

MEMORANDUM

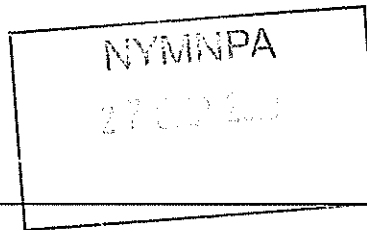
File Ref: 17809

Date: 10 September 2010

To: Paul Foster

From: Lisa Toyne

RYEDALE GAS PROJECT
Zones of Visual Influence Study Plans



Zones of Visual Influence Study Plans

The theoretical Zone of Visual Influence for the compressor building and the ground flare, the tallest structures within the Hurrell Lane Gas Processing Facility, have been modelled. The technical methodology for creating the Zones of Visual Influence has been set out in a technical appendix. The resultant Zone of Visual Influence plans illustrate theoretically how much of these structures can be seen from the surrounding area. The extent of the visibility of these structures has been set out in accordance with the following:

Compressor building Overall Height: 12m	% Visible	Ground flare Overall Height: 15m	% Visible
Upper 3m of roof visible	<25%	Upper 3m of stack visible	<20%
Upper 6m of building visible	<50%	Upper 6m of stack visible	<40%
Upper 9m of building visible	<75%	Upper 9m of stack visible	<60%
Compressor building fully visible	100%	Upper 12m of stack visible	<80%
		Stack fully visible	100%

The theoretical visibility has been determined, solely taking account of topography, existing vegetation, planting proposals (Year 1 and Year 15, allowing for the growth of the landscape proposals), and is based on the assumption of uninterrupted sightlines between a structure (and portions of that structure) on site and locations in the surrounding area. The theoretical Zone of Visual Influence does not take into account the effect of built form.

The theoretical Zone of Visual Influence created by the availability of views then needs to be assessed taking into account whether areas coincide with receptors, the sensitivity of any receptors, distance from the Site, and with field based assessment to establish the actual context of the views.

Receptors

Much of the theoretical Zones of Visual Influence for the compressor building and the ground flare cover areas where there is no public access such as roads, railway lines and public rights of way, no residential areas and no areas of employment, and therefore there are no receptors to obtain views.

Certificate No: 15 0003



Where the theoretical Zones of Visual Influence coincide with receptors, the sensitivity of that receptor will have an influence on the significance of the view of the structure.

Distance

The Zones of Visual Influence do not take into account distance. The greater the distance from the compressor building or ground flare the smaller it will appear in the view. For example, a view of the top 3m of the ground flare will be more significant immediately adjacent to the Site, but will be, at worst, barely perceptible over 3km from the Site. This will also influence the significance of the visual effect.

Context of the View

The significance of the visibility of the structure is also dependant on the context of the view. Where a structure is typical of other existing components of the view, or is characteristic of elements within the existing view, the visibility of the structure will be less significant than if it introduces an uncharacteristic or detracting component into a view. The extent to which the structure occupies the view will also influence the significance of the visibility, that is, whether it forms a large or small component to the view.

The Zones of Visual Influence plans therefore solely illustrate a theoretical model of where the compressor building and ground flare can potentially be seen. The actual visibility must be checked from field assessment, and is influenced by the screening effect of built form and by distance, and then the significance of the visibility needs to be judged based on the context of the wider view and the sensitivity of the receptor, before drawing conclusions on the visual effect of the compressor building and the ground flare.

Compressor Building: Year 1

The compressor building is 12m in height and is located in the centre of the Hurrell Lane Gas Processing Facility. The theoretical Zone of Visual Influence for the compressor building is predominantly limited to the south of the dismantled railway line that runs east to west through the Vale of Pickering to the immediate north of the Gas Processing Facility.

- To the south-west
A series of substantial tree belts and blocks of woodland to the south west of the Gas Processing Facility screen views of much of the compressor building.
Potential views of the majority of the compressor building are limited to the immediate west of the Gas Processing Facility (not coinciding with any receptors), and within the vicinity Charity Farm where there is a lack of intervening vegetation.
There are limited potential locations obtaining views of the upper half or less of the compressor building, and these rarely coincide with any receptors. The study identifies that the top half of the compressor building is potentially visible from the village of Kirby Misperton, however, these views are over a distance of 6.5km and do not take account of intervening built form, and orientation or direction of views, and are unlikely to be significant.
- To the south and south-east



There are potential open views of the compressor building to the south and south-east, as a result of the combination of the flat landscape of the Vale of Pickering and the limited vegetation within that landscape, with the newly planted landscape proposals having limited initial screening effect. There are limited receptors within this area, and views would generally only be available from roads. The theoretical Zone of Visual Influence identifies that there are potential views of the majority of the compressor building from the village of Yedingham, however, these views are over a distance of 4km and do not take account of intervening built form, and orientation or direction of views, and are unlikely to be significant.

Where there are substantial tree belts or blocks of woodland within the landscape, these effectively screen views of the compressor building to the further south-east.

- To the north and north-east
Potential views of the compressor buildings are generally screened by the embankment of the dismantled railway line and associated vegetation, to the immediate north of the Gas Processing Facility. There are limited potential views to the north where a break in the embankment allows views into the Site, but these do not generally coincide with any receptors, with the exception of users of the A470. The study identifies that there are potentially views of the majority of the compressor building from the village of Snainton, however, these views are over a distance of 7km and do not take account of intervening built form, and orientation or direction of views, and are unlikely to be significant.

Compressor Building: Year 15

The theoretical Zone of Visual Influence plan for Year 15 illustrates that the potential Zone of Visual Influence for the compressor building is substantially reduced, both in extent of area, and extent of compressor building visible. The landscape proposals, including planting to the boundaries of the Site, generally effectively screen all but the roof of the compressor building. Views of the majority of the compressor building are limited to the Site, and a small elevated area to the west, but which does not coincide with any receptors. Views of the top half of the compressor building are limited to a small area to the north of the Site which again does not coincide with receptors with the exception of views from the A470, and a small area to the distant east which is over a distance of 7km and generally does not coincide with any receptors.

Ground Flare: Year 1

The ground flare is 15m in height and is located in the south-eastern corner of the Hurrell Lane Gas Processing Facility. The greatest theoretical visibility of the ground flare occurs to the south of the dismantled railway line that runs east to west through the Vale of Pickering to the immediate north of the Gas Processing Facility.

- To the south-west
The series of substantial tree belts and blocks of woodland to the south west of the Gas Processing Facility also screen views of much of the ground flare, generally limiting views to the upper part of



the structure. Being 3m taller than the Compressor building, the extent of theoretical visibility is greater, however very little of the theoretical Zone of Visual Influence coincides with receptors. Views of the majority of the ground flare are limited to the immediate west of the Gas Processing Facility from a short length of Longlands Lane, and within the vicinity Charity Farm and Williwow Grange Farm where there is a lack of intervening vegetation.

The study identifies that the top 40-60% of the ground flare is potentially visible from the village of Kirby Misperton, however, these views are over a distance of 7km and do not take account of intervening built form, and orientation or direction of views, and are unlikely to be significant.

- To the south and south-east

There are open views of the ground flare to the south and south east, as a result of the combination of the flat landscape of the Vale of Pickering and the limited vegetation within that landscape, with the newly planted landscape proposals having limited initial screening effect. The theoretical Zone of Visual Influence does not coincide with many receptors, generally limited to a few short lengths of road or footpath.

Where there are substantial tree belts or blocks of woodland within the landscape, these again effectively screen views of the compressor building to the further south-east.

The study identifies that there are potential views of the majority of the ground flare from the village of Yedingham, however, these views are over a distance of 4km and do not take account of intervening built form, and orientation or direction of views, and are unlikely to be significant.

- To the north and north-east

There are no views of the ground flare to the north of the Gas Processing Facility, being effectively screened by the dismantled railway embankment and the associated existing vegetation to the immediate north of the Gas Processing Facility.

The theoretical Zone of Visual Influence also identifies that the upper parts of the ground flare are potentially visible from higher ground to the north east. From Wilton Heights there are potential views of the top 3m of the ground flare from two public rights of way, and from Warren House which is over a distance of 3km. There are potential views from the southern edge of Wilton and to the west of Allerton, at distances in the region of 1.5km and 3km respectively.

The study identifies that there are views of the majority of the ground flare from elevated land to the north of Eberston and Snainton, however, these views are over a distance of between 5km and 9km and do not take account of intervening built form, and orientation or direction of views, and are unlikely to be significant.

Ground Flare Building: Year 15

The theoretical Zone of Visual Influence plan for Year 15 illustrates that potential full views of the ground flare are limited to the Site and to a very short elevated length of Longlands Lane to the west. The theoretical Zone of Visual Influence is substantially reduced, both in extent of area, and extent of ground flare visible. The landscape proposals, including planting to the boundaries of the Site, substantially limit views of the ground flare to the upper parts of the structure. To the south, the theoretical Zone of Visual Influence illustrates the potential extent of views of upper parts of the ground flare, however much of the zone does not coincide with receptors, and beyond 3km, any potential views are unlikely to be significant. There are potential views of the upper half of the ground flare from within the vicinity of Charity Farm and



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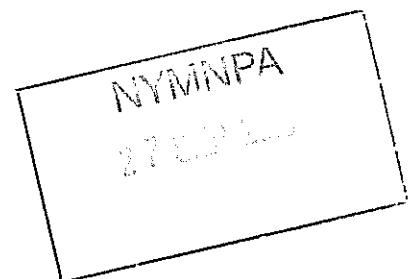
Willow Grange Farm. To the north and north-east, there are potential views of the upper 3m of the ground flare from two public rights of way and of the upper 6m from the southern edge of Wilton over distances of approximately 1.5km. Potential views to the further north and north-east are generally over a distance of 3km in distance and are unlikely to be significant.

Landscape and Visual Summary

The Application Site, including the proposed pipeline, the Ebberston Well Site and the Hurrell Lane Gas Processing Facility is well screened by existing vegetation, such as the Dalby Forest, woodland plantations to the south of the North York Moors National Park and the existing vegetation around the Ebberston Well Site and the Hurrell Lane Site, and the steep slopes of the escarpment running to the north of the A170.

The permanent adverse visual effects are very localised. There are no permanent views of the Proposals from the North York Moors National Park, with the exception of glimpses of the Ebberston Well Site from the immediately adjacent footpath. Limited views are obtained from publicly accessible locations, such as public rights of way, in the immediate vicinity of the Hurrell Lane Processing Facility, and from open locations to the north-east on higher ground, and to the south from the valley floor of the Vale of Pickering.

Very few residential properties experience permanent adverse adverse visual effects, limited to those properties located close to the Hurrell Lane Gas Processing Facility.



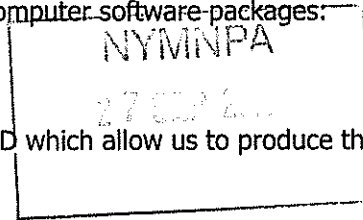
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Methodology For Computer Generated Zone of Visual Influence (ZVI) Study

The Zone of Visual Influence (ZVI) of the Site is produced by creating a 3D mathematical model of the site and its surroundings using the following computer software packages:

AutoCAD
Key Terra-Firma



Terra-Firma is a set of tools designed to work within AutoCAD which allow us to produce the ZVI.

The process of creating a ZVI begins with the creation of a "Ground Model" that is a mathematical representation of the existing landform surrounding the site. A series of targets are then defined to represent the features to be analysed. From this a "Visibility" model is produced which shows how many of the defined targets are visible from a particular point on the surface of the ground model.

The ground model is made by interpolating 3D levels data onto a 25x25m grid. This data is derived from Ordnance Survey Profile data in the form of 3D point data with a planimetric accuracy of +/- 1.0m and a vertical accuracy of +/- 1.0-1.8m (depending upon location). This re-interpolation of the data is necessary compromise between accuracy and speed.

The software produces a ZVI by drawing a series of sections radiating from a defined target. The sections are used to determine whether an observer with a given eye level (1.7m) above the surface of the ground model would be able to see the target. By analysing a number of points together a coherent model of the visibility of the site can be constructed. The Visibility model is created by mapping the data from these sections onto a rectilinear grid

Visual Barriers:

In addition to the topography the ZVI can also take into account existing and proposed visual barriers which can be used to model the effects of features such as woodland blocks, tree belts and buildings. Smaller features such as individual trees and buildings with a small footprint, or very low features such as trimmed hedgerows (up to 2m in height) are not included within these barriers as their effects are often lost due to their small area of effect in relation to grid size of the Visibility model. Vegetation has been broadly divided into groups based upon their average heights, which are assumed to be: 4m for substantial hedgerows; 8m for tree belts or copses; 12m for mature tree belts and groups and 15m for woodland blocks. Buildings have been included as having an average height of 8.5m, and include areas of development, linear rows of buildings and clusters of buildings, but do not take into account individual buildings, or that buildings may be taller than this average height of 8.5m AOD.

Vertical Stack of Targets:

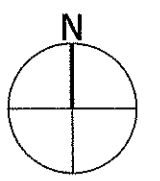
This model uses a series of targets stacked vertically at 1m increments from the top of the feature down to ground level and indicates the amount of the feature that will be visible. This indicates that there is a direct line of sight to the target(s) but does not take into account distance from the target.

Target Points:

The target points are defined according to the type of view to be analysed. For a vertical field of view a target point is defined for the upper most point of the feature with additional target points being defined at regular increments descending down from this point, so in the case of the Ground Flare a series of 15 target points were defined from the highest point (15m above ground level) down to ground level.

Output Colour Bands:

The output data is shown as a series of colour bands which can then be overlaid onto base mapping as a series of bands of colour representing different levels of visibility. In the case of the vertically stacked targets this can be used to indicate the portion of the feature that is visible, with each band representing a 3m section of the feature measured from the top.



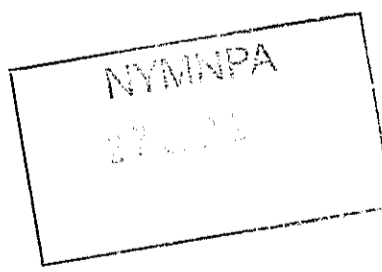
LEGEND

- Site Boundary
- Existing Woodlands, Copses And Tree Belts
- Existing Substantial Hedgerows
- Contours/Spot Heights (Metres AOD)
- Ridgelines
- Valleys

Compressor Building, 10.26m in Height

- Less Than Upper 3m (<30%) of Compressor Building Visible
- Less Than Upper 6m (30-60%) of Compressor Building Visible
- Less Than Upper 9m (60-90%) of Compressor Building Visible
- Compressor Building Visible From Ground Level (> 90%)

NOTES:
 ZVI based on 11 targets at 1m intervals vertically from top of Compressor Building Roof, 10.26m Above Ground Level.
 Existing building height: 8.5m
 Existing substantial hedgerow height: 4m
 Existing tree belt height: 8m
 Existing mature tree belt height: 12m
 Existing woodland block height: 15m
 Existing trees on railway embankment: 20m (including embankment height)



Project
Ryedale Gas Project

Drawing Title
**Zone of Visual Influence Study
 Compressor Building - Year 1
 Vertical Stack of Targets**

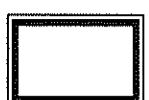


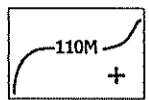
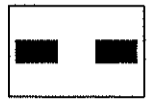

Date 10.09.2010 Scale 1:25,000 @A1 Drawn by ML Check by LT

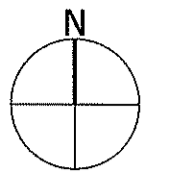
Project No 17809 Drawing No LSK10 Revision A

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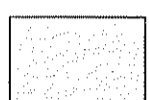


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LEGEND

-  Site Boundary
-  Existing Woodlands, Copses And Tree Belts
-  Existing Substantial Hedgerows
-  Contours/Spot Heights (Metres AOD)
-  Ridgelines
-  Valleys



**Compressor Building,
10.26m in Height**

-  Less Than Upper 3m (<25%) of Compressor Building Visible
-  Less Than Upper 6m (25-50%) of Compressor Building Visible
-  Less Than Upper 9m (50-75%) of Compressor Building Visible
-  Compressor Building Visible From Ground Level (> 100%)

NOTES:
 ZVI based on 11 targets at 1m intervals vertically from top of Compressor Building Roof, 10.26m Above Ground Level.
 Existing building height: 8.5m
 Existing substantial hedgerow height: 4m
 Existing tree belt height: 8m
 Existing mature tree belt height: 12m
 Existing woodland block height: 15m
 Existing Trees on railway embankment: 20m (including embankment height)

Proposed mitigation included at heights attained after 15 years of growth (8 - 12m)



Project:
Ryedale Gas Project

Drawing Title:
**Zone of Visual Influence Study
 Compressor Building - Year 15
 Vertical Stack of Targets**

Date: 10.09.2010 Scale: 1:25,000 @A1 Drawn by: ML Check by: LT
 Project No: 17809 Drawing No: LSK11 Revision: A



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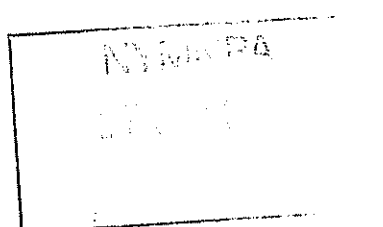
LEGEND

- Site Boundary
- Existing Woodlands, Copses And Tree Belts
- Existing Substantial Hedgerows
- Contours/Spot Heights (Metres AOD)
- Ridgelines
- Valleys

Ground Flare, 15m in Height

- Less Than Upper 3m (<20%) of Ground Flare Visible
- Less Than Upper 6m (20-40%) of Ground Flare Visible
- Less Than Upper 9m (40-60%) of Ground Flare Visible
- Less Than Upper 12m (60-80%) of Ground Flare Visible
- Ground Flare Visible From Ground Level (>80%)

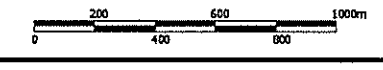
NOTES:
ZVI based on 16 targets at 1m intervals vertically from top of Ground Flare 15m above ground level.
Existing building height: 6.5m
Existing substantial hedgerow height: 4m
Existing tree belt height: 8m
Existing mature tree belt height: 12m
Existing woodland block height: 15m
Existing Trees on railway embankment: 20m (including embankment height)



Project:
Ryedale Gas Project

Drawing Title:
**Zone of Visual Influence Study
Ground Flare - Year 1
Vertical Stack of Targets**

Date: 10.09.2010
Scale: 1:25,000 @A1
Project No: 17809
Drawing No: LSK12
Drawn by: ML
Check by: LT
Revision: A



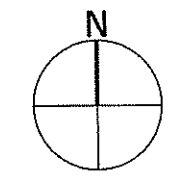
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LEGEND



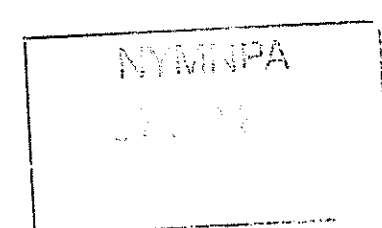
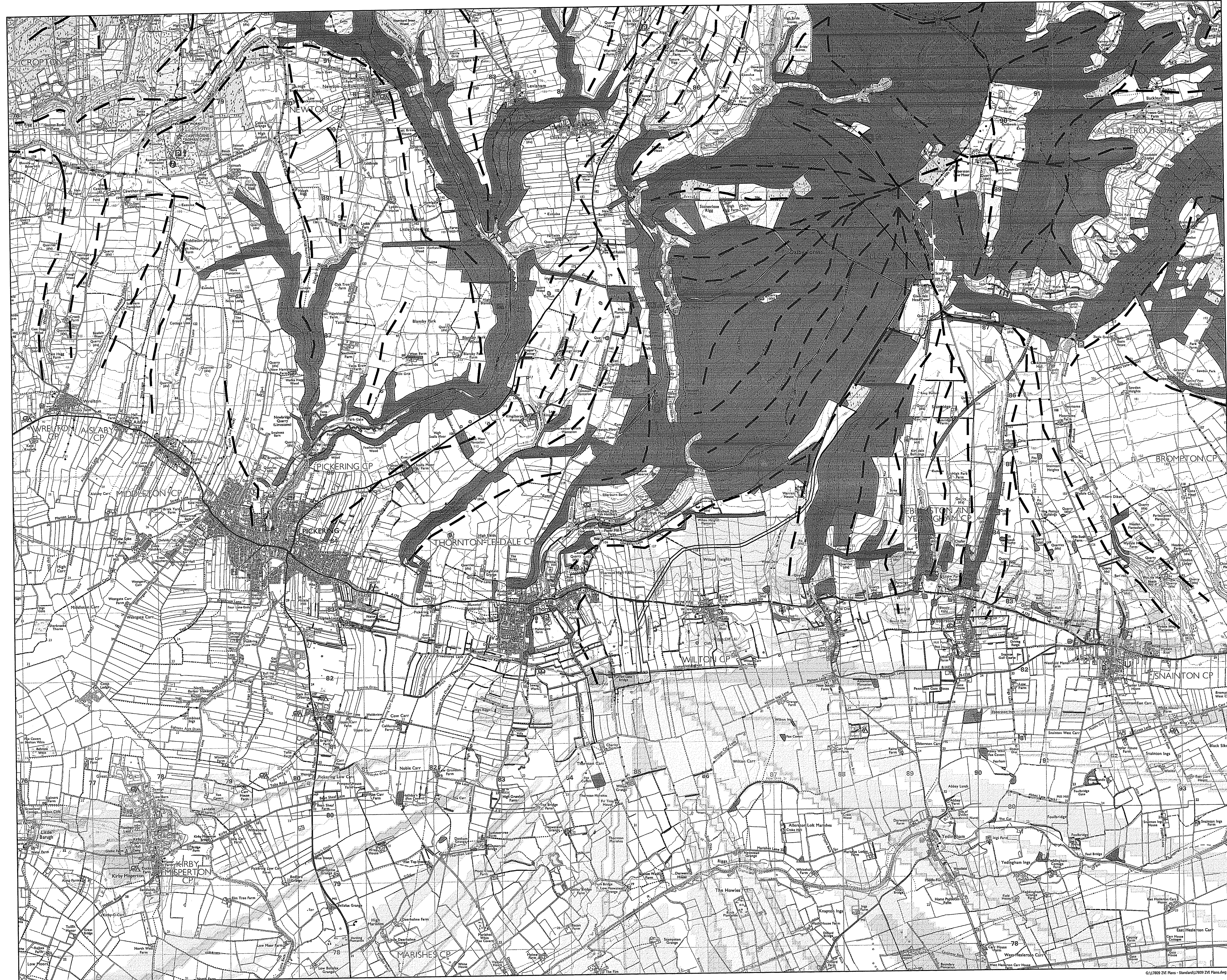
- Site Boundary
- Existing Woodlands, Copses And Tree Belts
- Existing Substantial Hedgerows
- Contours/Spot Heights (Metres AOD)
- Ridgelines
- Valleys

Ground Flare, 15m in Height

- Less Than Upper 3m (<20%) of Ground Flare Visible
- Less Than Upper 6m (20-40%) of Ground Flare Visible
- Less Than Upper 9m (40-60%) of Ground Flare Visible
- Less Than Upper 12m (60-80%) of Ground Flare Visible
- Ground Flare Visible From Ground Level (>80%)

NOTES:
 ZVI based on 16 targets at 1m intervals vertically from top of Ground Flare 15m above ground level.
 Existing building height: 6.5m
 Existing substantial hedgerow height: 4m
 Existing tree belt height: 6m
 Existing mature tree belt height: 12m
 Existing woodland block height: 15m
 Existing trees on railway embankment: 20m (including embankment height)

Proposed mitigation included at heights attained after 15 years of growth (6 - 12m)



Project
Ryedale Gas Project

Drawing Title
**Zone of Visual Influence Study
 Ground Flare - Year 15
 Vertical Stack of Targets**

Date: 10.09.2010 Scale: 1:25,000 @A1 Drawn by: ML Check by: LT
 Project No: 17809 Drawing No: LSK13 Revision: A

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TECHNICAL NOTE

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Highways, Transport & Infrastructure Planning

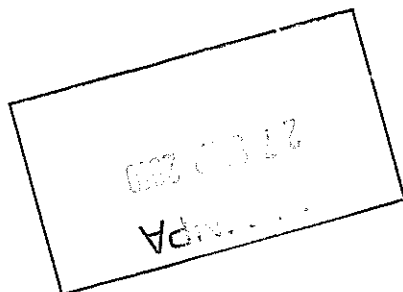
Cannon Consulting Engineers
Cambridge House, Lanwades
Business Park, Kentford,
Newmarket, CB8 7PN

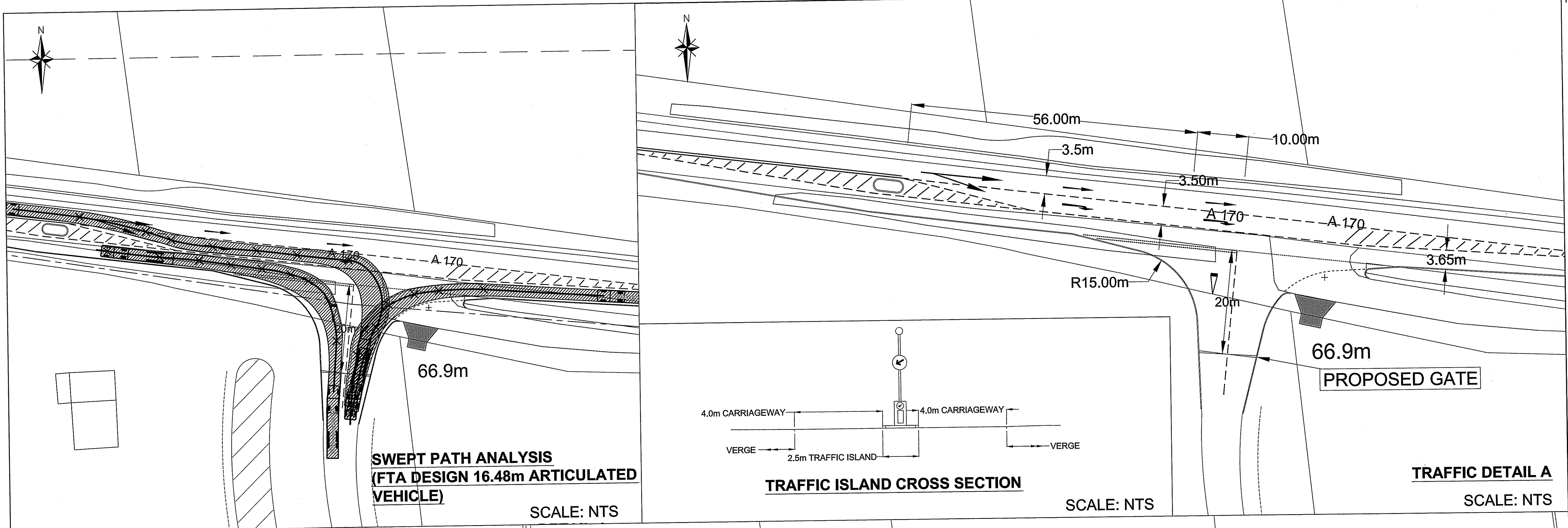
Project:	Ryedale Gas Project
CCE Ref:	E471
TN001 Title:	Revised Access Proposal
Prepared by:	Jessica Pratt
Approved by:	Rob Evans
Date:	September 2010

Revised Access Proposal

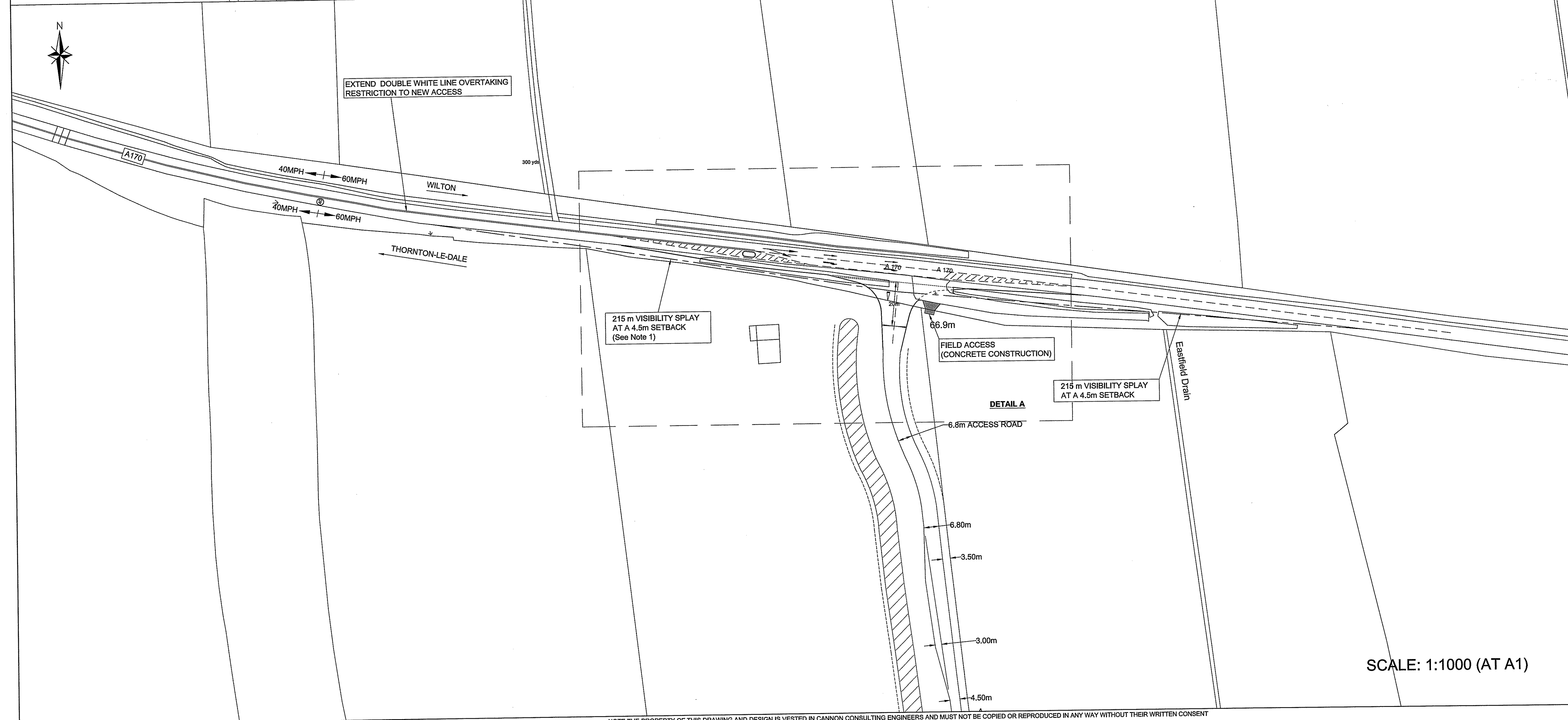
The revised access proposal for the permanent access from the A170 to the Hurrell Lane Gas Processing Facility has evolved from the access designed and submitted as part of the planning application. The original access was subject to pre-application discussions with the Highway Authority which underpinned the assessment of traffic impacts and design of an appropriate access. This included site meetings with officers of the Highway Authority. Whilst the access submitted with the application was considered acceptable in principle by the Highway Authority, these discussions have naturally continued since the submission of the planning application. The revised access shown on Cannon Consulting Engineers drawing no. E461 -10B is the culmination of those ongoing discussions with Highway Authority officers and also deemed to be acceptable to the Highway Authority.

The variation in the access design has been made to include a formal right turn lane into the site access with a central refuge that will accommodate the legal maximum size of heavy good vehicle. There are no other changes and the principle of access from the A170 is still acceptable.





- NOTES:
1. THE GROUND LEVEL WITHIN THE VISIBILITY SPLAY IS GENERALLY HIGHER THAN THAT OF THE CARRIAGEWAY SURFACE LEVEL. TO ACHIEVE THE INDICATED VISIBILITY STANDARD THE GROUND LEVEL WITHIN THE SPLAY WILL HAVE TO BE LOWERED.
 2. THE KEEP LEFT SIGN LOCATED ON THE TRAFFIC ISLAND TO BE 1200mm IN DIAMETER. ALL SIGNS AND ROAD MARKING TO BE IN ACCORDANCE WITH THE TRAFFIC SIGNS REGULATIONS AND GENERAL DIRECTIONS LATEST EDITION.
 3. JUNCTION LAYOUT IN ACCORDANCE WITH THE DESIGN MANUAL FOR ROADS AND BRIDGES TD 42/95 GEOMETRIC DESIGN OF MAJOR/MINOR PRIORITY JUNCTIONS.



REV	DESCRIPTION	DE	DR	CH	PA	DATE
B	MOVE RIGHT TURN LANE SOUTH TO AVOID CHANGE TO NORTHERN KERB LINE	JB	JB	JP	-	31/08/10
DESIGNED BY	DRAWN BY	CHECKED BY	PASSED BY			
JB	JB	JP	RE			
SCALES @ A1 SIZE	DATE	ISSUE STATUS				
AS SHOWN	21/07/2010	APPROVAL				
PROJECT TITLE						
RYEDALE GAS PROJECT						
DRAWING TITLE						
PROPOSED ACCESS						
CLIENT						
MOORLAND ENERGY LTD.						
CANNON						
CONSULTING ENGINEERS						
Highways, Transport & Infrastructure Planning						
Cannon Consulting Engineers Cambridge House, Kenford, Newmarket, Cambs, CB8 7PN Tel: +44 (0)1638 555 107 Fax: +44 (0)1638 555 106 info@cannonce.co.uk www.cannonce.co.uk						
DRAWING NUMBER	REV.					
E471/010	B					