Report to the Secretary of State for Communities and Local Government

by Edward A Simpson  JP BA(Hons) MRTPI

an Inspector appointed by the Secretary of State for Communities and Local Government

TOWN & COUNTRY PLANNING ACT 1990

PLANNING (HAZARDOUS SUBSTANCES) ACT  1990

LANCASHIRE COUNTY COUNCIL

APPEALS BY

CANATXX GAS STORAGE LIMITED

Inquiry opened on 11th October 2005 and closed 5th May 2006

Land at Preesall Saltfield, Stalmine, Wyre Estuary, and Fleetwood, Lancashire

File Refs: APP/Q2371/A/05/1183799 & APP/HSC/05/07
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### Abbreviations

- Appendix A: Assessor’s Report
- Appendix B: Revised lists of Conditions to be imposed in the event of Planning Permission and Hazardous Substance Consent being Granteds
- Appendix C: Post-Inquiry Responses to Energy Statement of 16th May 2006
Abbreviations used in the report

AGR Advanced Gas-cooled Reactor
ALARP As Low As Reasonably Possible
BAP Bio-diversity Action Plan
BAT Best Available Techniques
BBC Blackpool Borough Council
BBL Balgzand Bacton Line (UK-Netherlands gas pipeline)
bcf Billion Cubic Feet
BGS British Geological Society
BHS Biological Heritage Sites
BPS Booster Pump Station
BwDBC Blackburn with Darwen Borough Council
BW Brine Well Bore Holes
CA Countryside Agency
CBI Confederation of British Industry
CCW Countryside Council for Wales
CEO Chief Executive Officer
CGSL Canatxx Gas Storage Limited (The appellant company)
CIA Cumulative Impact Assessments
COMAH Control of Major Accident Hazard
CROW Countryside and Rights of Way Act 2000
DTI Department of Trade and Industry
EA Environment Agency
EIA Town and Country Planning (Environmental Impact Assessment) (England and
Regulations Wales) Regulations 1999
EN English Nature [now Natural England]
ER Energy Review (CD/58 – January 2006)
ES Environmental Statement
FEPA Food & Environment Protection Act 1985
FSS First Secretary of State
GCN Great Crested Newt
GCS Gas Compressor Station
GECF Gas Exporting Countries Forum
GLVIA Guidelines for Landscape and Visual Impact Assessment [Landscape Institute]
HGV Heavy Goods Vehicle
HSA Hazardous Substances Authority
HSC Hazardous Substances Consent
HSE Health and Safety Executive
IDS Internationally Designated Site
JAC Joint Advisory Committee for Strategic Planning (LCC, BBC, BwDBC)
JESS Joint Energy Security of Supply Working Group
JLSP Joint Lancashire Structure Plan
JNCC Joint Nature Conservation Committee
LCC Lancashire County Council
LNG Liquefied Natural Gas
LPA Local Planning Authority (LCC)
LMWLP Lancashire Minerals & Waste Local Plan 2006
MOPICO Motor in Pipeline Compressor
MPA Mineral Planning Authority
Mt Million Tonnes
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<td>NGT</td>
<td>National Grid Transco</td>
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<td>National (Gas) Transmission System</td>
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<td>SCG</td>
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<td>SPA</td>
<td>Special Protection Area</td>
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<td>Supplementary Planning Document</td>
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<td>SPG</td>
<td>Supplementary Planning Guidance</td>
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<td>SPV</td>
<td>Single Purpose Vehicle</td>
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<td>SSSI</td>
<td>Site of Special Scientific Interest</td>
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<td>SSTI</td>
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<td>STW</td>
<td>Sewage Treatment Works</td>
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<td>T&amp;CP(GPD)O</td>
<td>Town and Country Planning (General Development Procedure) Order 1995</td>
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Appeal 1. File Ref: APP/Q2371/A/05/1183799
Preesall Saltfield, Stalmine, Wyre Estuary, Lancashire

- The appeal is made under section 78 of the Town and Country Planning Act 1990 against a failure to give notice within the prescribed period of a decision on an application for planning permission.
- The appeal is made by Canatxx Gas Storage Limited against Lancashire County Council.
- The application Ref 02/04/1415 is dated 18/11/04.
- The development proposed is development of a natural gas storage facility including up to 20 well heads to create underground salt caverns by solution mining, the construction of above ground compressor station, a booster pump station, associated pipelines septic tanks and vehicular access track, the construction of brine/seawater/communication pipes below the Wyre Estuary, the construction of a seawater pump station, brine discharge pipeline and associated outfall to the Irish Sea.

Summary of Recommendation: The appeal be dismissed and permission refused.

Appeal 2. File Ref: APP/HSC/05/07
Preesall Saltfield, Stalmine, Wyre Estuary, Lancashire

- The appeal is made under Section 21 of the Planning (Hazardous Substances) Act 1990 against a failure to give notice within the prescribed period of a decision on an application for Hazardous Substances Consent.
- The appeal is made by Canatxx Gas Storage Limited against Lancashire County Council.
- The application Ref HSC/05/01 is dated 15/04/05.
- The development proposed is the underground storage of 2 million tonnes of natural gas and associated facilities including the construction of an above ground compressor station and pipelines.

Summary of Recommendation: The appeal be dismissed and consent refused.

1. PROCEDURAL MATTERS

1.1 By letter dated 11th July 2005 the then First Secretary of State indicated that this was a case that he should determine and directed accordingly. The reason for this direction is that the appeal relates to proposals for a development of major importance, having more than local significance and it involves the winning and working of minerals.

1.2 I held pre-inquiry meetings (PIM) on 23rd May and 3rd August 2005. The first PIM concerned appeals APP/Q2371/A/04/1163407 and APP/HSC/05/06. In July 2005 those 2 appeals were at first substituted by the current appeals and then subsequently withdrawn. At the first PIM it was agreed that the matters to be addressed at the inquiry would include the following:

a) Need, alternatives, principle of development, national and local policy;
b) Geology/storage technology, mining history etc;
c) Risk (gas migration/explosion), risk assessment, fear as a material consideration;
d) Sustainability of the working/disposal of mineral salt;
e) Impact on SPA, SAC, Ramsar, SSSI, BHS and Protected Species; to include water quality, sea defences, managed retreat and flooding;
f) Landscape impact of the development;
g) Impact on amenity value of the Wyre Estuary, Wyre Way and other footpaths;

h) Highway safety and highway impact on amenity;

i) Other amenity issues including noise, and impact on residential areas East and West of the Wyre Estuary in the short, medium and longer term;

j) Economic/tourism impact;

k) Human Rights.

1.3 The second PIM, although dealing with the substitute appeals, was concerned with procedural and programming arrangements for the inquiry. There was no material change to the list of matters to be addressed by the inquiry.

1.4 An Environmental Statement (ES) was submitted with the application for planning permission. By letter dated 8th September 2005, and pursuant to Regulation 19 of the 1999 Regulations, the then FSS notified CGSL’s agent that he required the appellant to supply the following further information:

a) A full description of the geology of the site and the surrounding area, including an assessment of the possible impact of the former workings in the locality and the capability of the geological structure to support the proposal; and

b) An assessment of the possible effects of subsidence, the potential for gas migration and the means to ameliorate any adverse impacts.

1.5 This further information was submitted as part of CGSL’s evidence to the inquiry. I have taken account of this information, together with that in the submitted ES, in preparing my report. The evidence to the inquiry is reported on a topic basis.

1.6 Ms Ruth Allington BSc MSc MBA FIMM CEng FGS CGeol MAE QDR was appointed as Assessor to advise on matters relating to the geological and hydro-geological setting of the scheme including the mining history of the Presall Salt Field, and the associated impacts of the proposed storage. In particular, I have asked her to consider the suitability of the Presall Salt Field for the proposed storage technology; the mechanisms and potential for gas migration and the extent and nature of related impacts; and the mechanisms and potential for subsidence and the extent and nature of related impacts. Her report is attached at Appendix A.

1.7 The inquiry opened on the 11th October 2005, closed on 5th May 2006 and sat for a total of some 36 days. On the opening day, and on the evening of the 2nd March, the inquiry was held in the Marine Hall, Fleetwood. The remaining sessions of the inquiry were held in the North Euston Hotel, Fleetwood. Accompanied site inspections were undertaken on 16th and 17th May. I (and my Assessor where appropriate) undertook both accompanied and un-accompanied inspections of the site, its surroundings, the wider area and the wider highway network. We also observed surface development activity at the gas storage facility at Byley, Cheshire, currently under construction. At the request of PWG I also visited the locality of the gas landfall terminal facilities at Barrow in Furness.
1.8 At the Inquiry an application for a partial award of costs was made by Lancashire County Council (LCC) against Canatxx Gas Storage Limited (CGSL). This application is the subject of a separate Report.

2. PRELIMINARY MATTERS

Appeals 1 and 2

2.1 The planning application states that ‘it is not possible at this stage to exactly specify the number of the proposed caverns until detailed geological surveys and the solution mining process are completed’. By letter dated 29th April 2005 the appellant formally sought to amend the planning application (and associated application for hazardous substance consent – Appeal 2). These amendments were made in response to consultation responses from statutory consultees and others on the previous application (LCC Ref.02/03/1455 – Appeal Ref. APP/Q2371/A/04/1163407)(see above) formally withdrawn on 11th July 2005.

2.2 These changes included a revised ‘Figure 7a, Master Plan – Scheme Development Drawing No.A.GSP.0600009 rev 3’ which indicated that all surface development now proposed would take place outside the area of the Wyre Estuary SSSI/Arm Hill, and a revised ‘Figure 7b, Master Plan – Completed Scheme Drawing No. A.GSP.0600010 rev 3’ which indicated 24 well-head locations and the caverns CGSL proposed to create from them. In addition to the exclusion of ground elements from the SSSI/Arm Hill and Clods Carr Land Field BHS, the letter also specified 24 caverns each not more than 100m in diameter, and that no well-head would be within 160m of a habitation. These changes had the effect of reducing the storage capacity of the scheme from 2m tonnes to 1.2m tonnes on the basis that the caverns proposed would have a capacity of about 30bcf\(^1\). There would also be a consequent reduction in the total volume of halites that would need to be solution mined.

2.3 These changes to the terms of the applications were accepted by LCC and the report to committee (Doc.CD/27) prepared on that basis.

2.4 In the light of discussion on day 8 of the inquiry the appellant re-stated, by letter dated 21st December 2005, its understanding of the description of the development for which planning permission was being sought. This was:

*Development of a natural gas storage facility including up to 24 wellheads to create underground salt caverns by solution mining; the construction of an above ground compressor station, a booster pump station, associated pipeline, septic tanks and vehicular access track; the construction of brine/seawater communications pipes beneath the Wyre Estuary; the construction of a seawater pump station, brine discharge pipeline and associated outfall to the Irish Sea.*

It was clarified that the maximum weight of gas to be stored was 1.2m tonnes; the maximum no. of caverns would be 24; and saturated brine discharge would be 80m litre/day.

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\(^1\) Billon cubic feet
2.5 As a result of the evidence submitted during the inquiry further detailed alterations were made to various elements of the scheme. Shortly before the close of the inquiry an agreed list of the plans which now comprise the application(s) was submitted (CD75\textsuperscript{5}(r)). For the avoidance of doubt the list of Plans is set out below. Suffix (r) indicates a plan revised during the inquiry.

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<td>CD75c(r)</td>
<td>Compressor Station Site Plan</td>
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3. THE SITE AND SURROUNDINGS

3.1 The appeal site covers an area of approximately 261 hectares, located within and adjoining the Preesall Salt Field to the south and south east of Fleetwood, on either side of the estuary of the River Wyre near Stalmine (CD/3 – Fig.1a). The majority of the appeal site (253 hectares) is located on the Preesall Salt Field and would encompass the main extent of the above-ground infrastructure including up to twenty-four wellheads; a Compressor Station with external plant and equipment; a Booster Pump Station, also with external plant and equipment and storage; associated pipelines, septic tanks and vehicular access track.

3.2 The Preesall Salt Field is an extensive area of predominantly low lying open agricultural land (mostly Grade 2-3) and salt marsh to the east of the Wyre Estuary, which rises to an elevation of 23m above sea level at its southern end near Burrow's Farm, Staynall.

3.3 The Preesall salt marsh and Arm Hill area fall within the Morecambe Bay Special Protection Area (SPA), designated for its bird populations of European importance (Doc.CD/7 – Appendix 2 – Fig.3). The appeal site is also located within the Wyre Estuary Site of Special Scientific Interest (SSSI)/Ramsar site and is located close to a number of Biological Heritage Sites (BHS). The outfall pipeline would extend into the Irish Sea, part of which is identified as a draft Special Protection Area (the Liverpool Bay Special Protection Area (SPA)).

3.4 A further 8 ha of land would be required for the Seawater Pump Station at Fleetwood Docks, and a communications, seawater and brine discharge pipeline. The route of the pipeline would run from the main development site under the Wyre Estuary to Fleetwood Docks, then run parallel to the rear of the Jameson Road waste water treatment works, crossing the A585 (T) and a disused railway line, running south of Broadwater Woods and the grounds of the local Nautical College. It would then pass, within open fields, Rossall Hospital and playing fields (which form part of the Fylde Peninsula Green Belt) before running towards the coast to the rear of residential properties on South Strand and to the front of residential properties and a hospital on West Way. After traversing the sea wall it would extend for some 2.3 km into the Irish Sea.

3.5 A further pipeline under the Wyre Estuary would provide an electrical power connection between the southern end of the appeal site and the former ICI Hillhouse Works industrial site north of Thornton (CD/5/Fig.15b).

4. PLANNING POLICY

4.1 CGSL and LCC agreed the planning policy context for the appeal applications (CD/28 sect.4). Relevant European Directives and associated regulation include Directive 85/337/EEC (as amended by 97/11/EC - The EIA Directive); and Regulations 48, 49 and 53 of the Conservation (Natural Habitats & c.) Regulations 1994 - works likely to affect any site designated for its European nature conservation interest. (i.e. SPA or SAC – in this case the Wyre Estuary Ramsar/SPA site and Morecambe Bay SSSI).

4.2 Government policy and guidance as it relates to planning matters is set out in a range of documents including White Papers, Departmental Circulars, Planning Policy Guidance Notes (PPGs) and emerging Planning Policy Statements (PPSs).
4.3 For the purposes of Section 38 of the Planning and Compulsory Purchase Act 2004, regional planning guidance for the North West area is provided by the adopted RPG 13 and the emerging Regional Spatial Strategy (RSS) (and supporting daughter documents including the Regional Economic Strategy, and Regional Transport Strategy), which form part of the Development Plan.

4.4 Since the Partial Review, the RSS had reached the stage of the Report of the Panel. Weight should be accorded the Partial Alteration as a material consideration under Section 28. In the adopted RPG13, regard should be had to the policy implications of Policies ER5 and ER9.

4.5 The development plan for the area in which the proposals would be constructed also comprises the adopted “Joint Lancashire Structure Plan 2001-2016” (2004); the “Lancashire Minerals and Waste Local Plan 2006” (2000), and the “Wyre Borough Local Plan” (1999). The weight to be given to the policies of the development plan would reflect the age of the development plan and any changes in the national policy guidance framework since adoption.

4.6 The following Policies are considered relevant to the determination of the appeals:
   c) the “Wyre Borough Local Plan” (1999) – Policies SP14, ENV2, ENV4, ENV5 and ENV6.

4.7 CGSL and LCC also agreed that as the emerging Wyre Local Plan (Deposit Draft) had reached the stage of the Inspector’s report into the objections, it was a material consideration. Relevant policies to be applied were Deposit Draft policies Core11, ENVT2, ENVT5, ENVT6 and ENVT7.

4.8 Following the close of the inquiry the SoS for Trade and Industry published a Parliamentary Written Statement (PWS) entitled ‘Energy Statement of Need for Additional Gas Supply Infrastructure’. By letter dated 13th June 2006 I circulated the PWS to the Appellant, LPA and Rule 6 parties seeking comments on it and these are included within the group of documents prefix ‘IPI’ and summarised at Appendix 3. Where appropriate I have referred to the PWS.

4.9 In late November 2006 the SoS for Communities and Local Government published MPS1 – Planning and Minerals, and the accompanying Planning and Minerals Practice Guide. These documents have not been circulated to parties to the inquiry for their comments and are not otherwise referred to in this report.

4.10 In early December 2006 the SoS for Communities and Local Government published PPS25 – Development and Flood Risk. That document has not been circulated to parties to the inquiry for their comments and is not otherwise referred to in this report.

5. PLANNING HISTORY & PUTATIVE REASONS FOR REFUSAL

Planning History
5.1 The Preesall Salt Field has a long history of previous brine workings evident since Roman times. Until 1994, the site was solution mined for use as a source of chemical feedstock for chlorine production by ICI. There remains evidence of former abstraction wellheads and brine-filled depressions throughout the site where abstraction activities have taken place within the salt deposits inland to the east of the river.

5.2 The historic solution-mining has led to some instances of collapse within the wider area. Para 10.31 of Lancashire Minerals and Waste Local Plan acknowledges that ‘although the method of extraction used has long been established as safe and unlikely to cause subsidence, the presence of a void under the surface does have a physiological impact.’ It goes on to say that ‘the Mineral planning authority will therefore need to be satisfied that the provisions made for the protection of existing development in or adjacent to the development area, and for the long term safety of the cavities created are adequate.’

5.3 The majority of historic mineral workings planning applications relating to the appeal site have been for brine pumping and the extraction of salt - the latest permission being approved in 1998; and for exploratory borehole operations approved in 1972, 1998 and 2001. Planning permission was also granted in 1972 for the storage of brine sludge in a sealed salt cavity adjoining a borehole site at the junction of Highgate Lane and Brown's Lane (Application No: 2/6/8141) with three supplementary applications in 1975, 1978 and 1990 for the continuation of brine sludge disposal approved under the 1972 permission. The areas previously used by ICI for solution mining are located mainly to the south and east of the illustrative locations for the proposed caverns. Pipelines and access tracks forming part of the proposed development would, in places, cross parts of the appeal site containing former ICI solution mines (Plan Doc.CD/75b).

5.4 LCC and CGSL are of the view that there are no other appeals or matters relating to the site that need to be taken into consideration in the determination of these appeals (CD/28 para..2.4). Proposals for the inter-connector linking the gas storage facility to the national gas transmission system were the subject of a separate application submitted to Wyre Borough Council. That application had not been determined at the time of the closure of this inquiry, although WBC had indicated that subject to the satisfactory submission of certain additional detailed information it was minded to approve that application.

Putative reasons for refusal

5.5 At a special meeting of the Development Control Committee held on 26th July 2005 LCC resolved that, had the 2 applications not been the subject of appeals, it would have been minded to refuse both applications. The putative reasons for refusal for Appeal 1 were:

1. The proposed development would be contrary to Policy ER9 of the Regional Spatial Strategy, Policy 26 of the Joint Lancashire Structure Plan in that it does not take account of the national significance of the Region's reserves of salt which would not be worked in a sustainable manner.

2. The application contains insufficient information to:

    i. Properly assess and ensure the geology of the area is capable of accommodating the development;

    ii. Demonstrate that the geology would support the development and not cause unacceptable impacts on the environment through subsidence both within the estuary and on the land;
iii. Demonstrate its relationship to former solution mining activities or surface development; and

iv. Establish there is no opportunity for migrating gas through the geology or via former mining activities contrary to Policies 2, 3, 15, 16, 23, 25, and 72 of the LMWLP.

3. The applicant has not satisfactorily demonstrated that the proposal would not cause risk or damage and has not demonstrated sufficient means of mitigation to those identified impacts including noise to parts of Morecambe Bay and the Wyre Estuary Ramsar site, Special Protection Area and Site of Special Scientific Interest and a number of Biological Heritage Sites within the Fleetwood peninsula contrary to policy ER5 of the RSS, Policy 21 of the JLSP, Policies 15, 16, 17, 18, 20 and 25 of the LMWLP, Policies SP14, ENVT4, ENVT5 and ENVT6 of the WBLP and Policies ENV7, ENV7, and ENVT7 of the WBLPR.

4. The proposed development to the east of the estuary would result in the introduction of an industrial development which by reason of its scale and location would be detrimental to the quality of the open character of the coastal plain and estuary landscape contrary to the intentions of Policy ER5 of the RSS and Policies 20 and 21 of the JLSP, Policies 2, 7 and 72 of the LMWLP, Policies SP14 and ENV2 of the WBLP and Policies Core1 and ENVT2 of the WBLPR.

5. The HGV movements associated with the development of the site would be detrimental to highway safety on the local road network contrary to Policy 37 of the Lancashire Minerals and Waste Local Plan.

6. The HGV movements associated with the development of the site would lead to a loss of highway amenity to users of both the primary and local road network and to the amenities of residential properties fronting such for the duration of the development contrary to Policy 26 of the JLSP, Policy 37 of the LMWLP, Policy SP14 of the WBLP and Policy CORE 11 of the WBLPR.

7. The proposal would have an adverse impact on the amenity and recreational value on the Wyre Way and associated footpath network contrary to Policy 31 of the LMWLP for which no adequate arrangements have been proposed.

8. The application contains insufficient information to properly assess the levels of noise associated with the development of the site on the amenities of local residents and the environment contrary to Policies 2 and 3 of the LMWLP which seek to maintain quality of life and ensure an adequate buffer zone to existing dwellings and other sensitive land uses.

9. The applicant has not demonstrated that the proposal would not have an unacceptable impact on water quality and is therefore contrary to Policy 22 of the JLSP, Policy 23 of the LMWLP, Policy ENV4 and ENV6 of the WBLP and Policies ENVT3 and ENVT5 of the WBLPR.

10. The applicant has failed to demonstrate that the development would not present an unacceptable risk of gas migration given the relationship of the proposal to former operations and its proximity to residential areas on the east side of the estuary and the more densely populated Fleetwood peninsula throughout its operation,
decommissioning and long term aftercare management contrary to Policies 2, 3 and 72 of the LMWLP.

11. The proposal would result in considerable and understandable fear and distress within the local communities attributable to the high level of associated risk and the potential consequences of any accident occurring and would be contrary to Policy 2 of the LMWLP.

5.6 The putative reasons for refusal of Appeal 2 were:

1. The application contains insufficient information to:
   i. Properly assess and ensure the geology of the area is capable of accommodating the development;
   ii. Demonstrate that the geology would support the development and not cause unacceptable impacts on the environment through subsidence both within the estuary and on the land;
   iii. Demonstrate its relationship to former solution mining activities or surface development; and
   iv. Establish there is no opportunity for migrating gas through the geology or via former mining activities contrary to Policies 2, 3, 15, 16, 23, 25, and 2 of the LMWLP.

2. The proposal would lead to risk of damage to parts of Morecambe Bay and the Wyre Estuary Ramsar site, Special Protection Area and Site of Special Scientific Interest contrary to Policies 21 of the JLSP Policies 15, 16, 17, 18, 20 and 25 of the LMWLP, Policies SP14, ENVT4, ENVT5 and ENVT6 of the WBLP and Policies ENVT5, ENVT6 and ENVT7 of the WBLPR.

3. The applicant has failed to demonstrate that the development would not present an unacceptable risk of gas migration given the relationship of the proposal to former operations and its proximity to residential areas on the east side of the estuary and the more densely populated Fleetwood peninsula throughout its operation, decommissioning and long term aftercare management contrary to Policies 2, 3 and 72 of the LMWLP.

4. The proposal would result in considerable and understandable fear and distress within the local communities attributable to the high level of associated risk and the potential consequences of any accident occurring and would be contrary to Policy 2 of the LMWLP.

6. THE PROPOSALS

6.1 Up to twenty-four caverns would be created by solution mining, in which the salt would be dissolved in sea-water pumped into the deposits. The salt-saturated brine created in this process would then be pumped out and discharged through a diffuser to the Irish Sea at an outfall approximately 2.3 km west of Rossall, near Fleetwood (CD/75a+r & CD3 Figs 10a+b). On completion, the projected total of gas to be stored would be up to 1.2 million tonnes.

6.2 The proposed scheme would comprise:
6.2.1 New access roads a) from Cemetery Lane westwards to wellheads to the north and south of The Heads; b) a new road south from the lane running past Height O’ Th’ Hill to the Gas Compressor Station and new tracks westwards and southwards to the wellhead locations south of The Heads; and c) a new roadway connecting the Booster Pump Station to Back Lane opposite Park Cottage Farm via a) above (CD/75s).

6.2.2 Up to twenty-four wellheads including approximately one hectare of land around each wellhead for the drilling rig, casings and other equipment contained within a screening mound and accessed via a four metre wide service road. A larger area would be required where 3 well heads, nos.15-17, are proposed. On completion of each cavern, the area required in the longer term for the control valves and other surface infrastructure would be much smaller (Doc.CD/3 Figs.19c-e & Plan CD/75b).

6.2.3 Inspector’s Note. Prior to the modifications set out at par.6.3 below there would have been 2 larger areas of 4 and 6 grouped well-heads at Arm Hill and south of the UU STW north of Arm Hill (Doc.CD/3 Fig7b Rev.1).

6.2.4 A Sea Water Pump Station (Plans CD75n-q) (i.e. a brick-faced 16m x 50m building with a roof height of 9m) at Fleetwood Fish Dock with pipe-line links a) under the estuary to the BPS and b) to the sea-wall crossing at Rossall and thence to the off-shore diffuser.

6.2.5 A Booster Pump Station (Plans CD75, l, t & u) (i.e. a brick-faced Y-shaped building comprising two arms of 55m length and one arm of 12m length and a roof height of 9m; grouped with other buildings/plant/facilities including an electricity sub-station, car park areas and above-ground settling pipe array) east of the estuary 1km northeast of The Heads.

6.2.6 A Gas Compressor Station (Plans CD75c-h) including an external electrical switchyard, coolers, filters and dryers, vent stack, access road, parking and security fence and a series of linked buildings, including a single storey Main Compressor Hall, built into the side of Burrows Hill, housing the electrically powered compressors together with various valves and pipeline configurations; an “L” shaped ancillary building linked to the Main Compressor Hall by means of a roofed but otherwise open bay, with the basement to this building accommodating variable frequency drives for the compressor and other mechanical equipment; with the ground floor accommodation of the ancillary building consisting of an entrance lobby, control room, workshop, offices and toilet facilities. These buildings would be accessed via a new roadway from Brown’s Lane to the north. The largest of these buildings would have a ridge height of 16 metres, with the remainder having ridge heights of 8 metres. This would be sited 0.5km to the north-west of Staynall adjacent to Burrow’s Farm.

6.2.7 Underground gas distribution pipelines connecting the wellheads to the Gas Compressor Station and Booster Pump Station (Plan CD75b).

6.2.8 Vent stack (which would only be used during commissioning and occasional maintenance operations).

6.2.9 Under-estuary pipeline providing an electrical power link to the GCS from the electricity supply facilities at Thornton (Plan CD75b and Plan CD3 Fig 7a).

6.3 The proposed scheme was modified on the 9th May 2005 to:

a) Exclude all surface development from the Wyre estuary Site of Special Scientific Interest (SSSI) / Arm Hill area:
‘The wellheads would be repositioned in response to ecological and environmental objections to avoid the possibility of any impact on qualifying features of the Morecambe Bay Special Protection Area (SPA) or any incursion into the Wyre estuary SSSI. The change also avoids the loss of any habitat of rock sea lavender plants. Drilling from the wellheads will be a mix of vertical and directional (angled) drilling to the caverns’;

b) Exclude above-ground elements from within the Clods Carr Lane Field Biological Heritage Site (BHS):

‘A wellhead and associated roadway would be relocated to the north in order to avoid any adverse impact on the purple ramping fumitory plants within the BHS. The field into which the wellhead etc…would be relocated has no noteworthy ecological features’;

c) Reduce the number of caverns, storage capacity and volume of brine discharge:

‘The number of wellheads and caverns has been reduced from 25 to 24, with each cavern having a maximum diameter of 100m. The wellheads will not be within 160m of a habitation, in accordance with HSE guidance. This has the effect of reducing the overall gas storage capacity from up to 2 million tonnes to up to 1.2 million tonnes which in turn reduces the volume of brine discharge required. Thus, whilst the daily discharge rate into the Irish Sea will remain as previously indicated, the period of discharge would be reduced from a period of 10 to around 6 years’.

6.4 By letter dated 21st December 2005 the appellant confirmed the terms of the application. Matters not before the LCC at its July 2005 meeting as a result of evidence given in Blocks 1 and 2 of the inquiry being that the period of discharge of brine to the Irish Sea would now be 7-8 years rather than 6 years (Docs.CGS/2/4; CGS/14/2 Table 6.1) and that the maximum volume of salt that would be removed from the site would be 22.5Mm³; the volume required to store the maximum weight of gas.

6.5 During the inquiry, in response to cross-examination and to address discrepancies between certain of the CGSL surface infrastructure drawings, revised application plans were submitted. The schedule of plans comprising the final list of application drawings is doc.CD/75v(r) dated 6th April 2006.

Other Agreed Facts

6.6 CGSL and LCC agreed that there was no dispute with respect to the effects of the proposal on Archaeology, Cultural Heritage and Air Quality.

7. THE COMPANY’S APPROACH

7.1 In its opening submissions (CGS/0/4) CGSL stated that the proposal was all about “a piece of infrastructure to ensure that gas supplies are there, when needed, at times of peak demand and which helps the market to work efficiently for the benefit of all consumers”. The events of winter 2005/6 have only served to reinforce how important the proposed facility will be in meeting future UK energy requirements. In what, in the event, was an average winter in temperature terms, UK energy prices have fluctuated wildly, imports have at times been constrained, international tensions have threatened security of supply
and an incident at the Rough offshore storage facility all led to instability in the UK’s energy markets. In a severe winter things would be far worse.

7.2 It had never been claimed by CGSL that the Preesall facility is some sort of ‘silver bullet’ that will single-handedly solve all the UK’s energy problems. It is, however, an important part of the overall solution to those problems and to suggest otherwise would be to close one’s eyes to reality. The Preesall facility, together with other such facilities and other initiatives by Government, will help to bring security and stability to UK gas supplies in an increasingly uncertain world. That will bring direct benefits to gas and electricity consumers who are already facing sharply rising energy prices.

7.3 What is remarkable about the proposed facility at Preesall is that these important benefits to the UK energy markets can be achieved with relatively limited environmental and other impacts. This is not a proposal where nationally important landscapes are damaged; it is not a proposal where large numbers of properties would suffer prolonged noise impacts; it is not a proposal where ecological impacts have led EN or other ecological bodies to appear in opposition to the proposals; and it is not a project where, when compared with other retail or warehouse proposals, large numbers of traffic movements would be generated. There are local impacts, and that has always been acknowledged, but for a national infrastructure project of this scale and importance they are relatively small.

7.4 Much of the concern expressed by opponents of the proposed storage facility relates not to environmental impacts, but to safety (for example, PWG/0/6 “we focus primarily on safety, risk and fear”). Safety was of paramount importance to CGSL and under no circumstances would it be compromised. Safety is, however, a matter which is regulated under parallel and complementary legislation and it is significant therefore that this is not a project where the Health and Safety Executive has expressed safety concerns. Ultimately these appeals would turn on a planning balance.

THE APPEAL PROPOSALS

The Appellant Company

7.5 The background to Canatxx as a company is set out in CGC/2/2 Section 3. Canatxx Energy Ventures was formed in 1988 to pursue opportunities in deregulated private power generation and natural gas markets. A UK affiliate, Canatxx Energy Ventures Limited (CEVL), was incorporated in England in 1991. Canatxx first became involved in the Fleetwood/Preesall area in 1993 when it developed a project to construct a Combined Cycle Gas Turbine (CCGT) power station on the ICI Hillhouse site at Thornton. Whilst that project did not proceed, Canatxx became aware of the potential of the Preesall salt field for gas storage use and began to develop the project which is the subject matter of these appeals.

7.6 Canatxx Gas Storage Limited (CGSL) is a private company limited by shares and was incorporated in the UK in 2001 to construct and own the Canatxx gas storage facilities at Preesall. As is usual with projects of this sort, CGSL is a single purpose vehicle (SPV). It is anticipated that total capital expenditure on the project, by completion, would be in the region of £400 million. The SPV model is the most appropriate vehicle for developments such as this which will be financed by a mixture of debt and equity provided on a limited recourse basis.
7.7 It has been Canatxx’s approach to assemble a team of experts relating to all aspects of the proposed project \(^{(CGC/2/2 - 3.2.3)}\). Some are employees of the company whilst others are external consultants. The objective in each case, however, has been to identify leaders in their fields in order to promote a high quality scheme.

7.8 Whilst it has been a criticism of some objectors that Canatxx has no previous experience of constructing and operating an underground gas storage facility that was also true of Scottish Power at Byley and will continue to be true of the promoters of many other underground gas storage projects which are likely to be brought forward over the next few years. In a field where few energy companies in the UK have previous experience of underground gas storage projects the criticism levelled at Canatxx is without merit. The important point is that Canatxx has engaged leading experts from Europe and North America to advise it on the project.

Project Description

7.9 The project comprises the following elements \(^{(CGS/2/2 section 4.5)}\):

(a) The Storage Caverns;
(b) The Water Washing Infrastructure;
(c) The Sea Water Pumping Station;
(d) The Booster Pump Station;
(e) The Sea Wall Crossing;
(f) The Brine Outfall;
(g) The Gas Infrastructure;
(h) Electrical Infrastructure;
(i) Backup Control Centre;
(j) Gas Distribution Infrastructure;
(k) Wellheads in the Post-Drilling/Operational Phase
(l) The Monitoring and Control System;
(m) Road Infrastructure;
(n) De-Commissioning and Restoration

7.10 The Preesall facility is intended to store up to 1.2m tonnes of natural gas. This is equivalent to about 1.7 bcm (60 bcf) of gas. This volume of gas would comprise approximately 1.133 bcm (40 bcf) of ‘working gas’, with the remainder being ‘cushion gas’. Whilst CGSL would have to purchase, and would therefore own, the cushion gas, the working gas would be owned by gas supply companies who would purchase storage space in the Preesall facility.

7.11 The gas compressors for the project would have the ability to inject and withdraw natural gas into and out of the storage caverns at flow rates of up to 1,200 gigawatt hr/day (4 bcf per day) \(^{(CGS/2/2 paragraph 4.6.1.1)}\). This would allow the caverns to be filled in 10 days and would facilitate ‘cycling’, the ability to empty and refill the facility several times a year \(^{(CGS/1/2)}\). This is an important aspect of the scheme’s ability to contribute towards meeting national gas storage needs.

7.12 The storage of 1.2m tonnes of natural gas requires about 22.5Mm \(^3\) of cavern storage space. It is this volume of salt extraction, and the construction programme which would be necessary to achieve it, that has been assessed in relation to potential environmental impacts.

7.13 CGSL is applying for “up to 24 caverns”. Each cavern will require a separate wellhead and the location of these wellheads has been identified and fixed by the application
The location of the wellheads and the other above ground infrastructure, is to be secured by planning condition.

7.14 The location and design of the underground caverns themselves has always been illustrative. This is important to ensure that the planning regime does not encroach upon matters which will be the subject of detailed control under other legislation. It is important that matters of detailed siting and design which will form the subject-matter of the safety case for each cavern to be submitted to the HSE under the Control of Major Accident Hazards Regulations 1999 (COMAH) are not prejudiced by the planning system.

7.15 The plans showing indicative cavern locations are illustrative only and not intended to fix the locations or design of the proposed caverns. CGSL’s evidence makes clear that cavern locations are illustrative and that the cavern heights and volumes given are based on notional 100m diameter cylindrical caverns. (CGS/4/4 para.1.3 and Appendices 1 and 2) CGSL would wish to optimise its proposed cavern locations and detailed design to achieve safety requirements and maximise capacity within the overall capacity limit of 1.2m tonnes. CGSL has always accepted that, if that limit of capacity can be achieved with fewer than 24 caverns, then fewer would be developed. The description of development was confirmed by letter dated 21 December 2005 (CGS/C/7).

7.16 During the course of the inquiry a number of discrepancies were noticed in some of the application plans. Such discrepancies are not uncommon in large applications, although they should simply not have happened. CGSL apologised for these errors. They were of a fairly minor nature and it has not been suggested that anyone was materially misled by them. CGSL, together with LCC, has reviewed all of the application plans and an agreed list of ‘amended drawings’ provided. The plans as submitted, or where appropriate revised, which now form the application plans, and which are to be made subject to draft Condition no.2, are listed at CD75(v) (see paragraphs 2.5 and 6.2.1 - 7 above).

8. NEED AND ALTERNATIVES

8.1 The Case for CGSL

Introduction

8.1.1 The appeal proposal represented an important piece of energy infrastructure for which there was a clear national need. This was a highly material consideration which should attract considerable weight in the overall planning balance.

8.1.2 In considering the national need for more gas storage, and the weight to be attached to it in arriving at the overall planning balance, the Secretaries of State’s decision at Byley (CD53) was of some considerable significance. While it was accepted that there may be many site specific differences between Preesall and Byley, it was reasonable to conclude that the Secretaries of State’s approach to national need, and the weight to be attached to it, would be consistent.

8.1.3 Important themes from their decision at Byley provided a context for this appeal. The following points noted (emphasis added by CGSL):

“The Secretaries of State have considered the Inspector’s comments and conclusion on need ... They agree with the Inspector that security of
supply is of national importance and it is prudent to add to supply ... In their opinion this is an important consideration that carries considerable weight.” (CD53 para.18).

“In the opinion of the Secretaries of State, salt cavity gas storage is a type of storage that will assist with the security of supply and the proposed development is consistent with national energy policy. The Secretaries of State consider that this weighs in favour of the proposed development.” (CD53 para.18).

“The Secretaries of State give considerable weight to the assessment and the likely foreseeable supply-demand gap [based upon the planning assumption of a ‘1 in 50 winter’]. In their opinion, it would be inappropriate and unrealistic to require the establishment of absolute certainty both in predicting a shortfall in supply, and in establishing need for particular types of proposal to satisfy security of supply. Overall, the Secretaries of State consider that the available information is sufficient to demonstrate a significant likelihood of a supply-demand gap in the short to medium term.” (CD53 para.19).

“The proposed development provides a means for increasing security of supply that should assist in meeting the forecast supply-demand gap and that is consistent with national energy policy. In the opinion of the Secretaries of State, this is a material consideration of considerable weight in dealing with the appeal. In the opinion of the Secretaries of State, this element of need is a highly material consideration which on its own would be sufficient to establish need for the proposed development.” (CD53 para.20).

“The Inspector separately considers the beneficial impact of gas storage on the traded market for gas ... The Secretaries of State agree with the Inspector’s conclusion that the gas market would benefit from having greater storage and that salt cavity storage is good in terms of efficiency of the market ... “ (CD53 para.21).

“In the Secretaries of States’ view, the fact that other types of gas storage also have a beneficial impact on the traded market for gas, does not detract from the benefits provided by the proposed development. In their opinion, the proposed development is entitled to have this benefit weighed in its favour in determining the appeal.” (CD53 para.21).

“The Secretaries of State have given relatively little weight to the consideration of alternative sites given their findings on the effect of the proposed development on the open countryside ...” (CD53 para.22).

8.1.4 Those conclusions in relation to the Byley project set a useful context for the consideration of national need for further gas storage at Preesall. The clear national need for further gas storage capacity in the UK reflected strong and consistent themes of Government energy policy, which in turn reflected the needs of the UK for secure energy supplies and stable energy prices. This included gas supplied both for direct consumption
and for electricity generation. The principal relevant themes of Government policy were as follows.

**Energy Policy Context**

8.1.5 CGSL summarise Government energy policy relating to gas supply (CGS/1/2 – 3.15-30). The UK energy market had been privatised in the early 1980s and reliance on competitive and open markets has been at the heart of energy policy in the UK for over twenty years. The Energy White Paper: ‘Our energy future - creating a low carbon economy’ (February 2003) sets out the goals for energy policy as follows:

“To put ourselves on a path to cut the UK’s carbon dioxide emissions – the main contributor to global warming – by some 60% by about 2050, as recommended by the RCEP, with real progress by 2020;
- to maintain the reliability of energy supplies;
- to promote competitive markets in the UK and beyond, helping to raise the rate of sustainable economic growth and to improve our productivity; and
- to ensure that every home is adequately and affordably heated.”

(Para.1.18)

8.1.6 There were two important themes in Government policy particularly material to the proposed gas storage facility at Preesall. These were (a) security of supply; and (b) competitive markets. Both of these themes were expanded in Chapter 6 of the Energy White Paper (CGS/9/3 App.2) and both were raised and commented upon by the Secretaries of State in the Byley decision (above).

8.1.7 These themes were encapsulated at paragraph 6.1 of the Energy White Paper which stated that:

“Our goal is that people and businesses can rely on secure supplies of energy – gas, fuel and electricity – at predictable prices delivered through the market. Reliable energy supplies are an essential element of sustainable development.”

8.1.8 Paragraph 6.2 of the White Paper explains that:

“To achieve this we need a resilient energy system, without significant weaknesses, which works well and which recovers quickly if problems occur. This means a diverse system based upon a mix of fuel types, a variety of supply routes, efficient international markets, back-up facilities such as storage, and a robust infrastructure.”

8.1.9 CGSL had addressed the relevance to the land use planning decision of the twin themes of ‘security of supply’ and ‘competitive markets’ (flexibility of supply) (CGS/9/2 - 6.3-27).

8.1.10 The Department of Trade and Industry (DTI) had also emphasised the importance of additional gas storage facilities to the UK energy markets in the context of the current appeal proposal. The Assistant Director Gas (Competition & Regulation – Energy Markets Unit) had written to LCC setting out the DTI’s views on energy policy generally and in relation to the Preesall project (CD/9 pgs.1-11). That letter made a number of important points from which conclusions could be drawn on the value of the Preesall project in contributing towards the meeting of national need. In relation to need generally, para.17 stated:
“In short, additional gas storage facilities are needed because:

- GB’s existing sources of gas supply-side flexibility are declining, and new import infrastructure is (for economic reasons) likely to be sized primarily by reference to base-load demand, implying that it will be insufficient to meet winter peak demand;

And against this background;

- they would reduce the risk of physical gas supply shortage, for example in meeting peak winter demand reflecting gas central heating demand from households, and the safety risks that such shortages would bring;

- they would help to improve the operation of the commercial gas market, and to maintain competition in the gas market. They would in particular bring benefits in terms of lower prices for GB gas consumers;

- given the close links between the gas and electricity markets, there would also be benefits (in terms of price and reliability of supply) for GB electricity consumers.”

8.1.11 Recent events had only served to reinforce the need for further flexible gas storage capacity in the UK and the Government’s response to the 2005/6 winter events simply reinforced the energy policy support for the appeal proposal. On 23rd January 2006 the Government had launched an Energy Review consultation document entitled ‘Our Energy Challenge – Securing clean, affordable energy for the long-term’ (CD/58). In announcing that review 12 January 2006, the SoS for Trade and Industry, said that:

“Ahead of that review, in today’s speech I wish to focus primarily on the security of our gas supply, which has understandably been the cause of greatest concern in recent weeks.”

8.1.12 There was no indication in the SoS’s speech (CD59) or the subsequent Energy Review (CD/58) that there has been any weakening of the commitment to ‘security of supply’ and ‘competitive markets’. On the contrary, the thrust of the statement in the Energy Review was to make greater efforts to achieve those and other important energy policy objectives. Indeed one of the purposes of the statement was to announce “new measures to increase the potential for gas storage in the UK” (CD/59 pgs.14/15), those being legislative changes to allow more offshore gas storage and to streamline consent procedures for gas storage projects. Those policy developments were entirely consistent with the proposition that, if anything, the policy support for further gas storage facilities in the UK had increased since the 2003 Energy White Paper and the 2004 DTI letter (CD/9 pg.1).

8.1.13 Furthermore, these new policy initiatives had been brought forward in the context that Government was clearly aware that further gas storage projects are being considered (CD/59 – DTI Press Release – Notes to Editors). Far from regarding the ten gas storage projects currently being considered as sufficient to meet the objectives of Government energy policy, the SoS’s statement made it clear that legislative changes were being considered in order to bring forward off-shore gas storage and to streamline the onshore consents regime. This reinforced the Government’s policy commitment to ‘security of supply’ and ‘competitive markets’.

8.1.14 There was strong energy policy support for further gas storage capacity in the UK. As was made clear in the Energy White Paper, ‘safe and reliable supplies of electricity and gas are fundamental to our economy and way of life’ (CGS/9/3 – App.2 – 6.12).
Forecasts of Supply and Demand

8.1.15 Future gas supply and demand forecasts were assessed on two bases:

(a) average annual supply/demand \(^{(\text{CGS/1/2 section 4})}\), and

(b) severe winter supply/demand \(^{(\text{CGS/1/2 section 5})}\).

8.1.16 In relation to both ‘annual average’ and ‘severe winter’ forecasts both an optimistic and pessimistic case had been identified to demonstrate the robustness of the supply-demand deficit shown.

\(\text{a) Forecasts of Annual Average Supply/Demand}\)

8.1.17 A deficit in the annual average supply/demand balance was forecast from 2011/12 in the ‘optimistic supply’ scenario and from 2010/11 in the ‘pessimistic supply’ scenario. The approach, when looking at those future annual average deficits, was to assume that ‘Future Gas’ supplies would be secured to achieve an annual average balance. The quantum of these ‘Future Gas’ supplies was illustrated \(^{(\text{CGS/1/4-Figs.7+8 & CGS/1/3 App.5})}\). The challenge for the UK gas market was that ‘Future Gas’ supplies were likely to be predominantly imported gas with relatively little or no swing capacity. While CGSL assume that annual average supply/demand would be in balance as a result of new ‘Future Gas’ supplies, that had profound implications for the ‘severe winter’ supply/demand balance \(^{(\text{CGS/1/2 section 5})}\).

\(\text{b) Forecasts of Severe Winter Supply/Demand}\)

8.1.18 Gas industries worldwide had always been faced with the problem of how they met the need for gas in cold winters \(^{(\text{GCS/1/2 paragraph 5.2})}\). Gas demand was very closely linked to temperature. The lower the temperature, the higher the demand. That presented a dilemma for gas supply companies who needed to meet demand for gas in all reasonably foreseeable circumstances, if gas customers were not to be cut off or, in extreme cases, the pipeline network itself placed at risk. The dilemma for gas supply companies was that infrastructure provided to meet extreme peaks in demand would remain largely unused for the rest of the time. In the UK there had always been two separate criteria to assess the level of pipeline capacity and the storage capacity needed to meet severe winter demands. These were:

(a) the 1 in 20 peak day (pipeline capacity); and

(b) the 1 in 50 winter (storage capacity).

In this case it was the 1 in 50 winter criterion that was most relevant to the severe winter supply/demand forecasts. It was defined as the coldest winter that could be expected statistically in a run of 50 years. This criterion was now set out in the Public Gas Transporters Licence and in the Supply Licences \(^{(\text{CGS/1/2 para.5.12})}\).

8.1.19 In order to establish whether more storage capacity was needed an extensive simulation of extreme weather conditions between 2002/3 and 2013/14 had been conducted. In order to see what would happen if the 1 in 50 winter occurred in each of those years, a comparison had been made between peak daily gas demand and peak daily gas supply on the coldest 50 days in each year. To provide a robust assessment, the analyses had been provided on an ‘optimistic’ and ‘pessimistic’ scenario basis. In paragraph 5.13 of his
evidence Mr Trimble identifies the three key areas which separated the assumptions in
the optimistic and pessimistic scenarios (CGS/1/2 para.5.13.1-3). These were:
(a) availability of gas supply from off-shore;
(b) extra LNG available; and
(c) interruptible contract extensions.

8.1.20 The objective of the analysis was to establish whether gas demand would exceed gas
supply on any day. If demand exceeded supply then there could be a system emergency
and some customers would have to be cut off for safety reasons. The results for each
individual year were calculated (CGS/1/3 – App.5). Calculated firm gas demand was
compared with maximum available gas supply from existing and probable offshore UK
fields, known long-term contracts plus some spot imports/claw back and future gas. It
also included existing and new permitted UK storage (CGS/1/2 paras.5.16+17).

8.1.21 The results of this exercise are described, for the optimistic case, at paragraphs 5.18 and
5.19 of his proof and set out at Table 9. This same information was shown graphically at
Mr Trimble’s Figures 9a and 9b. For the pessimistic case, Mr Trimble’s analysis is
summarised at his paragraph 5.20 and set out at Table 10. These results are again shown
graphically, this time at his Figures 10a and 10b.

8.1.22 The Optimistic Case showed a supply/demand deficit in the years 2004/5 and 2005/6, a
surplus between 2006 and 2011 and then a supply/demand deficit returning in the years
2011/12, 2012/13 and 2013/14 (CGS/1/4 – Table.9 & Figs.9a+b). The Pessimistic Case showed the
supply/demand balance falling into deficit in 2009/10 and continuing through to
2013/14 (CGS/1/4 – Table.10 & Figs.10a+b). In this scenario the deficits were more severe with
demand peaking at over 125% of supply on some days. If the figure shown for any day
exceeded 100%, then an amount of gas demand equal to the excess above 100% would
have to be cut off or interrupted on that day in order to keep the pipeline network safe.
Some of the cutbacks shown in this analysis were very large indeed and would mean
major reductions in gas supply to power stations and to very large industrial consumers.

8.1.23 For CGSL it was concluded that the overall ‘best guess’ would be for an outcome which
lay roughly in the middle of the Pessimistic to Optimistic Cases range, but perhaps a
little closer to the Pessimistic Case than the Optimistic (CGSL/1/2 para.5.24).

8.1.24 If there was a peak day shortfall, problems could arise at three different levels, each more
serious than the last, these being:
(a) interruption of supply to major firm customers such as large industrial users and
power stations;
(b) an orderly shut down of the gas pipeline network; and
(c) an emergency shutdown of the system.

These were all serious consequences which should not lightly be contemplated by failure
to plan for and provide adequate gas storage capacity. It was easy in any infrastructure
inquiry to focus solely on local impacts if the development were to go ahead rather than
focusing on the wider impacts if it were not to go ahead.

8.1.25 The results of a sensitivity analysis for a one in five winter (CGS/1/3 Table 11), based on
optimistic and pessimistic case assumptions, showed that the problems of supply/demand
deficit were not confined to extreme winters and could exist towards the beginning of the
next decade even during a relatively mild winter.
8.1.26 It was to be noted that this analysis did not support some of the conclusions of the JESS 5 report (CGS/9/3 App.3). For CGSL that position had been fully justified (CGS/1/2 paras. 5.36-5.37; CGS/1/3 App.8; CGS/1/4 paras.5-8 and CGS/1/7 pages 4-10). For CGSL it was concluded that the correct view was that “The JESS 5 report is not, and was not intended to be, a definitive attempt to assess the security of gas supply for this country. To rely on it for decisions on whether new gas storage facilities were needed could only be extremely misleading.” (CGS/1/7 page.10).

8.1.27 In conclusion, the analyses amply justified Government’s concerns about future reliability of gas supplies to the UK market.

**Making the Market Work Better**

8.1.28 In order to understand the contribution which storage could make to the proper working of the gas market three key points had to be taken into account:

(a) the ‘balancing obligation’ inherent in the Network Code meant that gas suppliers had to ensure that every day they put back into the Transco system the same amount of gas that their customers had taken out;

(b) demand for gas was essentially an inverse function of temperature and could vary greatly from season to season and also from day to day; and

(c) the new gas suppliers, which now account for some 65% of the UK gas market, had relatively inflexible supplies and needed to rely on the ‘spot market’.

8.1.29 Over the last few years the nature of the gas spot market in Britain had changed and the market had become very volatile; three reasons for these changes in the market, being:

- rising oil prices;
- changes in trading patterns by gas producers; and
- concerns about security of supply and possible gas shortages.

It was the third of these which was potentially very significant for gas storage (CGS/1/2 para.7.15). This market volatility was illustrated by reference to day-ahead gas prices over recent months and years (CGS/1/4 Tables 12, 13 and 14 and Figures 12, 13a and 13b).

8.1.30 Underground gas storage in salt cavities had a particular role to play in moderating price volatility in the gas market. It needed to be emphasised that the nature of gas storage in salt cavities was inherently different from that of a depleted gas field such as Rough. That field, which was now used for gas storage purposes, filled and emptied at a relatively slow rate; it took up to nine months to refill its storage capacity. This had significant implications for the short-term spot market and meant that depleted gas fields were not well suited to respond to short term fluctuations in demand and consequent price spikes. By contrast, salt cavities allowed much faster response times and could be refilled more than once during the year. This was a particular strength of the Preesall facility (see 8.1.45 below).

8.1.31 The ability to deliver significant additional capacity into the Transco network to respond to short term peaks in demand (Doc.CGS/1/3 - App.1 + Fig.A1-1) would have an important moderating influence on gas prices in the spot market. “In recent months the concern amongst market participants about shortage of gas storage in Britain has led to what can only be described as a feeding frenzy as buyers scramble to get hold of capacity (CGS/1/2 para.7.23). This had led to sharply rising prices for gas storage capacity to levels considered to be “extraordinarily high”, reflecting the deep concern amongst gas market participants about the shortage of gas storage capacity. This was reflected in the fact that
in 2000/1 the cost of a unit of storage capacity at Rough was 9.9p, whilst by the winter of 2005/6 it had become 37.8p (CGS/1/4 Table.15+Fig.15). These prices, in turn, have an impact on gas consumers (CGS1/2 – 7.25).

8.1.32 The role which gas storage caverns played in making the markets work better was an important part of the overall need case for the Preesall facility and was fully consistent with objectives of Government policy as set out in the decision at Byley.

Meeting the Need

8.1.33 The Preesall facility would make a substantial contribution towards meeting the need for further gas storage capacity in the UK. CGSL sought planning permission to store up to 1.2m tonnes of gas (approximately equivalent to 60 bcf total gas and 40 bcf working gas)(see Conversion Factors: Ready Reckoner (CD43) for further conversion rates). CGSL had always accepted that that figure was an upper limit on the capacity of the project and that the actual capacity delivered would have to take into account any siting and design constraints resulting from the COMAH approval process.

8.1.34 CGSL’s view was that it would be able to achieve a storage capacity of about 1.2 m tonnes. That view had been based on the expertise and experience of those advising the Company. If the ultimate capacity of the scheme did prove to be less than 1.2 m tonnes, then its environmental impacts would also be less; a factor which objectors to the scheme had been somewhat reluctant to acknowledge.

Capacity of the Preesall Project

8.1.35 1.2 m tonnes of natural gas required approximately 22.5Mm$^3$ of cavern space at the typical operating pressures anticipated for the scheme. CGSL was confident that the 24 wellhead locations it had identified would allow it to create that volume of storage capacity (CGS/4/4 App.1). That schedule showed some provisional cavern volumes for 20 notional caverns of 100 metres diameter, allowing not less than 50 metres of roof salt and 10 metres of floor salt. The total cavern volume shown was 22.313Mm$^3$. It was important to bear two facts in mind: (a) the Appendix 1 schedule only related to twenty caverns; and (b) for most of the indicative cavern locations shown, the thickness of the salt was such that the height of the notional cavern could be increased without breaching the minimum requirement of 50 metres of roof salt and 10 metres of floor salt. The schedule was only intended to show that approximately 22.5Mm$^3$ of cavern space could be created within the Preesall Halite. It was not intended to show that those were the actual locations or the maximum sizes of the caverns which could be created.

8.1.36 During the detailed siting and design phase of this project, CGSL would seek to optimise the location and design of the proposed caverns to meet all requirements of the HSE whilst maximising the cavern volume created within the limits set. The cavern locations shown on the salt contour plans (CD47(b)) did not reflect that optimisation process and it had always been made clear that they were illustrative only.

8.1.37 PWG had sought to challenge the capacity of the proposed scheme. That challenge was entirely without merit. PWG had produced its own schedule of cavern volumes (Doc.PWG Figure 2/2/12 - Inquiry Ref.1/4/e). That document had contained errors and misunderstanding, as had been accepted on behalf of PWG in cross-examination. Detailed cavern siting and design was a highly technical area which needed to be undertaken by experts with considerable experience in the field. Whilst it might be tempting for members of the public to attempt to re-work the figures, very little weight should be attached to that
exercise. The PWG schedule was not put to the relevant Canatxx witnesses and so they
were not given a proper opportunity to point out its failings. CGSL would not have been
pursuing this project for many years if, as was suggested on behalf of PWG, the entire
Preesall salt field only had the capacity to accommodate a single gas storage cavern.

8.1.38 CGSL remained confident that the Preesall project would deliver a significant additional
contribution to UK gas storage, anticipated to be in the region of 1.2M tonnes (60 bcf).
Even if siting or design constraints reduced that figure, Preesall would continue to be
viable at a quarter of the size applied for. This appeared to be confirmed by the fact that
the Byley project was still viable at a fraction of the size of Preesall. This was important
because it demonstrated that the viability of the Canatxx proposal was not sensitive to
the loss of a few caverns. The viability of the project was extremely robust. Also, even
a quarter of its proposed size the project would still be substantially bigger than either
Byley or any other existing salt cavern gas storage facility in the UK.

8.1.39 For CGSL it was emphasised that even at a much reduced capacity, the Preesall project
would still make a significant contribution to meeting the national need for additional gas
storage capacity in the UK. In this context it was to be noted that the SoS found that the
need for the additional capacity provided by the much smaller Byley project attracted
“considerable weight”.

8.1.40 It was right that ‘every little helps’. It was also right that any reduction in the anticipated
capacity at Preesall would simply mean that more capacity would need to be provided
elsewhere in order to meet Government objectives on ‘security of supply’ and ‘market
competition’.

Locational Advantages of Gas Storage at Preesall

8.1.41 MPG.1 recognised that “minerals can only be worked where they naturally occur –
extraction sites are limited” (MPG1 para.5). Similarly, salt cavity storage facilities could only
be established in areas where salt existed at suitable depths and thicknesses. The British
Geological Survey (BGS) had identified only four UK locations which benefited from
salt beds that were of an appropriate depth and quality to accommodate large gas storage
caverns. Those were:
- The East Coast of Yorkshire;
- Cheshire;
- The Preesall deposits at the Wyre Estuary in Lancashire; and
- The Wessex Basin in Dorset

While there were other salt deposits in the UK, they were not of a thickness which would
be suitable for gas storage CGS/3/8.

8.1.42 It could be seen that on the basis of geology alone Preesall was one of the very few
locations in the UK where the potential for further salt cavity gas storage facilities might
be realised. There were a number of additional factors which made the Preesall site
particularly well suited to the creation and operation of salt cavern gas storage.

8.1.43 Factors which made the Preesall site a particularly suitable location for underground gas
storage in salt caverns included the following matters GCS/2/2 section.4.4).
Depth and quality of salt deposits

8.1.44 The depth of the salt deposits made them particularly suitable to enhance the UK’s ability to balance the supply and demand for gas over the very short term, as well as annually. The deposits were at a depth which would allow operation over a pressure range closer to that of the National Transmission System (NTS), thus allowing the proposed facility to respond very rapidly to required changes in flow. In contrast, the deposits in East Yorkshire were at great depth (GCS/2/2 para.4.2.4) and would have to operate across a range of pressures much higher than the NTS.

8.1.45 This characteristic also allowed the Preesall facility to be filled and emptied several times a year. The storage caverns had been designed with flow rates of up to 1,200 GWh/day (4 bcf per day) which would allow the caverns to be filled in ten days and would facilitate cycling (CGS/2/2 para.4.6.1.1). This could be contrasted with Rough which took up to nine months to fill (CGS/2/2 para.4.2.1) and Hornsea which takes over 160 days to fill (CD53 para.3.15). The ability to ‘cycle’ several times a year had the effect of multiplying the capacity contribution which a facility such as Preesall could deliver to the gas market. CGSL anticipated that the Preesall facility would be able to ‘cycle’ its working capacity some 3-4 times per winter. The facility also had the ability to accept more limited injection and withdrawal throughout the day, in response to market demand.

8.1.46 The salt deposits at Preesall were also of a quality which made them suitable for underground gas storage.

Supply of Sea Water for Cavern Washing

8.1.47 The proximity of the Preesall salt field to the sea meant that there was an abundant supply of sea water for cavern washing. Sea water contained 3% sodium chloride, compared to saturated brine at some 26%. Sea water was almost as effective as fresh water for the solution mining process but did not deplete large volumes of fresh water supplies. Preesall had a clear ecological advantage over potential cavern storage projects which had to rely on fresh water supplies for cavern washing (CGS/2/2 – para.4.52).

Proximity to Sea for Brine Disposal

8.1.48 Proximity to the sea was also an advantage in relation to the ability to dispose of the saturated brine resulting from the cavern washing process. CGSL had been unable to identify a commercial market for the brine (CGS/10/2). If, as CGSL contend, there was no commercial market for the re-use of the brine then there were distinct advantages in being able to dispose of it to sea. Such a disposal route was specifically acknowledged in the BGS/ODPM Mineral Planning Fact Sheet on Salt (CGS/9/3 App.11 pg.2).

Proximity to NTS

8.1.49 The general layout of the NTS (CGS/1/6 Fig.5) demonstrated that the proposed facility would be relatively close to the NTS pipeline network. This was important as it allowed for a reasonably short connection to the NTS. Some other projects might require considerably longer NTS connections. The Canatxx NTS connection planning application had the benefit of a resolution to grant by WBC, further information requested had been supplied, and the grant of planning permission was anticipated in the near future.
8.1.50 The NTS pipeline system near Preesall had been designed to handle the variable swing production from the Morecambe Bay gas field. It was extremely robust and ideally suited to supply and to receive gas from the proposed facility. No section of the NTS pipeline was better suited for connection to a major gas storage project.

Strategic Location of Preesall on the NTS Pipeline Network

8.1.51 Preesall was at a strategically important location on the NTS pipeline network to serve the major conurbations of Greater Manchester and Merseyside. The background note to EU Directive 2004/67/EC \(^{(CGS/9/3 \text{ App 8 sect.3)}}\) stated that:

> “Underground gas storage therefore plays a key role in EU gas supply both under normal operational circumstances as well as in case of supply emergencies and there are economic and strategic reasons why gas storage should be located close to the market. Gas companies therefore seek, as far as geology and economy allows, to spread storage facilities as well as possible and to locate them as near to large demand centres as possible i.e. preferably not too far from large cities.”

This approach was re-affirmed by DTI in its letter of 5\(^{th}\) July 2005 \(^{(CD.20 pg.2 para.2(iv+v)).}\) The Preesall gas storage facility would be particularly well located to support the extremely large industrial, commercial and domestic demand deriving from the major conurbations in the North-West.

Area of Low Population Density

8.1.52 The project was located in an area of relatively low population density. This was an advantage as, under the Hazardous Substances Consent procedure, the HSE had indicated an exclusion zone such that no wellhead could be located within a given separation distance of an existing dwelling. Great Britain was a densely populated island and it was significant that the mineral deposits necessary to create the proposed gas storage caverns were located below an area in which the HSE separation distances could be achieved.

8.1.53 The appeal proposal had a number of important locational attributes which made it particularly suited to the creation of underground gas storage caverns. It had not been suggested by any party to the inquiry that this combination of factors existed, or existed to the same extent, at any other location within the UK. The proposal not only assisted in meeting the overall need for gas storage in the UK but also met that need in a particularly well suited location. This is a powerful argument which objectors to the scheme had chosen largely to ignore.

Alternatives

8.1.54 It was an important strand on CGSL’s case that other potential gas storage projects were not alternatives, but would be needed as well \(^{(CGS/1/2 \text{ section.6})}\). This evidence was not cross-examined by either LCC or WBC.

8.1.55 Potential alternatives included:

(a) greater use of interruptible gas contracts;
(b) storage in other parts of Europe;
(c) aquifer storage;
(d) depleted gas fields;
(e) depleted oil fields;
(f) power generators and other industrial users interrupting their own supplies to sell them on the stock market; and
(g) traditional gas holders.

8.1.56 Few of these potential alternatives offered any real prospect of significant additional gas storage in the UK, and none offered the ability to provide large volumes of additional gas at short notice to meet the day to day fluctuations in the gas market. Depleted gas fields did not provide the withdrawal rates necessary to perform this function.

8.1.57 At paragraphs 11-14 of his supplementary proof of evidence, Mr Trimble set out an analysis of the amount of new storage space needed to achieve a balance in the supply/demand forecast. He concludes that in addition to Preesall delivering a ‘working gas’ storage capacity of 40 bcf (i.e. 12,396 GWh), balancing forecast ‘severe winter’ supply and demand would require an additional 19 - 38,000 GWh of storage capacity (Optimistic to Pessimistic Case). That was the equivalent of between 4 and 8 facilities the size of that proposed at Welton.

8.1.58 On behalf of CGSL it was argued that:

“This capacity would only be barely sufficient to avoid problems. In order to provide a margin for error and to guarantee that there would not be cutbacks, it would be necessary to build around 50-60,000 GWh in the Pessimistic Case and 20-30,000 GWh in the Optimistic Case.”

It would be necessary to build a significant number of gas storage facilities in addition to that proposed at Preesall in order to achieve the Government’s objective of ‘security of supply’.

8.1.59 It would also be wrong simply to assume that any other gas storage proposal would actually be granted planning permission. Welton had recently been refused planning permission by Lincolnshire County Council. PWG had highlighted the local opposition to the Ineos Enterprises scheme for underground gas storage caverns at Northwich in Cheshire. The Byley project had been strongly contested by the local community and only granted permission following a lengthy public inquiry following which the Inspector had recommended refusal.

8.1.60 The security of UK gas supplies could not be planned on the ‘Micawberish’ approach that ‘something will turn up’. The consequences of a significant supply/demand deficit in an extreme winter were far too severe to be ignored and, indeed, Government policy required this issue to be addressed.

8.1.61 Furthermore the Inquiry had been given no evidence on which it could be concluded that the environmental and other impacts of providing additional storage capacity at some alternative site, or combination of sites, was any less than that which might be found to exist at Preesall. No such analysis has been undertaken by LCC or any other objector to the appeal proposals.

8.1.62 It was also important to note that – in the context that the SSTI was clearly aware of the ten gas storage projects currently under consideration – the he was still proposing
legislative changes which would allow offshore gas storage projects to be brought forward (CD59 pg.15). This hardly indicated a Government stance that onshore gas storage projects were likely to meet all national gas storage needs.

8.1.63 This conclusion was further reinforced by the Energy Review (CD58 pg.37) which stated that:

"Sufficiency of storage facilities. Storage can play an important strategic role as a defence against import or production shortages in periods of interrupted supply or particularly high demand. The UK’s total storage capacity is considerably lower than for other major European countries, due partly to our recent history of self-sufficiency. Current storage capacity represents around 4% of UK gas demand, compared to 25% in France, 21% in Germany and 18% in Italy. A number of gas storage facilities are being planned or under active development. If they all went ahead, these new facilities would increase UK storage capacity to around 9% of annual UK gas demand by 2010”.

8.1.64 The Government was concerned that even if all current and proposed facilities were to go ahead, UK gas storage capacity would still be significantly less than that of our major European competitors. Furthermore, in relation to offshore gas storage in salt cavities, and the Stag Energy project in particular, the view expressed on behalf of CGSL was that the technical challenges to such a project would be so great that the chances of it being successfully developed were low (CGS/1/7 pg.16).

8.1.65 The argument that the Preesall facility was not required to meet UK energy needs, or that little weight should be attached to it meeting such needs, was not credible and should be rejected.

CGSL’s Response to LCC’s Case on Need

8.1.66 LCC accepted that there was a national need for further gas storage capacity in the UK. LCC’s Opening Submissions to the Inquiry (LCC/0/4 para.1.1.1) stated that:

“The County Council has never taken issue with the fact that there is a need for additional gas storage within the UK and that there is a planning benefit to the extent that this facility contributes to meeting that need. Accordingly LCC have accepted the representations of the DTi on the applications that it has considered at face value”.

Consistent with that approach LCC had called no evidence during Topic 1 of the inquiry and did not cross-examine or otherwise challenge the evidence of Mr Trimble. That was significant because that evidence had explained the policy context of the need, the quantum of need, the extent to which the proposed facility at Preesall would meet that need and the absence of any alternatives.

8.1.67 On behalf of LCC, it was stated that:

“It is important to note that the County Council does not take issue with the need for additional gas storage as described within the correspondence submitted by the DTi on this application. The following is therefore put forward by way of context and does not seek to take issue with the evidence of Mr Trimble.” (LCC/7/1 para.4.1)
8.1.68 Consequently, LCC had presented no positive case to suggest (a) that the scale of capacity required to meet the need for further gas storage was anything other than that put forward on behalf of CGSL; and (b) that any other gas storage project, or projects, represented an alternative to that proposed at Preesall. This was important for any proper understanding of the scope and context of LCC’s case on meeting the need.

8.1.69 On a proper analysis, LCC’s case on need came down to one very simple point. After acknowledging the planning benefit of meeting the need for additional gas storage in the UK, LCC went on to say that “the weight to be afforded to that benefit plainly must depend upon the extent to which the proposal will make any contribution” (LCC/0/4 para.1.1.2). LCC’s point was the obvious one that, if the Canatxx proposal did not provide additional gas storage capacity, then little or no weight could be attached to its meeting any national need.

8.1.70 It was also important to note that LCC did not challenge CGSL’s evidence that even if the capacity of the Preesall facility were less than 40 bcf of working gas it would still be making a significant contribution towards meeting national need. LCC could hardly pursue such an argument when the SsoS had already found that the Byley facility, which was a fraction of the size of that proposed at Preesall, did make a significant contribution to meeting national need for gas storage. Furthermore, LCC presented no positive case to suggest that a smaller facility at Preesall would not be commercially viable.

8.1.71 In relation to the issue of alternatives, LCC had not provided any positive case to demonstrate:
(a) the volume of gas storage capacity that would be needed to meet the UK’s strategic policy requirements;
(b) what alternative projects were likely to come forward within a timescale which could realistically assist in meeting that need;
(c) the planning policy status of any of those other projects;
(d) the environmental impacts or other constraints on the development of those other projects;
(e) the financial viability of those other projects;
(f) the proximity of those projects to the NTS, adequate supplies of water for cavern washing and a disposal route for the saturated brine etc; and
(g) the likely levels of local opposition to those projects.

8.1.72 The reality was that LCC had not challenged the national need for further gas storage capacity, had not challenged the weight to be attached to meeting that need and had not put forward any evidence to suggest that that need could be met without granting planning permission for the proposed facility at Preesall.

**CGSL’s Response to PWG’s Case on Need**

8.1.73 PWG sought to demonstrate, by its own numerical analysis of the UK gas market, that there was no need for any further underground gas storage facility in the UK beyond those existing and under construction (PWG/1/1c final comments).

8.1.74 PWG’s analysis was wholly untenable and based on a misunderstanding of the energy market and simple errors of fact. CGSL’s rebuttal proofs (CGS/1/5 and CGS/1/7) set out a detailed commentary on the PWG analysis and demonstrated that it was not to be preferred to CGSL’s expert evidence on the issue. The PWG analysis bore no relation to the reality of Government policy, which reflected considerable concern about the levels
of gas storage capacity in the UK, and of the UK gas markets themselves, which were exhibiting extreme fluctuations in price for both gas and gas storage. After the significant price rises announced in Spring 2006, few consumers would need reminding that there were considerable problems in the UK gas market. Further gas storage, above that which was already in existence and currently under construction, was clearly identified by Government as part of the solution.

8.1.75 For PWG it was accepted that the “1 in 50 winter” criterion was the accepted benchmark in the UK for examining the supply/demand balance in a ‘severe winter’. On the basis that CGSL’s assessments were correct (CGS/1/4 Tables 9-10), PWG also accepted that the consequences of the deficits shown would be very severe and material to the overall planning balance in this case. PWG was not able to put forward any other project, or projects, which should be regarded as alternatives to the appeal proposals rather than being needed as well as the appeal proposals.

8.1.76 PWG also sought to rely on the JESS5 report as demonstrating a lack of need for further gas storage in the UK. For CGSL the status of the JESS5 report, and why certain of its conclusions were not accepted, had been set out (CGS/1/2 para.5.36-7, CGS/1/3 App.8 & CGS/1/5 para.6-8). Certain of the conclusions of the JESS5 report did not appear to be consistent with Government policy, the reactions of the market, or the conclusions of John Havard on behalf of the DTI (CD/9 pgs.1-5).

8.1.77 The final theme of PWG’s need case was to suggest that due to geological circumstances the project would not make any meaningful contribution towards meeting that need.

**DTI Letters on Need**

8.1.78 During 2004 LCC invited the DTI to give its views on Canatxx’s proposed gas storage facility at Preesall (CD/9 pg.1). The letter explained the problem of balancing the physical gas market, why gas storage was important, the benefits to end-consumers and the importance of the Preesall gas storage project. Those points were entirely consistent with and supported CGSL’s case. DTI’s conclusions in relation to the importance of the Preesall gas storage project were as follows:-

“The proposed storage project at Preesall presents an opportunity to increase our physical storage capacity. Although Great Britain currently has large storage facilities, such as the partially depleted gas fields at Rough and Hornsea, seasonal storage capacity in Great Britain is very low by comparison with Continental Europe. It is important that we have storage in place before the situation becomes critical. However, storage projects have been slow to come through, and it is important that avoidable obstacles are not put in the way of those which are proposed. Investors in other potential projects will look closely at what happens at Preesall, and any delay or difficulty in planning approval could deter further projects.”

8.1.79 These were important sentiments for those who argued that the Preesall project should be refused planning permission because something else would come along. They were also important sentiments to bear in mind when considering the amount of geological and safety analysis which needed to be undertaken at the planning, as opposed to the COMAH, stages of the regulatory process.
8.1.80 The DTI letter also concluded that:

"Gas storage facilities make a valuable contribution to the reliability of physical gas supplies and to maintaining competition between gas shippers and gas suppliers. Particularly as Great Britain becomes increasingly dependent on gas imports, there is a requirement for additional peak gas supply capacity. Additional storage capacity would be valuable, both to contribute to peak supply capacity and to maintain competition in the gas market. We believe that gas and electricity consumers (who indirectly rely on gas) would benefit from this. Without additional gas storage capacity, there is a risk of gas supply shortages within the next few years. However, the Energy Markets Unit is concerned that new gas storage projects have been slow to come forward.

Against this background, the Energy Markets Unit of DTI believes that this project would be valuable in the national interest from an energy policy perspective."

8.1.81 LCC sought further advice from the DTI in 2005 on the need for gas storage in the UK. The response from the DTI (CD/20 pg.1) again made clear that “it is important for the market to have access to supply-side flexibility that is relatively close-to-market” and that “The absence of close-to-market gas storage facilities would therefore jeopardise security of supply into the non-household gas market, including gas supplies to power stations”. The letter also emphasised that “it remains the view of the Energy Markets Unit that the project under consideration by your Council would be valuable from an energy policy perspective, for the reasons set out in my letter of 21 May 2004”.

CGSL’s Conclusions on Need

8.1.82 There could be no serious doubt that this project represented an important piece of national infrastructure intended to assist in the delivery of two central themes of UK energy policy, namely ‘security of supply’ and ‘market competition’. The appeal proposals would help to achieve objectives which were vital to the UK’s national interests, and which should not be frustrated save for very good reason. It was clear that the need for the proposed facility at Preesall should be given considerable weight in the overall planning balance.

8.1.83 It was often the case that substantial pieces of national infrastructure, whether they be airports or power stations or motorways, would have local impacts, but those needed to be weighed carefully against overall national needs for such development. It was a truism that those who opposed national infrastructure projects turned up to express their views, whilst those millions who would benefit from such projects did not. Improving ‘security of supply’ in the UK gas market and assisting ‘market competition’ would benefit some 49 million gas consumers in the UK. The national benefits of the proposal were very substantial indeed and should weigh heavily in the overall planning balance.

8.2 The Case for LCC

8.2.1 LCC had never sought to go behind the advice of DTI on the need for additional gas storage in the UK. It was fully accepted that were permission to be granted these
proposals would make a valuable contribution to meeting the need for addition gas storage in the UK.

8.2.2 LCC invited the SoS to take into account the full range of Government statements upon energy policy and gas storage, and that the advice which had been specifically provided in this case was precisely taken into account. In that way the weight to be given to this undoubted benefit of the proposed development could be properly taken into account.

8.2.3 The words which had been used by the DTI were obviously carefully chosen. The contribution was described as being ‘valuable’ - it would be neither ‘valueless’ nor ‘invaluable’ but somewhere between. That was hardly surprising given that the issues that surround the ‘need’ argument are far from straightforward. The UK was at the start of a national ‘Energy Review’ which would encompass the dependency upon gas fired power stations, the capacity and reliability of interconnecting pipelines with other European states as well as gas storage itself. It was hardly surprising that the Government had not yet committed to a target for the capacity of gas storage at any point in the future. Still less had it committed to become involved in the state promotion of such infrastructure.

8.2.4 While comparisons with other EU states’ storage capacities were interesting, other than in a broadest sense, they did not assist in identifying the extent of the ‘need’ for additional storage in the UK. The Energy Review noted (CD/58 S.2.2.2 pg.37 para.2) that by 2010, if all of the projects currently being promoted came to fruition, UK storage capacity would be 9% of annual consumption. That was a factual observation and not a target.

8.2.5 Assessing the extent of the need was a predictive exercise over the next couple of decades with a host of dynamics. If CGSL’s proposal was to become a reality then by the time the entire facility was operational there would, in all probability, be three interconnectors, further LNG storage depots, further on-land gas storage projects coming forward, as well as the enticing prospect of off-shore gas storage in man made salt caverns.

8.2.6 CGSL sought to cast the January statement to Parliament by the Energy Minister as evidencing an acute need for gas storage and so adding to the weight to be given to its need case. That was a somewhat partial reading of what the Minister had to say. For CGSL it was accepted that to gauge the weight to be given to this benefit of the scheme one had to have some idea of what the national need was and what other projects were coming forward as well as what contribution the scheme would make.

8.2.7 There was undoubtedly a need for a significant increase, but no national policy statement as to how much more was needed. There were a number of projects at the planning, pre-planning and post-planning stage around the UK, as well as the potential for significantly more arising from innovative technologies such as the increasing use of LNG and off-shore storage deep beneath the seafloor (as announced by the then Trade Secretary Alan Johnson early in January 2006 for locations in the Irish Sea).

8.2.8 Similarly one of the capacity and spot price issues that the Minister and Ofgem had expressly recognised was the lack of true deregulation in the continental energy market. CGSL rightly referred to the extraordinary prices on the spot market over the last winter. However, it was also right to point out that the concern of Government was that this was due to improper under-use of the interconnector and that there was an outstanding complaint to the EU which was currently being investigated. It may be that there was a
huge problem with the security of supply which might not be solved by the middle of the next decade, however there was at least a realistic prospect that it would.

8.2.9 That would not mean that the need for additional storage would be proven to have been fallacious but rather that Government was alive to this issue, that there were steps being taken to ameliorate the issue all of which would be the subject of the Energy Review as well as a wide range of measures which would improve gas storage in the UK. None of that avoided the acceptance of the need case for additional storage. It did, however, impact upon the weight to be given to that part of the planning balance. If it were to be suggested that this proposal was an essential part of the future security of the gas supply of the UK which should override other concerns – that would be untenable. It was LCC’s position that it was no more and no less than the DTi had stated ‘a valuable contribution’. The fact that the proposal had not originally been called in for determination by the SoS suggested that it might not be of the national import claimed by CGSL.

8.2.10 With respect to the assessment as to weight, the contribution that would be made by the proposal was not clear. While 24 caverns were apparently proposed the southern-most caverns might never materialise. Moreover, on the basis of the information currently in the public domain, while the position of the well-heads was known, the location and size of the caverns was not. All that could be said was that there would be up to 24 caverns, up to 22.5Mm$^3$ of void that would be created and that could accommodate up to 1.2M tonnes of gas.

8.2.11 On the issue of viability in the event that a very much smaller project was ultimately all that could be achieved CGSL had pointed out that the appeal project was much larger than Byley. That might be right although there was no evidence as to where the limit of viability might actually be. What was important, given the paucity of information before the inquiry, was that if there was true uncertainty about the actual capacity of storage that the project would provide, then the weight to be given to the contribution that the project would make to the undoubted need for additional storage in the UK would be commensurately lower.

8.2.12 To complete the scheme and connect to the NTS would require the grant of a further planning permission by WBC as well as use of land which was not in the ownership of Canatxx. They were not a public utility and therefore lacked powers of compulsory acquisition of pipeline easements. There was, therefore, a degree of uncertainty as to whether the proposal would ever happen anyway.

8.3 The Case For PWG

8.3.1 Evidence on need presented on behalf of CGSL was not based on an unbiased approach. The witness presented his own forecasts of demand and supply for gas in the UK, and dismissed those produced by the DTI and others in the JESS Report. No mention had been made of the Secretary of State’s First Report of May 2005 until rebuttal evidence\(^{(CGS/1/5)}\). The JESS Group brings together contributions on energy security from the major participants, the DTI, Ofgem, NGT and the Foreign and Commonwealth Office. A number of firms and individuals responded to JESS with comments and proposals, in particular Centrica and EdF on the JESS Fourth Report, which were taken into account in the preparation of the Fifth Report (Nov.2004). CGSL’s witness did not.
8.3.2 Should the SSTI believe projections put forward by his own officials and the major players in the industry or those of CGSL’s witness. The JESS Group must have been more aware of Government thinking and policies and therefore had the greater understanding compared with someone acting as an independent consultant. It was accepted that the production of gas from United Kingdom Continental Shelf (UKCS) was diminishing and this would need to be replaced by imported gas brought in by pipeline or by LNG tanker. It was also important that there was sufficient gas available to supply the extra demand which occurred in winter. The important questions were a) what would be the demand for gas in the future from power stations, commercial and domestic users both on the coldest day and in a 1 in 50 winter?, and b) from what sources would the gas be supplied? For CGSL it had been argued that JESS 5(CGS1/7) was not intended to be a definitive attempt to assess the security of gas supply for this country. But in trying to predict demand and supply that was precisely what it did.

8.3.3 The SSTI’s First Report followed on from JESS and ‘looks at the UK supply-demand balance in gas and electricity over the next 7 to 10 years’. An examination of the predicted situation for winter 2005-6 (JESS 5 Fig.3) showed that gas supply would meet expected demand in 2005-6 even under severe weather conditions. CGSL’s evidence predicted serious supply problems in even a 1 in 5 winter.

8.3.4 At the beginning of the 2005/06 winter the Met. Office had been predicting a severe winter and this was the coldest winter for 10 years, although still not a very severe winter. There had also been a number of supply problems - loss of some UKCS gas because of a pipeline failure, the Norwegian pipeline and the LNG facilities at Milford Haven had not been completed, problems with the Interconnector supply and the closure of the Rough storage field. The CBI had warned that some of the biggest users of gas might be cut off. However, this was why they paid a lower tariff on interruptible contracts so that in times of exceptional demand, supplies to hospitals and homes could be maintained whilst they reduce consumption or switch to alternative and maybe more expensive short term fuel supplies.

8.3.5 A succession of mild winters had made these industries believe that they could pay a lower price for their gas and never be cut off. There were no widespread shut downs of major users, and despite all the problems which had occurred there was no shortage of gas. The JESS 5 Report was vindicated and CGSL’s evidence found wanting.

8.3.6 Turning to the situation in the winter of 2012/13, CGSL’s evidence claimed an optimistic scenario for demand of 652Mm$^3$ as the maximum demand for the coldest day in a 1 in 50 winter and a pessimistic scenario of 675Mm$^3$ (CGS1/6 Tables 3+4). The JESS forecast was for 560Mm$^3$ by 2010/11. Even with a rate of increase of 3.5% per year in the next two winters, demand would only reach 600Mm$^3$ by 2012/13. What CGSL gave was on the one hand a pessimistic scenario and on the other a very pessimistic scenario. For CGSL the main difference with JESS had been claimed to be the underlying forecast of annual gas demand (CGS1/2 p55). CGSL’s forecast assumes this to be just over 2% p.a. yet document CGS1/2 also states ‘demand is forecast to grow annually at around 1.6% per annum over the period 2002/3 to 2013/14’. (CGS1/2 p27).

8.3.7 The peak demand forecast during a 1 in 50 winter according to JESS in 2004/5 was 510Mm$^3$. An increase of 1.6% p.a. would increase that peak demand to 579Mm$^3$ by 2012/13 and even with a 2% p.a. increase the maximum demand by 2012/13 would be only 595Mm$^3$. To reach CGSL’s pessimistic forecast of 675Mm$^3$ would require a rate of increase of 4% per annum. This was double CGSL’s already inflated rate of 2%. The
two major sectors which used gas were a) the electricity producers and b) the industrial, commercial and domestic sector. The demand for gas was a reflection of the price of gas relative to other energy sources. ‘UK Month Ahead’ prices showed that, from being relatively stable at 20p/therm in the period 2000 - mid 2003, prices began to rise in late 2003 to 30p/therm and that rise had continued (CGS 1/7).

8.3.8 That has been reflected in the electricity generation sector by moving towards more coal-fired generation using clean coal technology and extending the life of existing coal-fired stations such as Longannet in Scotland. The lives of the existing AGR nuclear power stations had also been extended because of the significance of their contribution. The renewables obligation in electricity generation has been raised from 15% to 20%. Both CGSL and JESS assumed that gas fired power generation would increase to replace coal and nuclear and help to cut carbon emissions. That had not been happening as quickly as was envisaged. There was no question that the gas price increases would also have an effect on consumption in the industrial, commercial and domestic sectors, with users moving to more efficient gas appliances or different sources of energy. Thus the figure of 600Mm$^3$ for the peak day demand in a 1 in 50 winter in 2012/13 was not likely to be reached.

8.3.9 PWG (PWG 1/7a) agreed with CGSL (CGS 1/7 Table 5) on the capacity and delivery rates for the UGS facilities, existing and under construction, plus existing LNG. The JESS forecast for UKCS production in 2012/13 was 154Mm$^3$/d. CGSL noted that the import share of the market should exceed 60% by 2013/14. Thus local gas would supply 40% i.e. 53bm$^3$ or 146Mm$^3$/d. There was also agreement on the existing LNG supply and that existing imports should remain at 54Mm$^3$/d. The essential difference in the supply figures was the contribution which new pipelines and new LNG import facilities would make to gas supply. JESS indicated that the new pipelines (including Statfjord) would have the capacity to supply 197Mm$^3$/d. It was inconceivable that the Government would not have sorted out the problems with the Interconnector by 2012/13 which should by then be functioning as envisaged.

8.3.10 The delivery rates of 124Mm$^3$/d quoted for LNG projects under construction at Milford Haven and the Isle of Grain included the Phase 2 of expansion as listed in the SoS’s First Report. CGSL’s assertion that these storage tanks being constructed were purely for operational use at the terminals was contained in the SoS’s First Report which read “other sources of swing capacity” (besides UGS) “include oversized import structure.” Thus when considering the winter of 2012/13, UKCS could be capable of supplying 154Mm$^3$/d, existing imports 54, the new pipelines 197 and new LNG 124, making a total of 529Mm$^3$/d.

8.3.11 Applying the 1 in 50 winter model to 2012/13 but substituting the JESS figures for those of CGSL produced the following results. Of the 600Mm$^3$ demanded on Day 0, 529Mm$^3$ could be supplied as just described, leaving 71Mm$^3$ to be drawn from UGS which had the capacity of supplying 131Mm$^3$. After 10 days demand would drop to 528Mm$^3$ so that no more UGS would need to be drawn upon. Of course there had to be back up supplies in case of emergencies but even if Rough were out of action, other UGS could still supply 89Mm$^3$/d for the first 10 days. In addition to those storage schemes already referred to, five depleted fields were planned for gas storage (PWG 1/7a) with a total delivery rate of 75.6Mm$^3$/d over a 40 day period. Since there was already sufficient storage capacity to cope with a 1 in 50 winter in 2012/13, these could be considered to be further insurance in case of emergencies when some supplies might be cut off. They amounted in total to storage which was nearly twice the size of the Rough field.
8.3.12 CGSL imply that because none of these had yet received planning permission they may be prevented from going ahead. However, although the planning process may have delayed their development, so far no properly developed proposal for UGS had been refused by the SoS.

8.3.13 Since the Inquiry had opened 3 new UGS schemes in salt had been proposed - Portland, Holford (Cheshire) and off-shore under the Irish Sea. It had been shown in the USA that storage in off-shore salt cavities was technically feasible. The filling of offshore caverns from LNG tankers would be no slower than discharging LNG into onshore storage tanks. For security, safety and environmental reasons the Government was keen to promote the idea yet it was stated for CGSL that the possibility of such a project being successfully developed would be low. There had also been new LNG terminals proposed at Canvey Island and on Teesside and Canatxx itself wanted to build one on Anglesey.

8.3.14 All this was good news for the Government but bad news for CGSL because not every project was going to be needed. This provided the opportunity to compare projects and assess them in terms of suitability regarding safety, location, impact on the local residents and impact on the environment. Under these headings the suitability of the Preesall site was the least favourable by some considerable margin.

8.3.15 There was also a danger, because an oversupply of gas storage facilities wasted resources and was bad planning. If the Preesall scheme was developed and then found not to be economical, revenues would fall and there would not be the resources to maintain the facilities at the correct standards, making them potentially more dangerous. Companies would not want to wait around for a 1 in 50 winter in order to sell all of their stored gas. Instead they would go out of business, leaving the local authority with the problem of cleaning up.

8.3.16 Vast amounts of salt would have been pumped into the Irish Sea for no purpose, and huge amounts of infrastructure would be left above and beneath the surface. Most serious, up to 24 huge caverns would have been created which would need monitoring for ever.

8.3.17 CGSL had tried to persuade the Inquiry that there was a overwhelming need for more gas storage in this country but they had failed to take into account the Government’s own figures which showed that the need for extra gas in winters to come had already been considered and that the facilities which existed or were under construction were sufficient to cope with this increase in demand despite the diminishing supply from UKCS.

8.3.18 There was no overwhelming national need for the proposed Preesall storage which had serious problems relating to geology and safety; it would present unacceptable risks to very large numbers of people and be damaging to a fragile and important environment.

8.4 The Case For Mr & Mrs Jackson

8.4.1 CGSL’s witness on need had not been credible. He had disagreed with the fifth JESS report. Having claimed that all of industry disagreed with the figures he then claimed that no one had read the report, as it was badly advertised.

8.4.2 While CGSL’s witness could not foresee any problems in NTS’s ability to accommodate gas from this very large proposed facility, that was not supported in views expressed by
CGSL elsewhere. In European Gas Markets in July 2004 CGSL had stated that ‘The limitation will ultimately be what Transco can accommodate.’ (Doc.J/1/3 App.2b).

8.4.3 SoS DTI had stated in January 2006 (CD59), that; ‘Overall Britain is in a strong position, we have a broad range of energy supply and a balanced mix of energy generation.’ It was important to maintain this balance and not be reliant on the political vagaries of the international hydrocarbons market. It would be a mistake to become too dependant on gas.

8.4.4 The Gas Exporting Countries Forum (GECF) had been established in 2001 (Doc.J/1/18). The group’s inaugural meeting had been held in Tehran in May 2001. GECF, comprising 13 member states, together controlled about two-thirds of the world’s natural gas reserves. The forum members were Algeria, Bolivia, Brunei, Egypt, Indonesia, Iran, Libya, Malaysia, Nigeria, Oman, Qatar, Russia and Venezuela.

8.4.5 In March 2006, the Rt Hon Douglas Alexander MP, Minister of State for Europe, had said; ‘As world energy demand rises, a country with extraordinary natural resources like Russia will both increase its worth and its political power. To give just one example, at present about one quarter of Europe’s gas comes from Russia. If present trends continue, by 2020, three quarters of Europe’s gas will come from Russia.’

8.4.6 In February 2004, Russia cut off gas supplies to Belarus (Doc.J/1/19). On the 1st of January 2006, Russia cut gas supplies to the Ukraine (Doc.J/1/20).

8.4.7 In February 2006 the EU announced the findings of an investigation into the gas and electricity sectors (IDS), which had prompted Brussels to launch a crackdown on anti-competitive behaviour. The EC had found that some of Europe's biggest energy firms were holding back gas supplies, stifling competition and driving up prices.

8.4.8 The House of Lords, Gas Review, 17th Report, 2004, recognised that gas storage projects were not necessarily providing a strategic reserve. The report stated; ‘Some new storage capability is being planned for in the United Kingdom in the form of on-shore facilities, such as those planned at Aldbrough and Humbly Grove. These however are not storage in the sense of a strategic reserve but are designed for operational use in conjunction with trading.’

8.4.9 The Appraisal of an Underground Gas Storage Proposal at the Welton Oilfield, Lincolnshire (CD74), in addition to referring to that quotation, went on to state, in Functions and Needs for Gas Storage Facilities, ‘Commercially, where underground storage is used to hedge against seasonal and/or monthly differentials in gas prices, the profits to be made due to price fluctuations can be considerable. As a result, both the supply and demand side are using storage for more speculative purposes.’

8.4.10 In July 2004 CGSL had acknowledged the commercially speculative aspects of its proposed project (AppendixJ/1/3) by stating ‘the exceptionally high deliverability rates planned for the site also mean it could be used more commercially for trading purposes.’ CGSL’s claimed altruistic motive ‘of moderating gas price increases for consumers’ (CGS/1/2 para.8.9) strained credibility. The motivation for the proposed development, in investment terms, was simply ‘profit’.

8.4.11 There had been a number of developments since the commencement of the Inquiry. On the 29th November 2005, the Prime Minister and the SSTI, announced a review of UK energy policy (CD59). That revue was ongoing.
8.4.12 In the debate following the energy review announcement, Michael Jack MP drew the Government’s attention to how economic and efficient the AP1000 nuclear power station was (Doc.J/1/21). AP1000 had a good safety record, and the small amount of fuel required would come from friendly sources such as Australia and Canada. French electricity demand was sourced from 75% nuclear and 15% hydroelectric. This allowed France to enjoy a security of supply without too much dependency on events outside its control.

8.4.13 The technology was available to build clean-burn coal fired power stations and a whole range of renewable energy sources were capable of being expanded. There should be a balance of energy sources.

8.4.14 On 12th January 2006, the SoS DTI had stated (CD73 Note.1); ‘Today I can announce new measures to increase the potential for gas storage in the UK. There is the strong potential for gas storage in a number of geological formations off-shore, in areas such as The Irish Sea and the North Sea.’

8.4.15 On 22nd February 2006, Stag Energy had announced it’s ‘Gateway’ project to store gas in the Irish Sea (CD73). The offshore location would not impact on local communities, would extend the use of the many facilities in Barrow and provide new employment opportunities to those working in the offshore oil and gas sector.

8.4.16 In September 2005 INEOS Enterprise had announced its intention to invest in a new gas storage facility at the Holford Brinefield, Cheshire. That would be a sustainable development, as the brine obtained would help to underpin the long term future of a number of strategic chemical plants in the North West, including Ineos Chlor at Runcorn. In comparison, the proposed Fleetwood development had very little to recommend it and a great deal against it.

8.5 Energy Statement on Need for Additional Gas Supply Infrastructure

8.5.1 On 16th May 2006, shortly after the close of the inquiry, the Secretary of State for Trade and Industry issued a statement on the interaction of existing Government policy and planning procedures with regard to the need for additional gas supply infrastructure (Doc.IPI/2). The statement indicated that it ‘reiterates previous public commitments made by the Government on the importance of gas supply infrastructure and will help clarify the Government policy context for planning and consent decisions on gas supply infrastructure projects’.

8.5.2 In view of the publication of the statement so close to the close of the inquiry I asked for copies to be circulated to the appellant, LCC as MPA, and the other parties to the inquiry with a view to receiving their comments on the statement. The summaries of their responses are set out in Appendix C to this Report.

9. GEOLOGY, STORAGE TECHNOLOGY AND MINING HISTORY

9.1 Assessor’s Report

9.1.1 As noted at para.1.6 above, Ms Ruth Allington was appointed as Assessor to advise on matters relating to the geological and hydro-geological setting of the scheme including the mining history of the Preesall Salt Field, and the associated impacts of the proposed storage. In particular, she was asked to consider the suitability of the
Preesall Salt Field for the proposed storage technology; the mechanisms and potential for gas migration and the extent and nature of related impacts; and the mechanisms and potential for subsidence and the extent and nature of related impacts. Her report [AR] is attached at Appendix A.

9.1.2 In the light of the evidence presented for and during Block 2 of the inquiry I identified 3 specific issues on which I sought the particular assistance of my Assessor. These were the suitability of the Pressall Salt Field for the proposed storage technology; the mechanisms and potential for gas migration and the extent and nature of related impacts; and the mechanisms and potential for subsidence and the extent and nature of related impacts [AR1.4]. In preparing her report she sought to answer the following overarching question: ‘Are there any reasonable circumstances relating to ground conditions, the proposed gas storage technology or the interaction between the two which could place in doubt the successful implementation of the proposed development’. [AR1.5]

9.1.3 The 3 topic areas of geological, hydro-geological and mining setting of the Preesall Salt Field; the properties of the salt; and the proposed storage technology, including summaries of the cases of the parties, are addressed at sections 3-5 of her report. Section 2 sets out the common ground between CGSL, LCC and WBC in relation to these matters as set out in the relevant section of the draft statement of common ground (Doc.CD28) [AR1.6].

9.1.4 In relation to the 3 topic areas the Assessor has drawn conclusions with respect to:
   a) whether the information on the geological, hydro-geological and mining setting is sufficient or sufficiently detailed at this stage; [AR6.37-43]
   b) whether the information provided on the properties of salt and overlying materials is sufficient, or sufficiently detailed; [AR6.60-63] and,
   c) whether the information provided on the proposed storage technology is sufficient or sufficiently detailed at this stage [AR6.102-105].

9.1.5 Section 7 addresses the overarching question set out in para.1.5 of her report (see 10.1.2 above).

9.1.6 Section 8 sets out the Assessor’s overall conclusions on the 3 issues on which I sought advice [AR1.4], namely, the suitability of the Preesall salt for the proposed technology [AR8.2]; the mechanisms and potential for gas migration and the extent and nature of related impacts [AR8.4]; and the mechanisms and potential for subsidence and the extent and nature of related impacts [AR8.6].

9.1.7 My conclusions in Chapter 21 of this report refer directly, as appropriate, to relevant sections of the Assessor’s Report.

9.2 Geology

9.2.1 The following is a brief summary of the geology of the Preesall Salt Field, more extensive details of which are set out in Chapter 3 of the Assessor’s Report.

Geological sequence
9.2.2 The area around Preesall is underlain by Triassic rocks of the Mercia Mudstone Group. The general geological succession and nomenclature of the strata in the area is set out at AR 3.10. The following is a description of the strata underlying the appeal site.

9.2.3 The Preesall Halite is part of the Kirkham Mudstone Member. Above the Kirkham Mudstone Member is the Breckells Mudstone, and the Singleton and Hambleton Mudstone Members are beneath it. These mudstones together make up the Mercia Mudstone Group in this area. The Sherwood Sandstone Group underlies the Mercia Mudstone Group [AR3.12].

9.2.4 The superficial deposits above the halite comprise glacial and post-glacial sequences and blanket the entire western Fylde area and are variable in thickness, exceeding 60m in the Blackpool area. The deposits in the site area are described as “till, consisting of stiff reddish brown clay with pebbles of sandstone, limestone and igneous rocks with irregular, beds and lenses of sand and gravel. The Till, which is up to 40m thick, forms an irregular, undulating surface that in places is moulded into drumlins........the larger drumlins are about 500m long, 200m wide and rise to circa 20m above Ordnance Datum (O.D.) and trend at 150° to 170°.” [AR3.13]

9.2.5 Immediately overlying the Preesall Halite is the Coat Walls Mudstone, which is up to 122m thick. The Coat Walls Mudstone is a series of structureless, reddish brown mudstones interbedded with laminated, reddish brown and greenish grey mudstones and siltstones. Sporadic thin bands of mudstone with halite crystals also occur, particularly in the lower sequences. The Breckells Mudstone Member overlies the Coat Walls Mudstone and comprises three distinct lithologies that may reach a total thickness of 144m. They are dominantly reddish brown structureless mudstones with scattered greenish grey bands. The upper division, where present, often comprises largely brecciated (fragmented) mudstones, resulting from dissolution of thin halite beds [AR3.14].

9.2.6 The Preesall Halite is described as being a “succession of halite (rock salt) ranging in thickness from 79m to over 280m, with thin partings of reddish brown and greenish grey mudstones. The Preesall Halite is the lateral equivalent of the Northwich Halite in the Cheshire Basin .... which is the target for cavern development at Byley” [AR3.15/16]

9.2.7 Analysis of the descriptive log of the Arm Hill core shows “that the Preesall salts are free of potassium salts and have an insoluble content of approximately 3% according to the core report and laboratory chemical analysis” “The lithological log of the Arm Hill No.1 Borehole indicates that the Preesall Halite contains between 11% and 15% mudstone (plus or minus anhydrite), by volume, dependant upon how many of the very thinnest stringers of mudstone are included in the calculation” [AR3.18/19].

9.2.8 In summary, the appellant’s case is that 3-8% of non-salt material is expected to be present within the salt itself, with a further 11-15% of the halite sequence comprising mudstone (and/or anhydrite) beds or stringers [AR3.20].

9.2.9 The strata immediately below the halite are known as the Thornton Mudstone and comprise reddish brown and greyish green interlaminated mudstones with thin halite beds near the top and base. Beneath the base of the Thornton Mudstone are the Singleton and Hambleton Mudstone Members, with thicknesses of up to 311m and c
37m respectively. The Hambleton Mudstone Member is underlain by Sherwood Sandstone [AR3.21].

Geological Structure

9.2.10 A new model for the structure of the Preesall Halite was developed by Dr Evans and his colleagues at the BGS. The previous model (and that upon which the application documents were based) assumed that the structure was a syncline, bounded to the east by the Preesall Fault but without major faulting to the west beneath the River Wyre [AR3.22].

9.2.11 The new interpretation is summarised as follows: “The Preesall Halite would .... appear to have been deposited in an asymmetrical, westerly tilted graben that produced thickening into a down-east fault (the Burn Naze Fault) in the west.” In an asymmetrical westerly tilted graben, the zone between the boundary faults is characterised by faults developed parallel or sub-parallel to the boundary faults. Where these are parallel to and on the same side of the graben as the main basin controlling normal fault, they are known as ‘synthetic faults’ and where on the other side, they are known as ‘antithetic faults’. At Preesall, the main basin controlling fault is the down-west Preesall Fault. The Burn Naze Fault is the easternmost and largest of the inferred antithetic faults [AR3.24 and 3.26(Diagram)].

9.2.12 The revised geological model (as amended during the course of the Inquiry) is depicted at a scale of 1:10,000 on the three plans comprising Doc.CD47b. The halite is inferred to thicken to the west and its depth is inferred to increase south to north [AR3.29].

Thickness of principal units

9.2.13 The thickness of salt at indicated cavern locations is inferred to vary between a minimum of 117m (cavern 9) and a maximum of 329m (cavern 17), with an average of 202m. The inferred thickness of mudstone and superficial materials overlying the salt varies between a minimum of 192m (cavern 20) and a maximum of 412m (cavern 26), with an average of 319m. The appellant has not produced any analysis of the maximum, minimum and average thicknesses of superficial materials [AR3.37 to 39].

Seismic activity

9.2.14 Seismic events in the area have not been of sufficient intensity or magnitude to cause damage to surface structures; the maximum observed intensity in historical times is 5 EMS, which is just below the damage threshold [AR3.41].

Reliability and level of precision of the geological model

9.2.15 The plans illustrating the modelled top and bottom of salt and its thickness were revised and reissued twice during the course of the inquiry [Docs CD47, CD47a, and CD47b]. These plans were reproduced at 1:10,000 scale. Dr Evans indicated that BGS would not release, (and he would be uneasy about releasing) contour plots depicting the new structural model at a scale larger than 1:10,000 or with closer contour intervals, as this would imply a spurious accuracy to the model, which is essentially a refinement and reinterpretation of the published 1:10,000 scale mapping. The appropriateness of the choice of 100m contour intervals was explained as follows: “Contoured maps at 100m intervals are fit for scale and purpose relative to the stage of the investigations for which the work was conducted. Maps and resultant
halite thicknesses, should be viewed with this in mind and take into account the distribution of data across the study area with the associated confidence levels in mapping that these distributions imply [AR3.44/45].

9.2.16 There are two areas of uncertainty relating to the model that were discussed at length during the inquiry; uncertainty relating to the actual levels of the top and bottom of the salt and uncertainty relating to the location and displacement of faults. Uncertainty relating to the level of the top and bottom of the salt arises both because of the uncertainties inherent in the depth conversion of the seismic data, and because of the need to extrapolate where there are no boreholes or seismic lines. Estimated ranges in values for the depth of the top and bottom of the halite in various parts of the site were provided by Dr Evans. For the top of the halite this varied from ±5m, to ±20m, and for the bottom of the halite from ±5m, through ±20m, ±25 and ±25-35m, to ±40-50m [AR3.46 to 48].

Wet rockhead

9.2.17 “The Preesall Halite decreases in depth to the east until adjacent to the Preesall Fault, the salt is affected by circulating groundwaters. This leads to an area known as wet rockhead where the halite is dissolved and the overlying strata collapse into the void left by the dissolved salt. In the Preesall area salt dissolution has resulted in a belt of collapse breccias 400m – 600m wide, immediately west of the Preesall Fault”. The eroded zones (wet rockhead) generally extend 50-75m below the base of the drift, with collapsed Coat Walls Mudstones largely taking the place of the dissolved Preesall Halite. Historically, brine groundwater has been extracted from these zones (wild brining) and this has exacerbated sub-erosion of the rock salt and induced collapse of the overlying formations, leading to localised ground subsidence. The area inferred to be characterised by wet rockhead conditions is shown on a map by Wilson & Evans, 1990 [AR3.53]. CGSL has not carried out or commissioned any studies to establish or confirm the extent of wet rockhead [AR3.55].

Aquifers

9.2.18 The Sherwood Sandstone Group (SSG) underlies the Mercia Mudstone sequence at some considerable depth below the base of the Preesall Halite; the SSG subcrops beneath the superficial materials immediately to the east of the Preesall Fault. The SSG is a major aquifer of regional importance where it occurs at economically exploitable depths. Within the application site (west of the Preesall Fault), it is deeply buried beneath the Mercia Mudstone Group. North-east of the application site (east of the Preesall Fault), the Sherwood Sandstone has historically been utilised as a water supply for the Preesall saltfield and other industrial applications. It is likely that groundwater flow in the SSG beneath the Mercia Mudstone within the graben is limited due to deep burial, and that connectivity between the SSG in the application area and the Fylde Aquifer east of the Preesall Fault is very limited [AR3.57]. In general the Mercia Mudstone Group is an aquitard with very minor vertical or horizontal flows of groundwater [AR3.58].

9.3 Gas Storage Technology

9.3.1 The following is a brief summary of the proposed gas storage technology, more extensive details of which are set out in Chapter 5 of the Assessor’s Report.
9.3.2 A design methodology and set of criteria for salt cavern design were described by Professor Rokahr. The particular design criteria important for salt caverns are: minimum thickness of the salt layer above the roof; depth of the cavern; geometrical shape; minimum and maximum operating pressures; minimum pillar dimensions with respect to adjacent caverns or to the boundary of the salt rock formations or faults; and volume convergence during operation. Overall, a tight surrounding rock salt mass and smooth, consistent cavern shapes are fundamental to successful design. [AR5.2/3].

9.3.3 It is Professor Rokahr’s position that each cavern is an individual case and must be designed as such, also the design process is staged and iterative; with each item of information you improve confidence in the reliability of the geological model. One of the key objectives of design is to create around each cavern a ‘safety zone’. This safety zone is a zone beyond which the influences on in situ stresses in the ground of the construction and operation of the cavern are negligible. It must be contained entirely within the salt [AR5.5].

Significance of depth and thickness of overburden

9.3.4 The vertical pressure of the overburden (including salt head) above the cavern is the starting point in determining the maximum safe operating pressure and the minimum allowable internal pressure within the cavern. The stability of the cavern in various stress states is then determined by reference to the salt and overburden rock and rock mass properties, and having regard to the way in which the cavern will be operated (velocity of changes in internal pressure during operation) [AR5.8].

9.3.5 Professor Rokahr recommended maximum operating pressures not exceeding 83% of the vertical component of overburden stress and minimum internal pressures not lower than 30%. On the basis of an estimated vertical component of overburden stress of around 0.22bar/m, this would result in internal cavern pressures ≤0.18bar/m and ≥0.07bar/m). Given the wide variation in depths of the proposed caverns at their indicative locations, and the fact that each cavern must be designed individually to take account of its particular setting and the properties of the salt at that location, a similarly wide variation in allowable pressure ranges is anticipated [AR5.9/10].

Maximum and minimum cavern operating pressure

9.3.6 The minimum internal cavern pressure is that pressure necessary to guarantee the stability of the rock mass surrounding the cavern, taking account of the nature of pressure cycling within the cavern during operation. The minimum pressure is safe only for a restricted time span. Professor Rokahr stressed that the actual minimum internal cavern pressure would be determined on the basis of modelling and design, and was likely to be at or above 30%, but not less than this. The maximum internal cavern pressure must be restricted to a value substantially below the pressure resulting from the overburden. As with the minimum internal cavern pressure, it is necessary to simulate cycles of internal cavern pressure between the minimum and maximum in order to establish that the design maximum will be safe in operation [AR5.11/12].

9.3.7 Professor Rokahr also emphasised that 83% of vertical overburden pressure was the starting point for estimating maximum operating pressures; depth to cavern roof is not the only consideration. As with all of the design criteria this parameter represented the best case. Under no circumstances would a larger maximum operating pressure
be permitted, but the detailed investigation, analysis and design might lead to a lower figure being recommended [AR5.14].

Roof and floor thickness, and cavern spacing

9.3.8 For a maximum cavern radius of 50m (as proposed by the appellant), the thickness of salt remaining between the cavern roof and the mudstone formation above the salt must be greater than the maximum radius of the cavern \(i.e. \geq 50\text{m}\). For the same cavern radius, the minimum thickness of salt that must remain between the deepest point in the cavern and the mudstone formation beneath should be 20\% of the maximum radius of the cavern \(i.e. \geq 10\text{m}\) [AR5.16]. Assuming an overburden pressure of 0.22bar/m, the maximum operating pressures based on the above criteria for caverns in the illustrative locations could vary from 44.2 bar to 84.4 bar. It is to be noted that when compared with the maximum pressures acceptable to HSE in HSC consultation plan CD/26a, some 16 of the caverns would exceed the 83\% figure, although only by a small amount for two of them [AR5.17 Table].

9.3.9 Professor Rokahr also set out minimum spacing to be achieved between adjacent caverns, caverns and faults and caverns and old mine workings [AR5.18].

9.3.10 Caverns 21 to 24 were not shown in illustrative form on the final geological plans before the inquiry. While the appellant in closing still sought to develop ‘up to 24 caverns’ it was conceded in cross-examination that the construction of these 4 caverns in the south of the site was unlikely to go ahead; the indications from the latest geological modelling being that the salt in that area was too thin and too shallow [AR5.33].

Construction and commissioning of caverns

9.3.11 The drilling of a well and the construction of a cavern by solution mining is described in CGS/4/2 Section 5 and CGS/4/3, Appendix 3. The sequence of events is summarised below [AR5.36].

9.3.11.1 Conductor casing is driven into the ground using a vibrating tool. The depth to which this casing will be driven depends on ground conditions but typically it will be to between 10 and 20m (Phase I).

9.3.11.2 A pilot hole will be drilled to around 100m depth to accommodate the surface casing. The surface casing will be cemented back to the surface so as to create an impermeable barrier between the casing and the surrounding material(Phases II+III).

9.3.11.3 During Phase IV, the well itself will be drilled. If the target cavern location is offset from the drill pad, the hole will be drilled in a lazy “S” shaped configuration. The section in the middle of the lazy “S” could be horizontal or angled at up to 45\%; offsets from the wellhead location being not more than 500m, and minimum radius of curvature being 50m. By the time the hole has penetrated 25 metres into the salt, it will be vertical. The hole will be geologged using the same technique as that used for the Arm Hill and Heads boreholes. The results of this measurement are analysed and provide the required data for verifying the mechanical properties. When the well is complete, the casing will be cemented back to the surface (Phase VII).

9.3.11.4 After the cement grout has cured, the borehole will be drilled vertically to total depth \(i.e. the level at which production tubing will terminate\). Further geologging will be carried out and tied back to the previous logging. In addition to geologging, core
samples can be taken on a selective basis as the borehole is drilled through the salt (Phase VIII).

9.3.11.5 Inside the production casing tubing will be installed through which washing water will be pumped (this is known as the ‘hanging string’ because it can be raised or lowered as required so that the position at which the wash water is pumped in can be adjusted) (Phase IX). The hanging string has two components; an injection tube inside a larger tube.

9.3.11.6 Initially, sea water is pumped down the inner tube and brine is removed from the ground via the annulus between the two tubes. The sea water used for washing will be taken from the Fish dock and have a salinity of 3%.

9.3.11.7 Once a sump has been created (into which insoluble materials will fall during the washing process), and sonar surveying has confirmed the shape of the cavern, the process will be reversed (i.e. sea water will be injected via the annulus between the two tubes of the hanging string and brine will be taken out through the inner tube). This ‘reverse injection’ method produces a higher brine specific gravity and more efficient daily cavern space creation. During the washing process, the absolute and relative positions of the injection and withdrawal tubings can be varied to alter the cavern dimensions.

9.3.11.8 Throughout the direct solution mining process, a layer (‘blanket’) of nitrogen will be maintained between the developing roof of the cavern and the circulating water/brine. This nitrogen will be introduced via the annulus between the hanging string and the borehole wall in the salt. The presence of the nitrogen blanket will prevent sea water coming into contact with the roof of the cavern until such time as the lateral development of the void is complete to the desired distance and shape.

9.3.11.9 Washing continues in this way, with intermittent sonar surveys to monitor cavern size and shape, and careful monitoring of the daily cavern storage capacity created each day based on the volume of brine withdrawn and the temperature corrected specific gravity of that brine. The eventual operating capacity of the cavern will depend both on the height of the void created in the salt by washing and the amount of that void that is filled by insoluble materials (and the extent to which they bulk).

9.3.11.10 When the desired size and shape of cavern is achieved, the outer tube is shortened to a position just below the roof of the cavern and the water flow is again reversed (i.e. sea water is pumped in through the central tube and out through the outer tube).

9.3.11.11 After the cavern has been washed to the design shape and volume the hanging string will be removed, the wellhead will be fitted to the top of the borehole and de-brining tubing will be installed. (Phases XI to XIII). Following mechanical integrity testing gas will be injected down the annulus between the cemented production casing and the debrining tubing. Gas is introduced under pressure and used to purge the cavern of brine. After all the brine has been removed in this way from the cavern (except for that mixed with the insoluble materials remaining in the cavern sump), valves on the debrining string will be closed to prevent gas from entering the brine stream. When the cavern is full of gas, the de-brining tubing will either be removed from ("snubbed out of") the well or cut off ("shot off") just below the cavern roof.

9.3.12 The application drawings showing the arrangements at the brine booster pumping station [CD75j, CD75l(r), CD75t(r), CD75u(r)] show an “above ground settling pipe
array” comprising eleven pipes of diameter 1m mounted parallel to each other on 1m high supports, with inlet and outlet arrangements at either end. The operation and capacity of this facility is not explained in the appellant’s evidence, but Mr Heitmann confirmed that pits or lagoons are not now proposed for the settlement of suspended solids from brine [AR5.37].

Decommissioning

9.3.13 Unless a cavern is to be filled with solid material, which is not proposed here, there are two approaches that may be adopted. Either fill the cavern with brine, seal permanently and leave (with ongoing monitoring of surface subsidence), or fill the cavern with water (sea water or fresh water), install valves at the surface to allow occasional pressure relief or topping up and monitor both cavern convergence/pressure and surface subsidence. While the former method was set out in the planning application the latter method was indicated, in closings, to be CGSL’s preferred approach [AR5.42 to 49].

10. RISK

10.1 CGSL Case

10.1.1 As in many areas of land use planning consideration needed to be given to the need to avoid duplication of controls. The planning system should acknowledge the existence of other systems of control over the processes and activities that would be conducted at the Preesall site. It should further proceed upon the basis that other regulatory regimes would be properly and competently applied by those agencies that Parliament had determined should bear the responsibility for the enforcement and monitoring of the processes involved. This was the approach of the Secretaries of State in the Byley appeal. Paragraph 37 of the decision letter dated 19th May 2004 stated:

“The Secretaries of State have considered the Inspector’s comments and conclusions on health and safety issues [IR 9.47 to 9.63]. They acknowledge that those matters are of considerable concern to local residents and many objectors. The Secretaries of State accept that in determining this appeal, public fear and concern about health and safety issues is a material consideration. They have also taken into account the general guidance set out in PPG 23 that the planning system should not be operated so as to duplicate controls that are the statutory responsibility of other bodies. The Secretaries of State are aware that, in addition to planning permission, the proposed development requires other consents to operate. For the reasons set out at IR 9.51 to 9.62, the Secretaries of State agree with the Inspector’s conclusion that there is no safety reason to refuse the grant of planning permission, subject to the imposition of appropriate planning conditions, and providing all relevant safety requirements are satisfied”

Relationship between Planning and COMAH

10.1.2 The Control of Major Accident Hazards Regulations 1999 (COMAH) were made under the Health and Safety etc Act 1974. The “competent authorities” under these regulations were the HSE and the Environment Agency. It was not disputed that the Preesall facility would be a “top tier” site under the regulations. As such the facility
would be subject to this regulatory regime, as was explained in the evidence of Mr Tyldesley

10.1.3 The facility would be subject to the comprehensive legislative framework to ensure that health and safety issues were properly and expertly addressed at all stages of the life of the facility; design, construction, operation and eventual decommissioning.

**HSE’s HSC letter**

10.1.4 HSE provided its response to the HSC application by letter dated 22nd August 2005 (CD/25 pg 21-24). It stated:

“The Risk Assessment and Process Integrity Unit of the Health and Safety Executive has assessed the risks to the surrounding areas from the likely activities resulting from the granting of the proposed Hazardous Substances Consent...

On this basis, HSE has concluded that the risks to the surrounding population arising from the proposed operations are such that the proposal would be incompatible with the presence of the existing population unless appropriate precautions are implemented to mitigate the effects of a major incident at the proposed installation. Such mitigation could be achieved by a condition to the Consent to ensure adequate separation of the population from the source of a major incident”

10.1.5 HSE then set out the separation distances between the wellheads and any dwelling (such dwellings to include caravans). Canatxx could and would comply with the separation distances between wellheads and any dwelling.

**CGSL evidence**

10.1.6 The evidence of Mr Tyldesley (CGS6/2):

(i) Gave an overview of the regulatory system for health and safety risks to people associated with the sites such as that proposed by Canatxx.

(ii) Explained the role of the HSE:

(a) As an advisor to the LPA; and

(b) As a competent authority in relation to COMAH and other Regulations.

(iii) Set out the criteria by which the HSE assessed risk.

10.1.7 The legislative framework that would be applied to the Preesall facility was a comprehensive framework to ensure that safety issues were addressed at all stages of the process.

**Establishing Risk Criteria**

10.1.8 The role and responsibilities of HSE in relation to health and safety issues that arise out of work activities were spread over premises as diverse as nuclear power stations, off-shore oil platforms, coal mines and chemical plants. Much of modern health and safety legislation was “goal setting” rather than “prescriptive”. This would normally require a site operator to carry out an assessment of risks arising out of a work activity. The depth and complexity of the analysis depended on the risks associated with the activity. HSE had found it necessary to develop a detailed framework to allow a proper informed public debate about the level of risk to employees and the public that was generally “acceptable”. The HSE developed guidance and approved
codes of practice in consultation with other interested parties in order to help employers and others understand the legislation. It had a substantial research budget with the work carried out either by its own laboratory staff or by contractors with relevant expertise.

10.1.9 Assessment and enforcement activities carried out by the HSE Inspectors comprised regular site visits together with office based assessments of documentation, including safety reports produced by prospective and current site operators. The Hazardous Installations Directorate of the HSE was responsible for regulation of the major hazards industries on and off-shore, including pipelines. The Inspectorate included well qualified specialists in a variety of disciplines relating to health and safety, such as control systems engineering, pressure systems, fire and explosion hazards and probabilistic risk assessment.

Quantifying Risk Criteria

10.1.10 HSE had undertaken the first steps towards identifying quantified “risk criteria” in the early 1980s in order to inform discussion into the then proposed nuclear power station at Sizewell B. Since that time they had been refined by both HSE and others. The principles established were set out in the HSE document “Reducing Risk, Protecting People” (extracts in CGS/6/3 doc.3). The document sets out the idea that risks may be grouped by probability into three regions.

(a) Some risks were so great that they were regarded as “unacceptable” however great the benefits might be to those who wished to carry out the activity; e.g. the use of asbestos has important fire resistant properties but the very serious health effects give rise to an almost total ban on the use of the substance.

(b) Some risks were broadly “acceptable” even though people recognised that all activity carried a degree of risk. Within this category a distinction was drawn between risks that people voluntarily accepted and risks which they could not easily avoid.

(c) Between these categories there was a region of risk where the benefits had to be balanced against the risks to employees and the public. For risks created by a work activity in this range, the employer should consider what additional precautions could be taken to reduce the risk and the costs of such possible changes. Some incremental improvements might be inexpensive and would then be required. Other improvements that achieve the same incremental benefit might cost far more and may not be required. In general for COMAH sites the improvements would be required unless there was a “gross disproportion” between the costs and the benefits. HSE guidance states:

“In comparing costs against risk, HSE, when regulating, will be governed by the principles that:

• There should be a transparent bias on the side of health and safety. For duty holders, the test of “gross disproportion” implies that, at least, there is a need to err on the side of safety in the computation of health and safety costs and benefits. HSE adopts the same approach when comparing costs and benefits and moreover, the extent of the bias (ie. the relationship between action and risk) has to be argued in the light of all the circumstances applying to
the case and the precautionary approach that these circumstances warrant…”

10.1.11 This type of analysis entailed describing not only the precautions that had been taken, but also those which had been considered and rejected; this is known as an ALARP analysis (as low as reasonably practicable). HSE would not be satisfied by simply applying a standard but would seek to drive risks down so that they were ALARP.

_HSE Advice on Planning Issues_

10.1.12 The HSE was a statutory consultee in respect of planning consent and hazardous substances consent. It had a responsibility to consider the risks from the proposed development and, in the light of other existing activities in the vicinity, to advise whether there was any reason to refuse the permission because of the risks that would be created.

10.1.13 Paragraph A1 of the Appendix to Circular 04/00 states:

“HSE’s role in the land use planning system is to provide local authorities with advice on the nature and severity of the risks provided by major hazards to the people in the surrounding areas so those risks can be given due weight, when balanced against other relevant planning considerations, in making planning decisions.”

10.1.14 HSE advice was that where a new major hazard facility could be allowed the HSE would assign hazard radii around major inventories of dangerous substances or activities within the site. These zones would then be used as a basis for comment in respect of future planning applications in the area. The zones were set on the basis of the type of worst case event or events that could be foreseen. In respect of the current application HSE had performed their calculations on the basis of the jet fire that could follow a complete failure of the pipework at a wellhead and an explosion of a gas/air mixture that filled the compressor building (CGS6/3 App.10).

10.1.15 HSE had then identified appropriate separation distances between an existing dwelling (including caravans) and any wellhead area. This was a sophisticated calculation based upon the relationship between gas release and flow rate (CGS6/3 doc.8, Tables 5+6). The distances required by HSE could and would be achieved.

_Conclusions on HSE requirements_

10.1.16 To ensure the safety of facilities such as the appeal proposal involved multiple issues including selection of a suitable location, safe design, construction, commissioning, operation and maintenance. HSE had the trained specialists who would assess the detailed safety case for any proposed facility. They were not required to be addressed at the land use planning stage. Indeed, it was important that conditions were not imposed which could hamper HSE’s ability to recommend or require changes to the design or specification of the facility.

10.1.17 The health and safety legislation that was of direct application to the plant was comprehensive and multilayered. It allowed HSE to review and assess issues that arose at various stages. There were extensive powers available to HSE to prevent the plant being brought into operation, to insist on rectification of any problems subsequently identified, to maintain the plant properly, to maintain a robust safety management system, or in the last resort to demand the closure of the plant.
10.1.18 HSE Inspectors had a wide range of experience and expertise relevant to the control of the risks at major hazard sites. The Hazardous Installations Directorate within the HSE had been established to ensure that their primary role was to minimise the risk and effect of major incidents and they had the appropriate dedicated resources to carry out that role effectively.

10.1.19 The Secretary of State could be confident that the comprehensive system of regulation would be efficiently and effectively enforced.

10.1.20 CGSL had demonstrated that it recognised the types of hazard that were potentially associated with the proposal, and how they would be addressed in the design, construction and operation of the proposed gas storage scheme. The risk assessment referred to was a preliminary examination of the major hazards and was intended to demonstrate, in broad terms, the processes that would need to be carried out in a future application for the facility as required by the COMAH Regulations.

10.1.21 The investigation of the risks was largely qualitative and had concentrated on identifying how the hazards had been recognised in the safeguards and mitigation that would be provided to reduce the risks from hazards. Mr Grimes, as CEO for Canatxx Energy Ventures, had given an undertaking on behalf of CGSL that it would follow best practice and comply with all the relevant standards.

Safety Case

10.1.22 The COMAH Regulations required the production of a safety case for ‘top tier’ sites to demonstrate the safety of the design of the completed plant and normally covered the following areas:

(i) Hazard identification
(ii) Risk assessment
(iii) Risk reduction
(iv) Emergency preparedness
(v) Safety Management System.

10.1.23 The safety case would draw on all available information of the design and safety features of the plant to provide a coherent statement on the risks a facility presented and how those risks would be managed. It would use a combination of both the ‘prescriptive’ and ‘goal setting’ approaches to safety. This approach had the distinct advantage in that it required hazards to be specifically identified and the risks from those hazards to be managed to demonstrate they were as low as reasonably possible (ALARP). HSE’s approach would involve both a qualitative and quantitative risk assessment.

10.1.24 CGSL’s preliminary assessment of risks broadly identified the main hazards as including:

- Possible damage to the sea defences causing flooding;
- Collapse of the cavern causing collapse of the above ground area;
- Possibility of disturbing old workings;
- Possibility of disturbing aquifers;
- Failure of the brine pipework and leakage into the environment;
- Asphyxiation hazard from gas released during testing;
• Leakage of gas from the pumping station;
• Leakage of gas from the pipework and wellheads;
• Migration of the gas from the caverns and release at remote locations;
• Control system failure leading to loss of control of the facility;
• Cavern collapse and release of gas;
• Ingress of air into cavern leading to potential explosion risk;
• Local emergencies;
• Aircraft impact;
• Impact by vehicle;
• Earthquake;
• Electromagnetic interference;
• Loss of services;
• Lightning;
• Flooding;
• Vandalism;
• Terrorism;
• Disruption of control system by “hackers”;
• Cavern collapse after decommissioning; and
• Construction hazards.

10.1.25 Based on this preliminary hazard identification and analysis, the groups of hazard with the greatest potential to cause harm to the general public was assessed by CGSL as being a large-scale release of gas under pressure leading to explosion or major fire. This could be caused by:
(a) A failure of the gastight integrity of the large diameter pipework or wellhead, either caused by some defect in the pipework or by an external event.
(b) Failure of the gastight integrity of the equipment within the compressor station building.

10.1.26 It was CGSL’s view (CGS7/2 para.113) that this was consistent with HSE guidance that states:

“The principal hazards from natural gas storage sites are fires and explosions, resulting from leaks in the vessels themselves and in ancillary equipment such as pressure regulators and pipelines, both of which operate at high pressure.”

10.1.27 A preliminary analysis of the possible consequences of a major gas release had been carried out by WS Atkins Limited (CGS7/3 App.E). Atkins records:

“At the meeting of 16/2/05, Dr Riley of the HSE confirmed that the extent of the land use planning zones will be based on the thermal radiation hazards associated with a worst case horizontal jet fire and a potential vapour cloud explosion in the compressor station. This is consistent with the guidance in HSE’s internal Planning Case Assessment Guide (PCAG).”

Risk assessment conclusions

10.1.28 During the construction phase the hazards were generally typical of any large project. Normal application of good design and construction practice should be sufficient to control the risks from those hazards at a broadly acceptable or tolerable level.
10.1.29 The facility when constructed would operate a fairly simple process accepting natural gas from the NTS and storing it in underground caverns. The gas was then re-compressed and supplied back to the NTS when required. There were no unusual processes carried out and the properties of natural gas were known and understood. There already existed, throughout the UK an extensive network of large diameter natural gas pipework and associated compressor stations operating at a similar pressure to the facility proposed at Preesall. There were robust regulatory systems to address most of the aspects of the facility and the detailed safety cases that would be required under the COMAH Regulations. The Preesall facility together with other facilities that were found in the UK should be such as to demonstrate that the risk from the hazards imposed by it could be managed to be acceptable or tolerable and ALARP.

10.1.30 Mr Petryk (CGS5/1) had explained the control system for the Preesall gas storage project both as to design and how it was intended to be operated.

10.1.31 The Monitoring, Control and Communication System (CGS/5/1) had been designed to meet the requirements of, and to be an integral part of, the development project. It was also designed to provide the highest reliability and availability possible. It had been designed to be maintained whilst remaining in service. Triple module redundancy (TMR) was a solution that achieved the best availability and reliability performance. Any one of the three systems could be upgraded, repaired or replaced whilst the other two continued to operate. For all critical process systems, a fully triplicate solution would be provided.

10.1.32 The system was being designed so that if the fault tolerance designed into it was overwhelmed, the system would default to a safe situation. The use of safety valves, normally energised circuits, pressure relief valves and other safety devices would be used wherever necessary.

10.1.33 The tripex configuration offered the best protection in fault tolerance. It was able to continue to operate in the presence of a single, or in some cases, multiple fault. The configuration used three sets of all controls. All three controllers would have visibility into the neighbouring controllers and would constantly cross-check and compare results. There would be a software based ‘voting system’ in each controller that constantly evaluated all the results; providing status and result information. Any discrepancy between the three units would be enunciated and ‘voted upon’. The result of the ‘voting’ would be used to control the process. There had to be agreement between two units before action could be taken. The system configuration provided the most complete and reliable coverage possible.

10.1.34 Public concerns in relation to the evidence on leak detection (CGS5/1 – para.4.13) had been noted. The leak detection system proposed would use a number of different technologies, each uniquely suited to detect leaks from both the gas and the water pipeline systems. The system would not rely on any single indicator of leaks but would intelligently evaluate all the signals from each of the various leak detection systems to determine if a leak was present. The system would be fast, accurate and responsive to possible leak situations, and based on the following technologies:

*Flow Measurement*
10.1.34.1 The leak detection system would constantly monitor flow rates in the cavern washing piping system. Flow volumes and rates would be evaluated, balanced and cross-correlated. Any discrepancy would be further evaluated as a possible leak indication.

*Ground Conduction*

10.1.34.2 Specialised electronic measurements would continually watch for any electrical path created by small leaks of salt water. The system was very sensitive to changes in electrical conduction that occurred when salt water began to escape from the pipe and was optimised to monitor for small leaks.

*Ground/Pipeline Disturbance*

10.1.34.3 Instruments would be provided to detect situations when ground disturbance near a pipeline occurred. This would alert operators that trenching or digging was taking place near any of the pipelines. The system consisted of an array of fibre optic cables placed in a grid arrangement over the top of the pipeline from the centre extending outwards to cover the area to be protected. In the event that the cables were disturbed or cut a signal would be generated indicating with great accuracy the location of the disturbance.

*Acoustic Signature Analysis*

10.1.34.4 The pipeline would be instrumented in a manner that would allow the control system to measure acoustic signatures produced by leaks. The signals would be used in order to ‘listen’ for leaks which tend to emit a characteristic acoustic signal. The ‘signature’ would be constantly evaluated, checked and cross-correlated. Any discrepancy or unexpected change would be further evaluated as a possible leak indicator.

*Pressure Loss*

10.1.34.5 Sudden unexpected pressure loss would be used as a possible indicator of pipe rupture or a large leak. Pressure changes and pressure rates would constantly be evaluated, reconciled and cross-correlated. Any discrepancy or unexpected change in the measurements would be evaluated as a possible leak indicator.

*Detector Cross-Correlation*

10.1.34.6 No single detection scheme would be used to indicate the presence of leaks. All the various detectors would be evaluated as a comprehensive system before a decision was made. This strategy would give accurate and rapid results.

10.1.34.7 Data storage was also important. The system would keep a complete history of operational data. The system data and signals would be monitored and constantly recorded as a sequence of events with a time stamped resolution of 10 milliseconds. The data could be used to analyse conditions leading up to an ‘event’ and would provide a record of performance on each piece of equipment. The data could be used to develop operating strategies and tune the process for the most efficient operation possible.

10.1.35 Various fault scenarios had been considered\(^1\). These comprised an exhaustive list of incidents that would have to be subject to a full risk assessment procedure with the HSE at the appropriate time of the COMAH application process.
Control System Conclusions

10.1.36 CGSL has chosen the optimum solution to deal with the various control challenges presented by the proposal. The purpose of the system was to control, monitor and record all aspects of the Preesall facility. It would be subject to the critical appraisal and analysis of the HSE as part of the COMAH application process. A robust and ‘intelligent’ system has been devised, consistent with the best practice available.

Response to LCC’s evidence concerning risk

10.1.37 LCC did not introduce any specific evidence in respect of the risks and hazards associated with the Preesall proposal. The focus of LCC’s evidence related to:
(a) The information available to the Mineral Planning Authority on which they base their decision;
(b) The grounds for the Authority’s representation to the Inquiry relating to public fear and concern.

10.1.38 The putative reason for refusal in relation to risk stated:
“The proposal will result in considerable and understandable fear and distress within the local communities attributable to the high level of associated risk and the potential consequences of any accident occurring and will be contrary to Policy 2 of the LMWL.”

10.1.39 It was acknowledged that the Reason for Refusal alleged actual risk as opposed to perception of risk. It was LCC’s position that the applications presented only limited information regarding the geological context of the scheme and that this was fundamental to understanding whether it would be possible to guarantee the safety of the proposal. LCC had difficulty in understanding how the HSE could go on to recommend separation distances in a consultation zone of limited extent, apparently based upon a lack of detailed information about the proposals.

10.1.40 In relation to public concern LCC had drawn attention to the number of objections received: 12,054 objections of which 10,339 were on pro-formas and an additional 1,715 individual letters. LCC had concluded that the extent of public concern was far greater than that normally attached to controversial planning applications. LCC considered the objectors to be informed and sensitised by their own experiences.

10.1.41 In relation to gas migration and its consequences, LCC reflected other objectors’ principal concerns in relation to gas storage and the possibility of migration to the surface. In relation to uncertainty over geology, LCC again referred to third party objectors’ concerns in this regard.

10.1.42 In referring to third party objections based on subsidence or earthquake, attention had been drawn to the presence of the ICI cavern containing toxic mercuric sulphide sludge. For LCC it was asserted that much of the fear was related to uncertainty about the proposal in addition to the geological concerns, and that the lack of information was one of the many factors that had added to public concern. For LCC, third party concerns about the possibility of human error affecting the control systems was also reiterated, together with third parties lack of confidence in CGSL’s experience and ability to manage the installation at Preesall.
10.1.43 LCC had also reiterated the concerns expressed by third parties and individuals that their own lifestyles would be at risk together with those of their children. This was expressed as manifesting itself in impact upon investments, and life savings in respect of the individual properties in the broad area of the Preesall facility. There was also concern that the existence of the Preesall facility would have a deleterious impact on tourism and leisure.

10.1.44 For LCC it was concluded (LCC/3/1 para.8.28) that ‘The fears and concerns of objectors are supported by the Council’s other expert witnesses who demonstrate that these concerns are justified. Significant weight should therefore be given to these concerns.’

10.1.45 In response to CGSL’s risk evidence it was LCC’s position that the additional information provided to the inquiry was no more than ‘preliminary and qualitative assessments of risk’. In response to cross-examination LCC recognised the important distinction between the land use planning system and Health and Safety legislation. It was accepted that Health and Safety legislation provided the HSE with extensive powers of inspection, prevention of operation and powers to insist on improvement - including those that arise after the commencement of operations. It was further accepted that the comprehensive framework of legislation referred to in CGSL’s evidence would have to be addressed from design, construction, operation and decommissioning.

10.1.46 It was further agreed that:

- A responsible LPA would not seek to substitute its judgment for that of the HSE on issues of safety and risk;
- LCC did not suggest that the HSE were incompetent generally or specifically in the case of Canatxx.
- The appropriate advice to the Inquiry was that it must proceed upon the assumption that any facility would be authorised and operated in compliance with the Health and Safety statutory regime that applied to it.

10.1.47 In the context of the HSE advice on planning issues, it was accepted that all the risks identified as being capable of being relevant to the CGSL proposal (gas release, fire, pipe failure, gas migration) would have to be addressed before the facility became operational. It was also accepted that if the HSE was not satisfied the facility could not be operated for gas storage.

10.1.48 It was further accepted that in this particular case the HSE had, in accordance with its own guidance (CGS/6/3 App.4), considered both the hazards and risks presented by the hazardous substances and specifically the hazards and risks to people in the vicinity. The advice of HSE was that, subject to conditions, consent could be granted for the Canatxx proposal.

**Response to PWG’s evidence**

10.1.49 PWG expressed concern at the absence of information to support the planning application or HSC in relation to emergency planning and, in particular, to fire fighting equipment and processes. As explained in cross-examination, a significant distinction could be drawn between the Hemel Hempstead incident and the type of operation proposed at Preesall. Natural gas products did not generate the oil based smoke plume experienced in respect of that incident. The major area of difference
between CGSL and PWG was PWG’s view that fire fighting equipment needed to be addressed at the planning stage and there should have been a clear indication of what emergency plans would be put into operation in the event of an incident at the Preesall facility.

10.1.50 For PWG the expertise of HSE in relation to such matters was acknowledged, as was the fact that this would be addressed as part of the ongoing COMAH application process and be further addressed in the reviews conducted by HSE. PWG had no doubts about the ability or expertise of HSE in this regard; its witness having drawn that conclusion from his own experience of dealing with them.

Perception of risk

10.1.51 It was accepted that following the Newport County Borough Council v. Secretary of State for Wales [1997] case, that perception of risk, even if not objectively justified, was capable of being a material consideration in the determination of an appeal (CGS/9/2 pgs100–4). That general proposition should be qualified to the extent that in considering how much weight should be given to perceived risks it was material to have regard to the extent to which those fears were objectively justified. Greater weight should be given to opinions of recognised experts on such matters.

10.1.52 The conclusion of the Inspector on this issue in the Byley decision (CD53 para.9.63) was that:

‘Fear of danger plays a large part in the public response to this appeal ... I find nothing to substantiate those fears but consider that the perception of fear by members of the public should be given little weight.’

10.1.53 For LCC it was accepted that if in this case it was concluded (as in Byley) that there was nothing to substantiate those fears, the perception of fear or risk by the public as an issue should be given little weight. The approach to this matter by LCC lacked balance. No evidence addressed the risks associated with not providing additional gas storage facilities. Nevertheless, any decision maker was going to have to grapple with that issue in the context of the Preesall proposal. That was so because risk and perception of risk would need to be balanced against the consequences of not making adequate storage facilities available.

10.1.54 In this context it was recognised that without additional gas storage facilities there would be a risk of gas supply shortages (CGS/1/2 para 3.21). Solution mined salt cavities were a proven technology for adjusting gas supply systems to short term and seasonal changes in gas demand (BS EN 1918-3). The Government had recognised that salt bearing strata were ideally suited for the creation of storage cavities for gas (CGS/9/2 pg.59). It was further recognised that there was or soon would be a requirement to develop further storage facilities to cope with peak demand.

10.1.55 That position was reinforced by the Byley decision (CD53 – para.18) which stated; ‘That security of supply is of national importance and it is prudent to add supply.’

10.1.56 Without further gas storage of the type proposed here at Preesall, there was a real risk of supply failure. There were real risks associated with a supply failure both in economic and welfare terms for those dependent on gas or electricity supplied by gas fired power stations. LCC did not address anywhere in its evidence the consequence of not providing more storage of the type proposed in this case.
Conclusions

10.1.57 The health and safety legislation that would apply to the Preesall facility is comprehensive and robust. It allows the HSE, the body with the expertise and responsibility of enforcement, to assess and review issues that arose at a number of stages. They have extensive powers to prevent the plant being brought into operation, to insist on rectification of any identified problem, to ensure the plant is properly maintained and has an appropriate safety management system. The HSE’s powers include the ability to enforce closure of the plant.

10.1.58 The existence of the health and safety regime operated by the HSE under COMAH is a material consideration in the determination of these appeals. The approach of the Inspector and the Secretaries of State in the Byley appeal properly reflected the weight and context within which health and safety issues bear upon the decision in this case. The Inspector at 9.61 had concluded:

“It is vital to minimise human error and unauthorised access to the plant system to avoid danger to operators and the public. It is anticipated that HSE would verify all such safety-critical systems and sub-systems before giving its approval for gas operations to commence/continue. The suitable mechanism for such approval, including the adequacy of the shut down systems, would be the Safety Report submitted under the COMAH regulations.”

10.2 Case for LCC

Risks of Things Going Wrong

10.2.1 There was no doubt that before gas storage could take place HSE would have rigorously applied the ALARP principles to any risk. Accordingly, irrespective of whether a person with Mr Heitmann’s undoubted experience or someone else washed the cavern the assumption must be that HSE would ensure that it was done in such a way as to minimise residual risk.

10.2.2 That did not mean that risk would be avoided altogether however. It meant that, absent of an enforceable means to ensure that the project would be designed in the way articulated by Mr Heitmann, one could not know whether that would or would not be acceptable to HSE.

10.2.3 What was perhaps of most concern was that at CGSL’s anticipated limit of detectability (0.025%) with a cavern of 1Mm³ capacity, then up to 250m³ of gas at 80 bar could escape from the cavern without being detected. That equated to 20,000m³ at atmospheric pressure. Even if most of that vented harmlessly to atmosphere the potential for some to become trapped in an explosive situation was all too real.

10.2.4 It was not accepted that the risk was comparable to the risk posed by the NTS which passed through towns and cities of the UK. While the gas in the NTS was the same, it would be contained there in a pressure vessel specifically designed for the purpose, which could be the subject of a regular inspection regime and not within a geological formation which could only be indirectly inspected. While both may present residual risks those risks were inevitably going to be different. Moreover the volume of gas in comparatively close proximity to a significant population was quite different to the content of a high, medium or low pressure gas main.
10.2.5 Past experience elsewhere was that unforeseen hazards could and did occur in relation to underground gas storage in salt caverns and these had been set out in the Welton Oilfield UGS Report (CD/74 App.A - Section 5). Moreover the fact that a particular set of circumstances had not led to an accident elsewhere did not mean as a matter of fact that it would not happen. However, to introduce the storage of large volumes of a hazardous chemical in close proximity to centres of population created the potential, however small, for a catastrophic event.

10.2.6 It was therefore perhaps less than inspiring that neither Dr Evans, nor any other geologist had been engaged by CGSL to assess the suitability of the strata to accommodate gas storage. Nor was it inspiring that neither Mr Heitmann nor Mr Lowther appeared to claim ownership of the gas migration section of the Regulation 19 information, even though they were the stated authors of the piece.

10.2.7 It was also not entirely comforting that wildly differing volumes had been given at different points of the evidence for the extent of gas storage. Thus, for example the two subsidence reports appeared to consider quite different voids, and yet it had been asserted (but nowhere stated in the reports) that the subsidence work was intended to be ‘robust’ and to assess the ‘worst case’. One may have a degree of circumspection about the latter when: firstly that was not stated in either report; secondly the cavern locations were said to be ‘indicative only; and, thirdly that CGSL had still not provided the most recent subsidence monitoring data from the ICI caverns. To use the terminology of Circular 6/2005 it was difficult to see how one might not have doubts about whether there would or would not be an effect upon the Wyre Estuary.

Fear of Risk

10.2.8 The starting point for the concern of local residents was the nature of CGSL itself. It was a single venture company formed solely with the intention of promoting this scheme (CGS/2/2 para.3.1.2). Although Canatx as a ‘group’ of companies had a track record in the energy sector it had not had any past involvement in operating underground gas storage in man-made caverns anywhere else in the world. Moreover it proposed to use technologies that it described as ‘innovative’.

10.2.9 PWG in its cross-examination of Mr Grimes had clearly pointed out the failure of CGSL to engage with the public in order to seek to allay those concerns. In fairness to him he appeared to accept that his company could have done better to assuage concerns. LCC had repeatedly requested information from CGSL which, together with formal Regulation 19 requests from the Secretary of State, could only have led the informed public to have cast a much more cautious eye over the proposals than had CGSL engaged properly and openly with the public from the outset.

10.2.10 On any view the information presented to the inquiry was, in many respects, of a quite different calibre to that which had been presented to the MPA as part of the application prior to the appeal being lodged.

10.2.11 It is little wonder that there had been such a massive level of objection to the proposed development, much of which raised the fear of accident as a serious concern. For those members of the public who had chosen to attend the inquiry one wondered whether the drip feeding of geological information, the last minute compliance with the Regulation 19 direction and the ever changing application plans would have done much to assuage those concerns.
10.2.12 The fact that BGS were engaged by CGSL, but on a limited brief not to report upon the suitability of the salt to accommodate the caverns, and the fact that at best Professor Rokahr’s evidence was that he had enough information for the ‘feasibility’ stage but nothing further, could hardly have minimised fear.

10.2.13 There was nothing between the parties on the relevance of fear as a material consideration. Doc.LCC/3/1 – Section 5 contained a useful and comprehensive review of the authorities on the issue. In summary, fear was a material consideration. However, significant weight would only be given to that as a material consideration provided that it has land use consequences (e.g. an impact upon residential amenity in the widest sense) and if it was well founded. If fear was ill founded and/or did not have land use consequences then it did not matter whether that fear was shared by one or many thousands of people, it should not be a decisive factor in the planning balance.

10.2.14 The converse was also true. If there was a proper basis for the fear and it had planning consequences then it may carry significant weight, and the fact that it was widespread added to that weight. In this case not only had many thousands of representations been made over both sets of applications, but there was local political unanimity at district, county and MP level. In those representations a consistent theme was pervasive – a fear of an unexpected and extreme event involving a huge volume of potentially explosive gases which had the capability of migrating over many miles.

10.2.15 The first solid basis upon which that fear was based was that all of the experts (although not CGSL’s in-house experts) considered that there would be a residual risk of an event occurring which might result in serious consequences.

10.2.16 Neither Mr Harrison nor Mr Petryk considered that gas migration was part of that residual risk. That was astounding. Not only had there been incidents in the past where gas migration had occurred for unexpected reasons elsewhere in the world, but also because Mr Petryk’s systems would have a limit of detectability (0.025%). This meant that if a leak were to occur then, given the large volumes of gas under pressure that would be stored in each cavern, if a pathway to the surface existed then there could be a massive volume of gas at atmospheric pressure released, without its loss being detected by CGSL. CGSL’s response would be that the combined investigations that would underpin COMAH, together with CGSL’s triple-safe systems, meant that the prospect of there being a migration pathway was so small that it can be discounted.

10.2.17 That was tantamount to arguing that whilst for other events there was a residual risk however tiny, for gas migration there was not. For all of the reasons cited above, the risk of gas migration was real, and therefore fear based upon it was rational.

10.2.18 The second solid basis for fear of accidental gas release resulting in a significant accident was that such events had happened before. The report, by Dr Evans, for the Welton application made sobering reading (Doc.CD74 – App A). There had been a series of different accidents involving sub-surface gas storage in underground salt caverns. What that report implicitly recognised, but CGSL in this case did not, is that the lesson learnt from those events was not that the precise series of events that occurred could not be repeated here, but rather that the unexpected could and did happen.
Thus while the mechanisms by which the Three Mile Island event and the Chernobyl disasters occurred were no doubt radically different, the lesson that the world learnt was that a degree of separation between major conurbations and nuclear power stations was probably prudent however confident one was about the safety of ones plant.

The third solid basis for that fear was that the lessons which had been learnt from Hutchison etc had been, in at least one US state – Kansas, to presume that a safety zone should be introduced around proposals such as this. While CGSL sought to portray that response as simplistic, a proper reading of the code demonstrated that it was no such thing. It was not a simple distance-based approach – rather it required a fully worked up proposal based upon clear and comprehensive evidence of geological and geotechnical issues in order to receive a permit. However, additionally, the legislation required that a necessarily arbitrary exclusion zone was also applied in order to cope with the unexpected and unknown event from even the best run facility – ie the residual risk.

Far from being an alien concept a distance based exclusion in order to cover a residual risk was exactly what the HSE had recommended on the application in relation to well head blow out. Albeit that they had not yet assessed gas migration. It was therefore interesting to note that if CGSL were promoting this proposal this close to a conurbation within Kansas, rather than in Lancashire, it would be rejected outright.

The fourth solid basis was the shallowness of the deposit. None of the CGSL witnesses could point to a comparable location within bedded salt in Europe where gas storage was being proposed at such a shallow depth. Whilst that did not preclude gas storage, it added to the degree of caution given that the experience of the US was that most gas storage took place in domed salt. In Germany, where gas storage was more widespread in salt caverns, it was at a much deeper level than was proposed here. None of CGSL’s witnesses could point to gas storage in caverns formed within a faulted graben structure.

The fifth basis was the experience of the salt industry here over the last century. Of course mining techniques have improved markedly, however, the legacy had been extensive subsidence, knowledge of wet rock head, mines whose extent may or may not be well documented, as well as improperly explained anomalies in drilling records.

Hazardous Substances Consent

There was an obvious overlap between planning and HSC control. However HSC concentrated upon the implications of the storage of a substance at a given location, as opposed to the wider ramifications of the planning process. The requirement of HSC was explicitly intended to bring storage of hazardous substances into the realm of planning control rather than leave the matter to other schemes of control. Although the HSE was an exceptionally important application
consultee, it was important to note that the discretion had been vested by Parliament
upon the County Council as Hazardous Substances Authority.

10.2.26 CGSL had sought to deal with this issue by suggesting that as the putative
determination of the HSC application (no.05/01) had been made before the HSE had
given a full consultation response, having received that response indicating HSE’s
lack of objection that implicitly LCC ought to have abandoned its opposition to the
HSC appeal.

10.2.27 The suggestion that somehow LCC had ‘jumped the gun’ in making a putative
determination on the application was disingenuous.
(i) At the time of its determination the HSC application had already been the subject
of an appeal against non-determination. If any party had acted precipitously it
was CGSL;
(ii) There was already a public inquiry scheduled in relation to the previous (refused)
application for HSC and CGSL had made it explicit at the 1st PIM that it would
wish to substitute the second HSC appeal for the first. It had been incumbent
upon LCC to make a determination as to what its determination would have been;
(iii) The July determination of HSC (application no.05/01) should be seen in the
context of the fact that there had been a previous HSC refusal (application
no.04/01) which had been refused in part due to lack of information;
(iv) The stance of HSE over many months and over both applications had been that
CGSL had not provided it with anything like sufficient information to enable
HSE to make a full determination of the applications for HSC²;
(v) HSE had not revised that advice at the time of the determination.

10.2.28 It was obvious that:
(i) LCC had acted entirely properly in making a putative determination on the
application for HSC;
(ii) the timing of its decision had been appropriate given the forthcoming inquiry and
the need to adopt a stance for that inquiry;
(iii) the decision to refuse was the only decision based upon the advice of HSE and
the information provided by CGSL at the time.

10.2.29 As to the reasons why LCC had persisted in a case that HSC ought to be refused,
notwithstanding the stance of HSE that it had no objection, it was important to bear in
mind the following:
(i) The putative refusal extended to issues arising (essentially) out of lack of
information on the capacity of the geological strata to safely accommodate the
substance, as well the commensurate fear and distress that would arise, and had
arisen;
(ii) HSE had always stressed that in providing a view on the HSC application it had
taken a very narrow interpretation which expressly did not take account of the
capability of forming gas tight caverns within this geological strata, nor the risk
of gas migration (CD15/6), but had concentrated on the potential effects of thermal
radiation and over-pressure from release of the hazardous substance at ground
level, principally at well heads;
(iii) LCC had consistently taken the view as HSA that it could not assume at this stage
that those wider issues were irrelevant to the determination of such an
application, not least since the gas caverns should, on CGSL’s case, be

² See CD 14 (pp. 1 to 6) 15 (pp 5 & 16), 17, 18 on HSC 04/01, and CD26 on HSC 05/01.
considered to be large subsurface pressure/storage vessels (see reports to Committee on both applications (Docs.CD/17 and 27)). Had CGSL been proposing to sink large metal tanks into the ground to store a hazardous substance it would have been inconceivable that HSE would have taken the view that their integrity was not a matter for consideration at the HSC stage;

10.2.30 In addition to taking an overly narrow stance in its consultation response on the HSC application, it was important to note that HSE had based its response principally upon the information provided to it by CGSL. It followed that the 22nd August 2005 response of HSE (Doc.CD/25 p.21) could only be taken to be a determination of the appropriate consultation zones for thermal and overpressure around the wellheads etc. The appraisal by Atkins to EON of the likely response of HSE was instructive (CGS7/3 app.E). That had concluded that the Sportmans Caravan Site was then within the inner zone which would lead to a recommendation of ‘strongly advise against’. The month after that report the application had been amended to move the wellheads further away from the caravan park.

10.2.31 The caravan park now fell a matter of a few metres beyond the inner zone of the HSE recommended consultation zone. More importantly, all of the escape routes from the caravan park would take one into the inner consultation zone – a point which appeared not to have occurred to CGSL until cross-examination. The proffered solution was that the occupants might either wish to go north (although how and to where was not entirely clear), or to ‘hide behind their caravans’.

10.2.32 The point at which the zones were drawn was necessarily an arbitrary one and that in reality there would be a continuum of effect whichever side of the inner zone boundary one stepped. Thus for the caravan dwellers cowering behind their caravans in the event of a wellhead blow out (or at worst after multiple blow-outs) they could be comforted to know that all roads out would take them (or the emergency services) closer to well heads, and that the heat and pressure that they were experiencing was at least not that which would give rise to sufficient risk to have warranted the refusal of permission.

10.2.33 It was not clear to what extent those matters (including the fact that the vulnerable dwellings were caravans and not brick built houses) had informed the response of HSE on the HSC. What was clear was that the response of HSE (Doc.CD25 p.22) to what was proposed was incompatible with the surrounding population unless there were appropriate precautions to mitigate the effects of a major incident. The conditions sought to geographically limit the location of the storage of gas (albeit in explicit ignorance of consideration of the geology) and to create a separation of wellheads from dwellings.

10.2.34 On the totality of evidence before the inquiry the issues which were relevant to the issue of HSC went beyond those considered by HSE who had taken an unwarrantedly narrow view of the ambit of HSC. What was also notable was that the only response from HSE since the putative determination on the applications for HSC and planning permission had related solely to the HSC. Throughout, it had been assumed that HSE’s response amounted to its consultation response on both. It followed that if the consultation response was too narrow on the HSC application then it was also too narrow on the planning application.

Overlap with other systems of control
10.2.35 CGSL were placing great reliance in this case on subsequent schemes of control. LCC’s position was that:

(i) In inquiries of this nature Appellants’ often tried to avoid the consequences of a development by arguing that a particular matter would be dealt with in a parallel scheme of control and therefore was nothing to do with the planning determination. It was to be hoped that such a contention would be avoided in this case, for whilst it was proper for the planning system to base any decision upon the assumption that other schemes of control would operate properly, that did not mean that those matters should be ignored.

(ii) In the case of Lethem v Secretary of State and Worcester City Council [2002] EWCA 1549 (Admin) George Bartlett QC, sitting as a High Court Judge observed:

‘The essential point, in my judgment, is that a consideration that, in the absence of some other statutory control, would be a material consideration, is not rendered immaterial by the existence of that other statutory control’.

(iii) In the seminal case of Gateshead MBC v Secretary of State [1993] 3 PLR 100 Sullivan J. identified the following principles:

(1) where two statutory controls overlapped it was not helpful to try to define where one control ended and another one began;

(2) there would be cases at one extreme where it would be obvious that pollution controls were capable of being overcome at the next stage and therefore consideration could be safely left to that stage;

(3) there would also be cases at the other extreme where evidence of environmental problems was so damning that permission should be withheld because there was no point waiting to go through the next step of authorisation;

(4) most cases lay between the extremes, and the decision as to what to do in any individual case was for the decision maker, whose decision in that regard was subject to challenge on ‘Wednesbury principles’;

(5) the Secretary of State’s policy was not simply to leave all matters to the parallel system of control.

(iv) Accordingly, it was no answer to an identification of land use consequences of the development to simply point out that before the development could take place there would be a need for other consents. That was particularly important in the context of this proposal where public fear and concern was a real issue to the many thousands who had made representations.

10.2.36 CGSL did not contend that this case fell into the second of the categories identified by Sullivan J. Accordingly it was assumed that it accepted that the case fell into the fourth. That was significant because it meant, in terms, that the extent to which matters which would also be considered later in the process could be considered now was for the decision maker: ie one could rationally conclude that matters that CGSL contended should not be considered now ought to be, for example geological and geotechnical matters which LCC had always contended were crucial to appraise now.

10.2.37 It was LCC’s contention that the case probably fell within the fourth category, but verged on the third. Dr Hockaday for CGSL appeared to accept LCC’s approach that:

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3 ‘the second category’
4 ‘the third category’
5 ‘the fourth category’
(i) the planning system had to assume that other systems of control would operate properly;
(ii) the fact that there were overlapping systems of control did not render what would otherwise be material, immaterial;
(iii) it is no part of CGSL’s case that one should entirely rely upon HSE scrutiny of those matters which overlapped the planning system;
(iv) it was however CGSL’s case that it was appropriate for it as an Appellant to demonstrate that in principle there was sufficient technical information, that there was sufficient salt, and that it was of a type which could safely accommodate gas tight caverns.

10.3 The Case for PWG

10.3.1 No matter how safe CGSL claimed the proposed installation might be, no-one could dispute the proven fact that if and when gas escaped by whatever means from a pressurised underground storage facility its travel away from the site could be aided by the presence of faults, fissures, wells and mines. No-one could dispute the fact that gas under certain conditions could travel up to 7 miles underground. This had happened in Hutchinson, Kansas.

10.3.2 Those acting for LCC think that gas could migrate from this area if the project went ahead. Eye witness testimony and statements from local residents note that the ground is moving and in a state of collapse and there was compelling evidence of the existence of wild brine and wet rockhead both of which threaten the integrity of the proposed caverns.

10.3.3 No CGSL expert or witness had produced any evidence to categorically support the notion that gas would not migrate. In every instance where there is the statement that ‘gas will not migrate’ the statement also made is ‘because CGSL say so’. In the absence of any credible evidence in support of that statement it could only be considered as speculation. The unproven CGSL claims on safety and gas migration should be disregarded.

10.3.4 CGSL experts state that they would not design caverns that would allow gas to migrate, and that the HSE would ensure it was going to be safe. That was not good enough, nor was it acceptable to allow a development to proceed which could put the lives of any of the 100,000 people that lived within 3 miles of the proposed site at risk. Saying sorry later would not be good enough.

10.3.5 For CGSL to come to a Public Inquiry after a 13 year preparation period, with the full knowledge that there had been loss of life elsewhere in the world caused by a gas escape from an underground store in similar ground conditions, and to base their assurances of the suitability of the site on two test bore holes, only one of which had been thoroughly examined, was less than satisfactory for a proposed scheme of this magnitude.

10.3.6 Their own experts had agreed whilst giving evidence and under cross examination that more test boreholes would have to be sunk before they could properly evaluate the potential of the whole site. This was one of the few points all seemed to agree upon.

10.3.7 CGSL offered an unsubstantiated claim that there was no potential for gas migration. PWG suggested that there were 5 possible paths for the gas to escape from the caverns and the pipes, which could endanger people and property. There was clear evidence from underground gas storage sites around the world that accidents could and did happen
and that when they did, the consequences could be both tragic and extensive with a loss of life and a disruption to the lives of those living and working near these sites. In the examples quoted the evacuation of residents occurred between 1 and 3 miles.

10.3.8 Moreover, the majority of residents at risk in this case lived on a peninsula where an evacuation would be difficult at best and impossible in the extreme. CGSL had agreed in evidence that gas would indeed migrate for an undetermined distance outside the unlined salt walls of the caverns but they considered this to be a safety zone and stated that the gas would be contained within this ‘extended cavern’. PWG and residents considered that uncontrolled gas migration was a real possibility and PWG presented evidence and included some diagrams which illustrated that some small cracks and fissures could exist in the salt outside the so-called safety zone and that they could exist there undetected and adjacent to CGSL test boreholes.

10.3.9 Expert witnesses had told the Inquiry that the fast filling and withdrawal of gas to and from the caverns, which was one of the proposed scheme’s key features, would cause temperature changes within the cavern and that after a fast withdrawal of gas the temperature change would cause some of these small fissures to open up or extend and this would happen after each withdrawal.

10.3.10 Whilst it might only be a very small amount, the fissures could allow the gas to penetrate further from the original position on the cavern wall after each withdrawal. PWG had suggested that it was not without possibility that one or more of these small fissures could, under pressure, break out and join up with another small and as yet undetected fissure and in time that this could join with another one and so on.

10.3.11 Small fissures could join larger ones and larger ones could find their way towards even larger fissures, faults, wet rock head or any of the disused and discarded pipes left in the ground by ICI. All of which were pathways for gas to travel away from the site and possibly towards residential areas.

10.3.12 The detection or monitoring system would normally be expected to alert the operator to such a situation but, in the case of the largest cavern, CGSL would not notice any gas escape of less than 520 m$^3$. That would be only for one cavern and whilst a simultaneous loss was perhaps an extreme consideration CGSL could lose the same percentage of gas from any one of the proposed 24 caverns and not know it was missing.

10.3.13 The 520m$^3$ of gas at 73 bar equated to 39,000m$^3$ at atmospheric pressure. There could be a significant amount of gas gently snaking its way through underground fissures but becoming diluted as it mixed with air trapped in these fissures which instead of this improving the situation would be making it worse.

10.3.14 Gas had an explosive range of somewhere between 5% and 15%. This would mean that this escape of gas could mix with air until it became 390,000m$^3$ of explosive mixture. If a realistic but conservative estimate was made that only some 2% of this mix was to make its way into a building, on either side of the river, there could be some 7,800m$^3$ of undetected explosive mixture waiting to be ignited which would almost certainly be followed by an explosion. 7,800m$^3$ was equivalent to the volume of 15 to 20 average sized semi-detached houses.

10.3.15 Three points were worthy of note. 7,800m$^3$ was a very conservative estimate of the actual volume of gas that could reach and be contained within residential areas; this
was only the figure from one cavern and CGSL’s equipment would not have detected the leak at that point.

10.3.16 Prior to leak detection residents could be at risk and be oblivious to the fact. Eventually the site’s equipment would register and the loss of containment would be discovered. What would CGSL then do and how fast would they do it? Even if an immediate decision was taken to evacuate the leaking cavern by letting all the remaining gas escape to atmosphere this could take up to 4 days. During this time the leak from an unknown part of the cavern would continue unabated.

10.3.17 In reality ‘immediate’ may not be immediate, bearing in mind that CGSL would be about to lose a valuable quantity of gas. Would there be a delay to check the equipment, to validate their readings or would the perceived leak be monitored for a few hours before action was taken?

10.3.18 CGSL stated that gas would not migrate and seemed not to have considered practical comprehensive emergency actions or procedures. Valerie Green (see IP sessions), based on 35 years experience as a claims inspector and risk manager for a major insurance company, had stated that this type of development would cause insurance companies problems when assessing the risks involved with house insurance. Where there was evidence of previous problems, which there was at other sites, residents could expect to have their insurance premiums loaded making insurance very expensive and maybe as a worst case the companies could refuse to insure homes in the area.

10.3.19 Mrs Green expressed concern that her many letters to the Health & Safety Executive had gone unanswered and suggested that the lack of response showed the answers, and the full extent of the problems for both now and in the future were unknown. She also stated that if the full extent of the risk was unknown then this must breach every aspect of European Health & Safety Regulations and therefore planning permission should be denied.

10.3.20 If planning permission was granted under any circumstances it would be the residents who, as well as living in fear and suffering distress, would have to subsidise the CGSL presence with increased household insurance premiums, or the possibility of becoming uninsurable. All of this for commercial gain when there were alternative sites and schemes available which would not present the level of risk or potential cost to residents; schemes which could exceed the potential storage capacity of the proposed CGSL development and schemes that could come on-line within the same time frame. The Stag Energy proposal to store gas in the salt off the Wyre coast and to possibly link up with the depleted Morecambe Bay field offered such a solution that should be considered in view of the high risks associated with CGSL’s proposal.

Safety

Compliance with the requirements of the COMAH Regulations

10.3.21 The Regulations placed a requirement upon the operator to ensure that there are appropriate measures in place for responding to, and dealing with, emergencies involving loss of containment. PWG had noted several very serious major Loss of Containment incidents in industry over the years which had involved hydrocarbons from the chemical family of alkanes. Methane, or natural gas, was included in this family and the devastation and loss of life from a repeating number of industrial
accidents involving these highly flammable alkane gases justified the application of the various statutory precautionary measures included within the COMAH Regulations.

10.3.22 Despite this statutory requirement, CGSL had displayed an almost cavalier reluctance to apply industry standards within the Planning Application in three distinct and vitally important areas which were included in the requirements of the COMAH Pre-construction safety report concerning emergency response as follows:

a) A simple Risk Assessment would confirm the major risk to be fire and explosion from a loss of containment incident. Despite this serious risk, CGSL had failed to include provision within the Planning Application for resources of a pressurised fire water system that could provide sprinkler systems to protect adjacent equipment or water curtains to provide cooling from massive radiated heat.

b) The safety report shall highlight the need for adequate road access to enable a safe and speedy response by the emergency services. Best practice would be that of providing access from an upwind and thus a safe direction. CGSL had failed to include a suitable road access system to the site from a southerly direction, consistent with the prevailing wind direction in this area.

c) The usual industry standards for site security at a top tier major hazard sites had been described. A comparison of other such sites to that of the Preesall proposal was illuminating. The Canatxx Application if approved would generate a site with the lowest level of site security of any of a dozen other top tier major hazard sites surveyed. This was in direct contradiction to CGSL’s repeated intention to apply or exceed industry standards. The proposal failed to provide the normal accepted scale of site security to protect against access by vandals or terrorists who could easily initiate a major emergency

10.3.23 The COMAH Regulations required the operator of a ‘top tier’ major hazard site to develop emergency plans and these include the need to conduct roll calls in the event of an incident. They also require the operator to brief an attendant emergency services response concerning the nature of the emergency. CGSL would be unable to carry out the first part of this requirement. They proposed an open site with ability for the public (innocent or suspicious) to roam freely. In the event of an incident occurring, they would have no idea who was on the site and be in no position to communicate this vital information to attendant emergency services should the need arise.

10.3.24 CGSL would also be unable to carry out the second part of this requirement. It was proposed to leave the site unmanned and unguarded for the majority of the time and thus CGSL would be incapable of informing attendant emergency services of the nature of an incident. The HSE had issued a SAFETY ALERT following the Buncefield incident. The HSE had required all top tier major hazard sites to review their operations and, significantly, the review required operators to ensure there were appropriate measures in place for responding to and dealing with emergencies involving loss of containment. This was precisely the aspect of the CGSL Application which demonstrated weakness.

10.3.25 The case presented by PWG was of one of extreme concern that the development of Emergency Plans would be compromised by the exclusion of vital site infrastructure within the Application. The HSE ALERT review focused upon safety infrastructure,
and this was the precise area where PWG had identified a great weakness in the CGSL proposal. The Inquiry had only considered the terms of the CGSL application. It should not be overlooked that if the HSE required usual industry standards for top tier major hazard sites to be applied at Preesa all in terms of site security, and to ensure the exclusion of non-employed individuals from the site, any additional security fencing called for should itself be the subject of an assessment of its effect on landscape and land use issues.

10.3.26 Another cause for concern was that CGSL’s own consultant stated that Seveso II, as enacted into law in the UK by the COMAH Regulations 1999, could not be complied with. These aimed to prevent major accidents which involved dangerous substances and limit their consequences for man and the environment. The Health and Safety at Work Act required employers to conduct their undertaking so as to ensure that persons, employed or not, were not exposed to risks to their health and safety.

10.3.27 The safety evidence presented on behalf of CGSL had been at best incomplete and at times incorrect. Dr Garth Raybould of Atkins had stated that in his professional opinion there was a potential for gas to migrate from the proposed caverns due entirely to the unsuitability of the geology to support such a scheme. Intimate local knowledge and eye witness accounts of the happenings around the proposed area had indicated that the ground was on the move and had moved and collapsed in the past.

10.3.28 CGSL refuted the possibility of gas migration but could not or would not produce or name their ‘expert’ to substantiate that statement. It had therefore to be presumed that no such person existed.

10.3.29 None of the CGSL consultants or experts had been able to say that with the amount of research done to date gas storage at this site would be safe. They simply inferred that they would not go ahead with their part of the scheme if it proved to be unsafe, but that would be too late. There was no guarantee that the experts called as witnesses for CGSL would be involved with the scheme – the land with its planning permission could easily be sold on to a third party. These verbal assurances were worth very little until the experts were under some sort of employment contract.

10.3.30 Canatxx had failed to demonstrate the suitability of the geology, which could be summarised as a formation of limited extent, (the smallest salt body that anyone was proposing to use in the UK for gas storage) of rapidly varying thickness and depth and ridden with faults, of varying quality and with a wet rockhead of considerable and undetermined extent.

10.3.31 No consultant with suitable expertise appeared to have been involved with the overall scheme; indicating that no-one would take overall responsibility for the proposal. Indeed CGSL appeared to have elected to assemble an eclectic mix of “experts” who seemingly even disagree in parts of their evidence between each other and their client. CGSL had produced contradictory statements and had continued throughout to change their proposals in an attempt rectify errors and omissions.

10.3.32 This did not bode well for an adequate management of a high hazard facility. Untold and unnecessary damage would have been done to the marine, estuarine and ecological environments let alone the inconvenience inflicted upon the local residents and the increased illness and suffering that this proposed development would cause to those living in fear of it.
10.3.33 CGSL had drilled only two boreholes and chosen the ‘best’ positions within the proposed site to obtain the best results. Even so they had only evaluated one of the core samples and had had to admit that its interpretation of this piece of substantive evidence was possibly flawed.

10.3.34 The Inquiry has been given hard evidence that a wet rockhead, which could aid gas migration, existed within the boundaries of the proposed site. CGSL had not produced evidence to the contrary. In the light of this and other evidence commented upon, the CGSL claim that the site could store the amount of gas proposed could only be considered as anecdotal and supposition.

10.4 CASE for Mr & Mrs Jackson

10.4.1 It was surprising that a member of the CGSL legal team should challenge the veracity of a 3 mile evacuation zone being applied, in regard to the Moss Bluff incident (CD/54). CGSL’s safety expert noted that a large scale gas release did not produce an explosion but a blast wave, unless in a confined space e.g. building. While the proposed compressor station may be capable of being unmanned, the surrounding area is populated and this should be recognised. The second part of his statement, which advised that anyone in the vicinity ‘should not stand there and get cooked’ was alarming and would have added to the high level of public concern.

10.4.2 For CGSL it had been accepted that it could not be said that there was no risk. It was not accepted that the extent of clothes being worn at the time, in the event of ‘blast’, would reflect in the level of injury sustained. While some fabrics could protect, others could become welded to the skin and cause a great deal of harm, as was the case in the Abbeystead disaster.

10.4.3 With respect to possible escape routes from the Heads, use of Brown’s Lane might place people in greater danger. The recommendation on behalf of CGSL to use the riverbank was not appropriate. It would be a very long walk to safety, and not suitable for the elderly or infirm, or for anyone who had sustained injuries. The alternative advice for the residents of the holiday home park ‘to shelter behind a caravan’ was inappropriate. For CGSL it was acknowledged that risk existed in regard to the proposed development, yet CGSL appeared unwilling to acknowledge the need for a full and comprehensive risk assessment.

10.4.4 On the 11th of December 2005 a massive explosion at Buncefield occurred. As a result the HSE had issued a safety alert (J/2/16). That huge explosion had had a destructive power beyond the typical ‘worst case’ normally used for on-site and off-site emergency planning purposes.

10.4.5 In light of the evacuations undertaken at Moss Bluff and at other gas storage related incidents, and given that the ‘worst case’ had been recognised as underestimated at Buncefield, a thorough and rigorous risk assessment should have been undertaken, in relation to this proposed massive ‘Top Tier’ COMAH site. Any incident at this proposed site, not necessarily a major one, could induce panic amongst the surrounding population. People trying to leave the area would soon bring already congested roads to a standstill and impede or prevent access by emergency service vehicles.

10.4.6 The area around the proposed development was too heavily populated for there to be any realistic expectation of an emergency evacuation plan being effective. The sheer number of vulnerable people - the elderly, the infirm or disabled, the occupants of retirement
homes and nursing homes and the young in the many schools and nurseries throughout the area - would render a large scale evacuation logistically impossible.

10.4.7 The proposed development, by its very nature, would be recognised as a hazardous site. Added to this there were elements of further potential risk. These included the proximity of possible pathways for gas migration due to the site’s close relationship to existing cavities, many known to be linked; the presence of two levels of conventional mines nearby, for which no accurate records exist; the presence of wet rock head and the knowledge that wild brining operations were undertaken historically, for which no accurate records exist; the on-going problems of subsidence, which although inevitable, were not predictable with any degree of accuracy, either in timescale, extent or dimensions; the presence of known faults in the area and the possibility of further faults being identified; and the apparent lack of current knowledge of the status of the toxic waste repository, BW107, no survey results having been produced.

10.4.8 Adding to that a local population of some 100,000, it was understandable that people genuinely feared the consequences of locating this development on the Wyre Estuary.

11. SUSTAINABILITY OF THE WORKING/DISPOSAL OF SALT

11.1 The Case for CGSL

11.1.1 The case for CGSL considered firstly the economic viability of the re-use of the rock salt extracted as part of the solution mining process, and secondly the sustainability of disposal of the brine to the Irish Sea.

Brine Use Study

11.1.2 The solution mining process required 49.5Mt of rock salt to be removed; dissolved at a maximum rate of 8,000m³/day in a maximum flow of seawater of 80,000m³/day. The resulting brine would be discharged into the Irish Sea through an off-shore diffuser located approximately 2.3km off Rossall, Lancashire. The mining process was estimated to take 7 to 8 years to complete.

11.1.3 The Brine Use Study Report (CD/10) was submitted as supplementary environmental information in the second planning application. CGSL’s evidence (CGS/f02) incorporated the findings of that report. It described the practical use options for the brine produced as a result of the solution mining process. Such potential uses introduced a possibility of eliminating or reducing the environmental impact of the brine discharge around the proposed outfall in the Irish Sea.

Background

11.1.4 The Preesall Salt Field had a long history of salt mining. Around the turn of the 20th Century, the United Alkali Company was mining salt at Preesall. It became a founder company of ICI in 1926. ICI had three brine fields with Preesall being one of the two smaller fields. Until 1994 the ICI Preesall site was solution mined for chlorine production. ICI withdrew from Preesall as the market for chlorine reduced in size and the economics of salt extraction were found to be more favourable at their Cheshire brine fields. Since that time, there has been no sign of a resurgence of salt production or related chemical production in the Preesall Salt Field. It is probable that as the salt markets shrink, it will become increasingly unlikely that there will be any salt-based
industry redeveloped at the Preesall Salt Field. That analysis was shared by the Mineral Planning Fact Sheet produced for the former ODPM by BGS (CGS/10/3 Appendix 4). This states:

“Triassic salt fields have also been worked in the past at Preesall in Lancashire, in Worcestershire, Staffordshire, on Walney Island in Cumbria and in Somerset. Extensive areas of salt-bearing strata also underlie Dorset. It is highly unlikely that any of these deposits will become of commercial interest as a source of salt in the foreseeable future.”

Study Methodology

11.1.5 The methods used in the study included:

(a) Library and internet searches for markets, manufacturers and users of salt and brine and other organisations and individuals directly or indirectly involved with salt or brine and the sources of information on the regional and national reserves of rock salt.

(b) A review of the market survey report by Roskill entitled “The Economics of Salt” dated July 2004. The report also provided some data on market comparisons and trends in the UK, Western Europe and the USA.

(c) The review of the potential transport and use of Preesall Brine at Ineos Chlor with expert advice from Dr Ian White, an expert in the chlor-alkali industry and Mr David Steven, the Operations and Technical Director at British Salt Limited.

(d) Acquisition of informed opinion on the potential use of Preesall brine at leading UK salt manufacturers from David Steven and Ian Bradley (Technical Engineering Manager: Salt Union Limited).

(e) Procurement of the Salt Shipping Option Study from David Hunter, a transport economist based at the Mott MacDonald Croydon office.

(f) Separate consideration of the probable range and scope of environmental impact of facilities that would be necessary to put the brine to beneficial use taking as an example the construction and operation of a process plant located near Fleetwood producing high quality, dried salt product.

(g) Separate consideration of the extraction and disposal of the Preesall salt from the point of view of current philosophy and practices in sustainable development and local planning policies.

Brine Use Assessment

UK Salt Market

11.1.6 The Competition Commission 1986 Report on “White Salt” stated:

“By far the largest known salt field in the UK is in Cheshire, extending south into Shropshire. It is estimated to contain 20% of the United Kingdom total which is believed to amount to 2,000,000 million tonnes. These deposits are vast in relation to annual production in the United Kingdom of all forms of salt, including rock salt and brine, which is less than 10 million tonnes a year [in 1986].”

11.1.7 The more recent ODPM Mineral Planning Fact Sheet expresses a similar analysis. It stated:
11.1.8 The decline in the UK chemical industry was reflected in the reduction of salt production in the UK that had declined from a high of around 9Mt/annum in the 1970s to about 6Mt/annum in 2003. The shrinking UK market substantially increased the difficulty of finding uses for the Preesall brine or salt in the UK. The Preesall salt to be removed annually (6.8Mt/annum including sea salt) was greater than the estimated national production of salt for all purposes in 2003. This was estimated as:

- Dry salt produced from brine: 1.2Mt/annum
- Brine used wet (expressed as salt): 3.0Mt/annum
- Total salt extracted as brine: 4.2Mt/annum
- Rock salt (extracted and used dry): 1.9Mt/annum
- Total (in all forms): 6.1Mt/annum

11.1.9 The UK was a net exporter of relatively small amounts of salt at approximately 0.5Mt/annum.

**Investment in the Production of Higher Value Product**

11.1.10 UK salt production capacity by company in 2003\(^{(CGS/10/2 – pg.6-2 Table 2)}\) demonstrated that the UK was more or less self-sufficient in salt with supply meeting demand. Estimated consumption had fallen by about 1.5% per annum since the 1980s largely as a consequence of the decline in the mature European Chlor-Alkali sector. De-icing was another major consumer and according to the Salt Union up to 1Mt of salt was spread on UK roads each year.

11.1.11 As a consequence all or most of the Preesall salt would probably need to be exported. If the destination were to be outside Western Europe, it would need to be in the form of dried salt or higher value product such as chlorine to increase marketability and reduce shipping costs.

11.1.12 From discussions with the salt industry it had been concluded that a modern salt manufacturing plant capable of processing the pre-salt brine and producing the anticipated 6.8Mt/annum of market grade salt would be unlikely to be built for an investment of less than £200M, excluding decommissioning. The cost of plant producing higher value products, e.g. chlorine, would be several times greater than that estimate.

11.1.13 As such a plant at Fleetwood would operate for only 7 to 8 years and would then be dismantled, viability of such an operation could not be established and had been dismissed as an unrealistic option.

**UK Export Market**

11.1.14 In 2002 the export and import of salt were roughly in equilibrium\(^{(CGS/10/3 App.4 Table 1)}\); 327,760 tonnes exported and some 306,488 tonnes imported. As the UK was a self-contained market, there were limited import and export shipments. Of the export tonnage in 2002 approx.77% had been based around European Union trade. Trade exports outside the EU had ranged from 50,000 tonnes to 84,000 tonnes per annum over the period 1999 - 2002. The unit manufactured sales value of the export trade had averaged around £57 per tonne for intra-EU trade and £87 per tonne for non-EU shipments.
The majority of the UK regional trade had been handled in small coastal ships of between 2,000 and 3,000 deadweight tonnes (DWT) with direct import to a range of small regional ports. The broad distribution of salt sources combined with its low unit value and high bulk characteristics limited international trade in the commodity.

Brine Use Options

The broad use options for the Preesall brine included:

a) Pump all or most of the brine for direct use or processing.
b) Ship all or most of the brine by sea from Fleetwood to direct use or processing.
c) Produce salt or other higher value products at Fleetwood from all or most of the brine, ship the salt or other products by sea from Fleetwood to users or markets, return waste solids to Preesall salt field or other environmentally acceptable disposal including the discharge of solids or the residual brine to sea.

a) Pump brine from Preesall for direct use and/or processing

Insurmountable constraints to a pipeline transfer included:

i. Cost of pipeline transfer for direct use. The largest and nearest bulk user of brine was Ineos Chlor near Runcorn. However that only had the capacity to use about half of the Preesall brine. A pipeline with pumping stations laid from Preesall to Runcorn would be about 96km long and would need to pass over or under the River Mersey and at least two canals. Such an investment would be likely to cost at least £50M to £60M.

ii. Ineos Chlor was unlikely to want the brine as they already had an existing supply which was sufficient for its needs both now and for the foreseeable future. The company were currently in the process of upgrading manufacturing facilities to accommodate its existing brine source. It was also working with the operators of the proposed Byley facility to utilise the brine produced by solution mining for that gas cavity.

iii. There was no user or processing location inland to which a practical means of transport could be provided for the brine.

The option of laying a pipeline for the brine to “local” users was not realistically feasible. This option could be dismissed as not a practical one for the brine produced at Preesall.

b) Ship brine by sea from Fleetwood to direct use and/or processing

There were overriding constraints to shipping Preesall brine from Fleetwood. These included:

i. Seagoing vessels of typically either 5,000 tonnes or 1,200 tonnes capacity were berthed at Fleetwood. Using 5,000 tonne vessels, there would need to be approximately 20 daily departures for the Preesall brine. This was wholly impractical in the existing docks.

ii. In addition tidal restrictions required adjustment to sailing times. The larger vessels under consideration might be limited to movements only around high tides. The Fleetwood Port facilities would need some improvement.

iii. Associated British Port Holdings (ABP) advised that with a modest amount of investment the berths could be expected to continue to operate for the next 5 to 10 years.
11.1.20 Overall, the estimated current annual demand for salt in the form of brine in the UK was 4.2Mt. This was below the estimated rate of production from Preesall of approximately 6.8Mt per annum. The viability of this option depended upon locating a demand for 80,000m³ per day of brine for only 7 to 8 years no further than Western Europe owing to the very large volumes involved. There was no evidence of any realistic prospect of such a market emerging. This option could be dismissed as impractical.

c) Produce salt or other chemical product at Fleetwood, ship to user, return waste solids to Preesall Salt Field or other acceptable disposal and discharge weak brine to sea.

11.1.21 The fundamental obstacle to the viability of this option was dependent upon locating a demand for 6.8Mt per annum or the equivalent of 18,741 tonnes per day of salt or other major product for 7 to 8 years. The export of such a volume would necessitate the provision and use of a major dedicated bulk handling terminal in order to provide the necessary land storage area and appropriate scale loading facilities. As noted above a modern salt manufacturing plant capable of producing 6.8Mt of market grade salt annually would be unlikely to be developed for less than £200M. The costs of plant producing higher value products would be significantly higher. As such a large and expensive plant at Fleetwood would only be used for 7 to 8 years its viability would be severely limited.

11.1.22 A large plant for manufacturing salt from brine would require a site remote from populated areas but preferably near to Fleetwood Docks. It would require planning consent and, in operation, would also fall under the Pollution Prevention and Control (PPC) Regulations. It would have a significantly greater environmental impact than the proposed sea discharge of brine. The environmental impact could be identified broadly as follows:

i. Loss of business and employment at several key British salt companies in Cheshire.

ii. The physical impacts of very large manufacturing facilities on the Lancashire coast including visual aspects, increased noise and increased vehicle movements.

iii. Clean up and consents for gaseous discharges to atmosphere and liquid effluent discharges to sewer;

iv. Large energy consumption for manufacturing process and fuel for transport of the products with related greenhouse gas emissions.

v. Over the projected 7 to 8 year period, the manufacturing process would produce about 2.1Mt of waste mineral solids (impurities of little or no value). They would be discharged to either land or sea, or returned to the salt caverns.

vi. The flow of spent brine to sea would be of a similar order of magnitude to the current proposals but concentrations would be less.

11.1.23 Other relevant considerations would centre around the necessity to ship the resulting product (CGS/10/3 Appendix 3). In particular, the existing Fleetwood facility comprised some 6 hectares terminal area served by a dedicated 2 lane link-span loading jetty on the river frontage. The maximum size of vessel that could be accommodated at this facility was 160m length and 4.8m draught; around 5,000 DWT. Additionally, the existing use includes occasional summer sailing from the Isle of Man Passenger Terminal and fishing operations comprising some 42 coastal craft.
11.1.24 The existing Port facilities were inadequate to address the needs of a bulk export terminal. In order to provide a new bulk terminal on land controlled by ABP would be likely to involve significant dredging to form an adequately deep water basin. The capital costs of developing a new facility, either river berth or offshore jetty, would be prohibitive.

11.1.25 None of the options available for beneficial disposal of the resulting brine from the solution process was realistically feasible. That analysis reflected the observation contained in the ODPM Fact Sheet (CGS/10/3 App.4) which stated, in the context of the Preesall area (and other salt producing areas):

“It is highly unlikely that any of these deposits will become of commercial interest as a source of salt in the foreseeable future”.

11.1.26 LCC had not addressed the Fact Sheet; a document prepared to inform land use decisions against knowledge that sustainability was central to Government policy.

**Sustainability of Brine Disposal**

**Sustainability Definition**

11.1.27 CGSL (CGS/10/2 para.8.4) adopt the definition of sustainability contained in ‘One Future - Different Past’ the UK’s shared framework for sustainable development. It is defined as:

‘one which meets the needs of the present without compromising the ability of future generations to meet their own needs’.

11.1.28 CGSL has addressed the issue of the ability of future generations to meet their need for salt (CGS/10/2 Section 8).

**Reserves**

11.1.29 The 1986 Competition Commission report ‘White Salt’ stated:

“By far the largest known salt field in the United Kingdom is in Cheshire extending south into Shropshire. It is estimated to contain 20% of the UK total which is believed to amount to 2,000,000 million tonnes.”

11.1.30 UK salt reserves amount to 2,000Bt and the Cheshire-Shropshire basin contained about 400Bt. Based on the 2003 national production rate of 6Mt/a, this national reserve would have a lifetime in the order of 333,000 years (assuming all was commercially available). The rock salt proposed to be removed at Preesall (approx.50Mt) would amount to 0.002% of the estimated national reserves. In the context of NW England, based on the Cheshire-Shropshire basin reserves, that amounted to only 0.01%. Assuming a pessimistic estimate of commercially available deposits at 20% of total reserves, the maximum weight of rock salt proposed to be removed at Preesall would amount to only some 0.06%.

**CGSL Response to LCC Case**

11.1.31 LCC and others had been aware of the thrust of the CGSL case since the production of the Brine Use Study that accompanied the second application. No witness had been put forward by LCC or others to challenge the analysis contained in the study.
11.1.32 LCC were unable to put a positive case that the analysis conducted in the Brine Use Study was erroneous. For LCC it had been acknowledged that the beneficial use of the brine was not viable as a freestanding project.

11.1.33 CGSL recognise that a beneficial re-use would be ‘nice to have’. However, it was not an essential prerequisite to accord with the Government definition of sustainability.

11.1.34 The CGSL project would not use a significant proportion of the available salt resources in NW England, let alone the UK as a whole. Future generations’ requirements for salt would not be compromised. Overall, the insignificant proportion of the regional salt resource used for the project in order to provide a significant contribution to the national gas storage need would, in accordance with the definition of sustainability set out, be sustainable.

11.2 The Case for LCC

11.2.1 There was no dispute between the MPA and CGSL that if planning permission was granted there was unlikely to be a commercial use found in the foreseeable future for the volume of brine that would be produced over the period of cavern washing. Moreover there was no dispute that the extent of salt that would be dumped into the Irish Sea, whilst enormous in absolute terms (49.5 Mt) will be only a small percentage of the total extent of salt reserves within the UK (economic reserves being somewhat less than the total resource of salt).

11.2.2 However, that did not then lead to the conclusion that its disposal in this way was an appropriate course of action, let alone that it would be a sustainable course of action. For CGSL Dr Hockaday had accepted that the test of sustainability encompassed wider issues than simply that of what could commercially be done with 49.5 Mt of salt within the foreseeable future.

11.2.3 PPS1 para.3 recognised that sustainability meant ‘meeting the needs of the present without compromising the ability of future generations to meet their need’. This concept did not depend upon what was commercially achievable within the foreseeable future. The essence of the concept was to use resources prudently so as not to prejudice both known and presently unknown needs of those who would come after us. The period of consideration was self evidently not the next few decades.

11.2.4 Moreover what was proposed was not simply to use a resource sooner than later, but rather the irretrievable loss of a mineral which was expressly recognised to be a finite and important resource at both a regional and a national level. Policy ER9 of the RSS required that account be taken of the national significance of the Regions reserves of Salt. The BGS Planning Fact-sheet recognised that salt was an economically important mineral. It did not expressly consider the issue of sustainability.

11.2.5 Current national production of salt in all forms was 6Mt/annum (CGS 10/2 para.5.7 & pg.6-1) and national production capacity was some 7.8Mt/annum. The annual ‘production’ rate of salt in brine chosen by CGSL would be 6.8Mt/annum over a period of some 8 years; a period of time which was entirely in the control of Canatxx. It was all but inconceivable that there would be a short term domestic market. That did not mean that the inevitable alternative to the lack of an immediate market for that volume of brine, at that (arbitrary) rate of production and for that period (all of which were in the control of the Appellant)
was that disposal at sea was acceptable. The suggestion that one was not dealing with disposal but with another means of storage because one could recover the same volume of salt by desalination was not only an abuse of language but would mean that disposal of any volume of brine in the sea was ‘sustainable’ because one was merely ‘storing’ it elsewhere.

11.2.6 For it to be seriously maintained that this was a ‘sustainable’ course of action it would be necessary to demonstrate that there was a requirement for the development to take place at this time, and also that all other realistic options had been explored. Moreover, given that the salt was not only an acknowledged resource in its own right, but in this instance was being treated as waste, it was important to have regard to the Waste Strategy 2000 and policy ER9 of the RSS. This contrasted with the position in Aldborough. In the Humberside SP and Holderness LP there was no policy protecting salt reserves. Moreover there was a specific policy dealing with gas storage, which carried significant weight in that Inspector’s decision.

11.2.7 With respect to other realistic options those should have included:

(i) whether, even if there was no immediate market for the brine, the resource could be recovered/used in a way which might not in itself be economic but which would not render the project unviable overall; and

(ii) whether, if the resource could not realistically be used or recovered, there were alternative means of meeting the requirement for additional gas storage which did not involve the irretrievable loss of 49.5Mt of salt from a location where it was obviously capable of being recovered by mining.

11.2.8 The latter was an important distinction between on-shore and off-shore cavern creation. If future generations required salt it was overwhelmingly more likely that they would wish to mine it from on shore rather than off shore locations for obvious logistical reasons, and the disposal of brine to ocean might be more comprehensible if one was creating caverns under the ocean. At no point in the evidence of any of CGSL’s witnesses had there been an attempt to gauge the comparative sustainability credentials of meeting the national need for additional storage in other ways.

11.2.9 CGSL’s attempt to side step the issue by alleging that there was a massive need for additional storage and therefore this was not an alternative to other forms of storage but an addition to it, did not address this concern at all. The fact that there was a need for additional gas storage in the UK did not mean that every application ought to be treated as involving sustainable development when it manifestly was not. Every application had to be treated on its own merits. This meant weighing benefits against the dis-benefits; not that because there were benefits the dis-benefits could be ignored. Moreover, even if there was a need that did not render this proposal acceptable.

11.2.10 CGSL’s analysis based on grossing up the cost of a plant to extract refined salt did not demonstrate that this project as a whole could not viably proceed without some or all of the salt being extracted in a less refined form and then stored. The fact that this part of the ‘operation’ might be unprofitable was an irrelevance if the project as a whole was still viable, but much more ‘sustainable’. Similarly, the offer to ‘give away’ the brine once extracted had not extended to ‘giving away’ the salt produced in such a project. Such a resource could, for example, meet the UK’s road gritting requirements for half a century and avoid the need to extract rocksalt which would otherwise meet that need.
11.2.11 CGSL’s analysis was an entirely superficial one. Thus whilst a pipeline to the Merseyside chemical industry had been considered a pipeline to the nearest deep water docks (Heysham and Barrow) had not.

11.2.12 It may be that one day there might be a justifiable case for creating salt caverns in this location for gas storage and disposing of the brine to ocean as the BGS note posits, but such an unsustainable use of the resource should be the last and not the first option that was pursued.

11.3 The Case for PWG

11.3.1 PWG supported the case put by LCC. PWG’s principal evidence with respect to the disposal of salt concerns potential impact on ecology and is set out in Chapter 12 of this report.

11.4 The Case for Mr & Mrs Jackson

11.4.1 The terminology brine ‘use’ study could not accurately be applied to the appellant’s study. The original preferred option was to dispose of the cavern washings directly to the Wyre Estuary on the ebb tide \((J/1/23)\). CGSL had always regarded the salt as a waste product. There had been no real will to find a commercial use for this finite resource. If there had been real intent to find a commercial use for the brine, the possibility of using clean, fresh water for cavern washing would have been explored, rather than using contaminated sea water from the fish dock. The premise put forward on behalf of CGSL that it was not wasting a natural resource but simply re-locating it to the Irish Sea, was just plain silly.

12. IMPACT ON INTERNATIONALLY, NATIONALLY, AND LOCALLY DESIGNATED SITES AND PROTECTED SPECIES

12.1 Position of EN

12.1.1 EN had objected to both the withdrawn planning application and the appeal planning application as submitted \((Docs \text{EN/01 & EN/02})\). For this reason EN had been included as a Rule 6 Party. Following the submission of further information to EN, and in the light of further discussions with CGSL, EN had issued a further statement \((Doc.\text{EN/03})\) which indicated, subject to certain conditions and provisos, that EN proposed to withdraw its objections to the appeal proposals as modified. In the light of the conditional nature of EN’s position the Inspector requested the attendance of EN at the conditions and obligations session of the inquiry (see Chapter 20 below). The following is a summary of EN’s position statement EN/03.

12.1.2 As a result of the amended proposals in the revised application, the submission of further supporting, technical and scientific information, further discussions with and further proposals by the appellants, and subject to the SoS considering the imposition of conditions as outlined (see 12.1.32 below), EN no longer objected to the proposed development. The purpose of the Statement, was to set out why the objection had been withdrawn and to provide the parties to the Inquiry with a summary of the current views of EN.
Status and Functions of English Nature

12.1.3 EN was the Government agency established to be responsible for nature conservation in England. It was free to develop its own policies and to express independent views based on the best scientific evidence available. It played a statutory role in advising Government and others on the development and implementation of policies for or affecting nature conservation in England.

12.1.4 Relevant to this proposal, EN was responsible, inter alia, for:

a) The continuing assessment, notification, administration, protection, management and monitoring of SSSI.

b) Assisting and advising the SoS in respect of the processes of selection, consultation, designation/classification, administration, protection, management and monitoring of European and Ramsar Sites in England.

c) The protection and conservation of species protected by law, including some licensing procedures.

12.1.5 EN was also a statutory consultee in respect of, inter alia, plans and projects subject to EIA Regulations in England, for Hazardous Substances Consent, proposals likely to affect a SSSI and plans or projects likely to have a significant effect on any European site.

Nature Conservation Designations and Interests in the area of the proposed project

International Designations

12.1.6 International nature conservation sites in the area of the proposals comprised:

a) The Morecambe Bay European Marine Site SAC designated by DEFRA under the provisions of the Habitats Directive;

b) The Morecambe Bay SPA classified by DEFRA under the provisions of the Birds Directive.

c) The Morecambe Bay Ramsar Site listed under the Convention on the Wetlands of International Importance especially as Waterfowl Habitat.

12.1.7 In the light of the relevant regulations the Morecambe Bay European Marine Site SAC and the Morecambe Bay SPA were fully designated European Sites as a matter of law. As a matter of policy the Morecambe Bay Ramsar Site should be treated as if it is a fully designated European Site for the purposes of considering development proposals that may affect it. (PPS9 para 6[1]).

12.1.8 In respect of other areas EN considered that Liverpool Bay merits consideration for designation as an SPA and would be designated as a potential SPA in due course. It was important that the effects of the discharges from the proposals to this potential SPA should be considered in determining this appeal. Upon designation as a potential SPA, Liverpool Bay should also be treated as a fully designated European Site for the purpose of considering the proposals.

National Designations

12.1.9 The Wyre Estuary SSSI could also be affected.

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6 Regs 10 and 11 of the Conservation (Natural Habitats &c) Regulations 1994.
7 Notified by EN under S.28 of the Wildlife and Countryside Act 1981
Local Designations

12.1.10 Sites locally designated for their nature conservation interest included the Fleetwood Marsh Industrial Lands BHS, the Fleetwood Promenade Dune and Coastal Grassland BHS, the Rossall School Fields - Ditches and Bankings BHS and the Clods Carr Lane Fields BHS.

Legally Protected Species

12.1.11 The appeal proposals may affect Great Crested Newt; species especially protected.8

English Nature's Advice to the Inspector and Secretary of State

12.1.12 EN was of the opinion that, in deciding whether the proposals should be permitted, the SoS (advised by the Inspector) would need to follow the guidance in ODPM Circular 6/20059

International Sites

12.1.13 On the information available the appeal proposals as submitted would alone be likely to have a significant effect on the Morecambe Bay SPA and the Morecambe Bay Ramsar Site as a consequence of the potential loss of land, as a result of subsidence, that currently formed important bird habitat in the classified SPA and listed Ramsar site. This opinion was based on the advice in para.13 of the Circular, bearing in mind the ruling of the ECJ10 that an appropriate assessment was required where it cannot be excluded, on the basis of objective information, that the proposal would have a significant effect on the sites. EN was also of the opinion that as the proposal was not directly connected with or necessary to the management of the sites for nature conservation, the provisions of Habitats Regulation 48(1) applied, and an Appropriate Assessment had to be undertaken11.

12.1.14 In EN’s opinion, bearing in mind the further information submitted, the revised proposals would not be likely to have a significant effect, either alone or in combination with other plans and projects that EN was aware of, on the area being considered for classification as an SPA in Liverpool Bay or on the Morecambe Bay SAC. As a result, appropriate assessments were not required in respect of these sites, albeit the effects on Liverpool Bay should be carefully monitored on general maritime environmental grounds as recommended below.

12.1.15 EN considered that there was now sufficient information available to inform the Appropriate Assessment and that it could be ascertained that the appeal proposals would not have an adverse effect on the integrity of the Morecambe Bay SPA or the Morecambe Bay Ramsar site12. The further information submitted13 by the appellants indicated that:

a) The amount of subsidence would be relatively low (averaging 0.2mm per annum within a scale of -0.1 mm to -0.5mm pa).

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9 ODPM Circ.6.2005/DEFRA Circ.1/2005 Part 1 S.B and Fig.1- Biodiversity and Geological Conservation: statutory obligations and their impact within the planning system.
10 European Court of Justice C-127/02 - The Waddenzee Judgment
11 ODPM Circ.6.2005 Paras 12 – 16 and Fig.1 Boxes 1 - 2
12 ODPM Circ.6.2005 Paras 17 – 21 and Fig.1 Boxes 3 - 4
b) Although, at the outer edge of the cavern field, the predicted subsidence had the potential to alter the length of time that intertidal areas were exposed (for feeding birds), predicted subsidence within the intertidal areas (that is below Mean High Water Mark) was predicted to range from -0.1 to -0.4mm pa\textsuperscript{14}.

c) The predicted subsidence did not extend seawards as far as the Mean Low Water Mark so there should be no intertidal areas that would become subtidal as a result of subsidence.

d) There was a reasonable level of confidence in the predictions, which were considered to be the best that could reasonably be obtained and using the best scientific information available.

e) Such small changes in ground level in the intertidal areas might reasonably be expected to be offset by additional deposition of estuary sediments into any area that had subsided.

f) If natural deposition did not fill any intertidal areas that had subsided, and adopting the assumptions set out in the report, any eastward shift in tidal inundation time was likely to be too small to affect the ecological functioning of the intertidal areas for birds.

12.1.16 The report described a monitoring system that should be able to check that actual effects of subsidence were not significantly greater than the predicted effects, but that if they were, there would be likely to be practical and feasible mitigation measures, including but not limited to the redistribution of dredged material from the Fleetwood Docks, that would further offset subsidence and avoid an adverse effect on the integrity of the SPA and Ramsar site (measures not involving off-site compensatory habitat creation).

12.1.17 CGSL maintain that, on decommissioning, the caverns would be stabilised and that ongoing subsidence would cease. EN noted that natural coastal processes and rising sea levels were driving habitat changes in this dynamic estuary system and it could not reasonably be argued that such changes as may result from predicted subsidence of intertidal habitat over the 30 years would so affect the coherence of the estuary’s ecological structure and function as to prevent it from sustaining the populations of the bird species which the SPA and Ramsar sites would be able to support over the 30 year period without the development.

12.1.18 If the SoS agreed with this conclusion, it was open to her to grant planning permission subject to other material considerations. If, however, the SoS considers that she could not ascertain there would be no adverse effect on the integrity of the SPA and/or Ramsar site, it would be necessary for her to follow the steps in the remaining boxes of the flowchart. EN had no view as to alternative solutions or imperative reasons of overriding public interest, believing that, in this case, these were matters for the SoS to assess, if necessary, and on which EN had no expertise.

12.1.19 If the SoS considered that there were no alternative solutions, and that there were imperative reasons of overriding public interest to meet the requirements of Regulation 49\textsuperscript{15}, then EN would advise as follows. If secured by an appropriate condition, the proposed habitat creation at The Heads (see 12.1.27 below)\textsuperscript{16} could comprise adequate compensatory measures, under regulation 53 of the Habitats Regulations 1994. It would ensure that the overall coherence of the Natura 2000 network of sites was protected\textsuperscript{16}.

Wyre Estuary SSSI

\textsuperscript{14} Appendix 2 to above Report
\textsuperscript{15} ODPM Circ.6/2005 Paras 23 – 28
\textsuperscript{16} ODPM Circ.6/2005 Paras 29 – 32
12.1.20 For the reasons set out above in respect of the internationally designated sites, EN considered that the proposals would be unlikely to have an adverse effect on the integrity of the Wyre Estuary SSSI, in the long-term. The habitat creation (see 12.1.27 below) could have some beneficial effects on the SSSI interest features and would be consistent with the strategies set out in the Wyre Estuary Shoreline Management Plan.

12.1.21 Consequently, in respect of the general duty of the SoS under the provisions of S.28G and the procedures set out in S.28(I) of the Wildlife and Countryside Act 1981, EN would advise that it had no objection to the grant of planning permission subject to the imposition of conditions and that the habitat enhancement that would therefore be required fulfilled the duty to take reasonable steps to further the conservation and enhancement of the special interest features of the SSSI.

The Maritime Environment

12.1.22 The ES considered the potential impacts on the wider maritime environment associated with the hyper-saline discharge into the Irish Sea and the impacts on the benthic ecology. The ES concludes that an area would be subjected to a lethal discharge, with a further, larger area subjected to a sub-lethal discharge for the duration of the discharge. The ES indicated that the impacts of the discharge could be evident for a number of years after its cessation.

12.1.23 In addition to the discharge standards applied by the EA, EN advised that a long term monitoring strategy was required to measure the immediate impact of the scheme and the recovery rate of the affected benthos. It was suggested that the following survey regime should be implemented, using the methodology applied by W A Marine and Environment in the 2001 survey.

12.1.23.1 An additional baseline survey for the intended area that was to be subjected to the lethal and sub-lethal discharge in the spring prior to scheme implementation.

12.1.23.2 Following scheme implementation, annual repeat surveys should be carried out for three years after discharge commenced or until equilibrium was reached, again conducted in spring for comparative purposes.

12.1.23.3 After the cessation of the discharge a baseline survey should be conducted of the impact area, to be repeated for 2 years, after which there should be a sliding scale of surveys to be recommended by the surveyor and agreed by the LPA in consultation with EN and the EA.

Local Nature Conservation

12.1.24 EN advised that there would be no significant adverse effects on the BHS listed (see 12.1.10 above).

Risks to the Nature Conservation Sites Post Construction - Gas Migration

12.1.25 EN had considered the further information provided by the appellant on the potential risk of gas migration. EN has no expertise to advise on the adequacy of this information but had no reason to challenge the conclusions that the risk of gas migration affecting the nature conservation interests of the area was so low as to be insignificant. That issue was to be examined at the Inquiry and the principal parties were expected to

17 ODPM Circ.6/2005 Paras 60 – 66
produce sufficient evidence on which the Inspector and SoS would base their conclusions as to the risks and consequences. It was considered that nothing would be gained from EN calling additional evidence or seeking to examine the evidence to be called by the appellant.

**Habitat Enhancement**

12.1.26 The application and ES contained proposals for habitat enhancement on adjacent farmland owned by Canatxx. This would take the form of encouraging and assisting tenant farmers to manage the land in ways that would be favourable to farmland species that were priorities in the UK Biodiversity Action Plan. These proposals would be beneficial and should be conditioned as part of the delivery of the project as proposed.

12.1.27 Canatxx had proposed\(^{18}\) that further habitat enhancement could be undertaken at The Heads comprising the creation of new intertidal and roosting areas on a seasonally wet area of arable land. In effect this would be a managed realignment of the sea wall to create a new area of intertidal habitat of potential benefit for the wild bird species for which the Morecambe Bay SPA and Ramsar sites were designated (and for other waterfowl). EN would urge that a condition be imposed on any planning permission that may be granted requiring details of this habitat creation to be submitted to the planning authority for approval, prior to commencement of development, and subsequently implemented in accordance with an approved programme. If the works require a separate planning application, EN would urge the SoS to consider imposing a ‘Grampian’ condition on any permission granted in respect of this appeal, prohibiting the commencement of development, or some particular aspect of it, until planning permission had been obtained and works on the habitat creation had been commenced. EN was satisfied that the planning authority would consult EN on the appropriateness of the proposals and the programme of implementation.

12.1.28 EN sought conditions requiring these habitat enhancements on the grounds that:
   a) they would assist the SoS to meet the obligations of S28(G) of the Wildlife and Countryside Act 1981;
   b) they were an integral part of the overall project as proposed and assessed;
   c) they were consistent with para.1 of PPS 9 the key principles of which included planning decisions aiming to enhance biodiversity; and
   d) they represented opportunities to maximise the benefits for biodiversity within the design of development consistent with para.14 of PPS 9.

12.1.29 However, this habitat creation could not be regarded as mitigation for any loss of intertidal habitat from the internationally designated sites. This was because the area of new habitat would be outside the sites and any loss that might occur would be from within the sites. If the SoS considers, contrary to EN advice, that they could not ascertain that there would be no adverse effect on the integrity of the SPA or Ramsar site, EN would advise that, if secured by an appropriate condition, this proposed habitat creation at The Heads could comprise adequate compensatory measures, under regulation 53 of the Habitats Regulations 1994, so that the overall coherence of the Natura 2000 network was protected.

**Species especially protected by law and rare species**

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\(^{18}\) Report No. NH50679/EN - 29 July 2005
12.1.30 EN advised that although great crested newts, a European protected species, could be affected by the development proposals, the mitigation measures proposed by the appellant should ensure that the proposals would not be detrimental to the maintenance of the population of the newts at a favourable conservation status in their natural range and there was a reasonable prospect of a license being granted by DEFRA under the provisions of Regulation 44 of the Habitats Regulations 1994. EN took a similar view to the approach to be applied to the potential impact of the alternative access from the A588 avoiding the Cemetery Lane junction (Doc.LCC/C/11).

12.1.31 EN’s previous concerns with respect to the rare plant Rock sea lavender had been satisfied by the revised proposals. This species was listed as one of principal importance in England under section 74 of the Countryside and Rights of Way Act 2000, (see also Part III section A and Annex C of ODPM Circular 06/2005).

Conditions and Legal Agreements

12.1.32 EN advised that conditions should be imposed requiring:
   a) Post construction monitoring
   b) Delivery of habitat enhancement on land owned by Canatxx and managed by tenant farmers
   c) Delivery of habitat creation and management at The Heads
   d) That any necessary licence be obtained in respect of any European protected species prior to the commencement of development
   e) Monitoring of cavern field subsidence as proposed in the Environmental Statement to validate the predicted levels of subsidence and to consider remedial measures if necessary.

12.2 Case for CGSL

12.2.1 In relation to the environmental impacts of the scheme, CGSL had been advised by Mr Stewart Lowther who had first become involved in the project in November 2003. He had provided a comprehensive review of the legislative and ecological context of the proposals, the ecological effects of the scheme, and the proposed ecological mitigation and enhancement (Doc.CGS/12/2).

12.2.2 It was noteworthy that for such a large infrastructure project there has been so little ecological objection. EN and the other nature conservation groups either withdrew their objections or did not appear. The County and Borough Councils did not call ecological evidence and the evidence which was called, by PWG and the Jacksons, was directed to a relatively few narrow issues. That supported the way in which the Appellant had sought to engage constructively with relevant nature conservation groups and amend and/or mitigate its proposals to take account of relevant concerns. It should also be noted that this large measure of consensus, in relation to nature conservation issues, had been achieved for a project sited in close proximity to a number of internationally, nationally and locally designated nature conservation sites.

12.2.3 CGSL’s evidence considered potential ecological impacts in terms of effect on both the marine and the terrestrial environment. It was recognised that only a few elements of the proposed development were not located adjacent to or within a site that was designated for its nature conservation interest.
12.2.4 The key theme within the various policies of the statutory development plan is that
development which could adversely effect designated sites and protected species would
not be approved unless there were material reasons that outweigh the objectives of
designation and protection, and that appropriate mitigation or compensation measures
were provided. The level of protection that was afforded to the various protected areas
was proportional to its significance.

12.2.5 A number of internationally and nationally designated sites existed in the area around
the proposed gas storage facility - Morecambe Bay SPA, SAC and Ramsar site, the
suggested Liverpool Bay SPA, and the Wyre Estuary SSSI. It was CGSL’s case that
there was no likelihood that the appeal scheme would have a significant effect upon any
of the internationally or nationally designated sites.

12.2.6 Only one internationally protected species had been identified within the application
site; that being GCN\textsuperscript{19}. Although only found in two ponds, CGSL had adopted a
precautionary approach and mitigation proposals had been adopted on the assumption
that GCN could be present in ponds in un-surveyed areas. No ponds were to be lost to
the development. Four new ponds, specifically designed so as to be favourable to
GCN, would be constructed as part of the development. This commitment had been
reflected in draft Condition No.55 (Doc.CD/78r). In the light of the mitigation measures
that had been proposed, EN had confirmed that the proposals should not be detrimental
to the maintenance of the population of GCN at a favourable conservation status in
their natural range.

12.2.7 At the national level of protected species, only water voles needed to be considered.
While apparently suitable habitats had been found, there was no evidence of water
voles currently within the application site. CGSL had proposed that measures would be
in place to undertake further survey work at the time of the start of construction and
thereafter to implement mitigation measures, if required (Condition No. 57).

12.2.8 As the proposals had been shown to have no adverse impact on any specially protected
areas within the application site, there was no conflict with the Habitats Regulations
1984 or the Wildlife and Countryside Act 1981 (as amended).

12.2.9 Potential ecological impacts had been mitigated by the design of the proposed facility.
In particular:

a) The design of the discharge diffuser would ensure that the brine plume had
influence over the minimum possible volume of water and area of the sea bed;

b) The location at which the pipeline crossed the sea wall had been selected so as
to avoid any impacts upon the Fleetwood Promenade, Dunes and Coastal
Gardens BHS;

c) The pipeline trench across the Northern part of Rossall School Fields had been
designed so as to avoid the possibility that it could cause changes in water levels
within the Rossall School Fields BHS;

d) The route of the pipeline through the Fleetwood Marsh Industrial Lands BHS
had been amended so as to avoid the BHS as much as possible;

e) The locations of the Booster Pump Station and the Compressor Station had been
chosen so as to minimise disturbance to the Wyre Estuary; and

f) A wellhead had been removed from within the Clods Carr Land Fields BHS so
as to avoid an impact on purple ramping-fumitory.

\textsuperscript{19} Great Crested Newt
12.2.10 These detailed design mitigation measures were in addition to the decision to remove surface workings from Arm Hill, which had been taken on nature conservation grounds.

12.2.11 The potential ecological effects that remained were ‘residual effects’ that could not reasonably be avoided through design. Only one designated BHS would be affected as, despite alterations to the alignment of the pipeline, effects on the Fleetwood Marsh Industrial Land BHS could not be completely avoided. That effect would be very minor, and EN has advised that it did not consider the proposals to create significant ecological impacts on any BHS (EN/03 para 4.11).

12.2.12 Other ecological issues considered related to those nature conservation features that were not specifically protected and which were located away from designated sites. The potential impacts on these areas, in terms of disturbance and habitat loss, were not significant. Mitigation measures were proposed to restore and manage habitats within the application site and would result in the long term enhancement of biodiversity; these would be more than sufficient to overcome any short term impacts of construction activities. Condition 55 would require CGSL to submit details of its proposed ecological mitigation measures to the MPA for approval, and for the approved scheme to be implemented in full and thereafter maintained throughout the operational life of the site.

12.2.13 In addition to minimising the potential impact of the proposed development on individual features of nature conservation importance, CGSL had identified two specific areas of potential enhancement to local biodiversity. These were a) a fund to be established for habitat creation works and ongoing maintenance so as to enhance the biodiversity value of key species and features within the application site and, b), a new area of wetland to be created at The Heads to provide bird and botanical habitat enhancement. CGSL accepted that neither of these initiatives was ‘necessary’ for the purposes of Circular 11/95 on the basis of the Appellant’s assessment of the environmental effects of the proposed development. If, however, the SoS considers that the potential surface subsidence from the scheme would have an adverse effect upon the SPA, or that the effect was uncertain, then The Heads realignment scheme would constitute a ‘compensatory measure’ for the purposes of Regulations 49 and 53 of the Habitats Regulations and ODPM Circular 6/2005 (see 12.2.19 below).

12.2.14 In relation to the mitigation package it was concluded that:

“The mitigation measures …are, when taken together with the various revisions and refinements to the scheme, sufficient to ensure that the ecological effects of CGSL’s proposals have been minimised to the extent that they are not significant in EIA terms. The measures also involve habitat restoration plans that have the potential to enhance BAP species within the application area.” (Doc CGS/12/2 para 6.30).

12.2.15 This was an important conclusion and a considerable achievement for such a major national infrastructure project.

Response to EN’s case

12.2.16 In its original representations on the Appellant’s proposals, EN had raised a series of objections (Doc.EN/01). Following the amendment to the application to remove surface infrastructure from Arm Hill and the provision of further environmental information (Doc.CGS/0/7), EN had substantially revised its position, and withdrawn most of its
12.2.17 Further work on behalf of CGSL comprised surface subsidence calculations produced to the inquiry (CGS/0/5). As a result, EN had withdrawn its remaining objections as was reflected in Doc.EN/03. This made clear EN’s position as follows:

“In English Nature’s opinion, bearing in mind the further information submitted, the revised proposals would not be likely to have a significant effect, either alone or in combination with other plans and projects that English Nature is aware of, on the area being considered for classification as an SPA in Liverpool Bay or on the Morecambe Bay SAC, so that appropriate assessments are not required in respect of these sites, albeit the effects on Liverpool Bay should be carefully monitored on general maritime environmental grounds as recommended below.” (Para. 4.3)

“English Nature is of the opinion that there is now sufficient information available to inform the Appropriate Assessment and it can be ascertained that the appeal proposals would not have an adverse effect on the integrity of the Morecambe Bay SPA or the Morecambe Bay Ramsar Site. ...” (Para. 4.4).

“If the Secretary of State agrees with this conclusion, it is open to him to grant planning permission subject to other material considerations. If, however, the Secretary of State considers that he cannot ascertain there would be no adverse effect on the integrity of the SPA and/or Ramsar site, it would be necessary for him to follow the steps in the remaining boxes of the flow chart in Figure 1 and 22-32 of the Circular.” (Para. 4.5).

“If the Secretary of State considers that there are no alternative solutions, and there are imperative reasons of overriding public interest to meet the requirements of Regulation 49, (paragraphs 23 - 28 of the Circular) then English Nature would advise as follows. If secured by an appropriate condition, the proposed habitat creation at the Heads ... could comprise adequate compensatory measures, under regulation 53 of the Habitats Regulations 1994. It would ensure that the overall coherence of the Natura 2000 network of sites is protected (paragraphs 29-32 of the Circular).” (Para. 4.6).

12.2.18 These passages indicate that EN considered that there would not be an adverse impact on any site of international nature conservation importance. Furthermore, EN made clear that if the SoS formed a different view on this issue then the proposed habitat creation at The Heads would comprise adequate ‘compensatory measures’ for the purposes of the Habitats Regulations. It was in the light of those conclusions that CGSL had offered to fund The Heads realignment project in its S.106 Obligation.

12.2.19 The conceptual approach to the proposed habitat creation at The Heads involved the following:

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20 Also Doc.CD/37 and as part of Appendix 3 to Oct 2005 Reg.19 Response Doc.CD/39
• A lowering of the ground level so that it would be level with the surrounding salt marshes;
• The breaching of the bund so that lower ground would become open to the estuary and convert to inter-tidal salt marsh;
• The use of excavated material to create a new bund which would provide flood protection to the three gas wellheads and to the Sportsman’s Caravan Park, thus bringing the line of sea defences eastwards;
• The use of excavated material to construct an ‘island’ in the centre of the newly created marsh, which would remain above the majority of tides and thus serve as an alternative roosting site for birds currently subjected to regular disturbance at the nearby Arm Hill roost, by walkers and dogs; and,
• The provision of a bird hide, possibly including interpretive material, so that recreational bird watchers could view birds within the area, without causing disturbance to them.

12.2.20 The detailed design would be developed in consultation with the EA and the LPA and it would also be the intention of CGSL to invite comments on the design of the scheme from the RSPB and EN. The concept of creating such habitat had already been raised in dialogue between CGSL, the RSPB and EN (Doc.CGS/12/2 para.6.23) and both organisations were believed to be supportive of such a project. That view was endorsed in EN/03, and the EA has “no objection in principle to these works” (Doc.LCC/C/12).

12.2.21 CGSL recognised that The Heads realignment could involve ‘engineering operations’ such as to require planning permission. However, LCC regarded The Heads realignment project as beneficial in ecological terms. Furthermore, the EA’s Wyre Estuary Shoreline Management Plan (SMP) had identified this area of the Wyre Estuary for managed retreat. Indeed the EA objected to the original proposals for surface infrastructure on Arm Hill precisely because it would interfere with a policy of managed retreat21. Mrs Jackson produced a Halcrow Group Limited report for the EA which considered a number of potential sites for managed realignment including one just north of The Heads (Doc.J.2/17) and the Agency had now confirmed that it had no objection in principle to the works (Doc.LCC/C/12).

12.2.22 To the extent that it may be necessary to get any planning permission in order to carry out The Heads realignment project, and indeed any other consent, CGSL submitted that there was a more than reasonable prospect that such permission and/or consent would be granted.

12.2.23 In relation to this overall issue EN re-emphasised its position in a letter to LCC (Doc.EN/04 pg.2). This stated that:

“We have made clear in our statement that the managed realignment is not necessary to avoid an adverse effect on the integrity of the SPA/SSSI, so it would not be appropriate to refuse permission if it was not deliverable. It would only be essential to create the new inter-tidal area if, contrary to our advice, the Secretary of State nevertheless considered he could not ascertain no adverse effect on the SPA and granted the project consent via the route of Regulation 49 and 53 of the Habitats

21 EA letter of 17/1/2005 see Doc.CGS/9/3 App.12 para.3.1.2
Regulations. In that case the Minister may consider it necessary to ensure the habitat is created as a compensatory measure. I accept that it would be argued, therefore, that the conditions we have asked for are not strictly necessary in order to make the appeal acceptable (to English Nature), but it is for the Inspector to decide whether the conditions meet the relevant tests.”

Nothing in the letter of 20th March 2006 from EN (Doc.LCC/C/11) detracted from that position.

12.2.24 This point reflected CGSL’s position on the weight to be attached to its proposed realignment works at The Heads. If the SoS concluded that the appeal proposals would not adversely effect the internationally protected sites, then it was accepted that the weight to be attached to the proposed realignment works at The Heads may be limited. That did not mean that no weight should be attached to such enhancements.

If on the other hand the SoS considered that there was an adverse effect, and if it was concluded that the project was of overriding public interest and that there were no alternatives, then The Heads realignment project would be an adequate compensatory measure to which significant weight could be attached.

12.2.25 EN took full part in the relevant parts of the Conditions and Obligations sessions and it was understood that its points were properly reflected in the Schedule of Conditions (Doc.CD/72d).

12.2.26 It could be concluded that EN had no outstanding objection to the appeal proposals, that its comments on the draft conditions had been met, that it did not regard The Heads realignment project as necessary as there was no adverse effect on any nature conservation site of international importance, but if the SoS should disagree with that final point it had identified appropriate ‘compensatory measures’.

Response to LCC’s case

12.2.27 The Officers’ report on the appeal application (Doc.CD/23) had considered the issue of ecology. At page 32 the report stated that “The concerns of English Nature and the Environment Agency on ecological matters have still not been properly addressed and the proposal in its amended form would still pose a risk of damage to internationally designated sites.” At page 45 of the report it was stated that “It is not considered that in this instance, having considered all the environmental and supporting information available, that the Applicant has demonstrated that national need for gas storage in this location is sufficient to outweigh the need to maintain and protect areas of international importance and interests of acknowledged importance.” Based on that assessment the Report had recommended that permission should be refused on inter alia ecological grounds.

12.2.28 For the reasons set out, EN came to the conclusion that the appeal proposals would not adversely effect internationally important areas of nature conservation interest. The EA had adopted the EN position on nature conservation (Doc.CD/20/8).

12.2.29 LCC arrived at its position in opposition to the appeal proposals in no small part because it considered that they would have an adverse impact on internationally important nature conservation sites. It was therefore extraordinary that, having been informed by EN in August 2005 that there was no adverse effect on the international nature conservation sites, LCC had not either withdrawn this reason for refusal or called evidence to substantiate it. It should be noted that it was LCC’s position (LCC/7/1
that “In relation to the issue of nature conservation impact LCC have not sought to go behind the conclusions of English Nature.”

EN has made its position abundantly clear and given LCC every opportunity to substantiate any concerns that it might have in relation to ecological impact. In the letter to LCC dated 21 September 2005 Mr David Tyldesley, on behalf of EN, had stated that:

“In terms of the potential subsidence, the information in the report indicates that no subsidence is likely to occur, such as to cause changes to the inter-tidal habitats that are so significant that our objection should be sustained. If the County Council has information showing that the subsidence in the SPA/SSSI will be significant, in nature conservation terms, we would be interested to see it.

and that:

“I understand you have discussed English Nature’s assessment of the brine discharge and that you now understand the basis of its conclusions. It is requested that if you have specific concerns with possible suspended solids in the brine discharge and possible impacts on Liverpool Bay the details of this should be made available to English Nature and the Environment Agency.”

At no time did LCC supply EN with any significant information substantiating its concerns and, in relation to this latter point, EN had now confirmed that “the proposed discharge into the Irish Sea are unlikely to have a significant effect in the Liverpool Bay SPA” (Doc.LCC/C/11).

LCC had produced no evidence to suggest that the predicted levels of surface subsidence, as a result of the appeal proposals, would cause any unacceptable environmental impact. It had produced no evidence to suggest that the proposed realignment works at The Heads would not constitute appropriate ‘compensatory measures’ for the purposes of the Habitats Regulations. It had produced no evidence that the proposed brine discharge to the Irish Sea would have any unacceptable ecological impact. LCC called no ecological evidence. LCC’s approach had simply been to raise doubt and concern. It would be a matter for the SoS to consider whether LCC has acted responsibly in this regard.

Response to PWG’s case

PWG’s case on ecological impacts focused principally on the effect of the brine discharge into the Irish Sea (evidence of Dr Broughton - PWEG/4/1), although some other ecological issues had been raised (PWG/1/7 section 2). CGSL considered PWG’s concerns to be unfounded.

Dr Broughton (Doc.PWG/4/1.pg.3) had summarised his concerns as follows:

- There was a necessity for direct and repeated measurement of the dispersion and possible accumulation of salt from the discharge into local waters.
- The investigations of the Environment Agency were incomplete and were leading to inaccurate conclusions; and
- That the discharge of saturated brine into the Irish Sea would form a chemical barrier to migratory fish entering or leaving the rivers entering Morecambe Bay and the Seaboard of Lancashire;
**Measurement of discharges**

12.2.35 That point was not a reason for refusal as it was predicated on the basis that planning permission would have been granted for the project such that discharges were occurring. The brine discharges into the Irish Sea were a matter which would be regulated, by way of discharge consent, under the Water Resources Act 1991. Under that Act the EA, as the competent authority, may impose conditions on a discharge consent licence (sections 88 and 89 and Schedule 10 of the WRA 1991). Hyder was currently producing a monitoring scheme in consultation with the EA, but that was a matter for the discharge consent regime and not for the planning regime. In that regard, the EA Briefing Note of 17 March 2006 (Doc.J/1/24) confirmed that “This monitoring programme is currently being finalised ...”. This concern of Dr Broughton was, therefore, entirely misplaced.

**Environment Agency investigations not complete**

12.2.36 EA’s investigations were now substantially complete subject to the issue of the monitoring scheme. It was wrong, therefore, for Dr Broughton to imply that incomplete investigation of the discharge issue by the EA had led to “inaccurate and misleading conclusions”. The EA simply disagrees with Dr Broughton’s assessment on the effects of the discharge of brine into the Irish Sea, as it had made clear in its letter to Dr Broughton dated 12 September 2005 (Doc.PWG/4/2/6). There was nothing to indicate that the EA’s investigations are ‘incomplete’ or ‘inaccurate and misleading’.

**Chemical barrier to migrating fish**

12.2.37 That issue depended on two issues:

- The extent of the brine discharge plume; and
- The effect of the discharge plume.

12.2.38 In relation to both of these issues the Appellant submitted that Dr Broughton’s analysis was gravely in error.

12.2.39 **Extent of the discharge plume** - in carrying out its hydraulic modelling, Hyder had used a suite of well calibrated and validated models comprising, a DELFT 3D far-field model and an AEA Computer Fluid Dynamics (CFD) near-field model. These models had been described in some detail in the ES (Doc.CD4 - ES Vol.3 App.D). This comprised a detailed Marine Dispersion Modelling Report. These very sophisticated hydraulic models had been used to refine the design of the discharge diffuser and to model the discharge plume. Very great confidence could be placed in the results of this modelling exercise. It should be noted that Dr Broughton, who was not an expert in hydraulic modelling, had suggested no criticisms of these models. Instead he had simply referred to the results of two other models - the first being a model developed by Bradford University to model the discharges from five sewage outfalls, and the second being a particle tracking model developed by the Proudman Oceanographic Laboratory. Neither of these models had been developed or used to give a 3 dimensional representation of the brine discharge from the proposed outfall diffuser. Their results did not provide a credible alternative to the detailed Hyder modelling report.
12.2.40 The modelling confirmed that raised levels of salinity would be limited in vertical, horizontal and temporal extent (Doc.CD4 - ES Vol.3 App.D Sect.4). From the Marine Dispersion Modelling Report it was clear that the saturated brine plume would quickly disperse in the tidal waters of the Irish Sea, rapidly returning to ambient levels of salinity. The same conclusions could be drawn in relation to the elevated temperature of the discharge plume (Doc.CGS/12/4).

12.2.41 It was clear from the EA’s letter to Dr Broughton of 12 September 2005 (Appendices to Doc.PWG/4/2/6) that the EA had been working closely with Hyder on the hydraulic modelling and did not express concern with the modelling results. Moreover, its Briefing Note of 17 March 2006 (J/1/24) had stated that “The volume of work undertaken has been substantial and the quality of the modelling has been of the highest standard and in accordance with recognised industry standards. The modelling has been fully audited by Agency staff and all issues identified by the Agency have always been subsequently addressed.”

12.2.42 The EA’s letter to Dr Broughton of 12 September 2005 had ended by saying that “...I hope that the information which I have provided to you is useful and will in some way alleviate your concerns”.

12.2.43 PWG’s case had not appreciated the sophisticated nature of the hydraulic modelling which had been undertaken, or properly taken account of the results provided in the Environmental Statement.

12.2.44 Effect of the discharge plume - it was common ground between the parties that fish would simply swim around or over a discharge plume above a certain level of salinity. The saline strength of normal seawater is about 35ppt (PWG/4/1 page 15), although the Marine Dispersion Modelling Report had modelled ambient salinity down to 32ppt. It could be seen from the Modelling Report results (Doc.CD/4 App.D) that the horizontal and vertical extent of the plume at 35ppt and 40ppt was very limited. It also needed to be borne in mind that these maximum concentrations were also limited temporally (Doc.CD/4 App.D Figs.4-8 to 4-11). It was clear from any fair analysis of the results of the Modelling Report that the area of enhanced salinity which would be a potential barrier to migrating fish was very limited in extent and that they would either swim around or over it.

12.2.45 Dr Broughton also expressed a concern (PG/4/1 page 16) that enhanced levels of salinity of between 35-40ppt would collect in Lune Deep causing a long term reduction in plankton in Morecambe Bay. Again, this was to completely misunderstand the hydraulic modelling which indicated that the discharge plume would very quickly return to ambient salinity in which state it would be indistinguishable from the rest of the Irish Sea.

12.2.46 Dr Broughton’s concerns were wholly without foundation and based on a misunderstanding of the hydraulic modelling results. This was an issue where the EA had complete control under the discharge consent procedure and where it had expressed satisfaction with the modelling process and its results. This issue did not represent a reason for refusing the grant of planning permission.

Impact on birds

12.2.47 Section 2 of PWG/1/7 drew attention to the potential for the construction of the proposed facility to cause disruption to bird life. Mr Lowther had considered the
effect of drilling noise on local bird populations\(\text{(CGS/12/2 paras.5.98-101)}\) and concluded that the effects at a local population level were unlikely to be significant, would be short term and transitory. This was not an issue on which EN or RSPB had maintained an objection.

12.2.48 PWG had raised a particular point in relation to common scoter\(\text{(CGS/0/6 page 59 et seq)}\). This had been addressed on behalf of CGSL\(\text{(CGS/12/2 para.3.40)}\). The SEI\(\text{(Doc.CD/7 - pg.9)}\) made clear that the diffuser would be in the very large area of Liverpool Bay within which 2% of the Bay’s common scoter population was found. The area of higher density of common scoter started some 700m from the proposed diffuser location. The brine discharge modelling had confirmed that the levels of enhanced salinity (above ambient) would only extend a few meters from the diffuser. Neither EN, nor the RPSB, had supported PWG’s concerns on this point, which were without foundation. The potential for disturbance to birds during the construction period was not a significant adverse impact of the scheme.

**Conclusion**

12.2.49 It was remarkable with a major infrastructure project of this size in such close proximity to a number of internationally designated nature conservation sites, that there would be very little adverse ecological impact. The Appellant had gone to considerable length to reduce the environmental impact of the scheme through refinement to the design and through proposed mitigation. EN and other environmental stakeholders had withdrawn their objections and the County and Borough Councils had called no ecological evidence in objection to the scheme. The ecological impact did not represent a reason for refusing the planning appeal.

**12.3 Case for LCC**

12.3.1 In determining that it would have refused consent on the basis of the impact upon ecology LCC had been heavily reliant upon the views of EN. LCC had explained that that remained the position at the outset of the inquiry in opening and did not demur from that stance.

12.3.2 LCC has not sought to go behind the views of EN, nor had it raised a positive case on the impact upon the Ramsar site/SAC/SPA etc. However there were a number of areas which LCC had raised as concerns. Moreover it was important to note that EN’s withdrawal of objection was not an absolute one but was dependent in part upon the conclusions that were reached on other aspects of the evidence, principally gas migration and subsidence.

12.3.3 Given that there was no actual reason for refusal on the grounds of ecology there was no refusal to withdraw or revisit. However it was right to note that following the ‘volte face’ by EN, LCC’s ecological concerns were materially diminished.

**Residual Concerns**

12.3.4 The concerns related to lack of information. There had been no assessment of the impact of the particulate insoluble matter of less than 5µm being discharged into the Irish Sea. Given that the Appellant was unable to identify exactly what proportion of the total of 2Mt of particulates that would be generated would actually be discharged, and given that it had not been articulated anywhere in the evidence with any degree of particularity, there was little wonder that that was the case. The material would be
inorganic which might or might not result in problems to the flora and fauna of the marine environment. It was also going to be discharged in very small particles if the filtration system operated as claimed. That might mean it would be harmlessly dispersed throughout the ocean, but at this point in time that is unknown. It was not assessed within the ES, there was no view from the EA nor, until recently, from EN.

12.3.5 Somewhat belatedly and following requests from both LCC and CGSL. EN had now provided a view that there would be no adverse effect from this discharge. That view had not been explained in the EN’s letter (Doc.LCC/C/11). Equally it had not been identified anywhere in the ES in terms that could be readily understood to enable consultees to provide a view upon it.

12.3.6 In addition, the letter appeared to have been written in ignorance of the fact that EN had already provided a view on the discharge consent (Doc.J/1/24) which the EA had rightly pointed out was limited to a consideration of the impact upon water quality. The author of the later letter had gone on to point out that the applications (ie discharge consent and FEPA licence) would generate further information which would be brought forward in relation to discharges, and then points out (wrongly in the light of Doc.J/1/24) that planning permission would be expected to come forward first. The content of the two letters was demonstrably mutually inconsistent, and this was to the discredit of EN.

12.3.7 LCC did not seek to present a positive case to suggest that EN was actually wrong about the impact or otherwise of those particulates upon the marine environment of the proposed SPA. Rather that it was necessary to be circumspect about the advice of EN in this regard given that it is not based upon a rigorous or any appraisal in the ES, nor was the volume of the material quantified nor was its dispersal actually modelled. Moreover the robust view of EN was not explained at all but contained within a letter which itself betrayed a somewhat ‘slapdash’ knowledge of the ongoing applications relating to these proposals.

12.3.8 Similarly, it was suggested that the insolubles which would be filtered or settled out would be re-deposited in existing caverns. They would not be tankered off site. The caverns to be used were not identified, and there did not appear to be any caverns with the requisite WML. In any event, the operational development associated with such an activity was not shown and the impact of that proposed activity had not been assessed or consulted upon. It might be that what was proposed was an entirely innocuous activity which would have no environmental consequences. However, given that it would require both consent from the EA for the disposal of waste as well a fresh planning permission to undertake the activity it is impossible to tell at this stage.

12.3.9 The mitigation at the Heads was another exercise in presently unachievable promises. What was suggested was that there could be some form of controlled or uncontrolled inundation at the Heads which might or might may not (but probably would) involve some degree of puncturing of the sea defences. However the ramifications of doing that had not been thought out fully, no formal consent had been sought from the EA for breaching the flood defences, and if engineering operations were required (which seemed almost certain) then no planning application had been made. If the Heads did need to be relied upon as mitigation then its deliverability was again uncertain.

12.3.10 While belatedly the EA had indicated that in principle the creation of additional inter-tidal habitat was not objectionable (Doc.LCC/C/12) that did not amount to a consent. Prior
to the granting of any such consent CGSL would be required to demonstrate that what was proposed would be feasible and achievable.

12.3.11 The unilateral undertaking provided little ground for comfort. Part 4 of the schedule made clear that any scheme would be the subject of further consents (Doc.CD/81 para.4.2) and para.4.1 only committed CGSL to provide “...a scheme for the establishment and management of additional marshland on the Heads...”. What area of marshland, what level of maintenance and over what period was undefined. Given that that might be the compensation provision referred to by EN with respect to fig.1 of Circular 6/2005, the means of achieving meaningful compensation in the way anticipated by EN was pitiful.

12.3.12 The former suggested environmental stewardship scheme had now been abandoned by CGSL. To attempt to blame the agricultural tenants for their failure to be willing to sign up to a supposedly environmentally good idea when CGSL did not have the requisite degree of control to make the offer in the first place was thoroughly disingenuous. It was another example of promises being made without planning and land use issues having been addressed. Given its undeveloped form, it should not have been put forward as an element in support of the proposal.

Circular 6/2005

12.3.13 EN’s position was not that of a non-objector. Its correspondence to the Inquiry should be read with fig.1 of Circular 6/2005 and PPS9. It was clear that EN were seeking to ensure that the ecological ‘benefits’ offered by CGSL were provided, presumably on the basis of para.14 of PPS9 (ie opportunities to enhance should be taken) or on the basis of para.1(vi) – ie that there was significant harm which needed to be mitigated against.

12.3.14 EN’s stance (Doc.EN/03) was that in relation to the Liverpool Bay SPA and the Morecambe Bay SAC there would not be a significant impact. However EN had confirmed that in relation to the Morecambe Bay SPA and the Morecambe Bay Ramsar Site the proposals were likely to have a significant impact and therefore an Appropriate Assessment needed to be undertaken (Circular 06/2005 - Fig.1 Boxes 1-2). EN had concluded that based upon the additional information to inform the Appropriate Assessment submitted by the CGSL there would be no adverse effect upon the integrity of the SPA and Ramsar Site as a result of the appeal proposals (Circular 06/2005 – Fig.1 Boxes 3-4). Thus, in referring to the Fig.1 flow diagram, for the Morecambe Bay SPA and Ramsar Site there was a need for the decision maker to conclude that there would definitely not be an adverse effect. However the important point was that if that could not be done with certainty then one moved further into the flow diagram.

12.3.15 CGSL’s stance was that there was no need to go further because it could be demonstrated that there would be no adverse effect. EN did not support that view. It was agnostic as to the issue and left that conclusion (which depended on conclusions on gas migration and subsidence) to the Secretary of State.

12.3.16 It followed that if the SoS agreed with LCC that there was insufficient evidence to demonstrate that there would not be an adverse impact on the integrity of the SPA and the Ramsar site because of the lack of real information on geology and geophysics then contrary to CGSL’s stance one had to move further down the flow diagram. That then required the following before permission could be granted:
(i) proof that there were no alternative ‘solutions’ to the proposal;
(ii) a demonstration that there were imperative reasons of overriding public interest sufficient to override the harm; and,
(iii) had any necessary measures been taken to ensure the overall coherence of Natura 2000.

12.3.17 Compensation (ie the Heads and the now defunct Stewardship scheme) would only come in at the end to protect Natura 2000. It was presumably on that conditional basis that EN considered that the Heads could be seen to comprise the requisite compensation. If however that ‘necessary compensation’ was not ‘ensured’ then permission should be withheld.

12.3.18 With respect, the fact that so much was uncertain at this stage, from geological information, to the size and design of caverns to matters as basic as to where caverns would be it was difficult to see how a rational decision could be taken at this stage that there was sufficient certainty not to progress beyond box 5 of figure 1 of Circular 6/2005. If that was the case then:
(i) the evidence did not demonstrate that there was a complete absence of ‘alternative solutions’ should Preesall not proceed;
(ii) the evidence demonstrates ‘valuable contribution’, not imperative reasons of overriding public interest; and,
(iii) even if the Heads scheme was sufficient to act as compensation for all the reasons given before it would not be ‘ensured’ by these proposals.

12.3.19 On the basis of the approach of the SoS, on the basis of those matters which EN expressly did not provide a view upon, and in the light of the precautionary principle, the evidence did not demonstrate that permission ought to be granted

12.4 Case for PWG

12.4.1 The Wyre Estuary, and in particular the east bank and its hinterland were important ecologically with a variety of designated sites enjoying protection at local, national and international levels. There could be no doubt that this proposal would cause damage to these sites and to the inhabitants even where construction and operational activities manage to avoid direct access to the designated sites. That might occur as a consequence of spillage of alien materials that might find their way to designated sites via water courses; through the presence of contractors in adjacent locations causing disturbance, and/or through noise from site operations causing disturbance.

12.4.2 PWG recognized that conditions would be in place to minimize the impact of damage but contractors (under pressure of deadlines) and policemen (over stretched officials) rarely enjoyed the time-luxuries enjoyed by those who drafted the planning conditions. These designated sites could not be the sole support for mobile wildlife populations. Mobile wildlife did not recognize designated boundaries but also made use of surrounding feeding habitat. An example was the internationally important over-wintering flocks of pink footed geese that used many fields in the study area to feed when the tide covered the Morecambe Bay SPA. The fields around Preesall, Stalmine and Staynall were not officially part of that SPA but were just as important to the wildlife whose presence in Morecambe Bay at low tide was the justification for the SPA designation.

12.4.3 There were several species of birds, once nationally common but now at risk, which bred in the study area. Of the 23 species listed under Section 74 of the CROW Act
2000 and which had associated UK BAPs, over 25% bred in the area. Those species were Linnet, Grey partridge, Lapwing, Song Thrush, Skylark and Reed Bunting. The last two were recorded on the RSPB Red list.

12.4.4 There were also Brown Hares and Great Crested Newts in the study area, and a possibility of water voles, each of which had Section 73 CROW Act 2000 listing and accompanying UK BAP.

12.4.5 There were several wild plants in the area which also had UK BAP listings. CGSL had acknowledged the presence of breeding Barn Owls in the study area. These had special protection under the Wildlife and Countryside Act 1981 and were the subject of specific advice to developers from EN. Any loss of habitat or disturbance leading to a missed breeding opportunity was important to any individual species which was at risk. However it was the great variety of such species present in one place that marked the richness of the biodiversity of this area.

12.4.6 CGSL in its ecology evidence had considered individual at-risk species. The location of a Barn Owl nest site had rightly been withheld in evidence, but that same evidence failed to demonstrate that the surveys demanded by EN with regard to Barn Owl nesting and roosting sites had been carried out.

12.4.7 In an area so rich in biodiversity, bearing in mind that each of the at-risk species identified occupied its own niche in the Over Wyre ecosystem and was supported in turn by its own particular food chain and habitat demands, a rigorous cumulative impact assessment should have been carried out. There had been no attempt to do so. The mitigation offered by CGSL was of the nature of repair and or replace. Even if that was fully effective in restoring the physical elements, 3 to 5 years of disturbance might mean that the Over Wyre ecosystem would never fully recover.

12.4.8 There had been an assessment of the impact of ‘a low level steady noise’ from the GCS (Doc.CGS/12/2 paras.5.85-88). That evidence was now known to be incomplete. The main source of noise from the GCS would be from the gas dehydration plant. It would not be low and was unlikely to be steady. Even at the close of evidence CGSL had been unable to provide details of that noise, the only information being that each gas drier would generate noise levels of some 85dBA. This was very loud by any standard, and how many driers would be used, and their pattern of use, was unknown. There could have been no assessment of its impact on wildlife.

12.4.9 The Inquiry had heard arguments as to whether mineral resources i.e. salt brine from the solution mining process should, together with attendant other pollutants, be wasted by dumping at sea or usefully used in some way. PWG had concerns regarding the impact of the brine on the proposed Liverpool Bay SPA. Liverpool Bay has been proposed as a SPA because of its internationally important over wintering population of Common Scoter and nationally important over wintering population of Red Throated Diver. There might also be an important population of Little Gull but, as their national population was not known, the Liverpool Bay population could not be expressed as a percentage of the national total.

12.4.10 The outfall of the proposed brine disposal pipeline was within the area to be designated SPA and CGSL had acknowledged that the brine out flow would kill all non-mobile life within a radius of 50m of the diffuser, but claimed that the brine would safely dilute to ambient levels very rapidly. CGSL relied on the output from a
computer model of the tides, currents and topography of the sea bed. Dr Broughton’s evidence from two other model sources contradicted this.

12.4.11 There was concern a) that the discharge of 80ML/day of a saturated solution of salt for 7 years into this local area of the Irish Sea would form a chemical barrier to migratory fish, salmon and sea trout, as adults enter, and juveniles leave, the rivers entering Morecambe Bay and the seaboard of Lancashire, mainly the Rivers Leven, Kent, Crake, Lune, Wyre and Ribble; b) that the investigations by the EA and others were incomplete, and were leading to inaccurate and misleading conclusions; and c) that there was a necessity for direct and repeated measurement of the dispersion and possible accumulation of salt from the discharge into a local area of the Irish Sea to prove whether it would or would not affect the passage of migratory fish and increase the mortality of juvenile salmon, and destroy the migratory fisheries of the above-named rivers.

12.4.12 Concern for the survival of the Salmon in the 6 rivers was twofold; firstly over the effect of the hypersaline discharge on the migration pathway of salmon, as juveniles moving from the fresh water to the sea, and as adults returning from salt waters to the fresh water of the river; and secondly that the investigations by Hyder appeared to be incomplete and that the impact of the discharge, would be damaging to some of Europe’s species at risk. WWF had highlighted the threat to ten of Europe’s ‘most endangered species’, including the salmon.

12.4.13 Salmon spawned in the upper reaches of rivers developed from parr into smolts. Temperature changes began their migration to the sea which lasted some 4-6 weeks. It was in the estuary that they meet their first major physiological change. Their osmotic pressure in fresh water balanced their higher concentration of bodily fluids by absorbing and then excreting water. In salt water the process had to be reversed, and to avoid death from dehydration they had to drink large quantities of sea water, desalinate it in their kidneys and excrete the salt through their gills. Any delay in the transition from fresh to salt water would increase the mortality, through higher predation and possibly also increased physiological stress adapting to a saline habitat. Once in salt water their feeding was dependant on plankton; swallowing food whole. Any loss of plankton would increase stress by inducing starvation.

12.4.14 Returning adult salmon had to make a reverse physiological change. The passage from salt to fresh water was dependant on water temperature - from 4°C to 22°C which governed metabolic processes and energy, and river flows. The physiological changes of adapting to fresh water increased stress and delay in entering the river added to it. Spring tides might be helpful; neaps may cause delay, on-shore winds helped. Unhelpful conditions might keep salmon moving up the estuary only to retreat to deeper water with the tide, a high proportion being caught by nets as they headed back to sea from the estuary.

12.4.15 Morecambe Bay, was the second largest area of mud and sand in the UK. An SPA and candidate SAC. 5 rivers drained into and through it; all joining in the Lune Deeps. The deeps were a ‘Kettle Hole’ some 40m deeper than the surrounding area, formed at the entrance to the Bay at the end of the last Ice Age. It covered an area 20km long and 2.2km wide just over 5km from the Fylde coast; a similar distance from the proposed position of the discharge as it was from the shore. A major sewage outfall from Fleetwood discharged into the Lune Deeps.
12.4.16 The tides on the Cumbrian and Fylde coast were the second highest in the Irish Sea, with spring mean range of 8m. The effect of a constant and considerable quantity of hypersaline introduced at an initial 260 parts per thousand (ppt) on the present system of tides appeared not to have been considered. Penetration of saltwater up estuaries was well known, the salt underlying the fresh water. The highest tide penetration in the Lune was up to the weirs east of Lancaster and up the Wyre to St.Michael’s. If there was an increase of saline concentration in the Bay due to the anti-clockwise gyre, that increase would be apparent several kilometres up all five rivers. Similarly, the same undesired effect of hypersaline into the brackish water of the estuary might occur in the Ribble. The effect on salmon smolts already stressed by the physiological changes taking place would be a significant increase of stress leading to an increased mortality.

12.4.17 It was noted that the elevation of temperature between 1°C and 10°C was not considered by Hyder to be significant and who had not considered the matter further. This was an omission in view of the potential increase in mortality of salmon, particularly smolts, from an increase in temperature due to the reduced flow of fresh water in drought conditions adding to the increased temperature of the sea in summer. Sea-water temperature was normally between 5 - 6°C in February and March and 14.5°C - 16°C in August. This variation was greatest in coastal waters; enhanced in times of drought and low river flows, with resulting difficulties and increased mortality for the salmon.

12.4.18 There was no further mention of temperature in the Hyder report, nor any reference to effect of increases of temperature of less than 10°C when combined with an increase in salinity. It was not unknown for drought conditions to be present at other times than summer; nor was an increased mortality in salmon dependent on a rise of not less than 10°C. As temperature rose so did the metabolism of the fish with its increased need to feed. WWF had noted that increases in sea surface temperature in the North Sea could adversely affect post-smolt growth and survival. And that warm summers may inhibit spawning migrations of adult fish into fresh water. Stocks from the North Atlantic feeding areas were particularly vulnerable to changes in salinity and water temperature. This was directly translatable to the Irish Sea in the area of Morecambe and the Fylde coast. This increased the stress on fish undergoing physiological changes either as adults returning from the oceans or juveniles attempting to enter the sea from the rivers. An increase of stress inevitably increases mortality.

12.4.19 The tides in this area of the Bay and along the Fylde coast were complex, but not, as suggested by Hyder, unknown. There was an anti-clockwise gyre in the Bay, and this was density-driven. It reinforced the dynamic importance of strong near-bed horizontal density gradients. At high tide, there were two pronounced counter rotating eddies either side of the Lune Deeps and north-east of Fleetwood in the Lune estuary. These movements were echoed in the Proudman examination of salt particle movement from the proposed discharge off Rossall. It was reasonable to suppose that these gyres, particularly the main anti-clockwise one through the Bay, and the minor one around the north of Fleetwood and the Lune estuary, would pick up some of the hypersaline discharge and distribute it across the rivers Leven, Kent, Crake, Lune and Wyre. It was entirely reasonable to expect that over time the Bay would accumulate enough extra salt to raise its
concentration contrary to the views of Hyder and the EA that the proposed salt discharge would not affect the conservation areas in the Bay.

12.4.20 There was much emphasis placed on the position and size of the plume and little on the diffusion of salt from it. It is agreed that any self-preserving fish would avoid it. Concern should be shown for the larger areas that would hold a greater than normal concentration of salt as it was spread by the action of the tides, and its own greater specific gravity than the normal sea water, into the Bay and along the Fylde coast; possibly into the Lune Deeps at the entrance to the Bay, and up the rivers in the tidal waters of the separate river estuaries.

12.4.21 The figure of 40ppt was taken as the saline strength fatal to most organisms. This was based on a single paper and was a closed water system. The fish were post-smolts. Fish of 200mm fork length survived exposure to 16.5 to 33ppt., but not 40ppt. Fish 135mm long or shorter did not survive. Larger fish could tolerate sudden changes in salinity up to 40ppt provided there was no accompanying major change in temperature (10°C). There appeared to have been no attempt by EA to investigate any spread of saline distribution from the plume, but only with salinities greater than 40ppt.

12.4.22 Modeling by the Proudman Oceanographic Laboratory at Liverpool University demonstrated Multi-particle Tracks and Diffusion \( (\text{Doc.PWG/4/2/3}) \). It did not contradict the Hyder/EA model, but complemented it. It demonstrated a different view of the spread to be expected and that there was a progression of salt north-east into the Bay. There was an occasional escape further west towards the entrance to the Bay. There was a mass movement, similar to that shown in the Bradford University model of the drift of sewage from the Lune Deeps outfall, southwards past Blackpool, past St.Anne’s and into the mouth of the Ribble estuary. It was entirely reasonable to suppose that the drift into the Bay, aided by the anti-clockwise gyre, would, in time, increase the salinity in the Bay and disturb the passage of fish into the various rivers.

12.4.23 It was also reasonable to consider whether by the pull of gravity on this greater density of the salt would attract the salt down the slope into the Deeps and there form a plug of hypersaline. There was already computer evidence from the Proudman model that stray particles had drifted westwards. But the mass-movement into the Ribble mouth was the most worrying.

12.4.24 These were isolated computer modelling runs; and that used by Hyder was considered by PWG to be particularly opaque. The model, by Bradford University, of the effects of the tides on the sewage discharge into the Lune Deeps was clear \( (\text{Doc.PWG/4/2/5}) \). It showed clearly the strength and direction of the tides of that area, the movement of the plume and its drift in a north-south direction down the Fylde coast and movement north-east into the Bay above Fleetwood, as did the Proudman particle model.

12.4.25 A series of computer modelling and physical measurements needed to be done and exhaustively repeated over varied conditions of tide and temperature, before any decisions on the safety of the salmon, the sea trout, plankton and other creatures could be taken. Those measurements should include chemical tracing studies at all heights of the tides, both springs and neaps, high and low water. They should accommodate the effects of wind shear, salinity, evaporation and decay and
dispersion throughout the water column, and changes in temperature. They should be related to the north-south drift of the Irish Sea, and the effects of wave action, and of its corresponding lack of wave action in the lower regions of the Lune Deeps. They should be taken throughout the area of Morecambe Bay and for the Lancashire coast as far as the Ribble or Liverpool Bay. Until that had been done, no sound decision could be made as to whether the salmon and sea trout and other species at risk would be free of risk to their migratory pathway or to their lives.

12.4.26 The concerns were with saline strengths of less than 40ppt. Normal sea water was 35ppt, reducing to 33-31ppt near the shore from the effects of the river water. There was no great range between what is normal and what could have a deleterious effect on salmon. It was not known what level of salt concentration would inhibit salmon from following their normal migratory path, or what concentration would remove their ability to sense by smell the river of their origin. It was known that increases in salinity could adversely effect both adult salmon and the juvenile form to a point of increased mortality (Doc.PWG/4/4/17). Hyder accepted that increased salinity could reduce the growth of juvenile fish. This could be a serious matter for a species that was in the 10 species most at risk in Europe. WWF had noted that organic pollution in estuaries could lead to high levels of fish mortality (Doc.PWG/4/4/28). Nobody appeared to have thought of higher salt pollution.

12.4.27 Plankton was strictly defined as inert; it was Nackton that contained animals active enough to escape predation and dangerous chemicals like hypersaline. Assuming they could tolerate high levels of salinity as advised by Hyder, there must still be a level at which there was some reduction in amount and therefore a reduced food larder for small fish such as post-smolts. The rich food area of the Lune Deeps would be at risk if sufficiently large quantities of salt were to find their way there; causing a reduction in the available plankton of the Bay. For CGSL it was admitted that there was some uncertainty as to what degree of increased salinity in the band between 35 and 40ppt would affect plankton and appeared to be somewhat hopeful that there would be a none too great effect on the basic food for salmon juveniles and sea trout. In terms of conservation of a species in danger, this attitude is unsupportable. It was surprising that the EA which was charged with care of these migratory fish had not come down on the side of caution. This would lead to a deepening crisis of malnutrition in salmon, and would add to their difficulties in coping with their physiological change.

12.4.28 There was doubt on the ability of plankton to tolerate hypersaline discharges. Because of that uncertainty, the sterilization of significant volumes of water, and the serious risks that would accrue to salmon (adult and juvenile) and other species, obtaining more data on the effects of hypersaline on the plankton of the Irish Sea would be a better and safer procedure (Docs.PWG/4/2/1 + 4/4/3).

12.4.29 Sea trout were migratory fish that arose from the brown trout population. They descended rivers to feed in the local sea areas and returned to spawn in the small upper tributaries of the main rivers. These fish from these 6 rivers feed in the waters of the Bay and along the Fylde coast, and were particularly vulnerable to any pollution, including that of hypersaline. They had a similar physiological change on entering and leaving salt water as salmon, but were even more susceptible to a lack of plankton in these coastal waters as they tended not to enter the deeper oceanic waters outside the Irish Sea.
12.4.30 Since the late 1960s there had been a reducing number of salmon. Returning adult fish were estimated to have declined by 35% and the spawning escapement by 30% between the 1970s and the present time. Bye-laws had restricted the take of salmon to both the nets and rods, by the time allowed to the nets and, for the rods, the addition of defining the method to be used up to the 15th June, being by fly and artificial lure only. The net industry had been restricted in the time it may operate; the rods restriction was that no fish may be killed before the 1st June, and from then to the end of the season only 4 fish per rod to be killed, others to be released without further harm. There were various methods voluntarily undertaken and vigorously pursued by angling groups in River Trusts, Associations and Consultatives to enhance the stocks of salmon. These included raising juvenile salmon from the egg stage and putting the parr into areas of the river protected from avian predation; work to the beds and banks of the Ribble and Hodder by the Ribble Valley Conservation Trust and on the Lune by the Lune Habitat Group, and on the Wyre by the Wyre River Trust, and by local Associations on many of the smaller waters to improve the spawning and nursery areas of these salmon-producing rivers. Money had been raised to sponsor university departments to study water quality, in-river fly life and spawning gravels and the effects of bank conservation. The Lune and Wyre have been so monitored by Lancaster University for several years leading to considerable improvement in knowledge of the fisheries of those rivers.

12.4.31 The finances involved in these fisheries was not inconsiderable and directly related to their stocks of salmon. The EA's estimate of the economic benefit in 1999 for the netting industry was £65,000 and for the rod fisheries £540,000. The angling-based River Trusts and Conservation Groups were dealing with work requiring sums of around £100,000, with minor work of around £11,000. The Lune Habitat Group and Ribble Valley Conservation Trust had spent large amounts of money on river work to protect the nursery and spawning areas of salmon. Any loss beyond that naturally to be expected would cancel out all the EA's work to preserve a sufficient spawning escapement, and the hard work and hard-gained money contributed by the angling voluntary bodies to enhance the spawning and nursery areas in these 6 salmon-bearing rivers.

12.4.32 What was feared locally, nationally by the Salmon & Trout Association and internationally by the Atlantic Trust, was that the EA had taken at face value investigations into the spread of the proposed hypersaline discharge and its possible effect on both juvenile and adult salmon - investigations which seemed to be incomplete and misleading in their conclusions, with consequent harm to a species already at risk.

12.4.33 Application of Canatxx’s model would require substantial input of estimated values regarding the discharge, the sea bed and the currents. Given the history of changes to plans, volumes and dimension forming part of the proposals the subject of these appeals, and the inconsistencies between different documents presented during the course of the Inquiry, there could be little confidence in the accuracy of the data provided and the subsequent results produced. That damage would occur was not in doubt, only the extent of that damage.

12.4.34 Common Scoter were also the subject of a UK BAP. The British Isles breeding population had reduced to an estimated 200 pairs, 110 in northern Scotland and 90 in the north west of the Irish republic. The species had been extinct in Northern Ireland since the early 1990’s. From that BAP, one of the current factors said to be a cause of
Common Scoter decline was listed as being loss of feeding habitat i.e. sand dwelling shellfish lost through commercial harvesting.

12.4.35 Sand dwelling shellfish were typical of the non-mobile creatures which would be killed as a result of the brine discharge; arguably a greater loss as this would be permanent. One of the targets of the UKBAP was to “maintain the range and distribution of wintering Common Scoters” and this target was not qualified by subjective views regarding degrees of significance. It was recognised that Common Scoter had a very low tolerance to disturbance from human activities. Wildlife and Wetlands Trust population surveys during the winters of 2001 and 2002 had been used to identify population concentrations to inform SPA considerations. For CGSL it had been accepted that based on this data there was a major concentration of common scoter a mere 700m from the planned location of the diffuser.

12.4.36 Mr Lowther had also been aware of more recent WWT surveys but had not consulted them. CGSL accepted that damage would occur within the SPA, and its whole defense relied on assertions that the impacts of its actions would not have a significant impact on the Liverpool Bay SPA. CGSL offered no mitigation other than monitoring and surveys, and yet had acknowledged that to be effective, mitigation options would have to be adopted from the outset.

12.4.37 Of the options listed (Doc.CD/2 - ES Vol.2 pg.93 para.8.4.4) only that of extending the pipeline into deep water (and beyond the boundaries of the SPA) seemed likely to be effective. The proposed Liverpool Bay SPA would be protected by European Legislation enshrined in UK law in the Conservation (Natural Habitats & c.) Regulations 1994. Regulation 48 states that: A competent authority, before deciding to undertake, or give any consent permission or other authorisation for a plan or project which a) is likely to have a significant effect on a European site in Great Britain (either alone or in combination with other plans or projects), and b) is not directly connected with or necessary to the management of the site, shall make an appropriate assessment of the implications for the site in view of that sites conservation objectives.

12.4.38 CGSL had sought to convince the Inquiry that the impact was not significant and in that argument much reliance had been placed on the computer model mentioned earlier. Although seeking to convince the inquiry that an appropriate assessment had been made of the impact of this proposal in combination with other plans or projects Hyder had produced limited evidence in support of this contention (Doc.CD/7 – SEI Sectn.3.4). This had concluded: “It must be assumed that internationally significant numbers of scoters and red throated divers have co-existed with these activities for some time and continuation in their present form will not adversely affect the suggested SPA.” Common Scoter were on the RSPB Red List. Red List species were species that were globally threatened, whose population or range had declined rapidly in recent years (i.e. by 50% in 25 years). An assumption was not proof, and Hyder’s conclusion was not consistent with that of the RSPB.

12.4.39 There were several references which cast doubt on the rigor of Hyder’s ‘in combination’ assessment. The EC had commissioned Hyder to investigate methodologies appropriate for cumulative impact assessments (CIA). The report, Guidelines for the Assessment of Indirect and Cumulative Impacts, as well as Impact Interactions, DG XI Brussels (Hyder, 1999) had identified nine methodologies for cumulative impact assessment and assessed the merits of each.
12.4.40 CCW had a project to develop a generic CIA methodology and Hyder had been represented on that project. It was unclear why Hyder had not employed at least one of those methodologies to conduct a full assessment of the in-combination effects as the company was clearly very well placed to understand what was available and what should be employed.

12.4.41 CIA should consider much wider scenarios than were presented in the SEI, for example:

- Physico-chemical transport – emissions interacted with others at distance e.g. plumes, effluents – the computer model described by Hyder did not consider any in combination effects. CGSL were quite dismissive of Dr Broughton’s assertion that effluent impacts should also be modeled.

- Nibbling loss – gradual disturbance and loss of habitat by project proliferation – the scoter were restricted by feeding habits to shallow waters.

- Spatial and temporal crowding – was there too much happening in too small a space or too short a time - the disturbance issue.

- Species interaction – Hyder dismissed the impact of brine on salmon because they were mobile creatures. Dr Broughton made a convincing case of cumulative stress effects on salmon during a stage of life cycle change. What were the effects of this on the wider marine ecosystem – was there a knock on effect on fish-eating Red Throated Divers? Not only were the answers unknown, but not all the questions were known without a full study being undertaken.

12.4.42 CGSLs conclusion that its actions would not significantly damage the Liverpool Bay SPA had not been supported by its evidence. The computer model on which so much reliance was placed did not appear to have been validated against the life model so there could be no confidence in its results.

12.4.43 The presence of large numbers of Common Scoter a globally threatened species, within 700m of the saline discharge point had been discounted.

12.4.44 The ‘in combination’ assessment that had been presented did not conform to any recognized methodology and relied on an assumption. There has been no appropriate assessment of the ‘in combination’ impact of the brine discharge at its present location that complied with the requirements of Regulation 48.

12.4.45 CGSL might seek to argue that SoS is excused consideration under Regulation 48 on the grounds that other Agencies had not raised objections. However, European legislation charged every official at all stages to have regard to impact on SPAs. 92/43/EEC Article 6 para.3 stated: “3. Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.”
12.4.46 Para.4 allowed some derogation: “4. If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted.”

12.4.47 Regardless of any argument relating to national need for gas storage, no case had been put forward that it was necessary to damage this SPA for reasons of overriding public interest nor had it been argued that saline discharge into the SPA was the only available option. Para.4 used the words, “in the absence of alternative solutions”. It was PWG’s contention that this was not the only site that could be developed for gas storage. It is one of an increasing number and there were more environmentally acceptable and safe sites elsewhere so there are real alternatives.

12.5 Case for Mr & Mrs Jackson

12.5.1 The Wyre Borough Tourist Guide 2004 invited one to “Imagine Beautiful Wyre”. Those who lived, worked in and visited the area appreciated what a special environment it is. Dr Lowther’s blinkered vision of the area, after five visits, was reflected in his description of the area as ‘tedious and boring.’ Thousands would agree to differ. The east bank of the estuary was appreciated for its rural tranquility and landscape variety, from the internationally designated marshes, to the patchwork of farmland and rural lanes, the woodland and coastal footpaths and typical English villages and hamlets.

12.5.2 The survey teams had also chosen to ignore or mis-interpret the natural environment of the Wyre Estuary. No GCN survey had taken place in 2005 at the Height O’th’Hill. There had been no documentation to confirm that access had been permitted. The statement that ‘following the resolution of access difficulties in Spring 2005, these ponds were subsequently surveyed, and great crested newts found to be absent from all of them.’ (Doc.CGS 12/2 para.3.17) was inaccurate.

12.5.3 Other errors made by the survey team included;
- Walkers and their dogs, even in Wyre, were not capable of walking on water and disturbing birds on the high tide roost at Arm Hill during tidal inundation,
- Mis-identifying broad leaved woodland, containing as many as fifteen different deciduous species, as conifers.
- Mis-identifying arable fields as improved grassland.
- Mis-identifying fishing lakes, which supported numerous freshwater species as ‘brine filled depressions.’
- Failing to recognise that thousands of over wintering geese regularly occupied fields at the south end of the site.

12.5.4 Consultation had not taken place between the appellant and local people in regard to proposed habitat enhancement measures and the question of conflict between dairy cattle movement and construction traffic had not been resolved.

12.5.5 In the Ramsar Advisory Missions Report, Dee Estuary, United Kingdom (1994) (Doc.J/1/25), the monitoring team had made the following observation about
environmental assessment; 83. “Whilst Environmental Assessment (EA) is mandatory or advised for certain development proposals, the Monitoring Procedure team believes that it would be beneficial for a greater degree of independence to be brought to EA procedures, which are presently implemented on the basis of an environmental statement provided and paid for by the prospective developer. Whilst this arrangement is consistent with “the polluter pays” principle, the independence of an environmental statement prepared by (or under contract to) the developer is clearly questionable.”

12.5.6 The Monitoring team also comment that; 88. “There also appears to be a worrying trend in recent development proposals towards treating the concept of mitigation as something that can be “bolted on” to make almost any proposal acceptable.”

12.5.7 The CGSL environmental enhancement proposals were not deliverable. The tenant farmers were not CGSL farm managers and they had the right to the quiet enjoyment of the land held in the tenancy, without interference from the landlord.

12.5.8 The ‘enhancement’ measures had not been designed to complement the ecological environment that already existed. Little logical thought or practical reasoning had gone into the suggested measures. For example, it was proposed to create four new ponds in compartments 11, 12, 13 and 14, designed specifically for GCN (Doc.CD7 para.8.2.3). GCN required an area of ‘good’ terrestrial habitat surrounding a pond to a radius of at least 250m. CGSL had failed to realise that this 250m would extend into land which would not be under the control of CGSL. Hedgerows were also important for GCN as they provide conduits for newt movement. There were no hedgerows in this area, and for that reason it was attractive to over-wintering geese.

12.5.9 The EA were aware that the potential for managed re-alignment, in the area between Burrows Marsh and Hackinsall Sewage Works, was poor due to the presence of brinewells. It was clear from Figs.6.1 and 6.7 of the EA Managed Re-alignment Study (Doc.J/2/17), that the area to the south of the Heads was not a potential inter-tidal area. If, as CGSL claimed, there would be no long-term problems, why was there a need for compensatory measures for any environmental damage to the SSSI’s caused by subsidence?

12.5.10 For CGSL it had been stated that an EIA of the proposed pipeline to the national transmission service (NTS) had been carried out and no significant effects were predicted. However, it was accepted that 40% of the pipeline development area had not been surveyed. In addition, it was accepted that in the 40% area hedgerows and ditches have not been surveyed. No surveys for badgers, water voles, great crested newts, bats, breeding birds, barn owls or purple ramping fumitory had been carried out, all species known to be present in the area. It had also been accepted that no archaeological assessment of the pipelines route had been carried out, despite the known potential of the area to contain archaeological assets of national significance.

12.5.11 A filtration unit, a large new feature, had been introduced at the proposed booster pump station (CD/75t)22. The diagram showed brine entering and exiting this structure but there were no details of how, or to where, the residues would be removed, just vague references to disposal down existing wells. The existing brinewells nearest to the booster pump station had not been surveyed for suitability for this purpose. Some had marl roofs and the presence of wet rock head or faults had not been investigated.

22 Plan No.A.BWP/WKS.0603200 Rev 2, 09.03.06)
If the residues, which were assumed to be in the form of a wet sludge, were not fully salt saturated, they could not be placed down fully worked cavities as further solution of salt would occur.

12.5.12 When I.C.I. had developed a new well, it had been worked in conjunction with a more mature brine-well to ensure that the weak brine became fully saturated and the marls were allowed to settle in a larger cavity, thus reducing the marl content of the brine. No details had been given of the means by which the contaminated residues were to be conveyed to existing brine-wells. No waste disposal license had been sought, or any consideration given as to whether that means of disposal would be acceptable when the new EU Directive on the Management of Waste from Extractive Industries came into force.

12.5.13 The EA had been having confidential meetings with the developer for nine years. In the minutes of the meeting of 13th June 2001(Doc.J/1/23), concerns had been raised concerning the effects on local (fish) nursery areas, migrating salmon and trout and the lethal effects of the brine discharge on a diverse benthic population. The EA had been expressing concern with regard to the possible ecological impacts of the discharge.

12.5.14 During recent environmental investigations in connection with off-shore wind farm development, surveys found that Liverpool Bay supported two listed species of bird, common scoter and red-throated diver, in numbers sufficient to qualify the area for Special Protection Area (SPA) status.

12.5.15 Despite 9 years of discussions with the EA (Doc.J/1/24) CGSL had still not put forward an agreed brine discharge monitoring programme and the EA had delayed the Discharge Consent decision until 16th May 2006. The briefing note had also indicated that EN had signed off the EA’s assessment against the Habitat’s Directive and agree with the conclusion of no adverse effect.

13. LANDSCAPE AND VISUAL AMENITY

13.1 Case for CGSL

Introduction

13.1.1 The evidence in respect of landscape and visual impact (CGS11/2) comprised a review of the EIA to the 2nd Application and a follow up assessment.

Methodology

13.1.2 The methodology followed that of the most recent publications from the Landscape Institute, Countryside Council and the Countryside Agency. In addition guidance is also referred to in the Design Manual for Roads and Bridges. The approach involved four elements:

(a) Baseline survey;
(b) Identification of visual receptors;
(c) Description and quantification of changes to the baseline;
(d) Evaluation of the predicted impacts.
Baseline Survey

13.1.3 This involved the collection of data on the physical, biological, historical and cultural components of the landscape that contribute to its character and value. It was evaluated to assess the importance of the landscape and its features to enable classification into the units of character and value. The appropriate methodology for assessing impact on landscape character and quality is that based upon the Landscape Institute’s Guidelines for Landscape and Visual Impact Assessment (GLVIA).

13.1.4 Landscape sensitivity or capacity (Doc.CGSL/11/2 para.219) is the degree to which a particular landscape character type or area is able to accommodate change without significant effects on its character or overall change of landscape character type. Landscape sensitivity is taken into account in the assessment of impact and the criteria used to determine sensitivity are indicated (Doc.CGSL/11/2 Table 2).

Identification of Visual Receptors

13.1.5 The locations for assessing the visual impacts were defined by the Zone of Visual Influence (ZVI). The ZVI for the construction and post-construction phases are shown on Figures 14A and 14B (Doc.CGS11/3). The effect on each significant visual receptor within the ZVI likely to experience an impact is assessed during the day time in the winter for the year of opening and in the 15th year after opening in both winter and summer, the latter taking into account all the proposed mitigation measures. The significance of the impact on each visual receptor was assessed (CGS11/2- Table 9).

Description and Quantification of Changes to the Baseline

13.1.6 The elements of the scheme’s temporary construction works and permanent infrastructure elements assessed for visual impact (Doc.CGS/11/2 section 4) are as follows:

Temporary

i) Construction of the brine outfall pipe - Fleetwood. The outfall pipe would be installed in the first year of the construction period with the underground pipe being laid over a period of 3 months. A temporary working area would be of the order of 36 - 37m in width. The temporary working width would be reduced to 10m at hedgerow, ditch crossing and roads to minimize habitat loss and disruption.

ii) Construction of Brine Outfall and Sea Water Pipes – Wyre Estuary/ Preesall The Brine Outfall and Sea Water Pipeline would be drilled under the estuary in the first year of the construction period. The operation would take approximately 6 months to complete. Temporary drilling equipment would be located on the west bank of the estuary and comprise a trailer mounted rig.

iii) Construction of the Caverns - Preesall The construction of each cavern would comprise a drilling phase which would require a drilling rig at the wellhead for up to approximately 3 months. This would be followed by the washing of the cavern by seawater over a 2 year period. During the drilling phase there would be a hard standing working area at each wellhead approximately 60m x 120m. On completion of the drilling phase, the
working area would be reconfigured to its final circular arrangement approximately 12m diameter and the washing of the cavern phase could then commence.

iv) Construction of the Gas Manifold Pipes - Preesall
The main gas manifold pipes between the Booster Pump Station and the Gas Compressor Station would be installed during year 3 of the construction period. There would be a further minor pipe laying beyond this period to connect each well head to the main gas manifold pipes. The temporary working area for the undergoing pipeline construction would require the removal of some hedgerows. That width would be reduced to 10m at hedgerows, ditch crossings and roads.

v) Temporary Construction Access
It is recognised that the scheme would require the construction of new tracks as well as work to some existing tracks within the Preesall rural landscape. The majority of the tracks would comprise a 4m single lane track constructed of granular material.
In addition the scheme would also require the construction of a 7.3m wide access track to both the Booster Pump Station and the Gas Compressor Station (Doc.CGS11/3 – App.1 Fig.5).

vi) Construction of the NTS gas pipeline - Preesall/North Fylde Mosses
The underground NTS gas pipeline and the two gas metering stations would be constructed over 3 months in year 3 of the construction period. Although considered in association with the appeal proposal this is the subject of a separate planning application to WBC. It has resolved, subject to further consideration in relation to certain highway matters, to approve that application. The same process of pipe laying as the current application would be adopted in respect of the NTS connection. A working area of approximately 36m - 37m would generally be required which would reduce to 10m at sensitive locations such as hedgerows.

Permanent Infrastructure Elements

vii) Seawall viewing platform.
The viewing platform would be located where the brine outfall pipe climbs over the seawall. In order to hide the pipeline the viewing platform would be constructed on the beach side of the seawall. It would comprise a new access ramp to the beach and a widened section of walkway. The alignment of the underground brine outfall pipe would be demarcated on the surface by low (750mm height) concrete posts located either within the replacement hedgerows or at other boundary features.

viii) Seawater Pump Station
The seawater pump station would be located within the industrial area to the south east of the Fleetwood Dock basin. It would comprise a single storey building of predominantly red brick construction with a pitched slate roof. Its location is dictated by the need to be proximate to the Fleetwood Dock in order to extract seawater before the same is pumped under the Wyre to the Booster Pump
Station on the Preesall side of the estuary. It would not be essential or even desirable to screen this modern building as it would sit within a derelict area of the docks. A well designed modern building at this location would be considered a beneficial new feature (Docs.CGS11/2 para.4.39 and CGS11/3 Fig.4.0B).

ix) Booster Pump Station (BPS)
The BPS would be located approximately 300m to the east of the Wyre Estuary shoreline on an area of low-lying ground within the Preesall rural landscape. The location of the BPS has been determined by its proximity to the Seawater Pump Station at Fleetwood and the proposed wellheads. The function of the BPS would be to pump seawater to the various wellheads, to wash the caverns and to pump the extracted brine out to the Brine Outfall. The building would comprise a single storey structure of brick and slate with an overall height of 11m. The scale and mass of the modern building is considered to be similar to a typical agricultural building found in the local area (see aerial photomontage plan CGS/11/3a).

The location of the BPS is low lying (between 5m and 7m AOD) and has a southerly aspect. It is recognised to be locally prominent within the open low lying pasture landscape to the south which falls within a small area of the designated Defined Open Coastline. In order to reduce the overall appearance of the BPS and its ancillary features a belt of native trees and shrubs would be planted along the existing field boundaries to the north and west of the building/storage area. The planting would be a minimum 25m in width. Within 15 years the planting would be established to create a dense screen 5m - 6m in height.

x) Gas Compressor Station (GCS)
The GCS would be a larger building than the BPS and its siting is recognised as being more critical in terms of its overall impact on the landscape. The building would be located on an area of arable land immediately to the north east of Burrows Farm. This area has a north and east aspect and is a perceptible local feature within the local landscape.

In order to minimise the building’s impact on the Wyre estuary to the west and the rural Preesall landscape to the north and east, the overall mass of the GCS and its ancillary features would be either set into the east facing slope of the drumlin or located on the lower slopes above the floor plain. Most of the bulk of the building would be set below the ridgeline of the drumlin (approximately 23m AOD) although the highest point of the roof line pitch would be approximately 29m AOD and therefore slightly higher than the ridge line.

The GCS would be a functional building of brick and slate construction which would be of a larger scale than typical farm buildings of the area. In addition the external elements of the building would include a secure storage yard for maintenance equipment as well as access and car parking and perimeter security fencing. It would also include features associated with the maintenance of the NTS pipeline including a 10m high compressor stack.
Extensive areas of native tree and shrubs, including clumps of pine, would be planted round the building and the associated features. Within 15 years the planting would have established to create a dense screen 5m - 6m in height.

xi) Wellheads
There would be up to 24 wellheads constructed along a 3km stretch of the Wyre Estuary east shore. They would comprise the wellhead itself, approximately 1.8m in height set within a gravel access area. Around the access area would be a 3m high perimeter security fence. Those wellheads within the open landscape between the Heads and Hackensall Sewage Works in the north and close to the Wyre Way would be set within 3m high earth mounds which would hide the wellhead apparatus, the access area and perimeter security fencing. The final form of the mound would be shaped and planted to blend in with the local land form and vegetation cover. Native woodland and hedgerow species are proposed to be planted in the vicinity of the wellheads.

The wellhead locations would be dictated by the potential cavern sites; arranged either as a single wellhead or in clusters of 2 or 3. They have been located so as to avoid disturbance to the SSSI and the Wyre Estuary landscape.

xii) Permanent Access Tracks
These are shown on the Preesall Master Plan (Doc.CD75b).

Evaluation of the Predicted Impacts

13.1.7 The sensitivity of each landscape type to the type of development proposed was assessed (Doc.CGS/11/2 Section 5). This landscape value was compared against the anticipated magnitude of the development to give an overall impact score. The impact score for the final scheme took into account mitigation measures including the residual impact of 15 years planting. There would be an overlap between the temporary construction phase and the completion of the permanent features of the scheme (Doc.CGS11/2 para.5.5).

13.1.8 In assessing the sensitivity of the landscape to accommodate change, the Countryside Agency’s ‘Regional Character Assessment’ and LCC’s ‘A Landscape Strategy for Lancashire’ were used. The Lancashire landscape elements were further sub-divided into five sub-character areas:

(i) Irish Sea
The sea wall is a prominent and austere linear feature 4m high. It is an unremarkable landscape. The main visual receptors at this location would be the users of the Lancashire Coastal Way, the beach and boat users.

(ii) Fylde Peninsular
This was sub-divided into:
   a) Fleetwood Suburban Townscape - Unremarkable and ordinary, the main components are the residential properties which comprise the main visual receptors, and,
   b) Fleetwood Dock Industrial Townscape - Characterised by industrial, retail and derelict land. There is in the vicinity a landfill site and a waste water treatment
works. A feature of note is the Fleetwood Marsh Nature Park. Overall this is predominantly poor quality landscape.

(iii) **Wyre Estuary**
This area comprises mainly the inter-tidal foreshore, mudflats and marshes. It is overall of good quality, albeit at the west it is influenced by the industrial activity on the other side of the Wyre.

(iv) **Preesall Rural Landscape.**
The landscape contains some prominent farmsteads. It is undulating, predominantly low lying agricultural in nature. Here the collapsed caverns of the former ICI brine extraction activity form a rare and distinctive landscape feature designated a County Heritage Site. The detracting features include sewage works and overhead power lines.

(v) **North Fylde Mosses**
This is a flat, low lying landscape. There is very little development. The predominant land use is improved pasture or arable agricultural activities. It is overall an ordinary landscape.

13.1.9 In the sub-areas Irish Sea and Fylde Peninsula the impact would either be neutral or in respect of the Sea Water Pump Station in the area of dereliction, of local medium beneficial change.

13.1.10 It is recognised that in the Wyre Estuary sub-area there would be an adverse impact on the landscape.

13.1.11 In the sub-area of the Preesall Rural Landscape the construction activity would have a high magnitude of change (Doc.CGS11/2 para.5.134). There would be a large adverse impact for the first 3 years. Thereafter the permanent features, albeit visible, would become substantially screened after approximately 15 years (Docs.CGS11/2 - Tables 10 and 11). CGSL accepts that the effects of the development, both temporary and permanent, would be adverse.

13.1.12 There was a recognition that the scheme would have an adverse impact on the local landscape within the wider scheme area during the construction phase (Doc.CGS11/2 para.6.8). The permanent above ground features associated with the scheme would be dispersed throughout the area. In terms of landscape impact the most sensitive features would be those proposed within the Preesall Rural Landscape and the Wyre Estuary. In assessing the significance of the new features within or adjacent to the Preesall and Wyre Estuary landscape, consideration had to be given to both the sensitivity of the receiving landscape and the magnitude of impact of the development.

13.1.13 The sensitivity of the landscape related to the ability of the landscape to accept change without alteration of the defining characteristics of that landscape.

13.1.14 A relevant consideration was the LCC report ‘Landscape Sensitivity to Wind Energy Development’ (Doc.CD/76). Wind energy developments generally comprised large-scale features in excess of 70m in height, used modern high technology materials and had a visual impact, create light flicker and were associated with supporting infrastructure.
both temporary and permanent including borrow pits, site access arrangements for very large vehicles, overhead power lines, substations and access tracks etc.

13.1.15 The LCC report identified the area as one which had a medium to low sensitivity for wind farm development of small to medium scale, i.e. up to 10 turbines (Doc.CGS11/3 – Figs.11.0a and 11.0b). The document demonstrated that consistent with the national and Structure Plan policies, and other relevant considerations, the receiving landscape, in this vicinity, was one which was capable of accommodating significant change.

Response to LCC/WBC Landscape Evidence

13.1.16 In the Closing Submission on behalf of WBC legal submissions were made to the effect that planning permission must be refused because of the provisions contained within the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999. This was misguided.

13.1.17 Substantial landscape information and analysis was submitted and comprised part of the Environmental Statement (ES). It provided a description of the aspects of the environment (landscape) likely to be significantly affected by the development in accordance with paragraphs 3 and 4 of Part I to Schedule 4 of the 1999 Regulations. The adequacy of it as an ES is demonstrated by the fact that the putative Reasons for Refusal relied on the landscape analysis contained within the ES rather than a reason for refusal based upon adequacy of the ES itself. The Councils accepted the findings of the ES insofar as it provided an analysis of the main landscape effects of the proposal. They relied upon those findings to justify their conclusion that the landscape impacts were unacceptable. That conclusion was different from the conclusion in the ES. The submission betrayed a fundamental misunderstanding of the 1999 Regulations; namely, an ES can be compliant notwithstanding that the LPA (or other decision maker) disagrees with the analysis.

Character Assessment and Visual Impact Methodology

13.1.18 Doc.WBC1/1, addressed landscape methodology and visual effects of the proposal. A considerable portion of the evidence was devoted to criticising the ES and its approach to Landscape Assessment. The view was expressed that the ES did not set out a clear landscape character baseline for the three areas and transparently identify a qualitative assessment of the landscape in question. The ES methodology is criticised in terms of the assessment of the sensitivity of the receptor - that users of footpaths, bridleways and cycle ways should be considered to have a high sensitivity to changes in the landscape, and that this degree of significance has not been expressed within the ES. Similarly that the ES is flawed in that no cumulative effects of the impacts indicated from construction through to the residual period of the development had been analysed.

13.1.19 Thereafter the same sub-character areas identified in CGSL’s evidence were addressed on behalf of LCC/WBC. They were not meaningless.

Irish Sea

13.1.20 Whilst the Lancashire Coastal Way is considered to have a high sensitivity to change, the conclusion in the ES that the proposed development would create negligible to slight beneficial effects over the area is accepted.
Fylde Peninsula

13.1.21 In respect of this area it is considered that there would be significant negative impact in relation to the visual intrusion of the Seawater Pump Station. In addition the Gas Compressor Station, the wellheads and the pipelines during construction and through operation until the mitigation alters the position were also considered to be significant negative impacts. The overall conclusion is that a negative change to both landscape character and visual character of the study area would take place as a consequence of the proposed development. This included the Seawater Pump Station.

Wyre Estuary and Preesall

13.1.22 Summarising the landscape effects, both the temporary and residuary, there would be some 17 significant negative visual impacts remaining and, overall, the introduction of so many ‘industrial’ features into what the Councils considered to be a high quality landscape would degrade the existing landscape character.

Cumulative Effects

13.1.23 The cumulative effects were described as those consisting of the combined effects on the countryside of all the effects of the proposed development whether large or small and regardless of location and division by ES documentation. These total visual impacts together were sub-divided into significant (i.e. those which have a moderate adverse or higher score after mitigation) and not significant (i.e. those that would score below this threshold). In addition to the significant effects described, it was argued that the non-significant effects when taken collectively should also be given weight as the number and nature of these effects, although small, would further contribute to the degradation of the landscape character areas of Wyre and Preesall and the wider proposal site as a whole.

Timescale of Development

13.1.24 In terms of the construction phase of the development, the position adopted on behalf of the Councils was that by reference to the Holford Brine Field, Cheshire development proposal (4 year construction period) the temporary effects of this element of the proposal should be considered as ‘more significant than a temporary operation’. Overall, it was concluded that both the construction phases and the operational and residual phases should be considered when assessing the landscape and visual effects of the proposal.

Conclusion on character assessment and visual impact methodology

13.1.25 There was agreement with the conclusion in the ES that:

“The visual impact of the scheme on the landscape character and quality will reduce over time but can still be classified as adverse”.

13.1.26 In particular, the construction phase of the work should be considered as a significant phase of the proposed development given the time anticipated for this to be completed. In relation to other elements of the ES, there was considered to be a significant under-statement in terms of the development proposal. The Councils’ overall conclusion is that the proposals are adverse to both the landscape character and a substantial number of visual receptors over the Wyre Estuary and Preesall character areas.
Landscape Methodology and Assessment

13.1.27 There are two significant areas of disagreement contained within the landscape analysis presented: (a) The “robustness” of the ES; and (b) The judgments made in respect of the Landscape Assessment of the development proposals.

Environmental Statement

13.1.28 For CGSL Mr Kitch had adopted the broad methodology contained in the ES in his evidence and provided his own assessment in order to provide a transparent methodology of the approach that he had adopted to the characterisation of the landscape and the analysis of the impact on receptors of the changes to the landscape.

13.1.29 In cross-examination he acknowledged that the ES had ‘some shortcomings’. In particular, the methodology deployed was not clearly identified. Whilst that was a legitimate criticism it was not an acknowledgement that no methodology was deployed. In particular, the Landscape Assessment within the ES had been drawn together in accordance with the appropriate Regulations to assess the ‘likely significant environmental effects’ as required. That approach was supported by para.7.42 of GLVI which expressly states that not all impacts need to be assessed, just those that are significant. While the information that was submitted should have involved how the assessor came up with the assessments, the overall findings of the assessment were reasonable and the findings were appropriate.

13.1.30 It was emphasised that not all receptors had to be identified, just those significant ones. This enabled a comparison to be made to the approaches adopted to the presentation of landscape information. The claim on behalf of WBC that a view of some of the works could be had from Blackpool Tower and that this had been omitted from the ES is not accepted as a valid criticism of the ES. For WBC it was accepted that that view was not a significant one. The methodology deployed in the evidence submitted to the inquiry on behalf of CGSL was not short of explanations, and the analysis of the various features and the conclusions drawn upon that analysis was appropriately transparent.

13.1.31 Whilst it is acknowledged that proper professional judgments are required in terms of the assessment of the impacts and judgments on landscape change, the methodology set out in CGS11/2 is robust and clear.

13.1.32 In respect of the criticism that is now levelled against the ES, there are two factors that were apparent from cross-examination of WBC’s witness. Firstly, as is clear from the WBC report in respect of the planning application, the LCC report on the application to Committee and the Opening Statement on behalf of WBC, there had been no suggestion that the ES was deficient with regard to the Landscape Assessment or its methodology. While there had been significant criticisms of other parts of the ES, none focused upon any criticism of the methodology in the ES deployed in terms of the landscape or visual assessment conducted within it.

13.1.33 Secondly, exactly the same methodology had been used in respect of the NTS application. That application, to be determined by WBC as LPA, was to be approved subject to certain unrelated highway matters. No criticism of the type now leveled against the current ES is made. On the contrary, whilst landscape is identified as one of the key issues and the ES for the NTS connection application has been ‘thoroughly reviewed’, the conclusion was reached that, subject to conditions, the impacts on
landscape, nature conservation and archaeology are not significant and the proposal complies with the development and emerging plan policies in these respects (Doc. WBC/2/1 - Executive Summary).

13.1.34 The Landscape and Visual Amenity section of the report appears at paragraphs 9.5 - 9.22 and is devoid of any criticism of either the methodology or, significantly, the conclusions based upon that methodology in terms of the NTS application.

**Landscape Assessment**

**Policy Aspects**

13.1.35 There is no recognition that the development is locationally specific. The minerals in question can only be worked where they are found. As with the ICI brine wells, the gas storage caverns are equally dependent upon the presence of salt deposits fit for the purpose of gas storage. As eventually accepted on behalf of WBC, if gas storage in salt caverns is to be permitted on the basis of need, there must be a corresponding recognition that there are limited opportunities for such developments to occur. WBC’s landscape analysis does not recognise or address the consequences of those matters.

13.1.36 Equally, the infrastructure associated with such development is going to be dictated by the location and size of the gas storage facility. This issue was not addressed in WBC’s evidence, nor was it being argued by WBC that the infrastructure was either unnecessary or excessive for the development proposed.

13.1.37 Policy, both national and local, recognises and ascribes differing levels of importance to landscape and heritage designations. For WBC it was acknowledged that the greatest protection was assigned to sites of international importance, followed in descending order by national, regional, county and local importance (CD/28c – para.6.4.4). While recognising that landscape is an important consideration, this landscape, on any view, should not be credited with the same importance as a National Park or an AONB.

**Structure Plan**

13.1.38 Policy 20 states:

> ‘Lancashire landscape character types are identified on map 13. Development must be appropriate to the landscape character type within which it is situated and contribute to its conservation, enhancement or restoration, or the creation of appropriate new features.’ (CD28c)

13.1.39 This was not a policy to preserve landscapes in aspic, and change would not be resisted (CD/28c para.6.4.2). The policy required development to be appropriate to the landscape character type within which it was situated and contribute to its conservation or enhancement. One of the targets of the SP was to increase areas of native woodland. Target 20.1 sought to increase the area of native woodland by 15% by 2016.

13.1.40 WBC neither recognise not acknowledge that the significant areas of planting of native woodland species proposed as part of this proposal would be a recognised and welcome benefit associated with the development.

13.1.41 In respect of the landscape character types that are identified it should be noted that the provision of Wind Energy Developments were countenanced as being compliant with this policy. Likewise, the NTS connector pipe and the associated metering stations were likewise found to be compliant with this policy.
13.1.42 Policy 2 ‘Quality of Life’, anticipates both minerals and waste development. It refers to material impacts in relation to traffic, visual impact, noise, dust, blasting, landfill gas, pollution, odour and other factors leading to loss of amenity and the requirement that the MPA be satisfied that those effects can either be eliminated or reduced to acceptable levels. For WBC it was accepted that policy compliance is secured here if the impacts are ‘reduced to acceptable levels’.

13.1.43 Policy 7 relates to proposals in ‘Open Countryside and Landscape’. There is a requirement that such developments are in scale and keeping with the features of the Landscape Character Tracts within which they are sited and the development would not have an unacceptable adverse impact on the local character of the landscape and would safeguard key landscape features. The Landscape Character Tracts identify two potential areas of interest: (a) Coastal and estuarine areas; and (b) Amounderness.

13.1.44 Paragraph 4.30 of the Plan informs that Lancashire contains some of the finest countryside in Britain, including the designation of two AONBs. The sentence following reads ‘The remaining landscape is also considered important.’

13.1.45 The Landscape Character Tracts matters to which particular regard are to made are as follows. In the Coastal and estuarine areas the priority is to be given to the conservation of special features, sand dunes, salt marshes, coastal cliffs and grasslands, beaches and other inter-tidal habitats, and the renewal and enhancement of the landscape by the creation of coastal grasslands, management of sand dunes and small scale enhancement and habitat creation measures.

13.1.46 Nowhere do LCC/WBC acknowledge that those matters to which ‘particular regard’ in the context of this policy are to be had include, as part of the CGSL proposals, the creation of further inter-tidal habitats that will be of recognised ecological worth.

13.1.47 In the Amounderness, the ‘distinctive features’ to which ‘priority’ will be given include the renewal and enhancement of the landscape by woodland and hedgerow management, pond conservation and creation, sympathetic new woodland planting and the creation of wetland and other semi-natural habitats and habitat links. There is no recognition in the case of LCC/WBC that those matters to which particular regard is required to be had are enhanced by the CGSL proposals.

Wyre Borough Local Plan

13.1.48 The Local Plan (CD28b), adopted in July 1999, pre-dates the Structure Plan by half a decade. WBC referred to Policies SP13 and SP14 of the Local Plan. However, those policies are Settlement Policies. Policy SP1 states: ‘Development in the Borough will be concentrated within and on the edge of Fleetwood, Thornton Cleveleys and Poulton-le-Fylde with the boundaries of those urban areas being defined by land use allocations and other policies of this plan.’

13.1.49 Policies SP13 and SP14 should be seen in the context of a policy framework for the concentration of development into urban areas and in the context that the relevant LPA is not either the Mineral Planning Authority or the Waste Disposal Authority. The justification to Policy SP13 states:
‘The overriding intention of such policies is thus to redirect development and investment to the settlements and, in doing so, to protect the inherent qualities and rural characteristics of the countryside.’

13.1.50 As acknowledged on behalf of WBC, it is not its case that minerals and waste development should be directed to the settlements.

13.1.51 Policy ENV2 of the Local Plan has also been referred to. Both Mr Kitch and Mr Taylor are of the view that the Canatxx proposal conflicts with the wording of the policy. The Policy states:

‘Except for the purposes of fisheries, sea defence, coastal protection, navigation, informal recreation and amenity, or for the development of the off-shore hydro-carbon, or renewable energy industries, proposals for development will only be permitted where there is no detrimental effect on the open character of the defined open coastline as shown on the proposals map.’

13.1.52 The context for this policy has to be recognised in the sense that WBC has no minerals or waste disposal functions. The policy countenances a range of developments, including off-shore hydro-carbon development in the open coastline, having a detrimental effect without conflict with policy. The inevitable point missing from WBC’s analysis of this policy is a recognition:

a. That if the Gas Compressor Station/Booster Station pipe work, NTS connection etc were associated with off-shore hydro-carbon industry it would be acceptable in terms of the policy; albeit, there would be no difference in terms of the visual impact associated with the development; and,

b. The recognition within the context of the policy of a range of developments that would be permissible on the defined open coastline was, of itself, recognition that the landscape was capable of accommodating a range of developments, many of which would have permanent and significant visual impacts, in an acceptable way.

Landscape’s Ability to Accept Change

13.1.53 The single most significant difference between the approaches on behalf of CGSL and WBC was the assessment of the landscape’s ability to accommodate change.

13.1.54 WBC did not refer to the LCC document ‘Landscape Sensitivity to Wind Energy Development’ (CD76). That was remarkable. It was not sufficient simply to say that the CGSL proposal did not involve Wind Energy Development. The importance was that a professional informed view, consistent with the key policies addressed in this case, was made of the sensitivity of the relevant landscape to accommodate change in the form of Wind Turbines. The whole purpose of that study had been to address landscape sensitivity. It was that issue that was central to a proper and informed assessment of the degree to which this particular landscape could accommodate change of the type proposed in the CGSL scheme.

13.1.55 It was useful reference in understanding how LCC and its Consultants considered the sensitivity of Lancashire landscapes and their ability to accommodate change in an acceptable way. The document was relevant because it demonstrated the ability of the landscape to accept significant change. It was to be noted that the reason for not pursuing the Supplementary Planning Guidance related to concerns about the prospect
of planning applications. There had been no criticism of the analysis by the consultants engaged by LCC.

13.1.56 Moreover, the assessment was consistent with SP Policy 20 (Doc.CD76 para.3.10). By referring back to Policy 20, a development in this subject area must have been adjudged to be acceptable in principle as being ‘appropriate to the landscape character type within which it is situated and contributing to its conservation, enhancement or restoration or the creation of appropriate new features’. It was, therefore, the expressed view of LCC’s own informed Consultants that a development of up to 10 wind turbines would meet the wording of the Policy.

13.1.57 Lovejoys had been commissioned by LCC, Blackpool and Blackburn Councils to prepare guidance on the sensitivity of Lancashire’s landscapes to wind energy developments. It was prepared by landscape experts informed of the Policy framework within which their work was being undertaken (CD76 para.3.1). The only possible conclusion that could be drawn from the work conducted by Lovejoys was that informed and expert opinion concluded that development of wind energy proposals of up to 10 turbines would be compliant with Policy 20, that it would be appropriate to the landscape character type and would contribute to its conservation or enhancement.

**Overall conclusions**

13.1.58 CGSL had consistently recognised, both in the ES and in its landscape evidence, that there would be significant adverse impacts during the construction phase and adverse impacts would continue in respect of the permanent elements of the scheme. Those adverse consequences have to be put into the planning balance in any informed assessment of the overall proposal. The Councils landscape case is overstated and significantly flawed.

13.1.59 The cumulative assessment point whereby multiple negligible effects were added to create a substantial adverse impact, lead inevitably to the assertion that the utilitarian one storey building at the Seawater Pump Station in Fleetwood Docks, surrounded by dereliction, should be refused planning permission on the basis that it contributed to multiple negligible adverse effects. That lead to the illogical and unattractive proposition that, while the development of that building would be acceptable if divorced from the wider CGSL proposal, it was, nevertheless, unacceptable when part of the proposal on the other side of the Wyre estuary. That was an absurd proposition to advance.

13.1.60 The most significant difference between CGSL and the Councils related to the sensitivity of the landscape to accommodate change. WBC failed to acknowledge that development, both above ground and permanent, was anticipated to be accommodated within this landscape. In particular, Policy 72 of the MWLP (CD28d) relating to salt provision anticipated that proposals for the extraction of salt and/or brine would be permitted having regard to the three criteria set out in the policy. LCC, therefore, anticipates development of salt extraction. That would necessarily involve wells, pumping stations, access tracks and associated pipe work. Inevitably there would be hedge removal and ‘linear’ and ‘cumulative’ effects.

13.1.61 Secondly ‘Landscape Sensitivity to Wind Energy Development’ (CD76) contemplates wind turbine development within the landscape that was the main focus of the CGSL proposal. Such developments would provide much taller developments, moving elements, access tracks, substations and power lines as an inevitable concomitant of
that proposal. It was clear that informed and expert opinion advising the LCC expressed the view that such development would comply with policy.

13.1.62 Thirdly, WBLP Policy ENV2\(^{(CD28h)}\) expressly countenanced off-shore hydro-carbon and renewable energy industries being appropriately located on the defined coastline. Developments associated with the hydro-carbon industry could include compressor stations, booster stations, dryers and vent stacks. Whilst it was acknowledged that the CGSL proposal was not an off-shore hydro-carbon industry, the infrastructure associated with it must have been contemplated as being appropriate and acceptable and capable of being accommodated within the landscape.

13.1.63 Overall, there had been consistent acknowledgement that the landscape of the area was capable of accommodating significant change. While for CGSL it was recognised that there would be adverse landscape consequences as part and parcel of the proposals, the need to recognise that the landscape was one which could accommodate change and that there were associated landscape benefits to outweigh negatives, including Habitat creation, Broad leaf planting and Hedgerow creation. The overall conclusion should be that the landscape impact was such as not to warrant the refusal of planning permission for the development.

13.2 Case for LCC

13.2.1 LCC adopted the submissions of WBC on this issue. That included the transformation of the rights of way network through the site from quiet rural walks to walks close to major built and engineering operational development, the effect of which would be heightened by the essential segregation of rights of way where they adjoined or crossed what would become internal haul roads.

13.2.2 What was very apparent from CGSL’s inquiry evidence was how ill formulated these proposals had been. Firstly, the approach to landscape evidence in the ES was not just different to that presented as evidence to the inquiry, but could only be viewed as being fundamentally flawed. For CGSL it had been accepted that less than full weight could be accorded to that part of the ES.

13.2.3 Secondly, the effect of the proposed development on the East of the Wyre Estuary would be to introduce obvious and alien industrial and quasi-industrial features in the landscape – fenced, lit compounds around up to 24 well heads with a starkly engineered landscape feature around them, together with two substantial fenced and lit industrial areas. CGSL’s landscape assessor had not visited the site at night and no assessment had been made of the impact of lighting from the development on the night-time environment. In no way could the altered landscape be considered comparable to agricultural development.

13.2.4 The new features would be present in the landscape for decades, and the impact of the changed views and altered character of the landscape upon residents and visitors to the area could be best summarised by a walk along the Wyre Way from South of the CGS to north of well-head 2. The potential changes, which would be repeated for other public rights of way, would include segregation, vehicle crossings and signage, together with clear and filtered views into the massive degree of industrial incursion into the open countryside.
13.2.5 Notwithstanding CGSL’s policy analysis (Doc.CGS/9/3 App 1), in the context of the landscape evidence it was untenable and absurd to conclude that there would be ‘no detrimental impact’ upon the landscape of this part of Lancashire. Indeed, for CGSL it was accepted that there would be a high magnitude of impact on the landscape during the construction period (CGS11/2 para.5.135).

13.2.6 It should also be noted that definitive plans showing the extent of built and operational development were produced to the inquiry only after CGSL had presented its landscape evidence. That evidence did not address the exact extent of development for which permission was now being sought. The clearest example was that of the settling pipe array.

13.2.7 The final point in relation to landscape issues related to the period over which the impact would take place. Much had been made of the fact that what was proposed would be transitory. It would not. Whatever may or may not have been the impression given by Mr Grimes, it was now clear that what was not being sought was a permission that would last no more than 30 years in total. The development might last for many decades as caverns were progressively commissioned. Moreover, Mr Grimes had indicated that the infrastructure that was proposed to be used would have a life well in excess of thirty years, and that applications to continue with the use of the caverns could be made towards the end of the life of any permission granted now. It follows that what is proposed would have an impact for a number of decades and probably many decades. It would be obtuse to characterise this permission as ‘temporary’ save in the sense that all development is in the perspective of human history transitory, and where the life of residential development is assumed to be 50 years (PPG25 para.31).

13.3 Case for Wyre Borough Council (WBC)

Introduction

13.3.1 There was a large measure of overlap between the resolved positions of the two Local Authorities. WBC had not presented evidence in support of every aspect of its resolved position, where evidence had been presented by LCC. Local opposition to a proposal is not in itself a ground for refusing or granting planning permission, unless it is founded upon valid planning reasons (PPS1 para.27). If there was merit in the case presented by LCC, it should prevail, even in the absence of supporting evidence from WBC. Similarly, if there was no merit in the case presented by LCC, it should fail, notwithstanding supporting evidence from WBC. As noted at the opening of the Inquiry, duplication of evidence by WBC would serve no meaningful purpose and would not assist the determination of the appeals.

13.3.2 WBC only presented evidence concerning the Landscape and Visual Impact of the proposed development. WBC’s case is that there is material harm occasioned by the development as a result of an adverse Landscape and Visual Impact. This harm should be weighed in the wider planning balance, in coming to an informed judgement as to the acceptability of the appeal scheme.

13.3.3 The Closing Submissions of WBC should, therefore, be considered by the Secretary of State (SoS) in conjunction with the Closing Submissions of LCC, which take account of WBC’s Landscape and Visual Impact Assessment, in forming the overall judgement that planning permission ought properly to be refused.
Adequacy of the Environmental Statement

13.3.4 WBC considers that the environmental impacts that would result from the proposals have not been fully or properly assessed in the ES which accompanied the original submission or in the ES, as amended by the Regulation 19 Direction information.

13.3.5 The ES had been submitted pursuant to the EIA Regulations. It was common ground that the proposed development was EIA development, and that an ES was required. There was no statutory provision as to the form of an ES (Circ. 2/99 para.81). Nonetheless, Regulation 3(2) states:

'The relevant Planning Authority or the Secretary of State or an Inspector shall not grant planning permission pursuant to an application to which this Regulation applies unless they have first taken the environmental information into consideration, and they shall state in their decision that they have done so.'

13.3.6 The expression ‘environmental information’ was defined in Regulation 2(1) as follows:

'Environmental information means the Environmental Statement, including any further information, any representations made by any body required by these Regulations to be invited to make representations, and any representations duly made by any other person about the environmental effects of the development.'

13.3.7 ‘Environmental Statement’ was also defined in Regulation 2(1) as follows:

'Environmental Statement means a statement -
(a) that includes such of the information referred to in Part I of Schedule 4 as is reasonably required to assess the environmental effects of the development of which the Applicant can, having regard in particular to current knowledge and methods of assessment, reasonably be required to compile, but
(b) that includes at least the information referred to in Part II of Schedule 4.'

13.3.8 Part II of Schedule 4 to the Regulations provided (inter alia):

'1. A description of the development comprising information on the site, design and size of the development.
2. A description of the measures envisaged in order to avoid, reduce and, if possible, remedy significant adverse effects.
3. The data required to identify and assess the main effects which the development is likely to have on the environment....'

13.3.9 Part I to Schedule 4 provided (inter alia):

'3. A description of the aspects of the environment likely to be significantly affected by the development, including, in particular, population, fauna, flora, soil, water, air, climactic factors, material assets, including the architectural and archaeological heritage, landscape and inter-relationship between the above factors.
4. A description of the likely significant effects of the development on the environment, which should cover the direct effects and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects of the development, resulting from:
(a) the existence of the development;
(b) the use of natural resources;'
(c) the emission of pollutants, the creation of nuisances and the elimination of waste.

and the description by the Applicant of the forecasting methods used to assess the effects on the environment...

7. An indication of any difficulties (technical deficiencies or lack of know-how) encountered by the Applicant in compiling the required information.’

13.3.10 Regulation 30 provides that a grant of planning permission by the Secretary of State in contravention of Regulation 3 is to be taken as not being within the powers of the Town and Country Planning Act, under Section 288 of that Act.

Issues

13.3.11 The mandatory requirements of paras.1 to 3 of Part II of Schedule 4 were not in a logically correct sequence:\textsuperscript{23} Firstly, the ES must contain a description of the development\textsuperscript{(para.1)}. Secondly, it must contain the data required to identify and assess the main effects which the development is likely to have on the environment\textsuperscript{(para.3)}. Thirdly, it must contain a description of the measures envisaged to avoid, reduce and, if possible, remedy significant adverse effects\textsuperscript{(para.2)}.

13.3.12 Applying the above principles to the facts of this case, the SoS cannot grant planning permission in respect of this development if the alleged deficiencies are such as to allow the SoS to conclude that:

- The data required to identify and assess the ‘main effects’ of the development have not been provided;
- Alleged inadequacies in the preparation of the ES, collectively or individually, are so significant as to amount to a failure to consider ‘significant adverse effects’ and/or ‘main effects’\textsuperscript{24}.

13.3.13 That this is the right approach is given support by Circ.2/99, which states:

‘The Directive’s main aim is to ensure that the Authority giving the primary consent (the ‘competent Authority’) for a particular project makes its decision in the knowledge of any likely significant effects on the environment. The Directive, therefore, sets out a procedure that must be followed for certain types of project before they can be given ‘development consent’. This procedure ... is a means of drawing together, in a systematic way, an assessment of the project’s likely significant environmental effects. This helps to ensure that the importance of the predicted effects, and the scope for reducing them, are properly understood by the public and the relevant competent authority before it makes its decision.’ \textsuperscript{(Circ.2/99 para.9)}

13.3.14 The ES itself stated that its aim was ‘to identify and assess potential impacts that may arise from the construction, operation and decommissioning of the gas storage scheme.’ \textsuperscript{(ES Vol.2 pg.29)}.

13.3.15 If the ES is deemed to be so flawed that it fails to consider ‘significant adverse effects’ or ‘main effects’, then it cannot constitute an ES. There would be, therefore, no relevant environmental information and the SoS (applying Reg 3(2)) must not grant planning permission.

\textsuperscript{23} Per Harrison \textit{J v. Cornwall County Council, ex parte Hardy} [2001] JPL 86 at paragraph 66

\textsuperscript{24} See \textit{Hardy} paragraphs 64 to 67
Deficiencies in the ES

13.3.16 For CGSL it had been agreed that in order to assist the SoS and the public:
(i) The ES had to follow a methodology;
(ii) The methodology had to be robust, transparent and then followed;
(iii) The assessment of effects had to be comprehensive.

13.3.17 For CGSL it had been accepted in cross-examination that the ES contained ‘some shortcomings’. This concession was the appropriate starting point for considering the inadequacy of the ES. That it was inadequate was beyond dispute.

13.3.18 The ES Methodology is set out at ES Vol.2 para.5.1.2. The ES states that the assessment of the visual impact involved identifying individual visual receptors such as residents, local properties and users of local public open space and footpaths (ES Vol.2 pg.39). If not all relevant visual receptors are identified, then the effect is to underestimate or under-represent the likely impact of the development. The methodology was not robust.

13.3.19 The ES purported to make an assessment of the impact of the development on the landscape by: a) assessing how sensitive the landscape was to change; and then b) assessing the degree of change which the development would make to the landscape (ES Vol.2 pg.39). The degree to which various receptors were ‘sensitive’ to a change in the existing landscape character depended on whether the current landscape was of high, medium or low value. On behalf of CGSL it was agreed that knowledge of the landscape value was fundamental to the assessment of significance.

13.3.20 Although the ES provided a definition of ‘sensitivity’ there was no definition of landscape value. Accordingly, when a landscape value is ascribed, the reader has no idea of the basis for the criteria on which such a landscape value has been given. The ES therefore lacks transparency and cannot be understood by third parties.

13.3.21 While a definition of ‘sensitivity’ of the landscape character or visual receptor was provided, such definitions were incomprehensible (ES Vol.2 pg.39). For CGSL it was conceded that the definitions were ‘flawed’. The definition of ‘sensitivity’ used in the ES meant that no footpath (regardless of use/character/location etc) could ever be considered to be high sensitivity. For example, the Wyre Way could not be considered to be high sensitivity in the ES regardless of the SoS’s judgement as to its sensitivity; regardless of its proximity, at less than 1km, to intrusive built development; and notwithstanding CGSL’s evidence, which considered it to be of high sensitivity (Doc.CGS/11/2 para.534).

13.3.22 For similar reasons, users of public areas (Doc.CD3/Fig.30) could never be considered high and/or medium sensitivity. These constituted obvious flaws in the definitions employed in the ES. The effect was to underestimate the significance of the impacts of the development (ES Vol.2 pg.40 Table 5-3). On behalf of CGSL it was conceded that the ‘sensitivity levels were inappropriate’ and that they lead to ‘some anomalous results’.

13.3.23 The ES divided the application site into essentially 4 areas: Irish Sea (Ch.8); Fylde Peninsula (Ch.9); Wyre Estuary (Ch.10); Preesall area (Ch.10). There was no map delineating these areas in the ES, nor were they set out in any source document. The areas were, therefore, meaningless to anyone reading the ES.
13.3.24 Regardless of the area considered, the ES contained errors. It failed to explain the landscape character value of the Irish Sea area. This made it impossible to follow how the overall judgment on impact to landscape character had been reached (ES Vol.2 pgs.81-2). The deficiencies in the ES in respect of the Wyre Estuary and Preesall area, were the most significant. The ES failed to make any baseline assessment of sensitivity. No assessment had been made of the landscape quality of the Wyre Estuary, even though it was conceded on behalf of CGSL to be ‘high quality’.

13.3.25 The results of the visual impact assessment were set out in tabular form (ES Vol.2 pgs.232-3). The Tables set out the sensitivity of the receptors, which were identified geographically (Doc.CD/3 Fig.31a). The results table contained a number of significant errors. Receptor 20 lay 1-2km from the GCS and infrastructure. Applying the (albeit flawed) definition of sensitivity in the ES, it should have be classified as ‘medium sensitivity’ not ‘low sensitivity’. Applying the matrix in Table 5-3, the effect of the incorrect classification was to under-represent the significance of the impact.

13.3.26 Receptors 22 and 23 lay in Staynall village; were within 1km of the GCS. Applying the ES definition they should have been classified as ‘high’ not ‘medium’ sensitivity. The effect was to again under-represent the significance of the visual impact; a ‘moderate’ impact not a ‘slight adverse to negligible’ impact.

13.3.27 Receptor 27 was Highgate Farm which lay within 1km of built development. Accordingly, it should be ‘high’ not ‘medium’ sensitivity, and the ‘moderate adverse’ impact should be ‘substantial’. The effect was to under-represent the impact of the development, by incorrectly applying the flawed methodology of the ES.

13.3.28 The ES considers a number of ‘other properties’ including the Poplars, Hackensall Hall Farm and Stalmine Hall Park (ES Vol.2 para.10.3.4.17). No details were provided on either the sensitivity of the receptor or the magnitude of change. It was, therefore, not possible to understand how the significance of the impact had been derived.

13.3.29 WBC considered the impact on the Wyre Way to be particularly important in the determination of the planning appeal; yet no information had been provided on the sensitivity of the Wyre Way or on the magnitude of change to the Wyre Way (ES Vol.2 pg.229). Accordingly, the judgement of the ES that the long-term impact was negligible was completely without context and therefore meaningless; a point accepted on behalf of CGSL.

13.3.30 Finally, the assessment in the ES was only a prediction because the visual impact assessment had not been based on visits to individual properties (ES Vol.2 pg.39). A visual impact assessment based on a site visit would be more robust than one which was not.

Significance

13.3.31 The significance of impact on both landscape and visual receptors was categorised in Table 5-3. The results Tables (ES Vol.2 pgs.232-3) sought to employ Table 5-3 in deriving the significance of the impact as a function of sensitivity of receptor and magnitude of change. However, the ES failed to apply (properly or at all) the matrix in Table 5-3. It therefore failed to follow its own (flawed) methodology. The results table entry for Receptor 12, the Heads Caravan Park, indicates a ‘high sensitivity’ and a ‘low magnitude of change’. Applying Table 5-3 should have resulted in a ‘moderate’ significance of impact, not ‘slight adverse’. The ES had failed to follow its own methodology and cannot, therefore, be considered to be robust.
13.3.32 Receptor 15, Curwens Farm, is stated to be of ‘high sensitivity’ with ‘low magnitude of change’. Again, a moderate adverse impact should have been recorded, not ‘slight adverse’. Receptor 20 was ‘low sensitivity’ with ‘low magnitude of change’. The ES should have recorded ‘slight adverse impact’, not ‘negligible’; a category that did not even appear in Table 5-3.

13.3.33 Receptor 24, Gaskells Farm, with ‘high sensitivity’ and ‘high magnitude of change’ should be recorded as ‘substantial’ impact, not ‘moderate adverse’. Receptor 25, Carters Farm, with a ‘high sensitivity’ and ‘low magnitude of change’ should have been recorded as ‘moderate adverse’, not ‘negligible’. On each occasion, applying Table 5-3, these errors lead to an under-representation of the significance of the impact. The ES was fundamentally flawed as it failed to follow its own methodology.

Impact

13.3.34 The ES made the judgement that there was not expected to be any ‘significant residual impact’ on landscape character in the Fylde area \textsuperscript{(ES Vol.2 para.9.3.6)}. The ES provided no definition as to what a ‘significant’ impact would be. For CGSL it was agreed that, in that context, the judgement was meaningless. In the corresponding section about the Wyre/Preesall area, no reference was made to ‘significance’ at all. There was, therefore, a worrying lack of consistency in the way the methodology was applied in different areas of the application site. This matter was of particular concern given that the ES recorded one visual receptor with a substantial adverse impact, four with a moderate adverse impact and three with a slight adverse impact. The ES was silent on whether or not such impacts were ‘significant’.

13.3.35 The ES made no reference to cumulative impacts, even though they are specifically referred to in para.4 Part 1 to Schedule 4 of the Regulations. It was agreed that cumulative impact was relevant in terms of intervisibility and in terms of transition through a landscape. The ES had simply not modelled those impacts. For CGSL it was conceded that there should have been a section on it.

13.3.36 Judgements on Landscape and Visual Impact are subjective. Regardless of the conclusions reached as to the adequacy of the ES, the failings of the ES called into question the competence or objectivity (or both) of its authors. It was no answer to contend that criticisms of the ES did not form part of the resolved position of the LPA. It was plain from the WBC officer’s report to committee and the resolution of the LPA that it did not accept the findings of the ES. In any event the point was raised in the resolution of LCC, with whom WBC presented a joint case.

13.3.37 For CGSL it was ultimately conceded that the ES contained a ‘number of errors’ and that one could not attach full weight to it. In the light of such evidence, it would be appropriate for the SoS to consider whether planning permission could be granted in this case, given the inadequacies in the ES, regardless of the resolved position of WBC and LCC.

13.3.38 In summary, WBC invited the SoS to find that the ES (in so far as it purports to deal with Landscape and Visual Impact Assessment):

(i) Failed to provide relevant definitions e.g. on landscape value;
(ii) Where it provided definitions, such definitions were inherently flawed e.g. on sensitivity;
(iii) Failed to consider all relevant receptors;
(iv) Where it considered receptors, it failed to correctly apply its own (flawed) definitions of sensitivity (see Receptors 20, 22, 23 and 27);
(v) Failed to identify the sensitivity or degree of change experienced by a number of important receptors e.g. the Poplars, Hackensall Hall Farm and the Wyre Way;
(vi) Failed to apply correctly the matrix of significance (Table 5-3) e.g. Receptors 12, 15, 20, 24 and 25;
(vii) Failed to consider cumulative impacts at all;
(viii) Failed to consider whether, overall, the recorded impacts were ‘significant’, in the context of the Wyre Estuary and Preesall.

13.3.39 On the basis of CGSL’s evidence, the only possible conclusion to draw was that the ES was a fundamentally flawed document which had been totally discredited and upon which no reliance could be placed. With respect to landscape and visual impact, the full effects of the proposed development on the environment and local communities had not been properly assessed and that adequate, detailed and objective information has not been submitted in the ES accompanying the application. Accordingly, planning permission could not be granted in this case.

Planning Policy

13.3.40 The Development Plan comprised the Regional Spatial Strategy (RSS) for the North West (March 2003); Joint Lancashire Structure Plan (March 2005); Lancashire Minerals and Waste Local Plan (2006); Wyre Borough Local Plan (July 1999).

Regional Spatial Strategy

13.3.41 Policies DP1 to DP4 set out the Core Development Principles that should inform spatial and development planning across the Region in order to achieve sustainable development. Policy DP3 required new development to demonstrate good design quality and respect for its setting. RSS was not written as a development control document. The Appellant did not rely on any policies contained within it, in support of the case on landscape and visual assessment.

Joint Lancashire Structure Plan (JLSP)

13.3.42 The JLSP was adopted in March 2005. Policies 20 and 23 were relevant to a consideration of the landscape and visual impact evidence. Policy 20 referred to the Lancashire landscape character types identified on Map 13. To comply with Policy 20, the proposed development must be appropriate to the landscape character type within which it is situated; and the development must contribute to its conservation, enhancement or restoration or the creation of appropriate new features. ‘Appropriate new features’ in this context were landscape features (Doc.CD554 pg.78).

13.3.43 Applying the policy test in Policy 20, if either a) the proposed development was not appropriate to the landscape character type within which it was situated, or b) the proposed development did not conserve or enhance the landscape, then the proposed development must be deemed to be contrary to Policy 20. In reaching such a conclusion, the proposed development must be assessed in relation to the policy’s objective criteria listed (a) to (k). This would include a consideration of b) the condition of the landscape; c) visual intrusion; d) the layout and style of buildings; and j) remoteness and tranquillity.
13.3.44 WBC accepted that Policy 20 did not place an absolute bar on development. The policy was designed to accommodate landscape change ‘in a positive way’ (Doc.CD554 para.6.4.2). However, the Policy expressly took account of all of Lancashire’s landscapes, ‘not just those with special designations.’ The Policy recognised that areas could be locally distinctive without being the subject of a special designation. Map 13 (Doc.CD554 pg.77) defined the area west of the estuary as coastal plain and suburban. East of the estuary, the landscape was characterised as coastal plain and open coastal marsh.

13.3.45 Policy 23 sought to maintain the open character of the undeveloped coastal zone (Doc.CD554-Map 16). Areas both to the east and west of the estuary were defined as falling within the Lancashire coastal zone. Part of the area to the east of the estuary was defined as an undeveloped coastal area. Much of the undeveloped coast had considerable nature conservation value and was also important in terms of its landscape quality and character (Doc.CD554 para.6.4.18).

13.3.46 Policy 23 required that ‘the open character of the undeveloped coastal zone will be maintained’. In the context of the policy, ‘maintained’ meant that there would be no net harm to the open character of the undeveloped coastal zone, and that was accepted on behalf of CGSL. Accordingly, if there was any harm to the ‘undeveloped coastal zone’ part of the Wyre estuary, then the proposed scheme would be contrary to JLSP Policy 23.

Lancashire Minerals and Waste Local Plan 2006 (LMWLP)

13.3.47 The Plan was adopted and became operational on 28th December 2001. Policies 2, 4 and 7 were relevant to the landscape and visual impact.

13.3.48 Policy 2 stated that proposals for minerals development would only be permitted if it was demonstrated that visual impact (and other factors leading to loss of or damage to amenity which would adversely affect people) could be ‘eliminated’ or ‘reduced to acceptable levels’. In assessing proposals, account would be taken of the extent to which those factors could be controlled ie. mitigation measures.

13.3.49 It was not suggested by the Appellant that the landscape and visual impact could be eliminated. In judging compliance with Policy 2, the issue was whether the mitigation measures proposed were sufficient to reduce the landscape and visual impact to an acceptable level. In judging the landscape and visual impact it was appropriate, as agreed in cross-examination, to include in that assessment cumulative impacts. Cumulative impacts had not been assessed in CGSL’s landscape evidence (Doc.CGSL/11/2 para.3.20).

13.3.50 Policy 4 provided that minerals developments would only be permitted if the cumulative material effects of the proposals would be acceptable when assessed against the criteria in Policy 2. Under Policy 7 minerals developments in the open countryside would only be permitted if a) they were in scale with the features of the Landscape Character Tracts within which they were sited; and, b) they were in keeping with the features of the Landscape Character Tracts; and, c) they would not have an unacceptable adverse impact on the local character of the landscape; and, d) they would safeguard key landscape features. If the proposal failed any of these criteria, it would be contrary to Policy 7.

13.3.51 It was agreed that the Policy applied regardless of whether a particular area was the subject of a special landscape designation because the landscape in Lancashire as a
whole is considered ‘important’ in planning policy terms, regardless of its formal designation. **Policy 7 specifically concerned developments which were ‘temporary uses of land’.** The length of any alleged ‘temporary’ impact should therefore be evaluated.

13.3.52 The Landscape Character Tracts referred to in Policy 7 were defined and also set out matters to which ‘particular regard’ should be had. It was agreed that the list was non-exhaustive. Accordingly, if it was concluded that the proposal was either not in scale or not in keeping with the landscape character in which the various development elements were to be sited, then the proposed development would be contrary to Policy 7.

Wyre Borough Local Plan (1991 - 2006) (WBLP)

13.3.53 Adopted in July 1999, Policies SP13, SP14 and ENV2 were relevant to the landscape and visual impact evidence. Policy SP13 was considered relevant by CGSL. It was a fundamental part of the overall strategy of the Local Plan that policies for the control of development outside the defined settlements should restrict proposals to those which are actually required to support the areas predominant land uses. The policy was concerned primarily with the needs of agriculture, forestry, tourism and their related activities together with the objectives of retaining local employment opportunities or satisfying a particular local need for housing.

13.3.54 Policy SP13 (unless otherwise justified by other policies in the Plan) would not permit development in areas designated as countryside unless one of the exceptions (A) to (E) was satisfied. It is agreed that none of the exceptions applied. Accordingly, the proposal was contrary to Policy SP13. The overriding intention of the Policy was to protect the inherent qualities and rural characteristics of the countryside. The policy also required all proposals for development to be considered with regard to issues of amenity, scale, design and materials.

13.3.55 Policy SP14 sought to apply consistent principles and high standards of design and amenity for all types of development. The proposed development must satisfy a number of criteria, which include (B) the development should be acceptable in the local landscape in terms of its scale, mass, style, siting and use of materials; and (C) suitable landscaping and/or screening should be employed to satisfactorily ameliorate the impact of the development and any necessary associated activities (for example parking, external storage). If any element of the development was deemed unacceptable in the local landscape in terms of its scale, mass or siting, then the application would be contrary to Policy SP14.

13.3.56 Policy ENV2 stated that proposals for development would only be permitted where there was no detrimental effect on the open character of the defined coastline. The application site east of the estuary was within the open countryside. The booster pump station fell within the coastal zone. Although the gas compressor station (GCS) was not within the coastal zone it would affect views from the coastal zone. As agreed on behalf of CGSL, it would, therefore, affect the amenity of those enjoying the ‘openness’ of the coastline.

13.3.57 Policy ENV2 set out a series of exceptions. The proposed development did not fall within any of the stated exceptions. ‘Renewable energy industries’ were one such exception. Wind farms are considered to be a special case for the purposes of Policy ENV2. The Policy reflected the importance of the open coastline and was aimed at...
preserving ‘this scarce amenity and important nature conservation resource’ \(^{(Dec.CD/28b - WBLP\ Policy\ ENV2\ Justification)}\). It was no part of CGSL’s case to suggest that there would be ‘no detrimental effect’ on the open character of the defined open coast line, as a result of the proposed scheme. For CGSL it was accepted that the proposed development would be contrary to Policy ENV2.

Planning Policy Statement 7 (PPS7) - Sustainable Development In Rural Areas

13.3.58 PPS7 was published in August 2004, post-dates the JLSP and was a material consideration in the determination of this appeal. Unlike PPG3\(^{(at\ pg.38)}\) and PPS6\(^{(at\ para.3.2)}\), PPS7 did not express itself to be a material consideration which may supersede adopted policies in the Development Plan. The Government’s objectives for rural areas contained in PPS7\(^{(pg.6)}\) were, amongst others:

(i) To raise the quality of life and the environment in rural areas through the promotion of:
   (a) Good quality, sustainable development that respects and, where possible, enhances local distinctiveness and the intrinsic qualities of the countryside; and
   (b) Continued protection of the open countryside for the benefit of all, with the highest level of protection for our most valued landscapes and environmental resources;

(ii) To promote more sustainable patterns of development:
   (a) Focusing most development in, or next to, existing towns and villages;
   (b) Preventing urban sprawl;
   (c) Discouraging the development of “Greenfield” land and, where such land must be used, ensuring that it is not used wastefully.

13.3.59 Sustainable development was the core principle underlying land use planning, in general, and PPS7, in particular. It embodied the following key principles:

(i) New building development in the open countryside away from existing settlements, or outside areas allocated for development in development plans, should be strictly controlled; the Government’s overall aim is to protect the countryside for the sake of its intrinsic character and beauty, the diversity of its landscapes, heritage and wildlife, the wealth of its natural resources and so it may be enjoyed by all;\(^{(para.1(iv))}\)

(ii) All development in rural areas should be well designed and inclusive, in keeping and scale with its location and sensitive to the character of the countryside and local distinctiveness.\(^{(para.1(vi))}\)

13.3.60 The Development Plan policies referred to above were entirely consistent with the key objectives and key principles of PPS7, and for CGSL it was accepted in cross-examination that ‘The Policies generally reflect the aspirations of PPS7.’

13.3.61 If it was concluded that the landscape and visual impact evidence demonstrated non-compliance with the Development Plan policies, then PPS7 was not a material consideration which could justify the grant of planning permission in this instance.

**NB. Inspector’s Note.** PPS 3 replaced PPG3 after the close of the inquiry.

Supplementary Planning Guidance
13.3.62 Three documents were potentially relevant a) A Landscape Strategy For Lancashire; b) Landscape And Heritage SPG; and c) Renewable Energy SPG. Their background status was set out in Doc.WBC/1/5.

13.3.63 The Landscape Strategy for Lancashire comprised 2 reports (a Landscape Character Assessment and a Landscape Strategy). It informed Policy 20 of the JLSP. It added little to the policy background beyond the tests contained in Policy 20.

13.3.64 The Landscape and Heritage SPG had been intended to provide additional guidance on the operation of Policy 20. The JSP Authorities had commissioned consultants to undertake a Study of Landscape Sensitivity to Wind Development, to help inform the SPG. The findings of the study were incorporated into a revised draft SPG (Doc.CD/554b).

13.3.65 In December 2005, the Joint Advisory Committee for Strategic Planning determined to exclude the revisions to the SPG as it considered that it could give rise to an excessive number of planning applications for wind energy development. It determined that this part of the SPG should be reconsidered and potentially used in an SPD on Renewable Energy.

13.3.66 At the close of the inquiry the SPG (even as amended) had not been adopted by either LCC or WBC. In accordance with the advice in PPG12, very little weight could attach to it, and no weight could attach to that part, relied on by CGSL, which concerned wind energy development.

13.3.67 The purpose of the Renewable Energy SPD was to inform Policy 25 of the JLSP, not policies 20 and 23. It was in draft, had not been adopted and limited weight can attach to it.

13.3.68 If the appeal proposal was contrary to the Development Plan, then none of the above SPG documents could be material considerations which justified non-compliance with the DP. Moreover, to the extent that reliance was placed by CGSL on documents relating to wind farm developments alone, they were not intended to, nor could they, be used as justification for other forms of development. This was recognised on behalf of CGSL (Doc.CGS/11/2 – para.3.24) where it was accepted that the document Landscape Sensitivity to Wind Energy Development ‘addresses landscape parameters only’ and was ‘specifically related to wind energy schemes.’ Further, it provided only ‘strategic guidance’ and ‘is not intended for the assessment of individual applications, where site specific…assessments will still be required.’ (Doc.CGS/11/2 – para.3.27)

13.3.69 CGSL also accepted (Doc.CGS/11/2 – para.2.20) that sensitivity varied according to the nature of the proposed development and the type of change being considered, and that could only be achieved by carrying out an assessment. The reliance on studies in the context of wind energy development had very little relevance, if any, to the determination of these appeals.

Elements of the Scheme

13.3.70 The relevant expert witnesses agreed that, before any assessment of landscape and visual impact was undertaken, it was appropriate to identify the various elements of the proposed scheme. The major elements included construction of the caverns, wellheads, BPS and GCS.

Construction of the Caverns
The construction of each cavern would comprise a drilling phase requiring a drilling rig at the wellhead for up to 3 months. This would be followed by the washing of the cavern by seawater, over a 2 year period (Doc.CGS/11/2 – para.4.16). The drilling rig would be 27 metres high. Each wellhead would have a hardstanding working area, approximately the size of a football pitch. Drilling at each wellhead would take 6 weeks. Accordingly, the 27 metre high drilling rig would be present for a minimum of 144 weeks, although in cross-examination, it was conceded that the figure would be nearer 5 years.

Wellheads

Up to 24 wellheads would be constructed along a 3 kilometre stretch of the eastern shore of the Wyre Estuary. Each wellhead would be 1.8 metres in height with a gravelled access area (12m²), with a 3 metre high perimeter security fence together with lighting and security cameras (Doc.CGS/11/2 – paras.4.55-60).

Those wellheads within open countryside would be set within a 3 metre high earth mound; an engineered bund in a doughnut shape. Wellheads would be served by a 4 metre access track and would be installed over a 5 year period (Doc.CGS/11/2 – paras.4.59+64).

Booster Pump Station (BPS)

The BPS would comprise a single storey structure of brick and slate with an overall height of 11 metres (Doc.CGS/11/2 – paras.4.42 & Plan CD/75u(r)). Its built footprint would be some 2,384m², while the site area of the BPS with external areas (including car parking, hardstanding and areas of maintenance equipment) would be some 15,515m². There would also be a 450m length of 7.3m wide roadway, together with associated fencing and gates.

Gas Compressor Station (GCS)

The GCS would be a larger building than the BPS and whose siting was accepted on behalf of CGSL as being more critical (Doc.CGS/11/2 – paras.4.48). It would be 11.5 to 15.5 metres in height with a building footprint of some 4,331m². External plant area would comprises Electrical switch yard; Coolers; Filters; Driers and a 10 metre high chimney stack. There would also be car parking. The external area would cover approximately 10,000m²; there would be 100m metres of 7.3m wide roadway, together with security fencing and gating.

Landscape and Visual Impact Assessment

The Irish Sea

The significance of the operation and residual effects on the landscape would be ‘negligible’ to ‘slight beneficial’, following restoration of the beach and improvements to the seawall and sea viewing platform (Doc.WBC/1/1 para.4.3.4.4). Other than a moderate adverse visual impact during construction, WBC agree CGSL’s assessment and consider that the proposals would be sufficient to mitigate any long-term adverse impacts on this area.

Fylde Peninsula
13.3.77 WBC consider that the proposals would lead to significant negative impacts in relation to visual intrusion by the seawater pump station, the GCS, the wellheads and the pipelines during construction and throughout operation until such time as mitigation measures altered this.

13.3.78 The construction and landscape effects could be summarised as:

(i) Loss of 0.8 hectares of open grassland in the construction of the seawater pumping station;
(ii) Loss of 12 metres of hedgerow in the construction of pipelines;
(iii) Removal of several significant areas of woody scrubland vegetation in the line of the pipelines;
(iv) Approximately 3.5 kilometres of trench work up to 36/37 metres wide running the course of the pipeline from the seawall to the seawater pumping station and the estuary edge.

13.3.79 There were 13 receptors within the field of visual influence which would suffer significant negative impacts throughout the construction phase. The operational effects would include a) the introduction of a large industrial building (the seawater pump station) which would be visible from the estuary nature reserve to the south and the eastern bank of the estuary, and b) views of the GCS, drilling rigs and other related activities would degrade the landscape quality of the eastern bank of the estuary as viewed from the western bank. The industrial nature of the buildings, their scale and nature, would appear out of keeping with the high quality rural landscape and would remain as a permanent landscape change beyond the construction and operational phases.

13.3.80 This would be a significant negative impact throughout the operational phase and would remain into the residual phase. Many smaller negative impacts were noted and fell to be considered separately under cumulative effects.

13.3.81 The proposed developments on the western bank of the Wyre Estuary passed through a landscape of mixed quality and the impacts would be most noticeable during the construction phase. However, the length of the construction phase and the nature of the impacts generated within this phase were such that a negative change to both the landscape character and visual character of the application site would take place.

Wyre Estuary and Preesall

13.3.82 The landscape and visual impacts would include:

(i) The loss of 1.5 hectares of arable open countryside for the GCS;
(ii) The introduction of the GCS, a large industrial building out of scale and character with the surrounding countryside. The GCS would remain highly visible from many angles including from across the estuary to the west, creating a permanent negative influence over the landscape’s character and visual amenity;
(iii) The loss of 1.55 hectares of open arable countryside for the booster pump station;
(iv) The introduction of the BPS, a large industrial building out of scale and character with the surrounding landscape. The BPS would remain highly visible from many angles and would create a permanent negative influence over the landscape’s character and visual amenity;
(v) Approximately 6,400m² of arable open countryside was required for each wellhead;
(vi) The wellheads represented a permanent change to a high quality landscape with the introduction of industrial elements, some of which would be highly visible, eg a drilling rig up to 27m in height;
(vii) Through a protracted construction phrase (lasting a number of years) the wellhead drilling and washing operations would be highly visible both from within the study area and from the western side of the estuary degrading the landscape character of these areas. Beyond the drilling and washing phases, the wellheads would remain surrounded by bunding, fencing and other associated features creating a permanent negative influence over the landscape’s character and visual amenity;
(viii) The loss of 0.7 kilometres of arable open countryside for permanent metalled access roads to the gas compressor station and the booster station;
(ix) The loss of 2.9 kilometres of arable open countryside for permanent access tracks;
(x) The loss of 66 metres of hedgerow in the construction of both types of trackways and roads;
(xi) The loss of 120 metres of hedgerow through the construction of the gas pipeline corridor;
(xii) The loss of small woodland and scrub through the construction of buildings and pipelines;
(xiii) Approximately 8.68 kilometres of trench work up to 20 metres wide for the construction of the gas pipelines.

13.3.83 There would be 27 significant negative visual impacts throughout the construction phase (WBC/1/1/ 4.5.6.4). WBC’s visual assessment showed 20 negative visual impacts throughout the operational phase of development. Operational effects would include:
(i) The GCS. This would introduce into the landscape an industrial, large-mass building with associated compounds (WBC/1/4/ Fig.TPM42). It would not fit with the local vernacular and would be highly visible from all angles, including from the west and across the estuary;
(ii) The BPS. This would represent the introduction into the landscape of an industrial, large-mass building and compound (WBC/1/4/ Fig.TPM38). It would not fit with local vernacular and would be highly visible from many angles, particularly from the Wyre Way;
(iii) The introduction of large areas of hardstanding within compounds not in keeping with the existing landscape character;
(iv) The introduction of urban elements, for example roads and other infrastructure, leading to the degradation/urbanisation of Wyre Marshes and Preesall character areas;
(v) The introduction of wellheads which, although not as intrusive as the larger buildings, would bring with them access tracks, bunding of up to 3m in height, security fencing of at least 3m in height and operational lighting and CCTV units. Their number and distribution over a wide area was such that they would bring further industrial and urban elements into the landscape; further degrading the landscape character of the Wyre Marshes and Preesall.

Residual Effects
13.3.84 The residual effects of the development could be understood from a comparison of the photomontages. The GCS in winter year 1 had all elements visible, including the roof, which would break the skyline, the walls, the coolers, filters, dryers and the chimney. While the long-term impact would be lessened due to mitigation planting, the photomontages demonstrate that the roof would still break the skyline, and the walls, coolers, dryers and the chimney would all still be visible. No observer would have their experience of the GCS altered as a result of the mitigation planting. The inclined slope, together with the elevated positioned and scale of the building meant that the GCS would continue to be highly visible and would contribute a negative and degrading influence over the Wyre and Preesall character areas.

13.3.85 Similarly, with the BPS, the photomontages showed very little mitigating effect from screen planting. The balance of the roof, a long expanse of wall and the gable front end would all still be visible. The open nature of the landscape of the estuary and the many views afforded from both residential properties and the Wyre Way meant that the BPS would continue to exert a negative and degrading influence over the Wyre and Preesall character areas. WBC conclude that there were 17 significant negative visual impacts that would remain through to the residual phase.

13.3.86 In the Report into the Scottish Power proposal at Byley, the Inspector had written: ‘regardless of the number of trees that may be planted to ameliorate the adverse effects of the proposal, the gas processing plant would be a de facto large industrial complex in the open countryside.’ That judgement would apply to both the GCS and BPS.

Mitigation

13.3.87 Mitigation planting would be secured by condition. However, for CGSL it was accepted, given the appellant had no record of successful mitigation planting schemes and that this was not a personal permission, a mitigation planting plan should have been provided, otherwise it ‘was all up for grabs at the condition stage’. On this basis, it was submitted that where there was disagreement/uncertainty as to the effect of the mitigation planting, such uncertainty should be resolved in favour of the LPA.

13.3.88 It is agreed that the success of mitigation planting would be dependent on soil/rainfall/sunlight/temperature/wind-exposure/health of the plant stock and maintenance of the planted stock. However, existing vegetation on the appeal site had the look of coastal vegetation and was stunted and shaped by the prevailing wind. To reach the heights claimed by the appellants, longer than 15 years will be required. After 5 years, little if any impact would have been made to screen the scale/mass and bulk of the industrial development. It was WBC’s position that the screening effects of the mitigation planting claimed by CGSL had been overstated. The residual effects would therefore be worse than those it had assessed.

Cumulative Effects

13.3.89 The cumulative effects would be the combined effect on the countryside of all the effects of the proposed development whether large or small and regardless of location. WBC had collated the total visual impacts, split between significant (those which would have a moderate adverse or higher score after mitigation) and not significant (those which score below that) (WBC Closing Submissions - Table pgs.61-63). In addition to the significant effects described above, the non-significant effects, when taken collectively, should also be given weight. The number and nature of these effects, although small,
would further contribute to the degradation of the landscape character areas of Wyre Estuary and Preesall and the wider proposal site as a whole.

Overall Conclusions

13.3.90 WBC conclude that:
(i) The development was not appropriate to the landscape character type within which it was situated. It failed to contribute to its conservation, enhancement or restoration or the creation of appropriate new features. The development was therefore contrary to JLSP Policy 20;
(ii) It was agreed that there would be an adverse impact on the open character of the undeveloped coastal zone. The open character would not, therefore, be maintained. The development was, therefore, contrary to JLSP Policy 23;
(iii) It was beyond dispute that the adverse landscape and visual impacts could not be eliminated. Further, such impacts (including cumulative impacts) could not be reduced to an acceptable level. The development was, therefore, contrary to LMWLP Policies 2 & 4;
(iv) The development was contrary to LMWLP Policy 7 because (whether on a permanent or a temporary basis):
(a) It was not in keeping with the features of the Landscape Character Tracts within which it is sited; and/or
(b) It was not in scale with the features of the Landscape Character Tracts within which it is sited; and/or
(c) It would have an unacceptable adverse impact on the local character of the landscape; and/or
(d) It would fail to safeguard key landscape features.
(v) Unless justified by other policies in the Plan, the development would be contrary to WLP Policy SP13;
(vi) The development was not acceptable in terms of its scale, mass and siting in the landscape and/or suitable landscaping or screening had not been demonstrated. Accordingly, the development was contrary to WLP Policy SP14;
(vii) The development was contrary to WLP Policy ENV2.

13.3.91 It was further submitted that the development was contrary to PPS7 and that the SPG referred to by CGSL did not outweigh non-compliance with the Development Plan Policies.

13.4 Case for PWG

13.4.1 The method used to determine landscape and visual receptor impacts was a curious mix of 3 separate methodologies. Which ever method or combination was used, the process was clearly subjective, and this had been agreed on behalf of CGSL.

13.4.2 This Inquiry had seen evidence of 3 separate assessments: the original ES, CGSL’s witness’s assessment and WBC’s assessment. Each had assessed the same landscape and visual receptors and yet the assessments appeared to have little in common. There was, however, a degree of consensus to the extent that both the landscape and the receptors were forecast to suffer adverse impacts.

13.4.3 Visual Impact Assessments were made at Year 1 during development’ and Year 15, and it was claimed that by Year 15 mitigation measures would become effective. Within the
methodology applied the category ‘substantial adverse’ was the most damning impact classification. The definition of ‘substantial adverse’ was: Prominent or dominant introduced feature(s), which creates deterioration in the view, and where the viewer is regarded as being of higher sensitivity.

13.4.4 In CGSL’s Year 15 assessment this most damning classification was reserved for a few receptors in close proximity to the Gas Compressor Station. This gas compressor station would be located on Burrows Hill on the east bank of the estuary 500m north of the settlement of Staynall. Burrows Hill was the highest point on the eastern estuary and was clearly visible in views from all points of the compass. In the main, receptors considered by CGSL to suffer the worst impact were those within a radius of around 500m of developments. That assumption needed to be tested. As an example of the potential impact at distances in excess of 1km, there were views of Burrows Hill, from the main A588 at its junction with Carr End Lane. Here one would see the impact of a very large industrial building dominating the skyline.

13.4.5 CGSL strongly maintained that the purpose of mitigation was not to hide the CGS and other development sites but to reduce the adverse impact of the structures to acceptable levels. The evidence presented to support the claim of reducing the adverse impact was particularly weak. Burrows Hill was the highest feature in the eastern estuary landscape. It was prominent in all views of the area and from both sides of the estuary. The proposal was to place an industrial building 15.5m high on an excavated terrace at 14m AOD. The ridge of this building would be at 29.5m AOD. Burrows Hill had a spot height of 23m AOD. The southern wall of the building would start slightly north of this spot height. At its southern end 6 to 7m of the building would be visible above the ridge line of the Burrows Hill.

13.4.6 The building would be 100m long and at its northern end, which is situated around the 18m contour; 10m to 11m of building would be visible above the ridge line of the Burrows Hill. So from the west bank of the estuary a large industrial building 100m long and between 6m and 11m high would be visible above the ridge. By comparison a standard BT telegraph pole was 9m high. Moreover, there are no straight lines in nature. In views from the east, the full mass of the building 100m x 15.5m would be visible together with ancillary equipment. From the north the building mass would be 55m x 15.5m plus ancillary equipment.

13.4.7 From the south the building mass would also be of the order of 55m x 15.5m though existing vegetation might provide a little screening. In views from the north and south there would be views along the ridge and the side of the building dependent on the angle.

13.4.8 The mitigation offered was:
(i) Extensive tree planting, a minimum planting width of 25m was recommended (CGS/11/1/para.4.45).
(ii) Perimeter screen planting, also a 25m minimum width. While the proof of evidence specifically related to the BPS, for CGSL it was agreed that similar minima would be necessary at the GCS for effective screening.
(iii) Security fences would not be set at the perimeter of development where it would be visibly prominent but within/behind planted areas, subject to the proviso that tall trees would not be immediately adjacent to security fences for security reasons (CGS/11/1/para.4.92). CGSL indicated that this might require 10m of ground.
13.4.9 A key underpinning assertion in CGSL’s evidence was that effective screening of buildings would be achieved by year 15 based on plantations achieving a height of 5-6m at the recommended plantation width. To test the efficacy of this contention there were 2 aspects to consider. Firstly, could the site boundaries accommodate both the proposed structures and the recommended minimum plantation widths of 25m in each direction to effectively screen the perimeter fence and the building? Secondly, did the topography of the site, falling away as it did at all points of the compass, permit the planting of trees to a minimum plantation width of 25m in such a way as to provide any kind of screen? It was PWG’s position that they could not.

13.4.10 Considering firstly the limitations imposed by site boundaries, it was unlikely that planting on the west and east sides of the site could ever achieve the recommended densities, (10 m for security fence - clear ground for security purposes; 25m of perimeter planting – to screen the perimeter fence, and 25m of tree planting – to screen the structures).

13.4.11 Additionally, the building was 55m wide, there were 2 roadways of 7.3 metres each and there had to be provision for fin-fan coolers. On an east to west axis the minimum distance required to avoid compromising these minimum recommendations is 175m. This was before provision for the roadways and fin-fan coolers. Measurement of the site width on an interactive OS map indicated a site width of some 155m.

13.4.12 CGS11/3b appeared to represent the site as approx 30m wider than it was and trees appeared to be shown right up to the perimeter which was contrary to the suggested approach. Inevitably some compromise would be required, although the inescapable conclusion had to be that the proposed screening in plantation width terms could not be achieved and the mitigation would therefore be ineffective from the east and from the west.

13.4.13 There would be adequate space available to the north and to the south, but limitations would be imposed by topography. The main structures would be placed on a terrace created on the east side of Burrows Hill at a level of 14m AOD. Those main structures would rise a further 15.5m above datum. If it were possible to create plantations 25m wide at 14m AOD on this site and the growth rates predicted by CGSL were achievable then those plantations would only be 5 to 6m high and therefore only screen some 30 to 40% of the height of the building.

13.4.14 However, on Burrows Hill the land fell away rapidly in every direction and it is clear that there is little space available to plant trees in substantial numbers above the 10m contour. Most trees would have to be planted below the 10m contour and when they attained the 5-6m predicted their tops would barely have reached 14m AOD – the level at which the building started. The mitigation proposed would be totally ineffective.

13.4.15 Photographs from the south demonstrated that the additional recommended planting of trees in the field boundaries to the south could have no beneficial impact on the view. Existing mature trees did not break the skyline save for a handful around the pond on Burrows Hill.

13.4.16 It was important to visualise the impact of a building 100m long, 55m wide, and 15m high, and without effective screening. Walkers following the Wyre Way were recognised as ‘high sensitivity’ receptors. The path followed the route of Burrows Lane and at the top of Burrows Hill provided panoramic views across Morecambe Bay and the Lakeland Fells, the Howgill Fells, the Northern Pennines, the Bowland Fells.
and the Southern Pennines. There were few finer panoramas anywhere. If this proposal was implemented the walker would still have a view to much of the Lakeland Fells but everything else would be obscured by a building 100m long and as high as the power supply poles adjacent to the lane. The wider panorama could be lost to a generation or more.

13.4.17 There were also pleasant views over the estuary, albeit with an industrial backcloth. If the proposal went ahead few walkers would pause to admire that view because the noise levels from the gas dehydration processes would not be tolerable for long.

13.4.18 Gardens in Staynall would overlook the gas compressor site from distances of around 500m. It was noted that while residents within their houses could be classed as ‘high sensitivity’ receptors they did not merit such status whilst enjoying their gardens and surrounding environment. This position was not supported in CGSL’s expert evidence, and it would be absurd to accord a transient receptor on the Wyre Way greater receptive sensitivity than that accorded to a neighbour in their garden. Burrows Hill was entirely open to the South and plantings at lower level would do little to disguise the proposed structures at the GCS.

13.4.19 Burrows Hill was prominent in all views from High Gate Lane and the properties thereon and with the ineffective mitigation proposed the adverse impact of the GCS would be as damaging in year 15 as it would be in year 1.

13.4.20 While it was claimed on behalf of CGSL that ancillary equipment items of a low key nature had had their design, location and layout considered to minimise impact on landscape revised plans had been introduced mid-way through the submission of that landscape evidence and the witness had been unable provide dimensions for the ancillary equipment or, in a number of instances, identify the items from plan. This suggested a superficial approach to the preparation of the landscape evidence.

13.5 Case for Mr & Mrs Jackson

13.5.1 On behalf of CGSL it had been stated ‘that the indicated impact of the scheme on landscape character and on local views would not be significant.’ In view of the witness’s uncertainty as to the dimensions of the buildings and lack of awareness of the many components of the related infrastructure, the only conclusion could be that the assessment was fundamentally flawed.

13.5.2 The proposed GCS would be visible above the ridgeline and, taking into consideration the need for security fencing and an area of ‘no mans land’ between the fencing and the planting, any attempt to screen the easterly aspect would be pointless, as the planting would be further down the slope.

13.5.3 The phrase ‘screening with native trees’ had been used frequently. The only native trees to the area were Ash and Sycamore, and Willow where it was damp. Where woodland had been planted in the area, it was not unusual for 20% to require re-planting and those that did survive were slow to establish.

13.5.4 The statement ‘that new woodland blocks are considered to be beneficial features within the landscape character’ was misguided. The landscape of the Wyre Estuary and adjoining areas of farmland was appreciated for its open character. The value of the
Lancashire countryside was in its wide diversity of landscape types, from the foothills of the Pennines to the coastal plain and river estuaries and marshes.

13.5.5 Altering the character of the landscape would not be beneficial to those species that rely on the area for their natural habitat, planting trees in an attempt to hide the ugly development would not be successful and would be detrimental to both indigenous and migratory wildlife (Doc.J/2/3a).

13.5.6 The Wyre Estuary was particularly important as part of a network of estuarine habitats; the loss of one part could destroy the integrity of the network. The Wyre Estuary was important because of its geographical position. Along with other North West estuaries, it was a vital migration staging area for waterfowl. These birds needed to build up their nutrient reserves in preparation for long distance migration and survival in their breeding areas. Within the estuary feeding was limited by the period of tidal exposure. During high tide, birds moved to feed on the surrounding farmland. It was not just the estuary itself which was critical to the feeding habits of these migratory birds. The landward areas were also vital to their survival.

13.5.7 Not only did waterfowl and migratory geese rely on the estuarine hinterland for survival, but so did numerous other species of birds, of particular note was the skylark, which is listed on the Birds of Conservation Concern Red List (Docs.J/2/3a+c). The Wyre Estuary had already suffered damage on the west bank due to industrial development and recently, increased recreational usage, eg. Wyre Estuary Country Park which brought its own impacts.

13.5.8 On the east bank, further unnecessary exploitation of the Preesall halite and the establishment of the accompanying industrial development, peripheral to the estuary, could only be considered as harmful to this unique estuarine system. It was time to draw the line on further development and preserve the remaining rural areas surrounding the Wyre Estuary.

13.5.9 CGSL sought to create a very unpleasant environment. The whole area from Staynall to Knott End Golf Course would be turned into a massive construction site. Vegetation would be stripped from the site during the winter months, prior to development, creating a wasteland of churned up mud. Great scars would appear across the countryside, as pipelines and services were laid and roads and standings constructed. Construction compounds, storage areas and porta-cabins would appear all over the site.

13.5.10 Alien features would be introduced into the rural landscape, parking areas, security cameras, lighting and fencing, large scale industrial buildings, which would be of such immense dimensions that any possibility of screening with native trees lacked credibility.

13.5.11 Wildlife corridors would be truncated, internationally important feeding areas for migratory birds would be decimated, and vital habitat for ground nesting birds would be destroyed. The sensitive ecological balance that was so vital to maintaining the rich diversity of species would be lost.

13.5.12 At the beginning of the end of the lifespan of the proposed facility the massive disruption to the area would start again as the whole process was put into reverse during de-commissioning.
14. HIGHWAYS AND TRAFFIC

14.1 Agreed description of the local highway network and traffic generation (CD/28 section 8).

14.1.1 Principal highway access to the main site at Preesall would be provided by the A588. The A588 is a non-trunk ‘A’ road which runs from a junction with the A585(T) south of the River Wyre at Shard Bridge through the villages of Hambleton and Stalmine to Preesall Park, a small hamlet about a kilometre east of the proposed main development site. From Preesall Park, the A588 continues in a north easterly direction towards Lancaster, where it meets the A6. The road is a rural single carriageway and is generally subject to the national speed limit, with stretches of restricted speed limits where it passes through villages and other settlements, including Hambleton and Stalmine. It is of a variable standard which is generally adequate for the nature and volume of traffic demand it currently carries. Where it passes close to the site at Preesall Park, there is a section of poor alignment at its junction with Cemetery Lane and the B5377 Park Lane.

14.1.2 Traffic flow data for the A588 through Stalmine has been provided by LCC from a temporary Automatic Traffic Count carried out in August 2000. Further manual traffic counts were undertaken by Hyder Consulting in October 2004. The road currently carries a two way flow of about 10,000 vehicles per day, of which about 500 per day are heavy goods vehicles (HGVs).

14.1.3 Access to the Seawater Pump Station site at Fleetwood Docks would be provided by the A585(T). The A585(T) is the trunk road which links the port of Fleetwood to the national motorway network. It runs south from the docks, passing immediately adjacent to the Fleetwood development site, and provides a direct link from its junction with the A588 near Shard Bridge to junction 3 of the M55 north of Kirkham. It is a good standard single carriageway road. Information from the Route Management Strategy recently undertaken by the Highways Agency shows that it currently carries about 23,000 vehicles per day, of which about 1,500 are HGVs.

14.1.4 There are a number of minor existing routes which link the main Preesall development site and the A588. These are, from south to north, Staynall Lane; Carr End Lane; Smithy Lane; and Cemetery Lane. All of these roads are unclassified rural roads of varying standard and run in an east-west direction between the A588 and High Gate Lane / Back Lane, which in turn runs north-south along the eastern boundary of the site.

14.1.5 The most southerly is Staynall Lane. This is a narrow 2-3 metre wide road lined with tall hedgerows on either side. It is not possible for two vehicles to pass on this road. There are no formal passing places and passing can only be achieved at field entrances and entrances to properties where the carriageway widens.

14.1.6 Staynall Lane provides access to a number of farms and farmland. There are a small number of residential properties fronting the road at its junction with the A588. Access from the A588 is provided by a priority junction. Visibility to the right is good and meets current Department for Transport (DfT) standards, visibility to the left however does not meet DfT standards. There are no pedestrian facilities and the road is unlit.

14.1.7 Both Carr End Lane and Smithy Lane connect into Grange Lane, which then meets with High Gate Lane. Carr End Lane passes through the village of Carr End and
Stalmine. The lane is narrow, on average 4 metres wide, and although it is possible for two cars to pass each other, a car could pass a lorry only with difficulty and generally it would not be possible for HGVs to pass each other. The road is fronted by residential property and some residents park their cars on the carriageway. Footways are provided on both sides of the road and the road is lit.

14.1.8 Smithy Lane also passes through the village of Stalmine. The road is a standard width single carriageway and is lit, with footways on each side. The road is fronted by residential properties and there are a number of side roads off it leading to further residential development.

14.1.9 Grange Lane is a narrow lane, with an average width of 3 metres. It is generally difficult for vehicles to pass each other. There are no formal passing places and passing can only be achieved at field entrances and entrances to properties where the carriageway widens. The road passes through agricultural land and there are a number of isolated residential properties fronting the route. There are no footways and the road is unlit. The junctions of both Smithy Lane and Carr End Lane with the A588 are priority controlled. Visibility at both junctions is good and conforms with current DfT standards.

14.1.10 Cemetery Lane is generally about 6 metres wide. A small number of residential properties front onto the road, mostly at the eastern end, close to its junction with the A588. The rest of the route is fronted by the cemetery and agricultural land. There are no footways and the road is unlit. At its eastern end, Cemetery Road intersects with the A588 via the B5377 at what is effectively a four-arm priority junction at a bend on the A588. The A588 approaches to the junction, which form the eastern and southern approaches, have priority. Cemetery Lane road traffic must give way to both A588 traffic and B5377 traffic.

14.1.11 Trip generation estimates have been produced based on an assumed construction profile over the 3 year construction period. These have been validated using an assessment based on the likely staffing levels at peak periods of construction. While this validation showed a three fold difference between the estimates the absolute difference in HGV trips was 24 movements per day.

14.1.12 Once construction work is completed, operational traffic volumes at both the Preesall site and at Fleetwood Docks would be low.

14.2 Additional Agreed Statement on Highways Issues (CD/62)

14.2.1 During the inquiry those representing CGSL and LCC reached further agreement on a number of highway issues.

Proposed Roundabout at Cemetery Lane / Highgate Lane

14.2.2 HA Document TD 10/93 is the appropriate Standard for this type of junction improvement. Approach speeds measured on behalf of LCC (Doc/LCC/5/4 Appendix) are agreed.

Proposed Temporary Link Road between A588 and Cemetery Lane

14.2.3 HA Document TD 42/95 is the appropriate Standard for the junctions at A588 and Cemetery Lane. Speed surveys undertaken by both parties on A588 and on behalf of LCC on Cemetery Lane are agreed.
14.2.4 LCC considers that visibility splays of 4.5m x 120m are required at the A588 junction and splays of 4.5m x 90m at the Cemetery Lane junction. CGSL considers that splays of 2.5m x 120m at A588 and 2.5m x 90m at Cemetery Lane would be sufficient and would reduce the temporary impact on hedgerows, but would be prepared to accept a condition regarding visibility splays as required by LCC.

14.2.5 The approximate additional lengths of hedge affected are as follows:

<table>
<thead>
<tr>
<th>For Y distance of</th>
<th>X length @ 2.5 &amp; 4.5m</th>
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<tbody>
<tr>
<td>120 m</td>
<td>30m to 40m</td>
</tr>
<tr>
<td>90 m</td>
<td>25m to 30m</td>
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14.2.6 LCC considers that a scheme showing the method of control of use of the temporary link road should be submitted for its approval. CGSL are prepared to agree to a Condition to that effect.

Site access junction at Back Lane / Cemetery Lane

14.2.7 HA Document TD 42/95 is the appropriate Standard for this junction. LCC considers that visibility splays of 4.5m x 70m are required at this junction. CGSL considers that splays of 2.5m x 70m would be sufficient and would reduce the environmental impact of the required works, but would be prepared to accept a condition regarding visibility splays as required by LCC. The approximate additional lengths of hedge affected for a Y distance of 70m are 20m and 25m respectively.

14.2.8 LCC considers that a staggered junction arrangement is required at this location. CGSL considers that a cross roads junction arrangement would be sufficient here.

14.2.9 LCC considers that a scheme showing the method of control of the use of the temporary access road into the site should be submitted for its approval. CGSL are prepared to agree to a Condition to this effect.

Access to Compressor Station and southern portion of the site at Highgate Lane.

14.2.10 HA Document TD 42/95 is the appropriate Standard for this junction. LCC consider that a staggered junction arrangement would be preferable at this location, but, in view of the comparatively low volume of traffic and the temporary use of the access track from the north, would be prepared to accept a cross-roads junction. This would be acceptable to CGSL.

14.2.11 LCC considers that a visibility splay of 4.5m x 90m would be preferrable at this location for both the southern and northern approaches, but would be prepared to accept a splay of 2.5m x 90m for traffic from the north, in view of the comparatively low volume of traffic and the temporary use of the access track. CGSL consider that splays of 2.5m x 90m would be sufficient for both approaches and would reduce the environmental impact of the required works, but would be prepared to accept a Condition regarding visibility splays as required by LCC.
14.2.12 During the operation of the temporary access road from the north, LCC would require the erection and maintenance of traffic signs on Highgate Lane to Chapter 8 of the Traffic Signs Manual, warning of construction traffic. CGSL is prepared to agree to a Condition to this effect.

14.2.13 LCC considers that a scheme showing the method of control of use of the temporary access road into the southern portion of the site should be submitted for its approval. CGSL are prepared to agree to a Condition to this effect.

The internal road network

14.2.14 The lengths of designated footpaths and bridleway affected by temporary access roads are agreed (Doc.LCC/5.4 para.2.21). LCC considers that a scheme should be submitted for its approval, showing how suitable segregation of access tracks parallel to footpaths and bridleways, and gating of footpaths crossing access tracks will be achieved. CGSL are prepared to agree to a Condition to this effect.

14.2.15 LCC require details of construction of internal access roads to be submitted for approval. CGSL are prepared to agree to a Condition to this effect.

Decommissioning

14.2.16 Decommissioning of the scheme would be by filling cavern voids with brine, which is assumed to be piped to the site. On the basis that the decommissioning work will generate a similar, or lesser volume of traffic to that assumed for construction, any temporary highway and access measures required for construction must be reinstated for the period of decommissioning.

HGV Movements

14.2.17 For the avoidance of doubt, the reference in the SCG (Doc.CD/28 para.8.2) relates to potential peak periods of HGV activity within the overall peak construction phase. CGSL estimate an average over the peak phase of 60 2-way HGV movements per week, averaged at 12 2-way HGV movements per day. The validation referred to in the SCG assumes at a ‘peak within the peak’ that there are 4 areas of construction activity. Each of these 4 areas is assumed to generate 9 2-way HGV movements per day, giving an overall total for the ‘peak within the peak’ of 36 2-way HGV movements per day (i.e. 72 movements).

14.3 The Case for CGSL

Introduction

14.3.1 All parts of the development proposal had been considered in terms of the propensity to generate traffic and engage highway issues. The evidence (CGS13/2) addressed the Fleetwood development comprising a Sea Water Pumping Station and Brine Discharge Pipeline; the main storage facility at Preeall on the eastern side of the Wyre Estuary where the salt caverns would be created; an associated interconnecting gas pipeline from Preeall to the National Transmission System near Nateby; and the construction of new roads within the main site to provide a network of haul roads facilitating access to individual construction sites.

Road Access to the Development Sites
14.3.2 The local highway network had been agreed with LCC and was detailed in the SCG (Doc.CD/28). The Fleetwood site was served by the A585(T); a trunk road which linked the Port of Fleetwood to the National Motorway Network. It was generally a good standard single carriageway road and carried some 23,000 vpd of which about 1,500 were HGVs.

14.3.3 The principal highway access to the main site at Preesall was provided by the A588. The highway ran from a junction with the A585(T) south of the River Wyre at Shard Bridge through the villages of Hambleton and Stalmine to Preesall Park, a small hamlet about 1km east of the main development site. From Preesall Park the A588 continued in a northerly direction towards Lancaster where it met the A6. The road was a rural single carriageway generally subject to the national speed limit, but with stretches of restricted speed limits where it passed through villages or other settlements. It was of a generally adequate but variable standard. There was a section of poor alignment at its junction with Cemetery Lane and the B5377 Park Lane. The road currently carried a two-way flow of about 10,000 vpd of which 500 were HGVs.

14.3.4 There were a number of possible existing routes which could be used to carry traffic between the main development site and the A588. These were Staynall Lane; Carr End Lane; Smithy Lane; and Cemetery Lane. All of these roads were unclassified rural roads of varying standards and generally ran in an east-west direction from the A588.

14.3.5 Cemetery Lane was the widest and most direct of the four possible routes from the A588 to the development site. The carriageway was generally about 5m wide with adjacent verges and was wide enough for a lorry to pass a car or light goods vehicle without causing problems. While two lorries could pass each other with care along much of the route, there were sections where, because of the restricted carriageway width or near bends, some encroachment onto the verges was likely to occur when lorries pass. Traffic flows entering and leaving Cemetery Lane are low (Doc.CGS13/2/para.4.16).

14.3.6 At its eastern end Cemetery Lane intersected with the A588 via the B5377 at a four-armed priority junction at a bend in the A588. (Doc.CGS13/3 - App.A fig.5). The A588 approaches to the junction, the eastern and southern approaches, had priority. Cemetery Lane traffic must give way to both A588 traffic and B5377 traffic. Junction visibility was poor, especially for traffic emerging from Cemetery Lane. Accident data (Doc.CGS13/3/4) showed that there had been a number of personal injury accidents occurring at or on the approach arms to this junction. A scheme to improve road markings and to make the junction more conspicuous had been introduced by LCC. Further improvements to the junction would be difficult unless there was the acquisition of private land at the junction. However, the scale of the problem was unlikely to justify the use of CPO powers by LCC to acquire the necessary land.

Development Traffic

Operational Development

14.3.7 The Fleetwood site, comprising the Pumping Station and pipelines, would be unmanned on completion. The only operational traffic generated would comprise occasional maintenance visits.

14.3.8 At Preesall, once construction is completed, there would be very few staff based permanently at the site and access would be required primarily for maintenance and
security purposes. Assuming 24 hour/7 day operation, the Compressor Station Room would be staffed by 6 to 8 operators per shift. The existing caravan park at The Heads was to be closed and any traffic movements associated with it would be removed from the local lanes. The Statement of Common Ground included the agreed statement that once the construction work was completed, operational traffic at both the Preesall site and Fleetwood Dock site would be low.

Decommissioning

14.3.9 As was acknowledged on behalf of LCC, provided that it was not intended to backfill the decommissioned salt caverns with HGV-borne material, LCC had no issue with regard to the decommissioning phase of the project. A condition proposed to be imposed upon any grant of planning permission would adequately secure LCC’s position.

Construction Traffic

14.3.10 The concerns expressed by LCC focused exclusively upon the construction period of approximately 3 years. The construction phase at the Fleetwood site would be completed during the first year, whilst at Preesall construction would continue into years 2 and 3. Mr Mason has estimated a generation of about 55 two way car or light goods vehicle trips per day. Whilst a detailed study of the likely distribution has not been undertaken it is reasonable to assume that about 90% of employment trips will be to and from the south. LCC do not take issue with that part of Mr Mason’s analysis. The Fleetwood site is expected to generate a total of 635 lorry movements, all of which occur in year 1.

14.3.11 In the case of Preesall the total volume in year 1 was expected to be 1,875 HGVs, 2,100 HGVs in year 2 and 1,415 HGVs in year 3. During this 3 year construction phase the average number of lorry deliveries per week at Preesall would be 36. It was recognised that in practice the number of lorries per week would vary throughout the construction period depending on the nature of the operations being carried out and the level of activity at the site. It was acknowledged that the ‘peak within the peak’ could give an overall total for such period of 36 HGV 2-way movements (36 in, 36 out) per day (Doc.CD/62 para.7.1). At other times, there would be a corresponding reduction in HGV movements.

Development Traffic and Access to the Sites

Fleetwood Site

14.3.12 The highway access to the Fleetwood site would be via the existing Harbour Trading Estate access road which linked to the existing roundabout on the A585(T). The total volume of construction traffic amounts to 635 two-way lorry movements all of which would occur within year 1 of the construction programme. The maximum number of daily HGV movements expected was 10 (5 in, 5 out). Construction personnel employed at Fleetwood may generate up to 30 trips per day. Both HGV and staff-related traffic could be accommodated on the existing access road network. Traffic impact on the A585(T) would not be significant. The Highways Agency had raised no objection to the development proposal.
14.3.13 For LCC it had been acknowledged that development on the Fleetwood side of the estuary could be accommodated in a satisfactory manner for the reasons given (Doc.CGS/13/2 - para.6.1).

Preesall Site

14.3.14 Access to the main site at Preesall was proposed directly opposite the western end of Cemetery Lane at its junction with Back Lane. Traffic volumes on Back Lane were extremely low. However, existing visibility at the junction was poor and improvements were proposed. All heavy construction traffic would be directed to use only this access to the site and would be confined to a route along Cemetery Lane to the A588 and south to and from the A585(T) junction at Shard Bridge. The other potential routes had been considered and rejected. For LCC it was acknowledged that of the options available to access the main site at Preesall the best of the available options was the use of Cemetery Lane.

14.3.15 Along the stretch of the A588 between Preesall Park and Shard Bridge the combined impact of the employment related and HGV delivery construction traffic would result in an increase in total daily traffic of about 1% and an increase in HGV traffic of about 5%.

14.3.16 The Guidelines for Traffic Impact Assessment were aimed at assessing the permanent effects of operational traffic from developments (Doc.CGS/13/2 para.6.11). They acknowledge that traffic flow on any un-congested road frequently varied by up to 10% on a day to day basis. Furthermore, the Guidelines recognized that the environmental conditions on a road did not change significantly with changes of traffic less than some 30% unless there were major changes in the flow composition.

14.3.17 Against the background that the thresholds in the Guidelines were intended to be applied to permanent operational development traffic, it should be noted that in this case they were not exceeded even by the temporary construction traffic for the development along any of the access routes proposed with the single exception of Cemetery Lane.

Main Issue

Introduction

14.3.18 Whilst the daily volume of construction traffic was small and of limited duration, the standard of the junction of Cemetery Lane and A588 Hall Gate Lane was recognised to be poor. This was particularly so for emerging traffic from Cemetery Lane. Consequently, CGSL proposed improvement measures to be provided at its expense.

14.3.19 Two alternate solutions were put forward; a proposed roundabout at Cemetery Lane/Hall Gate Lane; or a temporary Link Road between the A588 and Cemetery Lane.

Roundabout at Cemetery Lane/Hall Gate Lane

14.3.20 The key to providing an effective improvement at this junction was the acquisition of private land. CGSL had been able to negotiate an agreement to acquire land at the junction which had previously not been available. The result was that it would be possible to develop an alternative improvement scheme for the junction (CGS13/3 - App.A - Fig.11). It was CGSL’s position that the roundabout would considerably improve the
conspicuousness of the junction and lead to a reduction in approach speeds along the A588 (Doc.CGS13/2 para.6.16). The approach speed had been identified as one of the common factors leading to accidents at the junction (Doc.CGS/13/4). The roundabout layout would overcome junction visibility problems associated with the existing layout and would significantly improve the movement of large lorries through the junction as demonstrated by the swept path diagrams (Doc.CGS/13/3 App.C).

14.3.21 For LCC (Doc.LCC5/4) it was not considered that the improvements would improve conditions. The arrangement were thought likely to make conditions worse at this junction. In particular Highways Agency document TD10/93 and Doc.LCC5/5 showed the deflection that would be created by the roundabout in respect of traffic moving south from the direction of Preesa ll towards the A588. LCC’s criticism was that there would be insufficient deflection to meet the standard contained in TD10/93.

14.3.22 That approach missed the point. It was not CGSL’s case that the proposed roundabout would comply with TD10/93. The appropriate test was not compliance with the letter of the standard, but rather the adequacy (or otherwise) of an existing junction layout. It was recognised that the existing junction layout was utterly substandard. For LCC it was recognised that the existing junction layout was ‘idiosyncratic’. Mr Jones noted that it would be inconceivable for the current junction arrangement to be regarded as acceptable if proposed as part of any new development.

14.3.23 For LCC it was accepted that the appropriate test to be applied in respect of an existing junction was whether the proposal would create an improvement over that which existed. Absolute compliance with the letter of a standard would not be the appropriate test against which to measure a proposal to improve an existing junction.

14.3.24 Some 2.5m vehicles passed through this ‘idiosyncratic’ junction annually (Doc.LCC/5/4 para.2.12). Some 500 HGVs per day passed through; 250 in each direction.

14.3.25 The construction process at Preesall had been estimated to generate 5,390 HGV deliveries over a 3 year period. This equated to an average of 8 HGV deliveries per weekday (in each direction). Mathematically, the average 16 movements per day represented only 3.2% of HGV movements per day through the junction. This would be for a limited period of 3 years only. Against that background, it was asserted on behalf of CGSL that there would be a permanent improvement to the junction layout, and this had been accepted on behalf of PWG.

14.3.26 In particular, the following permanent benefits would be derived from the roundabout proposal. The swept path analysis (Doc.CGS13/2 App.C) demonstrated that with both rigid and articulated HGVs there would be significantly less encroachment onto opposite carriageways for all movements through the roundabout. It replaces an ‘idiosyncratic’ junction with its unusual pattern of priority with a more conventional/familiar arrangement to road users. The presence of the roundabout would be likely to reduce approach speeds because of the anticipation on the part of drivers of having to stop and give way. Whilst it was accepted that the deflection on the approach from the Preesall direction south did not meet standards contained in TD10/93, the situation was largely unaltered from the current layout. In respect of all other arms of the junction there would be a significant improvement.

14.3.27 CGSL conclude that the provision of a permanent roundabout was the appropriate solution to what was undoubtedly a junction with a history of personal injury
accidents. The solution proffered by CGSL, while designed to overcome concerns in relation to the 3 year construction phase of the proposal would be of permanent benefit to the users of the A588 at this location.

Temporary Link Road between A588 and Cemetery Lane

14.3.28 As an alternative to the preferred roundabout solution, an option was available to provide a new access road linking the A588 and Cemetery Lane. An illustrative layout of the scheme had been suggested in the April 2005 amendment to the TIA with a further modified version reflecting agreements with land owners (Doc.CGS13/2. App.A – fig.10).

14.3.29 In Closing Mr Tucker had placed reliance on para.40 of Circular 11/95 (Doc.LCC/0/7 para.3.3.3.4) That statement of policy had to be seen in light of the decision of Millington v. SSETR [1999] JPL 644 (Doc.CD/80). HHJ Rich QC in that case stated:

“To that paragraph [ie para.40 of 11/95] there is appended a note referring to the British railways case and observing that:

“The House of Lords established that the mere fact that a desirable condition, worded in a negative form, appears to have no reasonable prospects of fulfillment does not mean that planning permission must necessarily be refused as a matter of law. However, the judgment leaves open the possibility for the Secretary of State, to maintain as a matter of policy that there should be at least reasonable prospects of the action in question being performed within the time-limit imposed by the permission.”

I think that the footnote is mistaken. Certainly the case leaves it open to the Secretary of State to refuse to impose such a condition if there are reasons other than the unlikelihood of implementation. But the unlikelihood of implementation is not by itself a sufficient reason to refuse, and allowing it to be policy cannot make it so”

14.3.30 Mr Tucker was mistaken as to the correct approach to para.40 of Circular 11/95. Unlikelihood of implementation was not a sufficient reason to refuse to grant planning permission. Furthermore, his submission was that an applicant/appellant was required to establish control over the land by a demonstration of legal title to the land in question. If that were the test the vast majority of Grampian conditions would not satisfy it. The evidence was that CGSL had completed an option in respect of one of the landholdings and were at an advanced stage of securing options with the remaining two landowners. Here there was a real prospect that the relevant condition could be met during the life of the permission granted. The evidence was that negotiations were proceeding and were at an advanced stage.

14.3.31 The nature of the proposal was a ‘bypass’ of the Cemetery Lane junction. Use of the road would be controlled by CGSL as a private access road during the construction period and, on completion, the road would be removed and fields, fences and hedges would be restored. For LCC it was accepted that the proposal satisfied its concerns.

14.3.32 The remaining issue related to visibility requirements, and only the ‘x’ distance remained in contention. It was accepted that, if required, CGSL could achieve the ‘x’ distance required by LCC at the cost of removal of additional hedgerows. CGSL preferred to maintain the ‘x’ distance at 2.5m. That would be appropriate because the
junctions proposed would be ‘lightly trafficked’ (Doc.LCC/5/4 para.2.8), TD42/95 countenanced an ‘x’ distance reducing to 2.4m in ‘exceptionally difficult circumstances’, in ‘Places, Streets and Movement’ (Doc CGS13/7) an ‘x’ distance of 2.4m was described as:

“The minimum necessary for junctions within development to enable a driver who has stopped at a junction to see down the major road without encroaching onto it”.

The extract showed a HGV at a junction in order to demonstrate the proposition being advanced.

Back Lane/Cemetery Lane Junction

14.3.33 Significant progress had been made to agreement in relation to this particular junction arrangement. The cross-roads solution at this location was not contrary to any relevant standard. In order to accommodate the concerns of LCC at this location, an offset/stagger would be provided.

Access to Compressor Station/High Gate Lane

14.3.34 The visibility splay from the north was accepted as being 2.5m x 90m as a consequence of the low volume and temporary use proposed. The difference related only to the ‘x’ distance for visibility from the south; LCC suggesting 4.5m. While CGSL was in a position to provide that ‘x’ distance if required, it was considered unnecessary because the junction would be exclusively used by CGSL employees and that use would be modest. It would also avoid unnecessary removal of hedgerows.

Overall conclusion

14.3.35 All the concerns in relation to the highway aspects of the case were capable of satisfactory resolution. The area of dispute was restricted to the narrow issue of which of the two solutions at Cemetery Lane was to be preferred. CGSL preferred the roundabout solution as that secured a permanent benefit. However, the by-pass solution was available as an alternative and was acceptable to LCC. There was no basis for withholding planning permission on highway grounds.

14.4 The Case for LCC

14.4.1 For CGSL it was accepted that the SoS needed to be satisfied a) that any increase in traffic generated by the development could be safely accommodated on the highway network, and b) that any improvements which were required to achieve that accommodation were both achievable and would result in safe highway conditions.

14.4.2 For CGSL it was also accepted that if the Appellant could not demonstrate that it had control over land required to fulfill the requirements of a Grampian condition then such a condition should only be imposed where there was a reasonable prospect that it would be fulfilled during the life of the permission (Circ.11/95 para.40).

14.4.3 For the most problematic junction, the inquiry had been offered ‘choices’; a bypass or a roundabout.

The Bypass
14.4.4 The construction of an access road to bypass the Cemetery Lane junction, as shown in
the revised TIA and in CGSL’s evidence, indicated acceptable road alignments but
inadequate visibility splays. Following discussion, agreed visibility splays were
identified which CGSL accepted could and should be provided.

14.4.5 In order to construct the bypass planning permission would be needed from Wyre BC
(Doc.CD/22 pg 81). Notwithstanding that ample time had passed since the idea had first been
mooted no such permission had been sought. Accordingly, the extent to which there
might be issues which could arise from consultees, and that might render the
construction wholly impracticable, was unknown.

14.4.6 One of those matters might be ecology. Although some of the land had apparently been
surveyed, and although the possibility of protected flora and fauna was a real one, the
alignment of the road has not been properly surveyed in terms of ground conditions,
ecology or anything else. Accordingly whilst it might be that the ‘precautionary’
approach suggested on behalf of CGSL may ultimately prove to be a fair one, at this
stage this was unknown. Similarly the extent of consequential hedgerow loss that
might arise might be confined to uninteresting hedgerow with no ecological interest.
However, in the absence of proper survey evidence that was unknowable. Whilst EN
had belatedly indicated its acceptance of the precautionary approach (Doc.LCC/C/11),
there had been no planning application which might have ‘flushed out’ whether EN’s limited
response of no concern was accepted by other wildlife/ecological interests.

14.4.7 The greatest difficulty with the bypass proposal – which appeared to have led CGSL to
promote the deeply unsatisfactory roundabout alternative and might also explain why
no planning application had been made – was that CGSL had produced no evidence to
the inquiry to demonstrate that the requirements of para.40 of 11/95 were satisfied. The
most that had been presented to LCC was an e-mail which identified three landowners
with whom discussions had taken place, together with an assertion that a completed
option has been secured with one of the owners and that Canatxx were at an advanced
stage of securing options from the other two (Doc.LCC/06). No plan of landownership had
been provided. There was no control of the route, and by the close of the inquiry there
had been no certification of title from CGSL’s solicitors.

14.4.8 In the absence of evidence of control over the required land the bypass solution should
not be promoted. However, even if the requisite degree of control could be secured, the
uncertainty that was associated with the delivery of a Grampian condition requiring the
construction of the bypass was such that it should not be relied upon.

14.4.9 What was proposed would be difficult to deal with by condition in any event. In order
to minimise environmental impact the road would be constructed, then after the
construction period of the operation has been completed it would be grubbed up.
Thereafter in several decades time it would be reconstructed in order to accommodate
the decommissioning traffic before once again being grubbed up. The form of any
application was unknown. However, it could be anticipated that parties would
contemplate whether it would be environmentally less damaging to build the road and
leave it for the life of the operation rather than building it and grubbing it up and
restoring it twice.

The Roundabout

14.4.10 The only reason for the roundabout to be promoted was to enable CGSL to seek to
avoid the obvious problems with the bypass, although it might also have been a means
to assist negotiations with the landowners of the land over which the bypass would run.

14.4.11 For CGSL it had been explained that having acquired some land on the south west corner of the junction a roundabout had been designed to fit CGSL’s land ownership. What had not occurred was the commissioning of a design of safe roundabout followed by an assessment of what land would be required to accommodate that design, and then CGSL securing interest over the necessary land. In view of the anticipated ‘multi-million dollar’ overall cost of the development it was hard to avoid the conclusion that the approach to the design of the junction was inappropriate. What was now proposed was an urban feature on a rural road which failed to conform to standards and which was judged to be unsafe.

14.4.12 The fact that a ‘mini roundabout’ was being proposed, rather than a full roundabout, was the most telling evidence that CGSL did not control enough land to create a proper junction in this location. There were a number of deficiencies in the design compared against the standards. These included:

(i) a mini-roundabout was an urban solution and was inappropriate in a rural setting;
(ii) a mini-roundabout was inappropriate with approach speeds in excess of 30mph \( (TD\ 16/93\ 2.3-5) \) as was the case here based on speed survey evidence and the speed limits here;
(iii) the extent of deflection on the north-south route through the roundabout was grossly deficient;
(iv) in order for HGVs to undertake turns at the roundabout in a number of respects there would be significant encroachment onto the opposite carriageway, a de facto change in the priority of turns (contrary to the highway code) and manoeuvres which could only be described as unorthodox;
(v) the extent of over-running would require the roundabout to be a painted circle and not a raised dome \( (TD\ 16/93\ para.2.8) \) – reducing any traffic calming effect;
(vi) there was little if any attempt to accommodate vulnerable road users.

14.4.13 CGSL’s response had been to point to two factors, firstly that the existing junction was a somewhat eclectic design and secondly that the HGV movements would be concentrated within finite periods over a three or four year period. Neither warranted sanctioning what was plainly an unsafe and inappropriate junction design. More significantly, because the junction would require land outside the highway it would also require planning permission. In view of the issues involved it was unlikely that such a permission would be forthcoming.

14.4.14 The comparison with the existing junction demonstrated that there was a clear problem with the existing road junction. The accident record demonstrated that accidents were caused principally by excess speed resulting in a loss of control as well as crossing manoeuvres. However, in the last 12 months traffic calming measures had been introduced to ameliorate both – the success of which was unknown – and therefore the base comparator was also unknown. Moreover whilst the existing junction was unorthodox there was no accident record associated with HGV’s turning into Cemetery Lane – largely because there were only a few larger vehicles associated with agriculture that were likely to do so; in contrast to the 72 per week in the peak of activity.
The comparative benefit of the Canatxx proposals for some (but not all) of the manoeuvres had to be balanced against the increase in HGV flows through the junction. Comparative tracking runs of the turns using the original and proposed junctions indicated an obvious downplaying of the difficulties of the proposed junction compared to the existing, using means such as altering the nature of the approach to the junction. The comparisons which had been undertaken were an unfair presentation of the evidence as they were not true comparators.

With respect to the suggestion that the increase in HGV traffic would be for two limited periods at the start and at the end of the development, that was an invitation for the SoS to avoid her responsibilities. The aggregation of the periods would amount to a number of years and not months. Moreover the effect would be to perpetuate a deeply unsatisfactory junction well into the future on the unattractive basis that the existing junction was already awful.

It was LCC’s position, as MPA and Highway Authority, that the roundabout solution should not be countenanced.

Preferred Approach

If this had been a more modest development, eg. conversion of agricultural buildings to residential use, local residents would expect the decision maker to ensure that, if development took place, junction design would be both intrinsically safe and deliverable. If not one would expect that permission would be refused.

Notwithstanding the fact that this was a development which was out of the ordinary and would involve multimillion pounds of investment it was LCC’s view that the same principles should apply. Setting all other matters aside, this would be sufficient reason for a refusal of planning permission.

Accordingly the third choice was to refuse the application on the basis of inadequate demonstration that the site could be safely accessed.

As for other highway issues, the effect of directing traffic along Cemetery Lane would be to have an adverse impact upon the amenity of frontagers given the nature of residential development on that road, and that was accepted on behalf of CGSL.

The Case for PWG

The A585, Greenhalgh to Poulton-le-Fylde was already badly congested (HA Route Strategy August 2004). It was unsuitable to accommodate further heavy goods traffic. The proposed project site was some 12 miles away from the M55 Junction 3, via the A585 and this is too far away to allow rapid access to emergency vehicles, which would inevitably be called upon from elsewhere in the County, in the event of an incident.

The A588: - A585 to Cemetery Lane Junction - was notorious for serious road accidents and fatalities, caused by conflicting speeds of heavy goods and other vehicles. Further vehicles, particularly large construction vehicles would inevitably contribute to the increased risk of further accidents.

The A588 Cemetery Lane junction was far too constricted to allow creation of a mini roundabout, which in any event would not be wide enough to accommodate heavy
goods vehicles. Cemetery Lane itself was unlit and had no pavements. It would be dangerous to expect pedestrians (including holiday makers and those unfamiliar with the area), horse riders and cyclists to share the carriageway with construction traffic.

14.5.4 Park Cottage Farmhouse and Park Cottage were both very old properties, closely abutting the carriageway. The noise arising from construction traffic would be insufferable to the residents and the foundations of the houses would probably be damaged by continual passing of HGV traffic. Cattle from the two dairy farms on Cemetery Lane would be in daily conflict with site traffic at milking times. Cow slurry ground into the road by the traffic would hasten deterioration of the road surface thus increasing noise and potential damage to the adjacent properties and presenting the Council with an unwelcome repair bill.

14.5.5 Stability of any site access track from the Cemetery Lane / Back Lane junction would be compromised by future subsidence of the existing brine wells which dotted the landscape in the immediate vicinity of the route.

14.5.6 The other narrow, unlit lanes in the area, all without pavements, were used for local amenity by residents, horse riders, cyclists, small holders and farmers etc. It would be unreasonable and potentially dangerous to encourage commercial volumes of cars or larger vehicles to use any of these lanes.

14.6 The Case for Mr & Mrs Jackson

14.6.1 The appellant had failed to give any consideration to the traffic impact on the A585. There was no appreciation shown of the congestion problems on the major artery which linked the port of Fleetwood with the M55 and the rest of the motorway network. The continued existence of the Stenna Line, Fleetwood to Larne service, was totally dependent on the capacity of the A585 to carry its traffic. The implications for the port of Fleetwood would be grave if the service was transferred to Heysham or elsewhere.

14.6.2 Fleetwood Docks and north east Thornton were strategic locations for development and part of a designated Regeneration Priority Area. Meeting regeneration targets was also dependent on road infrastructure capacity. Fleetwood was also attracting much needed retail development - for example Freeport, and new major retail outlets such as ASDA. These were all dependant on the road network for supply. The planned recycling plant, although a desirable development in improving the way waste was managed, would contribute further traffic.

14.6.3 The A585 was already at peak capacity, major congestion and traffic delays were common, major tailbacks were frequent, in particular between Windy Harbour traffic lights and Norcross roundabout. Problems experienced were poor journey time predictability and reliability, congestion during periods of high HGV usage and delay in response times of emergency service vehicles, due to the traffic volume.

14.6.4 There was no appreciation shown of the accident problems on the A588, which was clearly apparent from the ‘there have been fatalities on this stretch of road’ warning signs and readily available accident statistics, and press and media coverage.

14.6.5 There had been no consideration of the advisability of routing all the construction traffic past Stalmine Primary School, or any consideration given to the fact that Stalmine was split by the A588. There were residential areas on both sides of the road,
the post office, shop, hairdressers, school, reading rooms, bowling clubs and Wyre Villa complex on the west side; the church, public house and three residential static home sites, a farm shop and busy garden centre on the east side.

14.6.6 Hambleton also had residential areas, shops and services on both sides of this road, and was more highly populated than Stalmine. In both villages there were frequent and numerous trips across the road.

14.6.7 CGSL had not assessed the impact of development traffic on the local Over Wyre road network. Surveys had been timed so that they did not take into account traffic movements generated by the holiday home parks. No account had been taken of the heavy usage at times by farm traffic of the rural road network. Although informed that any conflict issues between movement of cattle and construction traffic had been resolved with the relevant local dairy farmers, this was not the case as no discussions had taken place. For CGSL it had been accepted that rural roads referred to as ‘lightly trafficked’ could, at peak agricultural usage times, be categorised as ‘heavily trafficked’.

14.6.8 The traffic plan for the proposal indicated that construction traffic would be routed down a bridle path. No consideration had been given to the fact that that bridle path was bordered by well established hedges, on both sides and would be too narrow to safely accommodate both construction traffic and equestrians.

14.6.9 No consideration had been given to the use of the local rural roads as a leisure amenity, by walkers, cyclists and horse riders or to the fact that the development would have a significant impact on footpaths FP38, FP61, FP42, FP41, FP45 and brid al path BW2a.

14.6.10 The proposals put forward by the appellant for a mini roundabout or mini by-pass were both outside the planning application area. No planning permission had been sought, and there had been no public consultation. Neither proposal met acceptable design standards.

14.6.11 Mini roundabouts should only be used when all approaches were subject to a 30 mph speed limit or less and traffic on a main road should be able to see a side road for a distance corresponding with safe stopping distance.

14.6.12 As for the mini-roundabout, there was no space available to put in place the necessary traffic deflection, and de-prioritising the junction would increase the risk of accidents. The appellant’s traffic consultant’s claim that no double decked buses used this route was false as children attending St. Aidans Technology College were conveyed by this means of transport.

14.6.13 The proposed mini by-pass would be privately controlled by the appellant. No details had been put forward as to what measures would be put in place to ensure traffic wishing to gain access to the private road did not block back onto the highway. There would also be construction traffic and pipe delivery traffic associated with the construction of gas pipeline connecting the appeal site to the NTS. This traffic would enter and leave Moss House Lane on the opposite side of the A588 from the proposed by-pass junction.

14.6.14 WBC had resolved to grant planning permission for the pipelines development, subject to conditions, despite the fact that no traffic impact survey information had been provided in the Environmental Statement. Some traffic information had recently
been supplied in relation to the pipelines development, this information had not been publicly advertised or site notices displayed.

14.6.15 CGSL had submitted numerous changes to their plans during the Inquiry. Each series of maps had contained errors or omissions. The most recent SK/FP/30/11/05 Rev C, showing the proposed re-alignment of the haul road, depicted BW50, which was fenced off as liable to subside, as BW44. There were two BW44’s on that map. Other brinewells in the area had been omitted, BW45, BW47, BW78, BW98 and BW102. The maps provided were not accurate or up to date. Areas of subsidence were much larger than portrayed, for example, a section of Aggleby’s Road had subsided several years ago.

14.6.16 The proposed haul road to serve the north of the site, although recently shown as diverted, still passed over an area of land recognised as potentially unstable. The north - south service track also passed over land known to be potentially unstable. There would be conflict with existing traffic at both junctions of these service roads with existing lanes.

14.6.17 Construction traffic would need to cross the Wyre Way in two separate places, on Burrows Lane and to the north of the Heads, Brown’s Lane. Again, no consideration had been given to conflict of interest. Local lanes such as Highgate Lane, Staynall Lane and Grange Lane, which were single track and had no designated passing places, would become ‘rat runs’ for construction personnel.

14.6.18 All these potential highway and traffic problems highlighted how inappropriate it was to attempt to site a massive industrial development in a rural area.

15. NOISE

15.1 Matters agreed in draft SCG (CD/28 – Section 18) and CD/61

15.1.1 Both parties have separately and independently conducted noise surveys.

15.1.2 This section of the SCG was directed at establishing the existing ambient noise climate in the vicinity of the proposed development.

15.1.3 All relevant data has been shared. It is agreed that the following noise levels can be taken as representative of the existing noise climate in the vicinity of the proposed development and can be used for the purposes of noise assessment.

<table>
<thead>
<tr>
<th>Location</th>
<th>Day</th>
<th>Night</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cotes Wall Farm, Monks Lane</td>
<td>dB L_{A90}</td>
<td>dB L_{Aeq}</td>
</tr>
<tr>
<td>Carters Farm/ Burrows Farm</td>
<td>30</td>
<td>47</td>
</tr>
<tr>
<td>The Heads/ Sportsmans Caravan Parks</td>
<td>34</td>
<td>52</td>
</tr>
<tr>
<td>Hospital, West Way</td>
<td>50</td>
<td>58</td>
</tr>
<tr>
<td>South Strand/ King Georges Memorial Field</td>
<td>44</td>
<td>50</td>
</tr>
<tr>
<td>Boat Compound Wyre docks</td>
<td>46</td>
<td>51</td>
</tr>
<tr>
<td>Little Height o’the Hill</td>
<td>41</td>
<td>46</td>
</tr>
<tr>
<td>Caravan Park, Fleetwood Road</td>
<td>55</td>
<td>65</td>
</tr>
</tbody>
</table>

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15.1.4 CD/61 set out further areas of agreement reached between CGSL and LCC during the inquiry (see paras.15.1.5 – 19 below). The ES assessment of noise and vibration must now be viewed in the light of the further work undertaken for CGSL & LCC respectively. To that extent the original work is superceded.

Construction Noise Assessment

15.1.5 The calculation of construction noise impacts presented in the following tables and figures in the Appendix to CGS/14/3 are agreed as demonstrating that construction noise impacts could be controlled to acceptable levels:

<table>
<thead>
<tr>
<th>Component/Source</th>
<th>Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seawater Pump Station (SPS)</td>
<td>Table D8</td>
</tr>
<tr>
<td>Booster Pump Station (BPS)</td>
<td>Table D8</td>
</tr>
<tr>
<td>Gas Compressor Station (GCS)</td>
<td>Table D8</td>
</tr>
<tr>
<td>New and Altered Roads</td>
<td>Table D2</td>
</tr>
<tr>
<td>Haul Roads</td>
<td>Table D9</td>
</tr>
<tr>
<td>Brine Outfall</td>
<td>Table D7</td>
</tr>
<tr>
<td>Brine Pipeline</td>
<td>Table D5</td>
</tr>
<tr>
<td>Under Estuary</td>
<td>Table D6</td>
</tr>
</tbody>
</table>

15.1.6 The Contractor should be obliged by condition or s.106 obligation, on appointment to seek to obtain a section 61 agreement in advance of all site work which covers inter alia hours of working, permissible noise levels and scheme details including plant to be used. Hours of working should be daytime Mondays to Fridays and Saturday mornings only, and permissible noise levels should not exceed those set out in the tables listed above.

Construction Traffic

15.1.7 It is agreed that with the exception of Cemetery Lane all construction traffic noise impacts are likely to be minimal (Docs.CGS/14/3 Fig.C8, CGS/14/2 Tables 6.10 and 6.11).

15.1.8 Noticeable increases in traffic noise outside properties on Cemetery Lane are predicted, but the resulting levels are moderate [It is noted that at Sunny Nook, which is closer to traffic on the A588 (Doc.CGS/14/3 Fig.C9), absolute levels are higher but the increment is minimal].

15.1.9 The existing number of daily HGV movements on Cemetery Lane is 4. The numbers are reported by CGSL to increase to around 19 during construction with a temporary high of 24 during the peak summer period of construction. For properties close to the highway, this will result in short term noise impacts from individual heavy vehicle movements.

Operational Noise

15.1.10 During the operational phase using the plant and equipment proposed by CGSL the number of generated traffic movements is low and hence no significant traffic noise impacts are anticipated.

15.1.11 Tables D11 (Docs.CGS/14/3) and 6.7 (Docs.CGS/14/2), demonstrated that by suitable design and construction, operational noise levels are capable of being limited to acceptable levels. A condition in line with that proposed in Paragraph 8.6 of CGS/14/2 requiring the monitoring of noise from the gas compressor, booster pump and seawater pump stations should be imposed.
Venting

15.1.12 Venting of the pipeline will be required at locations to be specified. A scheme of noise control for venting setting out the times, duration and noise levels at noise sensitive properties should be submitted and agreed with the planning authority.

15.1.13 It is understood that air venting may be required in the vicinity of the Seawater Pumping Station and the brine outfall near the Hospital.

Decommissioning

15.1.14 The caverns will be stabilised by saturated brine filling and bulk materials imported to site will not be used for this purpose.

15.1.15 Removal of the buildings and infrastructure on decommissioning is likely to result in similar noise levels to those which are predicted for the construction stage. A Section 61 agreement as suggested under paragraph 2.2 above should be sought.

Drilling Noise

15.1.16 The levels predicted at individual locations in Table D4 (Doc.CGS/14/3) are agreed to be reasonable predictions using established procedures taking into account soft ground attenuation and topographical screening. They do not take into account any acoustic screening due to buildings or local structures.

15.1.17 The acceptability, or otherwise, of the noise impact from drilling is not agreed. It is agreed that the tables appended to Doc.LCC/6/4 show the comparison between background noise levels and predicted drilling L_{Aeq} noise levels without additional mitigation. Such an exercise is used in BS4142:1997. CGSL contend that such an exercise is not appropriate to gauge temporary noise during mineral workings in line with the LCC M&WLP and MPS2 Annex 2 Paragraph 2.19. LCC contend that whilst regard should be had to MPS2, regard should also be had to BS4142, given the nature of the duration of the impacts upon the nearest noise sensitive properties.

15.1.18 Whilst CGSL do not accept the relevance of BS4142, as a matter of mathematics, and without applying any rating correction or additional mitigation, the background level would be exceeded by the predicted LA_{eq} levels in the locations and for the periods shown in the supplementary table (Doc.LCC/6/4).

Conditions and Obligation

15.1.19 It is agreed that the following matters should be addressed by conditions and/or obligations: construction noise, construction traffic, operational noise levels from three stations, venting, decommissioning, and drilling.

15.2 Case for CGSL

15.2.1 In order to develop and operate the underground caverns it was proposed to solution mine up to 24 wellheads. The significant features of the scheme that needed to be addressed in the context of any noise assessment included:

i) A seawater pumping station in the docks area;

ii) A sub-surface brine discharge pipeline and outfall to the Irish Sea;
iii) Directional drilling of brine, seawater and communication pipes beneath the Wyre Estuary;

iv) The construction and operation of a GCS;

v) The construction and operation of a BPS;

vi) The construction and use of access tracks and roadways;

vii) Decommissioning of the above ground infrastructure.

15.2.2 The key elements of the development and operational phase of the process, with respect to noise, would be as follows:

i) The salt caverns would be developed using vertical and directional drilling into underground salt deposits. 80,000m³ of salt water would be pumped daily from the seawater pump station at the docks through a pipeline under the Wyre Estuary and then injected under pressure into the caverns in order to dissolve the salt deposits. This component of the process was intended to operate for 24 hours a day during the cavern washing phase.

ii) Salt-saturated brine would be extracted and pumped into the Irish Sea at an outfall approximately 2.3km west of Rossall.

iii) The GCS would contain 4 electrically driven MOPICO compressors or equivalent with magnetic bearings with a total rating of 42,000hp. They would be installed in a sound attenuating building. Four bays of fin-fan coolers would be located to the east of the station.

iv) The seawater pump station would consist of a steel framed masonry clad building with associated switchgear and services. It would house 14 electrically driven submersible pumps each with a rating of 125hp.

v) The BPS would contain 24 electrical pumps each of 300hp. Associated facilities would include workshops, control centre for the washing operations and the primary control centre for gas storage operations.

vi) Open pipe-laying was proposed on land for the installation of the seawater pipe, the brine outfall pipe and the gas pipelines. Directional drilling would take the pipes under the Wyre Estuary.

vii) Permanent access roads would be constructed to connect the GCS to the local road network and to connect the BPS with Back Lane.

viii) The wellheads were proposed to be located over an approximately 3km stretch of land to the east of the Wyre Estuary. Each would require an area of around 120m x 80m which would be reduced on completion of the cavern washing phase and installation of pipe-work. It was proposed that the caverns would be washed in groups of 6 to 8 at any time. The first group was expected to be completed, tested, dewatered and commissioned for use 30 months from the commencement of construction.

Scheme Program

15.2.3 The indicative programme for the scheme of development (CGS/14/2 Table 6.1) provided an indication of start and finish months for each of the specific areas of activities.
Importantly, the expected duration of the drilling operations was set out. Borehole drilling would be intermittent with 4 - 6 weeks of drilling assumed in respect of each borehole.

Baseline Noise Levels

15.2.4 The existing noise levels had been separately and independently measured (see 15.1.4 above and Doc.CGS14/2. Table 5.3).

Further Joint Statement of Agreement

15.2.5 Doc.CD/61 represented the joint statement of agreement on behalf of LCC and CGSL. It had also identified one significant area of disagreement in approach. The following areas of agreement should be noted:

Construction Noise Assessment

15.2.6 The calculations of construction noise impacts (Doc.CGS14/3 App.D Tables) had been agreed.

15.2.7 It was therefore demonstrated that construction noise could be controlled to acceptable levels in respect of the Seawater Pump Station, Booster Pump Station, Gas Compressor Station, New and Altered Roads, Haul Roads, Brine Outfall, Brine Pipeline, Under Estuary and Construction Traffic.

15.2.8 With the exception of Cemetery Lane, all construction traffic noise impacts were likely to be minimal (Doc.CD/61 para.3.1). The agreed statement noted that in respect of Cemetery Lane there would be noticeable increases in traffic noise but the resulting levels would be moderate. There would be a limited period when traffic movements associated with the peak of construction activity would be the highest (ie. the ‘peak of the peak’). The overall numbers of HGV movements assessed would remain unchanged. The consequence was that outside the ‘peak of the peak’ there would be a corresponding reduction in HGV movements.

Operational Noise

15.2.9 While the plant was operating the number of generated traffic movements would be low. It was agreed that there would be no significant traffic noise impacts anticipated with this phase of the development (Doc.CD/61 para.4.1). The evidence demonstrated (Doc.CGS/14/3/Table.D11 + Doc.CGS/14/4) that by suitable design and construction, operational noise levels were capable of being limited to acceptable levels. It had been agreed that a condition in line with that proposed on behalf of CGSL (Doc.CGS/14/2 para.8.6) should be imposed.

15.2.10 It was currently proposed that the caverns would be stabilised by saturated brine pumped into the caverns. Bulk importation by vehicles would not be used for this purpose.

15.2.11 The removal of the buildings and above ground infrastructure on decommissioning was likely to result in similar noise levels to those which were predicted for the construction phase. Consequently it was recognised that the noise impacts could be controlled to acceptable levels.

Venting
15.2.12 Doc.CD/61 required a scheme of noise control venting that set out the times, duration and noise events at noise sensitive properties to be submitted and agreed with the MPA. That issue had been addressed in the scheme of conditions discussed at the inquiry.

Drilling Noise

15.2.13 The one significant area of disagreement related to the acceptability of the noise impact from drilling operations. The area of disagreement had related to the utilisation of BS4142:1997 analysis by LCC compared to the absolute limits set out in MPS2 preferred by CGSL.

15.2.14 Doc.CD/61 noted that the levels predicted at the individual locations (Doc.CGS/14/3 Table.D4) were reasonable predictions using established procedures that took into account soft ground attenuation and topographical screening. They did not take into account any acoustic screening owing to buildings or local structures.

15.2.15 While CGSL did not agree the appropriateness of the methodology used by LCC (Doc.LCC/6/3) the predicted LAeq levels in the locations and for the periods shown were agreed. The mathematical evidence presented by LCC showing that without additional mitigation the background levels would be exceeded by the predicted LAeq levels was accepted.

15.2.16 Having identified the one significant area of disagreement in respect of noise matters it was important to put it into context. For LCC it had been agreed that:

a) The drilling operation would be temporary;

b) Actual drilling would be over a 2-3 year period within a 6 year window (Doc.CGS14/2 – Table.6.1);

c) The drilling programme would be staggered;

d) At any one location the closest rig (and hence the highest noise) would be in position for a 4 - 6 week period (Doc.CGS/14/2 Table.6.1 – Footnote).

15.2.17 For LCC the predicted level at individual locations had been agreed (Doc.CGS/14/6 Table.D4). Those predictions were without local acoustic screening or other noise mitigation, which could include, for example, enclosures to pumps.

15.2.18 During ‘Day Time’ there would be no exceedance of the 55dB LAeq (Doc.CGS/14/6 - Table.B). At ‘Night Time’ there would be exceedances of 42dB LAeq, the highest being at Cote Wall Farm (55dB). The significance of the limit of 55dB daytime and 42dB night time were enshrined in national policy. Para.2.2 of Annex 2 to MPS2 refers to Guidelines for Community Noise (1999) a World Health Organisation Document and quotes from the document:

“To protect the majority of people from being seriously annoyed during the daytime, the outdoor sound level from steady continuous noise should not exceed 55dB on balconies, terraces and outdoor living areas. To protect the majority of people from being moderately annoyed during daytime, the outdoor sound level should not exceed 50dB.”

15.2.19 These were absolute levels irrespective of increase over background. With the one exception at Cote Wall Farm (well-head W9), all well-head Day Time levels would meet the 50dB limit without any screening or other attenuation (Doc.CGS/14/6 - Table.B).
For LCC it was recognised that for Cote Wall Farm, fine grain work to model the effect of the existing outbuildings and any screening would be required. The absolute level of 55dB could be achieved for Cote Wall Farm during the daytime and 50dB elsewhere. Further reductions could be achieved in the following ways:

(a) Equipment selection

The drilling rig modelled by CGSL produced a level at 109dB. That modelled at Byley was 10dB lower. If CGSL were to use a drilling rig at a noise output of that modelled for Byley, 10dB would need to be removed from both tables B (Doc. CGS14/6). Both CGSL and LCC had been willing to test the anticipated noise levels by on site measurement at the Byley facility anticipated to commence drilling operations in April 2006. However, a delay in commencement had prevented that opportunity. The point remained that drilling noise levels submitted to another MPA were considered in the context of a similar application and not challenged. The conditions imposed reflected the ability to achieve levels at noise sensitive properties derived from the anticipated noise output levels from a drilling rig.

(b) Acoustic Screening

Para.2.9 of MPS2 Annex 2 stated that in respect of acoustic screening 5 - 10dB reductions could generally be obtained.

(c) Restricting Operations

A degree of flexibility could be built into the timing of the drilling operations to reflect uses in the area. For example, work in the vicinity of the caravan parks could be limited, if necessary, to avoid periods of occupation during the peak summer holiday periods.

(d) Hours of Operation

CGSL did not consider that an ‘hours of operation’ condition would be justified in respect of the drilling operations which were intended to be operated on a 24 hour basis. Nevertheless, the absolute levels of noise set out in the proposed CGSL noise condition would have to be complied with in order to secure reasonable levels of residential amenity as required by MPS2. The operation of the development would have to be controlled such that the noise levels were achieved without equivocation. If necessary, a restriction on hours of operation would be undertaken by CGSL in order to secure compliance with the limits imposed by MPS2.

Some or a combination of these measures were capable of achieving levels below the absolute levels in MPS2. That could be achieved for both daytime and night time operations. If a reduction associated with a ‘Byley’ drilling rig, plus screening, was achieved this would reduce levels by between 15 - 20dB. The consequent level at Cote Wall Farm at night with wellhead W9 operating would become in the region of 35 - 40dB and therefore below the absolute limit of 42dB.

Appropriateness of Absolute Levels

The main difference between LCC’s and CGSL’s witnesses related to the use of absolute levels. For LCC it had been acknowledged that the MPS2 exercise undertaken on behalf of CGSL had been a legitimate and appropriate one. For LCC it had been argued that in addition to MPS2 analysis there should also be a BS4142 consideration.
15.2.23 Para.2.19 of Annex 2 to MPS2 set out absolute limits of 55 dB and 42 dB. The 55 dB correlated to para.2.2 of MPS2 and the WHO guidelines that were referred to. The choice of 42 dB meant that with partially open windows inside a bedroom the noise level would be 30 dB. BS8233:1999 sets out the indoor ambient noise levels (Doc.CD/65 – Table.5). In order to have reasonable resting/sleeping conditions within bedrooms a ‘good’ standard criterion would be achieved by setting a night time noise limit of 42 dB outside the property.

15.2.24 By achieving the absolute levels required in MPS2 residential amenity would be protected. The objectives of the MPS2 guidelines related to mineral operations and the objective of ensuring reasonable levels of residential amenity were maintained during such operations.

BS4142

15.2.25 The approach on behalf of LCC to the utilisation of BS4142 was a misapplication of that standard. It was explicitly for mixed residential and industrial areas. Of the many descriptions that could be applied to the proposed development site, mixed residential and industrial was not an appropriate one. One obvious example, in mixed residential and industrial areas of the type countenanced in BS4142, was the likelihood that background levels of noise would be significantly higher than locations such as Preesall. That was demonstrated by reference to the existing situation (Doc.CGS/14/2 Table 5.3). A BS4142 analysis would predict the likelihood of complaints without development due to current significant exceedances above the 10 dB limit.

15.2.26 CGSL maintained that what was important was not a comparison between background and predicted levels but the likely effect of the noise operations at the development site on people at noise sensitive locations. As MPS2 recognised, the effect on people could be protected by the imposition of absolute limits or better. The CGSL proposed conditions would secure the objective of setting enforceable limits so that noise levels would not be anticipated to be materially detrimental to residential amenity.

Consistency of Approach

15.2.27 A key test for judging whether LCC’s approach here was an acceptable one could be by reference to:
   a. The Inspector’s and SoSs’ approach in the Byley decision letter;
   b. The approach of LCC in other cases.

Byley Decision Letter

15.2.28 The Inspector’s Report at paras.9.73 to 9.76 (Doc.CD/53) dealt with the issue of noise. The local action group (CAP) had argued that the absolute limit set out in the CCC documentation was not appropriate as the operation would be effectively continuous. At paragraph 9.76 the Inspector had concluded:

“It is true that the drilling rig would move from wellhead to wellhead and the rig would itself be effectively in continuous operation. However, I do not agree that the noise experienced at each sensitive receptor (bedroom windows in the nearest farmhouses) would be constantly felt around the permitted maximum level. There would be 8 wellheads at varying
distances from the dwellings at the farms that would be affected. The permitted maximum level (...) would be experienced only when the nearest wellheads to a sensitive receptor are being drilled. Therefore, the noise experienced would not equate to a continuous operation at one site, and the further condition suggested by CAP would not be necessary. I find that the imposition of the noise conditions discussed at the Inquiry should ensure that there would be no material harm as a result of noise from the proposal."

15.2.29 At para.43 of the SoSs’ decision letter of 19th May 2004 it was recorded that there was agreement with the Inspector and the planning conditions. Those planning conditions reflected CGSL’s approach to absolute limits. The approach of both the Inspector and the SoSs’ was consistent with that for CGSL’s and its analysis of a MPS2. To prefer the analysis on behalf of LCC would mean that the LPA in Byley and the Inspector and the SoSs’ were seriously in error.

LCC approach elsewhere

15.2.30 The LMWLP referred to the production of the Model Planning Conditions which had been ‘informed by the relevant PPGs, MPGs and Circulars” (Doc.CGS/14/4 para.4.15). The Local Plan continued:

“The draft conditions listed include indicative limits for those environmental parameters which are capable of measurement such as noise. The Model Conditions are intended to provide guidance for officers of the authorities in dealing with planning applications to seek to ensure the proposals which are permitted have the least impact on adjoining users in line with the most up-to-date and relevant guidance and knowledge.”

15.2.31 The Model Conditions that were currently available from LCC (Doc.CGS/14/6 App.A) adopted CGSL’s approach rather than that put forward on behalf of LCC at this appeal. LCC had been unable to produce any document or grant of permission in which the MPS 2 and BS4142 approach had been adopted by LCC to control noise at a mineral site.

Other Issues

15.2.32 LCC’s claim in Closing that the ES noise information was ‘wholly inadequate’ was not accepted. The ES had addressed noise and provided information sufficient to properly assess the likely significant effects of the proposal. The fact that additional work was undertaken was not recognition that the environmental information was incomplete or inadequate.

15.2.33 It could be no surprise that in the lead up to a public inquiry further work on the subject was undertaken in order to present an up to date analysis. To do otherwise was capable of leading to legitimate criticism of CGSL.

15.2.34 PWG had raised the issue of vibration from HGV movements and the effect of this on residential properties close to the highway. Both CGSL and LCC had agreed that vibration from any aspect of the proposed scheme would not be an issue warranting refusal of permission (Doc.LCC/6/1 para.3.3).
Overall conclusions

15.2.35 Significant areas of agreement had been reached by witnesses for LCC and CGSL (Doc.CD/61). Subject to the imposition of appropriate conditions, the noise associated with the construction of buildings, with the HGV movements of the construction phase, with operational traffic, from the seawater pump station, the booster pump station and the gas compressor station whilst operational, and from the decommissioning phase were not unacceptable to LCC.

15.2.36 The significant issue outstanding related to the appropriate criteria against which to judge the drilling noise part of the proposal. The approach of behalf of CGSL was demonstrably preferable insofar as it provided the certainty that the levels to be achieved were those capable of protecting reasonable levels of residential amenity. That approach was consistent with national policy in MPS2, the approach of the Inspector and Cheshire County Council in the Byley decision, it was reflected by the decision of the SsoS in the Byley decision and, more importantly, LCC had consistently applied the same basis in the determination of other mineral applications.

15.3 Case for LCC

15.3.1 The noise information in the ES (Doc.CD/2 pg.316) was and remained woefully inadequate. For CGSL it had been acknowledged to be ‘inadequate’. The subsequent approach on behalf of CGSL – continuous noise readings at 3 locations for a week each and sets of 15 minute day and night readings at three other locations – contrasted with 20 minutes worth of readings at two locations in the ES. CGSL’s noise evidence still did not address venting from the pipelines or decommissioning.

15.3.2 In relation to HGV movements, while the increase in road traffic along Cemetery Lane during the constructing period might result in a negligible difference in the $L_{10,18}$ level, it would involve a series of individual and obvious events each of which would have an adverse impact on the residential amenity of those who lived along the Lane and which had the potential to be subjectively disturbing.

15.3.3 The remaining areas of dispute related primarily to the interpretation of policy and the impact of well-head drilling.

15.3.4 CGSL’s assessment of wellhead drilling noise impacts at the nearest noise sensitive properties depended in part upon the noise source being accurately assessed. The evidence assumed a sound power level of 109dB $L_{WA}$ on the basis of field measurements reported to the witness by CGSL. With this assumption noise levels had been predicted to exceed adopted criteria by up to 13dB(A) at several properties for several months. It was then argued (Doc.CGS/14/6) that this assumption was ‘conservative’ and that a level 10 dB lower had been assumed at Byley. The only supporting evidence produced was a report by an independent noise consultant which had established that after intensive effort to minimise noise emissions the resulting level from a comparable rig was, as originally assumed, 109dB $L_{WA}$. Accordingly, the only proper starting point for the assessment was that of a sound power level of 109dBA for a rig which was already heavily engineered to mitigate noise impacts.
15.3.5 It was then argued that, notwithstanding that for a number of properties for a number of well-heads the rating level would be more than 10dBA above background, the noise environment at those noise sensitive properties would be acceptable.

15.3.6 That had been justified firstly on the basis that, in the light of MPS2, one needed only to consider absolute noise levels and need not be concerned with an exercise involving a comparison of the predicted noise level from drilling operations and the background noise level (similar to that suggested in BS4142). That approach was wrong and based upon a mis-reading of MPS2 Annex 2 para.2.19. That manifestly required regard to be had to the background noise levels. Para.2.7 of the Annex also required MPAs to have regard to the character of the process, the background noise levels and to ‘standards’. Those ‘standards’ were set out at the end of the Annex and include BS4142. To read MPS2 as excluding a comparison between the rating level and the background level as being inappropriate was mis-guided.

15.3.7 BS4142, in its foreword, plainly envisaged its use in circumstances other than just the rating level of industrial properties. Given that drilling noise was a quasi-industrial process which would continue over hours (and potentially into the night) in one location for many weeks and in some cases months, its use was all the more relevant to well-head drilling.

15.3.8 Secondly, it was sought to be argued that the noise would be ‘temporary’. Given drilling would take place sequentially, then it followed that for some locations the drilling of successive wells over the construction period would not be the one-off impact of a single well for a few weeks, but rather a number of wells over a period of years, with perhaps some periods of ‘respite’, when the noise from drilling would be replaced by the noise of well-head relocation. It might be temporary, but only in the sense of being of finite duration. For some properties it would effectively be continuous, day and night, for an extended period, just like the noise from a fixed industrial property. On behalf of CGSL, BS4142 had rightly been used to assess noise during the operational phase for the seawater pumping station and the booster pump station, and the suggested condition (CGS/14/2/Para.8.6), with levels down to 28dB(A) at night and 30dB(A) during the day, must have been regarded as necessary. However, these too were temporary noise sources, which would cease operating when the caverns, and the drilling, had been completed. It was noted that while it was argued in one situation that the difference in duration of noise exposure at any one property was sufficient to require that it was necessary to limit noise exposure to 30dB(A) during the day, in the other a level of 55dB(A) was considered acceptable. This was inconsistent.

15.3.9 Thirdly it was argued that even if the approach on behalf of LCC was correct and that that part of MPS2 which required a BS4142 type analysis was appropriate, then what was being presented and analysed was the extreme because mitigation had not been shown. While that might be true, it was impossible to know because CGSL had not presented evidence of what mitigation might come forward and what its attenuation might be. What had been produced was evidence that, with mitigation including almost all measures that an independent consultant considered practicable, there was limited scope for further noise reduction at source.

15.3.10 CGSL invited a leap of faith that it would be able to comply with conditions and achieve an acceptable noise environment even though no evidence had been submitted that demonstrated that such mitigation of drilling noise was achievable. It
was not sufficient to say that any impact would be capable of mitigation, but not demonstrate that fact. Moreover, residents who would be impacted should not have to rely on LCC taking swift enforcement action if CGSL were wrong and there were transgressions.

15.3.11 It was for the appellant to prove its case, and inviting the SoS to impose a condition that might or might not be achievable was to abdicate responsible decision making. That was neither sufficient nor appropriate when dealing with the living environment within and outside people’s homes.

15.4 Case for Mr & Mrs Jackson

15.4.1 The east side of the estuary was a rural area, and no real attempt had been made to assess the impact of noise on the holiday home parks or those people who used the area as a recreational amenity. For CGSL it had been acknowledged that the noise produced by drilling could become irritating. It was also agreed that during the lifting of pipes, sudden unexpected resonating clangs could be heard. Lack of certainty as to what noise levels a drilling rig would produce, or whether the assumed noise levels were prior to, or after the introduction of noise mitigation measures, undermined any impact assessment.

15.4.2 Having lived and worked in close proximity to the drilling and development of solution mined wells, it was not considered a pleasant experience and not one to be repeated. It was accepted that a whole range of conditions would need to be put in place if development proceeded. However, past experience had shown that in brinefield development, where the developer was also the landowner, regard for the planning conditions associated with the development, could be lax.

NB. Cases for Interested Persons are set out in Chapter 18

16. ECONOMIC IMPACT

16.1 The Case for CGSL

16.1.1 The Tribal HCH report (Doc.CGS/9/3 App.14) assessed the potential economic impact of the CGSL proposal on the local economy. Section 2 presented an economic profile of Wyre Borough area within the context of recent trends in Lancashire and the North West and included an overview of the tourism industry in Lancashire and Wyre. Section 3 set out the results of the economic impact assessment and covered the employment which would be created by the development during construction and operation and the potential impact on the tourism industry as a result of the assumed closure of the two caravan parks (The Heads and The Sportsman).

Economic Overview

Population

16.1.2 The resident population of Wyre Borough in 2003 was 108,300; 8% of the population of Lancashire. The principal towns in the Borough included Garstang, Fleetwood, Poulton-le-Fylde and Thornton Cleveleys. Since 1991 the population of Wyre
Borough had increased by almost 6% compared to more modest growth in Lancashire and population decline in the North West as a whole (Doc. CGS/9/3 App.14 Table 2.1).

16.1.3 The age distribution of the population of Lancashire was similar to the North West as a whole. Wyre Borough had a significantly larger proportion of the population in the over 60 age group and a lower proportion of the population in the younger groups (Doc.CGS/9/3 App.14 Table 2.2).

Economic Activity

16.1.4 A lower proportion of the population was economically active in Wyre Borough compared to that of Lancashire and the North West. The main drivers of the lower economic activity rate were the lower proportion of the population in full-time employment and a lower proportion of the population who were unemployed. Wyre Borough had a relatively high rate of economic inactivity; however, this was not surprising given the higher proportion of people over the age of 60. This was reflected in the proportion of the population who were retired: 20% compared to 15% in Lancashire and 14% in the North West.

Unemployment

16.1.5 At July 2005 there were 740 people registered as unemployed in Wyre Borough; 1.2% of the working population. This could be compared favourably to the rate in Lancashire (1.9%) and the North West (2.5%).

16.1.6 Wyre Borough had seen an increase of almost 4,000 people in employment (13% increase) since 1998. This was a relatively high increase compared to Lancashire (plus 4%) and the North West (plus 7%).

Employment Structure

16.1.7 The employment structure of Wyre Borough was dominated by two sectors; distribution, hotels and catering, and public services. These accounted for over 60% of employment compared to 52% across the North West as a whole. The proportion of employment in transport and financial services, at 4% and 10% respectively, was below the North West average of 6% and 18%. Manufacturing activities were important in the North West, accounting for 15% of employment. In Wyre, the proportion was only 11% (Doc.CGS/9/3 App.14 Para.2.9).

Average Earnings

16.1.8 The residence-based estimate of average weekly earnings in Wyre Borough was £399 (an annual salary of £20,700); 1% higher than the North West and 4% higher than Lancashire. Workplace based estimates for both Lancashire and the North West were very similar to the residence based estimates, but the workplace based estimates for Wyre Borough were much lower. At £343 per week, this translated to an annual salary of £17,800: 14% lower than the residence based estimate. The difference between the two demonstrated that people living in Wyre Borough were likely to be working outside the District.

Tourism Industry

16.1.9 Tourism had become a major sector in the economy of Lancashire, and Wyre Borough in particular had gained from its proximity to Blackpool. In 2003 there were over 58m visitors to Lancashire with 90% of the visitors on day-trips (Doc.CGS/9/3 App.14...
Table 2.7. Of the 5.7m visitors who stayed overnight, 75% stayed in serviced accommodation such as hotels, guesthouses and B&Bs. Total spending by tourists in the Lancashire area in 2003 was £1,645 million, with 49% derived from visitors staying in serviced accommodation and 38% from day visitors.

16.1.10 Tourist visitors to Wyre Borough were dominated by day-visitors (70%). There was a significant difference between Wyre Borough and Lancashire in relation to the availability of serviced accommodation. Nearly 90% of bed spaces in Wyre Borough were in non-serviced accommodation compared to 42% in Lancashire as a whole.

Employment Impact

16.1.11 There would be permanent and temporary impacts associated with the proposed gas storage facility. The temporary impacts related to the construction phase of the project; permanent impacts to the operation of the facility. The economic impact related to the income and employment created in the local economy by the proposed development and comprised three elements:

(i) Direct impact. Income and employment supported by the construction and operation of the gas storage facility.

(ii) Indirect impact. Income and employment in businesses supplying goods and services to the Preesall site during both construction and operation.

(iii) Induced impact. Income and employment supported in the local area by people employed directly and indirectly spending parts of their salaries in the area.

Construction Impact

16.1.12 The employment supported during the construction phase would be temporary and only last for the duration of the construction project. At its peak there would be 150 people employed on the construction site. From average earnings for the construction industry the direct income associated with the construction was estimated to be £3.8 million. It was not envisaged that there would be a problem in finding the required labour for the project.

16.1.13 The indirect impact of the construction was derived from the non-wage and salary expenditure of the contractor in support of their day to day operations. Some of the expenditure would be on locally sourced goods and services.

16.1.14 In the absence of published multipliers for the North West, Scottish input-output tables had been used. The relevant multiplier is 1.089. As the construction impact was being assessed for the County of Lancashire, the value for the North West had been modified to derive a value for the County. The Lancashire multiplier had been estimated to be 1.3. During the construction phase almost 200 jobs would be supported in the County with income of £4.9 million created.

Operational Impact

16.1.15 Once the gas storage facility was operational there would be 30 people employed at the site. It was envisaged that 15 would be permanent operation and maintenance employees with an additional 15 in commercial operations. Those 30 people would earn wages and salaries of some £0.9 million. The operation of the site had been
assumed to result in the closure of two caravan parks and it was estimated that 10 people employed at these sites would lose their jobs as a result. Wages and salaries associated with these 10 job losses were estimated to be £0.2 million. Together, the net increase in direct employment would be some 20 jobs and an income of some £0.7 million.

16.1.16 The indirect impact associated with the operation of the site and the lost employment at the caravan parks had been estimated. Gas distribution had a combined indirect and induced multiplier of 6.093; and Hotels, catering, pubs etc for the caravan parks had a combined indirect and induced multiplier of 1.268.

16.1.17 The direct employment at the site would yield indirect and induced employment of 9 and income of £0.2 million. The indirect and induced employment associated with the two caravan sites was less than 1 with an income of approximately £12,000. The net effect would be 9 jobs with an additional income of £0.2 million. Overall the facility was estimated to generate an additional 29 jobs in Wyre Borough. The additional jobs created would be higher value jobs than those lost in the tourism industry.

16.1.18 In addition to the direct, indirect and induced jobs lost as a result of the closure of the two caravan parks there would be lost expenditure in the area from the visitors who would have stayed in these facilities. The lost visitor expenditure associated with the assumed closure of The Heads and The Sportmans caravan sites, based on a combined total of 110 caravans assumed to be almost always occupied, was estimated to be £1.67m per year. This represented some 2% of the total tourism expenditure by people staying in serviced accommodation.

16.1.19 The wider impact of the loss of the caravan sites would be mitigated. The sites provided static caravans for purchase rather than touring caravans. Since January 2004 there had been successful planning applications for static caravan sites in Wyre that more than accounted for the proposed loss of pitches at The Heads and The Sportmans. It was possible that those being displaced from the site could relocate to one of the new sites that had recently gained planning permission, or purchase units for sale at other parks within Wyre Borough.

Conclusions

16.1.20 The proposed gas storage facility would have a positive impact on the Lancashire economy during the construction phase. At the peak some 200 jobs would generate an income of some £4.9 million. The operation of the facility would create 29 net additional jobs in Wyre Borough with a net additional income in the Borough of some £0.9m.

16.1.21 The loss of the two caravan parks would be mitigated by those people who took the opportunity to seek other pitches within the area. Recent planning permissions for new/extensions to sites amounted to over 120 pitches. Consequently, it was anticipated that the economic impact from the lost expenditure of these visitors would be greatly reduced, if not negated as a consequence.

16.2 Other Parties

16.2.1 No detailed evidence as to the likely economic impact of the proposals was submitted by LCC, PWG, or Mr & Mrs Jackson. The concerns of interested persons who addressed the inquiry or submitted written representations are set out in Chapter 18 of
this report. A number of those representations raised general concerns as to possible indirect impacts such as increased household insurance premiums, a possible inability to get appropriate insurance cover, economic blight from an inability to sell properties, a general lowering of property values and a general reduction in the attractiveness of the Wyre area as a holiday destination leading to reduced incomes both for those involved in tourism and for the community generally.

16.2.2 PWG drew particular attention to the statement by Mrs Green [see 18.44 below]. She had expressed concern that her many letters to the HSE had gone unanswered and suggested that the lack of response showed that answers and the full extent of the problems for both now and in the future were unknown. She had also stated that if the full extent of the risk was unknown then that must breach every aspect of European Health & Safety Regulations and therefore planning permission should be denied.

16.2.3 PWG supported the view that if planning permission was granted it would be the residents who, as well as living in fear and suffering distress, would have to subsidise the CGSL presence with increased household insurance premiums, or the possibility of becoming uninsurable. This would be for commercial gain when there were alternative sites and schemes available which would not present the level of risk or potential cost to residents; schemes which might exceed the potential storage capacity of the proposed CGSL development and schemes that could come on-line within the same time frame. PWG considered the Stag Energy proposal to store gas in the salt off the Wyre coast and to possibly link up with the depleted Morecambe Bay field offered such a solution, and that that should be considered in view of the high risks associated with CGSL’s proposal.

17. HUMAN RIGHTS

17.1 Case for CGSL

17.1.1 Although considered in the officer’s report to committee (CD23.pages.43/44) and in CGSL’s evidence (CGS/9/2 6.251-7) it was not pursued by LCC in evidence or legal submissions. It is CGSL’s position that there would be no breach of Convention Rights.

17.2 Case for Mr & Mrs Jackson

17.2.1 On behalf of CGSL it had been stated that ‘while Article 1 grants a right to peaceful enjoyment of one’s possessions, it does not guarantee the right to enjoy them within a pleasant environment’ (Doc.CGS/9/2 para.6.253). This summed up CGSL’s attitude to the human and natural environment and the people of the Wyre Estuary deserved better than that. They had the right to live without the considerable anxiety and distress cause by the proposal and without the risk of the potential consequences of any accident occurring.

17.3 Cases for Interested Persons

17.3.1 A number of letters received from IPs (see Chapter 18) considered that the proposal represented an infringement of their human right to enjoy life free from fear and the threat of death and/or the destruction of their land and property, contrary to Articles 1 and 2.
18. INTERESTED PERSONS STATEMENTS

Below are summaries of the oral statements made by interested persons. Numbers in [ ] are the interested person’s representation identity number.

18.1 Ben Wallace MP [11] Lancaster & Wyre

18.1.1 The Government’s energy policy is neither clear nor complete. The Secretary of State for Energy had referred to increased use of ‘clean’ coal in place of gas. We do not yet know what is needed and how this is to be achieved and therefore unsure of what our short to medium term gas needs will be. For example, Labour Members of the Scottish Parliament had referred to increased nuclear power. CGSL’s proposal is not based on need but on profit.

18.1.2 To satisfy EU legislation there is a need to consider alternatives. Although alternatives are dismissed on the basis of high economic cost no evidence has been brought forward to justify this. Alternatives should be seriously discussed. Countries like Qatar are exporting LNG to gas storage depots. North Sea gas fields are also available for storage. There is no certainty that this proposal would affect energy prices. Prices are not governed by shortages but by world demand.

18.1.3 The Duchy of Lancaster has not yet agreed to grant permission for works on land it controls, nor has it indicated that it would do so. The proposal is, therefore, entirely speculative.

18.1.4 The proposals are also considered to be contrary to Articles 6.3 and 6.4 of Habitats Directive.

18.1.5 If the pipeline connecting the site to the national gas transmission system has a disturbing effect then this also must be taken into account.

18.1.6 All levels of democratic decision making had rejected the proposal. This was not a party political issue but based on the strength of feeling of the residents of this part of Lancashire. While the Government had a long term duty with respect to energy supply it also had a similar duty to the environment. It should also respect the views of the community.

18.1.7 While some may accuse local people of taking a ‘NIMBY’ approach, the area includes SPA, projected SPA and SSSI. This was no ordinary ‘back yard’.

18.1.8 It is accepted that DTI had indicated support for the principle of additional gas storage. However, those letters had been written before the energy review had been announced and their remained a question mark over the scale of the role to be played by nuclear power. Government policy continues to evolve.

18.2 Joan Humble MP[7] Blackpool North & Fleetwood

18.2.1 Ms Humble supports the detailed report prepared by the Head of Planning Services for Wyre Borough Council recommending rejection of the proposal. Further detailed concerns were raised in a letter of objection to LCC. In summary, the geology is not suitable for this development. Dumping massive amounts of salt in the Irish Sea and destroying the marine environment for years ahead is not acceptable. The safety

25 Letter of 6th January 2006 attached to statement of 2nd March 2006
concerns of constituents have not been adequately addressed. Accidents do happen. In the event of an emergency, arranging an evacuation of the Fleetwood peninsula would be extremely difficult due to the limited north/south links.

18.2.2 It is accepted that additional gas storage is desirable to ensure continuity, but this proposal is in the wrong geology, and due to the size of the local population, is in the wrong place geographically.

18.3 Janet McMullan [338]

18.3.1 Ms McMullan has suffered severe orthopaedic problems since birth and continues to have numerous severe disability problems. Both parents had also had severe disabilities. She has had to cope for most of her life with little support from others. Having lived in Manchester, she then lived on her own in Sheffield, London, Cambridge and now Stalmine. She requires peace and quiet after many years of upheaval and trauma in order to maintain her independence.

18.3.2 The CGSL proposal should not be permitted. In addition to concerns about the environment and susceptibility to terrorist attack, Over Wyre has no proper infrastructure. There is no public accessible transport, or public accessible taxis and the authorities have no plans to introduce such facilities. Facilities that are provided are community ‘make-dos’ such as standardised spaces on buses and carrying as many people in an ambulance as is possible. Health care in Lancashire is poor due to the emphasis of cost over care.

18.3.3 It is not known what facilities would be provided for the disabled in the event of an emergency. While she has faith in the emergency services the particular features of Ms McMullan’s disability mean that it takes her time to prepare to leave her home, she cannot travel in a car or do things speedily. Because she needs to live in specially adapted accommodation she needs to know where she would be supposed to go in the event of such an emergency. This applies equally to other disabled people such as those in care homes. Disabled people need to be aware of and be provided with clear evacuation instructions so that they can act accordingly in the event of an emergency.

18.3.4 In 2004 a 3-mile radius area in America had to be evacuated following a gas explosion. Following the hurricane in New Orleans a group of people in the sports dome, a lot of whom were elderly or disabled, were left to fend largely for themselves. They became completely displaced from the rest of society. Following the explosion and fire at the Buncefield oil depot the area around had to be evacuated and many homes suffered extensive damage. Accidents do happen. Who will take on the responsibility if it occurred in Over Wyre?

18.4 Lynda Shannan [767]

18.4.1 If the proposal proceeds it is not a question of if an explosion occurs but when. People would be killed or maimed and families destroyed. As a responsible parent the only choice would be to move away. The only question to be answered was ‘is it really acceptable to attempt to meet energy shortage objectives while also ruining people’s lives and putting other people’s lives at great risk’. The safety of citizens and protection of the environment should come before meeting any Government objective or commercial advantage.
There is toxic material stored by ICI in a well on site which could, under pressure, leak into the estuary and surrounding area. The land is not suitable for gas storage because it is not consistent enough. It is also too close to residential areas and schools to be safe. The environment is unsuitable because the area is of special scientific interest and hosts an array of wildlife. The minor roads are unsuitable.

### 18.5 Philip Moore [804]

18.5.1 The geological conditions will not permit the storage of gas without significant residual risk of gas migration. This represents an unacceptable risk to the safety of a large population living close to the site. CGSL has not demonstrated that it has the necessary experience in underground gas storage to understand and correctly evaluate the risks inherent in this proposal.

18.5.2 The proposal is not specific to CGSL as developer. However, a company with greater experience of underground storage or project development could have conducted a more conventional and thorough process of project evaluation. This may have resulted in the abandonment of the proposal had the unacceptable safety risks, presence of former mine workings and proximity of population been appreciated. Initial activity by CGSL appeared to have concentrated on the economic benefits of the proposal to the area rather than concentrating on safety and engineering issues. Public meetings held by CGSL indicated that not a great deal of consideration had been given to these aspects. Given the general statement that salt is a good strata in which to store gas, it appears CGSL assumed that all salt strata is capable of safely retaining gas.

18.5.3 The project has been over-promoted without completing the normal investigations on feasibility in sufficient detail at the appropriate stages. An example is the late submission of limited and insufficient borehole information, some of which appears incomplete. The presence of voiding in areas of the CGSL boreholes would suggest the presence of voiding elsewhere within the salt strata, with associated high risk of gas migration.

### 18.6 Mr Booth [822]

18.6.1 There would be a high risk of terrorist attacks as the well heads would have no armed security. Records show there is a high risk of earthquakes and serious tremors, some of which would be capable of causing minor cracks in salt enough to allow gas under pressure to seep. Global warming increases tide height causing flooding and increasing weight pressure on salt beds. Global warming requires safe pollution-free energy justifying the resurrection of the Wyre tidal barrage scheme which would provide power, local employment, leisure facilities and an essential flood barrier. The CGSL proposal would prevent this.

### 18.7 Dorothy Hillman [729]

18.7.1 Main concerns include lack of safety due to the storage of gas at high pressure and danger from the operation of the GCS located only 500m from her home. There is always the possibility of human error in design, construction or operation. CGSL statements are not reassuring.

18.7.2 The construction and operation of the facility will cause significant increase in heavy traffic on narrow country lanes as well as noise and nuisance. There will be long lasting effects on the bird and plant life east of the estuary.
18.7.3 This is not a sparsely populated area and the proposed method of storage would cause fear and anxiety for people living in the Over-Wyre district. The discharge of brine will damage flora and fauna in the SSSI.

18.7.4 There is ready-made storage capacity under the sea in Morecombe bay and the North Sea from where gas and oil have already been extracted.

18.8 Charlotte Jameson [780]

18.8.1 Most local properties are over 100 years old and located close to the roadside. Local rural lanes are currently safe for walking with children and pets because there is currently so little traffic. With the development pedestrians and other road users will be at risk from heavy vehicles. Those more elderly residents who can currently walk in safety will be afraid to leave their homes.

18.8.2 The current peace and quiet will also be lost, resulting in the loss of birds and other wildlife. Noise from the GCS will be continuous. If heavy goods vehicles used Burrows Lane the embankments would be damaged. These roads are currently incapable of being served by normal sized refuse vehicles.

18.8.3 All site testing should have been undertaken prior to the submission of the planning application. Insufficient surveys had been undertaken, and insufficient money spent on this element of the proposal. CGSL appear to have no contingency in the event of an extreme accident. The issue of gas migration has been all but ignored. There is only one road in and out of Hambleton and that would become blocked in the event of an evacuation.

18.9 Sandra Langhorne [789] secretary, Fylde Coast Bridleways Association (FCBA).

18.9.1 FCBA has 500 members and was formed in 1984. It succeeded in having footpaths and bridleways upgraded across the Fylde and regularly ride horses along lanes in Preesall and Stalmine. FCBA objectives include protecting bridleway and riding routes for the benefit of the public, and to be concerned with all aspects of safety for horses and riders on highways and bridleways. In 1997 there were 2469 horse, 2282 riders, 28 livery yards and 7 riding schools in Wyre Borough. Members and other horse owners need to exercise horses in a safe and suitable environment. This applies equally to walkers, cyclists and local residents; all of whom would be detrimentally affected by the CGSL proposal.

18.9.2 The huge scale of the development would have a permanent adverse impact on the landscape; the necessary heavy goods vehicles causing damage to highways and changing the nature of the roads of Over Wyre from safe and quiet country lanes to heavily trafficked roads. All this activity would have a detrimental impact on wildlife which would migrate and not return.

18.9.3 The risk to life from a gas explosion is the most important issue. The Abbeystead disaster resulted in 16 lives being lost as a result of a gas explosion. Sampling based on only 2 boreholes was inadequate for a proposal of this nature. The safety zones adopted by Kansas State legislation should be adopted here. If these standards were applied this proposal would be refused.
18.10 **Douglas Lee** [90]

18.10.1 It is not possible to safeguard an area the size of the application site from potential terrorist attack and the area will become a prime target. No evidence has been presented from the police or fire services concerning contingency plans in the event of a natural or man-made disaster.

18.11 **Trevor Lund** [118]

18.11.1 The salt in this area is unsuitable due to its depth, dip of the beds and marl partings. CGSL’s assumption that it would not leak is breathtakingly arrogant. The salt syncline is heavily faulted, and not all the locations of the faults are known. Preesall Salt Field has a history of brine extraction, the implications of which cannot be fully known. There is also the problem of wild brine. There is a lack of a thorough survey.

18.11.2 In other parts of the world UGS schemes have leaked resulting in explosions. CGSL has no experience of operating this type of storage facility.

18.11.3 CGSL has failed to engage the local community, as if local residents views do not matter. Things can go wrong, as shown by the Buncefield Oil Depot explosion. There appear to be no contingency plans in the event of things going wrong here.

18.11.4 The proposal is likely to destroy any hope of the Hillhouse site being regenerated. There has been insufficient research into the effects of the saline discharge, or other effects on the Barnaby Sands SSSI.

18.12 **Cllr. Moon** [786]

18.12.1 In the light of the statement from SoS DTI (3rd November 2005) that there was 77 days storage capacity, CGSL’s argument that there was insufficient storage capacity should be disregarded.

18.12.2 It is surprising that BGS has not been asked by CGSL to comment on the suitability of this salt for use for gas storage. The land is extremely unstable, there are numerous examples of subsidence and these continue. The proposals will make an unsafe area even more so.

18.12.3 It would be wrong to dump millions of tonnes of brine into the Irish Sea. This would damage marine life, users of the beach and Fleetwood’s fishing industry. The road infrastructure is also incapable of accommodating this proposal. The sub-standard junction of Cemetery Lane with A588 would become particularly dangerous. Those dangers could not be overcome by the construction of a mini-roundabout.

18.12.4 The development would appear as a ‘blot’ on otherwise beautiful open countryside. In the event of the proposal resulting in further subsidence it would become a ‘no-go’ area.

18.13 **Joe Reed** [210]

18.13.1 The depth of local feeling against the proposal is extensive. Local experience as a gardener has demonstrated the difficulty in regenerating the environment in this part of Wyre. Wildlife takes some 8 years to return. Saltmarsh containing rare plants will take an unknown time longer, if at all, given the amounts of lime that will deposited in the construction of the concrete and limestone site roads.
18.13.2 The fears of residents are well founded and not a hysterical reaction. The Abbeystead explosion was indicative of the effects of a gas explosion. Similar events should not be allowed to happen here. CGSL had done nothing to allay people’s fears.

18.14 **Sam Rielly** [799]

18.14.1 Preesall Salt Field is not located in a sparsely populated area. There have been some 12,000 letters of objection. The Wyre area has a population of some 106,000, 57 schools and numerous nurseries and play groups. This population deserves a great deal of consideration. Safety is paramount. The effect on house prices and insurance premiums should also be taken into account. There are more suitable locations for storage, including the former oil and gas fields in the North Sea.

18.15 **Suzanne Sharples** [781]

18.15.1 She is concerned at possibility of gas leakage and the evidence presented does not redress these fears. While CGSL claim that the area has a low population there are 15 dwellings at the top of Staynall Lane. A gas leak would end in fatalities around the area. The US had over 50 years experience of underground gas storage and the Kansas state laws, which would prevent a proposal like this being undertaken there, should be introduced into UK law. There is insufficient evidence to support the argument that there are no pathways here along which gas could migrate.

18.15.2 She is also concerned at the potential risk from terrorism, impact on the landscape – particularly in views from the river, impact on wildlife and impact on the environment.

18.16 **Geoffrey Taylor** CEng, MIEE [32]

18.16.1 He expressed concern at possible damage to United Utilities Sewage Treatment Works (STW) at Hackensall Brows both during construction of the appeal proposal and during operation. The HSE and associated CGSL evidence deals only with the safety of persons. If the sewage works were to become non-operational, possibly by damage to the feed pipe during the construction phase, or the feed pipe and/or works as a result of a worst-case event during the operation phase, then Knott End and Preesall would, for a time, have no sewage treatment facilities. This would raise the possibility of untreated sewage having to be pumped to sea.

18.16.2 The STW is important to the health of the locality surrounding the CGSL site and separate damage-avoidance data and advice should exist for this works dealing with the avoidance of damage to the feed pipe during construction, and a separation distance between the STW and the well-heads to avoid damage to the works in the event of a well-head/gas pipeline worst-case event.

18.17 **Mike Tucker** [818]

18.17.1 There is a lack of energy policy nationally. Base load should be supplied by a balance of nuclear, oil and coal, with gas for ‘peak lopping’. The residents of north Fylde and Over Wyre should not be inflicted with a gas storage scheme just because of an absence of a national energy policy.

18.17.2 This storage will be used purely as a trading facility and only limited weight should be put in CGSL’s arguments based on ‘national interest’ and ‘strategic interest’.
18.17.3 CGSL’s assessment of safety is based on 2 boreholes, and that is insufficient for a site of this size. Over Wyre is a country district and its roads reflect that. Traffic generated by the appeal proposals would have a detrimental impact on this generally tranquil area to the detriment of the amenity of many residents.

18.17.4 A proposal for residential development in this area would be turned down as contrary to the WBLP and there is no reason why the CGSL proposal, which covers a large area and would require significant infrastructure should be treated any differently.

18.17.5 It is inevitable that after decommissioning the caverns will eventually collapse. This has implications for flood defences. Such a legacy should not be left for future generations. CGSL appear to have undertaken only to look after the site for 5 years after it ceases to operate.

18.17.6 Unlike surface storage facilities as used at ICI Hillhouse, it will not be possible to inspect the proposed storage caverns other than by camera. This could never be as effective as the rigorous internal and external tests to which containment vessels are normally subjected. Similarly, the caverns could not be subject to any pressure testing above their operating pressure for fear of destroying the integrity of the rock salt.

18.17.7 The location of gas storage facilities should follow best world practice. There should be a reasonable separation distance between the storage facility and local populations. There are some 650 dwellings and 1500 people in Stalmine. A separation distance of only 1 mile is not reasonable. The village of Preesall is even closer. As Fleetwood and Thornton are within 2 miles the CGSL claim that this is a lightly populated area is not true. This matter takes on great significance in view of the damaged caused as a result of the recent fuel depot explosion at Hemel Hempstead (Buncefield). The reason why local residents are so concerned that even a minor escape of gas could be catastrophic to those that live in the vicinity of the proposed scheme is because of its sheer scale, at some 22.4Mm$^3$.

18.18 Janet Whitlow [754]

18.18.1 While not opposed to the principle of underground gas storage there are matters of concern. The house at Park Cottage Farm was built in 1756 of brick over cobbles. It has no foundations and stands adjacent to the road. It has not previously had to withstand the prolonged passage of HGVs and there is concern that traffic generated by the appeal proposal would have a detrimental impact on the structure of the property.

18.18.2 The farm seeks to achieve high standards of animal health and welfare. As a result its herd of pedigree cattle produce large volumes of high quality milk. The construction of the site access road across one of the farms main grazing fields would have a detrimental effect on the wellbeing of the cattle. This would also have a detrimental impact on the farm’s grazing provision as cows are unable to walk too far from the farm to their grazing fields. The long term effect will be a reduction in milk quality and increased stress for cattle in calf. The access road would also disrupt cattle access to other parts of the farm holding; an issue about which CGSL have yet to offer a solution.

18.18.3 The proposed access road, some 8m wide, cuts through a number of grazing and silaging fields. The holding has 53 fields on some 136 acres, so fields are small. This
road which would go through 7 fields, and would make them smaller. Agricultural contractors, who tend to use larger machinery, would find current difficulties when silaging exacerbated. Land management at the holding is already difficult due to the presence of underground and protruding pipes and brickwork squares from the former brine operations. The appeal proposals would exacerbate these problems.

18.18.4 Borehole 50 is on the route of the proposed access road. This has been fenced as it is expected to collapse in the near future. The first 2 fields each contain 3 boreholes. It would not be safe to take heavy construction plant across this land. A better route for access to the site from A588 would be to Burrows Farm from the vicinity of Cold Row. It would be shorter, avoid the difficult Cemetery Lane/A588 junction and avoid interference with children going to and from Stalmine School. There would be no need for access from Back Lane, less interference generally to the local community, and no risk from collapsing former brine wells.

18.19 David Shaw [750]

18.19.1 As a teacher and a keen writer, artist and natural historian, he had attempted to keep abreast of many of the technical issues which were fundamental to the inquiry. These predominantly related to the paramount concerns regarding safety and security of the proposed installation. He shared the anxieties of Over Wyre residents with regard to safety, although could not enter into the debate of scientific and technological detail. He was not qualified to do so and had to trust the word of others.

18.19.2 His contribution to the debate was the product of a deeply held affection for the landscape which was threatened by the proposal. He regularly walks this countryside with his dog; The Heads, Barnaby's Sands, Arm Hill were at the heart of a countryside which was very precious to him.

18.19.3 He wrote a monthly article for the local ‘Focus’ magazine, titled ‘Nature Ramblings’. Much of the subject matter featured in that column was fuelled by his experiences when walking the land which is at the centre of this debate. Additionally, as an artist, much of his work was inspired by this environment.

18.19.4 He felt passionately about this landscape with its river, mudflats, salt marshes, pastures and hedgerows. These features were at the heart of his life in Over Wyre and a great number of residents shared his view and cherish this countryside. It was the reason why many local residents lived there.

18.19.5 Assuming the concerns over the crucial safety issues could be completely satisfied there remained concerns over the impact above ground, the rumours of tracks being driven across the land and an increase in heavy traffic; visible manifestations of this immense project on The Heads, Barnaby's Sands, Arm Hill and Burrows Farm and the fragile habitats they provided. On behalf of the many people who used this landscape, the walkers, the photographers, the artists, the birdwatchers, the sailors, the shooters and the anglers; this was their green space, their playground, their little bit of wilderness. It was not just a piece of unimportant 'spare land', it enriched all their lives.

18.20 Chris Ball [245]

18.20.1 Salt, a long term natural resource should not be wasted to store a short term resource – natural gas. Canatxx has insufficient experience to undertake a development of this
complexity. It is unfair that the people of Fleetwood, who have suffered the
destruction of the fishing industry, should be faced with such a hazard. They are
presently the subject of risk due to the presence of nuclear reactors at Heysham.
There has already been a problem with radio-active hot spots. Fleetwood would
become an unsafe place in which to live.

18.21 **Michele Bates**[821]

18.21.1 In the knowledge that other people have had to be evacuated because of UGS
incidents Ms Bates is very concerned because her home is closest to the proposed
storage caverns. As a horse rider and owner she meets with other riders in the area.
While horse riding she is able to appreciate the countryside through which she travels.
Large vehicles frighten horses and this results in increased numbers of accidents. As
a car driver on the local network she is also aware of the accidents on the A588 and
A585. Increased traffic would result in further accidents.

18.22 **Mrs B Forsyth**[783]

18.22.1 It cannot be guaranteed that there will be no human error or equipment failure, no
underground movement, no environmental damage, no servicing or security lapses or
no malicious or terrorist damage. Alternatives are available in the Irish Sea and North
Sea depleted gas fields well away from population. They are readily accessible to
bulk supply shipping tankers. With 100,000 people living within 3-4 miles of the
appeal proposal only the foolish or greedy would proceed with this scheme.

18.23 **Mark Hamer**[533] member of North Western Sea Fisheries Committee

18.23.1 The discharge of huge quantities of brine into the surrounding sea will result in the
total destruction of marine life in an extremely important area. Local fishing boats
and anglers would be badly affected. These conclusions are supported by a Report of
the Sea Fisheries Committee prepared by Dr Stephen Atkins[Doc.IP533]. If the appeal is
successful then substantial compensation must be paid by CGSL to those fishermen
adversely affected.

18.24 **Irene Horner**[755] secretary, Thornton action Group and Thornton Community Office

18.24.1 Complete safety can never be guaranteed and accidents can and do happen. If there
was an accident, to whom would the survivors turn? There are no contingency plans
and CGSL don’t envisage that there could ever be a problem, Article 2 of the Human
Rights Act states that ‘everyone’s right to life shall be protected by law’. This law
should be utilized to direct CGSL to find another site that is not in such close
proximity to a population of some 100,000. In such matters it is right to err on the
side of caution. Setting up a local liaison group is no answer to local residents’ fears.

18.24.2 The suggestion that extensive tree planting should be used to screen buildings will
seriously affect the feeding grounds of over-wintering geese. CGSL’s conclusion that
the area is not of significance to geese is at odds with local residents’ knowledge
which clearly refutes this conclusion. CGSL appear to dismiss the possible impact of
the proposal on the various designated sites. The project would have a considerable
and lasting adverse effect on the eco system.

18.24.3 HGV traffic generated by the proposal would serve to exacerbate the already
increasing problems on the A585, A588 and the extremely narrow lanes in the Over
Wyre area.
18.25 Richard Jackson [820]

18.25.1 As the 4th generation to farm and also live on this land he is unable to move away. It is unfair that he should be faced with having to live with the fear associated with this storage facility 24 hours a day. There is no evidence that it is safe. As with all top tier COMAH site, this development would cause problems.

18.25.2 The local populations of birds and brown hares are so large that people come specifically to see them. As a keen watcher he is also keen to preserve what there is for future generations. When ploughing, there are always following seagull flocks. In addition, large flocks of lapwing and oyster-catcher.

18.25.3 As a farmer he is used to driving the narrow roads, often not much wider than the tractor. These roads are incapable of also accommodating lorry traffic associated with the proposal. The farm produces hay, straw and haylage. There is a strong demand for these crops such that some potential customers have to be turned away.

18.25.4 He has experience of the existing caverns and is aware of the faults in the area. After 30 years there is no confirmation that the subsidence associated with the former brine and salt workings has ceased

18.26 Ian Johnstone[796]

18.26.1 CGSL is seen as a bad neighbour and there is no trust or confidence in what it says. The Preesall area is faulted and unstable, brine-wells have collapsed, and water or ground movement has connected some together. This is not a safe location to store gas under pressure in the large quantities proposed.

18.26.2 Options for emptying a cavern in an emergency were transfer to another cavern, storage in the grid or release to atmosphere. From the largest cavern this was stated to take some 4 days and amount to some 140Mm$^3$ of gas at atmospheric pressure. It is not accepted that venting this volume of gas would not result in a hazard either down wind, or for passing aircraft. In any event, it would affect Government targets for control of the release of greenhouse gases.

18.26.3 The loss of gas below levels of detection within the caverns, at some 0.025% of volume and amounting to some 35,000m$^3$, is also of great concern. The claim that any repeated loss of this size would then be noticed is also not accepted. While this might be true in circumstances where the stored gas volume remained static, with changes in gas volumes due to storage ‘cycling’, losses of 0.025% would be masked by the larger changes and not noticed.

18.26.4 Little or no detail on emergency procedures, emergency containment or evacuation procedures have been submitted and no conclusive evidence that the ground conditions are suitable for the proposed scheme. In view of Canatxx’s lack of experience in underground gas storage, this should have been done prior to the submission of the application.

18.26.5 While it is noted that Canatxx staff deny the possibility of gas migration and this issue is not included in the hazard scenarios, Prof.Rokahr qualified his evidence by saying that he could not commit himself to a design without much more investigation. It is also to be noted that CGSL’s health and safety witnesses agreed that there was no such thing as 100% safety. The worst case scenario would be a significant gas migration erupting or leaking into buildings and igniting or exploding as happened in
18.26.6 The safety zones suggested by HSE are insufficient to safeguard local people. Moreover, there was no high volume ring main to supply water for emergency services. Given the prevailing winds, and the need for the fire service to approach any emergency event from an upwind direction, there was no adequate access from the south for large fire appliances. Burrows Lane, the normal upwind access, was a narrow single tract incapable of accommodating such vehicles.

18.26.7 CGSL seriously underestimate the range and impact of the proposed brine discharge on marine life in Morecombe Bay and the Irish Sea; especially the most sensitive salmon and sea-trout.

18.26.8 CGSL’s need case failed to take into account additional supplies from Norway with its new pipeline, large contracts from Russia, and the 2nd European connector, all of which will come on stream before this proposal could be commissioned. In addition, the Government is now proposing storage of gas in depleted gas and oil fields in the North and Irish seas. Stag Energy has announced proposals to develop storage off Barrow in Furness. This would fill the local section of the NTS grid and reduce the opportunity for CGSL to do likewise. The Irish Sea has been supplying local needs for many years and Stag Energy’s proposals would allow this to continue. In these circumstances, CGSL’s proposals, with their detrimental impact on the local population, should no longer be considered.

18.26.9 Mr Heitmann and Prof. Rokahr accepted that they had limited experience working and designing caverns in bedded salt, and had not been involved in such heavily bedded salt or in ground contained in a narrow folded river valley. Only minimal geological studies have been done to date and little accurate information is available. As well as major faults it is accepted that faults in the 20-30ft range would not be revealed by seismic surveys. From water and ground movement elsewhere in the Preesall Salt Field it was known that brinewells link up over time. It is not possible to assure gas tightness over a lifespan of 30 – 50 years.

18.26.10 The proposed site would be a prime target for terrorists, and it would not be the first gas or oil storage site in the NW to be targeted. It would be vulnerable to attack and the quantities of explosives needed to carry out such an attack could be quite small and mobile. There would be little likelihood of the terrorists being apprehended, particularly if CGSL achieves its ultimate aim of a fully automated site with no personnel present.

18.26.11 During construction HGVs would cause damage and serious road congestion. There are likely to be further serious accidents given the existing local accident figures.

18.27 Harold Lister[756]

18.27.1 CGSL’s justification of the need for storage, partly based on providing more stable prices, will not happen. Similar promises were made in relation to north sea oil and gas, and yet the UK had the highest prices in Europe, gas bills had risen by 75% and were due to rise further even though more storage will be available at Byley.
18.27.2 It was accepted that there could not be ‘no risk’, although the advice to shelter behind a caravan rather than stand and get cooked, was not comforting. Caravans would also provide less acoustic protection than normal dwellings. The suggestion that CGSL could run the system by computer from a location elsewhere in the world would not provide ‘on the spot’ safety checks.

18.27.3 The company argue that it should be left to HSE to resolve any problems that CGSL might have in getting the storage scheme up and running, and that the public should have faith in them to do so. But HSE are the same body tasked with investigating accidents that have occurred after companies have followed its guidance. HSE does not stop accidents happening. When it comes to UGS in unstable terrain there are no experts. Accidents are always possible and can happen.

18.27.4 The under-sea storage of gas in the Irish Sea, as announced by the Minister Alan Johnson, would be far safer than inland storage, and would replace eyesore gas storage facilities around the British coast. There is no need for the Preesall proposal.

18.27.5 This proposal was unique in the scale of local opposition to it.

18.28 Mrs M McCann[757]

18.28.1 There were 134 disused brinewells in the salt field of which 8 had already collapsed and a further 5 were predicted to do so. Two farm houses, Westfield and Aggleby’s had had to be demolished.

18.28.2 The marshes, classified as an SSSI, were one of only two examples of this type in England and it was vital that they were protected. CGSL’s proposals would have a detrimental impact and would not protect the SSSI. Its proposals to flood part of the area to ‘enhance’ the environment would endanger local residents and prevent essential services reaching The Heads. The Mercury Sludge borehole - BH107 - was close to Burrows Marsh and between 1972 and 1993 some 47,000 tonnes of this sludge had been deposited there.

18.28.3 Following explosions locally at Abbeystead, and at Hutchinson and Moss Bluff in the USA, issues of safety must take priority. Limits of 3 miles from the nearest habitation or disused brine well imposed in Kansas should be imposed here. If the proposal is so safe why were CGSL seeking to remove the caravans from The Heads Caravan Park?

18.28.4 In view of the narrow roads of Over Wyre, vehicle access was a major concern. Following the replacement of the former toll bridge roads in the area had become increasingly congested. The A588 has a poor accident record, and diversions resulting from such events cause damage to the narrow lanes used. The roads which access The Heads are unsuitable for large vehicles and Burrows Lane is equally narrow. The residents of Over Wyre should not be subjected to the inconvenience and disruption that would result from the CGSL proposals that would also endanger and destroy the area’s rural way of life.

18.29 Kevin Mellor[773]

18.29.1 The roads already display fatality signs and are unsuitable. More will occur due to construction traffic. Escape routes from the village are totally inadequate in case of emergency. There is only one route in and out. Property values will decline. There
has been a large rise in the numbers of properties for sale and communities are being broken up.

18.29.2 He is concerned at the limited availability of information about the proposal, trespass by those undertaking surveys for CGSL and the history of salt mining in the area. The principal motivation for CGSL is profit.

18.30 **Rebecca Murdock[815]**

18.30.1 Issues of concern were destruction of the salt marsh, traffic and pollution, impact on migratory bird patterns, possible change to tidal flow, increased salination of the sea off Rossal Point, erosion of tourism, lowering of house prices. Guidance in the BGS fact sheet indicates that salt caverns are not the ideal shape or size for gas storage. There is also concern about single point failure risk. Gas seeping into the salt marsh would poison flora and fauna and lower air quality. The site was also close to the nuclear power station at Heysham. This large amount of highly inflammable gas would be stored only 1 mile from Fleetwood.

18.31 **Cllr.R Mutch[770] County Cllr.for Over Wyre**

18.31.1 All local authorities in the area, County, District and Parish, oppose this scheme. Fear is a material consideration in this case because accidents have occurred at UGS facilities elsewhere. In an area with a population of 80,000 – 100,000 this proposal cannot make sense. Experts claimed that the accident that occurred at Abbeystead could not happen. They are not always right.

18.31.2 Other matters of concern are the impact of the brine outfall on marine life in the Irish Sea, and the impact of additional traffic on the inadequate local road network. Those people who live at Knott End on Sea can live without this proposal.

18.32 **Elizabeth Ormerod BVMS MRCVS[583] representing The Mount Veterinary Surgery**

18.32.1 There is a great deal of concern about this proposal. In 24 years working in this borough there has been no other issue that has caused so much fear and anxiety. The main areas of concern are health and safety - in particular, risk of explosion, and damage to the environment - especially to sea and estuary birds, to local flora and to fish and other marine life forms. Any scientist - if they can be relied upon to give an independent view - would advise against this proposal. Her role as a veterinary surgeon is concerned with the public health, animal welfare (including the welfare of wild animals) and the environment.

18.32.2 Natural Gas, especially under high pressure, is dangerous. One of the major risks would be the migration of gas along unmapped fracture lines. A highly explosive mix could surface anywhere up to many miles away from the storage caverns. Such instances have occurred in other countries causing death, casualties and destruction. This is a densely populated area, with many schools, nursing homes and several hospitals. To site a major storage facility here would be madness. The recent explosion at Buncefield and several other recent major explosions in other countries including the USA, Australia and China should serve to remind everyone of the need for careful planning. The gas blow out in Chongqing City, China, turned a 10 square mile area into a death zone - 200 people were killed, some 290 were hospitalised and 41,000 people were evacuated. Twenty eight villages were affected.
18.32.3 The planning applications submitted by CGSL were wholly inadequate. There was a lack of information relating to health and safety - which should be their biggest concern. Local residents all remember the explosion of gas at Abbeystead which killed several people. Local people are not satisfied by statements trying to reassure them that this would be safe as there can be no guarantees. The records of the National Transportation Safety Bureau in the USA show that each year there are explosions in and around high pressure storage sites or pressurised pipes that carry flammable gases. Much work of a veterinary surgeon involves the interface and interaction between man, animals and the environment; and repairing damage caused due to human error or by unexpected environmental situations. Accidents do happen when man and the environment interact.

18.32.4 If greater volumes of gas must be stored in the UK, it must be done with the greatest consideration for human health and safety. New plants for storage of large volumes of gas should only be sited in unpopulated areas, for example in the depleted oil and gas fields offshore. The storage of liquid gas in manufactured chambers is another option. It costs more - but this is a price we may have to pay to reduce risks of explosion.

18.32.5 Other health concerns include, toxic waste in old mine workings. Tens of thousands of tonnes of mercury waste is stored in an old salt cavern close to the proposed site. Mercury is a heavy metal and extremely toxic. If mercury was released as a result of the proposal, the effects would be devastating. There had been two episodes of mercury release to the sea in Japan in the 1960’s. In the first 111 people died or were made seriously or chronically ill with central nervous system symptoms. In the second episode 120 were poisoned. It is believed that there is ‘more than mercury’ stored in some of the old mines at Preesall, and that other noxious material would cause major problems if leakage occurred.

18.32.6 An important but often overlooked aspect of public health is the effect of chronic stress. This has been shown to contribute to hypertension, strokes, heart attacks, Type 2 Diabetes, gastrointestinal ulcers and cervical and lumbar spinal pain. It can also lead to impairment of the immune system with increased susceptibility to infection and cancer. This proposal has already caused much stress to residents.

18.32.7 More resources are required to develop alternative renewable forms of energy. Canatxx members should give consideration to financing alternative energies. As well as recouping a good investment they would be helping to secure the planet’s future - and that of their grandchildren. The town has strong associations with the sea. Those who go to sea know the tremendous and unstoppable force of the elements - of the power of the tidal current; of the energy of the rise and fall of the tide. Morecambe Bay has a very large tidal range - up to 10.5 metres and tidal bores reaching up to 9 knots. These forces are extremely strong and, unlike wind power, totally predictable. There should be major investment in learning how to harness the energy of the sea. Fishermen whose fishing time has been affected due to EEC legislation would be well placed to help site and monitor energy transfer machines in the sea and on the seabed.

18.32.8 The other major concern is the adverse effect on the environment, animal and plants. Morecambe Bay and the River Wyre are very special. Morecambe Bay is the largest continuous intertidal area in the UK. It covers 310Km$^2$. It is an internationally important site for birds and is a European Marine Site. It is designated a SPA due to its large shallow inlets and bays, its intertidal mudflats and sand flats, its Pioneer salt marsh, and its salt marsh. It is also designated a SPA to help protect the large number of migrating birds that visit in autumn and summer, internationally important waterfowl and seabirds,
internationally important migratory species, and internationally important populations of regularly occurring Annex 1 species.

18.32.9 The salt marsh to the east of the River Wyre is a SSSI. Barnaby Sands is one of the last extensive areas of un-grazed salt marsh on the Lancashire coast. It is important as a site for over wintering waders and wildfowl. It is also the home of the extremely rare rock sea lavender, found at only three other sites in the UK, and the rare sea wormwood. The proposal would result in loss of habitat that supports purple ramping fumitory and tall ramping fumitory. Negative impact is predicted on Great Crested newts close to Burrows Lane. The effect of man’s actions on the environment are all too often only realised with hindsight. We are part of the web of life, everything is interconnected. We must choose our actions carefully and always consider the needs of others. Other people, animals, plants and our shared environment. We are an intelligent species. We must now develop intelligent solutions to energy sourcing and storage.

18.33 Mrs S Pelham[775]

18.33.1 Principal concerns relate to safety. Children live in Stalmine and their safety has to be paramount. This proposal is close to schools and nurseries. This proposal is not safe. Access will be a problem both during construction and in the event of a ‘disaster’. The proposal will also result in the devaluation of house prices.

18.34 Jenifer Phillips[643]

18.34.1 Local residents have been treated with disdain by CGSL. Its attitude is that public objections are misguided, irrational and arise from lack of knowledge and understanding. Late changes to the scale of the proposed storage facility, with a reduction from 3 billion m$^3$ to 1.7 billion m$^3$ with no significant reduction in the numbers of caverns proposed, suggests that LCC has also been treated with disdain. The main reason for public concern over safety is the suspect geology of the area. CGSL has provided negligible geological evidence, essential deep bores were limited to 2, and Prof.Rokahr agreed that this was inadequate. Throughout the inquiry the locations and numbers of caverns has changed as more information has become available.

18.34.2 Local residents are worried about the proximity to old brine wells, the salt mine and numerous faults; worried that gas will migrate; and concerned that there is extensive wet rockhead. CGSL’s approach to the submission and timing of the applications, and to compliance with requests for information from LCC and subsequently the Inspectorate, does not inspire confidence in the company.

18.35 May Poole[550]

18.35.1 She feels afraid and angry. CGSL has given no thought to the area or its residents. If the scheme is permitted, residents will have the ever present fear of gas escape and explosion. She is also concerned at how effective emergency services would be given Fleetwood’s location on a peninsular. In addition, the tourist trade, which Fleetwood increasingly relies on, would be detrimentally affected. Construction work to build the sea outfall would affect the promenade and low walk. Homes would lose their value and insurance premiums rise.
18.36 **Robert Pye[752]** Stalmine P.C.

18.36.1 The initial public meeting of January 2004 called by parish councils following submission of the first application had been attended by some 350 – 400 persons. Concerns raised included safety, damage to the countryside, poor access, increases in traffic, disposal of brine at sea, and lack of geological information. Residents cannot understand why there should be so many changes to the proposal put forward during the inquiry, including number and location of well-heads, traffic junctions and pipe tracks. If permitted, the proposal would be fundamentally different to the proposal as originally submitted.

18.37 **Mrs D Ramsden[14]** Town Mayor of Preesall

18.37.1 Local residents’ concerns focus on the risk of gas seepage and explosion and consequent disruption to their lives. CGSL appear to disregard those concerns yet it is local residents who will have to live with the worry if permission is granted. Some American states would not permit this type of storage so close to populated areas. Local residents have watched the continuing subsidence of former brine workings and are fearful of the consequences of this proposal. Contrary to CGSL’s view, need for gas storage should not outweigh the risk to the local population.

18.37.2 A risk to life, however small, is a risk too far and should not be imposed on future generations. This area is not sparsely populated, nor is it especially near to Manchester and Liverpool. Preesall has a technology college with some 800 pupils, 2 primary schools, 4 churches, various shops and a number of caravan parks whose weekend residents are not included in population counts, as well as hundreds of houses and bungalows.

18.37.3 There appears to be no provision for evacuation, or compensation for loss of life or property. Properties would be blighted and it may not be possible to get insurance.

18.38 **Stephen Rolland[774]** Poulton Residents Association

18.38.1 CGSL evidence has not addressed the issue of the effects of stress on the underlying rock structure induced by changes in tidal pressure. The weight of the tide is approximately 1 billion tons and while CGSL claim that the ground is stable, creating the vast underground caverns would compromise the integrity of the geology beneath which would be susceptible to the flexure during changing states of the tide. There is a known fault line below the estuary and there needs to be far more testing of the substructure to ensure there is no risk of rock fracture over time.

18.38.2 It is noted that concentrated brine can be used as a biocide to clear away mussel and invertebrate infestation in pipes. This would suggest that CGSL’s claim that the large quantities of concentrated brine from the solution mining would have no significant effect on marine life in Morecombe Bay is incorrect. It is noted that both Mr Evans and Mr Heitman indicated that more work would need to be done before final decisions on the design and construction of the caverns could be taken.

18.38.3 The study of the effects of solution mining of salt on wetland hydrology in central New York indicated detrimental impacts on tree growth\(^{26}\). Applying those outcomes to the proposal would suggest salt solution could escape into surrounding geological

\(^{26}\) Abstract attached to response letter No.774 dated 21/02/06
structures, could damage surrounding farm land and the water table, and accelerate current rates of subsidence. If brine could escape under modest pressure then so could gas under far greater pressure.

18.38.4 The approach to security appeared to have no regard for peoples’ lives. There would be no guards, no closed circuit TV surveillance, and minimal fencing despite the storage of large quantities of a hazardous material.

18.39 John Tootill[750]

18.39.1 The proposal is impractical and would fail with catastrophic consequences to those who live here and to the environment. The estuary soils are made up of sand, grit, pebbles and silt; all materials porous to air and water and equally porous to gas. The river bed at this point is some 70ft below the level of the raised land of the golf course. Gas would escape through these porous soils.

18.39.2 Steel gas receivers have to be constructed to the highest standards and pressure tested. The CGSL caverns can not be tested in this way. This proposal is just a ‘scam’ to obtain planning permission for an infrastructure that would then allow CGSL to store waste, such as toxic or nuclear, which would not need to be stored under pressure but would be very profitable.

18.40 Neill Anderson[777]

18.40.1 The evidence to the inquiry lacks integration and there has been an initial reluctance to divulge information. A proposal of this scale should be undertaken by a company pre-eminent in the field, not one with no direct experience.

18.40.2 The economic benefit of gas storage will only occur if market forces apply throughout the EU, and recent price rises this winter (2005/6) have indicated that this is not happening. The claimed advantages of the location, and the pressures to be used is not supported by the high power consumption of the compressors whose electrical power will result in the generation of substantial tonnages of CO₂ at power stations.

18.40.3 In relation to safety, total reliance on HSE for guidance and permissions is not a proactive approach. In view of CGSL’s claim to adopt world industry standards, those adopted by Kansas following a fatal accident should be used here. European standards are some 8 years old and framed prior to the Kansas incident. It would be foolhardy to wait for a UK gas storage incident before revising safety standards when other better standards have already been framed. Safety zones defined solely on the basis of well-head and compressor station locations are inadequate. Known and ‘proven’ technologies are still vulnerable where there is poor management control and human error. That CGSL draw attention to the fact that incidents abroad relate to gas connection, infrastructure or operator error, rather than to cavern failure, is no support for its case. The incidents have still happened.

18.40.4 HSE are also totally reliant on the information supplied to them by CGSL; information which CGSL already acknowledge is incomplete with respect to the location, depth and specification of the caverns. HSE has yet to consider the underground features of the proposal, and its hazard scenarios are consequently very limited. HSE should look to the American experience and legislation for guidance.

18.40.5 There is uncertainty over past ICI activities and concern that records of waste disposed of in former workings may be inaccurate.
18.40.6 The rigorous standards applied to pipeline and storage vessel construction appear not to apply to caverns storing gas at similar pressures.

18.40.7 Congestion on the A585T from M55 to Fleetwood is already high and HGV traffic generated by the construction phase will seriously exacerbate these problems. The recently approved waste facility at Thornton will have a further detrimental traffic impact.

18.40.8 In view of the large volumes of brine produced daily from the solution mining process, the use of 5 micron filters to collect particles entrained in the brine has yet to be properly investigated on either commercial or practical performance grounds. The fact that CGSL are not seeking a personal permission means that the site could be sold on to another developer who might use different equipment.

18.40.9 There should be a balance between the national need for a proposal and local concerns. The will be no real benefit to local residents to counter their very real fears.

18.41 George Bell[795] Ramblers Association, Fylde Group

18.41.1 While not making a formal objection to the proposal the RA have an interest in ensuring minimum disruption to the public footpath network, that temporary closures and diversions are properly notified, signposted and way-marked, and that permanent reinstatement should be no less beneficial to users. The landscaping of the Booster Station, Compressor Station and Wellheads as promised by CGSL should also be implemented.

18.41.2 In relation to footpath diversions, where there is an intention to divert a path onto a tarmac road, eg. Back Lane, consideration should be given to providing the path in the fields alongside the road rather than expect walkers to use roads that are narrow, have no pavements and which during the construction period may be subject to increased traffic flows.

18.42 Brenda Butterfield[809]

18.42.1 The proposal is much closer to population centres than permitted in Kansas. 70,000 live within 3 miles. The gas could escape through the poor rock salt in an area already showing signs of subsidence and travel much further underground, putting at risk residents and holiday makers visiting Blackpool. There are some 500,000 visitors during the season and regeneration money is being invested to increase visitor numbers. Similarly, Cleveleys is undergoing extensive redevelopment.

18.42.2 The site is less than a mile from Fleetwood, close to former brine wells and within a mile of the abandoned ICI salt mine. Over 50,000 tonnes of mercury waste has been disposed of here over 26 years.

18.42.3 Natural gas may appear scarce at the moment but it is not needed to guarantee a supply of gas to the UK market. The use of depleted North Sea and Irish Sea gas fields could fulfil this role. The Rough Field already does this.

18.42.4 There are no proposals to underwrite any disasters. The fire service and hospitals would not be able to deal with a catastrophe of the dimensions which could occur and the strong north-westerly winds would spread fumes and fireballs across the Fylde area. We and subsequent generations deserve an environmentally rich heritage and a safe place to live and work.
18.43 **Dr Martin D Connaughton**[787] representing himself and Preesall residents.

18.43.1 Two schools are located in the vicinity of the proposal site. A fault line can be tracked to within 0.5 miles of the schools from the site. A gas leak would take only a few minutes to reach the schools with high potential of a disastrous explosion. During the construction phase traffic will increase significantly, with the potential for a significant increase in road traffic accidents. We all have a duty to protect future generations by ensuring that safety is top of the priority list for any project, including gas storage.

18.43.2 Property is generally the biggest investment made by people and so its value must be protected in order to prevent personal hardship, particularly for those who rely on the capital from their property for retirement pensions through either equity release or down-sizing. There is an impending pension problem and this is recognised by the Government. The task of avoiding such problems should not be made more difficult by eroding people’s main investment. This proposal would have the effect of seriously eroding property prices in the area.

18.44 **Valerie Green**[749]

18.44.1 Based on knowledge and experience as an insurance claims investigator this kind of storage plant would cause insurance companies problems when assessing risk. If there is evidence of leakage or a history of explosions and fires, which there have been elsewhere, insurance companies would load their premiums making insurance very expensive. Some of the Wyre areas are already penalised because they are in a flood zone.

18.44.2 In the worst case insurers could refuse to insure buildings in the area. If this happens, obtaining a mortgage could be threatened, and areas of the Wyre could become ghost towns as people become unable to sell or produce investment to maintain their properties. The Association of British Insurers (ABI) should be provided with all of the evidence from the inquiry and asked for its opinions. Once the plant is built it would be too late.

18.44.3 CGSL will require public liability insurance and local homes and business will require property insurance. In the event that insurance is refused, will the Government take over the risks as they have done, in places like Northern Ireland in respect of riot, malicious damage or terrorism, albeit at less than 100% of the loss? Following the recent oil fire at Buncefield local residents are reporting that they can no longer sell their homes and insurance cover is being priced out of the reach of many. Only as incidents develop, such as a gas incident here, can insurers truly assess the risk and by then the assessment is too late for many people.

18.44.4 The insurance industry has expertise in relation to health and safety. There is case law on the storage of substances and the pollution of neighbouring land or property due to escape. In addition, as natural gas is odourless there is no smell warning and any escaping gas becomes a ticking time-bomb. Will all aspects of health and safety be fulfilled? When the inevitable happens and someone loses their life who will take responsibility? The ABI, its risk managers and underwriters should be asked to give guidance. Elderly residents have to live with increased costs in all areas of running a home. Massive increases in insurance costs could not be borne by many.
18.45 Liz Hargreaves[651] Stalmine Under Fives Playgroup

18.45.1 The playgroup is a small community based charity with up to 40 children and 6 staff run by a committee of mothers. Its location in Stalmine Reading room is less than 1 mile from the compressor station. The committee has responsibility to ensure the safety and well being of the children in its care, its staff and parents and carers when on site. The proposal compromises that responsibility. The primary concern is safety from both the operation of the site and during construction. It is noted from LCC’s evidence that while the hazards have been identified their related consequences have not. For CGSL it is accepted that there is a residual risk of accident that cannot be entirely eliminated. CGSL has not done anything to convince local residents that they should not be very disturbed by the proposal. A compressor station failure is acknowledged to give the greatest potential to cause harm to the public. That a fire or explosion ‘is by no means certain’ is not reassuring. CGSL appear to offer no guarantee of safety.

18.45.2 The most frightening consequence is escaping gas and explosion as at Hutchinson. The proposed safety zone within the caverns indicates that CGSL expect the gas to escape. The routes of all the fault lines are currently unknown. This gas could potentially escape and explode anywhere. The recent Buncefield incident is an example of the massive devastation that can be caused by an explosion. Were this to happen here the injury to children at the play group, and any other people in the vicinity, from flying glass alone would be enormous. Such development would not now be permitted in the USA so close to residential areas. If this proposal is allowed it will indicate that little value is placed on individuals and that their safety is not imperative.

18.45.3 The facility would be a prime terrorist target as there are no proposals to protect the site as a whole. No guards and no perimeter fence. She is concerned that if there was an explosion would it endanger the security of Heysham nuclear power station.

18.45.4 During construction there would be a significant increase in traffic, particularly HGVs, using the already dangerous A588. The play group is situated at the junction of Carr End Lane and Smithy Lane, Stalmine, roads likely to be used for access to the Compressor Station when operational. These roads have poor alignments and are substandard. Surveys which concentrate on peak hour flows up to 9 am. miss traffic generated by the play group which starts after 09.15. Equally, surveys undertaken in late October miss school traffic due to half term holidays.

18.45.5 All minor roads in the area are narrow, often with insufficient space for cars and bicycles to pass safely, let alone larger vehicles. These roads are used by pedestrians, including children, and horse riders. When an accident closes the A588 there is chaos on these surrounding lanes. They are not suitable for either construction or commuter traffic.

18.45.6 The environmental impact would be large, from killing sea bed marine life due to the brine outfall to the death of wildfowl, other birds and plants that rely on the unique River Wyre habitat; consequences that appear to be accepted by CGSL. This area of countryside would be destroyed by short-sightedness and the lost environment could not be recovered for future generations.

18.45.7 The villages around Wyre had already suffered a major accident in 1984 with the deaths of 16 people following the explosion at Abbeystead pumping station. There is
a real fear that a similar accident could happen as a result of this proposal. In the light of CGSL’s approach to complying with requests for information during the planning application and appeal process there is no confidence it would comply with safety regulations and security requirements.

18.46 **Rosemary Hogarth**[582]

18.46.1 When salt extraction started at Preesall it was based on rock head (wild) brine. Some 3000 gallons/hr was pumped from No.2 shaft creating a void into which the marl sank and the surface of the fields at Vicarage Farm started to subside. In 1926, United Alkali bought the farm to avoid the continuing compensation claims from the previous tenant and owners. In the 1920’s, 7-8,000 gallons/hr of wild brine started to run through the roof of the top mine. A surface subsidence was spreading towards no.54 brine well and a pump was installed to reduce ingress into the mine.

18.46.2 In the light of the mining history of the salt field it is unbelievable that anyone would propose to store gas at such shallow depths, in layered salt mixed with marl, in an area of faults and wild brine, and so close to population. There must be billions of gallons of wild brine at depths of over 1000ft. The lower mine (904-1000ft) flooded in 1930. Brine well no.43, at 1300ft, was abandoned after yielding over 129,000 million gallons of brine. Nos.32 & 33 were abandoned after yielding 390,000 million gallons. Mr Daniels, a former brine worker recalled drilling near the golf course. Although they found good salt they also found wild brine so abandoned the project.

18.46.3 As the local representative of the British Horse Society, Back Lane, Corcas Lane, Staynal Lane etc are the only safe places for riding in the area and there are a number of horse riding and training yards on these lanes, including one training young children.

18.47 **Cllr.Gordon McCann**[753] Preesall Ward, WBC

18.47.1 The proposal represents a complete waste of a finite mineral resource. In addition it will do massive environmental damage for many years to Morecombe Bay; an SPA, SSSI and one of Europe’s most important feeding grounds for over-wintering migratory and resident bird species. It is wrong when UK and European Governments are urging people to re-cycle and cut waste to a minimum and conserve valuable and irreplaceable natural resources, to permit a proposal which will do the opposite.

18.47.2 Salt is the foundation of the chemical industry and provided much employment locally in the last century. Its by-products are used to purify drinking water and produce many plastics. Scarce natural resources should only be used to improve health or standards of living. They should not be thrown away just because the space they occupy is wanted. That is folly and the thinking of a by-gone age. It is not sustainable or sensible to waste raw materials on the scale proposed by this project. It is not the case that there is no need for gas storage but there are less wasteful and more environmentally friendly ways to do it.

18.47.3 As with the North Sea, gas can be stored in depleted gas fields under Morecambe Bay. The infrastructure to store and extract the gas is in place and will cost little to reverse the process.
18.48 **Michael Owen**[807]

18.48.1 The Morecambe Bay gas field is available but the cost of installing the gas is a deterrent. Money should not be a consideration when considering the lives of people. There are considerable salt deposits in the Irish Sea off Blackpool which could be used to create caverns which would allow tankers to unload off-shore. This would have obvious safety advantages compared to being close to communities. The technical report to WBC sets out sound reasons as to why the CGSL proposal should not be permitted.

18.48.2 The claim by CGSL’s chairman to take every precaution to ensure that the scheme would be totally safe does not reflect the reality of the case. The initial scheme was not based on a full investigation and many things have subsequently been changed. The capacity has been reduced by almost 50%, the caverns and well heads have been relocated, they did not know the various pressures at which the gas could be stored in the different caverns, and they do not know how to dispose of the brine in an ecologically acceptable way.

18.48.3 The exposed nature of the project is an open invitation to terrorists. Local residents are frightened because there is no guarantee that there will be no leakage of gas underground. These caverns are at shallow depths close to former brine wells and mine workings, as was the case at Hutchinson. Access to the site for emergency services would be difficult, particularly if evacuation was also necessary. It is not known if hospitals would be able to deal with such an emergency.

18.48.4 In view of the recent explosion at Buncefield it is assumed that no permission will be granted for this scheme unless the Government is satisfied on matters of safety and that there is funding in place to return the area to its former condition and compensate residents as regards any loss of assets or loss of life as a result of any such incident.

18.49 **Brian Paley**[19]

Risk and safety

18.49.1 He is concerned about the possible impacts of gas migration and agrees with the detailed points made by PWG and by Mrs Jackson. He also agrees with the evidence put forward by PWG and Mrs Jackson regarding subsidence.

Road Safety

18.49.2 CGSL can impose routing conditions for HGV movements via contract. Planning consent conditions which limit convoy sizes and seek to distribute movements evenly throughout the working day would also be appropriate. However conditions cannot be used to limit access to the public highway, therefore all employees traveling to or from the sites are free to use public roads without constraint.

18.49.3 The pros and cons of changed road layouts at Preesall Park have been considered in evidence. However, all drivers are ‘traffic experts’; searching out the shortest route for regular journeys, and these usually occur in the morning and evening peaks. This leads to the creation of ‘rat runs’. We all use ‘rat runs’; equally we all deplore the use of ‘rat runs’ by others. The majority of employee journeys would be via Hambleton to the south, and no one can believe that this traffic would use Pressall Park regardless of the road layout adopted there. The favoured routes would be one of the following: Wardleys Lane and Burrows Lane; Wardleys Lane, New Road, Brickhouse Lane and Highgate Lane;
Staynall Lane and Highgate Lane; Carr Lane End and Grange Lane. Daily choice might well depend on the employee’s actual destination.

18.49.4 Each of these lanes is narrow, single track, without official passing places and largely unlit. They have no footpaths and are regularly used by residents and visitors on foot, cycle or horseback. The state of the roadside verges bears witness to the difficulties of traffic meeting head on, especially on the section of Staynall Lane between the A588 and Highgate. All this occurs even though current traffic volumes are allegedly light. The Staynall Lane/A588 junction at first sight appears to be a very wide junction with good sight lines for joining the A588. The problem lies in a manoeuvre where traffic, travelling north on the A588, turns left into Staynall Lane along what appears as a deceleration lane (it doubles as a bus stop) and is immediately faced with a blind turn into single track. Traffic leaving Staynall Lane has no visibility along that deceleration bay. The risk of accidents at this point would be seriously increased because the proposal introduces a new and counter-directional flow at peak journey times.

18.49.5 The separation of vulnerable users (walkers, cyclists and horse-riders) from site traffic where site access tracks will run parallel to or cross bridleways and footpaths has been considered. This concern is evident even though these site access tracks would be at least 25% wider than the local public lanes, and traffic speeds on site tracks would be substantially lower. There is an absurdity in a situation that were CGSL is seeking to build a site road for its employees parallel to say Highgate Lane then safety conditions to protect vulnerable users would be set, but where that same traffic shares a public road with the same vulnerable users little can apparently be achieved through condition. Common sense dictates that employee traffic should be controlled by condition in cases such as this.

Noise

18.49.6 There is no objective test of tranquility, as with beauty it requires a subjective judgment. The CPRE designate the east bank of the Wyre as a tranquil area. The noise measurement survey undertaken as part of the initial EIA was woefully inadequate in many respects. However, its accompanying narrative assessment that existing ambient noise levels are dictated by the ‘sound of wind and wildlife’ is correct. Ambient noise levels at Staynall are largely set by nature (wind and wildlife); BS4142 is unable to distinguish between natural sounds that improve the quality of life and the man-made ones that degrade it. There are the occasional lawnmower, tractor and even helicopter, but these are infrequent and of short duration. Any constant noise, whether tonal or something more intrusive, will attract complaint.

18.49.7 The model of noise emissions from the Gas Compressor Station raises several issues.

18.49.7.1 There is doubt over the accuracy of the model, it was apparent during questioning that CGSL had not disclosed all noise sources from the Gas Compressor Station to its consultants. There are no specific details of the noise emissions associated with gas dehydration plant, and have yet to learn how many gas dehydration units will be located some 500m from his village. From artists impressions produced to support the visual impact case there is reason to believe that it may be as many as 4, and of course noise is cumulative.

18.49.7.2 The model identifies Rosy Nook²⁷ as the receptor for Staynall. This property is the nearest property to the proposed gas compressor station. However there are several

²⁷ Incorrectly referenced ‘Cosy Nook’ in model
features of that property that would mitigate the effects of noise in a way which cannot
benefit the majority of the remainder of the village. It is built at the lowest contour
point in the village, is surrounded by dense tree and shrub land and therefore benefits from
soft ground attenuation and from attenuation by the woodland. Properties on Staynall
ridge face the compressor station across a depression and do not enjoy the same soft
ground attenuation; a 5 - 6 dB difference. Any ‘noise’ condition for Staynall should use
one of the ridge line properties, possibly ‘Meadow View’, as the designated receptor for
measurement purposes.

18.49.7.3 CGSL is prepared to accept a condition that operational noise levels at nearby receptors
should remain below ambient levels. However, keeping noise levels at ambient
levels doesn’t mean that noise from the gas compressor station would not be heard
above the sounds of nature and wildlife. The condition should be written so as to
ensure that noise occurring from operational activity at the Gas Compressor Station did
not lead to any increase in ambient noise levels at an agreed distance from the Gas
Compressor Station.

Environment

18.49.8 The Wyre Estuary, and in particular the east bank and its hinterland are important
ecologically with a variety of designated sites enjoying protection at local, national
and international levels. This proposal would cause damage to these sites and to their
inhabitants even where construction and operational activities manage to avoid direct access
to the designated sites. This might occur as a consequence of spillage of alien materials
that may find their way to designated sites via water courses; through the presence of
contractors in adjacent locations causing disturbance; and through noise from site
operations causing disturbance.

18.49.9 The designated sites cannot be the sole support for mobile wildlife populations. Mobile
wildlife does not recognise designated boundaries and makes use of surrounding
feeding habitat too. The internationally important over-wintering flocks of pink footed
geese use many fields in the study area to feed when the tide covers the Morecambe Bay
SPA. The fields around Preesall, Stalmine and Staynall are not officially part of that SPA
but are just as important to the wildlife whose presence in Morecambe Bay at low tide are
the justification for the SPA designation.

18.49.10 There are several species of birds, once nationally common, but now at risk which
breed in the study area. Of the 23 species listed under S.74 of the CROW Act 2000
and which have associated UK BAPs, 6 breed in the area. These are Linnet, Grey
Partridge, Lapwing, Song Thrush, Skylark and Reed Bunting. The last two are also
recorded on the RSPB Red List.

18.49.11 There are also Brown Hare and Great Crested Newt in the area, and a possibility of
water vole. Each has a S.73 CROW Act 2000 listing and accompanying BAP. There
are several wild plants which also have a UK BAP listings. There are also 2 breeding pairs
of Barn Owl in the south of the area. They have special protection under the Wildlife and
Countryside Act 1981 and are the subject of specific advice to developers from EN.

18.49.12 Any loss of habitat or disturbance leading to a missed breeding opportunity is
important to any individual at-risk species. However it is the range of such species
present in one location that marks the richness of the biodiversity of this area.
18.49.13 CGSL in its ecology evidence considers individual at-risk species, and no evidence is presented that the surveys demanded by EN with regard to Barn Owl nesting and roosting sites has been carried out. In an area so rich in biodiversity, and bearing in mind that each of the at-risk species identified occupies its own niche in the Over Wyre ecosystem and is supported in turn by its own particular food chain and habitat demands, a rigorous cumulative impact assessment should have been carried out.

18.49.14 Mitigation offered by CGSL is of the nature of repair and or replace. Even if fully effective in restoring the physical elements, 3 to 5 years of disturbance might mean that the Over Wyre ecosystem could never be fully restored. Part of that mitigation is woodland planting which doubles as mitigation for visual and landscape impact. In evidence the ecologist defers to the landscape specialist on ‘native species’ plant selection, the landscape designer defers to the ecologist on biodiversity values of selected plants. Native species value to the ecosystem is to support species at various levels in the food chain. CGSL offer lists of allegedly native plants as an appendix to landscape evidence but nowhere in their evidence do they seek to prove a linkage between those plants and the Over Wyre estuary ecosystem. There is doubt over the provenance of the so called native species Pinus Maritime. The correct binomial nomenclature for the Corsican Pine is Pinus nigra var maritima. It is clearly not native to UK shores.

18.49.15 The RHS provides a plant search facility on its website available to non members. Search criteria of a) Native (UK), b) coastal environment and c) 4m to 8m height after 20 years, produces a list of just 4 species. Of these only 2 are present on the CGSL list of proposed species. Native UK does not mean native to NW Lancashire.

18.49.16 There are concerns regarding the impact of the waste brine on the proposed Liverpool Bay SPA. It is proposed because of its internationally important over-wintering population of Common Scoter and nationally important over-wintering population of Red Throated Diver. There may also be an important population of Little Gull but as their national population is not known the Liverpool Bay population cannot be expressed as a percentage of the national total. The proposed brine outfall would be within the area to be designated SPA. CGSL acknowledge that the brine out-flow would kill all non-mobile life within a radius of 50m of the diffuser but that the brine would safely dilute to ambient levels very rapidly. CGSL rely on the output from a computer model of the tides, currents and topography of the sea bed. Dr Broughton provided evidence from two other model sources that to some extent contradicts this.

18.49.17 All computer systems simulate or model real life activities. Bench testing of systems is no substitute for real world operation and no system is error free. Application of CGSL’s model would also require substantial input of estimated values regarding the discharge, the sea bed and the currents. In view of the changes to CGSL’s evidence during the inquiry, there can be no confidence in the accuracy of the subsequent results. That damage will occur is not in doubt, only the extent of that damage.

18.49.18 Common Scoter are the subject of a UK BAP. The UK breeding population has reduced to an estimated 200 pairs, 110 in northern Scotland and 90 in the north west of the Irish republic. The species has been extinct in Northern Ireland since the early 1990’s. The BAP indicates that one factor said to be a cause of decline is loss of feeding habitat ie sand dwelling shellfish lost through commercial harvesting. Sand dwelling shellfish are typical of the non-mobile creatures which would be killed as a result of the brine discharge; arguably a greater loss as this is permanent. One target of the UK
BAP is to ‘maintain the range and distribution of wintering Common Scoters’. The target is not qualified by subjective views regarding degrees of significance.

18.49.19 It is recognised that Common Scoter have a very low tolerance to disturbance from human activities. Wildlife and Wetlands Trust (WWT) population surveys during the winters of 2001 and 2002 had been used to identify population concentrations to inform SPA considerations, and for CGSL it was agreed that based on this data there was a major concentration only 700m from the planned location of the diffuser. Although aware of more recent WWT surveys these had not been consulted on behalf of CGSL.

18.49.20 CGSL accepts that damage will occur within the SPA, and its whole defence relies on assertions that the impacts of its actions would not have a significant impact on the Liverpool Bay SPA. It offers no mitigation other than monitoring and surveys, and acknowledges that effective mitigation options would have to be adopted from the outset\(^\text{28}\). Of the options listed only that of extending the pipeline into deep water (and beyond the boundaries of the SPA) seems likely to be effective.

18.49.21 The proposed Liverpool Bay SPA is protected by European Legislation enshrined in UK law in the Conservation (Natural Habitats & c.) Regulations 1994. Regulation 48 states that: ‘A competent authority, before deciding to undertake, or give any consent permission or other authorisation for a plan or project which a) is likely to have a significant effect on a European site in Great Britain (either alone or in combination with other plans or projects) shall make an appropriate assessment of the implications for the site in view of that site’s conservation objectives.

18.49.22 CGSL has sought to convince the Inquiry that the impact would not be significant, and in that argument much reliance is placed on the computer model referred to earlier. In seeking to establish that an appropriate assessment has been made of the impact of this proposal in combination with other plans or projects the SEI\(^\text{29}\) sets out 3 paragraphs which conclude: ‘It must be assumed that internationally significant number of scoters and red throated divers have co-existed with these activities for some time and continuation in their present form will not adversely affect the suggested SPA.’

18.49.23 Common Scoter are on the RSPB Red List. Red List species are those that are globally threatened, and whose population or range has declined rapidly in recent years (ie by 50% in 25 years). The conclusion made on behalf of CGSL is not consistent with that of the RSPB. The rigour with which the ‘in-combination assessment’ was made is also questionable. In researching relevant European legislation there is reference to ‘Hyder 1999’, commissioned by EC to investigate methodologies appropriate for cumulative impact assessments. The report\(^\text{30}\) identifies nine methodologies for cumulative impact assessment and assesses the merits of each. Similarly the Countryside Council for Wales has a project to develop a generic Cumulative Impact Assessment methodology, and Hyder are represented on that project. The company are clearly well placed to understand what is available and what should be employed. It is unclear as to why Hyder had not employed one to conduct a full in-combination assessment here. Cumulative Impact Assessments should consider much wider scenarios than are presented in the SEI, for example:

\(^{28}\)ES Vol.2 para.8.4.4
\(^{29}\)SEI paras 3.4 – 3.6
\(^{30}\)Guidelines for the Assessment of Indirect and Cumulative Impacts, as well as Impact Interactions, DG XI Brussels (Hyder, 1999)
• Physico-chemical transport - emissions interact with others at distance eg plumes, effluents - the computer model described by Hyder does not consider any in combination effects and CGSL were quite dismissive of Dr Broughton's assertion that effluent impacts should also be modelled.

• Nibbling loss – gradual disturbance and loss of habitat by project proliferation. The scoter are restricted by feeding habits to shallow waters.

• Spatial and temporal crowding - is there too much happening in too small a space or too short a time to avoid unacceptable disturbance?

• Species interaction - Hyder dismiss the impact of brine on salmon because they are mobile creatures. Dr Broughton made a convincing case of cumulative stress effects on salmon during a stage of life cycle change. What are the effects of this on the wider marine ecosystem - is there a knock on effect on fish-eating red throated divers? Not only do we not know the answers, but we do not know all the questions unless a full study is done.

18.49.24 This does not amount to an appropriate assessment, as required by Reg.48, of the in-combination impact of the brine discharge at its present location. The minimum action that should be taken would be to impose a condition that the pipeline be extended to deep water at a suitable point outside the proposed SPA. Pipelines are routinely laid to oil and gas rigs, the technology of extending this brine pipeline should not present an insurmountable challenge.

Landscape and Visual Impact

18.49.25 The GCS is to be located on Burrows Hill 500m north of the village of Staynall; a settlement of around 20 homes which may double during the period March to October when the caravan site is open. Staynall occupies a hilltop position, 7 to 10 of its properties have open views across a shallow depression towards Burrows Hill, the wider Preesall landscape, with Morecambe Bay and the Lakeland fells as a backcloth. There is some industrial landscape to the west on the Hillhouse site but by and large this is a very desirable view.

18.49.26 The method used to determine landscape and visual receptor impacts is a curious mix of 3 separate methodologies. There has been no logical explanation for this mix. The individual methodologies each address all of the component parts and any one could have produced a result. It was agreed that the methods are subjective and un-auditable.

18.49.27 The latest CGSL evidence suggests that residents of Staynall whose properties have views to Burrows Hill would experience substantial adverse impact in the short term. In the method used the score cannot be any poorer. The definition of substantial adverse is ‘Prominent or dominant introduced feature(s), which creates deterioration in the view, and where the viewer is regarded as being of higher sensitivity.’ For CGSL it is maintained that 15 years after implementation mitigation factors would improve the view for Staynall residents from substantial adverse to moderate adverse. The method’s definition of moderate adverse is ‘Notable or clearly evident introduced feature(s), which creates deterioration in the view, and where the viewer is regarded as being of higher sensitivity.’ After 15 years there are still ‘notable or clearly evident introduced features which create a deterioration in the view’.
18.49.28 CGSL are quick to point out in evidence that the purpose of mitigation is not to hide the CGS and ancillary equipment but to reduce the adverse impact to acceptable levels. It is to be noted that Burrows Hill is the highest feature in the eastern estuary landscape; it is prominent in all views of the area and from both sides of the estuary. The proposal is to place an industrial building 17.6m high on an excavated terrace at 14m AOD. The ridge of this building would be at 31.6m AOD. Burrows Hill has a spot height of 23m AOD and the buildings southern wall starts slightly north of this spot height, at its southern end 8 to 9m of the building would be visible above the ridge line of the Burrows Hill. The building would be 100m long and at its northern end, which is situated around the 18m contour, 13 to 14m of building would be visible above the ridge line of Burrows Hill.

18.49.29 From the west bank of the estuary a large industrial building 100m long and between 8 and 14m high would be visible above the ridge. In views from the east, the full mass of the building 100m by 17.6m would be visible together with ancillary equipment. From the north the building mass would be 55m x 17.6m, plus ancillary equipment. From the south the building mass would also be of the order of 55m x 17.6m, though existing vegetation might provide a little screening here. In views from the north and south there would be views along the ridge and the side of the building, varying dependent on the angle of view. Typical gas dehydration plant requires a 12m x 4m footprint and its tallest point, the dehydration tower, is of the order of 12m by 2m diameter. This would have the appearance of significant chemical-type plant.

18.49.30 The mitigation offered is extensive tree planting, with a recommended minimum planting width of 25m; perimeter screen planting, again 25m minimum. Security fences would be set within or behind planted areas, subject to the proviso that tall trees would not be immediately adjacent to security fences for security reasons. This might require 10m of ground. All ancillary equipment to be painted green or brown depending on practicality.

18.49.31 The trees to be planted in a challenging environment are expected to reach 5 to 6m in height after 15 years. Even if achievable, the best result on the drumlin ridge would leave 2 to 3m of the building visible at the north end and 8 to 9m visible at the south end. However, this ridge is the most exposed aspect of the site and achieving 5 to 6m in height would be difficult. Elsewhere the land falls away rapidly in every direction and trees could not be planted in substantial numbers above the 10m contour. Most would be below this, and would therefore barely have reached 14m AOD - the level at which the building starts.

18.49.32 It is unlikely that planting on the west and east sides of the site could ever achieve the recommended densities. 10m for security fence, 25m of perimeter planting and 25m of tree planting on either side amounts to some 120m. Adding a building 55m wide makes 175m. This compares with a site width of some 155m. Moreover, this has not included provision for two roadways and the fin-fan coolers. The recommended density of tree planting could not be met. While adequate space is available to north and south, in each case the land falls away too rapidly for the proposed planting to have any effect.

18.49.33 The additional recommended planting of trees in the field boundaries to the south could have no beneficial impact on the view. Existing mature trees do not break the skyline, except for a handful around the pond on Burrows Hill. However, these latter mature trees are very important for the landscape and the wildlife and so should be protected by condition during construction. Generally, the mitigation proposed is totally ineffective. While for CGSL it was pointed out that the year-15 assessment takes place in summer
when there are leaves on the trees it would make little difference whether leaves were present or not if the branches were not high enough.

18.49.34 Receptors in Staynall are unlikely to see any improvement in their views in the course of the period of assessment and no-one else with views of Burrows Hill would see any improvement either. It is not that the installation is incapable of being screened but that CGSL has offered no evidence as to how that might be achieved. Very significant conditions would need to be imposed to ensure that adverse impacts could be reduced to acceptable levels.

18.49.35 Access tracks to well heads would be constructed of a granular material which would in time be colonized naturally by local species. Nature would need help with this. If a network of ugly scars was to be avoided then the imported material must not alter the pH of the soil. As this area is not noted for its limestone species, crushed limestone tracks would be unlikely to be colonized naturally.

18.49.36 Neither the EIA nor subsequent work has considered the night time environment in Over Wyre. This is an area substantially without light, and the CPRE maps recognize it as an area of low light pollution despite the proximity of the urban areas to the South. Introducing artificial light to this landscape would have an adverse impact that would be magnified substantially beyond its initial size. If the development is to be permitted this should be controlled by suitable conditions.

18.49.37 There have been indications that well-heads would require masts to support microwave and radio communications links to backup fibre optics networks. Such intrusions are unnecessary. Duplicate but alternatively routed fibre optics would be just as effective; again controlled by condition.

18.49.38 The actions of EN with respect to the inquiry are to be deplored. By initially objecting and then effectively withdrawing, these actions have had the effect of stymieing the ability of other conservation bodies to pursue their objections; and inhibited the extent to which LCC could challenge the ecological evidence. EN had effectively become a witness for the developer but not one open to cross examination. Its actions also created a suspicion of political interference and regardless of whether there had or had not been this had undermined public confidence.

18.50 Fred Porter[617]

18.50.1 Kneps Farm Holiday Park, first established in the late19th century, has developed into one of the foremost holiday parks in the north-west catering for privately owned holiday homes (mainly for tourists from East Lancashire) and touring units. The site is situated on the west bank of the Wyre and following the expansion of the ICI Hillhouse facility this chemical works became the Park’s immediate neighbour. The Park had become accustomed to occasional loud bangs from the Corvic plant followed by a shower of white Corvic dust dependent on wind strength and direction. Also very occasionally a chlorine gas cloud would pass over.

18.50.2 When activities on the ICI site were perceived to no longer present any threat, the need to notify Park customers of hazardous substances in the area and procedures to follow in the event of an incident became unnecessary. The Park has a duty of care towards its clients and has no wish to see such health and safety controls reinstated on

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31 ES pg 19 para.2
the site licence because of the presence of CGSL. In the past Park visitors had complained about noise from the ICI plant and this does not bode well for repeat visits. Some of those with touring caravans did not return because of problems associated with the impact of ICI’s activities.

18.50.3 Potential effects of the proposal are a rise in insurance premiums, discouragement to buyers moving into the district, a downturn in tourism, and disturbance to birds and other wildlife on the estuary. No thought appears to have been given to underwriting the project in the event of claims for compensation being necessary. There have been previous disasters involving gas explosion both in America and China, and close to here at Abbeystead where 18 lives were lost.

18.51 Cllr Vivien Taylor[797] WBC Knott End and Preesall Ward

18.51.1 CGSL had been reluctant to provide details that would allay local residents’ fears and concerns relating to health and safety issues. These include the close proximity of the facility from homes, existing mine workings and other brine wells. The proposed caverns would make the area very vulnerable. The surrounding area continues to suffer from significant subsidence, and this instability already holds the threat of chemical contamination from the mercury sulphide disposed of in BW.107. Gas storage would bring with it the threat of gas seepage and explosion following future subsidence.

18.51.2 Following previous gas explosions, US legislation prevents such developments within 3 miles of existing habitation. While it is easy for CGSL to state that there would be no explosions there has been no thorough risk assessment or emergency evacuation plan involving the emergency services and the population who may need to be evacuated. Increased heavy goods traffic will also use already inadequate rural roads where serious accidents already occur.

18.51.3 The saline discharge would have a devastating impact on bird and marine life and habitats in Morecambe Bay and the Wyre Estuary. It would last for up to 10 years and Fleetwood’s fishing industry, already all but extinct, would lose any prospect of future revival. Increased salinity in the bay would also have a hazardous effect on the secondary cooling system at Heysham Power Station.

18.51.4 The CGSL proposal is not in the national interest. The national interest would be better served by exploring safer alternative storage in the existing gas fields of the North and Irish Seas rather than in densely populated areas such as Wyre where the lives of thousands of people would be endangered.

18.52 Barbara Whiteside[768]

18.52.1 She is most concerned about noise and is one of a minority of residents of Fleetwood and the surrounding area susceptible to and greatly disturbed by a constant droning noise that hovers over Fleetwood and some Over Wyre districts. For those sensitive to this noise life can be extremely distressing, particularly as others either cannot hear it or it appears distant and sporadic.

18.52.2 CGSL’s noise surveys registered steady plant noise or constant plant noise, and this was more noticeable at night. This was proof that there is a persistent noise. However, the report made no reference to the possibility of CGSL plant and machinery giving rise to low frequency noise (LFN). Fans, compressors and pumps
will produce LFN, and for those who are susceptible to such noise the prospect of additional LFN is of great concern.

18.52.3 If subjected to more LFN the only option would be to move away from the area. That would not be fair. People have a right to live where they choose and people who suffer as a result of their particular sensitivity to LFN should be protected.

18.53 **John Whitworth**[765]

18.53.1 He is concerned about the attitude of CGSL to the community. He is also concerned that a company with no previous experience of such a project should be undertaking this proposal here. Information presented to the inquiry by CGSL was woeful and lacking in detail. The company cannot be trusted and if approved the proposal would decimate the area for a long period leading to fears of further cavern collapse, noise, possible escape of gas and subsequent explosion.

18.54 **Liz Wilson**[779]

18.54.1 Organisational cultures rarely alter significantly over time. The characteristics that CGSL display now are likely to be continued if permission is granted. To-date these have included a casual approach to the requirements of the planning framework and unwillingness to engage adequately with local concerns. Inquiry submissions were un-prepared and the approach to the inquiry was re-active rather than pro-active. Leadership, based in Texas, is remote, as is safety planning. There appears to be uncoordinated project management and team-working at the centre. Information is provided only on a need to know basis as decided by the appellant. The assumptions and behaviours are consistent with an ‘off-shore’ venture rather than a land-based project in a community setting.

18.55 **Capt.R Wilkins**[823]

18.55.1 The objection relates principally to the side effects of the gas transmission pipeline linking the CGSL proposal to the NTS pipeline on the operational land of Black Lane Head Farm. Transco gas pipe-line Feeder 21 already crosses the farm. While the pipeline, and metering stations at Nateby, is the subject of a separate planning application which is not before this inquiry, the need for that pipeline derives solely from this appeal proposal.

18.55.2 When the NTS pipeline was constructed it had been claimed that land would be returned to normal agricultural use and drains repaired. They still do not function properly and while CGSL claim that there will be an early return to normal, experience suggests that that is unlikely to happen. Parts of the farm come within an area subject to flooding so good drainage is of particular importance. Limitations placed on working close to or over the pipeline mean that ‘normal working’ on the farm is not always possible. A 1.5ha industrial construction (metering station) with pumps and buildings, is proposed on Grade 2 land within the holding some 300m from the farm house. In addition to the visual and noise impact, the loss of this land, which is not to be replaced by other compensatory land, would severely damage the business prospects for the holding. For this reason no land at Black Lane Head Farm would be made available to CGSL to undertake any of these link pipeline works.

18.55.3 Previous plans showed the metering station located much further away and out of sight of the farm. CGSL had given no explanation of the reason for these changes
which amounted to an arrogant and cavalier attitude to the victims of their plans. There also appeared to have been little attention given to security, while access would be a significant problem because there was no road close to the proposed metering station.

Written Representations

18.56 Written representations were received following the submission of the appeals with respect to the original planning application and its associated HSC application. As those two appeals were substituted by the appeals the subject of this inquiry, and not withdrawn until the principal of that substitution had been agreed by PINS, it was further agreed at the PIM that, in order to avoid confusion and uncertainty amongst those who had submitted representations, those written representations already submitted for the withdrawn appeals would remain before the inquiry.

18.57 The majority of the written representations raised objection to the principle of the development; raising detailed matters also addressed in the oral representations summarised above. There were some 800 written representations received as a result of the notification of the appeals. A significantly greater number of letters had been received by LCC at the various application(s) stages. These were almost entirely letters of objection. Many letters indicated support for the case being presented by PWG.

18.58 Issues raised in most of the representations concerned one or more of the following issues: fear and the potential hazard/lack of safety of the proposal - by reference to instances of death and damage in various UGS facilities elsewhere in the world - bearing in mind the proximity of the proposals to a substantial resident population in Over Wyre and the wider Fleetwood area; impact on wildlife and ecology, including impact on nationally and internationally designated sites; the waste of salt by the proposed method of brine disposal and its impact on marine life; traffic impacts and highway safety on local rural roads and the principal roads through the area; the potential to exacerbate existing and on-going subsidence problems associated with the former brine workings; impact on the rural landscape of Over Wyre; impact on residential amenity; and detrimental impact on property values. In reporting these written representations, and to avoid extensive duplication, only matters not otherwise raised in oral submissions recorded elsewhere in this report are noted.

18.59 Concerns were expressed at the potential impact of the proposal on the UU STW at Hackensall Brow during both the construction phase and the operation phase of the gas storage facility. If the STW became non-operational for any reason, Preesall and Knott End would cease to be served by sewage treatment facilities.

18.60 A number of local residents considered that the proposal represented an infringement of their human right to enjoy life free from fear and the threat of death and/or the destruction of their land and property.

18.61 There was concern at the implications for local residents and the wider community if CGSL went bankrupt following an incident at the storage facility.

18.62 Many representations suggested that the facility would be particularly vulnerable and attractive to attack by terrorists.

18.63 While not objecting to the principle of the development, the Ramblers Association drew attention to the need to ensure that disruption to the public footpath network was kept to
a minimum; that temporary closure or diversion was properly notified, signposted and
way-marked and permanent reinstatement no less beneficial to users.

19. CONDITIONS AND UNILATERAL UNDERTAKING

19.1 Planning Appeal Draft Conditions

19.1.1 The draft planning conditions, as modified by CGSL and LCC following discussion at
the inquiry (Doc.CD/72d) are set out below. While the conditions were, for the most part,
agreed between LCC and CGSL, where wording is not agreed, contested proposed additional
wording is underlined, while contested wording proposed to be deleted is struck through.

Time Limit for Commencement of Development

1. The development shall be begun before the expiration of five years from the date of
this permission.

Approved Documents

2. The development shall be carried out in accordance with the following documents,
except where these may be modified by conditions below:

<table>
<thead>
<tr>
<th>Planning Application Form dated</th>
<th>18 November 2004</th>
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<tbody>
<tr>
<td>General arrangements and wellhead location</td>
<td></td>
</tr>
<tr>
<td>Fig 7a Master Plan</td>
<td>A.GSP.0600009 7</td>
</tr>
<tr>
<td>Fig 7b Preesall Master Plan</td>
<td>A.GSP.0600010 7</td>
</tr>
<tr>
<td>Compressor Station</td>
<td></td>
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<tr>
<td>Site Plan</td>
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<tr>
<td>Lower Ground Floor</td>
<td>A.CPS.0604201 1</td>
</tr>
<tr>
<td>Site Sections</td>
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<td>Booster Pump Station</td>
<td></td>
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<tr>
<td>Site Plan</td>
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<tr>
<td>Ground Floor Plan</td>
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<tr>
<td>Basement Floor Plan</td>
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<tr>
<td>Site Sections</td>
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<tr>
<td>Basement Floor Plan</td>
<td>A.SW.P.0602201 1</td>
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3. From the date of commencement of the Solution Mining Infrastructure works, as defined in this permission, until the permanent cessation of gas storage and the restoration of the site, a copy of the planning permission, including all documents approved in accordance with this permission, shall be available for inspection at all times at the site office and any other remote location(s) which control(s) the operation of the development.

4. The storage of gas in any cavern authorised by this permission shall cease not later than 30 years from the commencement of gas storage in that cavern and its site shall be restored in accordance with the conditions to this permission within a further year or within one year of the cessation of the storage of gas, other than cushion gas, in any cavern.

**NB.** LCC do not agree to the proposed changes and deletions to condition 4 by CGSL

5. During the operational period of the gas storage facility, the caverns shall only be used for the storage of natural gas.

**THE DEVELOPMENT OF ELECTRICITY INFRASTRUCTURE, WATER/BRINE PIPELINES, SEA WALL CROSSING, PUMPING STATIONS, DRILLING OPERATIONS AND CREATION OF CAVERNS** (hereinafter referred to as the ‘Solution Mining Infrastructure’)

**Schemes to be Submitted**

6. Prior to the commencement of the development of the Solution Mining Infrastructure the following details for the pumping station and pumping booster station and associated compounds, plant and equipment, pipeline inspection stations along the brine outfall pipeline, shall be submitted to, and approved in writing by, the Mineral Planning Authority.

   i. Details of all design, layout, elevations and materials to be used;
   ii. Details of all permanent external plant and equipment including that for the brine discharge pipeline;
   iii. Details of the alignment, construction and surface treatment of all internal access roads;
   iv. Details of those points of access along the brine discharge pipeline to be used for the construction of the brine discharge pipeline and those to be retained for the duration of the operational life of the site;
   v. Details of all fences and gates;
   vi. Details of any external illumination of the buildings and associated compounds;
   vii. Details of slurry pipelines, associated slurry settling plant, equipment and stockpiling and removal facilities. Details of the means of disposing of slurry
other than that to be disposed of via the brine outfall. No slurry shall be disposed of on the surface of the site or within any of the existing caverns without the prior written agreement of the Mineral Planning Authority. If slurry other than that to be disposed of via the brine outfall is to be disposed of off site, details of the means of transporting it off site including quantities, vehicle type, numbers of vehicles and hours of operation shall be submitted.

Thereafter the development shall be constructed in accordance with the approved details unless otherwise agreed in writing with the Mineral Planning Authority.

7. Prior to the commencement of the development of any of the temporary compounds for the purposes of constructing the under Wyre Estuary electricity infrastructure, the under Wyre water/brine pipelines, each brine borehole, or the works associated with the installation of the water/brine pipelines and brine discharge pipeline, the following details shall be submitted to and approved in writing by the Mineral Planning Authority:

   i. Details of the location and size of each compound; the infrastructure associated with the under Wyre Estuary electricity connection shall be located on the west side of the Wyre Estuary;
   ii. Means of access and details of the construction of each access;
   iii. Details of the construction of the surface of each compound including the stripping and stockpiling of soils, the location and the storage of such, and the materials to be used in the construction of the compounds;
   iv. Details of any fencing to be erected;
   v. Details of any floodlighting to illuminate the compound including the number, height and location of any stanchions to be erected or mobile floodlighting units to be used, the number of floodlights, their lux levels, angles of luminance and extent of light distribution;
   vi. Details of the proposed reinstatement of the temporary compounds for the purposes of decommissioning.

The temporary compounds for the purposes of constructing the under Wyre Estuary electricity infrastructure, the under Wyre water/brine pipelines, each brine borehole or the works associated with the installation of the water/brine pipelines and brine discharge pipeline shall thereafter only be constructed in accordance with the approved details unless otherwise agreed in writing by the Mineral Planning Authority.

8. Prior to the commencement of development of the Solution Mining Infrastructure a scheme and programme for the design and construction of the crossing of the sea wall at Rossall by the discharge pipeline and the design and construction of a viewing platform shall be submitted to the Mineral Planning Authority for approval in writing. Thereafter the approved scheme shall be implemented in full unless otherwise agreed in writing with the Mineral Planning Authority prior to the commencement of solution mining.

**Commencement of the Solution Mining Infrastructure**

9. The wellheads shall only be constructed in the positions shown on drawing no. A.GSP.0600010 Rev.7 - Fig 7b Preesall Master Plan and in no other locations unless first agreed in writing with the Mineral Planning Authority.
10. Not less than seven working days' notice in writing shall be given to the Mineral Planning Authority prior to the commencement of construction of each of the supporting compounds to drill the under Wyre Estuary electricity connection, the under Wyre water/brine pipelines, each brine borehole, or the works associated with the installation of the water/brine pipelines, the discharge pipeline to the sea wall, the crossing of the sea wall, the viewing platform and the outfall.

11. The Mineral Planning Authority shall be informed in writing within seven working days of each wellhead being converted from a brine wellhead to a gas wellhead.

**Blasting**

12. No underground blasting shall take place without prior notification to the Mineral Planning Authority. In the event blasting is necessary details of the methodology, levels of blast charge and times when blasting is proposed to take place shall be first submitted to the Mineral Planning Authority for approval in writing.

12a. No blasting shall take place until a scheme and programme for the monitoring of blasting has been submitted to and approved in writing by the Mineral Planning Authority.

- The scheme and programme shall include details of:
  - a) Blast monitoring locations;
  - b) The monitoring to be used;
  - c) The vibration levels to be recorded;

  A copy of the measurements recorded by the equipment shall be retained for a period of 12 months and submitted, on request, to the Mineral Planning Authority.

**NB.** LCC proposed condition 12a. In the absence of such LCC consider proposed condition 12 to be incomplete. CGSL do not agree the proposed change.

**Cavern Design and Siting**

13. The design and siting of any gas storage cavern for which consent is sought as part of any application pursuant to the Control of Major Accident Hazards Regulations 1999, shall, unless otherwise agreed in writing by the Mineral Planning Authority, be based upon the following principles:

- i. The maximum radius of any cavern shall not exceed 50m;
- ii. The thickness of salt between any cavern roof and the top of salt above shall not be less than the maximum radius of that cavern;
- iii. The thickness of salt between the base of any cavern and the bottom of salt below shall not be less than 20% of the maximum radius of that cavern;
- iv. The salt pillar between adjacent permitted caverns shall not be less than three times the maximum radius of each cavern;
- v. The salt pillar between any permitted cavern and an existing brine cavern shall not be less than four times the maximum radius of the permitted cavern;
- vi. The salt pillar between any permitted cavern and a major fault such as the Burn Naze Fault shall not be less than three times the maximum radius of that cavern;
NB. LCC proposed insertion to (vi) above was not accepted by CGSL who proposed the following alternative (vi).

vi. The salt pillar between any permitted cavern and any fault identified by geophysical investigation to be within the salt formation itself shall be not less than three times the radius of that cavern.

NB. The proposed alternative is not accepted by LCC

vii. The maximum permissible internal pressure of any permitted cavern shall not be greater than 83% of the vertical component of the overburden pressure related to the cavern casing shoe depth;

viii. The minimum permissible internal pressure of any permitted cavern shall not be less than 30% of the vertical component of the overburden pressure related to the cavern casing shoe depth;

ix. The gas tightness of any permitted cavern shall be assessed at the maximum operating pressure conditions for that cavern;

x. The assessment of cavern stability (including thermal effects) shall include an assessment assuming a rapid pressure drop to atmospheric pressure (blow out)

14. The Minerals Planning Authority shall be notified of details of the precise location of each proposed cavern within a period of seven working days following that location having been agreed with and accepted by the Health and Safety Executive as part of any application made pursuant to the Control of Major Accident Hazards Regulations 1999.

Methods of Brine Extraction

15. No brine shall be extracted by any method other than controlled solution mining as defined by this permission.

16. All brine shall be discharged through a filtration system that prevents the discharge of any material in excess of 5 microns. There shall be no surface settling tanks. No material generated by the filtration system shall be disposed of on any part of the surface of the site. All material generated by the filtration system shall be disposed of off site unless otherwise agreed in writing with the Mineral Planning Authority.

Precise Levelling Survey

17. Prior to the commencement of controlled solution mining in any part of the application site a precise levelling survey of that part of the application site where the said controlled solution mining will be undertaken shall be carried out, the details of which shall be first submitted to and approved in writing by the Mineral Planning Authority. Following the commencement of controlled solution mining precise levelling monitoring shall thereafter be undertaken every six months from such commencement. A copy of the results of the precise levelling survey(s) shall be submitted to the Mineral Planning Authority within four weeks of the
completion of each survey. The precise levelling surveys shall continue on an annual cycle for the operational life of the site. In the event that any settlement attributable to the presence of gas storage caverns is identified at any time in any place throughout the operational life of the site associated with the operations shall be submitted within three months of such settlement being identified for approval in writing by the Mineral Planning Authority. The scheme and programme shall set out the means of addressing the settlement.

**Noise Associated with the Solution Mining Operations**

NB CGSLand LCC were unable to agree conditions in this section.

CGSL proposed conditions 18a - 18c below.

18a. Before development commences a scheme for the control of noise emissions due to the development at noise sensitive locations shall be submitted to and approved in writing by the Mineral Planning Authority. The scheme shall demonstrate that Best Available Techniques for the control and reduction of noise have been adopted in respect of the selection and use of equipment and plant to be used, provision of proposed mitigation, phasing of working and hours of operation. The approved scheme shall be implemented at the start of commencement of development and be maintained thereafter.

18b. Notwithstanding condition 18a\(^{32}\), cavern drilling noise emitted from the site shall not exceed a ground floor, freefield level of 55 dB LAeq, 1 hr outside any noise sensitive dwelling between 0730 and 2200 hrs.

18c. Notwithstanding condition 18a above, cavern drilling noise emitted from the site shall not exceed a freefield level of 42 dB LAeq, 1 hr outside the bedroom of any noise sensitive home, between the hours of 2200 and 0730.

LCC proposed condition 18 below to replace CGSL 18a and to delete 18b and 18c

18. Before the commencement of development, a scheme for the control of noise emissions due to the development at noise sensitive locations shall be submitted to and approved in writing by the Mineral Planning Authority. The scheme shall demonstrate the control and reduction of noise by the use of plant and equipment, the provision of mitigation by the phasing of working and hours of operation. The rating levels (rating level as defined by this permission) at the noise sensitive locations shall not exceed the following:

a) Not more than 10dB greater than LA90 during the period 0700 - 1900 hours;
b) Not more than 10dB greater than LA90 during the period 1900 - 2200 hours;
c) Not more than 10dB greater than LA90 during the period 2200 - 0700 hours

The approved scheme and programme shall be implemented at the start of the commencement of development of the solution mining infrastructure and employed throughout the development of the solution mining infrastructure.

\(^{32}\) NB. In CD/72d this is incorrectly recorded as a ref. to Condition 17, as it is in Condition 18c also.
19. When drilling the under Wyre Estuary electricity pipeline, brine pipelines and brine boreholes there shall be no ‘tripping out’ of the drill string between 1900 and 0700 hours except in emergencies. Where such operations are unavoidable, all aspects of pipe handling shall be carried out in such a way as to minimise noise levels. In particular, the loading chute shall be lined with a sound deadening material.

NB. Proposed extension of hours to 2200 by CGSL not agreed by LCC.

**Ground and Surface Water Pollution Prevention**

20. All drilling mud shall be stored in a bunded area with an impermeable liner within the drilling compound.

21. All drilling fluid and cuttings shall be removed from each drilling compound for disposal at a site licensed for its receipt.

**Completion of Solution Mining Infrastructure**

22. The development works associated with the Solution Mining Infrastructure shall be completed within a period of 8 to 10 years from the date of the first commencement of commercial washing within the first cavern unless otherwise approved in writing by the Mineral Planning Authority.

NB. The above changes proposed by CGSL are not agreed by LCC

23. Following the completion of solution mining at each wellhead, the associated temporary solution mining compound shall be removed, soils replaced, the access roads grubbed up to a single track width and the site restored within a period of six months in accordance with a scheme and programme to be first submitted for approval in writing to the Mineral Planning Authority. Thereafter the scheme and programme shall be implemented in full unless otherwise approved in writing by the Mineral Planning Authority and the land thereafter maintained for a period of 5 years in accordance with the Lancashire County Council Environment Directorate specification entitled ‘Tree and Shrub Planting with Grass Seeding and protective Fencing’.

24. A scheme and programme for the decommissioning of caverns unused for gas storage shall be submitted to the Mineral Planning Authority within three months of:
   i. The HSE or the operator having determined that the caverns created by solution mining are unsuitable for gas storage; or
   ii. Solution mining of completed caverns having ceased for a continuous period of 12 months; or
   iii. Solution mining of any partially constructed cavern having ceased for a continuous period of 18 months;

The scheme and programme shall provide for:
   a. The long term management of the caverns and their content for their decommissioned life;
   b. An annual programme of monitoring of the caverns to ensure their stability;
c. A risk management plan for the possibility of the caverns becoming unstable, setting out the measures to be taken to minimise risk.

Following written approval by the Minerals Planning Authority, the scheme and programme shall be fully implemented.

25. Unless otherwise agreed in writing by the Mineral Planning Authority, in the event that no gas is stored within any of the caverns hereby permitted within a period of 24 months following the completion of all solution mining works, a scheme detailing the removal of the access roads and all above ground development shall be submitted to the Mineral Planning Authority for approval in writing. The approved scheme shall thereafter be implemented in full within 12 months of its approval by the Mineral Planning Authority.

Not later than six months after the completion of solution mining a scheme detailing the removal of the remaining above ground installations which are no longer required shall be submitted to the Mineral Planning Authority. The approved scheme shall be implemented in its entirety within a further six months from the date of its approval.

Unless otherwise agreed in writing with the Mineral Planning Authority, in the event the solution mining ceases for a continuous period of 24 months, the access, access roads, the pumping station, the booster pumping station, the brine discharge pipeline and all related compounds, plant and equipment shall be removed from the site within a further 12 months and the site restored in accordance with a scheme and programme to be first submitted to the Mineral Planning Authority for approval writing.

NB. LCC do not agree to the deletion of the two conditions above as proposed by Canatxx

**THE GAS COMPRESSOR STATION AND ASSOCIATED COMPOUND AND GAS PIPELINES** (hereinafter referred to as the `Gas Storage Infrastructure')

**Schemes to be Submitted prior to the Commencement of the Gas Storage Infrastructure**

26. Prior to the commencement of the development of any of the temporary compounds for the purposes of constructing the gas storage infrastructure as defined in this permission, the following details shall be submitted to the Mineral Planning Authority for approval in writing:

i. Details of the location and size of the temporary compound;

ii. Means of access;

iii. Details of the construction of the surface of the compound including the stripping and stockpiling of soils, the location and the storage of such, and the materials to be used in the construction of the compounds;

iv. Details of any fencing to be erected;
v. Details of any floodlighting to illuminate the compound including the number, height and location of any stanchions to be erected or mobile floodlighting units to be used, the number of floodlights, their lux levels, angles of luminance and extent of light distribution;

The temporary compounds for the purposes of constructing the gas storage infrastructure shall be constructed in accordance with the approved details unless otherwise agreed in writing the Mineral Planning Authority.

27. Prior to the commencement of the development of the Gas Storage Infrastructure as defined in this permission the following details shall be submitted to and approved in writing by the Mineral Planning Authority:

i. The design and specification of fencing around the perimeter of gas compressor station, associated compounds and each wellhead;

ii. The specification and colour of all surface treatment of the Gas Storage infrastructure particularly with regard to the avoidance of glare or reflection from any surfacing or surface treatment.

iii. The detailed design, layout and elevations of all structures and external plant and equipment comprising the Gas Storage Infrastructure including any venting stacks.

Thereafter the approved details shall be implemented in full.

28. No development of the gas storage infrastructure shall commence until a scheme for monitoring the rating level (rating level as defined by this permission) of noise emitted from the gas storage infrastructure during normal operation which shall not be greater than the existing background noise level at the selected noise sensitive locations during the day and night, has been submitted to and approved in writing by the Mineral Planning Authority. The scheme and programme shall include details of:

i. The identification of noise sensitive properties and maximum rating levels at these properties;

ii. The identification of noise monitoring points and maximum day time (0700 - 2200 hours) and night time (2200 - 0700 hours) rating levels at these points;

iii. The equipment to be used for monitoring and the, information to be recorded including weather conditions, activities taking place at the site and the plant and equipment being used during the monitoring period;

iv. The monitoring period;

v. Details for the reporting of monitoring results to the Minerals Planning Authority;

vi. Procedures to be adopted if rating levels exceed the identified background day and night time levels at the identified noise sensitive properties;

vii. A timescale for the implementation of each of the above matters.

The monitoring (including measurements and assessments) shall be made in accordance with the methodology contained in BS4142: 1997.

Commencement of Development of the Gas Storage Infrastructure

29. No storage of natural gas in caverns attached to any wellhead shall commence until any properties within the relevant safety zone as identified by the Health and Safety Executive under any Hazardous Substances Consent have been permanently vacated.
30. At least seven working days' notice in writing shall be given to the Mineral Planning Authority prior to the commencement of development of the Gas Storage Infrastructure.

31. The Mineral Planning Authority shall be informed in writing within seven working days of the commencement of normal operations (excluding commissioning) of the gas compressor plant.

Vehicles Access and Movements

32. No development of the gas storage infrastructure shall commence until details of the crossover of Highgate Lane to access the site of the proposed compressor station and under Wyre Estuary electricity line have been submitted to and approved in writing by the Mineral Planning Authority. No other means of access shall be used by site traffic to either enter or leave this part of the site at any time without the prior written agreement of the Mineral Planning Authority.

Lighting

33. The compressor station and associated compound, well heads and all internal access roads shall not be artificially illuminated externally except during routine maintenance and emergencies in accordance with details which shall first be submitted to and approved in writing by the Mineral Planning Authority. This condition shall not apply to the construction and commissioning of these facilities but before the carrying out of any such operations details of lighting during construction and commissioning shall be submitted to, and approved in writing by, the Mineral Planning Authority.

Cessation of Gas Storage Operations

34. Within 30 years of the commissioning of each gas storage cavern facility or within 24 months of the permanent cessation of gas storage within the respective caverns (whichever is the sooner), a scheme for the demolition of all the gas storage infrastructure and solution mining infrastructure no longer needed for the long term maintenance of the underground caverns, and for the restoration of these sites, shall be submitted to the Mineral Planning Authority for approval in writing.

NB. LCC do not agree to the above deletions or insertions proposed by CGSL.

34a. Following the commencement of gas storage in the first cavern, the use of the gas storage infrastructure shall cease 30 years from commencement of gas storage.

NB. LCC do not agree the deletion of the above condition proposed by CGSL.

35. Following the expiration of the period referred to in condition 34/34a or, if sooner, the permanent cessation of gas storage within any caverns, the respective gas storage infrastructure and solution mining infrastructure shall be demolished and the site restored within a period of twelve months, in compliance with
the scheme previously submitted to and approved in writing by the Mineral Planning Authority pursuant to condition 34 above.

**Decommissioning**

36. Within 3 months following the permanent cessation of gas storage within the respective caverns, a scheme and programme for the decommissioning of the caverns shall be submitted to the Mineral Planning Authority for approval in writing. The approved scheme and programme shall be commenced within one month from the date of approval.

37. Any scheme and programme for the decommissioning of the caverns to be submitted to the Mineral Planning Authority pursuant to condition 36 shall not involve the bringing onto site any solid materials for depositing into the caverns.

38. All brine that is to be used for the decommissioning of the storage caverns is to be conveyed to the site by underground pipeline only.

**THE FOLLOWING CONDITIONS SHALL APPLY TO ALL ASPECTS OF THE PROPOSED DEVELOPMENT**

**Highways**

39. No development shall commence until a scheme and programme for accessing the site from the A588 and Cemetery Lane has been submitted to and approved in writing by the Mineral Planning Authority. The scheme and programme shall include details of:
   i. The width of access and associated kerb radii;
   ii. Visibility splays;
   iii. The setting back of any gates to ensure vehicles can park off the highway when accessing a closed site and for the gates to open inwards;
   iv. The surfacing of the access bell mouth and internal access roads which are to be metalled;
   v. The maintenance of the access and surface throughout the operational life of the site.

   Thereafter the approved access shall be the sole means of entering and leaving the site for all vehicles associated with the development of the site except in an emergency. The visibility splays shall be kept clear of any obstruction above 1 metre when measured from the surface of the nearest part of the adjoining metalled portion of highway throughout the operational life of the site.

40. **EITHER**
   Development shall not commence until details of a new mini-roundabout at the junction of Cemetery Lane and the A588 (Preesall Park) have been submitted to, and approved in writing by, the Minerals Planning Authority and until the junction has been constructed in accordance with the approved details.

   **OR**
   Development shall not commence until details of a temporary link road between the A588 and Cemetery Lane have been submitted to, and approved in writing by, the Minerals Planning Authority and until the proposed road has been constructed in accordance with the approved details. The link road shall thereafter be removed in its entirety within 6 months.
of the completion of the Gas Infrastructure Works, or 10 years of its construction, whichever is the earlier, in accordance with a scheme including restoration of hedgerows and agricultural land to be submitted to, and approved by, the Mineral Planning Authority.

41. The maximum number of Heavy Goods Vehicle movements to and from the site east of the Wyre Estuary shall not, unless otherwise agreed in writing with the Mineral Planning Authority, exceed 72 per day (36 in and 36 out).

42. The number of Heavy Goods Vehicles (as defined by this permission) which enter the site east of the Wyre Estuary shall be recorded by the site operator. These records shall be available for inspection at the site office and a copy of these records shall be submitted to the Mineral Planning Authority every six months, or within five working days of such records being requested by the Mineral Planning Authority.

All vehicular access to the site east of the Wyre Estuary shall be taken from the access approved for the purposes of conditions xxx. No other means of access shall be used to either enter or leave this part of the site at any time without the prior written approval of the Mineral Planning authority except for access by emergency vehicles.

NB. LCC do not accept CGSL’s proposed deletion of the above condition

43. No development shall commence until wheel-cleaning facilities to a design, specification and at positions first approved in writing by the Mineral Planning Authority have been installed.

44. The wheel cleaning facilities installed shall remain available for use, and shall be maintained in full working order, at all times for the duration of the construction works associated with the development so as to ensure that no debris from the site is deposited by vehicle wheels upon the public highway.

45. Any internal haul road or private way between the wheel cleaning facilities and the boundary of the site shall, throughout the development, be metalled and drained and kept clear of debris along its entire length at all times.

46. Upon completion of construction, all temporary access routes onto the public highway are to be closed, except for those to the compressor station, booster pump station, and the crossing of Burrows Lane to well head nos 21-24. Wellhead nos. 21-24 shall thereafter only be accessed via the crossing of Burrows Lane from the compressor station site. All verges and field boundaries that will be affected by temporary access routes shall be restored in accordance with details to be first agreed in writing by the Mineral Planning Authority and thereafter shall be maintained for a period of five years in accordance with the Lancashire County Council Environment Directorate specification entitled ‘Tree and Shrub Planting with Grass Seeding and Protective Fencing’.

47. Any temporary highway and access measures required for the construction period shall be reinstated to an equivalent standard for the period of decommissioning of the gas storage facility. Following the completion of the decommissioning works, all temporary access roads are to be grubbed up and the site restored in accordance with the conditions to this permission within a period of six months unless otherwise approved in writing by the Mineral Planning Authority.
Footpaths and Bridleways

48. Prior to the commencement of development, a scheme detailing the proposed segregation of access tracks parallel to footpaths and bridleways, and the proposed gating of footpaths and bridleways crossing access tracks shall be submitted to the Minerals Planning Authority for approval in writing. Thereafter, the approved scheme shall be carried out in its entirety and maintained for the duration of the construction period.

Hours of operation

NB. CGSL AND LCC were unable to agree the conditions in this section.

CGSL suggested conditions 49 and 50

49. No site preparation, construction or decommissioning works or site restoration shall take place outside the hours of:

- 0700 to 1900 hours, Mondays to Fridays (except Public Holidays)
- 0700 to 1600 hours on Saturdays;
- No site preparation, construction or decommissioning works or site restoration shall take place at any time on Sundays or Public Holidays.

This condition shall not, however, operate so as to prevent the use of pumping equipment and the carrying out, outside these hours, of essential repairs to plant and machinery used on site.

50. No heavy goods vehicles, as defined in this permission, shall enter or leave the site outside the hours of:

- 0700 to 1900 hours, Mondays to Fridays (except Public Holidays)
- 0700 to 1600 hours on Saturdays;
- No heavy goods vehicles shall enter or leave the site on Sundays or Public Holidays.

LCC suggested conditions 49a and 50a

49a. No site preparation, construction or decommissioning works or site restoration shall take place outside the hours of:

- 0730 to 1830 hours, Mondays to Fridays (except Public Holidays)
- 0730 to 1300 hours on Saturdays;
- No site preparation, construction or decommissioning works or site restoration shall take place at any time on Sundays or Public Holidays.

This condition shall not, however, operate so as to prevent the use of pumping equipment and the carrying out, outside these hours, of essential repairs to plant and machinery used on site.

50a. No heavy goods vehicles, as defined in this permission, shall enter or leave the site outside the hours of:
0730 to 1830 hours, Mondays to Fridays (except Public Holidays) 0730 to 1300 hours on Saturdays; No heavy goods vehicles shall enter or leave the site on Sundays or Public Holidays.

Conveyance of Gas, Water and Brine

51. All natural gas, water and brine used in, stored within or produced by the development or as part of decommissioning shall be conveyed to and from the site only by underground pipeline (with the exception of potable water and water/brine and other fluids used for drilling operations) unless otherwise agreed in writing with the Mineral Planning Authority.

Colour of Plant, Machinery and Buildings

52. All plant, machinery, fencing and buildings on site (except brickwork), with the exception of mobile plant, shall be in a colour to be first approved in writing by the Mineral Planning Authority. Thereafter all such plant, machinery, fencing and buildings shall be maintained in the approved colour with the exception of any pipelines which require colour coding for recognition purposes and the stacks which shall be coloured pursuant to a scheme to be submitted to, and approved in writing by, the Mineral Planning Authority.

Agricultural Land Classification Survey and Soil Characteristics Profile

53. Prior to the stripping of soil from any area currently in agricultural use (and which would subsequently be restored to agriculture), including individual wellhead sites, pipeline areas and access roads, an agricultural land classification survey and soil characteristics profile shall be undertaken, submitted to and approved in writing by the Mineral Planning Authority.

Operational Details

54. No shrub, hedge or tree shall be felled or cleared during the period 1 March to 31 July inclusive, without the prior written consent of the Mineral Planning Authority.

Ecology

Prior to the commencement of development a scheme and programme for the assessment and monitoring of the effects of the abstraction of water from Fleetwood dock on the Fleetwood marsh lagoons shall be submitted for the approval in writing of the Mineral Planning Authority. The scheme and programme shall set out the measures to be put in place to ensure the levels of the Fleetwood Marsh lagoons do not change to such an extent that the habitats are adversely affected throughout the duration of the solution mining and gas storage decommissioning.

NB. LCC do not agree to CGSL’s proposed deletion of the above condition. It is CGSL’s position that there is no hydraulic inter-connection between the dock and the marsh lagoons (Doc.CGS12/2/paras. 5.32-37).
55. Prior to the commencement of development details of the ecological mitigation measures, including the creation of additional ponds and their subsequent management, shall be submitted to the Mineral Planning Authority for approval in writing. The approved scheme and programme shall be implemented in full and thereafter maintained throughout the operational life of the site.

Prior to the commencement of development a scheme for ensuring the management of any agricultural land within the application site during the period of construction and operation of the proposed development shall be submitted to and approved in writing by the Mineral Planning Authority.

NB. LCC do not agree to the deletion of their proposed condition above because its provisions are not provided for in the proposed Section 106 Agreement.

56. Prior to the commencement of the development of the Solution Mining Infrastructure a scheme for minimising disturbance to breeding birds within the Fleetwood Marsh Industrial Lands BHS shall be submitted to and approved in writing by the Mineral Planning Authority.

57. Prior to the commencement of development of either the Solution Mining Infrastructure or the Gas Storage Infrastructure a scheme and programme for the investigation of the presence of Great Crested Newts within the application boundary shall be submitted to, and approved in writing by, the Mineral Planning Authority. In the event Great Crested Newts are present the scheme and programme shall identify mitigation measures to be employed.

58. Prior to the commencement of development a programme of monitoring and mitigation for water voles shall be submitted to the Mineral Planning Authority for approval in writing. The approved programme shall be implemented within one month of the commencement of development and carried out on an annual basis for the duration of the working life of the site. The results of the monitoring and mitigation shall be presented in an annual report and submitted to the Mineral Planning Authority within one month of each annual monitoring exercise having been completed.

Archaeology

59. At least 14 days written notice of commencement of any soil stripping programme shall be given to the Mineral Planning Authority. Access shall be afforded at any time during the development to an archaeologist nominated by the Mineral Planning Authority to enable him/her to undertake a watching brief and observe the excavation and to record finds and other items of archaeological interest.

60. In the event that an archaeological find or feature is discovered, no construction operations or preparation for such operations shall take place within 10 metres of the find or feature for a period of 14 days from the Mineral Planning Authority receiving written notification of such a discovery, unless otherwise agreed in writing by the Mineral Planning Authority. If the Mineral Planning Authority is of the view that the find or feature requires further investigation, no construction operations or preparation for such operations shall take place within 10 metres of the find or feature until such time as a scheme and programme for further investigation and recording has been
submitted to and agreed in writing by the Mineral Planning Authority. Thereafter the scheme and programme shall be implemented in full unless otherwise agreed in writing with the Mineral Planning Authority.

**Noise**

61. A scheme for monitoring noise from the compressor station, the pumping station, the booster pumping station and all associated external plant and equipment shall be submitted for approval in writing to the Mineral Planning Authority to demonstrate that rating noise levels (rating level as defined by this permission) do not exceed agreed background noise levels at the following locations:

<table>
<thead>
<tr>
<th>Location</th>
<th>Rating Levels Day 0700 - 2200 hrs</th>
<th>Rating Levels Night 2200 - 0700 hrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cote Walls Farm</td>
<td>30</td>
<td>28</td>
</tr>
<tr>
<td>Carters Farm/Burrows Farm</td>
<td>37</td>
<td>37</td>
</tr>
<tr>
<td>The Heads/The Sportsman's Caravan Park</td>
<td>34</td>
<td>32</td>
</tr>
<tr>
<td>Hospital, West Way</td>
<td>50</td>
<td>40</td>
</tr>
<tr>
<td>South Strand/King Georges Memorial Field</td>
<td>44</td>
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<tr>
<td>Boat Compound Wyre Docks</td>
<td>46</td>
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</tr>
<tr>
<td>Little Height o’ th’ Hill</td>
<td>41</td>
<td>35</td>
</tr>
<tr>
<td>Caravan Park, Fleetwood Road</td>
<td>55</td>
<td>33</td>
</tr>
</tbody>
</table>

62. Prior to the commencement of development, a scheme and programme for the venting of brine pipelines shall be submitted to and approved in writing by the Mineral Planning Authority which shall include the following:

i. Venting locations;

ii. Duration of venting operations; except in an emergency, venting operations shall only be carried out between the hours of 0800 and 1800 hours Monday to Friday (and at no time on Saturdays, Sundays or Bank Holidays);

iii. Identification of noise sensitive properties;

iv. Identification of the background noise levels at noise sensitive properties during the venting times.

The approved scheme and programme shall be implemented in full.

**NB.** LCC do not agree to CGSL’s proposed changes to hours in the above condition and conclude that the hours of 0800 to 1800 should be retained as venting is a controlled and planned event.

63. All plant, equipment and machinery used in connection with the development, operation and maintenance of the site shall be equipped with effective silencing equipment or sound proofing equipment to the standard of design set out in the manufacturer’s
specification and shall be maintained in accordance with that specification at all times throughout the development.

64. Prior to the commencement of development no solution mining development shall take place until a scheme and programme describing the types of reversing alarms to be fitted to mobile plant on the site has been submitted to the County Planning Authority and approved in writing for approval in writing. The scheme and programme shall provide for the fitting of non-audible reversing systems and include details of alternative measures that will be adopted should non-audible warning systems fail to operate or be unsuitable. Following the written approval by the County Planning Authority the scheme and programme shall be implemented in its entirety on commencement of the development and the measures contained within the approved scheme shall thereafter be utilised at all times during the development.

**Dust**

65. No soils or overburden shall be stripped and no development shall commence until a scheme and programme of the measures for the suppression of dust has been submitted for approval in writing by the Mineral Planning Authority. The scheme and programme shall include details of:

i. The suppression of airborne dust caused by the moving and storage of soil and overburden, minerals and other materials within the site;

ii. Dust suppression on haul roads;

Following the written approval by the Mineral Planning Authority the scheme and programme shall be implemented in its entirety on commencement of the development and the measures contained within the approved scheme shall thereafter be implemented at all times during the development.

**Lighting**

66. Any artificial lighting installed for use during the hours of darkness at any time during the development, operation or decommissioning of the site shall point in a downwards direction and shall be cowled to avoid sideward or upward glare.

**Hedgerows**

67. No section of hedgerow shall be removed until a survey of that particular section of hedgerow has been undertaken and the results and details of mitigation measures have been submitted to, and approved in writing by, the Mineral Planning Authority.

**Ground and Surface Water and Pollution Prevention**

68. Throughout the period of development, operation, restoration and aftercare all ditches, watercourses, field drainage systems and culverts shall be protected such that the flow of water is not impaired or the drainage onto and from adjoining land rendered less effective.
69. All oil, diesel oil and lubricants stored on the application site for any purpose shall be stored on a base impervious to both oil and water and surrounded by an impermeable bund wall. The bunded area shall be capable of containing 110% of the largest tank's capacity and all drain pipes, fill pipes and sight gauges shall be enclosed within its curtilage.

70. No stream or watercourse shall be disturbed until a scheme and programme, including a timescale, for its diversion is submitted to, and approved in writing by, the Mineral Planning Authority.

**Discharge of Foul Drainage**

71. All foul drainage shall be discharged to a public sewer or else to a sealed watertight tank fitted with a level warning device to indicate when the tank needs emptying. Upon emptying the contents of the tank shall be removed from the site completely.

**Landscaping**

72. No development shall commence until full details of both hard and soft landscape works for the application site have been submitted to and approved in writing by the Mineral Planning Authority. The details of the hard landscaping shall include:

   i. Proposed finished levels or contours;
   ii. Car parking layouts;
   iii. Other vehicle and pedestrian access and circulation areas;
   iv. Hard surfacing materials;
   v. Temporary and permanent compounds;
   vi. Minor structures (e.g. refuse or other storage units, signs etc);
   vii. Proposed and existing functional services above and below ground (e.g. pipes and pipelines, drainage, power and communication cables).

The details of soft landscaping works shall include:

   i. Planting plans detailing the location and layout of the planting to be undertaken, protection measures and methods of planting;
   ii. Written specifications of the proposed seed mixes to be used and rates of application;
   iii. The size, types and number of each species to be planted;
   iv. Replacement of losses/failures and maintenance;
   v. Proposed means of rabbit/stock proofing;
   vi. Measures to protect existing vegetation on site;
   vii. The programme/timescale of the planting;
   viii. The management of any landscaping area including the maintenance of tree and shrub planting areas including the maintenance of tree and shrub planting and grazing or mowing of grassland area.

73. No development shall take place until details of earthworks (including the construction and heights of any screening mounds including materials to be used, grading, soiling, and seeding or other methods for securing vegetation cover) have been submitted to and approved in writing by the Mineral Planning Authority. These details shall include the proposed grading and mounding of land areas including the levels and contours to be
formed, showing the relationship of proposed mounding to existing vegetation and surrounding landform.

74. Details of any floodlighting shall be submitted to and approved in writing by the Mineral Planning Authority before the use hereby permitted commences. Development shall be carried out in accordance with the approved details.

**Landscape Works Implementation**

75. All hard and soft landscape works shall be carried out in accordance with the programme/timescale agreed with the Mineral Planning Authority and shall secure the completion of the landscaping scheme within the first planting season following the progressive completion of construction of the respective elements of the development.

**Landscape Management Plan**

76. No development shall take place until a landscape management plan, including long term design objectives, management responsibilities and maintenance schedules for all landscape areas, has been submitted to and approved by the Mineral Planning Authority. The landscape management plan shall be carried out as approved. All landscaping and planting works shall be maintained throughout the operational life of the development in accordance with the Lancashire County Council Environment Directorate specification entitled ‘Tree and Shrub Planting with Grass Seeding and Protective Fencing’.

77. The maintenance regime shall provide for the replacement of failures or damaged plants on an annual basis for a period of 5 years following such planting in accordance with the Lancashire County Council Environment Directorate specification entitled "Tree and Shrub Planting with Grass Seeding and Protective Fencing". Such failures or damaged plants shall be replaced with plants of a similar size and species unless otherwise agreed with the Mineral Planning Authority in writing.

78. Prior to the commencement of development a scheme and programme detailing the working methods, means of mitigation and restoration for works involving the installation of the brine discharge pipeline within the following Biological Heritage Sites shall be submitted to the Mineral Planning Authority for approval in writing.

i. Fleetwood Promenade, Dunes and Coastal Grasslands BHS;
ii. Rossall School Fields BHS;
iii. Fleetwood Marsh Industrial Lands BHS

Thereafter the approved scheme and programme shall be carried out in its entirety.

79. Prior to the commencement of development all hedges and trees forming part of the site boundaries or to be retained within the site shall be identified on a plan to be submitted to and approved in writing by the Mineral Planning Authority. The identified trees and hedgerows shall be protected from any damage and be maintained throughout the development, restoration and aftercare period in accordance with the Lancashire County Council Environment Directorate specification entitled ‘Tree and Shrub Planting with Grass Seeding and Protective Fencing’.
80. Any trees within the site which are either removed or damaged, become diseased or which die at any time during the development, restoration and the aftercare period as provided for in this permission shall be replaced during the first available planting season, as defined in this permission, after which such condition is discovered with trees of a similar type, number and species so affected and shall thereafter be maintained throughout the development, restoration and aftercare period in accordance with the Lancashire County Council Environment Directorate specification entitled ‘Tree and Shrub Planting with Grass Seeding and Protective Fencing’. This condition shall not apply to trees that are removed as part of approved thinning works.

81. Before the development to the east of the Wyre Estuary commences stock proof hedges, fences or walls including gates shall be provided around the perimeter of those parts of the site that are to be developed and thereafter they shall be maintained at all times throughout the development, restoration and aftercare period.

82. All areas of the site left undisturbed but not in agricultural practice, and all topsoil, subsoil and soil making material mounds shall be kept free from noxious weeds throughout the development including the restoration and aftercare periods in accordance with a scheme and programme to be submitted to and approved in writing by the Mineral Planning Authority prior to the commencement of development.

**Soil Stripping, Handling and Storage**

83. No topsoil, subsoil or mound forming material shall be imported to the application site at any time except with the prior written approval of the Mineral Planning Authority.

84. No plant or vehicles shall cross any area of unstripped topsoil or subsoil except where such trafficking is essential and unavoidable for the purposes of undertaking the permitted operations.

85. No movement of topsoil shall occur during the months of October to March (inclusive) except for the construction of permanent or temporary hard standing, roads, foundations; or where the topsoil is in a dry condition and only with the prior written approval of the Mineral Planning Authority.

86. No part of the application site shall be excavated or traversed by heavy vehicles or machinery (except as necessary to strip that part of topsoil or subsoil) or used for a road or for the stationing of plant or buildings, or storage or subsoil, until all available topsoil has been stripped from that part.

87. All topsoil and subsoil shall be stored in separate mounds which:
   i. Shall be located in specified positions previously agreed in writing with the Mineral Planning Authority;
   ii. Shall be constructed with only the minimum amount of compaction necessary to ensure stability and so shaped to avoid the collection of water in surface undulations;
   iii. Top soil shall not be stored in mounds that exceed a height of 2m above surrounding ground level;
iv. Subsoil shall not be stored in mounds that exceed a height of 3m above ground level;
v. Shall not be traversed by heavy vehicles or machinery except where essential for purposes of mound construction or maintenance;
vi. Shall not be subsequently disturbed until required for restoration unless otherwise agreed in writing with the Mineral Planning Authority.

88. All storage mounds that will remain in situ for more than three months shall be seeded with a grass seed mix that has previously been agreed in writing with the Mineral Planning Authority.

**Restoration**

89. Except where otherwise previously agreed in writing with the Mineral Planning Authority restoration shall be carried out such that:

i. After replacement of topsoil and subsoil and after settlement the contours marry in with those of the surrounding land;

ii. The land is free from ponding and capable of receiving an effective artificial under-drainage system.

90. Prior to re-spreading of subsoil or topsoil the upper 500mm of the surface shall be ripped at a spacing of 500mm or closer to remove rock, stone, boulder, wire rope, cable or other foreign objects or compacted layers capable of impeding normal land drainage operations including mole ploughing or sub-soiling.

91. Stones, materials and objects which exceed 200mm in any dimension and occur on the surface of the ripped and loosened ground shall be removed from the site or buried at a depth of not less that 2 metres below the final pre-settlement contours.

92. The replacement of topsoil shall not commence until the Mineral Planning Authority has been notified that condition 90 above has been fulfilled and has been given an opportunity of at least two working days to inspect the completed sub-soiling works. Topsoil shall only be re-spread when it is in a suitably dry and friable condition.

93. The re-spread topsoil shall not have a lower agricultural land classification than that notified to the Mineral Planning Authority, in accordance with condition 53, and shall be ripped or loosened:

i. To provide loosening equivalent to a single line pass at a spacing of 500mm or closer;

ii. To full depth of the topsoil plus 100mm; and any loosened non-soil making material, rock, boulder or larger stone lying on the loosened topsoil surface and greater than 100mm in any dimension shall be removed from the site or buried at a depth not less than 2 metres below the final settled contours,

94. The Mineral Planning Authority shall be notified in writing within 2 working days of condition 93 above being complied with and shall be given an opportunity to inspect the completed works before the commencement of cultivation operations.

**Aftercare**
95. All areas restored pursuant to conditions 88 to 93 shall be subject to aftercare for a five year period. This period shall commence on the date that certification in writing has been made by the Mineral Planning Authority of the completion of restoration, as defined in this permission.

96. An aftercare scheme shall be submitted to the Mineral Planning Authority for approval in writing, at least 3 months before the spreading of subsoil commences. The scheme shall outline the land management steps to be taken to establish and maintain a satisfactory sward.

97. Before 1 March, and every subsequent anniversary during the 5 year aftercare period, the Mineral Planning Authority, owners or occupiers shall be provided with a scheme and programme containing the following for the written approval of the Mineral Planning Authority:

   i. Proposals for managing this land in accordance with good husbandry including planting, cultivation, seeding, fertilising, draining, watering and otherwise treating the land for the forthcoming 12 months;

   ii. A record of aftercare operations carried out on the land during the previous 21 months.

98. Before 1 May of every year through the 5 year aftercare period, unless the Mineral Planning Authority agrees otherwise in writing, a site meeting shall be arranged by the site operator to discuss and agree the proposals prepared in accordance with condition 97 above. This meeting shall be attended by representatives of the Mineral Planning Authority and person(s) responsible for undertaking the aftercare steps.

Permitted Development Restriction

99. Notwithstanding the provisions of the Town and Country Planning (General Permitted Development) Order 1995, Schedule 2, Part 25 (or any order revoking and re-enacting that order with or without modification) no installation of a telecommunications microwave antenna or any structure intended for the support of a telecommunications microwave antenna shall be erected within the site, except where required in connection with the operation of the facility.

Electricity Lines

100. Prior to the commencement of construction of the gas storage infrastructure a scheme for the routeing underground of all electrical conduits which are intended to serve the gas storage facility shall be submitted to, and approved in writing by, the Mineral Planning Authority. The approved scheme shall be carried out in its entirety.

Prior Approval

101. With respect to any condition that requires the prior written approval of the Mineral Planning Authority, the schemes and measures thereby approved shall be carried out in accordance with that approval unless subsequently otherwise approved in writing by the Mineral Planning Authority.
19.1.2 The list of conditions set out in Doc. CD72d also included a series of definitions of terms used in the conditions.

19.1.3 In relation to the location of the proposed Brine Diffuser, Mr Pailey proposed the following condition:

‘When seeking brine discharge consent to the Irish Sea the Developer shall agree with the Environment Agency an appropriate discharge location which shall be outside the boundaries of the proposed Liverpool Bay SPA’ (Doc.CD/72c).

19.2 Hazardous Substance Consent Appeal Draft Conditions

19.2.1 The draft HSC conditions as modified following discussion at the inquiry are set out in document CD/78r. The conditions as agreed between CGSL and LCC were as follows:

1. Prior to the storage of gas within each cavity, the Hazardous Substance Authority be provided with:
   a) A copy of the sonar surveys, overlain on a plan of the area of Hazardous Substance Consent showing the relationship of the cavities and the boundaries of the site.
   b) A report on the results, of the sonar surveys, plus non-technical summary of the cavity validation procedures. Cavity validation procedures will include a summary of the following aspects throughout the leaching period.
      i. Mass balance of air, water and brine throughout the leaching period.
      ii. Records of volumes, pressure and inlet/outlet temperatures indicating any change from normal operating conditions.
      iii. Seven day pressure tests of the casing and cavity at maximum cavity storage pressure.
      iv. Casing pressure test.
      v. Cement bond log of the casing.
      vi. Final sonar survey.

2. The Hazardous Substance Authority will be provided with an annual monitoring report with the following details:
   a) The maximum and minimum volumes of gas stored and a summary of the gas input and output throughout the year.
   b) A copy of the most recent sonar survey including the position of each cavity overlain on the Hazardous Substance Consent plan.
   c) A report and non-technical summary of cavity monitoring procedures and their results indicating the safety and integrity of the gas storage. Cavity monitoring procedures will include the following aspects-
      i. Cavity pressure and unpredicted changes in pressure
      ii. Daily gas stock balance and inventory
      iii. Precise level surveys

3. Revalidation procedures will be carried out at intervals to be agreed within 6 months of the assessment of the COMAH Safety Report by the Health and Safety
Executive, or implemented in the event of any significant abnormalities in the monitoring parameters. Revalidation will include:

1. Sonar surveys
2. The ten year summary of the monitoring procedures together with the annual report.

4. Prior to the storage of natural gas in any of the caverns a risk assessment shall be carried out to determine the need for fire appliances to reach specific areas of the site. The assessment shall identify the locations and the necessary standards of access to facilitate attendance by fire appliances and or any other emergency vehicles.

5. The wellheads shall be located as shown on drawing no. A.GSP.0600010 Rev 7 - Fig 7b Preesall Master Plan to planning application 02/04/1415 unless otherwise agreed in writing with the Hazardous Substance Authority.

6. The wellheads shall not exceed a height of 2 metres above finished ground level.

7. The hazardous substance shall not be kept or used other than in accordance with the application particulars provided in Form HM1 and Plan C.3600.0300003 Rev 2 nor outside the areas marked for storage and use of the substances on the said plan which forms part of the Hazardous Substance Consent application and shall not exceed 1.2 million tonnes of natural gas.

8. The wellhead gas completion internal diameter shall not exceed 244 mm or not exceed the diameter of available sub surface safety valves, unless otherwise agreed in writing with the Hazardous substance Authority.

9. The gas manifold pipelines connecting the wellhead feeder pipes to the compressor station shall not exceed 1067 mm in outside diameter; the pipes shall be 1067 mm X70 class with 18 mm wall thickness; the maximum allowable operating pressure shall not exceed 78 bar.

10. The wellhead feeder pipes shall not exceed 324 mm outside diameter; the pipes shall be 3005 mm X42 class with 110 mm wall thickness.

11. The maximum operating pressures of any of the natural gas storage caverns shall not exceed those pressures identified in the wellhead areas identified in the technical data on Plan C.3600.0300003 Rev 2.

12. No wellhead shall be located within the following separation distances of an existing dwelling (such dwelling to include caravans):

<table>
<thead>
<tr>
<th>Wellhead Area</th>
<th>Separation Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>150</td>
</tr>
<tr>
<td>2</td>
<td>135</td>
</tr>
<tr>
<td>3</td>
<td>145</td>
</tr>
<tr>
<td>4</td>
<td>140</td>
</tr>
<tr>
<td>5</td>
<td>120</td>
</tr>
</tbody>
</table>

13. The facility shall be designed, constructed and operated in accordance with recognised standards to include at least but not limited to BS EN 1918 parts 3 and 5,
and any other international standards including API (American Petroleum Institute) RP 1114 and API 1115.

**NB. Inspector’s Note**

Condition 10 contained numerical errors. 3005mm should read 305mm. 110mm wall thickness should read 11mm (Doc.CD/26a - Key - Technical Data).

19.2.2 For HSE it was indicated that the plan referred to in condition no.7 (Doc.CD/26a), which set out 5 separate zones, allowed for flexibility in the location of the caverns measured from the well-head zones.

19.2.3 For LCC it was emphasized that the purpose of the HSC controls, as set out in circular 4/2000, was to ensure that residual risks were properly addressed. This was not a case solely concerned with the integrity of a pressure vessel. There was considerable uncertainty with respect to the geology of the area. There was also considerable concern at the possibility of gas migration.

19.3 **Unilateral Undertaking**

19.3.1 During the inquiry, discussions had taken place between LCC and CGSL with a view to entering into an agreement under S.106 of the 1990 Act. No agreement was reached, but the 16 March 2006 draft of the document had been the subject of discussion during the conditions sessions of the inquiry.

19.3.2 At the close of the inquiry a signed Unilateral Undertaking (UU) (CD/81) was submitted by CGSL. The ‘land’ the subject of the UU is highlighted in yellow on the plan following page 2 of the UU. The schedule of obligations of CGSL is as follows:

1. **Cavern Aftercare Programme and Bond**

1.1 Prior to the removal of the cushion gas from each cavern constructed pursuant to the Planning Permission, a scheme and programme for the aftercare of that cavern for a period of 25 years following the decommissioning of the cavern shall be submitted to the Council for their approval ("the Cavern Aftercare Programme").

1.2 The Cavern Aftercare Programme shall provide for:
   (a) the monitoring of the cavern to be decommissioned in order to record its stability
   (b) the steps to be undertaken if the cavern were to become unstable

1.3 CGSL shall carry out the Cavern Aftercare Programme for each cavern in accordance with the terms of that Programme.

1.4 Prior to the removal of the cushion gas from each cavern constructed pursuant to the Planning Permission, CGSL shall provide the Council with a bond ("the Cavern Aftercare Bond"), for a sum estimated by CGSL as being the reasonable cost of carrying out the Cavern Aftercare Programme for that cavern.

1.5 If CGSL fail to carry out the Cavern Aftercare Programme for any cavern then the Council may itself carry out the Cavern Aftercare Programme and recover the cost of so doing from the relevant Cavern Aftercare Bond.
2 Above Ground Infrastructure Decommissioning And Bond

2.1 Prior to the removal of the cushion gas from the last cavern constructed pursuant to the Planning Permission, a scheme and programme for the removal of all remaining above ground infrastructure constructed pursuant to the Planning Permission shall be submitted to the Council for their approval ("the Above Ground Infrastructure Decommissioning Programme").

2.2 CGSL shall carry out the Above Ground Infrastructure Decommissioning Programme in accordance with the terms of that Programme.

2.3 Prior to the removal of the cushion gas from the last cavern constructed pursuant to the Planning Permission, CGSL shall provide the Council with a bond ("the Above Ground Infrastructure Decommissioning Bond"), for a sum estimated by CGSL as being the reasonable cost of carrying out the Above Ground Infrastructure Decommissioning Programme.

2.4 If CGSL fail to carry out the Above Ground Infrastructure Decommissioning Programme then the Council may itself carry out the Above Ground Infrastructure Decommissioning Programme and recover the cost of so doing from the Above Ground Infrastructure Decommissioning Bond.

3 Lorry Routeing

3.1 Prior to Commencement of Development a proposal for the routeing of construction vehicles associated with the Development ("the Construction Routeing Proposal") shall be submitted to the Council for their approval.

3.2 All construction vehicles associated with Development shall use only those routes specified in the Construction Routeing Proposal, unless otherwise agreed in writing with the Council.

3.3 Prior to the commencement of the Above Ground Infrastructure Decommissioning Programme a proposal for the routeing of vehicles associated with the Above Ground Infrastructure Decommissioning Programme ("the Decommissioning Routeing Proposal") shall be submitted to and approved by the Council.

3.4 All vehicles associated with the Above Ground Infrastructure Decommissioning Programme shall use only those routes specified in the Decommissioning Routeing Proposal unless otherwise agreed in writing with the Council.

4 The Heads Re-Alignment Project

4.1 Prior to the first commercial storage of natural gas in any cavern created pursuant to the Planning Permission, a scheme for the establishment and
management of additional marshland on the Heads ("the Heads Re-alignment Project") shall be submitted to and approved in writing by the Council.

4.2 Subject to the grant of any necessary permissions and/or consents from any statutory body (if any) required for the works involved, CGSL will carry out the works set out in the proposals as approved by the Council and in accordance with a timescale approved by the Council.

5 Training Of The Local Emergency Services

5.1 Prior to the first commercial storage of natural gas in any cavern created pursuant to the Planning Permission, a scheme to familiarise the local emergency services with the Development and to provide appropriate training shall be submitted to and agreed with the Council ("the Training Scheme").

5.2 The Training Scheme will be carried out at CGSL’s own cost in accordance with the timescales set out in the Training Scheme.

6 Residents’ Liaison Committee

6.1 Prior to Commencement of Development, a residents' liaison committee shall be established in accordance with a scheme submitted to and approved by the Council ("the Residents Liaison Committee").

6.2 The Residents’ Liaison Committee shall continue to meet in accordance with the scheme approved by the Council, during the construction and operation of the Development.

19.3.3 The terms of the schedule to the draft obligation were similar, but not identical, to the terms of the schedule to the UU set out above. Item nos. below refer to the draft S.106 schedule but are the same as the UU unless otherwise specified. The variations were as follows.

Item 1.1 Decommissioning of replaced by removal of cushion gas from.

Item 1.5 Omitted from the UU. This item related to arbitration in the event of failure to agree the sum or form of the Cavern Aftercare Bond.

Item 1.6 Renumber 1.5 in the UU.

Item 2.1 Decommissioning of replaced by removal of cushion gas from.

Item 2.3 Decommissioning of replaced by removal of cushion gas from and delete and agreed with the Council.

Item 2.4 Omitted from the UU. This item related to arbitration in the event of failure to agree the sum or form of the Above Ground Infrastructure Decommissioning Programme Bond

Item 2.5 Renumber 2.4. in the UU.
Item 3.1 (“the Routeing Proposal) shall be submitted to and approved by the Council replaced by (“the Construction Routeing Proposal”) shall be submitted to the Council for their approval.

Item 3.2 Construction added before Routeing Proposal

NB. Items 3.3 and 3.4 of the UU were not previously contained in the draft S.106.

Item 4.2 Add and in accordance with a timescale approved by the Council.

Matters at issue with respect to the Schedule to the Draft S.106 Agreement

General Cases for LCC, CGSL and Mr & Mrs Jackson

19.3.4 LCC did not allege that the existence of agricultural tenancies meant that CGSL did not have sufficient title to enter into the s.106 obligation. However it was clear that CGSL and its tenants clearly took a different view as to their respective titles with the clear prospect for future dispute.

19.3.5 Mr Grimes had made it clear that it would be wrong for the decision maker to do other than make sure that there would be an enforceable mechanism in place to ensure that the site would be cleared upon completion of the operations, that the surface would be properly restored and that the caverns would be properly monitored, and if necessary measures to remedy any extreme and unexpected eventuality. He had also accepted that that could mean a very large and long term financial responsibility would be needed.

19.3.6 The mechanism promulgated in the s.106 obligation was innovative. No monies would be payable until the scheme had been decommissioned, and when the cushion gas (which had not been defined in the undertaking) would be used to provide a bond (the amount of which would be set by CGSL alone) to enable after care to be dealt with. Moreover the area of land over which planning permission was sought for gas cavern creation included large areas not owned by CGSL.

19.3.7 The former lead to an interesting question of enforceability as to what would happen if at the end of the operational life of the project the successor in title to CGSL decides to improperly sell on the cushion gas and then decamp from the site? It was unclear as to against what an injunction to enforce the s.106 agreement could bite. The effect of the proposal was to require the MPA to police the decommissioning process because the ‘bond’ would not become payable until the very end of the process.

19.3.8 Of more concern was the fact that the bond would be set by CGSL alone in order to fund a programme which was to be submitted by CGSL to the MPA. Paragraph 1.1 of the schedule required CGSL to submit the scheme to the MPA for its approval. The deficiency of the mechanism is exposed by the simple question – what if the submitted programme was rejected by the MPA? The undertaking did not impose an obligation upon the MPA to approve anything, but more importantly paragraph 1.3 of the schedule merely referred to the Aftercare Programme not such programme as has been approved by the MPA.

19.3.9 Even if the operator at the time pursued the route of propriety there remained the question as to what would happen if the bond was insufficient, and what would happen if the monitoring period was inadequate? The caverns would be permanent features,
some of which would lie beneath the Estuary. Whilst Professor Rokahr may well design caverns that would be stable and gas tight during the operational period, salt creep may be unpredictable and all parties recognised a need for monitoring just in case. It was LCC’s position that whatever arbitrary period was chosen to monitor there remained some risk that it may not be sufficient. Moreover, however well designed the caverns were there remained some risk that the unexpected may occur (whether catastrophic collapse or simply excessive creep). At this point in time all that could be said with certainty was that there was some risk that what was being proposed may not be sufficient. A mere 25 year aftercare period, which would be much less than the likely operational life of the caverns, was simply not long enough.

19.3.10 That was not a flight of fancy. Mr Heitmann properly pointed out that after care was one of the hot topics in the UGS industry at the moment, and that intellectually he favoured the fill solution. That was not being proposed here. There was therefore no guarantee in this case, and the degree to which risk was minimised was dependent upon the robustness of what was contained within the s.106 obligation. It was not robust enough to provide the degree of comfort necessary given the inherent sensitivity of this area and the current lack of knowledge of sub-surface conditions. If the amount of the bond was underestimated (either deliberately or inadvertently by CGSL or its successors) then it was no comfort to the Council tax payers of Lancashire that the costs of carrying out the works in default were to be recoverable from an inadequate bond.

19.3.11 There were very good reasons why the initial drafts s.106 agreement recognised that the amount of any such bond should be determined by a third party. Even if an arbitration could not be imposed upon the MPA as a non-party to a unilateral undertaking it would still have been open to CGSL to include some mechanism for independent scrutiny of the quantum of the bond. That it has not done so tells against what is proposed.

19.3.12 Similar points applied in relation to the ‘Above ground infrastructure decommissioning bond’. Additionally part 2 of the schedule appeared to only deal with final decommissioning and not interim decommissioning. Where was the funding to come from if, contrary to CGSL’s expectation, the cavern washing infrastructure was installed but then commercially realistic operational caverns could not then be created (e.g. because the nitrogen test gas could not be retained), or because further investigations reveal only limited areas where caverns could be safely created?

19.3.13 It was no answer to these concerns that a similar s.106 obligation had been not required at Byley. Firstly, ‘so what’? If an obligation of this type was needed (which it plainly was) then it hardly mattered that one was incorrectly not required elsewhere; secondly, there were obvious sensitivities (ecological) and differences (geological) between Preesall and Byley.

19.3.14 Even if all of the remainder of LCC’s concerns were rejected then the failure to provide an adequate means to ensure aftercare and decommissioning should of itself warrant the dismissal of these appeals. It was to be noted that this was not a matter which could be abdicated to COMAH because once the volume of stored gas fell below the COMAH lower tier threshold then HSE’s interest in the site would cease.

Cavern Aftercare Programme and Bond, and Above-ground Infrastructure Decommissioning and Bond
19.3.15 LCC were concerned that the provision and quantification of the bond would take place just before decommissioning. It was normal practice for bonds to be provided at the commencement of development. The amount was intended to ensure that if something went wrong it would not have a long term detrimental impact. The value of the cushion gas was currently unknowable, as were possible remediation costs. Within the inter-tidal area there was no knowledge of the possible cost of collapse remediation.

19.3.16 LCC accepted that the proposed end of monitoring by CGSL could be some 55 years hence and that would have provided some monitoring, but long-term monitoring was needed. A characteristic of salt was that it could ‘creep’. There was deep skepticism that 25 years would be sufficient to determine the long-term stability of a decommissioned cavern. There was also uncertainty as to what would happen to the unspent portion of the bond after 25 years. A single bond covering the whole development was preferable to a series of bonds based on one bond per cavern. The final cavern cushion gas would also have to fund the Above Ground Infrastructure Decommissioning Bond.

19.3.17 Clause 1.2(a) was insufficiently precise, and LCC would not wish to be in dispute at some time in the future as to what was intended to be monitored and how.

19.3.18 LCC required Bonds from time to time in connection with development proposals. They were justified in this case because of the limited knowledge and deep uncertainty surrounding the geological context for this proposal. The issue of interim abandonment, ie. If gas storage did not go ahead following cavern construction, was nowhere addressed by the obligation.

19.3.19 Mr & Mrs Jackson noted that the voids would remain indefinitely. On the basis of the national policy that ‘the polluter pays’, responsibility for the long term maintenance of the caverns should remain with CGSL indefinitely.

19.3.20 CGSL saw no reason why the scheme should carry the cost of the Bonds for 30 years prior to their being required to fund works. It would not be possible to specify or cost at this time what would need to be done, nor was it possible to predict the level of inflation over that period. The principle of the provision of a bond at the start of a gas storage scheme would be a matter of interest for the whole of the gas storage industry. If it became necessary to have a bond at the outset it would have a national impact.

19.3.21 CGSL consider a 25-year aftercare period would be long enough to establish that a cavern was safe. That would be some 55 years or more from when the permission would have been granted. No such undertaking had been given with respect to any other brine working or other storage cavern, such as Byley or Aldborough. This indicated genuine commitment by CGSL.

19.3.22 LCC had not suggested any period in place of the 25 years. Subsidence due to gas ‘cycling’ was expected to be negligible. The more recent ICI caverns had been in existence for over 40 years.

Lorry Routing

19.3.23 LCC sought to apply the lorry routing to all construction traffic, all decommissioning traffic and HGVs during the operational phase.
19.3.24 Mr & Mrs Jackson considered that all traffic should be subject to the routing agreement.

19.3.25 CGSL saw no reason to apply it to non-construction traffic, but accepted that it could be applied to decommissioning traffic. Once development was operational, employee traffic would be going to their place of work. Other ancillary collections, such as refuse, and occasional maintenance deliveries, did not require specific routing. It would not be possible to ensure that a small operational delivery was not made by a large lorry as a part load.

The Heads Realignment

19.3.26 CGSL recognized that the establishment and management of additional marshland on the Heads (The Heads Re-alignment Project) may require permissions and consents from EA and/or EN as well as LCC as LPA. The scheme was not necessary, but was beneficial and there was a reasonable prospect that it could take place.

19.3.27 LCC was concerned at the absence of any specified timescale for the work to be undertaken although it was noted that the absence of a specific trigger for implementation was addressed at para.4.2 to the schedule to the UU by the inclusion of a reference to an approved timescale.

Response by CGSL to the case for LCC

19.3.28 There was no justification for the project to carry the costs of the provision of a bond from the commencement of the development when the bond would only be drawn on after some 30 years. This would be a major disincentive for this and other similar developments. Moreover, it would not be possible to specify now what the appropriate sum for the bond would be as the works necessary could not yet be specified and the likely level of inflation over the period was also unknown. No such bond had been required at Byley.

19.3.29 While LCC was concerned at an after-care period limited to 25 years it had not suggested an alternative one. 25 years after decommissioning would be some 55 years from now. The more modern ICI caverns had been monitored for some 40 years and there was no sign of collapse. Problems resulting from the Victorian approach to salt mining should not be used as a basis for justifying a more stringent aftercare period.

19.3.30 It was not accepted that there should be a single bond for the site. Multiple bonds tied to individual caverns would result in a series of bonds, each of 25 years, triggered by each individual cavern decommissioning.

Case for CGSL concerning Agricultural Tenancies on the appeal site

19.3.31 It was CGSL’s understanding that although the CGSL land was subject to a number of farm tenancies, they were all regulated by the Agricultural Holdings Act 1988. Those tenancies contained early resumption rights which were operable pursuant to Case B and entitled CGSL to determine the tenancies where a valid planning permission had been obtained. That included the tenancies relating to the Jacksons’ land. On that basis, it was confirmed by those acting for CGSL that, so far as they were aware, the CGSL land was free from any farm tenancies that could prevent the obligations set out in the unilateral undertaking from being carried out (Doc.LCC/O6).
Case for Mr & Mrs Jackson concerning Agricultural Tenancies at Height O’th’ Hill Farm and Little Height O’th’ Hill Farm

19.3.32 Both farms were sold by ICI subject to Mr Jackson’s Agricultural Holding Act tenancies. Clause 4 in both tenancy agreements stated that ‘There are excepted and reserved to the Landlords or to the persons entitled thereto:-

(A) Mines and Minerals. – All mines and minerals including brine rock salt petroleum and natural gas iron and stone marl gravel sand and clay peat and water in or under the said land with full powers (including power to let down the surface) for the Landlords and their Lessees Licensees and others by their permission to search for win work pump quarry get and take away the same and to occupy any part of the surface of the said land for such purposes but paying to the Tenant reasonable compensation for all damage occasioned by the exercise of such powers, and

(B) Right to resume possession for non-agricultural purposes. – The right on giving two calendar months’ previous notice in writing to the Tenant for the Landlords at any time to resume possession of any part or parts of the said land for any of the purposes set out in Section 31 of the Agricultural Holdings Act 1948 or for the purpose of building recreation mining or tipping or for any other purpose connected with the business or manufactures carried on for the time being by the Landlords or for any other non-agricultural use for which planning permission has been granted excluding however from all of the above purposes the use of the land for agriculture and in the event of such right being exercised the Landlords will pay compensation to the Tenant in accordance with the provisions of Section 60 of the said Act and will make a reasonable reduction in the rent in proportion to the extent of the land taken out of the tenancy in accordance with Section 33 of the Act.”

19.3.33 The exceptions and reservations in favour of the Landlords in clause 4(A) were quite extensive but only related to the right to “search for win work pump quarry get and take away” the various materials and substances listed earlier in the clause and which were naturally found in or under the land in question.

19.3.34 Clause 4(B) gave the Landlords the right to resume possession of any part of the holding for virtually any purpose on the service of two months’ notice to the Tenant. The rights referred to in section 31 of the Agricultural Holdings Act 1948 included the right to adjust boundaries between agricultural units or to amalgamate agricultural units, the planting of trees and various other non-agricultural uses. However the right to resume possession under Clause 4(B) was subject to one major condition, namely, ‘that the land cannot be taken back by the Landlords from the Tenant for use for agricultural purposes’.

19.3.35 Notwithstanding the terms of Clause 4 of each of the tenancy agreements, the Landlords could serve a notice to quit on Mr Jackson under the provisions of the Agricultural Holdings Act 1986. He would have the right to serve a counter-notice rendering the notice to quit ineffective unless the consent of the Agricultural Land Tribunal was first obtained. The right to serve a counter-notice was excluded in a number of “Cases” set out in Schedule 3 of the 1986 Act. Known as “Cases A to H”, “Case B” could be relevant in this instance.

19.3.36 A “Case B” notice was used where land was required by the Landlords for a use, other than agriculture, for which planning permission has been granted or was deemed to be
granted. It could not be legally used by Landlords to obtain possession of land which was to remain in agricultural use.

19.3.37 CGSL had put forward a series of broad principles which it intended to apply to the development of an ecological management plan to be adopted across its land-holdings within and close to the application area. Those principles included the carrying out of various management practices for high grade habitat enhancement measures and specific reference was made by CGSL to the provision by it of a fund to be made available to its tenant farmers to enable the tenant farmers to carry out those management practices.

19.3.38 It was clear that while some of the land included in existing agricultural tenancies would be taken back in hand from the tenants by CGSL for construction purposes, CGSL envisaged that their tenant farmers would continue to farm the remaining agricultural land included in their farm tenancies and that some or all of that land would be included within the CGSL ecological management plan.

19.3.39 CGSL did not have the legal right to make their tenant farmers adopt or comply with the terms of the ecological management plan and the plan could not therefore be delivered by CGSL unilaterally. It was entirely dependant on the voluntary co-operation of the farm tenants.

19.3.40 CGSL had made no approach to Mr Jacks on, and it was understood that CGSL had made no approach to any of its other agricultural tenants, to discuss the terms of the proposed ecological management plan and to see whether the tenants would agree to cooperate with CGSL in the implementation of such a plan.

19.3.41 There were various other rights reserved to the Landlords within the tenancy agreements, including in Clause 4(E) the right to lay pipes, etc and in Clause 4(F) rights of entry for any purpose connected with the exceptions and reservations contained within Clause 4 of the tenancy agreements or for any other reasonable purpose, but that did not include for any agricultural activity.

19.3.42 In Clause 6(A) of each of Mr Jackson’s tenancy agreements his Landlords agree “That the Tenant paying the rent and observing and performing all the agreements on his part herein contained may quietly hold and enjoy the farm during the tenancy in accordance with the provisions of this Agreement without any interruption by the Landlords or any person or persons lawfully claiming under them.”

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20. Inspector’s Conclusions and Recommendations

20.1 Preamble

20.1.1 In my conclusions, the numbers in [ ] brackets indicate the preceding paragraphs or documents where the relevant information can be found. References to the Assessors Report are shown thus [ARx.x].

20.1.2 The structure of my conclusions reflects the range of matters addressed at the inquiry as discussed at the pre-Inquiry meetings (PIMs) and set out at para.1.2 of this report. I set out the relevant principal considerations under each of the matters addressed. I address at Section 20.13 matters relating to the failure to grant hazardous substances consent.

20.1.3 Environmental Statements and Supplementary Environmental Statements were submitted in part with the application and in part as a result of requests for additional environmental information under Regulation 19 of the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999. I have taken account of this environmental information in arriving at my conclusions and recommendations.

20.2 Need, alternatives and principle of development

20.2.1 The principal considerations are:

Whether there is a national need for more gas storage;

Whether there is a need for more underground gas storage;

Whether there is specifically a need for the appeal proposal and/or whether there are alternatives.

Whether there is a national need for more gas storage

20.2.2 Security of gas supply is a matter of national importance, and was accepted as such by the SsoS in the Byley decision [8.1.3]. Security of energy supplies is also one of the four goals of national energy policy as restated in the Energy Review (ER) [CD/58]. Although there was some debate as to how energy needs should be met, particularly in relation to interruptible gas contracts, there was no suggestion at the inquiry that energy needs should not be met. LCC emphasized that it did not seek to ‘go behind’ the advice of DTI on the need for additional gas storage in the UK and fully accepted that if permission was granted for the appeal proposals they would, if implemented, make a valuable contribution to meeting the need for addition gas storage in the UK. [8.2.1]

20.2.3 In relation to domestic demand, an interruption of supply on a wide scale would bring with it extremely serious consequences. These would include both the substantial manpower resources necessary to ensure the safe re-commissioning of domestic appliances, but also, from experience elsewhere, the likely timescale that would be entailed before dwellings were again able to be heated; potentially during a period of extreme cold with its health implications for the old and vulnerable.

20.2.4 For this reason, security of supply to the domestic market would be maintained in preference firstly to ‘interruptible’ industrial contracts, and secondly, to major industrial users including power stations. This latter shut-down would, of course, have
implications for domestic gas consumers as most domestic gas appliances require electricity in order to operate pump and control systems.

20.2.5 The UK is currently at a transitional phase in its supply of and demands for gas and is increasingly becoming a net importer. Gross imports amounted to almost 13% of total demand in 2004 [CD/58 pg.35]. The ER also noted that imports could be meeting some 40% of demand by 2010, and 90% by 2020. Gas is currently imported in 3 ways; 70% direct from Norway, the inter-connector via Belgium and LNG to the Isle of Grain terminal. At the time of the inquiry a new pipeline from Norway was expected to open in 2006 and ER noted that contracts were in place for at least another 10 years. A second link to Europe (BBL) was also expected to open in late 2006. The energy review anticipates that there will be sufficient sources of supply to meet UK annual demand for gas in the medium term [CD/58 pg.36 Chart 13].

20.2.6 Historically, UK continental shelf reserves (UKCS) have acted as both a source of supply and, by way of variation in rates of release in the southern North Sea and Irish Sea, a means of balancing seasonal peak demand. As a consequence, storage as a percentage of UK gas demand, at some 4%, has been relatively low when compared with France (25%), Germany (21%) and Italy (18%). Future supplies of gas to the UK will be primarily from 3 sources; UKCS, LNG imports and UK-landed via pipelines. Notwithstanding the current investment in pipeline and inter-connector capacity between the UK and mainland Europe (including Norway), it is unrealistic to contemplate that these 3 types of sources would have the capacity to meet peak seasonal demand. Seasonal variation in demand, resulting mainly from changes in temperature, can range from 50% of annual average in summer to 190% on a peak winter day. There are also significant daily variations in demand. In the winter period 1st October 2004 – 31st March 2005 daily demand varied from below 250Mm³/day to over 400Mm³/day [8.1.31].

20.2.7 There are both economic and technical reasons why future sources of gas will be less able to directly provide for this variation. In view of the high cost of providing this type of infrastructure, pipe-line over capacity of this scale i.e. 190%, would not be provided. To do so would substantially increase gas transport costs, necessary to pay for the additional infrastructure capacity, while providing a capacity which would not be needed for much of the year. The economics of the gas market have also changed, and continue to change. Historic long-term contracts, with demand/supply flexibility, are being replaced by shorter term contracts. It is to be noted that monthly spot contracts generally have little or no flexibility, and unless the purchaser has access to storage capacity, the volumes of gas bought will more closely reflect the volumes that will, with a reasonable degree of certainty, be demanded by consumers on a daily basis throughout that contract period. This will obviously be below peak daily demand during that period. As an indication of the scale of this variation, even in winter, demand dropped by some 11% on 14th January 2005, only to rise by some 11% the following day. Daily spot contracts suffer from 2 obvious and significant disadvantages when attempting to meet winter peak demand. Firstly, as cold periods in the UK are likely to occur at times of cold temperatures in Europe there will be no certainty that gas will be available. Secondly, that which is available is likely to be expensive [CD/20 para.iii].

33 That has subsequently happened.
20.2.8 On this latter point, while I note PWG’s assertion that the Government would have sorted out any problems with the operation of the inter-connector by 2012/13 [8.3.9] the fact that the inter-connector may well be physically available would be no guarantee that it would be used in a particular way at any particular time, and in view of the national policy of reliance on the operation of a free competitive market, reaffirmed in the Gas Supply Infrastructure Statement of May 2006 [8.5 - Doc.IPI/2], the Government would be unable to require its operation in any particular way.

20.2.9 Greater storage capacity nationally would result in the UK being less vulnerable to short-term fluctuations in demand and supply, and that is reflected in both the national approach set out in the ER, and in the correspondence from DTI to LCC [8.1.10].

20.2.10 The suggestion that the UK could take advantage of storage facilities in Europe by either purchasing storage capacity, or gas from store, is only superficially attractive. Gas travels through pipelines at only some 20-25mph [Doc.CD/20 pg.2 para.2.iv]. At these speeds, storage in Europe would be much less able to satisfy daily variation. More importantly, it requires spare capacity in the inter-connectors at a time of the year when there may well be little spare capacity [Doc.CD/20 pg.2 para.2.iii].

20.2.11 The appellants take a more pessimistic view of future supply and demand compared with JESS 5, which is strongly supported by and forms the basis for the calculations put forward by PWG [8.3.7-11]. For CGSL it was argued that JESS underestimated likely growth in demand over the next decade, and they preferred the 2% growth rate anticipated by Transco. Improvements in efficiency in the use of gas in the past decade appear to have constrained the growth in demand. Future demand will continue to be affected by the extent to which those past levels of energy efficiency are and can be maintained. Increases in the cost of gas to consumers will tend to encourage continuing efficiency measures. In view of Transco’s role in ensuring the provision of sufficient infrastructure to meet demand, it is not surprising that it should make allowance for a higher level of growth in demand. However, that does not mean that the lower level anticipated in JESS 5 will be exceeded to any significant extent.

20.2.12 The likely contribution of LNG to meeting peak demand is, in my view, over-estimated by PWG. As noted on behalf of CGSL, LNG storage capacity is required initially in order to accommodate ship loads which are then released to the NTS; suitably blended where appropriate to ensure correct calorific value. It is not, however, a significant source of long term storage even though the annual supply of gas from this source is anticipated to increase significantly. It is a feature of LNG storage that its temperature rises slowly over time resulting in a degree of continuous ‘boil-off’. The gas produced by this re-gasification process has to be released to the NTS [CGS/1/5 para. 24]. Although capable of speedy release to the NTS there is no guarantee that the reserves would necessarily be available at times of peak demand, or that companies operating such facilities would wish to purchase LNG around times with potentially high spot prices. When re-gasified it is, however, capable of being stored in UGS facilities.

20.2.13 Security of supply is also dependant on the ability of the system to continue to supply gas when certain elements of the infrastructure are not available for technical reasons. A particular example in Winter 2005/6 was the closing of the Rough Gas Field Storage facility due to a fire. Similar technical disruptions can affect long-distance pipeline supplies. For this reason it is the SoSs’ position that ‘In their opinion, it would be inappropriate and unrealistic to require the establishment of absolute certainty both in predicting a shortfall in supply, and in establishing need for particular types of
proposals to satisfy security of supply. Overall, the Secretaries of State consider that the available information is sufficient to demonstrate a significant likelihood of a supply-demand gap in the short to medium term. [8.1.3]. The decision on Byley was issued in May 2004 in the full knowledge of anticipated short term infrastructure improvements in the form of the new gas pipeline from Norway and improvements to UK-European inter-connector capacity, and there is nothing that has happened in the intervening period to suggest that that situation has changed.

20.2.14 On this issue I conclude that the evidence before the inquiry does not support PWG’s view that there is no need for additional gas storage in the UK.

Whether there is a need for more underground gas storage

20.2.15 The SoS for Trade and Industry has recently restated [Appendix C - Doc.IPI/2] that Government policy establishes broad objectives and, against the background of the free operation of a competitive market to ensure security of gas supply, leaves the private sector to make the commercial decisions to develop the infrastructure that can maintain and improve the reliability of energy supplies.

20.2.16 There is no national guidance as to the appropriate level of UGS to be provided in the UK. The energy review does note, however, that available storage in the UK is well below levels in France, Germany and Italy, and would remain so even if all currently planned UK storage facilities came on stream. Moreover, in their decision on the Byley case, it was stated that ‘In the opinion of the Secretaries of State, salt cavity gas storage is a type of storage that will assist with the security of supply and the proposed development is consistent with national energy policy. The Secretaries of State consider that this weighs in favour of the proposed development.’ [8.1.3]. It is recognized that while there is some limited demand-side flexibility, the much higher winter demand compared to summer requires the supply side to make specific provision for balancing the market to prevent supply failure [8.5 - Doc.IPI/2 - Statement Note para.23]. It remains the Government’s position [8.5 - Doc.IPI/2] that there is a clear national need for new gas storage infrastructure and it is actively encouraging the provision of additional gas storage capacity.

20.2.17 In the context of LNG being less suited, both technically and economically, for long term storage in above-ground vessels, the remaining options comprise UGS either in the form of purpose built caverns, or through the reuse of depleted oil and gas fields. On this issue I conclude that the need for additional gas storage will be met primarily by under-ground gas storage.

Whether there is a specific need for the appeal proposal and/or whether there are alternatives

20.2.18 CGSL has not looked at alternatives to this proposal because it argues that this capacity is needed along with other schemes coming forward [8.1.54]. With an increasing percentage of supply coming from non-UK sources, and UK sources becoming more distant from the locations of UK demand, on-shore storage which enables gas, which is slow-moving, to be available closer to markets when consumers require it, will be a clear benefit in balancing short-term swings in demand. This role has, in the past, been undertaken in part by the Morecambe gas field, and as that resource becomes depleted and ceases to fulfill that specific function the NTS capacity previously provided for that swing demand will become available to other gas sources [8.1.50].
20.2.19 The Preesall facility, at some 15km from Garstang, would be relatively close to the NTS. In addition, as a facility operating at pressures close to NTS operating pressure, it would be technically capable of ‘cycling’ capacity more speedily in response to changes in the supply of and demand for gas. However, at any one time that would be dependent on the remaining storage capacity available. This would be likely to be low at the end of any period of low gas prices. It would also depend on the price of available gas at the end of any period of release of gas from storage to meet swing demand and the contractual imperatives on suppliers having access to that storage capacity.

20.2.20 While obviously beneficial attributes of the appeal proposals they do not, of themselves, amount to a specific need for this particular proposal. Moreover, as noted elsewhere within this report [AR.8.3], while the relatively shallow salt deposits bring with them certain operating benefits they also bring particular disadvantages in terms of the ability to ensure the long term integrity and security of the facility without detriment to the surrounding environment.

20.2.21 The proposal seeks to store up to 1.2M tonnes of gas, and a proposal at this scale could make a significant contribution and addition to UK storage capacity. However, that level of capacity would take some 10 or more years to install, with initial gas injection beginning some 4 years after receipt of all construction permits [6.4]. The benefit of this scale of capacity would only be fully available in 2017 or beyond. More significantly, there is considerable doubt at this stage as to the practicality of achieving anywhere near this level of storage in the particular geological circumstances of the Preesall Salt Field [AR6.105; AR.7.12; AR7.17; AR.8.2 and AR8.3.2].

20.2.22 While it can be argued, in the context of a relatively low level of storage capacity compared to annual demand, that any increase in storage capacity would be of some benefit, in the absence of evidence as to the practically achievable levels of capacity here, it cannot reasonably be claimed that there is a particular need for this specific facility at Preesall. In arriving at this conclusion I have taken into account the fact that a facility with only some 25% of the capacity of the appeal proposal would still have greater capacity than the Byley facility [8.1.38].

20.2.23 PWG and others argued that as there are a number of other proposals under consideration which may come forward, the Appeal proposal was not necessary. A particular proposal noted was that canvassed by Stag Energy for UGS in the Irish Sea [8.3.13; 8.4.15]. While superficially attractive in that a) the caverns would be off-shore and well away from habitation and, b) it offered the prospect of the gas being landed via the existing pipeline and shore facilities of the Morecambe Bay field, that proposal is at a very early stage. At this point in time it would be appropriate to place only limited weight on the contribution that that proposal might make to UK capacity in the medium term. However, to suggest, as CGSL do, that such a proposal would have little prospect of technical success is not supported by those, such as DEFRA and DTI, who are actively addressing the need for new legislation to allow such off-shore projects to be brought forward [8.5 - Doc.IPI/2].

20.2.24 As noted above, Government policy does not define or specify a need for a particular facility in a particular location but, subject to appropriate regulation, leaves those decisions to the market. While there is an acknowledged need for more UGS, in the context of the uncertainties that underlie the suitability of the geology of the Preesall
Salt Field to accommodate the appeal proposal, that national need cannot be extrapolated to mean that there is a specific need for the appeal proposal.

20.3 Geology, storage technology, mining history

20.3.1 The principal considerations are:

Whether the information provided on the geological, hydrological and mining setting is sufficient at this stage to enable a decision to be made on the principle of the feasibility of the appeal proposal and hence the proposed land use;

Potential effect on proposed infrastructure from subsidence from existing caverns;

Potential effect of general subsidence and/or subsidence from cavern roof collapse on Hackensall STW;

Potential effect of subsidence from cavern roof collapse on proposed infrastructure

20.3.2 Matters relating to gas migration are considered in Section 20.4 below. The potential impacts of subsidence from cavern roof collapse on ecology and landscape are addressed in their respective sections 20.6 and 20.7 below.

Whether the information provided on the geological, hydrological and mining setting is sufficient at this stage to enable a decision to be made on the feasibility of the principle of the appeal proposal and hence the principle of the proposed land use.

20.3.3 The geological model and detailed report prepared by the BGS amounted to a refinement of the published geological map at a scale of 1:10,000 and its associated memoir. Dr Evans emphasised that the work undertaken with his colleagues did not amount to a site investigation, and that it was only fit for purpose at a scale of 1:10,000 with contour intervals of 100m. Also, that the model would benefit from further information, particularly in the area between seismic lines IELP-99-25 and CAN-97-G, where no drilling or seismic surveys had been carried out [AR6.38]. My Assessor concludes that the geological work undertaken so far can be described as a high quality geological ‘desk study’, suitable as a basis for the design of further site investigations but not for site selection and preliminary cavern design or determination of scheme capacity. It is also noted that the appellant had not included in its site evaluation any detailed consideration of the ground conditions in the ICI brine field area, where it proposed to establish significant surface infrastructure. In the Assessor’s view, PWG’s historical and local research provided an excellent example of what this element of the desk study could have contributed to project planning and identification of elements requiring further investigation or monitoring.

20.3.4 The objectives of a site investigation (designed on the basis of the desk study findings) would be to provide sufficient additional information to reduce uncertainty to an acceptable level, confirm or amend assumptions in the desk study model, and allow preliminary site selection (for both caverns and surface infrastructure) and reliable estimation of scheme capacity (or a range of capacities) based on conceptual and conservative design parameters. The Assessor considers that the absence of such a site investigation at the planning application stage of this project underpins the very significant uncertainty regarding the number of caverns that can be established, their depths and dimensions and therefore the anticipated capacity of the scheme. She
concludes that it is impossible to say exactly what level of residual geological uncertainty is acceptable at the planning application stage. This would, to some extent, be driven by the amount of risk a developer was prepared to tolerate. However, the current level of uncertainty inherent in the geological model is such that the range of possible outcomes in terms of cavern locations and capacities is so wide that the scale and therefore the impact of the scheme in planning and environmental terms cannot be established [AR6.40]. These are conclusions with which I concur.

20.3.5 The Assessor also concludes that only when geologically suitable areas for cavern establishment have been identified in a site investigation as described above would it be appropriate for detailed investigation of the individual cavern sites to proceed and for sampling, testing and geomechanical modelling to commence. Detailed investigations would include the drilling of a single deep, cored borehole at each of the proposed cavern locations and the application of geophysical and/or supplementary probe drilling techniques to determine, in detail, the three dimensional geometry of the proposed location [AR6.41]. In situ and laboratory testing would be carried out in the salt and overburden materials to provide input data and boundary conditions for the geomechanical modelling required to support cavern design. Only this latter phase of investigation would be inappropriate before the COMAH assessment/approval stage.

20.3.6 The Assessor draws attention to concerns with regard to wet rockhead. It is agreed that caverns should not be formed in any location where there is wet rockhead. She concludes that it is essential that both the western limit of wet rockhead is established with more certainty and that this information is available at the planning application stage [AR6.24]. In view of its potential impact on gas migration pathways [AR8.5], and hence risk and fear of risk of explosion, (see Section 20.4 below) I also conclude that this is information that should be available at the planning application stage.

20.3.7 From the Byley Inspector’s report and, particularly, the Byley Assessor’s report as well as the Byley geological evidence presented at this inquiry, it is clear that the level of uncertainty in the geological setting at Byley was very low. Detailed geological and geomechanical studies of the salt at those proposed cavern locations are undoubtedly required as a basis for detailed cavern design and the COMAH process but there is no risk that such investigations would fundamentally alter the proposals in terms of the number and size of caverns. At Preesall, that is not the case [AR6.42].

20.3.8 In drawing her overall conclusions as to whether the information provided on the proposed storage technology is sufficient or sufficiently detailed at this stage, my Assessor notes that the information provided on the proposed storage technology has had to be pieced together in the course of the inquiry since the appellant’s case was neither clear nor internally consistent before the inquiry opened. However, she considers that the information now available on the proposed storage technology is sufficient at this stage to describe the scale and nature of the development envisaged, how it is proposed to create the storage caverns, what their dimensions and possible range of shapes might be, what proportion of the volume of each salt cavern will be taken up by insoluble materials and associated brine, and what minimum separation distances will be required between adjacent caverns and between caverns and faults or former brine workings [AR6.102].

20.3.9 There is also sufficient information available to demonstrate that, even if 20 caverns could be constructed with the heights indicated on the relevant plans and tables, the amount of storage capacity indicated in the application could not be achieved in any
event. The Assessor estimates that only some 44-52% of the total anticipated cavity volume of 22.3Mm³ could be achieved due to the combined effects of retention of insoluble materials in the cavern and reduction in size from the perfect cylinders assumed by the appellant [AR6.104].

20.3.10 Applying the various indicative ‘design rules’ that have been described by the appellant’s experts to the geological model as it currently exists clearly demonstrates that there is no realistic prospect of forming caverns at around half of the indicative locations, because of their proximity to faults. If those caverns that are too close to faults are taken out of the scheme, the Assessor estimates that only 15-18% of the total anticipated cavity volume of 22.3Mm³ could be achieved [AR6.105].

20.3.11 She also notes that since the wellhead locations are fixed, and given the density of faulting where it has been identified, the possibilities for relocation of caverns to more suitable locations are extremely limited. She concludes that the appellant appears to have failed to appreciate that the geological structure is a major constraint on cavern location and scheme capacity and has therefore significantly overstated the amount of storage capacity that could be formed at this site [AR6.105].

20.3.12 Bearing in mind the above, and in the light of the Assessor’s conclusion [AR6.43] that, taken overall, the information provided by the appellant is neither sufficient nor sufficiently detailed to support the proposals in the planning application – a conclusion reached against the background of the considerable uncertainty that exists relating to constraints that fundamentally affect the location of the caverns and the capacity of the scheme including the location of faults, the depth of the Preesall Halite and the thickness of the salt – I conclude that the information provided on the geological, hydrological and mining setting is insufficient at this stage to enable a decision to be made on the feasibility of the principle of the appeal proposal and hence the principle of the proposed land use.

20.3.13 I therefore also conclude that the proposal would be contrary to policies 2, 42, 71 and 72 of the LMWLP.

Potential effect on proposed infrastructure from subsidence from existing caverns.

20.3.14 While some of the former ICI caverns at the western limit of the brine field have been sonar surveyed, the majority of former brinewells have not [AR6.31]. CGSL has also not identified the former salt mine workings on its maps and figures.

20.3.15 Application plan CD/75b indicates that pipelines carrying sea water to the wellheads for washing saturated brine from the wells as a result of washing, and gas to and from the proposed caverns and the GCS, cross areas containing caverns previously mined by solution techniques [5.3]. For the appellant it is claimed that the petroleum industry has considerable experience in laying and operating pipelines in areas of unstable terrain. However, no assessment or modelling of the likely impact of ongoing progressive or catastrophic subsidence on the proposed pipe-work, or any other infrastructure, has been undertaken [AR6.36]. The risk assessment appears not to have considered this as a possibility [10.1.25]. In view of the ‘dramatic crown hole features’ that have been created close-by by recent events [AR6.35], and bearing in mind that an area in close proximity to the proposed route of the pipelines and associated with BW-64 has been fenced off in anticipation of collapse, it is a matter of particular concern that the potential impact of such a collapse has not been addressed at this stage [AR6.36].
20.3.16 As a matter of principle, this aspect of the proposal would appear to conflict with policy 71 of the LMWLP which aims to protect the surface of the former Preesall Salt Field from development that could be adversely affected by land instability due to existing ‘cavities’.

20.3.17 Assuming the speedy shut-off of the booster pumps, the impact of such a pipeline failure in relation to the sea-water and brine pipelines would be limited to the deposition of sea-water or saturated brine, probably within the collapsed landform. While not insignificant to flora, it would be unlikely to represent any significant direct hazard to members of the public. However, a rupture of the gas pipeline under pressure of some 75bar, even with the speedy shutting of valves at the well-head and GCS, could result in the release of a significant volume of gas.

20.3.18 This risk to the public using the Wyre Way in this locality appears not to have been assessed (see 20.4.14 below).

Potential effect of general subsidence and/or subsidence from roof collapse on Hackensall STW

20.3.19 The potential for the proposal to affect the STW at Hackensall Brow was raised in written representations [18.59]. The precise location of each of the proposed gas storage caverns is, necessarily, illustrative. However, the degree of freedom in the location of those caverns is limited for technical/design reasons, and so the suggested locations can be taken to be indicative of their general location. The Assessor has concluded that subsidence resulting from cavern closure will occur over the entire footprint of an individual cavern projected vertically upwards to the ground surface, and beyond into a zone determined by the ‘angle of draw’ – commonly held to be 35° to the vertical. As an example, for a cavern at a depth of 350m, the zone within which subsidence could occur would extend some 500m beyond the limit of the cavern projected vertically to the ground surface [AR8.8]. The extent of the zone of subsidence beyond the limits of the underground opening would be commensurately greater the greater the depth of the cavern, although the amount of subsidence that occurs is inversely related to depth (i.e. there is a depth below which closure of an opening of a particular size or shape would not give rise to subsidence at the surface.

20.3.20 The STW is located towards the northern end of the appeal site where the rock overburden thickness is of the order of 400m and where caverns 1 – 5, 7, 8 and 25 would all have zones of influence which, in the event of general subsidence, could affect the ground surface currently occupied by the STW [AR7.7]. The only element of significant public infrastructure, other than the coastal flood prevention embankment, is the STW. This provides sewage disposal capacity for, inter alia, Knott End and Preesall.

20.3.21 While it is to be noted that United Utilities raised no objection to the appeal proposals and took no part in the inquiry, that is unsurprising given the appellant’s stated position that the development would not result in any significant surface subsidence. However, the Assessor has concluded that in the acknowledged situation of there being insufficient information for detailed geomechanical modelling at any cavern location, little reliance can reasonably be placed at this stage on the appellant’s predictive subsidence calculations [AR8.7]. In these circumstances it is not possible to conclude that there would be no disruption caused to the STW, nor that that disruption would not be severe. Such an impact would be unacceptable, and planning consent should not be
granted for the creation of gas storage caverns in this part of the appeal site in advance of design details which confirmed that there would be no possibility of unacceptable subsidence affecting Hackensall STW. This would inevitably result in a reduction in the potential gas storage capacity of any caverns created in this part of the appeal site and is a further factor leading to uncertainty as to the practicality of the appeal proposal.

20.3.22 Roof collapses leading to crown hole formation are significantly less likely to occur after testing and commissioning of caverns than during washing or, possibly, decommissioning. While the design of a cavern may be approved by the HSE, it is only when it has been formed and monitored and tested that its suitability for use for gas storage can be established under the COMAH process. It is therefore possible that unforeseen differences in the actual geological setting could result in a cavern with unacceptably thin salt head, or even a roof partially in mudstone [AR5.7 Diagram]. This scenario underlines the importance of robust and reliable geological modelling within the entire envelope and safety zone of a proposed cavern and in all the overlying strata. Given the complexity of the geology at Preesall and the current indications that each cavern location would present a unique combination of depth and thickness, the investigations necessary to produce such models are likely to be extensive [AR8.11].

20.3.23 The cavern design experts both confirmed that if a cavern roof failed at any of the indicated cavern locations then the cavern void would migrate to the surface and form a crown hole [AR8.9]. Crown holes generally develop vertically above the underground opening from which they originate, but over time edge back in an uncontrolled manner to create a ‘crater’ much larger in diameter than the original cavern [AR6.93 Diagram]. Such erosion within the inter-tidal zone would be likely to be much more rapid due to the twice-daily tidal inundation [AR8.9]. A number of the proposed caverns would be in close proximity to the STW and catastrophic collapse could result in major disruption and damage to this important piece of infrastructure. Again, planning permission should not be granted in advance of design details supported by robust and reliable geological modelling which confirmed that there would be no possibility of cavern roof failure affecting Hackensall STW and in my view this amounts to sufficient justification for a refusal of the appeal proposal at this time.

20.3.24 There are a small number of permanent dwellings that could be affected by similar subsidence from the proposed caverns elsewhere within the appeal site, and these include Coat Walls Farm (cavern 9) and the dwelling at The Sportsman’s Caravan Park (cavern 18).

20.3.25 The deletion of caverns, or their reduction in size sufficient to ensure no void migration to the surface, would also result in a reduction in the potential gas storage capacity of any caverns created in this part of the appeal site and is again a further factor leading to significant uncertainty as to the practicality of the appeal proposal.

Potential effect of subsidence from cavern roof failure on proposed infrastructure

20.3.26 The Assessor’s conclusions with respect to possible crown-hole formation following a cavern roof collapse [AR6.93 Diagram] also have implications for the proposed UGS infrastructure. While the proposed cavern locations are only illustrative it is clear that a collapse of a cavern could have a wider effect than just in relation to that collapsed cavern. For example, the crown-hole above cavern 19 could extend to the well-head for cavern 18 and also possibly that for 20; while cavern 7 could affect well-head 26.
Similarly, cavern 12 could have an impact on the BPS building, its plant and the associated external filter array, part of which could be located directly over the cavern. While similar conclusions can be drawn as to the need to ensure that cavern size was reduced to a level where there would be no surface effect in the event of roof collapse, the caverns and their well-heads would need to be so spaced as to ensure that a cavern failure could not have any detrimental impact on neighbouring caverns or their associated well heads and infrastructure.

**Other Matters**

20.3.27 A further area of uncertainty concerns the survey methods to be used to gain the necessary detailed geological information concerning the design and siting of those caverns that would be located below the mud flats and inter-tidal zone. There is no indication of what plant may need to be used, how it would be installed, or what impact that survey activity might have on these parts of the estuary, all of which fall within the Internationally Designated Sites.

### 20.4 Risk (gas migration/explosion), risk assessment, fear as a material consideration;

20.4.1 The principal considerations are:

- Whether the potential risk of gas escape/explosion makes this an unacceptable location.
- Whether the risk assessment points to a level of risk that is acceptable within an area containing this level of population.
- Whether the control mechanisms could ensure sufficient control over the operation of the site.
- Whether the fear expressed by local residents represents a rational response to the proposal and, if so, whether this constitutes a significant planning objection to the proposal.
- Whether the site as proposed to be developed would be unacceptably vulnerable to sabotage
- Whether the approach adopted in some other parts of the world of setting minimum distances between such facilities and populated areas should be adopted in this case.

**Preliminary conclusions**

20.4.2 It is accepted by Canatxx that fear can be a material planning consideration. In their decision on the Byley case [CD/53] the SsoS confirmed that in determining that appeal they accepted that ‘public fear and concern about health and safety issues is a material consideration’.

20.4.3 There have been events elsewhere in the world where the escape of gas from underground storage facilities has resulted in death and injury to members of the public. The distances involved have been much greater than the distances between the proposed wellheads and centres of population in this part of the Wyre Estuary [10.2.18].

20.4.4 Local residents’ fears had been reinforced by events at Buncefield in Hertfordshire, where a ‘Top-tier’ facility subject to control and inspection by the HSE, having caught
fire, had caused an unforeseen level of damage to properties not previously considered close enough to that facility to be vulnerable.

20.4.5 It is CGSL’s evidence that in respect of the current application the HSE has performed their calculations on the basis of the jet fire that could follow a complete failure of the pipework at the wellhead and/or an explosion of a gas/air mixture that filled the compressor building [10.1.14]. Setting aside the issue that a wellhead failure from a ‘full’ cavern would result in the high pressure release of gas over some 4 days, possibly ignited, possibly not, there appears to have been an assumption by CGSL and the HSE, based on the anticipated rapid dispersal of escaping gas to the atmosphere, that no other mechanism resulting in the possibility of gas explosion could occur.

20.4.6 Leak detection systems have a minimum level of detection below which a leak would not be detected. For commercial as well as safety reasons, it is important that these systems should have a high sensitivity. The systems which CGSL anticipate would be installed here would be ‘state of the art’. Even so, they might not detect a leak until 0.025% of the gas had been released [10.2.3]. With one of the larger caverns proposed by CGSL, even taking into account the necessary reductions in theoretical size to take account of imperfections in solution mining, reduced volume for insolubles, an allowance for further salt solution on decommissioning [AR7.14-17] and potential reductions in maximum gas pressure [AR5.17 Table], that could be of the order of 250m$^3$ at some 55bar. At normal temperature and pressure that would be a considerable volume of gas; particularly when further diluted with air to a mixture capable of explosion.

20.4.7 The Report on the Welton Field prepared by BGS notes that ‘salt cavern storage appears to be the environment in which most gas escapes/leaks occur. They do not represent the same facility as depleting or depleted oil and gas fields, which have already proved their integrity as containment structures over a geological time scale, and are generally shallower than those oil/gas reservoirs’ [10.2.18]. The leaks would appear to result from mechanical/engineering failure rather than failure of the caverns themselves [AR8.5].

20.4.8 The Assessor concludes that if a cavern design and testing successfully negotiates the COMAH process, the risk of gas migration from the cavern itself is likely to be very small indeed and, subject to verification and modelling, the likelihood of pathways existing within the halite bed that could act as conduits for migrating gas that could link caverns with receptors is also very low [AR8.4]. The escape through the salt may well be so unlikely as to be reasonably discounted.

20.4.9 However, the Assessor has also concluded that the potential for gas migration and its consequences at receptors in or near the site as a result of a ruptured pipe passing through more permeable strata that may exist in the overburden has not been addressed adequately or at all [AR8.5]. This is also the basis of much of the fear expressed by many local residents. The Assessor notes that it would be essential for a comprehensive risk assessment to be carried out at each and every proposed cavern location to identify potential pathways for gas migration and to establish whether those pathways were linked to receptors. Also of concern is the vulnerability to subsidence strain of the lazy ‘S’ pipe-work forming the link between the caverns and the wellheads. Unless or until reliable subsidence calculations have been carried out based on a reliable geo-mechanical model it is impossible to say what those strains might be and
whether it would be possible to design a ‘fail safe’ well string that would withstand them [AR7.18].

20.4.10 The HSE has specified 5 zones where, depending on storage pressure, well heads may not be constructed within the specified distance, varying from 120 – 150m, of an existing dwelling. This assessment is based on a jet fire following well head failure. However, details of the emergency response following the initial pipe failure event at Moss Bluff in August 2004 resulted firstly in an evacuation zone of 1 mile. This was extended after 24 hours to a 3-mile zone following the separation of the wellhead equipment from the casings and the uncontrolled venting of the burning gas to the atmosphere i.e. a jet fire. A similar sized evacuation zone south and west of the River Wyre would cover the urban areas of Fleetwood, Cleveleys, Thornton and northern parts of Blackpool and Poulton-le-Fylde, while to the east it would include the smaller settlements of Hambleton, Stalmine, Preesall and Knott-End on Sea, as well as the scatter of rural dwellings to the east of the River Wyre. In addition to the large numbers of people involved, the evacuation of the area west of the River Wyre would be further complicated by the fact that it is also a peninsular.

**Whether the potential risk of gas escape/explosion makes this an unacceptable location**

20.4.11 As set out at 20.4.9 above, the potential for gas migration and its consequences at receptors in or near the site as a result of a ruptured pipe passing through more permeable strata that may exist in the overburden has not been addressed adequately or at all [AR8.5]. In view of the potential impact of gas migration on the occupiers of properties within or close to the appeal site, I also conclude that prior to the grant of any planning permission it would be essential for a comprehensive risk assessment to be carried out at each and every proposed cavern location to identify potential pathways for gas migration, both geological and man made as a result of former solution mining activity, and to establish whether those pathways could or would not link to receptors. There are a number of residential properties above or close to the illustrative proposed cavern locations, or former workings, which could be vulnerable. In the absence of this detailed information, the uncertainty as to the vulnerability of properties to gas migration, and hence potential explosion, makes this currently an unacceptable location for UGS.

**Whether the risk assessment points to a level of risk that is acceptable within an area containing this level of population.**

20.4.12 The risk assessment undertaken by CGSL had sought to broadly identify the range of main hazards but was a preliminary examination intended to demonstrate, in broad terms, the process that would need to be carried out in any future application required by the COMAH Regulations [10.1.20]. The range of main hazards identified was extensive [10.1.24]. The groups of hazard with the greatest potential to cause harm to the general public was assessed by CGSL as being a large-scale release of gas under pressure leading to explosion or major fire, and that this reflected HSE guidance [10.1.26 +.27].

20.4.13 The risk assessment contains no quantitative measures, but rather relies on the fact that there are a relatively small number of residential properties on or in the immediate vicinity of the appeal site, that in relation to this planning application none fall within the ‘exclusion’ zones specified by the HSE, and the belief that larger settlements east and west of the river would be far enough away not to be affected. In the case of the
small hamlet of Staynall, it would be only some 500m from the Gas Compressor Station and only a little further from wellheads 21-24.

20.4.14 No assessment has been made of the potential risk to those visiting the area for recreation purposes; particularly those using the Wyre Way. In view of the proximity of a number of the proposed well-heads to the Wyre Way, and the acknowledgement that a well-head fire would be a main hazard with greatest potential to cause harm to the general public, the absence of a detailed assessment is surprising. In the light of the conclusions reached at 20.4.10 above it is not possible to say, on the basis of the generalized risk assessment undertaken by CGSL, that the level of risk to the local population, and others coming to the area for recreational purposes, is acceptable. To grant planning permission for the proposed development in advance of a clear understanding and quantified assessment of the level of risk would be contrary to LMWLP policy 2 which indicates that proposals for mineral development will only be permitted where it is demonstrated that all material impacts or other factors leading to loss or damage to amenity which would adversely affect people can be eliminated or reduced to acceptable levels.

Whether the proposed control mechanisms could ensure sufficient control over the operation of the site.

20.4.15 The day to day operation of the site would rely on data transfer and control systems to a system of triple redundancy (and therefore provide for continued operation of safety systems even though an element or elements of the control system had ceased to function). Control systems that are designed to ‘fail to off’ or ‘fail safe’ add a principal level of security and, although not yet at a stage in the design process where the control systems for this facility could receive COMAH approval, I am satisfied that CGSL intend to design and install ‘state of the art’ control systems [10.1.31].

20.4.16 These systems would, initially, be operated from the site. I note that those representing CGSL expressed the view that there was no reason in principle why these systems could not be operated remotely from more distant locations, including the USA. While that prospect is a matter of concern to local residents, there is no indication that such a level of remote operation would be acceptable to the HSE, and any change from direct local to more remote control would require a variation to any COMAH approval previously granted.

20.4.17 Uncertainty arises in relation to those parts of the infrastructure that lie beyond the limits of the control systems. In relation to a well-head this is the length of the string below the lowest cut-off valve. Because of the need to locate well-heads on land, those caverns sited below the estuary would need to be connected to them by ‘lazy S’ pipe-work. This pipe-work is vulnerable to subsidence strain, and until reliable subsidence calculations have been carried out it is impossible to say whether it is possible to design a ‘fail safe’ well string that would withstand them [AR7.17]. It is therefore not possible to say, on the information currently available, that the proposed control mechanisms could ensure sufficient control over the safe operation of the site.

Whether the fear expressed by local residents represents a rational response to the proposal and, if so, whether this constitutes a significant planning objection.

20.4.18 Explosions and/or fires resulting from the escape of gas from UGS facilities have occurred in the recent past [10.2.5]; two examples being Hutchinson in Kansas, and Moss Bluff in Texas. The ability of domestic gas supplies to cause explosions is
generally well known, although fortunately a relatively infrequent occurrence. The Abbeystead disaster of 1984 in which some 16 people had been killed had occurred at a River Wyre outfall north-east of Garstang and is a further reminder to local people of the destructive capability of a gas explosion, albeit that that event had not been associated with a proposal for the supply or storage of gas. Against this background, the initial reactions of fear at the potential destruction which could be caused by a ‘failure’ at the proposed UGS facility cannot reasonably be said to be irrational. While CGSL state that what had happened at the recent events in Hutchinson and Moss Bluff ‘could not happen here’, that is on the basis that the appellant’s proposals would be more effectively managed and controlled. That assessment has not provided assurance to local residents. While the particular chain of events may not be capable of being repeated here, CGSL accept that there remains a residual risk.

20.4.19 It is to be noted that while BGS had been employed to provide an assessment of the geology of the site, it had not been instructed to consider the suitability, or otherwise, of this salt reserve for UGS [10.2.6+12] unlike in the report prepared for the UGS proposal for the Welton Oil Field [10.2.5]. The Assessor has drawn attention to the fact that the potential for gas migration, and its consequences at receptors in or near the site as a result of a rupture of a pipe running through more permeable strata that may exist in the overburden, has not been adequately addressed [AR8.5]. Without the necessary detailed assessment the fears expressed by local residents will remain, and will represent a rational response to the proposal.

20.4.20 In view of the distances over which gas was able to migrate and cause damage in the Hutchinson case, it is understandable that residents of Fleetwood and other more heavily populated areas beyond the appeal site should express serious concern for their health and wellbeing. The extent to which these prove to be reasonable fears and concerns can only be assessed on the basis of a comprehensive investigation of the form, nature and permeability of the overburden strata. Until that information is available, and the true level of risk has been assessed, these fears are a material consideration that constitutes a significant planning objection.

Whether the site as proposed to be developed would be unacceptably vulnerable to sabotage

20.4.21 The worst-case risk so far assessed by the HSE relates to 2 eventualities. An explosion and/or fire as a result of gas collecting in the GCS, and a jet fire at a well head. From these assessments, zones from which all residential properties should be excluded have been defined, and these become de facto consultation zones within which the HSE would wish to be consulted if and when other proposals for development come forward.

20.4.22 Measures which may be required to be implemented by the HSE as a result of the subsequent applications for permits and/or approvals under the COMAH regulations are obviously not yet known. PWG drew attention to the type of security fencing normally erected around the perimeters of ‘top tier’ and similar installations, and I saw the fencing erected around the former ICI Hillhouse site, and that around the Barrow-in-Furness gas landing station facilities. At this latter facility I noted that security arrangements were extensive, high profile and ensured that members of the public were kept well away from the facility. CGSL propose 3m high fences around, and close to, each wellhead. While it is accepted that the various control stations of the NTS pipeline grid operate at similar pressures to the appeal proposals and are not viewed as especially vulnerable facilities, they can be relatively easily isolated in the event of an
incident, and gas going to or via those control stations can be stopped or re-routed. That may not be the case with a UGS wellhead fire which may need to be left to burn off over several days in the event of a jet fire occurring. Professor Rokahr noted that at one cavern it had taken a month to remove the gas following a blowout [AR5.15].

20.4.23 CGSL has not assessed these facilities as being especially vulnerable to external interference, and appear not to place significant weight on the possibility of terrorist or similar activity. As noted above, at this stage in the determination process the HSE, as a consultee, has assessed the proposal from the point of view of a worst case risk to local residents or site workers in the event of an explosion in the GCS or a well-head jet fire. There is no indication as to what the HSE as part of any subsequent COMAH authorization process would require in terms of protection of the above-ground well-head structures. Although surrounded by a 3m high fence, these well-head facilities would be unmanned and mainly located in areas close to where there is uncontrolled public access. As such they are demonstrably more vulnerable to external interference than manned facilities within a controlled and visually supervised perimeter. Any requirement by the HSE for more robust or extensive security measures would have implications for both the visual impact of the proposals on the landscape, and the continued accessibility of the Wyre Way to the general public. This eventuality, while a matter of concern to PWG and local residents, is not addressed by these proposals.

20.4.24 As the appeal proposal would be categorized as a ‘top tier’ COMAH site the HSE would continue to review standards and best practice throughout its life as a UGS facility. For this reason, while the site might be commissioned with protective fencing of the scale and type currently envisaged by CGSL, there is no certainty that that position would remain unchanged, as evidenced by the review of practices and standards following the Buncefield incident. There is, therefore, no certainty that, once operational, reassessment of safety standards would not result in the public being excluded from those lengths of the Wyre Way closest to well-heads. I consider that this eventuality would amount to an unacceptable consequence of the proposed development which would justify refusal of planning permission.

Whether the approach adopted in some other parts of the world of setting minimum distances between UGS facilities and populated areas should be adopted in this case.

20.4.25 For CGSL it was stated that safety was at the forefront of its approach. CGSL also claimed that it would meet or exceed all existing safety standards [10.1.21]. Many of the oral and written representations from interested persons, as well as the case presented by PWG, referred to standards now adopted in Kansas which included a minimum separation distance between the boundaries of populated areas and UGS facilities. The objectors’ arguments were not based on any technical assessment but the conclusion that if such standards were considered necessary to ensure safety in parts of the US, then similar standards should apply here. If a 3-mile zone were to be applied then these UGS facilities could not be built at Preesall.

20.4.26 While it may be CGSL’s witnesses’ view that ‘distance’ standards adopted elsewhere in the world cannot be justified on the basis of empirical assessments, it is nonetheless true that standards based on pre-determined distances between facilities and settlements have been imposed. Moreover, as the standards now applied in Kansas are applied as a result of recent experience following explosions associated with UGS which resulted in serious property damage or loss of life, it is understandable that residents of this part of NW Lancashire should wish to see similar safety standards applied with respect to the
appeal proposal. On the other hand, it should also be noted that the distance the gas migrated at Hutchinson was well in excess of the distance now included in the Kansas standard.

20.4.27 In relation to the determination of these appeals, it is not for the town and country planning system to specify particular standards, although the HSE are formal consultees with respect to the HSC application. The imposition of appropriate safety standards for any operational facilities installed in the event of planning permission being granted for the appeal proposals would be a matter for the HSE as part of the subsequent COMAH assessment process. Until such time as the results of detailed site investigations are available, and the precise geology of the salt field is understood, any standard based on a pre-determined distance would be arbitrary.

20.4.28 In arriving at this conclusion I accept that the absence of the necessary detail that would allow reasoned judgments to be made will tend to reinforce residents’ fears concerning the impact of this facility on their longer-term safety and well-being.

Other matters

20.4.29 While local residents are understandably concerned that wet rockhead conditions could provide a route for gas migration, it is accepted that no gas storage cavern would be constructed in salt formations subject to such conditions [AR6.24]. In these circumstances, the uncertainty associated with the extent of wet rockhead conditions does not increase the level of risk, although it does increase geological uncertainty.

20.4.30 CGSL argued that there was a risk associated with not providing this UGS facility at Presall [10.1.56]. I place only limited weight on that argument. The immediate short term risk of insufficient storage capacity nationally is not going to be met by this proposal because of the survey, design and construction period involved and the further consents that would need to be granted both before construction can commence, and before the first of the caverns can be commissioned. In any event, this is not the only location in England where there are proposals coming forward for underground gas storage facilities.

20.5 Sustainability of the working/disposal of mineral salt

20.5.1 The principal consideration is whether the proposal represents the sustainable use of a mineral resource, and if not, whether this amounts to a significant objection to the proposal.

Development Plan Background

20.5.2 The Core Development Principles of the regional strategy (RPG13 – 2003) promote sustainable development by, inter alia, securing appropriate conservation and use of minerals [4.3]. Policy ER9 indicates that appropriate provision should be made in the NW for the supply of a range of minerals, taking into account, inter alia, the national significance of the region’s reserves of salt. The policy sets out 5 sets of criteria that development plans should address, including the safeguarding of mineral resources.

20.5.3 The Lancashire Minerals and Waste Local Plan 2006 (LMWLP) was adopted in 2003. Policy 42 seeks the safeguarding of mineral resources. No development will be permitted which would sterilize or prejudice the extraction of mineral resources of
identified importance unless material planning considerations indicate otherwise. Policy 72 addresses salt provision. Proposals for the extraction of salt and/or brine will be permitted, subject to 3 provisions relating to need, protection of existing development, and the long-term safety of the caverns created. Para.10.30 notes that limited resources of un-worked salt deposits remain in the Preeass area and states that the abandonment of the industries which utilized the salt means that for the foreseeable future there will be no demand for further working.

Assessment

20.5.4 The solution mining process proposed by CGSL requires 49.5Mt of rock salt to be removed (on its cavern volume assumptions); dissolved at a maximum rate of 8,000m³/day in a maximum flow of seawater of 80,000m³/day. The mining process is estimated to take 7 to 8 years to complete [11.1.2]. The decline in the UK chemical industry has been reflected in the reduction in the annual production of salt in the UK. This has declined from a high of around 9Mt in the 1970s to some 6.1Mt in 2003. The Preeass salt removed per annum (6.8Mt including allowance for sea salt) is greater than the estimated national production of salt for all purposes in 2003; a figure which included 1.9Mt of rock salt extracted and used dry [11.1.8].

20.5.5 The majority of salt used in the UK is locally sourced and while there are small volumes of imports, the UK is a net exporter of 0.5Mt/annum. CGSL’s view that the shrinking UK market substantially increases the difficulty of finding uses for the Preeass brine or salt in the UK is not seriously at issue. It is LCC’s position that if planning permission is granted there is unlikely to be a commercial use found for the volume of brine that would be produced over the period of cavern washing in the foreseeable future [11.2.1].

20.5.6 In addition to the limited size of the market, there are particular barriers to the use of the Preeass brine in the UK or elsewhere in the foreseeable future. UK use would require the brine to be pumped either to an existing user or to a plant commissioned specifically in the locality.

20.5.7 The largest and nearest bulk user of brine is Ineos Chlor near Runcorn, which has a capacity to use the equivalent of only 50% of the Preeass output. In addition to the cost of providing a pipeline, estimated by CGSL at some £50M-60M [11.1.17.i], with no increase in UK demand for salt, Ineos Chlor’s existing brine resources would need to be displaced. While this appears initially to be an attractive prospect, some of the brine displaced would be that created by the development of the Byley UGS facility [11.1.17.ii] which, if not used by Ineos Chlor, would need to be disposed of elsewhere. I conclude that there is little likelihood of Ineos Chlor seeking or agreeing such a substitution. Moreover, there appear to be no other UK locations to which the brine could be practicably transported for subsequent use.

20.5.8 Shipping brine from Fleetwood pre-supposes the existence of a non-UK demand for this brine which would be competitive against world market prices for a limited period of 7 to 8 years. Transport costs, together with limitations on the size of vessels capable of being accommodated at Fleetwood would be likely to limit available markets to Europe, and while there is a small export of salt into Europe, this is significantly less than the volume that would be generated by the appeal proposal. The ability to transport this volume by sea would also be severely constrained by the impact of tide variation on frequency of sailing. For both practical and economic reasons I conclude
that this option would not be appropriate. With respect to LCC’s suggestion that piping the salt to port facilities at Heysham and/or Barrow, although this may allow the use of larger vessels, it would still not address the need for a limited-life market for the salt within an economic shipping distance.

20.5.9 LCC’s suggestion that the brine could be converted to low grade salt for de-icing purposes and then stored until needed is also only superficially attractive. Firstly, there would need to be investment in salt making plant for a limited period of only 7-8 years. With no prospect of the Preesall salt field coming back on stream in the near future as a source of ‘dry’ salt, the plant would then become redundant. That would amount to an unsustainable investment. Secondly, at an annual consumption rate of some 1Mt, storage capacity for a period of some 50 years would need to be found [11.2.10] which would be both costly and have its own land-use and transport implications.

20.5.10 The issue of the potential use of the salt, as addressed in the Brine Use Study, has looked at this issue from the stand-point of an economically self-financing activity, not as an element of the overall scheme. The proposal appears to have viewed the brine as no more than a waste product to be disposed of. To dispose of the brine in the way proposed is not a sustainable approach to the winning and working of minerals. This is in sharp contrast to other proposals which seek to use the output as a raw feedstock, e.g. Ineos Chlor in Cheshire. That approach is clearly a much more sustainable use of the resource. Moreover, the fact that there is currently no market for this material [11.2.1] reinforces the conclusion that to ‘mine’ it here does not represent a sustainable use of this resource.

20.5.11 BGS note that, in the construction of caverns for UGS, the disposal of salt as a waste product is likely to happen [11.1.25]. However, that does not amount to a policy decision in favour of such practices, but rather recognition of the consequences of mining a material for which there is currently no market. It is therefore a resource cost of the scheme. The Fact Sheet, while being information for local planning authorities and others to take into account, does not constitute adopted planning policy either nationally or locally.

20.5.12 The proposal does not constitute sustainable mineral development, would be contrary to policy RE9 of the regional strategy and to policy 42 of the LMWLP. In the context of the existence of other UGS proposals that are able to make beneficial use of the brine resulting from cavern creation, I consider that this conflict with development plan policy amounts to a significant objection to the appeal proposal which should be set aside only if there is an over-riding need for further gas storage to be provided by UGS at Preesall.

20.6 Impact on Internationally, Nationally and Locally Designated Sites and Protected Species

20.6.1 The principal considerations are:

Whether the development and operation of the appeal proposal would have detrimental impacts on nationally and internationally designated sites.

Whether the proposal, particularly the operation of the brine outfall, would have unacceptable impacts on protected species and the wider marine environment.
Whether the development and operation of the appeal proposal would have detrimental impacts on nationally and internationally designated sites.

20.6.2 On the basis of the modifications to the original proposals which excluded certain vulnerable areas and plant species, together with the anticipated impacts of the proposal as presented by CGSL, EN concluded that there would be no significant harm to ‘sites and species’ sufficient to justify a refusal of planning permission [12.1.2]. However, that position was on the basis of certain provisos (see 20.6.17 below). Subject to those provisos EN is satisfied that the proposals will cause no harm to those features of the nationally and internationally designated sites which justify those designations.

20.6.3 CGSL (and EN) make no allowance for mechanical/geological failure of caverns at construction or decommissioning stage. I address this matter at 20.6.12 onwards.

Impact of general subsidence on designated sites.

20.6.4 Following discussions with EN, CGSL proposed to include within the scheme an area of habitat creation in the form of new salt marsh; to be formed by the inundation of land to the rear (east) of the sea wall and south of caravan parks at The Heads [12.1.27 +12.2.13]. This would require the breaching of the existing sea wall and the re-creation of a new easterly length of sea wall to the south of The Sportsmans Caravan Park and its continuation in a southerly direction to reconnect with the existing sea wall further to the south at Burrows Marsh. This scheme is strongly supported by EN, sufficiently so for EN to suggest that it should be the subject of a condition requiring its provision [12.1.32]. CGSL include it as an element within the unilateral undertaking.

20.6.5 No details of this habitat creation, or the formation of the new lengths of sea wall, are included within any of the plans comprising the application the subject of this appeal. A schematic representation of its location, shown as ‘proposed marsh’ is included on a version of the Master Plan dated 3rd February 2006 (Doc.CGS/11/3a). The necessary works would require both planning permission and relevant authorization by the EA.

20.6.6 Mrs Jackson drew attention to the fact that earlier studies of the potential for managed re-alignment in the Wyre Estuary in this location, undertaken on behalf of the EA, had concluded that they were poor due to the proximity of the former brine workings [12.5.9]. However, the potential inter-tidal area in those study areas was both much more extensive and, significantly, located to the north of The Heads and Corcas Lane. Subject to the satisfactory re-creation of a sea wall on the northern and eastern sides of the area of ‘proposed marsh’, there appears to be no obvious reason why a new inter-tidal area could not be created here, and I note that the EA has indicated that it has no objection in principle [12.2.21].

20.6.7 Fig.1 to ODPM Circular 6/2005 (DEFRA Circular,1/2005) sets out the approach to the consideration of development proposals affecting internationally designated nature conservation sites. The boundaries to these sites in the locality of the appeal site follow the sea defences and include within them those areas of intertidal salt marsh that are inundated to varying degrees dependent on the state and cycle of the tides [3.3]. These latter areas of salt marsh and mud/sands above mean low-water mark comprise approximately half of the appeals site [3.1]. Surface features associated with the proposed development of the site would lie outside the boundaries of these internationally designated sites, but a number of the proposed caverns would lie below parts of the designated sites.
20.6.8 CGSL commissioned some predictive subsidence calculations. However, these are not based on the latest geological modelling and the cavern dimensions that appear to have been used in the two studies bear little relationship to the indicative shapes and sizes of caverns described during the course of the inquiry. There is acknowledged to be insufficient information for detailed geomechanical modelling at any cavern location. The Assessor concludes that little reliance can reasonably be placed at this stage on CGSL’s predictive subsidence calculations [AR8.7]. In these circumstances there is uncertainty as to the degree of subsidence that would occur.

20.6.9 The appeal proposal is not directly connected with or necessary to site management for nature conservation. In the event of significant subsidence, the proposal would be likely to have a significant impact on the interest features of the site, namely their availability as inter-tidal feeding grounds for sea birds. It is EN’s position, based on CGSL’s assessment of likely levels of subsidence, that no inter-tidal feeding areas within the estuary would become sub-tidal. In circumstances where the degree of subsidence is at present uncertain, that claimed eventuality is also uncertain. I therefore do not accept that there is no need for compensatory measures.

20.6.10 EN, having arrived at the conclusion that the proposal would not adversely affect the integrity of the site, and taking into account the approach to decision making set out in Fig.1 to ODPM Circular.6/2005, had concluded that in relation to the Directives protecting internationally designated sites (IDS), there would be no harm that required mitigation, and that planning permission need not be refused [12.1.18]. EN had also concluded that if it was thought that the levels of subsidence did amount to a harm to an IDS, the level of harm would be such that the proposed habitat creation at The Heads could comprise adequate compensatory measures, under regulation 53 of the Habitats Regulations 1994 [12.1.19], subject to compliance with conditions or obligations which would assure the provision of this additional compensatory area. EN’s position is, however, based on its understanding of CGSL’s assessment of the likely levels of subsidence, and not the conclusions drawn by the Assessor in the light of the examination of that evidence at the inquiry.

20.6.11 While there is uncertainty as to the extent of subsidence that would occur as a result of the operation and subsequent decommissioning of the site, EN had also noted that natural coastal processes and rising sea levels were driving habitat changes in this dynamic estuary system and that it could not reasonably be argued that such changes as may result from predicted subsidence of inter-tidal habitat over the 30 years would so affect the coherence of the estuary’s ecological structure and function as to prevent it from sustaining the populations of the bird species which the SPA and Ramsar sites would be able to support over the 30 year period without the development [12.1.17]. I conclude that while it may well be likely that the additional salt marsh proposed would provide adequate compensation for general subsidence, there remains an element of uncertainty. It is also to be noted that as the proposed area of additional salt marsh lies outside the boundary of the designated areas it cannot be considered to constitute mitigation [12.1.29].

Impact of ‘crown hole’ subsidence on nationally and internationally designated sites in the event of cavern roof failure during construction or decommissioning.

20.6.12 CGSL, as part of its risk case, had identified main hazards as including collapse of a cavern causing collapse of the above ground area and cavern collapse on decommissioning [10.1.24], although the preliminary groups of hazard with the greatest
potential to cause harm to the general public are assessed by CGSL as being a large-scale release of gas under pressure leading to explosion or major fire. As noted earlier, this was assessed as being caused by (a) a failure of the gastight integrity of the large diameter pipework or wellhead, either caused by some defect in the pipework or by an external event or (b) failure of the gastight integrity of the equipment within the compressor station building [10.1.25]. The preliminary HSE assessment addressed similar physical harm to the general public [10.1.26-7].

20.6.13 CGSL had sought technical advice on the anticipated levels of subsidence associated with the operation of the gas caverns once constructed [AR8.7], and had addressed a safety case focused on achieving no unacceptable harm to the general public. I am satisfied that the HSE, under the COMAH regulations, would not knowingly permit caverns to be used for gas storage without proof that they were ‘gas tight’ and otherwise ‘fit for purpose’ [AR7.3]. However, the COMAH process cannot ensure that only competent caverns are constructed and, when decommissioned, that the caverns continue to remain intact. That is also acknowledged in the CGSL risk assessment referred to above.

20.6.14 On the basis of the evidence presented to the inquiry [AR8.9], failure of the cavern roof during construction, if it occurred, would be an event most likely to occur after, or towards the end of cavern creation due to the bottom upwards cavern-washing process. Due to the ratio between the proposed cavern heights and their depths, any such roof failure would be likely to result in the migration of the void to the surface [AR7.6]. This void migration would be a direct consequence of the relatively shallow depth of the halite. On the landward side of the estuary this would produce extensive subsidence and a repeat of the deep flooding that has occurred, and continues to occur, in parts of the former solution mining and rock mine subsidence areas just to the east of the appeal site [AR6.28, AR6.34, AR6.35]. A breach of the roof of a cavern would also be irreversible as the marls would displace the brine and there would be little prospect of injecting material into the cavern to prevent the entry of the overburden.

20.6.15 While the locations of the proposed caverns are at this stage illustrative, the freedom for variation in siting is relatively limited given the design criteria to be taken into account [AR6.105; AR7.8, AR7.9]. A number of the caverns would be located under land close to the shore-line and the sea wall. Depending on the angle of draw and/or extent of any subsidence void at the surface, any significant ground movements caused by closure or collapse of caverns at depth could give rise to damage extending to a breach or breaches of the sea wall with subsequent inundation of the surrounding farmland. That would be visually and, to the tenant farmers concerned, economically, unacceptable. It would also be contrary to those development plan policies which seek to avoid the detrimental impacts of development including RSS policy CZ2B, ER2, ER8, JLSP policies 23, 24, LMWLP policies 2, 7, 24.

20.6.16 Setting aside the Assessor’s conclusions on the acceptability or otherwise of the number and general locations of the proposed caverns [AR7.10/11], some 13 of these (including possibly cavern 7) are proposed by CGSL to be sited under the inter-tidal marshes or the estuary itself and within the internationally designated areas. A collapse of a cavern roof here could result in the creation of a significant depression in the salt marsh [AR6.93 Diagram]. In such circumstances, that area of Arm Hill removed from the scheme in order to protect features of conservation value [12.1.31] could, itself, be totally lost. It is to be noted that EN withdrew its objection to the scheme firstly on the grounds that there would be no drilling activity at Arm Hill, and secondly, on the basis
that CGSL had assured it that there would be no detrimental levels of subsidence [12.1.15]. EN had subsequently indicated that it did not have the appropriate expertise to confirm this or present evidence to the contrary [12.1.25]. While the level of subsidence during the operation of any facility subsequently granted COMAH consent may be adequately compensated for by the proposed additional salt marsh, if provided, the same conclusion cannot be drawn in the event of catastrophic roof failure either during the construction period, or in the subsequent decommissioning period.

20.6.17  The assumptions that underlay EN’s assessment were as follows [12.1.15]:

a) The amount of subsidence would be relatively low (averaging 0.2mm per annum within a scale of 0.1 mm to 0.5mm pa).

b) Although, at the outer edge of the cavern field, the predicted subsidence had the potential to alter the length of time that intertidal areas were exposed (for feeding birds), subsidence within the intertidal areas (that is below Mean High Water Mark) was predicted to range from 0.1 to 0.4mm pa.

c) The predicted subsidence did not extend seawards as far as the Mean Low Water Mark so there should be no areas of intertidal marsh that would become subtidal as a result of subsidence.

d) There was a reasonable level of confidence in the predictions, which (EN understood) were considered to be the best that could reasonably be obtained and using the best scientific information available.

e) Such small changes in ground level in the intertidal areas might reasonably be expected to be offset by additional deposition of estuary sediments into any area that had subsided.

f) If natural deposition did not fill any intertidal areas that had subsided, and adopting the assumptions set out in the CGSL report, any eastward shift in tidal inundation time was likely to be too small to affect the ecological functioning of the intertidal areas for birds.

20.6.18  Of the above assumptions, c) and f) would not be maintained in the event of void migration to the surface and the resultant subsidence feature would be likely to become immediately sub-tidal. There is, therefore, uncertainty as to whether, in these circumstances, the integrity of the IDS would be maintained. It would also be of a scale and nature that had not yet been assessed by EN. In addition, there has been no assessment as to whether, in these circumstances, The Heads Re-Alignment project, as set out in the Undertaking, would continue to amount to adequate compensatory measures. The size and extent of the subsidence associated with the continuing collapse of BWs 52/53, and the Assessor’s conclusions as to potential crown-hole dimensions [AR6.93 Diagram] would suggest that a greater area would be lost than would be provided for by the proposed marsh.

20.6.19  In the light of this uncertainty, and given that alternative solutions to the proposal may come forward that would have a lesser effect or avoid an adverse effect on the integrity of the site, the advice contained in Circular 6/2005 indicates that permission should not be granted. It is CGSL’s case that alternatives have not been looked at because the appeal proposals are required along with other schemes currently being pursued. I have already concluded that there is considerable uncertainty as to the scale of UGS that
could be provided here, and that that reduces the significance of the arguments relating to the need for this particular proposal at Preesall [20.2.24]. As noted earlier in these conclusions, in the absence of any national assessment of the level of UGS required in the UK, and bearing in mind the timescales involved in the preparation of this and other UGS schemes, it is difficult to argue that there would not be alternative solutions with a lesser effect; the proposals by Stag Energy for storage under the Irish Sea, and referred to by both PWG and others, being an example of the type of proposal potentially available in the foreseeable future.

20.6.20 In the light of the guidance on the application of the law relating to planning and nature conservation in England as set out in ODPM Circular 06/2005, I conclude that this risk of crown hole subsidence, because it would appear to be irreversible if it did occur, is sufficient reason of itself to refuse planning permission for the appeal proposals.

Whether the proposal would have unacceptable impacts on protected species.

Impacts on land

20.6.21 Great Crested Newt (GCN), a European protected species, could be affected by the development proposals. However, EN are satisfied that the mitigation measures proposed by the appellant should ensure that the proposals would not be detrimental to the maintenance of the population of the newts at a favourable conservation status in their natural range and that there was a reasonable prospect of a license being granted by DEFRA under the provisions of Regulation 44 of the Habitats Regulations 1994. EN took a similar view to the approach to be applied to the potential impact of the alternative access from the A588 avoiding the Cemetery Lane junction [12.1.30].

20.6.22 Mrs Jackson noted that in relation to the appeal site a ‘decent foraging area’ for GCN in the proposed ponds would extend beyond land in CGSL ownership. However, the fact that a foraging area included land extending beyond the boundaries of a land ownership does not amount to an objection to a proposal unless the relevant foraging species would somehow be prevented from gaining access to that land, and that is not argued here. So long as the proposed mitigation measures are followed and take account of the presence of GCN, and of water vole which may also be present on the site, there would be no harm to these species as a result of the development sufficient to justify a refusal of planning permission.

20.6.23 Attention has also be drawn to the fact that at periods of high tide, when the inter-tidal feeding grounds are not available, farm land within the appeal site is grazed by some of the wild geese who frequent the estuary. While I accept that the planting of trees to provide screening for the Gas Compressor Station and Booster Pumping Station would make these areas less attractive to grazing wildfowl, they are not areas that have been defined as feeding grounds, and all fall outside the nationally and internationally designated areas.

Impacts on the marine environment

Preliminary conclusions

20.6.24 It is CGSL’s position that the impact of the outfall discharge of hyper-saline solution from the cavern washing process will be significant in close proximity to the discharge diffuser, leading to the death of all marine life that is susceptible to levels of salinity in
excess of some 40ppt\(^{34}\). It is also CGSL’s position that the salinity and temperature of the sea-water would quickly fall to ambient levels over a very short distance. These conclusions derive from the technical evidence from the Delft3D models.

**20.6.25** While discharge volumes of some 80 megalitres/day appear large, such quantities are relatively insignificant in the context of the volumes of sea water movement involved with diurnal inter-tidal flows in an area where mean tide ranges vary from 4.3m (neaps) to 8m (springs).

**20.6.26** Objections by PWG [12.4.10] on the grounds that the Bradford University and Proudman Oceanographic Laboratory models referred to by Dr Broughton contradicted the conclusions of the Delft3D dispersion model are not supported by the evidence. Firstly, neither was designed to model saline dispersion and secondly, any model tracking particles has to assume that the particles remain as discrete and identifiable entities. In contrast, the saline discharge is predicted to decay towards background levels over very short distances, a matter of 500m or so, after which it would become indistinguishable from the salinity of the remainder of the sea water in the Irish Sea; the salinity and temperature of which is subject to an element of annual variation in any event [12.2.40 + 44].

**20.6.27** There is further strong support for this position from the EA who have been closely involved with the work undertaken by Hyder in applying the Delft3D model to this proposed discharge into Liverpool Bay. The EA has noted that ‘the volume of work undertaken has been substantial and the quality of the modelling has been of the highest standard and in accordance with recognised industry standards’ [12.2.41]. This latter endorsement is significant in that it would be the EA who would be the decision maker with respect to an application for discharge consent and on whom the duty would fall to ensure that the requirements to protect nationally and internationally designated sites, and threatened species, in accordance with the relevant Directives, are met.

Impact on Salmon

**20.6.28** It is accepted that there has been a substantial reduction in the number of wild salmon both locally and within Europe, and that the Worldwide Fund for Nature has indicated that the salmon is one of the ten most endangered species in Europe [12.4.12+30]. Rivers flowing into Morecambe Bay, including the Wyre, are salmon rivers which, in the past, have supported significant stocks of migratory salmon and sea trout. There are continuing efforts being made to ensure that the appropriate conditions for the survival of these species are maintained, along with the spawning and nursery grounds [12.4.30].

**20.6.29** PWG’s concerns are based on the supposition that rather than dispersing in the manner predicted on behalf of CGSL, the hyper-saline discharge would result in a general increase in salinity in Morecambe Bay and its tributaries, a concentration of brine in the Lune Deep, and changes in sea temperature; all of which could affect mortality rates amongst salmon and sea trout at various important stages in their life cycle when they undergo physiological change [12.4.13+14].

**20.6.30** As noted above, the hydraulic modelling undertaken on behalf of CGSL has been done in consultation with the EA. I have noted Dr Broughton’s view expressed on behalf of

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\(^{34}\) Parts per thousand
PWG that a series of computer modelling and physical measurements needed to be done and exhaustively repeated over varied conditions of tide and temperature, before any decisions on the safety of the salmon, the sea trout, plankton and other creatures could be taken, [12.4.25]. However, as noted above, the EA has expressed the view that the volume of work undertaken on behalf of CGSL had been substantial and the quality of the modelling had been of the highest standard and in accordance with recognised industry standards. The modelling had been fully audited by EA staff and all issues identified by the agency had always been subsequently addressed [12.2.41].

20.6.31 I have already indicated above that I do not accept that the two models referred to by Dr Broughton contradict the Delft3D model as those models were clearly designed for a different purpose. As previously noted, this part of the Irish Sea experiences twice-daily tidal ranges of between 4.3m and 8m (neaps to springs), with tidal flows (springs) approaching 2 knots. Within this hydraulic context there is no evidence to indicate that the conclusions drawn from the Delft3D model, that saline levels and temperature would have fallen to within 5% of back-ground levels within 500m of the diffuser, are incorrect. It is common ground between the parties that fish would simply swim around or over a discharge plume above a certain level of salinity [12.2.44]. The area affected by levels of salinity more than 5% above background would be less than 0.25 km². In view of the very limited extent of the eastern Irish Sea (which includes Liverpool Bay and Morecambe Bay) that would actually be subject to elevated levels of salinity as a result of this proposal, I conclude that the impact of the saline discharge on migrating salmon and sea trout would not be significant.

Impact on common scoter and red-throated diver

20.6.32 CGSL’s evidence on the distribution of common scoter derives in part from work undertaken by the Joint Nature Conservation Committee (JNCC) in support of the case for designating Liverpool Bay as an SPA; common scoter being a qualifying species. Reference was also made to on-going studies into the prediction of the displacement of common scoter from feeding areas due to off-shore wind-farms. Common scoter over-winter in the Irish Sea, predominantly off the coast of north Wales and the North-West, with significant concentrations at Shell Flat some 3km off the Fylde coast to the west of Blackpool and the Wyre Peninsular [12.2.47]. The outfall would be within a part of the very large area where surveys between 2000 and 2003 revealed that only some 2% of common scoter were to be found. The similarly large area where some 98% of common scoter have been found begins some 3km off shore.

20.6.33 While this area of greater density starts only 700m away from the outfall, the critical feature for these concentrations is the availability of molluscs and bivalves which form the principal food source for the over-wintering scoter. Surveys undertaken to assess species in the vicinity of the proposed diffuser indicate an almost total absence of suitable bivalves. The dispersion modelling undertaken on behalf of CGSL indicates that the raised brine concentrations would decline to within 10% of normal ‘background’ levels within 250m of the diffuser, and 5% within 500m. It is to be noted that this would be well within that requirement of EA to ensure that excess salinity of the plume would not exceed 10% at 500m from the discharge location, i.e. an increase similar to normal annual variations in salinity.

20.6.34 Taking into account tidal movement, the various locations within close proximity to the diffuser would be experiencing varying levels of raised salinity between maximum and ambient over each 12hr tidal cycle [12.2.44]. I conclude that the proposal would not
have a detrimental impact on the feeding grounds within which 98% of the over-wintering common scoter are to be found. Moreover, as the discharge location would represent a very small part of the area where some 2% of common scoter is to be found, the potential population of scoter affected, if at all, would be extremely small. It is to be noted that neither EN, nor EA who would be responsible for determining any discharge consent and have set out minimum requirements, raised any objection to the proposal on these grounds.

20.6.35 Red-throated divers are fish-eating birds which surveys undertaken on behalf of JNCC indicate are not present within 500m of the proposed location of the discharge diffuser. Although present in Liverpool Bay in concentrations sufficient to make them an important national over-wintering population the surveys also indicated that they do not occur within 4km of this part of the Fylde Coast [12.4.9 + 12.2.48].

In-combination effects.

20.6.36 I do not accept the suggestion that because CGSL’s ‘in-combination effect’ assessment is so brief it is somehow inadequate [12.4.44]. I accept that there are other developments in the locality that may result in the displacement of common scoter from their normal feeding grounds. These include the off-shore wind farm at Shell Flat, to the north-west of Fleetwood/Cleveley under construction at the time of the inquiry, and other proposals to increase the number of wind turbines there. However, any common scoter displaced from that location would be unlikely to seek to relocate in the vicinity of the proposed diffuser, irrespective of whether the diffuser was there. As already noted the ES indicates that the proposed location for the diffuser does not lie within an area containing the appropriate food resource which would otherwise be necessary in order for this location to prove attractive to scoter.

20.6.37 The fact that organisms currently living within 50m of the diffuser would be fatally affected by the hyper-saline discharge would have no in-combination impact because there would be no scoter present to impact on. Moreover, para.3 of Article 6 requires the impact on the site to be significant [12.4.45]. Whether one is considering the Liverpool Bay SPA, or Morecambe Bay, the area that would be affected by levels of salinity more than 5% above background, at less than 0.25 km², could not reasonably be said to be significant in the context of these much more extensive areas.

Fine Particle Discharge

20.6.38 One particular area of uncertainty is the potential impact of the ≤ 5 micron fine particle discharge. The filtering of the output from the cavern washing process would result in those particles larger than 5 micron which did not otherwise naturally remain in the cavern sump being removed by the filters located to the rear of the booster pump station [Plan CD75j]. However, finer particles would form part of the hyper-saline discharge. While this would ultimately be a matter for the EA when establishing the terms of any discharge consent, it is a matter of some concern that, without any clear assessment of the likely volume of this material, or the way in which it would be deposited or distributed on leaving the diffuser, its potential impact is currently unknown. It is accepted that for the period of the cavern washing, and for some time after, the area within 50m of the diffuser would be subject to lethal levels of saline concentrations, and that this impact would last for a period of time beyond the cavern creation stage. To this end, EN seek the imposition of a monitoring programme which would record the rate of recovery [12.1.23]. The fact that there is no indication as to
what impact the fine particle discharge might have on that recovery process is a further undesirable uncertainty.

Other matters.

20.6.39 LCC, PWG and Mr & Mrs Jackson expressed some concern at the limited assessment made of the ecological impact of the route of the alternative access from A588 avoiding the Cemetery Lane junction. As a proposal put forward as an alternative to possible improvements at the Cemetery Lane junction itself, it does not fall either within the appeal site, or yet within the site of any other application for planning permission. Moreover, it does not pass through any designated sites, and while there may be protected species present, e.g. bat, water vole or GCN, EN is satisfied that the necessary precautions with respect to their treatment if found, and the associated license requirements, would be sufficient to provide appropriate levels of protection [12.1.30]; a view with which I concur. In any event, before this alternative access could be constructed a planning application would have to be submitted and approved, and that process could, if considered necessary, seek additional information.

20.6.40 Similar concerns were expressed by Mrs Jackson, and by Capt.Wilkins [18.55.1-3] in relation to the impact of (and the information submitted with the application for permission to construct) the inter-connector between the appeal site and the NTS at Garstang. However, that gas pipeline does not form part of this proposal. The acceptability or otherwise of that development, and the information provided to WBC as LPA for the pipeline inter-connector proposal, is a matter for that authority.

20.7 Landscape and Visual Amenity

20.7.1 The principal considerations are:

Whether the evidence submitted by the appellant satisfies the requirements of the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999; and,

Whether the proposals would have an unacceptably detrimental impact on the appearance of the Wyre Estuary, and the open countryside to the east of the Wyre Estuary.

20.7.2 Impacts on the amenity of residential areas to the west of the estuary are dealt with in section 20.10 below.

Town and Country Planning (EIA) (England and Wales) Regulations 1999

20.7.3 On behalf of CGSL it was accepted that the landscape assessment as submitted with the application had some short-comings, and that the methodology deployed was not clearly identified [13.1.29]. For this reason, those reading the ES would not have been able to understand, or make their own assessment of, the process that had resulted in the conclusions drawn with respect to the assessed impact of the proposals on the landscape. The ES was clearly deficient, and notwithstanding the fact that this criticism had not previously been raised with CGSL, I conclude that in this regard it failed to satisfy the requirements of the regulations.
20.7.4 That was not, however, the totality of the landscape evidence submitted by CGSL to the inquiry. Document CGSL/11/2 was an extensive and detailed proof setting out a clear methodology for assessing both the various landscapes within which the development would be undertaken and the impacts of the development on those landscapes. CGSL indicated that its witness had undertaken this process in order to provide a transparent methodology of the approach that he had adopted; a clear acknowledgment that what had been submitted previously was insufficient to satisfy the tests of a public inquiry.

20.7.5 The process of assessing landscape impact is, of necessity, subjective, irrespective of the rigour of the methodology, as different people will place differing weights on subjective elements. That will lead to variations in conclusions amongst experts, as well as between experts and lay people such as local residents who enjoy and appreciate their local landscape for what it is, irrespective of comparisons which may be made with other landscapes elsewhere.

20.7.6 PWG observed that there had been 3 separate assessments, two on behalf of CGSL and one for WBC, and that each had little in common with the others [13.4.1]. However, it was the conclusion of the original ES that ‘The visual impact of the scheme on the landscape character and quality will reduce over time but can still be classified as adverse’ [13.1.25]. In general terms that continued to be the conclusion of the witnesses for CGSL and WBC, and the conclusions of others including PWG. The issue over which the various parties disagree, is whether the degree of adverse impact would, or would not, be acceptable and whether the extent to which any reduction in visual impact over time would ameliorate that adverse impact to an acceptable degree.

20.7.7 Those disagreements are the subject of the second landscape material consideration that I address below. On this first consideration I conclude that there was sufficient information before the inquiry to arrive at reasoned conclusions as to the likely impacts of the proposals on the landscape, and that taken together, the requirements of the regulations were met. In arriving at this conclusion I am not indicating that I consider any of the assessments to be error free, or that the weights attached to any one particular characteristic or impact are to be preferred. Those are matters of judgement to be addressed below.

Impact on the appearance of the Wyre Estuary, and the open countryside to the east of the Wyre Estuary.

20.7.8 The impacts can be further subdivided into temporary (construction phase) and permanent (life of the facility).

Temporary impacts

20.7.9 The construction phase comprises an initial 3 year period during which the major physical features of the Booster Pump Station (BPS), Gas Compressor Station (GCS) various site access roads and access tracks, and the wellhead pads, together with interconnecting water and gas pipelines, would be constructed and installed. This would be followed by a period of ‘cavern washing’ that would start during the initial construction phase but continue for a period of some 7 – 8 years. This latter process involves the insertion of suspended ‘strings’ and the use of a mobile rig.

20.7.10 It is clear from the Master Plan (Doc.CD/75b) that there would be construction activity over much of the appeal site inland of the coastal defences. Much of this activity would take the form of installing underground pipe-work for sea-water, brine and gas
connections between the storage caverns, and BPS and GCS respectively. A further temporary operation occurring at this time would be the construction of the gas pipeline connection to the NTS. This was the subject of a separate planning application and committee report and is not a matter before this inquiry [18.55.1+Doc.WBC/2/1].

20.7.11 The installation of under-ground pipe-work of the type proposed is a common, almost every-day feature of modern life. Although conspicuous at the time of installation, the line of the pipe-work quickly returns to a more ‘natural’ appearance. This has been the experience elsewhere within the Preesall salt-field, and while there is extensive evidence within this essentially open landscape of well-head sites, access tracks and pads associated with that former brine working, visual remains of inter-connecting pipe-work are, for the most part, conspicuous by their absence.

20.7.12 For some of those enjoying the Wyre Way and other public paths through the appeal site this element of the construction activity would amount to a loss of visual and aural amenity. To the extent that it would be a temporary activity, the installation of the under-ground pipe-work would not result in any significant permanent detrimental visual impact. In arriving at this conclusion I have taken into account the need to make gaps in lengths of hedgerow during installation of the pipe-work. While the working width for installation would generally be some 36m, this would reduce at hedgerow crossings to some 10m. The existence of those crossing points would be likely to remain as visible features within the landscape for longer periods than the routes of the pipelines, due to the length of time that replacement hedging would need in order to grow, thicken and reach the visual maturity of the remaining undisturbed hedgerow.

20.7.13 Construction of the well heads and subsequent cavern washing would result in both temporary and permanent visual impact. Each well-head or group of well-heads would require a substantial pad on which to site the drilling and ancillary equipment for the ‘washing’ phase [Doc.CD/3 Fig.19c]. Specific site areas for each of these well-head sites are yet to be determined, but they are anticipated to be of the order of the size of a football pitch [13.3.71], and this appears to be confirmed by the size of the pads I saw being constructed as part of the Byley facility [1.7].

20.7.14 The Sea-water Pumping Station (SPS) and the construction of the pipeline under the estuary to link the SPS to the BPS would result in both permanent and temporary impacts. The permanent impacts of the SPS are dealt with below [see 20.7.36 below]. Activity associated with the under-estuary pipeline(s) for sea-water to the BPS and saturated brine from the BPS would take place on both sides of the estuary [Doc.CD/3 - Fig.16a]; the entry and exit sites having working areas of approximately 200m x 175m. The exit working area would be located in the general vicinity of, but some 200m west of the BPS. The system would rely on drilling from the western side and drawing the installed pipes back through in a westerly direction [Doc.CD/3 -Figs.16b + c]. As this would take place within the first 12 months of site development activity it would appear as part of the works associated with the construction of the BPS. As the works would be of relatively short duration and the plant and stored pipe-work of modest size, this would not result in significant visual harm to the landscape east of the estuary. I draw this conclusion notwithstanding the relatively unattractive appearance of the plant at the time of operation.

20.7.15 The entry site would be located in an area of former industrial/dock activity land with generally poor visual quality, although a country park is currently being created on land
to the south. Although not visually attractive, the temporary drilling activities would not have any significant detrimental visual impact on this locality.

20.7.16 Temporary impacts associated with the brine outfall pipe from the SPS to the sea-wall crossing would relate primarily to impacts on the amenity of residents, rather than impact on the landscape, and are dealt with in section 20.10 of my conclusions.

Permanent Impacts

20.7.17 Permanent visual impacts would, in the main, be restricted to those created by the Gas Compressor Station (CGS) and its associated ancillary external plant, the Booster Pump Station (BPS) and associated external plant, together with the well-heads, the access tracks, and the Sea-water Pumping Station (SPS).

Gas Compressor Station (CGS)

20.7.18 The CGS is the most significant feature in terms of both size and location. It would be some 100m in length, 60m in width and with a principal ridge height some 29.5m AOD and a secondary ridge height some 26m AOD [Plans.CD/75g+h]. The building would be located on the north-easterly side of Burrows Hill. This hill, with a spot height of 23m AOD, is the highest point of the appeal site, and the highest area of land to the west of the A588 between Hambleton and Pressall Park. The wider area is undulating, essentially low lying and drained by streams with tidal-flap control through the sea wall, but with occasional hills rising in places to 10m and elsewhere to 20m. It is an open, mixed arable and grazing landscape with occasional patches of woodland, particularly towards its northern end.

20.7.19 Within this setting the GCS would appear as a substantial built feature considerably larger than any other building in the locality. Its bulk, in a prominent elevated position, would be particularly conspicuous from numerous locations accessible to the public on both sides of the Wyre Estuary. On the western side this would include the well-used coastal footpath leading north from Stanah Country Park. On the eastern side of the estuary it would be prominent in most views from the Wyre Way, from both lower lying and elevated land to the north and west including Highgate Lane, and in views from the A588, particularly in the vicinity of its junction with Carr End Lane. Together with its ancillary external equipment the impact would be that of industrial scale development in a rural setting at variance and out of keeping with its rural setting. It would cause significant visual harm to this attractive rural landscape.

20.7.20 I arrive at this conclusion notwithstanding the 2m reduction in the height of the main building, apparently to be achieved by setting the building further into its development terrace, as indicated in the revised View drawings CD/75h(r) submitted during the inquiry.

20.7.21 The photo-montage Doc.CGS/11 Figs.7.0A provides illustrations of the anticipated appearance of the GCS during the winter of year 1 and during the summer of year 15 following the establishment of landscaping, precise details of which would be the subject of conditions [19.1+Doc.CD72d - Conditions Nos.72-98]. On the basis of the appellant’s assessment of the likely growth rate for the landscaping, I conclude that the bulk of the building would remain prominent in the landscape. In addition, while much of the surrounding ancillary equipment would be screened at a low level, the upper parts of the dryers and coolers, all obvious industrial structures, would remain visible. Taking into account the limited extent of the land available for the GCS site, the need
to provide both security fencing and clear areas for security visibility, and the various circulation roads and plant and equipment areas, there must also be doubt as to the ability of the proposal to accommodate CGSL’s recommended density of screen planting [18.49.32].

20.7.22 Local residents with experience of growing trees in this locality expressed considerable doubt as to the likelihood of achieving the rates of growth suggest on behalf of CGSL [18.49.31]. What I saw from my site inspections suggests that rates of growth would be greatly affected by the degree of exposure to prevailing winds. Single or small groups of trees closest to the exposed marsh are often stunted and bent away from the prevailing wind. Trees in more sheltered locations or in larger groups show more vigorous and successful growth. A particular example of the latter effect is the young copse of trees planted to the west of Coat Walls Farm; an area protected from northerly/north-westerly winds by rising ground, and also gaining some protection from south westerly winds due to their being planted on land well below 4m AOD.

20.7.23 While some of the planting around the GCS would gain some protection by being in the lea of the hill from south-westerly winds, they would be exposed to northerly and north-westerly winds. In the event that anticipated rates of growth are not achieved, the degree to which the detrimental visual impact of the GCS on the surrounding countryside would be ameliorated by the proposed landscaping would be greatly reduced.

20.7.24 Notwithstanding the possible variation in the degree of ameliorative screening that could be achieved, the impact of the GCS, throughout its operational life, would remain that of an industrial scale and type of development at variance with, and out of keeping with, its rural setting. The significant visual harm it would cause to this attractive rural landscape would be contrary to RSS policy SD8, LMWLP policies 2 and 7, and WBLP policies SP13+14b.

Booster Pump Station (BPS)

20.7.25 The BPS, although not as massive as the GCS, would still be a substantial building. Its ‘Y-shaped’ plan would have a maximum width of 130m, with principal wings some 20m deep. It would be some 11m high at its highest point, a chimney, but with an indicated ridge height of just over 9m [14.3.74 & revised Application Plans CD/75t(r) and u(r)]. To the rear there would be an extensive ‘Insolubles Settling Pipe Array’; the above-surface elements of which would be a series of parallel, approximately 30m long, 1m diameter pipes on 1m high supports; an obviously industrial feature clearly visible from the public footpath at the north-western corner of the BPS site in the early years of development. However, if this planting was as successful as the nearby planting to the west of Coat Walls Farm, it would become screened by CGSL’s proposed planting to north and west and would then cease to be an intrusive associated feature of the BPS facility.

20.7.26 For CGSL it was accepted that the BPS building would be ‘locally prominent within the open low lying pasture landscape to the south’ [13.1.6(ix)]. The proposed site for the BPS would be on south facing rising ground on the edge of an extensive area of open, low lying arable land. In addition to being visible from the footpath referred to above, it would be particularly prominent when viewed from an extensive length of the Wyre Way, which would be only some 350m away to the west at its closest. It would also be prominent when viewed from the public paths/bridleways which lead east, away
from the Wyre Way along Agglebys Road and Corcas Lane, towards Back Lane and the settlements of Stalmine and Preesall.

20.7.27 Although not substantially larger than the group of agricultural buildings to the north which comprise Coat Walls Farm, it could not be mistaken for a farm building, and although not as prominent as the GCS, it would nonetheless appear as a prominent and incongruous industrial building within an essentially open rural landscape even after year 15 [Doc.CGS/11/3b - Fig.6]. As with the GCS, the scale and appearance of this element of the development would be at variance with, and out of keeping with, its rural setting. The visual harm it would cause to this attractive rural landscape would also be contrary to those policies referred to at 20.7.24 above.

Wellheads

20.7.28 The locations of the proposed caverns are, at this stage, necessarily illustrative. Only their individual wellheads have site-specific surface locations. About half of the proposed caverns are currently intended to be sited below parts of the estuary that are inundated at high tide. All of the wellheads would be located landward of the current sea-embankment defences; although in a number of cases they would be extremely close to these sea defences [13.1.6(xi)].

20.7.29 Wellhead groups 1, 25 and 3, and 15, 16 and 17, together with the slightly more dispersed grouping of 18, 19 and 20, would be located in particularly exposed positions on the edge of the estuary. Similarly, 2, 4, 7, 26, 10 and 14 would also be particularly conspicuous from the Wyre Way [see Air-photo-based Master Plan CGS/11/3a]. Common features of the design of the wider well-head area would be a 12m wide horse-shoe shaped compound with 3m high security fence and surrounding planting, some of which would be on embankment, although groups 1, 25 and 3, and 21 – 24, appear not to have this latter feature [Doc.CGS/11/3 -Fig.8]. The horse-shoe shape would provide track access through the embankment for maintenance purposes.

20.7.30 Over time, the proposed planting would help the wellheads to merge with their surroundings when viewed from a distance. However, from close to, the presence of security fencing, the access track(s), and maintenance lighting, of which no details of the latter are yet available, would draw attention to the fact that these are elements of an industrial facility. Those on the more exposed edges of the estuary would be likely to remain incongruous features. Those wellheads to be located in slightly more inland locations towards the northern end of the appeal site (2, 4, 5, 8, 9, 11 and 12) would ultimately look less out of keeping due to the presence of several stands of woodland within the landscape; although they would have a visually detrimental impact until such time as the landscaping matured. While in general terms the planting of trees would accord with LSP policies which seek to increase tree planting within Lancashire, both location and species need to be appropriate, particularly in coastal locations open to public view or access.

20.7.31 These conclusions must remain necessarily tentative. While CGSL have put forward details of security measures it anticipates would be necessary, those have yet to be agreed with the HSE as part of any COMAH application, and they formed no part of HSE’s response with respect to the HSC application. PWG and local residents point to the exposed nature of the estuary and contrast what is intended here with the levels of security often required at other ‘top tier’ COMAH sites. As noted above [20.4.22], from my observation of the gas landfall facility at Barrow in Furness [1.7], security is
maintained by a combination of fencing, permanent staff presence, and an absence of landscaping which would otherwise prevent visual surveillance. If such measures were to be required by the HSE for security reasons, either initially or at some time in the future, the well-heads would remain incongruous industrial features out of keeping with this rural landscape.

**Access Roads and Tracks**

20.7.32 The access roads to the BPS and the GCS would be 7.3m wide bitumen-surfaced roads. In the case of the BPS this would be a ‘Y-shaped’ road giving access to both the main building and the pipe array to the rear, while for the GCS the road would wrap around the southern end of the building giving access to both the building and the ancillary external plant. In both cases the roads would be about 1km in length. Even though these roads would be hedge-lined they would remain prominent features within the landscape because they would be so much wider than the existing closely hedge-lined country lanes that characterize this area. They would draw attention to the industrial nature of the proposed buildings and detract from the open rural landscape through which they would pass.

20.7.33 The 4.3m wide maintenance tracks that would primarily provide access to the well-heads, but also link the BPS to the GCS, would comprise a combination of new and existing tracks; many of the latter being the remains of the maintenance tracks installed as part of the former ICI brine working. Although amounting to physical evidence of the former use of the area, they have a similar appearance to farm access tracks and, although somewhat geometrical in layout, are generally not so intrusive as to detract from the open rural nature of the landscape. Subject to efforts being made to maximize the use of existing tracks and minimize the creation of new lengths of track across otherwise productive farm land, these tracks would not seriously detract from the appearance of the landscape.

**Sea-Water Pumping Station**

20.7.34 As noted above [20.7.14], the Sea-water Pumping Station (SPS) and the construction of the pipeline under the estuary to link the SPS to the BPS would result in both permanent and temporary impacts. Following completion of the activity associated with the under-estuary sea-water and saturated brine pipelines, permanent surface facilities for these pipelines on the eastern side of the estuary would be contained in the BPS or the settling pipe array to the rear. On the western side they would be contained within the SPS. In both instances they would have no other permanent visual impact.

20.7.35 The SPS would be located close to the south-eastern corner of Fleetwood Inner dock to provide easy access to a supply of sea-water [Doc.CD/3 - Figs.8 and 13a]. This is an area containing a mixture of operational dockside buildings to the west, and cleared land and redundant/derelict buildings to the east. The area has little visual merit and I consider that a modern industrial building such as the proposed SPS could only have a beneficial visual impact here.

**Visual impact of subsidence from cavern roof collapse**

20.7.36 I have considered the potential impact of cavern roof collapse on the salt marsh as a feeding area within an internationally designated site in section 20.6 above [20.6.12 onwards]. Crown holes resulting from cavern roof collapse would also have a seriously detrimental impact on the appearance of the salt marsh, which is a significant visual
amenity in its own right. Visual harm to this area as a result of such a collapse would be unacceptable, and the risk of such a collapse, without evidence that it could never occur, amounts to sufficient justification for a refusal of planning permission.

20.7.37 The Assessor has drawn attention to the potential for a failure during cavern construction or decommissioning to result in void migration and crown hole surface collapse [AR7.6, AR8.3]. In response to questions from the Assessor, the specialist witnesses for CGSL and LCC confirmed that a roof collapse in a cavern whilst under construction, during its operational phase, or after decommissioning would lead to crown hole collapse at the surface rather than generalized subsidence [AR7.6]. Recent subsidence events such as that associated with BW88 to the north of Height O’t h Hill, which started in 1995 but continues to subside, indicate the scale of the damage to the landscape that such events can create.

20.7.38 The visual impact of the collapse of former brine-well BW88 is stark. It is on rising ground, and has taken the form of a deep flooded crater approaching some 100m in width with steep ‘cliff-like’ sides which continue to collapse as the unconsolidated superficial materials and weak mudstones erode back towards a stable angle. The scar created is visible from over an extensive length of the Wyre Way as well as from various other public vantage points. The Assessor has estimated the potential sizes of crown-holes that could be associated with catastrophic collapse of any of the proposed caverns [AR6.93 Diagram]; these could be of a similar scale to those already visible in the former brine field. The visual impact of this eventuality is not a matter that has been addressed by any of the parties to the inquiry.

20.7.39 The extent of the visual harm caused by such a collapse of one of the proposed caverns would vary depending on location but, in view of their proximity to the Wyre Way, they would always be significant, and if in close proximity to the Wyre Way or within the inter-tidal marsh, would be seriously detrimental to and change the whole character and appearance of this part of the estuary and its coastline. The implications for the well-being of the ecology of the Designated Sites and public safety on the Wyre Way are dealt with elsewhere in my conclusions.

20.7.40 The only way to design out the possibility of void migration to the surface would be to increase the depth of the caverns, where salt thickness allowed, and/or reduce their size so that material falling in to them if the roof failed would fill the cavern, support the overburden and arrest further migration [AR7.8]. However, this would result in a significant further reduction in the proposed storage capacity.

20.7.41 I conclude that the visual harm of crown hole collapse would be unacceptable here, would be contrary to JLSP policy 20, LMWLP policies 2, 7 and 72 and policy ENV2 of the WBLP, and that this element of the appeal proposal raises an unacceptable risk sufficient to justify a refusal of planning permission.

Other Planning Policies

20.7.42 I place little weight on the argument that the proposed development contains similar elements to those exhibited by shore-based facilities required by off-shore hydro-carbon developments, and that such facilities are permitted as an exception to the normal prohibition of development in the coastal zone. SP Policy 23 only provides for developments that require a coastal location. Other than reliance on sea water as the source of cavern-washing water, which is preferable to but could be replaced by fresh water, that is not the case here. The appellant’s choice of location is entirely dependant
on the geological location of the salt deposit which just happens here to be located close to the coast.

20.7.43 I also place little weight on the argument that the capacity of this landscape to accommodate the proposed development should be based on the capacity of this landscape to accommodate change associated with renewable energy proposals for wind-farms. In the first instance, this is neither a wind-farm proposal nor a renewable energy proposal. More significantly, Lancashire’s Joint Advisory Committee for Strategic Planning has expressly excluded the draft SPG document as further policy guidance on landscape and heritage because of the potential of the guidance to generate excessive numbers of planning applications for renewable energy developments. It is apparent that the extent to which the ‘Study of Landscape Sensitivity to Wind Development’ will have a bearing on future policy in Lancashire is currently uncertain and would, in any event, be through an SPD on Renewable Energy [13.3.62-67]

20.8 Impact on the Wyre Estuary/Wyre Way and other footpaths

20.8.1 The principal consideration is whether the proposal would have a seriously detrimental impact on the utility and enjoyment of the Wyre Way and other footpaths.

20.8.2 The Wyre Way forms a 26km (16 mile) link around the estuary, the mouth of which causes a break in the Lancashire Coastal Way. It also provides public accessibility to the foreshore and points from which the natural beauty and wildlife of the Estuary can be observed. From what I saw it appears to be a well used linear recreation route on both the western and eastern banks of the Wyre.

20.8.3 During the construction phase, the development would result in a visual and aural loss of amenity, particularly for people using that section of the Wyre Way on the eastern side of the estuary for recreation purposes. Many of the proposed well-heads, with their attendant construction equipment, would be located within some 300m of the path; with a number very much closer at only some 10-20m away. Noise from construction plant, machinery and vehicles, would clearly conflict with the quiet enjoyment of this rural coastal path. In view of the number of wells involved, this would result in a sustained period of amenity loss.

20.8.4 A number of the existing tracks proposed to be used for site access by construction traffic [2.5 Table - Doc.CD/75s(r)] are either also public footpaths or bridleway, or cross footpaths or bridleway. While measures can be taken to ensure the safety of users of the footpaths and bridleway [see para.20.9.29 below], the presence and movement of construction plant, materials and vehicles would result in a loss of amenity for the users of those rights of way. I conclude that the appeal proposals do not accord with the objectives which underlie LMWLP policy 31 which aims to avoid adverse impacts on the amenity and recreational value of public rights of way. While these impacts would not be sufficient in their own right to justify a refusal of planning permission they are a factor which weighs against the proposal.

20.8.5 I have already referred above to the potential for a failure during cavern construction or decommissioning resulting in void migration and surface subsidence [20.7.38 above]. An example of the impact of subsidence on access is provided by that associated with BWs 52 and 53. Although this large subsidence started in 1974 it has yet to stabilize and continues to subside. It has now extended as far as Agglebys Road; severing that
footpath link between the Wyre Way and Back Lane. The definitive footpath link between Agglebys Road and Corcas Lane to the south has also been severed by this subsidence. Any similar failure of a proposed cavern located in the vicinity of the Wyre Way could result in the severing of this important coastal path; severely restricting public access to and enjoyment of the estuary. This would be contrary to LMWLP Policy 32. In the absence of a technical assessment and scheme design that guaranteed that such an eventuality could not occur [AR 8.3.1], I conclude that this amounts to an unacceptable risk and a very strong argument against the grant of planning permission.

20.8.6 Impact on the amenity of users of the Wyre Way west of the estuary would be far more limited. There would be some noise and disturbance from the drilling operation associated with construction of the under-estuary pipeline providing the electrical connection between the GCS and the Thornton industrial estate [6.2.9]. However, this would be of relatively short duration and the plant would be located within an active industrial estate, located just to the west of the Wyre Way and the edge of the estuary, where existing users are already subject to a degree of noise and disturbance.

20.9 Highway safety and highway impact on amenity

20.9.1 The principal considerations are:

- Impact of the proposal on highway safety in the vicinity of the proposed principal access from A588 and the acceptability of potential alternatives;
- Impact on traffic flows/accidents on the highway network;
- Impact of construction traffic on properties in Cemetery Lane;
- Provision of on-site access roads and impact on safety of other users;
- Impact of non-HGV construction, employee and ‘maintenance/works’ traffic on local roads;

The impact of the proposal on highway safety in the vicinity of the proposed principal access from A588 and the acceptability of potential alternatives.

Junction of A588 with Cemetery Lane/B5377

20.9.2 This is a seriously sub-standard junction, complicated by the A588 turning through a right angle (from north to east) at what is a cross-roads, and with the B5377 being a continuation north from the southerly section of the A588. During the site visit I noted that some local traffic, effectively carrying straight on in a northerly direction onto the ‘B’ road, indicated to turn left, while some did not. Similarly, some traffic continuing on the A588 through the right-angle priority turn indicated right, while others did not. Visibility along the A588 for drivers approaching the junction from either the south or east is poor due to the abrupt change in alignment. These problems are exacerbated by the fact that, while priority is given to A588 traffic, the dominant flow is A588/B5377. The types of accident noted in the period 1999 – 2005 [Docs.CGS/13/4 & LCC/5/6] reflect these difficulties and the substandard nature of the junction.

20.9.3 The use of a mini-roundabout as suggested by CGSL would not amount to a material improvement here notwithstanding the additional road-space that would be provided by
the inclusion of part of the garden of Prospect House. Firstly, such roundabouts are intended for urban locations and should only be used when all approaches are subject to a 30mph speed limit [TD 16/93 para.2.3]; this is not such a location and speed surveys indicate 2-way 85th percentile speed of 38mph [LCC/5/4 App.C]. Secondly, and more importantly, the swept paths submitted indicate that there could be no raised centre to the roundabout because many HGVs and Rigid Trucks would need to pass over it when travelling along the A588, and when leaving or entering the A588 to and from Cemetery Lane [CGS/13/3 App.C – A11, A14, A15, A17-20]. As the roundabout could only be formed by a painted circle it would be unlikely to have the desired effect of warning and encouraging approaching vehicles to slow down; particularly those travelling north from the A588 onto the B5377. TD 16/93 notes that there is evidence that such flat central markings increase accident risks.

20.9.4 There would also be problems created by HGVs and Rigid Trucks turning left off the A588 into Cemetery Lane effectively forming an obstruction to vehicles approaching on the A588 from the east; the swept paths indicating that both vehicles would need to occupy the same central section of road.

20.9.5 While HGVs travelling to and from farms in the immediate locality currently enter and leave Cemetery Lane, these are very limited in number. Traffic flows currently entering and leaving Cemetery Lane are acknowledged by CGSL to be low [14.3.6]. In contrast, the majority of HGVs generated by the appeal proposal would undertake this manoeuvre as it is anticipated the majority of HGVs would approach from the national road network via the A585 to the south. This would tend to exacerbate traffic movement conflicts at this junction.

20.9.6 CGSL claimed that it now had control over the additional land currently within the curtilage of Prospect House required to provide the space for the mini-roundabout, although precise details of the extent of the interest were not before the inquiry. More particularly, no planning application has been made and the views of the LPA as to the acceptability, or otherwise, of this proposal are not known. There is, therefore, no certainty that these proposed improvements would be permitted.

20.9.7 One ‘environmental’ disadvantage is that it would have the effect of bringing the edge of the highway, which would not have a footpath here, somewhat closer to the front elevation of Prospect House and main ‘A’ road traffic would then pass within 2m of the front elevation of this property, making it a somewhat less attractive dwelling in which to live.

New Temporary Link Road

20.9.8 In highway terms this would clearly be a superior option. Doc.CD/62 indicates that acceptable levels of visibility could be achieved at both the junction with A588 and with Cemetery Lane. Variations in the choice of 2.5m or 4.5m set back (‘X’ distance) at the A588 would affect the degree to which the existing hedgerow would need to be removed [14.2.5]. As this would be effectively a private access, which at its worst would involve some 72 HGV movements per day, and not an access open to use by the general public, an ‘X’ distance of 2.5m would be acceptable. Control over the use of the access is a matter that would need to be addressed by further details that would need to be submitted (see condition no.39 Appendix B).

20.9.9 Schematic details of a route for this link road were set out in the supplementary environmental information [Doc.CD/7 App.1 Plan App.A]. This alternative does not,
however, form part of the application the subject of these appeals and no other planning application has been submitted. At the time of the close of the inquiry limited details of the scope or extent of any agreements reached with the various land owners had been submitted [14.4.7]. Only limited site surveys had been undertaken and no consultations on a detailed scheme appeared to have been undertaken by or with bodies that may have an interest. While EN may well be satisfied with a precautionary approach to possible impacts on protected species which may be affected [14.4.6], there is as yet no certainty that planning permission for such a proposal would be forthcoming.

20.9.10 Of greater importance is the ability to achieve a scheme that would be acceptable both in the medium term, i.e. during the construction phase of some 8 or so years, and in the longer term to enable decommissioning traffic to enter and leave during a period starting some 30 or more years into the future. This raises two significant uncertainties. Firstly whether the owners of the land in some 30 years time would be prepared to see the link road re-established, and secondly, whether it represents a sustainable approach to development to install a road, remove it and reclaim the land after some 8 years, then re-install it some time later, and then reclaim it yet again. Such an approach could only be justified where there was an otherwise overriding need for this storage facility.

20.9.11 In the context of this appeal there must also be doubt as to whether a condition could be drafted that would ensure not only that the link-road is built now and then removed, but that it will be re-built at some time in the future in concert with proposals for the decommissioning of the site at that future date. Further uncertainty is raised with respect to the impact of any unforeseen need to decommission a storage cavern in advance of the programme currently envisaged.

20.9.12 All other roads linking the Preesall Salt Field area to the A588 are so narrow as to be incapable of accommodating the HGV movements without unacceptable harm to the character and appearance of the area, and an unacceptable reduction in the safety of other road users; including motorists, pedestrians, horse riders, and the local agricultural traffic which uses these lanes to access fields and farms.

20.9.13 I conclude that the proposed means of access either by link road or via a mini-roundabout are unacceptable for the reasons set out above. In the absence of any alternative means of providing acceptable HGV access to the site I also conclude that this amounts to sufficient justification for a refusal of planning permission.

**Impact on traffic flows/accident rates on the highway network**

Impact on A588

20.9.14 The A588 carries a two-way flow of some 10,000 vpd of which some 500 are HGVs. The appeal proposals would result in a total daily traffic increase of about 1%, and an average increase in HGVs of the order of 5%, although anticipated peak flows of 72 HGV movements per day on some (peak) days would represent a more significant (14%) increase [Doc.CD62 para.7.1]. The A588 does not have a particularly good accident record, and the specific problems associated with the A588/Cemetery Lane/B5377 junction have been noted above. However, a 1% increase in total daily traffic flows generally along this road would be well within normal daily variation and would not result in any measurable decline in safety for motorists, pedestrians or other road users.
20.9.15 While a 14% increase in HGV movements appears significant, the 36 HGV 2-way movements would be a peak daily flow against a maximum weekly flow of some 60 HGV 2-way trips i.e. a daily average during those weeks of 24 movements [Doc.CGS/13/3/App.D].  Weeks with peak days would also contain days with commensurate reductions in HGV flows.  Against the normal background of fluctuating traffic flows this level of HGV traffic generation would not have a material impact on traffic flows or highway safety on the main highway network.

20.9.16 In arriving at this conclusion I have noted that for a 12-week period there would be additional HGV traffic on the network supplying pipes for the associated gas pipeline connector to the NTS [Doc.CGS/13/3/App.E].  The supply routes comprise combinations of lengths of A-class and more minor roads.  The A588 from Shard Bridge as far as Preesall would carry some 13 2-way HGV trips per day for 9 weeks, 6 weeks of which would continue along the length of the A588 as far as Stake Pool.  More minor roads would be used for periods of between 1 and 3 weeks, although the weekly rate of use of these minor roads would still be of the order of 13 2-way trips per day.

20.9.17 This related element of the gas storage proposal was the subject of a separate planning application that, at the time of the inquiry, still remained to be determined by WBC as LPA.

Impact on A585(T)

20.9.18 The A585(T) links Fleetwood to the national motorway network.  It is a generally good standard single carriageway road and carries some 23,000 vpd of which some 1,500 are HGVs [14.1.3].  It is no part of the highway authority’s case that the construction of the Seawater Pumping Station and Brine Discharge Pipeline, which would generate a total of some 635 HGV 2-way construction trips solely during year 1, would generate traffic flows resulting in unacceptable impacts on this part of the highway network.  Similarly, traffic generated by construction workers’ cars and vans would be equally insignificant.

20.9.19 As the seawater pumping station would be unmanned, and would be only occasionally visited for maintenance purposes, it would have no measurable traffic impact during operation.

Impact of construction traffic on properties in Cemetery Lane

20.9.20 The occupiers of Park Farm Cottages were concerned that these properties, which are located very close to the edge of the lane, would be damaged as a result of vibration caused by the passage of HGVs during the construction phases.  It was emphasized that, due to their age and form of construction, they did not benefit from substantial foundations and would be vulnerable to vibration.

20.9.21 I accept that these dwellings are not constructed to modern standards.  However, they are not dissimilar to many other properties of a similar age.  The passing of a lorry built to normal construction and use standards for use on the public highway would not create the level of vibration necessary to damage property.  Moreover, the speed of any such vehicle travelling along this westerly length of Cemetery Lane would be limited by the horizontal alignment of the road, and the proximity of its junction with Back Lane.
20.9.22 Cemetery Lane is currently lightly trafficked. Consequently noise from passing vehicles would be likely to cause some loss of amenity; particularly on those ‘peak’ days when there could be some 72 HGVs movements using the lane. The initial 3-year construction phase is the period during which there would be the higher levels of HGV traffic generation. Within that period, and notwithstanding the peak generation figure, the weekly generation rates would vary between 20 and 60 2-way trips per week [Doc.CGS/13/3 App.D], a maximum weekly rate only 40% higher than the above ‘peak’ daily rate. I conclude that this frequency of disturbance, although noticeable, would not be sufficient to amount to an unacceptable loss of residential amenity for the occupiers of dwellings in Cemetery Lane.

**Provision of on-site access roads and tracks and impact on safety of other users**

**Cemetery Lane/Back Lane**

20.9.23 The western half of Cemetery Lane is of sufficient width to allow 2 vehicles to pass, and the highway authority’s principal concern relates to the adequacy of its junction, rather than the ability of Cemetery Lane to accommodate the proposed HGVs. While there is some disagreement between LCC and CGSL as to the appropriate design and visibility standards for the junction of Cemetery Lane, Back Lane and the main site access, CGSL is prepared to accept a condition which requires LCCs visibility standards to be provided.

20.9.24 The visibility standards, staggered access and minor carriageway realignment required by LCC can be achieved within the highway or within land under the control of CGSL and are shown on plan CGS/13/3d. While this would have some detrimental impact on the rural appearance of this part of this country lane it would not amount to a significant material harm in the context of this proposal.

**Main site access**

20.9.25 The on-site access road from the Back Lane/Cemetery Lane junction travels in a generally north-westerly direction towards the booster pump station and on to the north-south ‘spine’ access track [Plan - Doc.CD75s(r)]. The originally proposed alignment went between brine wells BW50 and BW51. While a revised alignment has been put forward by CGSL which claims to avoid existing cavern locations, this route would appear to pass through part of the complex of farm buildings associated with the Park Cottage Farm holding. More significantly, it appears to be close to BWs 45, 46 and 51 and certainly within the zone liable to generalised or catastrophic subsidence if one or more of these caverns were to fail in the future [AR8.8 – 8.9]. At the present time, there continues to be uncertainty as to the practicability of this route.

20.9.26 It is also noted that this revised route lies, in part, outside the boundary of the appeal site, although within land under the ownership or control of CGSL or one of its affiliated companies.

**Highgate Lane access to Compressor Station, southern part of site and site spine road.**

20.9.27 LCC would normally prefer a staggered junction, rather than a cross-road junction, in this type of location. However, LCC accepts that, in view of the comparatively low level of traffic generated, and the temporary nature of the use of the northern arm of the on-site access track, a simple cross-road junction would be acceptable (Doc.CD62.para.4.2). That is a view with which I concur.
20.9.28 While there is agreement on a ‘Y’ visibility distance of 90m, CGSL consider a 2.5m ‘X’ distance to be sufficient. Adequate visibility can be obtained at the proposed junction and the likely level of use of either the existing road by non-site traffic, or the proposed site access roads by site generated traffic, both during construction and during operation of the appeal proposal would not cause significant hazard to other road users. Due to the relative narrowness of the road-side verges, there would be little difference in the visual impact of the provision of either a 2.5m or 4.5m visibility splay in terms of the lengths of existing hedgerow that would need to be removed. As this country lane does not have a pavement it is important that pedestrians and horse-riders should see and be seen by motorists. A 4.5m ‘X’ distance would be justified.

Designated footpaths and bridleways affected by the temporary access roads

20.9.29 In addition to the new lengths of surface access road to the Booster Pump Station and the Gas Compressor Station, there are proposed new site access tracks, linking to existing site tracks, which will provide access from the surface access roads to the various wellhead locations (Plan CD/75 (6)). It is accepted that the users of the lengths of designated footpaths and bridleways that would be affected by the temporary access roads would need to be protected [14.2.14]. Means of segregation or separation are common features on mineral developments and there is nothing particularly unusual with respect to this proposal that would suggest that adequate levels of safety could not be similarly achieved here. These would be matters of detailed design requiring later approval and can be the subject of appropriate conditions (see draft condition no.47).

Impact of non-HGV construction traffic and employee and ‘maintenance/works’ traffic on local roads;

Access for construction workforce

20.9.30 Concerns were raised about the impact of vehicles associated with the journeys to work of construction staff. There would be a maximum of some 150 people employed on site during the construction phase[16.1.12]. These could generate significant flows of cars and vans at the ends of shifts and this would have a detrimental impact on road safety and cause congestion, particularly on the narrower lanes around the site. While these workers would be employed at various locations across the site, as employees of CGSL, its contractors or sub-contractors, it would be possible for CGSL to ensure that they approached the site from Cemetery Lane and then entered the site either directly, or via Highgate Lane if working on the southern half of the site. They would also need to leave the locality via Cemetery Lane. This could be the subject of an appropriate condition.

Access for the operational workforce

20.9.31 Concerns were also raised about the impact of vehicles associated with the journeys to work of operational staff once the storage facility had been commissioned. The numbers of permanent operational staff on site, at 30, would be small. They would be concentrated at the Compressor Station, although some would also be employed at the Booster Pump Station, particularly during the solution mining stage. It is to be anticipated that these latter personnel would gain access to the site via Cemetery Lane and the main site access. They would be unlikely to make use of the other surrounding country lanes as these lanes would not provide either a quicker or easier journey to work.
20.9.32 There is the potential for staff employed at the Compressor Station to approach from a southerly direction via Staynall Lane and Highgate Lane. While the roads linking through to the A588 are unsuitable for use by HGVs, Staynall Lane, Highgate Lane and Back Lane are not so narrow as to be incapable of accommodating car and light van traffic generated by employee movements. Moreover, as the number of staff would be small, numbers of car and van trips involved would also be small, and not sufficient to result in any measurable increase in risk to pedestrians, motorists or other road users sufficient to justify control by way of imposition of a condition, or any other limitation on the normal unrestricted use of these public roads.

20.9.33 The potential problem of increased car and light van site traffic using Burrows Lane could be controlled by conditions limiting the use of the access from the Gas Compressor Station across Burrows Lane [Plan Doc.CGS/13/9a] to maintenance purposes only. On the basis of CGSL’s technical evidence there is some doubt as to whether storage caverns 21–24 would be constructed [AR5.33; AR6.100]. In such circumstances there would be no need for this maintenance access across Burrows Lane to be constructed.

20.10 Noise impact on areas East and West of the Wyre Estuary

20.10.1 The principal considerations are:

- The impact of the level and duration of construction noise on residential amenity
- The impact of operational noise from the Gas Compressor Station, particularly the associated gas driers, on residential amenity in Staynall

The impact of the level and duration of construction noise on residential amenity

Brine outfall pipe/seawall crossing

20.10.2 There are a number of elements of the scheme likely to give rise to construction noise [15.2.1+2]. These include, the construction of the brine outfall seawall crossing, the laying of the brine pipeline, under-estuary crossings for sea-water pipe and brine outfall pipe and electricity inter-connector, sea-water pumping station, booster pump station, gas compressor station, well-head drilling, and installation of interconnecting site pipework between the well heads and the booster pump station and gas compressor station.

20.10.3 The brine outfall/seawall crossing is anticipated to take some 6 months to construct [15.2.3]. Noise levels in the vicinity of the works at the western end of West Way are predicted to be some 59dB $L_{Aeq}$ [15.1.5 -Table D7]. This would have little impact on daytime noise levels, and the survey information indicates variation in existing nighttime noise levels with some close to the predicted construction noise level; background noise being influenced by distant traffic noise, and wind and sea noise. The Rossall Hospital buildings would be closest to this activity. The nearest residential properties are sufficiently distant not to be seriously affected. In view of the intermittent nature of this construction activity, control of night time noise generation, in so far as it might have a detrimental impact on the Hospital, could be by the imposition of conditions [15.1.6].

20.10.4 The brine pipeline linking the seawater pumping station to the outfall/seawall crossing would be laid by conventional ‘open cut’ means, with boring used under roads and
junctions to avoid disruption. Construction is anticipated to take some 6 months [15.1.5 +15.2.3]. While properties on the eastern side of South Strand, and those parts of the caravan park closest to Jameson Road, would be affected by this construction noise, the durations would be limited to no more than a month. Conditions could be imposed to ensure no unacceptable loss of amenity at night. Day time levels, at some 72 and 69 dBL\text{AeqT} respectively would be sufficient to detract significantly from the enjoyment of those properties if generated for a sustained period. However, MPS2 allows for temporary day-time operations of the order of 70dB(A)\text{Leq} 1hr so long as these do not last for periods in excess of 8 weeks per year. In view of the limited duration of these pipeline works in any one location, I conclude that noise levels would not be so high as to result in sufficient loss of amenity to justify a refusal of planning permission in the event of the appeal proposal being otherwise acceptable. Noise from the construction of the remaining lengths of this pipeline would not result in significant loss of residential amenity.

On-site pipework

20.10.5 Similar levels of noise would be generated by the installation of the on-site pipe-work for sea-water, saturated brine and gas which would connect the well-heads to the Booster Pump and Gas Compression stations. These levels would not be such as to result in any significant loss of amenity for occupiers of residential properties in the vicinity of the site.

Under-estuary pipelines

20.10.6 Although lasting for a period of some 8 months (4 months at each location) [15.2.3], noise associated with the directional drilling for the under-estuary pipelines and electricity crossing would not result in loss of amenity within the nearest residential areas [15.1.5].

SPS, BPS and GCS construction noise

20.10.7 Noise generated by the construction of the SPS, BPS and GCS would not, for the most part, result in a loss of amenity for occupiers of residential property in the locality. Cote Walls Farm would be subject to daytime noise levels causing moderate annoyance with respect to the BPS, while Carter’s Farm would be similarly affected with respect to the GCS. The former would be for a period of up to 12 months, while the latter would be for up to 24 months. I conclude that this temporary loss of amenity would not be sufficient to justify a refusal of planning permission. Cote Walls Farm\textsuperscript{35} would in any event then be subject to loss of amenity due to drilling noise (see below) which would be likely to make its occupation for residential purposes unacceptable.

20.10.8 Similar conclusions can be drawn with respect to the construction or modification of the various tracks within the site [15.1.5]. These would then become the haul roads for the further development of the site and its subsequent maintenance.

Drilling Noise

20.10.9 The impact of noise associated with the drilling of the well-heads remains an area of significant dispute between CGSL and LCC. While the likely levels of noise to be experienced at representative sensitive receptors were not in dispute [15.2.14] there was disagreement as to the appropriate approach to assessing the likely impact of such noise.

\textsuperscript{35} Also referred to as Coat Walls Farm on OS Landranger Map 102, and Cotes Wall Farm elsewhere
noise; CGSL preferring the absolute limit approach set out in mineral planning policy statement MPS2, while LCC considered that the analysis should be based on BS4142:1997.

20.10.10 While CGSL did not agree the appropriateness of the methodology used by LCC the predicted $L_{Aeq}$ levels in the locations and for the periods shown was agreed. The mathematical evidence presented by LCC showing that, without additional mitigation, the background levels would be exceeded by the predicted $L_{Aeq}$ levels was accepted [15.2.15].

20.10.11 For LCC it had been agreed that the drilling operation would be temporary, actual drilling would be over a 2-3 year period within a 6 year window, the drilling programme would be staggered, and at any one location the closest rig (and hence the highest noise) would be in position for a 4 - 6 week period [15.2.16].

20.10.12 The guidance in MPS2 indicates that, subject to a maximum of 55 dB(A)$L_{Aeq}$ 1hr, a noise limit of 10dB(A) above background should be aimed for; evening limits should not exceed background by more than10dB(A); and night-time limits should not exceed 42dB(A) $L_{Aeq}$ 1hr [16.3.6]. In addition, peak or impulsive noise should not be allowed to occur regularly at night. This generally accords with the BS4142 approach. It is also to be noted that, while MPS2 does not explicitly refer to BS4142 within the text of Annex 2-Noise, it is the first of the standards referred to in the bibliography to that document. This reinforces the view that LCC’s approach to the assessment of the noise impacts of this proposal is not inappropriate. The fact that LCC have not used this approach on minerals applications elsewhere in Lancashire is unsurprising, as the features of the noise generating activities associated with the development of an underground gas storage facility as proposed here are not normally replicated on conventional mining or quarrying operations, and there have been no recent planning applications for solution mining in this locality, or elsewhere in Lancashire.

20.10.13 CGSL consider that as the drilling is a temporary operation, it should be subject to the less onerous MPS2 standard set for temporary operations of 70dB(A)$L_{Aeq}$ 1hr. However, that is a daytime maximum, and then only for periods of up to 8 weeks per year.

20.10.14 Well-head drilling would take place over a period of some 78 months. The activity is described by CGSL as intermittent on the assumption of some 4-6 weeks of drilling for each borehole [15.2.3]. Aggregated, drilling would take place during up to 36 of those 78 months. As the caverns are expected to be washed in groups of 6 – 8 at a time, this would dictate that groups of well-heads would be drilled in sequence. In those locations where there are groups of well-heads; e.g. 1, 25+3, 15-17, 18-20, any other approach would be illogical. Moreover, with these latter two groups, if undertaken in sequence, there would be a lengthy period of disturbance for occupiers of Sportsmans Caravan Park as well as Cotes Wall Farm. The occupiers of The Heads Caravan Park would be similarly affected but, as they would also be affected by the HSE safety zone, they are proposed to be displaced.

20.10.15 Drilling would also take place at night and in many locations the maximum level of 42dB $L_{Aeq,T}$ would be reached or exceeded [15.2.15]. In addition, noise levels for other receptors would be 10dB(A) or more above background levels. This is clearly contrary to the guidance contained in MPS2. The fact that the noise at any one
receptor is highest for only one period does not make those lower noise levels somehow acceptable if they still remain above 42dB $L_{Aeq,T}$.

20.10.16 Mr and Mrs Jackson drew particular attention to the noise generated when the drill ‘string’ was broken to insert or remove lengths of pipe [15.4.1]. I accept that such percussive sounds can be particularly intrusive, especially if occurring at night.

20.10.17 While it is accepted that the equipment to be used at Byley was anticipated to generate less noise [15.2.21] it is not equipment that CGSL anticipated would be used here. Moreover, while CGSL argued that the level of 109dB $L_{WA}$ represented a source noise level that had not been subject to further mitigation, the only supporting evidence presented by CGSL was for plant which, despite being subject to extensive mitigation measures, still produced a source level of 109dBL$_{WA}$. In these circumstances, CGSL’s argument that it would be able to achieve substantially lower noise levels was not supported by the evidence.

20.10.18 The closest concentrations of permanent residents to the well-head locations are in the Park Lane area, between Pressall and Pressall Park, and at Staynall. There is also a concentration of permanent residential properties to the west of Park Lane fronting Back Lane in the vicinity of Acres Lane. Although closer to the well-heads, these latter properties lie within folds in the landscape and are not elevated, unlike those fronting Park Lane. At the representative locations for these areas, R12, R14 and R24 [15.1.18] day-time drilling noise levels would be acceptable. Night-time levels would, for the most part, remain well below 42dB and well within normal night-time standards.

20.10.19 The exception would be for Staynall during the drilling of holes 21-24. While the choice of ‘Rosy Nook’ might slightly underestimate those noise levels in the remainder of Staynall where the land is at a higher elevation, but further away, this difference in level is unlikely to result in a significant increase in night-time noise levels at these other properties. In the event of the appellant deciding not to create caverns 21-24, as appears likely [AR5.33], Staynall would no longer be affected by night-time drilling noise.

20.10.20 Residents of more isolated properties, several of which are occupied by farmers who work the surrounding land, would be more seriously affected. Cote Walls Farm is the most seriously affected. Some 12 of the drilling periods would see night-time increases of over 10dB, with 8 being over 42dB and a further 3 at 42dB. This would be an unacceptable night-time environment and its occupants would need to move. Hoys Farm, and to a lesser extent Curwane Hill, would also be subject to several periods when night-time noise levels would be over 10dB above background, although these would not be expected to exceed 42dB and an appropriate internal ‘bed-room’ noise level could be maintained.

20.10.21 Little Height o’th Hill could be subject to extensive periods of night-time noise at or above 40db during the drilling of caverns 18-23, of which 20 and 21 would be above 42dB. This would result in an unacceptable loss of amenity at night. It is to be noted, however, that the highest level of noise would be associated with drilling cavern 21, and as I have noted above, there is not certainty that caverns 21-24 would be constructed.

20.10.22 The largest concentration of residents seriously affected would be those occupying caravan at The Heads and Sportsman’s Caravan Parks. Here there would be some 6
drilling periods where night-time noise levels would exceed 42dB, with maxima estimated at 50dB. While this would be unacceptable with respect to conventionally constructed dwellings, those members of the public with experience of caravanning considered that there would be no certainty that caravans would provide similar levels of acoustic insulation [18.27.2], and that the noise disturbance would be even more pronounced.

20.10.23 I have already noted that The Heads Caravan Park, which is under the control of CGSL, is proposed to be closed for safety reasons because of its proximity to well-heads. However, that would not be the case with respect to those caravans at Sportsman’s Caravan Park. This level of night-time disturbance would be unacceptable and contrary to Policy 2 of the LMWLP and Policies SP2G and SP13 of the WBLP. To suggest that drilling operations could be arranged to avoid the seasonal use of the caravan parks is unrealistic given the proximity of well-heads 15-17 and 18-20, each group of which would be likely to be drilled in sequence.

The impact of operational noise, particularly from the Gas Compressor Station and its associated gas dryers, on residential amenity.

20.10.24 The well-heads do not generate noise while in operation. The majority of the powered plant would be accommodated in their associated SPS, BPS and GCS buildings. It is proposed that these buildings will be constructed so as to provide high levels of sound attenuation. In all circumstances, noise at sensitive receptors generated by plant within these buildings would be well below night-time background levels [15.2.9]. An assessment of the impact of noise from the fin-fan coolers located alongside the eastern side of the GCS building on properties in Staynall, which would not be screened by the CGS building, also indicates a level well below night-time background.

20.10.25 I have noted the concern that the choice of Rosy Nook as the sensitive receptor for Staynall gave an inaccurate representation of likely noise levels because it was located in a hollow and would benefit from ground attenuation of some 5-6 dB(A) [18.49.7.2]. However, I have also noted that the free-field noise assessments are calculated at a height of 1.5m and that the source height for the fin-fan coolers is some 6.5m. Moreover, if ground attenuation of some 6dB(A) is discounted the effect on buildings in Staynall on more elevated sites, which would also be further from the source, would still be below night-time background levels.

20.10.26 There remains one, possibly significant, area of uncertainty. The external plant shown on the application drawings [2.5 – Doc.CD75h] includes 6 gas dryers. The impact of the noise from these elements of plant had not been modelled. For the appellant it was thought that such plant generated noise levels of the order of 85dB(A). Although given time to do so they were unable to provide the inquiry with more reliable evidence. In view of the fact that these gas dryers are integral elements of the gas compressor facility, and that this could be a 24-hour/day operation, it is likely that this sound source would also generate noise at all hours of the day. In the absence of details of both the levels of noise generated, and any tonal characteristics, it is not possible to say that noise from this element of the scheme would not exceed background noise levels, nor have a detrimental impact on night-time residential amenity in Staynall.
20.10.27 There was justified criticism of the original baseline surveys undertaken prior to the submission of the application. These amounted to very short readings at 2 locations [15.3.1] and were clearly inadequate as a basis for judging the noise impact of the appeal proposals. I conclude that their scope and extent fell well short of what could reasonably be anticipated in an ES. The subsequent surveys were based on continuous readings at 3 locations, and a series of 15-minute day and night readings at 3 further locations. These formed the basis for the evidence submitted on behalf of the appellant, were to a more appropriate standard, and this is reflected in the extensive areas of agreement reached between the relevant expert witnesses for CGSL and LCC. CGSL’s claim that the ES had addressed noise and provided information sufficient to assess properly the likely significant effects of the proposal [15.2.32] is clearly wrong. Moreover, had CGSL submitted its more fulsome inquiry evidence at the ES stage, many of the concerns of LCC and interested persons with respect to noise impact would have been addressed, inquiry and other preparation time saved, and more time made available to address those matters that remained outstanding, not least the matters for which, as set out below, there remained uncertainty at the close of the inquiry.

20.10.28 In addition to the uncertainty relating to gas dryer noise, there still remain areas of general uncertainty with respect to noise associated with pipeline venting, and in the absence of any details concerning the decommissioning of the site, it is not known whether that process would also have the potential to generate unacceptable levels of noise.

**20.11 Economic/tourism impact**

20.11.1 The principal consideration is whether the proposal would have a positive or negative impact on the local economy.

20.11.2 No detailed assessment of likely impact on the local economy was prepared by parties other than CGSL [section 16.1 and para.16.2.1], although general concerns were raised by a number of interested persons with respect to the possible detrimental impact of such a proposal on house prices, and on the continuing attractiveness of the general area of Fleetwood/Wyre Estuary as somewhere to live, and as a tourist attraction.

20.11.3 The elements of the direct and indirect economic impacts reflect both the creation of temporary and permanent jobs on the site, and the resultant additional jobs they support locally, as well as the loss of jobs as a result of the assumed closure of the Heads and Sportsman’s caravan parks. The site of the Heads caravan park is controlled by CGSL and would be closed. The Sportsman’s is privately owned, but for the economic assessment it is assumed that it would close due to its proximity to the site, albeit that it would not quite fall within the proposed HSE minimum distance from a wellhead [10.2.30/31].

20.11.4 During the construction phase, some 200 jobs would be supported on and off site creating a peak annual income of some £4.9m. The operation of the facility would result in some 29 net additional jobs providing an annual net additional income of some £0.9m [16.1.20]. I conclude that the proposal would be likely to result in a marginal positive benefit assuming no wider loss due to the presence of the facility discouraging tourists from staying elsewhere in Wyre Borough. While this latter factor is of concern to some residents and those working in tourism locally, it is not currently quantifiable.
20.11.5 I place only limited weight on the argument that those existing caravan park tourists who would be displaced could find accommodation elsewhere in the locality because other sites had recently been granted planning permission elsewhere within the Borough [16.1.27]. While that might be true in a capacity sense, other sites would not offer the particular attractions provided by this estuary location, and these displaced tourists would be likely to seek accommodation in similar locations elsewhere, rather than other locations within Wyre Borough.

20.11.6 The concerns relating to the indirect financial impacts of the proposal, including the possibility of increases in residential insurance premiums or a decline in property values, are widely and sincerely held [16.2.1]. However, no gas storage would or could take place until the HSE, through the COMAH process, had been satisfied that a facility, including the provision of storage caverns, had been satisfactorily designed and constructed, and that it had been tested and pronounced fit for purpose. At that point, it would be no different to any other major hazard site, such as the former ICI Hillhouse site at Thornton, and there was no suggestion that the presence of that site had resulted in locally depressed house values or unaffordable domestic insurance policies. However, in view of the uncertainty relating to the geology of the Preesall Salt Field, it is not possible at this point in time to arrive at any conclusion as to whether the appeal proposal, or any other UGS proposal, would be practicable here.

20.12 Human Rights.

20.12.1 The principal consideration is whether the appeal proposals would conflict with Article 1 of the 1st Protocol, and/or Articles 2 and 8, of the Human Rights Act 1998.

20.12.2 Article 1 of the 1st Protocol states that ‘every natural or legal person is entitled to the peaceful enjoyment of his possessions. No one shall be deprived of his possessions except in the public interest and subject to the conditions provided for by law and by the general principles of international law. The preceding provisions shall not, however, in any way impair the right of a State to enforce such laws as it deems necessary to control the use of property in accordance with the general interest or to secure the payment of taxes or other contributions or penalties.

20.12.3 Article 2.1 states that ‘everyone's right to life shall be protected by law’.

20.12.4 Article 8.1 states that ‘everyone has the right to respect for his private and family life, his home and his correspondence’. Article 8.2 states that ‘There shall be no interference by a public authority with the exercise of this right except such as is in accordance with the law and is necessary in a democratic society in the interests of national security, public safety or the economic well-being of the country, for the prevention of disorder or crime, for the protection of health or morals, or for the protection of the rights and freedoms of others’.

20.12.5 LCC noted in its report to committee [17.1.1] that the matters giving rise to concern with respect to conflict with the human rights of residents of Hambleton, Stalmine, Preesall, the nearby caravan parks and the surrounding scattered farmsteads, were increased HGV movements and noise, and health and safety risks associated with possible gas migration, subsidence, or risk of a major incident. From the written representations, and the oral statements from interested persons summarized in Chapter
18 above these latter fears are not just restricted to residents on the eastern side of the estuary.

20.12.6 Both Article 1 of the 1st Protocol and Article 8.1 allow interference with these rights ‘in the public interest’. However, in view of the uncertainty associated with the contribution that this proposal would make to meeting demand for additional UGS [AR7.4-16], such a public interest assessment and balancing of arguments is currently most uncertain.

20.12.7 With respect to Article 2.1, it is clear that the COMAH process would ensure that the risk of gas migration from a cavern itself is likely to be very small [AR8.4]. However, the Assessor has concluded that the potential for gas migration and its consequences at receptors in or near the site as a result of a ruptured pipe passing through more permeable strata that may exist in the overburden has not been addressed by CGSL either adequately or at all [AR8.5]. As exploding gas in a confined area has the potential to kill, until such time as all the necessary ‘comprehensive risk assessments’ for each cavern have been carried out, there would appear to be a potential ‘in-principle’ conflict with Article 2.1.

20.12.8 In its assessment of the human rights issue in the report to committee, LCC expressed the view that there was insufficient information available to properly assess whether this is an acceptable location for this type of development to provide justification for affecting the rights of others. This conclusion is supported by the Assessor’s conclusions, which are ones with which I concur.

20.13 **Hazardous Substances Consent**

20.13.1 The principal considerations are:

> Whether the grant of an HSC at this time would accord with the objectives of the SEVESO II Directive; and,

> Whether, in the light of the conclusions drawn with respect to the uncertainty surrounding the capability of the salt deposit at Preesall to accommodate the scale of storage proposed, a meaningful HSC could be granted.

**Preliminary matters**

20.13.2 The objectives of the SEVESO II Directive are:

> *To prevent major accidents and limit the consequences of such accidents for man and the environment;*

> *in the long term, to maintain appropriate distances between establishments and residential areas, areas of public use and areas of particular natural sensitivity or interest, and*

> *in relation to existing establishments, for additional technical measures so as not to increase risks to people* (Circular 04/2000 para.6).

20.13.3 Section 9 of the Planning (Hazardous Substances) Act 1990 (PHSA) sets out in sub-section (2) matters (a – e) to which the authority shall have specific regard. Sub-section (4) sets out matters (a – c) that shall be included in any consent. Matter (c) states that
in respect of each hazardous substance to which it relates, there should be a statement of the maximum quantity allowed by the consent to be present at any one time.

20.13.4 Paragraphs 9 and 10 of Circular 04/2000 set out the purposes of the controls as follows:

9. The hazardous substances consent controls are designed to regulate the presence of hazardous substances so that they cannot be kept or used above specified quantities until the responsible authorities have had the opportunity to assess the risk of an accident and its consequences for people in the surrounding area and for the environment. They complement, but do not override or duplicate, the requirements of the Health and Safety at Work etc Act 1974 and its relevant statutory provisions (defined at s.53 of that Act) which are enforced by the Health and Safety Executive. Even after all reasonably practicable measures have been taken to ensure compliance with the requirements of the 1974 Act, there will remain a residual risk of an accident which cannot entirely be eliminated. These controls ensure that this residual risk to persons in the surrounding area and to the environment is properly addressed by the land use planning system.

10. The hazardous substances consent provisions enable specific controls to be exercised over the presence of hazardous substances whether or not associated development is involved. Hazardous substances authorities will be able to decide whether, in the light of the residual risk, and having regard to existing and prospective uses of a site and its surrounding environment, the proposed presence of a hazardous substance is an appropriate land use of that site.

20.13.5 As a top tier COMAH site the appeal proposal would have to comply with additional requirements. These would include preparation of a safety report, provision of public access to safety reports, preparation and testing of on-site and off-site emergency plans, and informing members of the public likely to be affected by a major accident. These requirements of the SEVESO II Directive are implemented through the COMAH Regulations 1999. The HSE is responsible for these Regulations (Circular 04/2000 para.4). In relation to the appeal proposal none of these matters is yet in the public domain.

Whether the grant of an HSC at this time would accord with the objectives of the SEVESO II Directive

20.13.6 In responding to consultations from LCC, and following discussion with CGSL, the HSE has indicated distances from existing dwellings, including caravans, within which no wellhead shall be located [10.1.4 + 10.2.30]. The HSE has defined 5 ‘Wellhead’ areas and applied a separation distance to each of these. These range from 120m to 150m and reflect the varying depth of the salt deposit (as advised to them at the time of the assessment), the resultant variation in overburden pressure and the consequent variation in maximum gas storage pressure within the various proposed storage caverns. In addition, and based on these separation distances, the HSE has defined an extensive land-use planning consultation zone which would constitute a notification area under Article 10 of the T&CP(GPD)O 1995 in the event of permission being granted.
20.13.7 As referred to above, guidance in circular 4/2000 notes that ‘Even after all reasonably practicable measures have been taken to ensure compliance with the requirements of the 1974 Act, there will remain a residual risk of an accident which cannot entirely be eliminated. These controls ensure that this residual risk to persons in the surrounding area and to the environment is properly addressed by the land use planning system.’

20.13.8 In its response to LCC’s consultation the HSE has addressed the impact of a well head fire (jet fire) on the existing population. ‘HSE has concluded that the risks to the surrounding population arising from the proposed operations are such that the proposal would be incompatible with the presence of the existing population unless appropriate precautions are implemented to mitigate the effects of a major incident at the proposed installation. Such mitigation could be achieved by a condition of Consent to ensure adequate separation of the population from the source of major incident.’

20.13.9 As already referred to elsewhere in these conclusions [20.8.4], a number of public footpaths and bridleways pass through the area. In particular, the Wyre Way passes through the appeal site close to the tidal edge of the estuary [20.8.2]. The issue of the safety of people using the Wyre Way for recreation was raised in a number of written and oral representations but was not addressed by the HSE in its response to LCC’s consultation. From my site inspection, which included walking the length of the Wyre Way between Knott End and Stalmine, it is apparent that this is a well-used public path; access to which is uncontrolled and unrestricted. I have already noted that the appeal proposals provide for the location of a number of wellheads extremely close to the Wyre Way [20.8.3], particularly Nos.2, 4, 7, 10 & 14. Without imposing unreasonable restrictions on members of the public, there is no practical way in which any record or assessment could be made of how many members of the public may be in the vicinity of those wellheads at the time of and in the event of a major incident. Nor is there any way that those members of the public could be protected from the effects of such an incident close to that important public footpath.

20.13.10 As noted above, 2 of the objectives of the SEVESO II Directive are a) to prevent major accidents and limit the consequences of such accidents for man and the environment and b) to maintain appropriate distances between establishments and residential areas, areas of public use and areas of particular natural sensitivity or interest. These proposals neither limit the consequences of accidents for the public, who are encouraged to resort to this area for recreation, nor maintain appropriate distances between establishments and areas of public use. As a publicized linear recreational facility the Wyre Way clearly constitutes an area of public use.

20.13.11 I conclude that the appeal proposal would not accord with the objectives of the SEVESO II Directive and that any measures to maintain appropriate distances could only be achieved by the closure of this length of the Wyre Way. There is currently no such proposed closure and, in view of its extensive use, any such proposal would be likely to be strongly opposed. I further conclude that this amounts to sufficient reason to refuse the application for HSC.

Whether, in the light of the conclusions drawn with respect to the uncertainty surrounding the capability of the salt deposit at Preesall to accommodate the scale of storage proposed, a meaningful HSC could be granted

20.13.12 In para.20.13.5 above I note the range of additional requirements that would need to be met by a top tier ‘COMAH’ site, and that in relation to the appeal proposal none of
these matters are yet in the public domain. In view of the preliminary design stage so far reached with respect to this proposal [AR6.38] that is not surprising. This view is also held by the HSE who state that, in considering this application for Consent (HSC) it has made the assumption that the requirements of the Health and Safety at Work etc Act 1974, and all relevant statutory provisions, will be met at the establishment should Consent be granted. The current stage of the design of the establishment, level of detail in the Consent application and the timescales for determination of the Consent, are insufficient to determine that this will be the case. The HSE then refer to S.29 of the PHSA 1990 and note that nothing in any Consent granted can require or allow the building or operation of an establishment which does not comply with the relevant statutory provisions and to the extent that any consent purports to require or allow any such thing is void.

20.13.13 As is clear from the the Assessor’s Report, there is great uncertainty as to the potential scale of underground gas storage that this salt resource may be capable of accommodating, and that it is likely to prove to be very much less than the 1.2m tonnes envisaged in the application [AR7.17]. The appeal proposal is not predicated on the basis that a particular volume of storage would be provided, but rather that ‘up to 1.2m tonnes’ would be stored. In this regard I have noted the reply to my question put to Mr Grimes as CEO of Canatxx that he considered that a facility with only some 25% of the proposed capacity would continue to be financially viable. However, the extent to which such a facility would differ from the facility the subject of these appeal proposals is not known. It was emphasized throughout the inquiry that while planning permission was being sought for the location of the wellheads, the location of the storage caverns is illustrative. Moreover, while caverns 2, 4, 5, 7, 8 & 11 are shown as being below wellheads, the remainder up to and including no.20 are not. In the most up to date plans submitted to the inquiry only 20 illustrative cavern locations are shown. Mr Heitmann for CGSL expressed the view that caverns 21 – 24 were ‘unlikely’ to be constructed [AR5.33].

20.13.14 The basis of the HSE’s assessment was on the information presented to it by CGSL, including that company’s assessment of likely levels of subsidence, together with the then current understanding of the geology of the salt field at the time of the submission of the application [AR5.13]. Evidence presented to the inquiry has resulted in a revised interpretation of the geology. Taking into account the evidence and response to questions put to Prof. Rokahr on design parameters, together with the illustrative locations of the caverns indicated by CGSL in plans CD47b, the Assessor has concluded [AR5.17 Table] that a number of the caverns would be unable to accommodate gas at the maximum pressure levels stipulated by the HSE in its response to LCC. Of the 20 (out of 24) caverns originally proposed for which there was relevant information, some 16 would exceed the 83% of overburden pressure maximum but still apparently comply with HSE’s requirement with respect to maximum permissible operating pressures as stipulated in the key to the plan accompanying its response [CD26a].

20.13.15 While 2 of the exceedences would be only marginally above the 83% figure, 10 would exceed a 90% level and 5 of these latter would be close to or exceed a 100% level. This would mean that in these locations the available overburden pressure would be less than the HSE’s suggested permitted maximum pressure of the gas within the cavern and that is clearly unacceptable. Both condition 7 and condition 11 [19.2.1] of the conditions which the HSE sought to see imposed on any grant of HSC make
specific reference to Plan C.3600.0300003 Rev.2 [CD26a]. Any HSC so conditioned would be both meaningless and unenforceable.

20.13.16 While such an HSC would fail to establish an appropriate level of safety given Prof. Rokahr’s recommendation in relation to Preesall not to exceed 83% of overburden pressure [AR5.9; AR5.10], detailed parameters would ultimately be set as part of the COMAH process based on far more detailed site investigation. However, it is clear from these conclusions that the accuracy and adequacy of the current level of geological knowledge of the site is insufficient to allow the granting of a meaningful HSC. This amounts to a further reason justifying a refusal of Hazardous Substances Consent.

20.14 Conditions and Unilateral Undertaking

20.14.1 The draft lists of revised conditions submitted following discussion at the inquiry were substantially agreed. The draft planning conditions were set out in CD/72d. The draft hazardous substance consent conditions were set out in CD/78r. CGSL also submitted a signed Unilateral Undertaking – CD/81. Where there was disagreement I recommend below an appropriate action or form of words.

20.14.2 I set out at Appendix B to this Report the lists of conditions as recommended to be amended following my conclusions set out below.

Planning Conditions

20.14.3 Condition 1 is agreed. In view of the wide range of matters that would need to be addressed before work could commence, a 5-year limit for commencement of development is appropriate.

20.14.4 Condition 2 is agreed. The development should be carried out in accordance with the documents listed in this condition unless otherwise modified in accordance with the requirements of subsequent conditions.

20.14.5 Condition 3 is agreed. Details of the planning permission should be available for inspection on site.

20.14.6 Condition 4 is not agreed. LCC seek to limit the length of permission for the storage of gas to 30 years from first commencement of gas storage. CGSL seek to modify the condition to apply the limit to each and every cavern; i.e. 30 years from the date of the first usage of the particular cavern for gas storage.

20.14.7 The effect of the original condition would be to reduce the effective life of those caverns constructed in the later phases of the development of the site; a period possibly shortened by some 7 – 8 years. The caverns are expected to have a minimum effective life of 30 years, although CGSL are of the view that this life may well be capable of being extended, possibly by a further 20 years. It accepts that any extension of the life of a cavern beyond 30 years would need to be the subject of a further planning application at the appropriate time and based on an assessment of the competence of the cavern(s) at that time.

20.14.8 To artificially reduce the life of a cavern to less than 30 years constitutes a waste of resources and is contrary to principles of sustainability. The decommissioning of the
caverns would, in any event, need to occur in a phased manner. If the development is otherwise acceptable then it is appropriate that each cavern should be able to operate over its anticipated minimum effective life of 30 years. I recommend amending the condition accordingly.

20.14.9 Condition 5 is agreed. Storage should be limited to natural gas only.

20.14.10 Conditions 6 to 8, which relate to the solution mining infrastructure schemes to be submitted, are agreed

20.14.11 Conditions 9 to 11, which relate to the commencement of solution mining and conversion from brine wellheads to gas wellheads, are agreed

20.14.12 Condition 12. Although agreed, it is not considered complete by LCC who suggest an additional condition 12a concerned with a scheme of blast monitoring. CGSL do not accept this.

20.14.13 If LCC are to approve in writing both the blasting methodology and the levels of charge to be used, compliance with the terms of the condition are effectively unenforceable without some form of monitoring. Equally, CGSL would wish to be able to ensure that its blasting had been undertaken in accordance with the terms of its approval. I recommend that the suggested condition 12a be imposed.

20.14.14 Conditions 13 and 14 relate to Cavern Design and Siting. Condition 13 contains 10 clauses i. – x., of which vi. or its alternative are not agreed. In the light of the Assessor’s conclusions, 13.vi. should refer to ‘any fault identified by geophysical investigation or drilling to affect the top and/or bottom of the salt’. A further clause should also provide for an allowance to be made for further loss of in-situ halite in walls, roof and floor of the cavern as a result of decommissioning. I recommend new clause 13.vii. accordingly.

20.14.15 Condition 14 is agreed

20.14.16 Conditions 15 and 16 concerning the method of brine extraction are agreed.

20.14.17 While condition 17 is agreed the levelling survey should be extend to include areas of both current and former brine extraction. This survey should be designed to detect ground movement relating to both the controlled solution mining and/or areas of former solution mining within the application site. The report should set out i) an assessment of the magnitude and effects of the subsidence on the ground surface and the associated infrastructure, ii) an analysis based on modelling of the magnitude and effect of future subsidence, iii) proposals for any remedial works required, and iv) proposals for ongoing monitoring. The proposals for any remedial works, and the programme for their implementation, should be submitted to and approved in writing by the MPA.

20.14.18 Conditions 18a-c (CGSL) and 18 (LCC), concerning noise associated with solution mining, were not agreed. While the noise limits suggested by CGSL would not exceed the maximum day and night-time noise levels set out in MPS2 Annex 2, they would exceed the limit of 10dB above background in relation to some sensitive receptors, particularly Sportsman’s Caravan Park and Cote Walls Farm. The guidance indicates that while MPAs should aim to achieve noise levels that do not exceed background by more than 10dB(A), to avoid unreasonable burdens on mineral operators higher levels, set as close as possible to that limit, may be acceptable.
However, these should not exceed 55dB(A). Evening noise levels (1900-2200) should not exceed background by more than 10dB(A).

20.14.19 I conclude that a combination of noise limits, reflecting in part those suggested by CGSL as well as those by LCC, would more closely reflect the MPS2 guidance. The use of BAT, together with a maximum day-time level of 55dB(A), an evening level of 10dB(A) above background, and a maximum of 42dB(A) at night should ensure no unacceptable loss of residential amenity and I shall recommend accordingly.

20.14.20 Condition 19 was not agreed. CGSL proposed the extension of the hours when ‘tripping out’ of the drill string could normally occur from between 0700 hours and 1900 hours to between 0700 hours and 2200 hours. ‘Tripping out’ is acknowledged to be a process that has a particular tonal/percussive character, and is likely to disturb those who hear it. In view of the likely continuing series of drilling events associated with working a group of caverns, this disturbance could be over a number of months. To allow this to continue until 22.00hrs could result in a severe loss of amenity for residents affected. Taking account of the guidance in MPS2 Annex 2 that evening limits should not exceed background by more than 10dB, I conclude that LCC’s proposed 19.00hrs limit would be more reasonable.

20.14.21 Conditions 20 and 21, concerning prevention of pollution from drilling operations, were agreed.

20.14.22 Condition 22 was not agreed. CGSL anticipate that the washing process would take some 7-8 years [6.4]. Allowing for a preliminary construction period prior to cavern washing being commenced suggests that a 10 year period from the commencement of the solution mining works would not be unreasonable and I recommend accordingly.

20.14.23 Conditions 23 and 24 were agreed.

20.14.24 Condition 25 was only partially agreed. LCC’s suggestion that any above ground installations no longer required in connection with the operation of the site should be removed is not unreasonable (now condition 25a). However, in coming to this view I have concluded that ‘required items’ would include those necessary for the periodic maintenance of caverns, as well as their decommissioning, so the range of above ground installations falling to be removed under this condition would be limited. However, it would allow for the removal of any redundant above-ground infrastructure remaining following a washed cavern failing to get subsequent COMAH consent for use for UGS.

20.14.25 The requirement that the site should be decommissioned and restored if UGS ceased for a period of more than 24 months is also reasonable bearing in mind CGSL’s arguments concerning the justification for the proposal based on the national need for more UGS, and the accepted detrimental visual impact of the proposal on the landscape. The condition (now 25b) provides for the MPA to agree a longer time period if appropriate, thus providing a degree of flexibility.

20.14.26 Conditions 26 to 28 were agreed.

20.14.27 Conditions 29 to 31 were agreed.

20.14.28 Conditions 32 and 33 were agreed. Condition 33 addresses the issue of lighting and includes a requirement that there should be no external illumination of wellheads and access roads other than during routine maintenance or emergencies. While CGSL
were willing to agree to this condition, there is no indication as to what the HSE, for security reasons, may require as part of any COMAH approval either before the facility was brought into use, or at some point in the future.

20.14.29 Condition 34 was not agreed. In order to be consistent with my conclusions regarding effective cavern lifespan [20.14.8 above] condition 34 should be revised to relate the 30 years to the commissioning date of each individual cavern. LCC’s condition 34a would conflict with my previous conclusion and would not be appropriate.

20.14.30 Condition 35 was agreed.

20.14.31 While CGSL and LCC agreed condition 36 there was concern raised, particularly by PWG, that it would be many years before any details of the proposed decommissioning were available to inform local residents. While I have some sympathy with CGSL’s view that there may be advances in technology in the intervening period, it is also agreed that any form of decommissioning and long term monitoring/maintenance of the cavern will not involve the importation of solid material to fill the voids (condition 37). This would appear to leave few options other than to fill the caverns with sea water piped to the site (condition 38). In these circumstances, there also appears to be no good reason why a scheme of decommissioning based on current technology should not be prepared shortly after COMAH approval. This approved scheme would then be implemented unless the MPA approved an alternative scheme. In the event of a significant new technology coming forward the MPA would be in a position to review options at that time. I recommend a new condition 36a, with consequent alteration to condition 36.

20.14.32 Conditions 37 and 38 are agreed.

20.14.33 Condition 39 addresses the standards to be applied to the general means of access from the A588 to the site access at the junction of Cemetery Lane and Back Lane, and is agreed. The detailed means of access was agreed in the alternative depending on the acceptability, or otherwise, of a new mini-roundabout at the A588/Cemetery Lane junction. As I have concluded that the most appropriate access for construction vehicles would be the proposed new link road, I recommend imposition of the associated condition 40.

20.14.34 Condition 41, which specifies a maximum number of HGV trips to and from the site, was also agreed.

20.14.35 LCC seek a condition requiring all vehicles visiting the site during both construction and operational phases to do so only via the main Cemetery Lane/Back Lane junction access. However, while this should be encouraged, CGSL could not ensure that all operational deliveries could be so controlled without wider limitations on the use of the surrounding public highways by all drivers including those visiting the area for recreational purposes. I conclude that such a condition would be inoperable.

20.14.36 Highway conditions 42 – 48 are agreed, are necessary and should be imposed.

20.14.37 Conditions 49 and 50 concerning operating hours were not agreed. CGSL seek weekday operations from 0700 – 1900 hours. Within a rural community where both early hours and extended working days, particularly in summer months, are the norm, the week-day hours sought by CGSL are not unreasonable. During the weekend, when families would expect to have both the peaceful enjoyment of their gardens and
not be subject to early disturbance, the hours proposed by LCC are more appropriate and I shall recommend accordingly. For consistency, similar hours should apply to the arrival and departure of heavy goods vehicles.

20.14.38 Conditions 51 to 54 were agreed.

20.14.39 LCC, at the EA’s request, had sought an additional condition relating to the monitoring of the effects of abstraction of water from the fish dock on the Fleetwood Marsh lagoons. This was opposed by CGSL. An assessment of the possibility of this occurring had been undertaken as part of Section 9 of the SEI. Two factors strongly support the conclusion that there are no inter-linkages. Firstly, there appear to be no daily changes in level in the lagoons notwithstanding the daily tidal cycle. Secondly, despite this daily tidal cycle in the dock, the westernmost lagoon is seasonal; suggesting recharge from elsewhere. I conclude that the proposed condition would be unnecessary.

20.14.40 Condition 55 concerning submission of details of the ecological mitigation measures was agreed. A further condition relating to the management of the agricultural land within the site during the construction period was not agreed. While I accept that it is important to minimize the impact of the proposals on those area of the site that will remain in agricultural use, the management of that land is a matter for the tenants under their agricultural tenancy agreements. In these circumstances, while CGSL and LCC may submit and approve, respectively, the terms of a land management scheme, it would be unenforceable without the agreement and direct cooperation of the tenant farmers concerned. Where the details of the approved scheme conflicted with the particular land management practices followed by the tenant of that land, any condition aimed at implementing the approved scheme would be unenforceable.

20.14.41 Ecological conditions 55 to 58 were agreed.

20.14.42 During the discussion of the conditions there was also the suggestion that there should be a condition relating to the monitoring of discharges. However, these are matters more appropriately dealt with by the EA in connection with any discharge consents required.

20.14.43 Archeological conditions 59 and 60 were agreed.

20.14.44 Conditions 61 to 63 address operational noise limits and controls and are, for the most part, agreed. Condition 62ii set out times when non-emergency pipeline venting could occur. CGSL sought 0700-2300 hours on weekdays. LCC wished to limit it to between 0800 and 1800 hours. These planned operations should take place at a time when there would be no resultant unacceptable loss of amenity. Consistent with other conditions to be imposed, I conclude that a weekday limit of between 0700 and 1900 hours would not be unreasonable. Non-emergency venting would not be permitted at any time on Saturdays, Sundays or bank holidays.

20.14.45 Condition 64 would control noise from reversing alarms and is agreed.

20.14.46 Conditions 65 to 71, which address the control of dust, direction of lighting, hedgerows, ground and surface water pollution and discharge of foul drainage, are all agreed and also necessary.
20.14.47 Conditions 72 to 99 address landscaping schemes and their implementation, a landscape management plan, landscape restoration works, soils stripping and handling, restoration, and aftercare. These conditions, which are for the most part agreed, are necessary for a scheme of this scale and complexity.

20.14.48 The main area of disagreement concerns conditions 95 and 96 relating to the management of the agricultural land falling within the appeal site during the aftercare period. While LCC and CGSL may well be able to agree the terms of an aftercare scheme, decisions as to how the agricultural land/farm holdings are to be managed are matters for the tenants concerned who may have different views as to the appropriate husbandry for this land at any particular time [20.3.37 to 42]. It would appear that however laudable the terms of these two conditions, CGSL would not have sufficient control over the use of all of the land concerned to ensure their implementation in full.

20.14.49 Condition 100 restricts Permitted Development rights with respect to the installation of telecommunications antenna and support structures other than those required for the UGS facility, and is agreed.

20.14.50 Condition 101 requires the under-grounding of site electricity services.

20.14.51 Condition 102 requires the implementation of details requiring prior approval by the terms of these conditions to be implemented in the form approved unless otherwise approved in writing by the MPA.

20.14.52 In relation to the location of the proposed Brine Diffuser, Mr Pailey had proposed that: When seeking brine discharge consent to the Irish Sea the Developer shall agree with the Environment Agency an appropriate discharge location which shall be outside the boundaries of the proposed Liverpool Bay SPA. In view of my conclusions in section 21.6.36 above I conclude that such a condition could not be justified.

Inspector’s note

The list in Appendix B is renumbered to take account of the recommended changes above, and where reference is made to conditions being agreed, in either the planning or HSC appeals, this includes my own acceptance that they are necessary and reasonable having regard to Government guidance.

HSC Conditions

20.14.53 The HSC conditions were agreed between CGSL and LCC.

20.14.54 Condition 1. For the avoidance of doubt, and in view of the potential interaction between the proposed gas storage caverns and existing former brine wells, condition 1a) should also refer to existing former brine cavities within the appeal site and I recommend accordingly.

20.14.55 Condition 2. There must be some doubt as to the practicality and/or potential impact of part of this condition. 2b) iii requires a precise levels survey. However, much of the appeal site lies below inter-tidal marshes and no indication has been given as to how such a survey might be undertaken, or what permanent ‘bench marks’ would

36 NB. In CD72d this was numbered 99 but no.95 had been omitted
need to be installed in order to undertake the survey within a tidal area where surface levels are themselves affected by tidal movements. There is also no assessment of any physical impact of the surveying infrastructure on these nationally/internationally designated sites.

20.14.56 Condition 3. There must be doubt as to the enforceability of this condition as there is no definition of what would constitute a ‘significant abnormality’ in the monitoring parameters. For the avoidance of doubt, the ten year summary (3ii) should also include the results of the monitoring, and I recommend accordingly.

20.14.57 Condition 4. PWG had raised concerns about the absence of any assessment of the needs of emergency services that would need to gain access in times of emergency [10.3.21-25]. This condition goes some way to addressing those concerns, although the physical impact of any measures required to be implemented as a result of the risk assessment is currently unknown. It is also not known if any measures would require works requiring planning permission or agreement with the highway authority.

20.14.58 Conditions 5 to 7 are agreed.

20.14.59 Condition 8. The principal of this condition is agreed, but as written is insufficiently precise. It should be reworded and I recommend accordingly.

20.14.60 Condition 9 is agreed.

20.14.61 Condition 10 is agreed, but as set out in CD/78r contained typing errors with respect to pipe dimensions. I recommend the condition be amended accordingly.

20.14.62 Conditions 11 to 13 are agreed.

20.14.63 The list of HSC conditions, as recommended to be modified, is set out at Appendix B to this report.

**Unilateral Undertaking**

20.14.64 During the inquiry, discussions had taken place between LCC and CGSL with a view to entering into an agreement under S.106 of the 1990 Act. No agreement was reached, but the 16 March 2006 draft of the document had been the subject of discussion during the conditions and agreements sessions of the inquiry.

20.14.65 At the close of the inquiry a signed Unilateral Undertaking (UU) was submitted by CGSL. The ‘land’ the subject of the UU is highlighted in yellow on the plan following page 2 of the UU [19.3.2].

20.14.66 Obligation 1.1 specifies an aftercare period of 25 years. While it is accepted that the most recent ICI caverns have been there for some 40 years without signs of collapse [29.3.22], in the absence of available inert fill material, the only practicable method of decommissioning the proposed gas caverns will be to fill them with sea-water. This will result in a further loss of salt by solution, with potential consequences for the continuing strength and longevity of the salt roof if additional salt solution were to be concentrated at the higher levels of the cavern. The success of that decommissioning programme will be entirely dependant on the successful further washing of the cavern without loss of structural integrity, and events during the previous 30 operational
years of the caverns may have no bearing whatsoever on that subsequent outcome. It is therefore not possible to say that 25 years would be an adequate aftercare period.

20.14.67 Without certainty that there would subsequently be no detrimental effect such as a ‘crown hole’ forming within the nationally/internationally designated sites in the estuary, reliance on this element of the UU to maintain integrity would also appear to be contrary to the Habitats Directive.

20.14.68 The fact that 1.1 gives LCC the right to approve the aftercare programme is no sanction against the submission of an unacceptable programme because the caverns will, by then, have been installed, come to the end of their economic and/or operational life and will require monitoring. This section of the UU appears to lack adequate means of enforcement. Similar concerns apply to obligation 2.1.

20.14.69 The UU contains no arbitration clauses [19.3.3 – Items 1.5 & 2.4]. As a unilateral undertaking, the absence of these arbitration clauses is unsurprising and I note that CGSL consider them inappropriate. While CGSL’s approach is understandable it tends to highlight the unenforceability of some of the obligations of the UU. Although there will be significant value in the sites cushion gas (and therefore a commercial imperative to remove it), by the time Obligation 2.1 is triggered there may only be cushion gas remaining in the final cavern, and this would have to fund both the aftercare of that cavern and the decommissioning of the above ground infrastructure. At this point in time those costs, and the value of the cushion gas remaining, are unknown. In the absence of arbitration there is no means of ensuring that a decommissioning scheme acceptable to the MPA is funded and implemented.

20.14.70 This is a matter of particular concern to LCC who understandably do not wish to find at some point in the future beyond 25 years that unacceptable subsidence events directly attributable to these proposals are incapable of rectification without public financial support.

20.14.71 The lorry routeing provisions, obligations 3.1-3.4, relate to and aim to control movements of construction and decommissioning vehicles. While I note the wish by local residents, including Mr & Mrs Jackson, that these controls should be extended to all vehicles visiting the site throughout its operational life, such controls would be unenforceable where the use of the public highway by those vehicles would not otherwise be subject to restriction or traffic regulation.

20.14.72 Obligations 4.1/4.2 provide for the additional inter-tidal marsh at the Heads. To the extent that these works will require the detailed agreement of the EA with respect to any necessary permissions or consents, there must be an element of uncertainty. However, the EA has indicated that, in principle, a scheme for extending the inter-tidal marsh here would be acceptable. I conclude that there are reasonable prospects of an acceptable scheme being brought forward.

20.14.73 Obligations 5.1/5.2 and 6.1/6.2 relate, respectively, to the training of local emergency services, and the setting up of a residents’ liaison committee. Neither are controversial.

20.14.74 As a matter of fact, the ‘Land’ the subject of the unilateral undertaking, coloured yellow in the plan forming part of that document, includes small areas of land outside the application site, but excludes, to the west of blocks LA948762, LA949704 and LA945889, areas within the appeal site as defined by the red line (CD/75b) and
shown on Doc.CD/3 Fig1b as ‘extent of salt for cavern development area’. It is not clear whether this has any implications in the event of the appeal being allowed.

20.14.75 In the event of the Secretary of State not accepting my recommendations but deciding to grant planning permission and hazardous substances consent, the revised lists of conditions set out in Appendix B should be imposed. In this event, the unilateral undertaking would then take effect.

20.15 Summary of Conclusions.

Need

20.15.1 As UK reserves are consumed and the UK becomes increasingly a net importer of natural gas there will remain an increasing need for additional storage facilities. These will comprise, for the most part, UGS in the form of either purpose made caverns or the re-charge of depleted former gas and oil reserves. While a development of the size proposed in the appeal proposal could make a significant contribution to increasing the overall UGS capacity in the UK, there is currently considerable uncertainty as to the practicality of providing a facility of the size proposed in the Preesall Salt Field. In these circumstances it cannot reasonably be argued that there is a specific and overriding need for the appeal proposal.

Geology

20.15.2 Overall, the information provided by the appellant is neither sufficient nor sufficiently detailed to support the proposals in the planning application. In view of the considerable uncertainty that exists relating to constraints that fundamentally affect the location of the caverns and the capacity of the scheme – namely the location of faults, the depth of the Preesall Halite and the thickness of the salt – the information provided on the geological, hydrological and mining setting, including uncertainty with respect to the extent of wet rockhead, is insufficient at this stage to enable a decision to be made on the feasibility of the principle of the appeal proposal and hence the principle of the proposed land use. The proposal would therefore be contrary to policies 2, 42, 71 and 72 of the LMWLP.

20.15.3 No assessment or modelling of the likely impact of ongoing progressive or catastrophic subsidence on the proposed pipe-work, or any other infrastructure, has been undertaken. The risk assessment appears not to have considered this as a possibility. In view of the ‘dramatic crown hole features’ that have been created close-by by recent events, and bearing in mind that an area in close proximity to the proposed route of the pipelines and associated with BW-64 has been fenced off in anticipation of collapse, it is a matter of particular concern that the potential impact of such a collapse has not been addressed at this stage. This aspect of the proposal would appear to conflict with policy 71 of the LMWLP which aims to protect the surface of the former Preesall Salt Field from development that could be adversely affected by land instability due to existing ‘cavities’.

20.15.4 If a cavern roof failed at any of the indicated cavern locations then the cavern void would migrate to the surface and form a crown hole. Crown holes generally develop vertically above the underground opening from which they originate, but over time edge back in an uncontrolled manner to create a ‘crater’ much larger in diameter than

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the original cavern. Such erosion within the inter-tidal zone would be likely to be much more rapid. A number of the proposed caverns would be in close proximity to the Hackensall Brow STW and catastrophic collapse could result in major disruption and damage to this important piece of infrastructure. Planning permission should not be granted in advance of design details supported by robust and reliable geological modeling which confirmed that there would be no possibility of cavern roof failure affecting the STW. In my view this amounts to sufficient justification for a refusal of planning permission at this time.

Risk

20.15.5 In the absence of detailed quantified risk assessments, the uncertainty as to the vulnerability of properties to gas migration, and hence potential explosion, makes this currently an unacceptable location for UGS. To grant planning permission for the proposed development in advance of a clear understanding and quantified assessment of the level of risk would be contrary to LMWLP policy 2 which indicates that proposals for mineral development will only be permitted where it is demonstrated that all material impacts or other factors leading to loss or damage to amenity which would adversely affect people can be eliminated or reduced to acceptable levels.

20.15.6 It is understandable that residents of Fleetwood and other more heavily populated areas beyond the appeal site should express serious concern for their health and wellbeing. The extent to which these prove to be reasonable fears and concerns can only be assessed on the basis of a comprehensive investigation of the form, nature and permeability of the overburden strata. Until that information is available, and the true level of risk has been assessed, these fears are a material consideration that constitutes a significant planning objection.

20.15.7 The wellhead facilities would be unmanned and mainly located in areas close to where there is uncontrolled public access. As such they are demonstrably more vulnerable to external interference than manned facilities within a controlled and visually supervised perimeter. Any subsequent requirement by HSE for more robust or extensive security measures would have implications for both the visual impact of the proposals on the landscape, and the continued accessibility of the Wyre Way to the general public. This eventuality is not addressed by these proposals.

Sustainable use of minerals

20.15.8 The proposal has viewed the extracted brine as no more than a waste product to be disposed of in the Irish Sea. To dispose of the brine in this way is not a sustainable approach to the winning and working of minerals. This is in sharp contrast to other proposals which seek to use the output as a raw feedstock, eg Ineos Chlor in Cheshire. That approach is a much more sustainable use of the resource. The fact that there is currently no market for the Preesall salt reinforces the conclusion that to ‘mine’ it here does not represent a sustainable use of this resource.

20.15.9 As the proposal does not constitute sustainable mineral development, it would be contrary to policy RE9 of the regional strategy and to policy 42 of the LMWLP. In the context of the existence of other UGS proposals that are able to make beneficial use of the brine resulting from cavern creation, this conflict with development plan policy amounts to a significant objection to the appeal proposal which should be set aside only if there is an over-riding need for further gas storage to be provided by UGS at Preesall.
Impact on designated sites and protected species

20.15.10 In the event of a crown hole forming within the inter-tidal marsh it is uncertain whether the integrity of the IDS would be maintained. The impact would be of a scale and nature that has not yet been assessed by EN or its successor authority. In addition, there has been no assessment as to whether, in these circumstances, The Heads Re-Alignment project, as set out in the Unilateral Undertaking, would continue to amount to an adequate compensatory measure. The size and extent of the subsidence associated with the continuing collapse of BWs 52/53, and conclusions as to potential crown-hole dimensions, would suggest that a greater area would be lost than would be provided for by the proposed marsh.

20.15.11 The mitigation measures proposed by the appellant should ensure that the proposals would not be detrimental to the maintenance of the population of the newts at a favourable conservation status, or have adverse impact on water vole.

20.15.12 In view of the very limited extent of the eastern Irish Sea (which includes Liverpool Bay and Morecambe Bay) that would actually be subject to elevated levels of salinity as a result of this proposal, the impact of the saline discharge on migrating salmon and sea trout would not be significant.

20.15.13 The proposal would not have a detrimental impact on the feeding grounds within which 98% of the over-wintering common scoter are to be found. As the discharge location would represent a very small part of the area where some 2% of common scoter are to be found, the potential population of scoter affected, if at all, would be extremely small. Red-throated diver would not be affected.

Landscape impact

20.15.14 The various built elements of the proposal would together contribute to a significant and detrimental change to the character and appearance of this attractive rural landscape. While the Gas Compressor Station and the Booster Pump Station would have the greatest permanent impacts over the wider area to both east and west of the estuary, the access roads and well-heads would bring more localized detrimental impacts for those walkers and riders attracted to the area for recreation on the Wyre Way and the local roads and bridleways. In the event of catastrophic cavern collapse the migration of the void to the surface producing a ‘crown hole’ would have a wholly unacceptable visual impact on the landscape.

Wyre Way

20.15.15 Any similar catastrophic failure of a proposed cavern located in the vicinity of the Wyre Way could result in the severing of this important coastal path; severely restricting public access to and enjoyment of the estuary. This would be contrary to LMWLP Policy 32. In the absence of a technical assessment and scheme design that guaranteed that such an eventuality could not occur this possibility amounts to an unacceptable risk and a very strong argument against the grant of planning permission.

Highway impact

20.15.16 A 1% increase in total daily traffic flows generally along the A588 as a result of the appeal proposals would be well within normal daily variation and would not result in any measurable decline in safety for motorists, pedestrians or other road users.
20.15.17 There would be problems caused by construction vehicles (HGVs and Rigid Trucks) turning left off the A588 into Cemetery Lane forming an obstruction to vehicles approaching on the A588 from the east. The use of a mini-roundabout in place of the current A-road priority at the junction of Cemetery Lane with the A588 would not amount to a material improvement.

20.15.18 The suggested temporary link road would be a superior option. However, this alternative does not form part of the application the subject of these appeals and no other planning application has been submitted. There is as yet no certainty that planning permission for such a proposal would be forthcoming. All other roads linking the Preesall Salt Field area to the A588 are incapable of accommodating the HGV movements without unacceptable harm to the character and appearance of the area, and an unacceptable reduction in the safety of other road users. In my opinion, without the link road, the proposal would be unacceptable on highway grounds.

20.15.19 The A585(T) links Fleetwood to the national motorway network. It is a generally good standard single carriageway road and carries some 23,000 vpd of which some 1,500 are HGVs. It is no part of the highway authority’s case that the construction of the Seawater Pumping Station and Brine Discharge Pipeline, which would generate a total of some 635 HGV 2-way construction trips solely during year 1, would generate traffic flows resulting in unacceptable impacts on this part of the highway network.

20.15.20 Other highway concerns could be addressed by the imposition of conditions.

Noise

20.15.21 The residential properties on the western side of the estuary closest to the route of the brine outfall pipe are sufficiently distant not to be seriously affected by construction noise. In view of the intermittent nature of this construction activity, control of night time noise generation, in so far as it might have a detrimental impact on the Hospital, could be by the imposition of conditions.

20.15.22 Similarly, levels of noise generated by the installation of the on-site pipe-work connecting the well-heads to the Booster Pump and Gas Compressor stations would not be such as to result in any significant loss of amenity for occupiers of residential properties in the vicinity of the site.

20.15.23 There would be a lengthy period of disturbance from drilling noise for occupiers of Sportsmans Caravan Park as well as Cotes Wall Farm. The occupiers of The Heads Caravan Park would have been similarly affected but, as they would also be affected by the HSE safety zone, they are proposed to be displaced. Drilling would also take place at night and in a number of sensitive locations the maximum level of 42dB $L_{Aeq,T}$ would be reached or exceeded. In addition, noise levels for other receptors would be 10dB(A) or more above background levels. This is clearly contrary to the guidance contained in MPS2.

20.15.24 In the absence of details of the levels of noise to be generated by the gas dryers located at the GCS, it is not possible to say whether noise from this element of the scheme would exceed background noise levels, and if so, whether it would have a detrimental impact on night-time residential amenity in Staynall.

Economy
20.15.25 The proposal would be likely to result in a modest positive economic benefit locally assuming no wider loss due to the presence of the facility discouraging tourists from staying elsewhere in Wyre Borough. While this latter factor is of concern to some residents and those working in tourism locally, it is not currently quantifiable.

Human Rights

20.15.26 There is insufficient information available to properly assess whether this is an acceptable location for this type of development such that it would provide justification for permitting proposals affecting the rights of others.

Hazardous Substances Consent

20.15.27 The basis of the HSE’s preliminary assessment of the proposal was on the information presented to it by CGSL, including the appellant company’s assessment of likely levels of subsidence, together with the then current understanding of the geology of the salt field at the time of the submission of the application. Evidence presented to the inquiry has resulted in a revised interpretation of the geology. The accuracy and adequacy of the current level of geological knowledge of the site is insufficient to allow the granting of a meaningful Hazardous Substances Consent.

Conditions

20.15.28 In the event of the Secretary of State deciding to grant planning permission and hazardous substances consent, the revised lists of conditions set out in Appendix B should be imposed. In this event, the unilateral undertaking would then take effect.

20.16 Formal Recommendations

20.16.1 I recommend that Appeal 1 (Planning Appeal APP/Q2371/A/05/1183799) be dismissed and planning permission refused.

20.16.2 I recommend that Appeal 2 (Hazardous Substance Consent Appeal APP/HSC/05/07) be dismissed and consent refused.

Edward A Simpson

Inspector
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Documents Lists

Core Documents

CD 1 Canatxx Gas Storage (CGS) - Planning Application Vol. 1 Nov 04
CD 2 CGS - Environmental Statement Vol. 2 - Nov 04
CD 3 CGS - Environmental Statement – Figures
CD 4 CGS - Appendices to the Environmental Statement Vol. 3 - Nov 04
CD 5 CGS - Second HSC Application - HSC05/01
CD 6 CGS - Supplementary Environmental Information - Non-technical Summary
CD 7 CGS - Supplementary Environmental Information
CD 8 CGS - Planning Policy Statement
CD 9 Consultation Responses to Planning Application 02/03/1433
CD 10 Brine Use Study - 22 April 2005
CD 11 Relevant correspondence to planning application 02/03/1455
CD 12 Development Control Committee reports for planning application 02/03/1455
CD 13 Hazardous Substance Consent Application HSC04/01
CD 14 Consultation responses to HSC application 04/01
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CD 26 a Hazardous Substance Map Rev 2 (attachment to page 14 of CD 26)
CD 27 Development Control Committee report for HSC application 05/01
CD 28 a Wyre Borough Local Plan 2001- 2006 1st Deposit Draft
CD 28 b Wyre Borough Local Plan - Written Statement
Joint Lancashire Structure Plan - Adopted March 2005
Lancashire Minerals & Waste Local Plan 2006
Regional Planning Guidance for the North West (RPG13)
LCC Appeal Questionnaire
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See CGS/0/6
UK Gas Infrastructure - Based on Transportation Ten Year Statement 2004
Salt Storage Cavern - Schematic Drawings
Conversion Factors - Ready Reckoner
Letter from Hammonds 27 October 2005
Solution Mining Research Institute - Research Project Report 91-0002-S (Nieland 1991)
Canatxx - Master Plan Scheme Maps
Master Plan - Completed Scheme Salt Top Contour
Note to accompany the amended Salt Contour Plans & Salt Thickness Isopachyte as requested by the Assessor
See CD 42
Statistical Elastic Dislocations - Bulletin of the Earthquake Research Institute (Maruyama T 1964)
The Preesall Salt Basin, A Provisional Report for Canatxx Energy Ventures Ltd - Dr M K Jenyon
Data Map of Subsidence as at 20/8/97
Daran Report
Figures 5, 6 & 7 to the Daran Report
Enclosure 1 to the Daran Report
Enclosure 2 to the Daran Report
Explanation of the maps in the Daran Report (Ed Hough)
The ICI Drilling Report
ICI Drilling Report
ICI Drilling Report
The Byley Inquiry
Byley Report – Non Technical Summary
SoS's Decision letter on the Byley Inquiry 19 May 2004
Moss Bluff Cavern Incident Report (Extract)
Bore Hole Data (Tabulated)
CD 56  Aldrough Report & Decision
CD 57  BGS - Geology of the country around Blackpool
CD 58  Our Energy Challenge - Securing clean, affordable energy for the long-term
CD 59  Alan Johnson Parliamentary Speech - Security of Supply - 12 Jan 06
CD 60  Byley Gas Storage Project Public Inquiry - Project Design (Underground Section)
CD 61  Joint Statement of Agreement between Dr Ron Hawkes & Patrick Williams
CD 62  Agreed Statement on Highways Issues
CD 63  CBI Report - Powering the Future
CD 64  MPG 11 - Minerals Planning Guidance - The Control of Noise at Surface Mineral Workings
CD 65  Sound Insulation & Noise Reduction for Buildings - Code of Practice - BS 8233:1999
CD 66  Rating Industrial Noise affecting mixed residential & industrial areas - BS 4142
CD 67  Guidelines for Community Noise - WHO
CD 68  PPG 24 - Planning & Noise
CD 69  Noise Assessment of Drilling Rig 28 - AEC Report 13 August 1999
CD 70  a Development Control Committee Meeting on 5 Oct 05 - Part 1 Item 5
CD 70  b Development Control Committee Meeting on 5 Oct 05 - Part 1 Item 4
CD 70  c Development Control Committee Meeting on 5 Oct 05 - Part 1 Item 3
CD 71  Application for gas storage turned down
CD 72  Preesall Gas Storage Draft Conditions
CD 72  a Email from Richard Glover - comments on conditions
CD 72  b Proposed amendment to Cavern Design & Sitting
CD 72  c Condition Proposed by Mr Paley
CD 72  d Final Planning Conditions - Version A
CD 73  Stage Energy - Press Statement
CD 74  Application No W80/1454/03 - Development of natural gas storage and refining facility.
CD 75  Schedule & Drawings of Surface Infrastructure (not to scale)
CD 75  a Figure 7a Master Plan
CD 75  b Figure 7b Preesall Master Plan
CD 75  c Compressor Station Site Plan
CD 75  c[r] CD 75c Revised
CD 75  d Upper Ground Floor
CD 75  e Lower Ground Floor
CD 75  f Compressor Station Site Section - Drawing A.CPS.0604400
CD 75  g Compressor Station Site Section - Drawing A.CPS.0604401
CD 75  h Compressor Station View Number 1
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CD 75  i Compressor Station View Number 2 & 3
CD 75  j Booster Water Pump Station /Workshop Site Plan
CD 75  k Booster Pump Station Ground Floor Plan
CD 75  l Booster Pump Station Basement Floor
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CD 75  m Booster Pump Station Site Sections
CD 75  n Seawater Pump Station Site Plan
CD 75  o Ground Floor Plan - A.SWP.0602200
CD 75  p Basement Floor Plan A.SWP.0602201
CD 75  q  Seawater Pump Station Exterior Elevations
CD 75  r  Seawall Crossing of Proposed Brine Outfall Pipeline - SK/FP/13/7/05
CD 75  s  Revised Roads & Access Tracks to Wellheads
CD 75  s[r]  CD 75s Revised
CD 75  t  Booster Pump Station Ground floor plan
CD 75  t[r]  CD 75t Revised
CD 75  u  Booster Pump Station Site Sections
CD 75  u[r]  CD 75u Revised
CD 75  v  Note to accompany surface infrastructure drawings CD75c[r] - CD75u[r]
CD 75  v[r]  Revised Note to accompany drawings CD 75c[r] - CD75u[r] ABOVE
CD 76  Landscape Sensitivity to Wind Energy Development in Lancashire
CD 77  BS EN 1918-2:1998 Gas Supply Systems - Underground gas storage
CD 78  Revised draft conditions from LCC incorporating comments from the HSE - 15 Mar 06
CD 78  r  Final HSC Conditions - 2 May 2006
CD 79  Photographs of Salt Cores
CD 80  Millington v Secretary of State - Case Comment
CD 81  Unilateral Undertaking Made under section 106 of the Town & Country Planning Act 1990 (as amended)

Canatxx Gas Storage Ltd.

CGS/  0/ 1  Planning Appeal - Statement of Case - 22 Aug 2005
CGS/  0/ 2  HSC Appeal - Statement of Case - 22 Aug 2005
CGS/  0/ 3  Statement of Case - Appeal Ref: APP/Q2371/1163407 - 21 Dec 04
CGS/  0/ 4  CGS - Opening Statement
CGS/  0/ 5  Proposed Natural Gas Storage Facility, Clarification of Potential for Gas Migration & Consequences of subsidence
CGS/  0/ 6  Regulation 19 Information - Geology Subsidence & Gas Migration - 7 Oct 05
CGS/  0/ 7  Further information in relation to Application Ref: 02/03/1455 - 13 June 2005
CGS/  0/ 8  Daily Drilling Reports (Arm Hill Core Hole)
CGS/  0/ 9  Land & Mineral Rights Registered to Canatxx
CGS/  0/ 10  Closing Submission on behalf of Canatxx
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CGS/  1/ 5  Rebuttal on Need to Jackson & PWG
CGS/  1/ 6  Niall Trimble - Supplementary Evidence on Need
CGS/  1/ 7  Rebuttal of PWG (PWG/1/1c & 1/7a & Comments on CD 58, CD 59 & ID 5
CGS/  2/ 1  Paul Grimes - Summary Proof - Block 1
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CGS/  2/ 4  Indicative Construction Programme for Gas Storage
CGS/  3/ 1  David J Evans - Proof of Evidence - Geology of Preesall Saltfield.
CGS/  3/ 2  David J Evans - Appendices to Proof
CGS/ 3/ 3 David J Evans - Figures to accompany Proof
CGS/ 3/ 4 David J Evans - Tables to accompany Proof
CGS/ 3/ 5 Dr D J Evans Supplementary Proof on Geology of Preesall Saltfied
CGS/ 3/ 6 Dr/ D J Evans - Supplementary Comments to Proof on Geology
CGS/ 3/ 7 Preesall Halite gamma log correlations. Dec 05
CGS/ 3/ 8 Map Showing Basin Depths
CGS/ 3/ 9 Geological Time clock
CGS/ 3/ 10 Dr Evans addressing matters raised by the Assessor
CGS/ 3/ 11 Comments on LCC/1/6 &LCC/1/7 prepared by D J Evans & E Hough, BGS
CGS/ 4/ 1 Norbert Heitmann Summary to Proof of Evidence
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CGS/ 8/ 1 Dr.-Ing. Reinhard B Rokahr Proof of Evidence
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CGS/ 9/ 1 Dr Malcolm Hockaday - Summary of Proof for Block 3
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CGS/ 9/ 3 Dr Malcolm Hockaday - Appendices to Proof
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LCC/ 5/ 4 Gary Jones Rebuttal Evidence - Volume 4 February 2006
LCC/ 5/ 5 Maps of Cemetery Lane Roundabout
LCC/ 5/ 6 Pictorial Representation of the Accidents described in CGS/13/4
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LCC/ 7/ 5 Letter to Liam Fisher 29 Jan 06 from Stuart Perigo

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WBC/ 0/ 1 WBC - Opening Statement
WBC/ 0/ 1a Supplement to Opening Statement
WBC 0/ 2 WBC - Committee Report - 5 April 04
WBC 0/ 3 WBC - Statement of Case on Appeal 04/01415/LCC
WBC 0/ 4 Closing submission on behalf of WBC
WBC 1/ 1 Carl Taylor - Proof of Evidence
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WBC 1/ 5 Note for Inquiry - a landscape Strategy for Lancashire
WBC 1/ 6 Wyre BC Committee Update on application No. 04/01415/LCC
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EN 0/ 2 Interim Position Statement - 3 Aug 05
EN 0/ 3 EN Statement in Relation to the Revised Application 02/04/1415
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EN 0/ 5 Comments on Draft conditions & S.106 Obligation - 6 March 2006

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PWG 0/ 2 Statement of Case App/1183799 Sept 05
PWG 0/ 3 The Impact of brine extraction & rock salt mining - Preesall Salt Field
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PWG 1/ 1 Howard Phillips - Proof of Evidence on Need
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PWG 1/ 4a Howard Phillips - Additional Proof on Geology (Figure)
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PWG 1/ 5 Howard Phillips - Proof - Existing Brinefield & Mine Workings (Previously 0/3)
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PWG 1/ 6b Michael Brown (Canatxx) letter to S Perigo (LCC) 6 May 2005
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PWG 1/ 7 Howard Phillips - Proof of Evidence on Environmental & Other Matters
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J 1/ 8 Response to CGS/3/5 & CGS/4/4 from D S Jackson – Nov 05
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Wells with exposed marl roofs
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D S Jackson - Requested site visit locations
Global Gas – 2 February 2006
Belarus fury at Moscow in gas row - 19 Feb 2004
Ukraine Gas row - 4 January 2006
House of Commons Hansard Debates - 12 Jan 06
Press releases. Ineos Enterprises Gas Storage facility Cheshire 29/9/05
Minutes of Canatxx/Environment Agency meeting 18 May 2000
Canatxx Briefing Note - Application for Discharge Consent – 17/3/06.
Ramsar Advisory Missions: Report No.34, Dee Estuary, UK (1994)
Email - Ian Williams to Kevin Wardle - Monitoring Preesall Land 4/1/06
Richard Cornish on Environment & Other matters - May 2006
M J Jackson - Proof of Evidence Block 2 Geology & Related Matters
M J Jackson - Summary of Proof
M J Jackson - Proof of Evidence - Environment Landscape - Block 3
Addition to J/2/3
Brown Hare Sightings Map
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Letter to June Jackson of 11 Feb 06 from A R & J Whitlow
Letter of 12 Feb 06 from A & E Bleasdale
Letter of 12 Feb 06 from W A Healde
Letter of 11 Feb 06 from Janet Whitlow
Notification of SSSI - Morecambe Bay & Wyre-Lune - 27 Jan 1995 –
A Nature Conservation Review
Map of Hedgerow on Holding No. 21/163/0003
Deliver us from Evil of Speed
Letter from R McCann to Mr Gee, Wyre BC
Letter from R McCann to Mr Perigo, LCC - 13 April 04
M J Jackson Proof of Evidence on Environment Landscape – Photos
Coatwalls Farm
HSE - Safety Alert to Operators of "COMAH" oil/fuel storage sites
Extract from EA - Ayre Managed Realignment Study Stage 1 –
Scoping of Potential Sites Many 2005
R S Jackson - Proof of Evidence Block 2 Geology & Related Matters

General Inquiry Documents
Notes of the PIM of 23 May 2005
Notes of the Second PIM of 3 August 2005
Inquiry attendance sheets
Letter from HA to LCC dated 15 Aug 05
Draft Scope of Statement of Common Ground - Canatxx-LCC-WBC
Letter 10/8/05 LCC - Notification of 2nd application & inquiry details

Inspector Documents
Request for Documents to Assist Technical Assessor for Block 2
Sketches of Caverns for clarification
Presentation of The Revised Modelling
ID 4/ Request for more detailed information on CD47a
ID 5/ Brussels warns of clampdown on European energy giants
The Independent 17 Feb 06

Inspector Post-Inquiry Documents
IPI 1/ DTI Statement - Letter to the Parties 13 June 2006
IPI 2/ DTI Statement - Ministerial Written Statement 16 May 2006
IPI 3/ D.S.Jackson - response to Ministerial Statement
IPI 4/ Canatxx - response to Ministerial Statement
IPI 5/ LCC response to Ministerial Statement
IPI 6/ PWG to be submitted

Correspondence
CGS C/ 1 R Glover to S Evans (1/6/05) - Confirming their view to proceed with inquiry
date of 11Oct 2005
CGS C/ 2 Hammonds to P Robottom (16/9/05) - Re Reg.19 request.
CGS C/ 3 Richard Glover to PO (27/10/05) - Response to request for further
information for the Assessor
CGS C/ 4 R Glover to LCC (10/11/05) - Ref LCC/C/2
CGS C/ 5 R Glover to PO (10/11/05) - Response to (ID 1) Assessor's request for
information
CGS C/ 6 Richard Glover to I Mulroy (2/12/05)- Response to directional drilling
CGS C/ 7 Richard Glover to I Blinko (21/12/05) Description of Development
EN C/ 1 David Tyldesley to B Bay (9/3/06) - Conditions & S.106 Obligation
LCC C/ 1 LCC to P Robottom (27/9/05) - Ref CGS/C/2
LCC C/ 2 LCC to R Glover (3/11/05) - request for further information
LCC C/ 3 LCC to R Glover (29/11/05) - Re CGS/C/4 & LCC/C/2 + Request for
LCC C/ 4 LCC to Sian Evans (24/11/05) re. Reg.19 compliance.
LCC C/ 5 LCC to P Robottom (8/11/05) Ref. to Reg. 19 & PINS letter of 8/9/05
LCC C/ 6 LCC to BGS (20/12/05) Request information pertaining to BGS
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LCC C/ 7 Christopher Green (BGS) to Ian Blinkho (23/12/05) Reply to letter of
20/12/05
LCC C/ 8 Dr Nigel Riley to Stuart Perigo (16/12/05) Reply to letter of 15/11/05
LCC C/ 9 Chief Fire Officer to S Perigo (20/1/06) Report relating to capability
of local highway network (Stalmine)
LCC C/ 10 S Perigo to Mr Pearce (9/3/06)
LCC C/ 11 EN to S Perigo (20/3/06)
LCC C/ 12 Ian Southworth (EA) to LCC (3/5/06) - No objection to additional salt
marshes.
PWG C/ 1 Ian Mulroy to R Glover (16/11/05) - Request for Information on
Directional Drilling

Interested Persons Written Statements
IP 0/ 1 Volume 1 of Statements made by Interested Persons Slot 1 – 1/3/06
IP 0/ 2 Volume 2 of Statements made by Interested Persons Slot 2 – 1/3/06
IP 0/ 3 Volume 3 of Statements made by Interested Persons Slot 3 – 2/3/06