

## 11.0 TRAFFIC AND TRANSPORTATION

### Introduction

- 11.1 This chapter of the ES assesses the likely significant effect of the Proposed Development in terms of transport and access and is supported by **Appendices 11.1**.
- 11.2 The chapter describes: the assessment methodology; the baseline conditions currently existing at the Assessment Site and surroundings; the likely significant environmental effects; the mitigation measures required to prevent, reduce or offset any significant adverse effects; and the likely residual effects after these measures have been employed. This chapter has been prepared by R Elliott Associates Ltd.

### Planning Policy Context

#### National Planning Policy

*National Planning Policy Framework (March 2012) (Ref. 11.1)*

- 11.3 The National Planning Policy Framework (NPPF) came into effect in March 2012 and superseded PPG13 (Ref. 11.2) as the national planning policy guidance. Its emphasis on transport matters in Section 4 is to:

***“promote sustainable transport that minimises the emission of greenhouse gases and reduce congestion”*** (Paragraph 30).

- 11.4 Paragraph 32 of the NPPF requires that:

***“All developments that generate significant amounts of movements should be supported by a Transport Statement or Transport Assessment. Plans and decisions should take account of whether:***

- ***The opportunities for sustainable transport modes have been taken up depending on the nature and location of the site, to reduce the need for major transport infrastructure;***
- ***Safe and suitable access to the site can be achieved for all people; and***
- ***Improvements can be undertaken within the transport network that cost effectively limit the significant impacts of the development. Development should only be prevented or refused on transport grounds where the residual cumulative impacts are severe.”***

## Local Planning Policy

### *NYMNP Core Strategy and Development Policies (2008) (Ref. 11.3)*

- 11.5 The Assessment Site is located on land within the boundaries of the North York Moors National Park. It is therefore important to consider the North York Moors National Park Authority (NYMNP) Core Strategy which was adopted in 2008.
- 11.6 Chapter 10 of the document refers to transport. Policy 23 'New Development and Transport' requires consideration of the need to travel and by which mode in order to reduce the environmental effect of traffic on the National Park. Points 3 and 4 of this policy are outlined below and are considered to be relevant:

- “3) The external design and layout and associated surfacing works take into account the needs of all users including cyclists, walkers and horse riders.***
- 4) It is of a scale which the adjacent vehicular road network has the capacity to serve without detriment to highway safety or the environmental characteristics of the locality.”***

### *North Yorkshire Local Transport Plan 2 (2006-2011) (Ref. 11.4)*

- 11.7 This is the second North Yorkshire Local Transport Plan (LTP) and replaces the provisional Plan. It sets out the aims and objectives for transport as well as the strategies and policies in North Yorkshire for five years.
- 11.8 The plan identifies the A170 as a 'primary route'. The main transport related issues identified for the Pickering and Thornton-le-Dale area include seasonal congestion associated with summer tourist traffic visiting attractions such as the North York Moors Railway, Pickering Castle, Flamingoland and the Dalby Forest Visitors Centre.

## Discussion

- 11.9 The Proposed Development provides the facilities to produce and condition gas within the well site and neighbouring Lockton Compound prior to being distributed by means of the existing LTZ pipeline operated by NGN. The process will involve the transportation by road of gas treatment fluids to and from the Assessment Site during operation as well as equipment and machinery required during construction, and decommissioning and restoration. The transportation of the above will be carried out in compliance with the relevant policy and guidance.

## Assessment Methodology

- 11.10 The primary purpose of the assessment is to determine what the likely significant effects of the Proposed Development would be on traffic and transport, as required by the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 2011 (Ref. 11.5). The assessment to determine whether effects are likely to be significant or not significant involves the combined consideration of the sensitivity of the highway network to the Proposed Development, and the magnitude of the effect that would occur.
- 11.11 The assessment process aims to establish the following:
- a clear understanding of the existing conditions of the surrounding highway network;
  - the nature of the Proposed Development and/or any mitigation measures incorporated into the design of the Proposed Development in order to minimise significant adverse effects;
  - the potential direct and indirect effects of the Proposed Development on the highway network;
  - identification of mitigation measures that might be implemented to reduce any effects of the Proposed Development; and
  - conclusions concerning the residual effects of the Proposed Development.
- 11.12 The approach to assessment has followed the procedure suggested by the Institute of Environmental Assessment (IEA) in 'Guidelines for Environmental Assessment of Road Traffic Guidance Notes No. 1 (GN1)' (Ref. 11.6), which sets out the recommended list of environmental effects which could be considered as potentially significant whenever a new development is likely to give rise to changes in traffic flows.
- 11.13 The gas treatment fluids will be transported by a transport company licensed to transport such fluids, and with properly designed and operated trucks for that purpose.
- 11.14 In assessing the effects of the Proposed Development on specific groups and locations, residential areas and recreational users of the area have been identified as particular groups to be considered (GS1, 17).
- 11.15 The environmental effects to be considered in this assessment are as follows:
- Severance;
  - Accidents and safety;
  - Non-vehicular safety (Cyclists Pedestrians and Equestrians (CPEs); and

- Transportation of by-products and treatment fluids.

#### Severance

11.16 Severance is the perceived division that can occur within a community when it becomes separated by a major traffic route. This effect is exacerbated by the coincidence of peak traffic flows with peak pedestrian movements and it can relate to quite minor traffic flows if they impede residents, either pedestrian or motorist.

11.17 GN1 recognises in para 4.28 that:

*"The measurement and prediction of severance is extremely difficult. The correlation between the extent of severance and the physical barrier of a road is not clear and there are no predicative formulae which give simple relationships between traffic factors and levels of severance. In general, marginal changes in traffic flow are, by themselves, unlikely to create or remove severance."*

11.18 Reference is given in GN1 (Ref. 11.6) to factors contributing to severance such as traffic speed, width of road and the availability of crossing places as well as the composition and number of vehicle movements.

11.19 GN1 recommends that the Manual of Environmental Appraisal indicators, reproduced below, as a way in which severance might be assessed:

*"Changes in traffic flow of 30% , 60% and 90% are regarded as producing 'slight', 'moderate' and 'substantial' changes in severance respectively."*

*"These figures have been derived from studies of major changes in traffic flow and therefore should be used cautiously in any environmental assessment. The assessment of severance should pay full regard to specific local conditions."*

11.20 Correlating this approach with the approach in Chapter 2 of this ES, the levels of change relate to each other as shown in **Table 11.1**.

**Table 11.1: Comparison of GN1 and Chapter 2 descriptors of magnitude of effect**

Magnitude of Effect	GN1 (MEI Indicators)	Chapter 2 of ES
High	Substantial	Major
Medium	Moderate	Moderate
Low	Slight	Minor

11.21 Effects of lesser magnitude than 'slight' or 'minor' can be regarded as negligible.

- 11.22 It is proposed to use the categories proposed in Chapter 2 of the ES to maintain consistency with the other chapters of this ES.

#### Assessment of Significance

- 11.23 The approach to the assessment of significance of effects is summarised in **Table 11.2** below, adapted from DMRB HA 205/08 (Ref. 11.7). This takes into account the duration, magnitude, direction and location of each effect as well as the sensitivity of the receptor.

**Table 11.2: Assessment of Significance**

Significance Definition	Adverse	Beneficial
Negligible	Very minor loss or detrimental alteration to one or more characteristics, features or elements	Very minor benefit to or positive addition of one or more characteristics, features or elements
Minor	Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements	Minor benefit to, or addition of, one (or more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring
Moderate	Loss of resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements	Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality
Major	Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements	Large scale or major improvement of resource quality; extensive restoration or enhancement; major improvement of attribute quality

#### Accidents and Safety

- 11.24 The Personal Injury Accident (PIA) record for the local highway network has been obtained from North Yorkshire County Council for a period from 1 January 2008 to 30 April 2013. The effect of additional traffic from the Proposed Development is discussed in terms of magnitude of increase, existing accident record with reference to typical rates on local links and junctions derived from Design Manual for Roads and Bridges (Volume 13, Section 1, Part 2, published May 2002) (Ref. 11.7).

#### Non-Vehicular Safety (Cyclists, Pedestrians and Equestrians)

- 11.25 Cyclists, pedestrians and equestrians (CPEs) are much more vulnerable to personal injury accidents than occupants of vehicles although no accidents were recorded for these groups in the time frame of the report obtained from NYCC. The existing risks faced by all these groups of road users when using this road are:

- High speed motor vehicles passing close to the CPEs;
- Poor visibility of CPEs;
- Risk of being startled;
- Poor awareness of approaching motorised vehicles by CPEs; and
- Poor awareness of CPEs by approaching motorised vehicles.

11.26 Although the Proposed Development will increase the volume of traffic over a relatively short period of time, this has the potential to increase the risk to the safety of the cyclists, pedestrians and equestrians. Mitigation measures are considered in more detail in later sections, when it will be shown that the traffic control measures or restriction of CPEs away from areas of overlap will increase the safety of the CPEs.

#### Transportation of by-products and treatment fluids

11.27 The operating phase of the Proposed Development will involve transporting by-products and treatment fluids in the form of amines, glycol and hydrocarbon condensate. The risks associated with accidents on such movements are identified or quantified and the effects of transporting by-products and treatment fluids are considered within this chapter.

#### Baseline Conditions

11.28 Before an access route to the Proposed Development can be considered in detail, an overview of the wider road network will be carried out to confirm the options available for approaching the Assessment Site and the most appropriate route will then be studied in greater detail. The baseline studies comprise:

- A traffic count using automated traffic counters;
- An examination of accident records over the past five years for the route between the major road and the Assessment Site;
- Examination of the road by car, with spot checks on foot; and
- Review of recent road usage.

#### Local Highway Network

11.29 The A170 runs east to west between Scarborough and Thirsk where it meets the A19, A61 and M1. At Pickering the A169 runs north to south between Whitby and York, as shown on **Figure 11.2**.

- 11.30 Access to the Assessment Site from either the north or the east is restricted to narrow unclassified roads having gradients of 1:5 in places which would require significant road works to accommodate the vehicles delivering tanks and equipment to the Assessment Site. Access from these directions has therefore been scoped out of further consideration.
- 11.31 The A169 runs north east from Pickering to Sleights and Whitby, coming within 5 km of the Assessment Site, but with no adequate direct access and will not be considered further.

#### *Dalby Forest Drive*

- 11.32 A minor road heads north from Thornton-Le-Dale to meet the A169 about 5.5 km north of Thornton-Le-Dale, from which access can be gained onto the Dalby Forest Drive which passes close to the northern edge of the Assessment Site. Dalby Forest Drive is maintained by the Forestry Commission which charges a toll for its use. The entrance to Dalby Forest Drive is located on the east side of the public highway, about 2 km north of Thornton-Le-Dale and the initial 400m section of Dalby Forest Drive is about 7m in width, reducing to 6m width when the road turns northeast.
- 11.33 The first section of the Dalby Forest Drive is generally level and after 1 km drops at about 1:10 into Thornton-Le-Dale and levels out to reach the main visitors centre and facilities area, after which it rises steadily in the woods past amenity sites and holiday cottages.
- 11.34 The Dalby Forest Drive forms part of a major tourist attraction for cyclists, horse-riders, hikers and holidaymakers and the effect of the proposed works upon the amenity of the area would be significant. Dalby Forest Drive is used throughout the year by amenity groups or individuals. The length of Dalby Forest Drive up to the junction with Ebberston Common Lane is about 7 km, with about 4 km after the main amenity area comprising single track road without formal passing places. Ebberston Common Road heads southwards from this junction past the entrances to the Assessment Site to a junction with the A170.
- 11.35 The effect that using the Dalby Forest Drive route would have on amenity and the reluctance of the Forestry Commission to allow its use as an access to the site is sufficient to discount it from further consideration.

#### *A170*

- 11.36 The A170 is a two-way single carriageway road, classified as a primary route within North Yorkshire and serves the eastern region of the county, passing from west to east about 6.5

km south of the Assessment Site. Minor roads lead north from the A170 in several locations between Allerston and Brompton-by-Sawdon, with the most direct route to the Assessment Site having a junction with the A170 at Eberston.

- 11.37 Outside the towns and villages, the A170 between Pickering and Scarborough is subject to national speed limit (60mph) except to the east of Allerston, where a 50mph section extends from the 40mph limit for about 1 km towards Eberston. The speed limit reduces to 40mph and 30mph where it passes through villages such as Allerston and Eberston.
- 11.38 There are gateway features at the entrance to the some of the villages, where space permits in the verge, and road markings such as yellow or red lines at 100m intervals precede the speed limit and village name signs. At the location of village name signs and the start of the lower speed limits, a 20m section of highway has red colouring to highlight to drivers the change in speed limit, and villages such as Allerston and Eberston have double white lines, hatched central strips and traffic islands to reinforce the speed restriction signs.

#### *Access to the Assessment Site*

- 11.39 Access to the Assessment Site will use the A170 to reach the area, with traffic approaching from either Thornton-Le-Dale in the west or Scarborough in the east. The Assessment Site is located north of the A170 with access proposed via Eberston Lane and Eberston Common Lane.
- 11.40 The width of the A170 in the vicinity of the Eberston Lane junction is 7.3m, with the two lanes of traffic separated by double white lines and a traffic island. Eberston Lane forms the minor leg of the junction with the A170, being 7 m wide at the junction and narrowing to 4 m away from the junction.
- 11.41 Eberston Lane remains about 3.5m wide for the rest of its length, except at passing places and widenings as mentioned earlier.
- 11.42 Eberston Lane forms a minor leg on the north side of crossroads at the A170, where the A170 passes through the village of Eberston in North Yorkshire. The lower end of Eberston Lane, near the A170, rises at gradients up to 1:10 from the village up through a narrow valley, Netherby Dale, to reach the upper plain, where the landscape becomes flatter and more open with good visibility along the road. Gradients on this upper section do not exceed 1:100.
- 11.43 The proposed access route passes the along the length of Eberston Lane (approx 5.0 km)



up to Givendale Head Farm. From this point northwards, the road is unsurfaced and is known as Eberston Common Lane. It continues for approximately 2.2 km to reach the Assessment Site entrances. This route is shown on **Figure 11.1**.

- 11.44 Eberston Lane is mainly single-track with passing places that were installed when the original Lockton exploration sites were being constructed and drilled in the 1960's and 1970's. The spacing of these passing places varies to provide inter-visibility between them, with those in the lower sections near the A170 being closer together than the passing places in the upper section where Eberston Lane rises onto the more open plain. Two corners have been eased by local road widening so articulated vehicles are able to manoeuvre around them without difficulty.
- 11.45 Eberston Common Lane is under control of the Forestry Commission and is also used as a Public Right of Way from the head of Eberston Lane at Givendale Head Farm in the south to the junction with Dalby Forest Drive in the north. Eberston Common Lane forms a minor leg at an oblique junction with Dalby Forest Drive about 300m to the north of the Assessment Site. The track is generally 6m wide and constructed of compacted gravel, and Dalby Forest Drive is a 6m wide tarmac road created by the Forestry Commission for logging operations and tourism as described above.
- 11.46 Works traffic for both the Eberston Moor 'A' Well Site and the Lockton Compound operated by NGN have used this established access from the A170 and Eberston Common Lane as shown on **Figure 11.1** in the past and the same route is proposed for the Assessment Site.
- 11.47 Eberston Lane has 30mph signs posted along its length applicable to site traffic generated by work at Eberston Moor 'A' Well Site and the Eberston South Well Site near Givendale Head Farm. This forms part of a separate application and is not discussed further here.
- 11.48 The section of Eberston Common Lane under the control of the Forestry Commission forms part of a series of trails for pedestrians, cyclists and equestrians centred on the Dalby Forest visitor centre and Dixon's Hollow; and is also part of the Tabular Hills Walk, a long-distance walking route that forms part of the circuit of the North York Moors.

#### *The Assessment Site*

- 11.49 The Assessment Site is located on the eastern edge of the Dalby Forest within a cleared area of conifer woodland to the west side of Eberston Common Lane, with privately-owned farmland on the east side of the lane.

- 11.50 Planning permission for the exploration well site (Ebberston Moor 'A' Well Site) was granted in 2006 (NYM/2005/0254/FL), with access for heavy goods vehicle traffic being taken from the A170 along Ebberston Lane and Ebberston Common Lane.
- 11.51 Vehicles associated with the construction and drilling operations at Ebberston Moor 'A' Well Site and the well site near Givendale Head Farm have used this access without incident since work commenced in 2006.
- 11.52 There have been no accidents relating to turning movements at the junction of the A170 with Ebberston Lane.
- 11.53 Ebberston Lane is primarily used for access to the farms located in the area and a recycling unit at Givendale Head Farm. This facility is operated by the landowner under the trade name of Gwilliam Recycling and is a fully licensed Waste Transfer Station (Licence Nr EAWML66157). The recycling unit accepts agricultural, building and gardening waste for separation and recycling, thus generating HGV traffic along Ebberston Lane. There has been no reported conflict between traffic accessing the recycling unit and that servicing the Ebberston Moor 'A' Well Site. Likewise, there have not been any conflicts reported between well site traffic and farm traffic.
- 11.54 Apart from the large house, Cliff House and the associated cottages, located at the junction of Ebberston Lane with the A170, the only other property within 100m of Ebberston Common Lane is Givendale Head Farm, which is at the northern end of Ebberston Common Lane. Other farms such as High Park Farm, Malton Cote and Scamridge are set at least 200m from the public highway, hidden from the highway by the topography, and are considered to have low sensitivity to the traffic using the road.
- 11.55 Cliff House is located immediately adjacent to the A170 and the effect on the occupants to traffic using Ebberston Lane is considered to be minimal in comparison to the effects of traffic on the major road.

#### Existing Traffic Flows

##### *Ebberston Lane*

- 11.56 The baseline traffic flows along Ebberston Lane were perceived to be considerably lower than for the A170 so a traffic survey was conducted to provide a basis for comparison with predicted vehicle movements during both the construction, operational, and decommissioning

and restoration phases of the Proposed Development.

- 11.57 A survey was commissioned from 'Sky High-Count On Us' to count the daily traffic vehicle movements on Ebberston Lane and to report on the findings. The survey was carried out between 30<sup>th</sup> April 2013 and 6<sup>th</sup> May 2013, with automatic traffic counters placed across Ebberston Lane and the A170. The results of the survey are included in **Appendix 11.1**.
- 11.58 The survey confirmed that the traffic flows in Ebberston Lane are low, with a maximum recorded number of 19 movements northbound and 11 movements southbound in one hour (Monday 30 April 0900-1000 hrs). The hourly total of traffic movements between the hours of 0800 and 1700hrs, averaged over the working week, vary between 10 and 17, with an average over the working day of 13 movements per hour.
- 11.59 Motorcycles and cars comprised 80% of the traffic, with LGVs and HGVs comprising the remaining 20%. These averaged daily movements are summarised in **Table 11.3**.

**Table 11.3: Baseline Traffic Flows along Ebberston Lane (Average Weekday Totals)**

Direction	Motorbike	Cars Class	LGVs, 2 Axles	HGV 3/4 axles	HGV 4/5/6 axles
Southbound	2	69	14	2	2
Northbound	3	71	12	4	2

- 11.60 Given that the road provides direct access to only nine properties, the level of car usage suggests that each household generates four double journeys per day for each property.
- 11.61 A possible explanation for these higher than expected figures is that Ebberston Lane is used as a short cut by vehicles originating from further north avoiding the toll payable on Dalby Forest Drive by using farm roads.
- 11.62 The relatively low figures recorded for HGV traffic movements along Ebberston Common Lane suggests that the recycling centre generates fewer traffic movements than might be expected for such a centre to remain viable. The website dedicated to the recycling centre makes no mention that cars carrying waste for treatment would be acceptable, with 1 tonne loads being the minimum quantity charged for by the centre.
- 11.63 Another reason for the low HGV traffic movements could be the timing of the survey, which ran into a Bank Holiday weekend.

*A170 Traffic Flows*

- 11.64 Previous surveys have confirmed that the daily traffic vehicle movements on the A170 are in excess of 5,000 per day, of which 4% was HGV traffic. These traffic flows are well within the capacity of a road of this type.
- 11.65 The survey carried out for this assessment confirmed that the average daily traffic movements along the A170 were 6,601 vehicles with cars and motorbikes comprising 93% of the volume. Light and Heavy Goods Vehicles represented 7% of the total flow with an average of 497 movements daily.

## Severance

- 11.66 There is some potential for severance to occur at the junction of Eberston Lane with the A170, but experience of the area has shown that the pavement alongside the A170 is little used by pedestrians and there is no scope for severance on Eberston Lane more than 200m from the A170 junction.

## Accident Records

- 11.67 A search was undertaken for Personal Injury Accident (PIA) records for the length of Eberston Lane between Eberston and Givendale Head Farm. North Yorkshire County Council has confirmed that in the period from 1 January 2008 – 30 April 2013 no PIAs were recorded for the road.
- 11.68 It can be seen that the observed accident record on Eberston Lane is negligible and the road could be considered as a receptor of 'Low' sensitivity.

## Cycle, Pedestrian and Equestrian (CPE) Facilities

- 11.69 There are no pedestrian specific facilities along Eberston Lane south of Givendale Head Farm and most recreational walkers use the network of public footpaths in the area, or use the facilities provided in Dalby Forest. A public footpath runs parallel to the lower section of Eberston Lane, meeting the road near High Park Farm, where another footpath heads westwards.
- 11.70 Similarly, there are no specific provisions for cyclists to use Eberston Common Lane, and it is less favoured than the Dalby Forest, which has been developed to attract cyclists as well as other recreational users.

- 11.71 Equestrians are understood to use the area although relatively few use Ebberston Common Lane, preferring the quieter tracks and rides within the Forest.
- 11.72 Dalby Forest, north of Givendale Head Farm, has open access and a campsite adjacent to the road through the forest is used on occasion by Scouts and Guides. The coordinates for this campsite are SE89300,88900 placing it about 1.2 km south of the Assessment Site alongside the forestry track just inside the trees south of Ebberston Low Moor.
- 11.73 Dalby Forest is considered to have very high amenity value, although the main centre for activities is near Low Dalby, to the west side of the forest. The forestry tracks and the Dalby Forest Drive are used extensively by off-road cyclists and hikers, whilst numerous picnic sites have been prepared by the Forestry Commission centred around viewpoints and Dalby Forest Drive.
- 11.74 Two cycle routes have their starting point at Dixons Hollow, about 1.5 km to the west of the Assessment Site and use Ebberston Common Lane where it passes the Assessment Site, with one cycle route using the same route as the proposed access up to the boundary of the Dalby Forest and Givendale Head Farm and then turns west along the southern boundary of the Forestry Commission land.
- 11.75 Apart from the cycle routes, the Assessment Site is on the eastern edge of the Dalby Forest and has not been developed by the Forestry Commission to the same extent as the west of the Dalby Forest. There are no picnic facilities or viewpoints within 1 km of the Assessment Site although the Dalby Forest Drive passes within 100m of the Assessment Site, separated from it by woodland.
- 11.76 Ebberston Common Lane is part of the network of gravel roads in Dalby Forest, but its distance from the main visitor centre and its location off the direct route to viewpoints makes it less used than other tracks in the area. However, awareness of recreational users is still needed, as both pedestrians and cyclists have been observed using the route.

### **Likely Significant Effects**

- 11.77 The Proposed Development is described in detail in Chapter 4 and as the traffic volumes differ between the construction, operational, and decommissioning and restoration phases. These will be considered separately below.

## Construction

- 11.78 The greatest effect of the Proposed Development on traffic flows will occur during the construction phase of the project, with specific activities within the construction phase generating peaks in the anticipated traffic flow. All the effects arising from this phase can be considered as short term and temporary, as described in Chapter 2.

*Personnel and Vehicles*

- 11.79 A mixture of light and heavy goods vehicle traffic (including some abnormal loads) will be generated during the construction phase. The anticipated construction personnel and traffic to be generated is outlined in **Tables 11.4** and **11.5** below, with the numbers of personnel based on previous experience of similar activities.

**Table 11.4: Summary of Personnel**

Project Activity	Personnel on site each week			
	Project Duration weeks (no.)	Max (no.)	Min (no.)	Average (no.)
Upgrading Eberston Moor 'A' Well Site	5	15	6	10
Up-grading Lockton Compound for conditioning/treatment of gas	10	10	6	8

**Table 11.5: Summary of Construction Vehicle Movements**

Project Activity	Vehicle Movements (no.)		Time period
	HGV	Others	
Eberston Moor 'A' Well Site	6	35	Weekly
	2	7	Daily
Gas Conditioning Site	10	50	Weekly
	2	10	Daily

- 11.80 In accordance with IEA guidance (Ref. 11.6) there are two 'rules of thumb' to delimit the scale of traffic effect.

***“Rule 1: include highway links where traffic flows will be increased by more than 30% (or the number of heavy goods vehicles will increase by more than 30%).”***

***Rule 2: include other specifically sensitive areas where traffic flows have increased by 10% or more.”***

11.81 The A170 is not considered to be 'sensitive area' given its status as a Primary Route. Previous site construction and drilling projects on Eberston Moor 'A' Well Site and the Eberston South Well Site near Givendale Head Farm, both accessible from Eberston Common Lane, have not caused more than a slight and temporary effect, with percentage increases less than the threshold of 30%. Although the Proposed Development contains no proposal to drill a borehole, the provision of these figures shown in **Table 11.6** below provides details on the level of traffic flow generated during past projects which are higher than the relatively low levels of traffic that would be generated by this Proposed Development.

**Table 11.6: Comparison of Base Traffic Flows on A170 with Development Traffic for Previous Projects using A170 and Eberston Common Lane**

Construction Activities	Traffic Flows on A170 during previous projects			
	Duration (Days)	Daily Base Flow HGVs(2013 figures)	Day Traffic Movements Generated	% increase in HGV traffic movements
Site Construction	28	100	25	25%
Rig Mobilisation	3	100	22	22%
Drilling	28	100	20	20%
Rig de-mobilisation	3	100	22	22%

11.82 **Table 11.6** shows that the increases in traffic movements generated by these previous projects were less than 30% of the base flow on the A170 when using the traffic volumes measured in the recent survey. Therefore as the actual peak flows associated with the construction of the Proposed Development will not exceed those previous peaks as shown in **Table 11.6**, these will also be less than 30%. In summary the traffic effect on the A170 is therefore considered to be of low magnitude and insignificant. The A170 is therefore scoped out of further assessment.

11.83 In accordance with the 30% rule, the traffic effect on Eberston Lane and Eberston Common Lane will be moderate adverse, given that the lane has very low base traffic flows. However, it was the approved route for construction of two sites, Eberston 'A' in 2006 for Viking UK Gas Ltd (application reference NYM/2005/0254/FL), and Eberston Moor in 2007 for Moorhouse Petroleum (application reference NYM/2007/0901/FL); followed by the drilling of exploratory boreholes on each site. The traffic levels for these schemes as shown in **Table 11.6** were much higher compared with the Proposed Development (**Table 11.5**).

11.84 Consequently, the effect on Eberston Lane and Eberston Common Lane and the properties along the road will be reduced from the levels previously experienced. The increased traffic flows arising from the construction phase within Dalby Forest will have a minor adverse significance in respect of severance, with management of traffic required to allow safe access

to the Scout Campsite when it is occupied.

### *Accidents*

- 11.85 The risk of accidents is increased by the increase in traffic flows, but the past record of development using this route has shown that the risk of accidents is negligible with the current traffic management in place.

### *CPEs*

- 11.86 Similarly, the emphasis within Dalby Forest on recreational activities suggests that there will be a moderate adverse effect resulting from the construction phase. However, the concentration of activities elsewhere in the Dalby Forest reduces the potential significance to minor adverse.

### *Transportation of by-products and treatment fluids*

- 11.87 The construction phase will not generate deliveries of by-products or treatments fluids other than fuel for the construction vehicles. This will be transported in normal road tankers that comply with controlling legislation and no extra measures are considered necessary.

### Operation

- 11.88 Once the construction phase is complete, the effect of traffic relating to the operation of the Proposed Development is much reduced. **Table 11.7** summarises the anticipated traffic effect relating to the day to day operation of the Proposed Development and regular deliveries and removals.

**Table 11.7: Summary of Vehicle Movements**

Site Operation			
Day time (07:30-18:00)		Night Time (18:00-07:30)	
1/2 operational staff		None.	
Other operational vehicles and deliveries		Average Traffic Flows	Maximum Traffic Flows
Operational vehicles	Regular External Deliveries/ Removals		
1nr maintenance vehicle	<b>Gas Conditioning Facility</b>		
4x4 staff	Water/condensate removal - articulated road tanker (HGV)	1nr weekly two-way removal	2nr weekly two-way removal
	Amine and glycol removal (by products) – articulated road tanker (HGV)	1nr two-way daily deliveries and removals.	2nr two-way daily deliveries and removals.



	Contaminated rainwater (HGV)	1nr two-way monthly removals.	1nr two-way weekly removals.
	<b>Well Site</b>		
	Corrosion inhibitor delivery – delivery by site pick up/4x4	1nr two-way monthly deliveries and removals.	2nr two-way monthly deliveries and removals.
	Methanol delivery - delivery by site pick up/4x4	1nr two-way monthly deliveries and removals.	2nr two-way monthly staff movements

**Table 11.8: Comparison of Average Base Traffic Flows and Worst Case Operational Traffic Flows along Eberston Common Lane and Eberston Lane**

Direction of Travel	M’bike		Cars Class		LGVs, 2 Axles		HGV 3/4 axles		HGV 4/5/6 axles	
	Base flow	Op* Flow	Base flow	Op* Flow	Base flow	Op* Flow	Base flow	Op* Flow	Base flow	Op* Flow
Southbound	2	-	69	2	14	2	2	5	2	-
Northbound	3	-	71	2	12	2	4	5	2	-

\* maximum daily number

11.89 **Table 11.8** shows that flows associated with the operation of the Proposed Development will be significantly lower than those associated with the construction phase, reducing from 20 HGV movements in each direction to a maximum of three movements in each direction. These trips will not necessarily be repeated on a daily basis, but only when required, so the figures shown represent the worst case.

11.90 The increase in HGV traffic flows will be between 100% and 200% above the base level flows creating a potential effect of moderate adverse significance when referring to **Table 2.1**. This percentage increase masks a very modest increase in the number of traffic movements that will actually occur, with the total traffic flow including that generated by the Proposed Development being well within the capacity of the road.

#### *Accidents*

11.91 The traffic flows generated during operation are insignificant in comparison to the construction phase and the risk of accidents is correspondingly reduced, suggesting that if the current levels of care are maintained during operation there will be a negligible effect upon the safety of road users.

*CPEs*

- 11.92 The reduction in traffic flows during operation will further reduce the significance of the effects from the Proposed Development but there will remain an overlap of usage of the Dalby Forest roads that keeps the significance at a minor adverse level.

*Transportation of by-products and treatment fluids*

- 11.93 The treatment of recovered gas will require the delivery of glycol and amines to the Assessment Site and the removal of spent amines and produced hydrocarbon condensates for treatment in an offsite facility. These fluids will be transported in sealed containers by licensed hauliers and a risk assessment. Chapter 15 provides an assessment of the effects in terms of contamination resulting from accidental spills. Given that the chemicals are being transported in standard sized vehicles, the potential effect on traffic is minor adverse.

## Decommissioning

- 11.94 Decommissioning and restoration of the Proposed Development, if future planning permission for the well site is not obtained (see Chapter 6), will require the removal of the flare, buildings, pipework and above-ground installations such as pipe runs, tanks and bunded areas to enable the Assessment Site to be restored to forestry in a condition as close as practicable to its original state. Prior to that removal process, all fluids will have to be removed from site, using sealed tankers operated by hauliers licensed to carry the particular fluids.
- 11.95 If future planning permission for the well site is obtained (see Chapter 6), the well site will remain as per the operation phase while the equipment and structures within the Lockton Compound and the flare will be removed and the development platform restored to forestry in a condition as close as practicable to its current state.
- 11.96 For both scenarios the removal of fluids will generate additional vehicle movements, estimated at about five two-way vehicle movements.
- 11.97 The decommissioning and restoration activities will produce similar numbers of vehicle movements to the construction phase, although these will be reduced if the foundations and concrete hardstandings are left in situ and removed when the site is restored.
- 11.98 Consequently, this phase will have traffic flows producing a negligible increase in adverse

effect from that in the construction phase.

#### Restoration

- 11.99 All fluids arising from the gas extraction process will have been removed from site during the decommissioning phase. The tanks, pipework and steel framework for the buildings will also have been removed leaving the stone and concrete surfaces and sub-surface structures.
- 11.100 The wells will be plugged and abandoned in a manner agreed with the Health and Safety Executive, the Environment Agency and NYMNPA if future planning permission for the well site has not been obtained. This will necessitate the use of a drilling rig with the associated vehicle movements to bring it onto site and then traffic movements to remove it upon completion of the abandonment process. The vehicle numbers associated with that process will depend on the rig used, but numbers of vehicles will be fewer than for a normal drilling operation because there will not be deliveries of drill pipe or other drilling materials. Cement will be delivered to form grout plugs in the bores. Generated traffic numbers will be similar to those quoted in **Table 11.6**.
- 11.101 The restoration phase will have an effect that will depend on the manner in which the work is carried out and the manner of disposal of removed materials. For example, if the concrete and hardcore produced by removing the site surfaces is re-used as road material to make up the Forestry Commission Roads, no HGV traffic will be generated along Eberston Common Lane or Eberston Lane although more Forest roads will be affected than if the materials were exported.
- 11.102 However, if the stone and concrete were to be disposed of to another site or a licensed tip away from the area, it would all have to be exported via Eberston Common Lane and Eberston Lane to the A170 and then further afield to its destination. The rate of disposal will be slower than during construction of the sites, because the material will have to be broken up, excavated, crushed if necessary, and then loaded onto lorries.
- 11.103 The total number of HGV lorry movements generated by this restoration process will amount to about 250, with 220 loads being generated by removal of the stone surfacing on the Eberston Moor 'A' Well Site.
- 11.104 It would be appropriate to suggest that the number of HGV movements be limited to that generated during construction of the wellsite (30 each way per day) so that the effect on receptors is no worse than during construction. The effect of this might be to prolong the

restoration process, but may be preferable to higher traffic movements over a shorter timeframe.

11.105 The relatively short term duration of this restoration phase (8 -12 weeks) will not change the significance of the effects on receptors from that of earlier phases.

### **Mitigation Measures**

#### Construction

11.106 Mitigation measures to be implemented during construction will include the use of route cards which will be issued to all drivers visiting the Assessment Site and vehicles accessing the Assessment Site along Eberston Common Lane and Eberston Lane shall be restricted to speeds of 30 mph. This will be most relevant to CPEs who are the most vulnerable of all receptors.

11.107 Large loads being moved up Eberston Common Lane and Eberston Lane will be escorted by an escort vehicle to avoid conflict with oncoming traffic.

#### Operation

11.108 During operation the following mitigation measures will be implemented to reduce the risk from the transportation of by-products and treatment fluids:

- The cargo should be transported by a haulier licensed to carry such products;
- The vehicle used to transport the product will have a fully documented maintenance record including a record of examination of hydraulic braking systems;
- The vehicle carrying the cargo will be escorted from the A170 up to the Assessment Site;
- The speed of the escort and tanker will not exceed 30mph on any part of the route between the A 170 and the Assessment Site;
- The vehicle carrying the cargo will avoid taking right hand turns across the flow of traffic unless there is a clearly defined right hand turn lane in a position of good visibility and speed restrictions;
- The proposed route to the Assessment Site will come from the west along the A170 and then turn into Eberston Lane towards the Assessment Site; and
- The proposed route away from the Assessment Site will turn eastwards on the A170 and then turn southwards on the B1258 to Knapton.

11.109 The greatest risk to highway users, including CPEs is considered to arise from speeding vehicles, no matter what load they are transporting, so the mitigation measures proposed for the construction phase will be continued into the operational phase with an escort vehicle preceding the tankers and speeds restricted to 30mph.

#### Decommissioning

11.110 The mitigation measures applied during the previous stages will apply during this phase as well, particularly in respect of escorting large loads such as tanks.

#### Restoration

11.111 Mitigation measures such as dispersal of surfacing materials on forestry roads will reduce the effects of raised volumes of traffic travelling along Ebberston Common Lane and Ebberston Lane.

### **Residual Effects**

#### Construction

11.112 The construction phase is short-term with the construction activities being short term and temporary in nature. The overall effects of the construction phase upon CPE receptors will remain during the course of the work, having a minor adverse significance in spite of the control measures proposed above being put into force. However, these effects will cease upon completion of this phase.

#### Operation

11.113 There will be a continued overlap of operations with CPE activity along Ebberston Common Lane during the lifetime of the Proposed Development. The effect of this overlap is minimal that the residual effect is negligible.

#### Decommissioning

11.114 The residual effects of the decommissioning will have minor adverse significance for the short term duration of the works in either scenario that will cease upon completion of the decommissioning.

## Restoration

11.115 Placing the salvaged surfacing upon the Dalby Forest tracks (if agreed by the Forestry Commission) will reduce during this phase the significance of the effects on Ebberston Lane between Givendale Head Farm and the A170 to negligible. Total disposal offsite via Ebberston Common Lane will keep the effect of this phase upon CPEs in Dalby Forest and along Ebberston Common Lane and Ebberston Lane as minor adverse significance. The management of CPE access will reduce the significance of the options to negligible and minor adverse respectively.

## Cumulative Effects

11.116 The Ebberston South Well Site that forms part of the Ryedale Gas Project uses the same access along Ebberston Road from the A170 as the Proposed Project, so there will be a cumulative effect arising from increased traffic flows.

11.117 If the periods of construction activity on the two projects coincide, the traffic flows will rise above those stated in this assessment, resulting in a more significant effect of greater magnitude for the period of the work. This effect will not extend beyond Givendale Head Farm, so the effect on the Public Right of Way will not be increased.

11.118 The sensitivity of Ebberston Lane and Ebberston Common Lane is low so the effect of the increased traffic upon road users and local residents will also be low.

11.119 The mitigation measures suggested for traffic to the Assessment Site include an escort for large or loads of by-products or treatment fluids, and this provision should be made known to the developers of the Ryedale Gas Project.

## Summary

11.120 The Assessment Site is located to the north of the A170, which is part of the primary route network, and the A170 is considered to remain suitable as an access. It is considered that the established access to the Assessment Site from the A170 using Ebberston Lane and Ebberston Common Lane is appropriate for accessing the Assessment Site.

11.121 Previous drilling operations at sites on the edge of Ebberston Moor have not been subject to traffic restrictions other than a speed limit and the volumes of traffic generated by both the construction and operational phases of this Proposed Development will be less than those during the original site construction and drilling operations and therefore similar restrictions will be put in place during this Proposed Development.

11.122 The greatest effect of the Proposed Development is anticipated to be during the construction and decommissioning and restoration phases, relating to CPEs, where the residual effect is considered to have minor adverse significance. However, these phases will occur over a short term and temporary period.

11.123 The effect of the operational development once construction is complete is considered to be negligible. The Proposed Development will generate very few trips and these can be easily accommodated within the existing road network. **Table 11.9** provides a summary of the likely significant effects of the Proposed Development.

11.124 In conclusion, the intention to export produced gas from the Ebberston Moor 'A' Well Site through a conditioning facility and onwards via the NGN LTZ pipeline connection is entirely consistent with transport policy.

**Table 11.9: Table of Significance – Traffic and Transportation**

Potential Effects	Nature of Effects (Permanent/ Temporary)	Significance (Major/Moderate/Minor) (Beneficial/Adverse/ Negligible)	Mitigation / Enhancement Measures	Geographical Importance*							Residual Effects (Major/Moderate/Minor) (Beneficial/Adverse/Negligible)
				I	U K	E	R	C	N P	L	
<b>Construction</b>											
Construction activities	Temporary	Moderate Adverse	Routing of construction traffic to suitable roads imposing traffic control measures							*	Minor Adverse / Negligible
<b>Operation</b>											
Operational staff	Temporary	Minor Adverse/ Negligible	No additional provision							*	Minor Adverse/ Negligible
Transportation of by-products and treatment fluids	Temporary	Moderate Adverse	Routing of traffic to suitable roads, traffic control measures							*	Minor Adverse/ Negligible
<b>Decommissioning</b>											
Traffic along Ebberston Common Lane	Temporary	Minor Adverse	Routing of construction traffic to suitable roads imposing traffic control measures							*	Minor Adverse / Negligible
<b>Restoration</b>											
Traffic along Ebberston Common Lane	Temporary	Minor Adverse/ Negligible	Routing of construction traffic to suitable roads imposing traffic control measures							*	Minor Adverse / Negligible
<b>Cumulative Effects</b>											
Coincidence of work with the Moorland Gas Well Site Development	Temporary	Minor Adverse	Routing of construction traffic to suitable roads imposing traffic control measures							*	Minor Adverse/ Negligible

**\*Geographical Level of Importance**

I = International; UK = United Kingdom; E = England; R = Regional; C = County; NP = National Park; L = Local



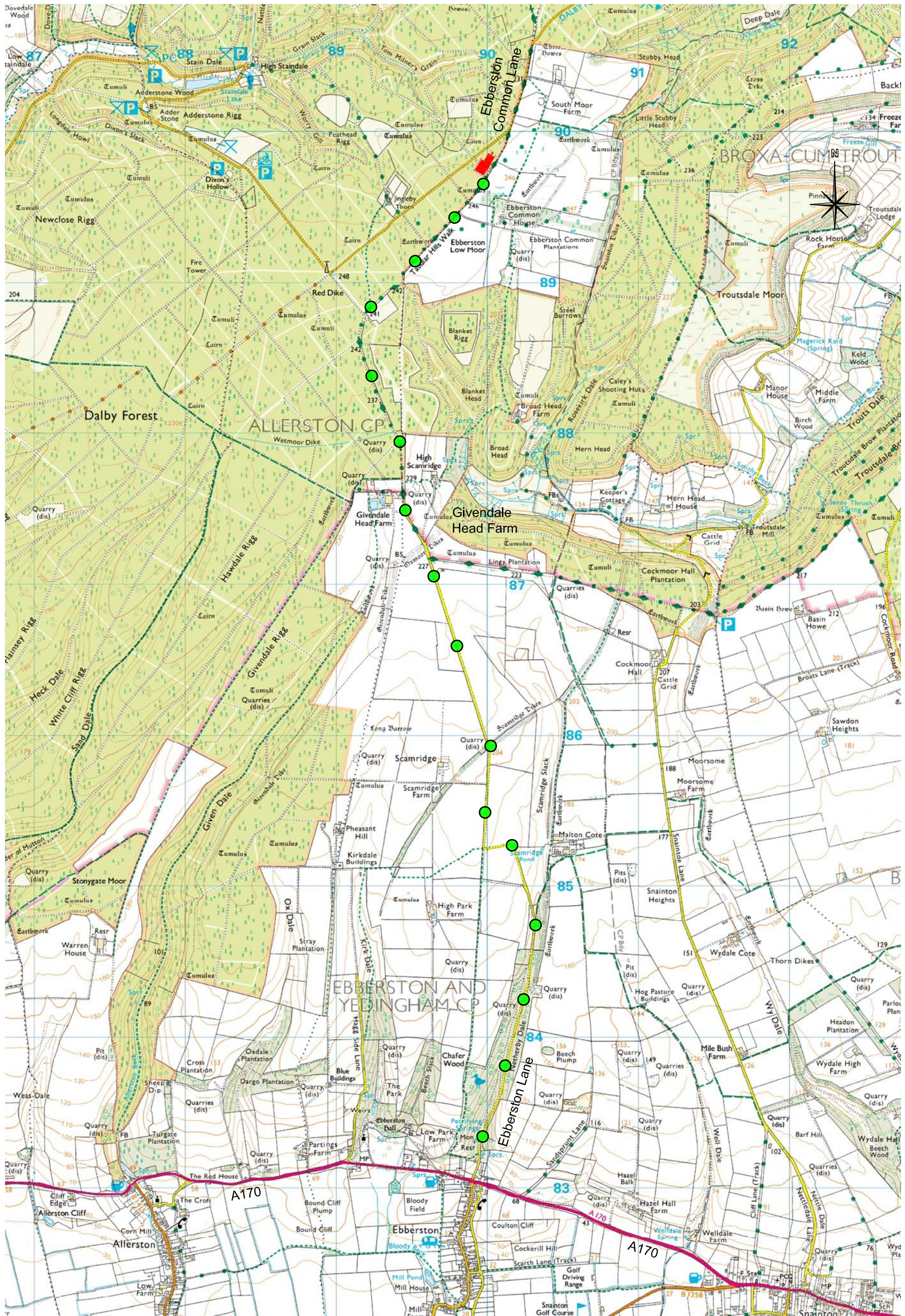
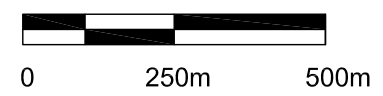


Figure 11.1 - Approved Site Traffic Route

● Approved Route for HGV Vehicles



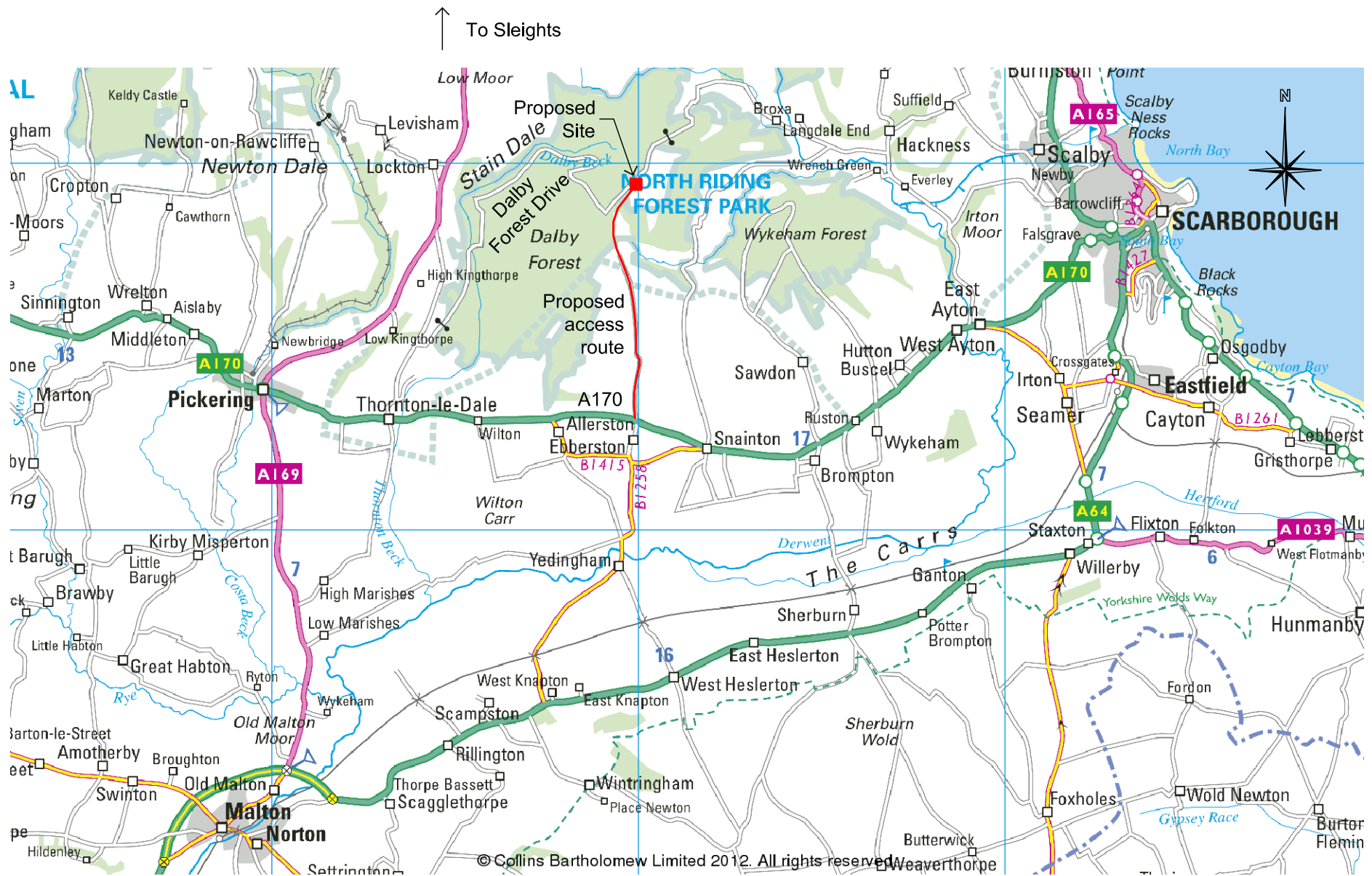


Figure 11.2 - Major Access Routes

