

ENVIRONMENTAL STATEMENT (VOLUME II)

Appendix 17.2 Traffic and Transport Methodology

HyNet Carbon Dioxide Pipeline DCO

Planning Act 2008

**The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 –
Regulations 5(2)(a)**

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1. IMPACT ASSESSMENT METHODOLOGY

- 1.1.1. The following are considered to be the key parameters for the Traffic and Transport assessment, presented in **Chapter 17 – Traffic and Transport (Volume II)**:
- Baseline and Future Baseline HGV and LGV traffic flows for construction traffic routes;
 - Forecast LGV and HGV Proposed Project peak year traffic flows;
 - Construction traffic routes and access locations (embedded mitigation); and
 - Sensitivity of highway links along construction traffic routes.
- 1.1.2. Each of these is required for the assessment and is set out in detail within this the Baseline Conditions section of **Chapter 17 – Traffic and Transport (Volume II)**.
- ## 1.2. SCOPE
- 1.2.1. This section outlines the proposed assessment methodology for Traffic and Transport. As the Traffic and Transport assessment requires consideration of a wider Study Area, and considers volumes of construction traffic on proposed construction traffic routes.
- 1.2.2. A key guidance document for determining an appropriate scope and methodology for the Traffic and Transport assessment was produced by the Institute of Environmental Assessment (IEA), now the Institute of Environmental Management and Assessment (IEMA), in the form of the ‘Guidelines for the Environmental Assessment of Road Traffic’ (1993) (**Ref. 8.1**).
- 1.2.3. The effects considered in this chapter have been assessed in the context of two ‘rules of thumb’ which are taken from the IEMA Guidelines, and which help to define the road links that need to be considered within the assessment.
- **Rule 1:** Include highway links where total traffic flows are predicted to increase as a consequence of a development by more than 30% (or where the number of Heavy Goods Vehicles (HGVs) is predicted to increase by more than 30%); and
 - **Rule 2:** Include any specifically sensitive areas where traffic flows are predicted to increase as a consequence of a development by 10% or more. Sensitive areas may be defined as locations near to more vulnerable user groups, such as school children, people with disabilities or the elderly, or accident black spot areas, roads at or near capacity, or links with high pedestrian flow.
- 1.2.4. Whilst these rules are acknowledged, this assessment considers the effects arising from changes to total traffic and HGV volumes on all highway links that

have been identified for the routing of construction traffic, regardless of whether they exceed either of the two 'rules of thumb'. This ensures the possible environmental effects arising from all traffic associated with the Proposed Project are subject to robust assessment.

- 1.2.5. Access would be required to secondary locations¹ during the construction phase of the DCO Proposed Development. Access to these locations is temporary and anticipated to take place over a matter of days or weeks and/or traffic volumes in these locations are anticipated to be negligible. The assessment therefore does not consider the impact of construction traffic serving secondary locations. Measures to ensure safe and suitable access in these locations has been considered as part of the **Outline Construction Traffic Management Plan (OCTMP) (Document reference: D.6.5.3)**.
- 1.2.6. Where road closures are required it is anticipated that they would last a maximum of two weeks. This is consistent with temporary road works undertaken by statutory undertakers during the routine operation and maintenance of utilities equipment, or by the highways authority during routine maintenance. The assessment therefore does not consider the impact of diversion routes.

1.3. METHODOLOGY

- 1.3.1. The potential environmental effects of the DCO Proposed Development have been assessed in accordance with the Institute of Environmental Assessment (now Institute of Environmental Management and Assessment (IEMA) 'Guidelines for the Environmental Assessment of Road Traffic' (1993) ('the IEMA Guidelines') (Ref. 8.1).
- 1.3.2. The IEMA Guidelines identify that the following environmental effects may be considered important when considering traffic from an individual development:
- Noise;
 - Vibration;
 - Visual Impacts;
 - Severance;
 - Driver Delay;

¹ Access locations are also categorised as 'Primary' or 'Secondary'. Primary access locations are those which will serve any of the below locations:

- Centralised Compounds;
- Above Ground Installations (AGIs); or
- Block Valve Stations

All other access locations are designated as Secondary accesses. These are designated as such to reflect that at these locations construction traffic volumes are anticipated to be significantly lower and/or over a much shorter duration than the Primary Accesses.

- Pedestrian Delay;
- Pedestrian Amenity;
- Hazardous Loads;
- Air Pollution;
- Dust and Dirt;
- Ecological Impact; and
- Heritage and Conservation.

1.3.3. Of these effects, many will be considered within other technical assessments of the EIA; only Severance, Driver Delay, Pedestrian Delay and Pedestrian Amenity will be assessed within the **Chapter 17 – Traffic and Transport (Volume II)**. Whilst not on the recommended list within the IEMA Guidelines, reference is made to effects of Fear and Intimidation and Highway Safety, which are therefore also assessed in the Traffic and Transport chapter.

1.3.4. It is important to note that the guidelines do not distinguish between temporary and permanent changes in traffic flows, whereas, in reality, short-duration increases are likely to be less disruptive and less impactful than permanent increases, and therefore less significant. Therefore, although the level of effect will be initially reported for a typical day of construction traffic, the methodology set out in the IEMA Guidelines assumes that traffic flow increases are permanent. As such, professional judgement will be applied when considering the influence shorter durations are likely to have on the overall significance of effects, particularly in locations with very low baseline levels of traffic where effects may otherwise be overstated.

1.3.5. Typically, when assessing the impacts of traffic effects, there are a range of particular groups and locations which may be sensitive to changes in traffic conditions compliant with the ‘rules of thumb’ previously outlined. These are outlined in the IEMA Guidance as ‘Affected Parties’, as follows:

- People at home;
- People in workplaces;
- Sensitive groups including children, elderly and disabled people;
- Sensitive locations, e.g. hospitals, churches, schools, historic buildings;
- People walking;
- People cycling;
- Open spaces, recreational sites, shopping areas;
- Sites of ecological/nature conservation value; and
- Sites of tourist/visitor attraction.

- 1.3.6. The IEMA Guidance states that this list of affected parties is not exhaustive. One affected party that is not on the list but would be considered in the Traffic and Transport Assessment would be 'road users'.

2. VALUE AND SENSITIVITY OF RECEPTORS

- 2.1.1. All of the affected parties have one thing in common, which is that their potential exposure to changes in traffic volumes arises through their proximity to a construction traffic route. In this ES, a receptor has been defined not by individual affected party, but by location (a road or public right of way). The sensitivity of individual receptors (roads or public right of way) has been determined based on the proximity to affected parties and the built environment indicators observed on the receptor.
- 2.1.2. To expand on this, an individual cyclist (the affected party) might use multiple routes, some of which experience varying degrees of change to traffic flows as a consequence of the construction of the DCO Proposed Development. It is considered inappropriate to take the highest degree of traffic flow change experienced by the cyclist and conclude that this is the impact of the construction of the DCO Proposed Development, when there may be multiple routes used by the cyclist that have a considerably lower degree of change in traffic flows.
- 2.1.3. Each link (or, in the case of longer links with changing characteristics, each section of link), has been given an overall level of sensitivity based on the character and the presence of certain receptors along the link. The sensitivity designation relates to the affected parties listed in the previous section.
- 2.1.4. Where a construction traffic route does not feature residential dwellings, footpaths, cycle paths or other features of the built environment likely to be used by affected parties, then it will be determined as having a low sensitivity.
- 2.1.5. **Table 1** considers affected parties and built environment indicators and describes the rationale behind assigning overall highway link sensitivity to individual links.

Table 1 - Categorising Sensitivity of Highway Links

Affected Party	Built Environment Indicator along Highway Link	Highway Link Sensitivity to Changes in Traffic Flow
People at Home	Residential Properties	<p>Medium: Where there are a number of properties with a direct frontage to the highway link being used as a construction route.</p> <p>Low: Where there are few properties with direct frontage to the highway link being used as a construction traffic route.</p>
People in workplaces	Offices, industrial units, employment uses	<p>Low: People in workplaces such as offices, industrial units and other employment premises are not considered to be overly sensitive to changes in traffic flow and HGV proportions as a result of construction traffic routing.</p>
Sensitive groups (children, elderly, and disabled people)	Schools, play areas, care/retirement homes, disabled parking bays	<p>High: Where there are multiple indicators of sensitive groups with direct frontage onto the highway link being used as a construction traffic route.</p> <p>Medium: Where one indicator of sensitive groups is present with direct frontage onto the highway link being used as a construction traffic route.</p> <p>Low: Where no indicator of sensitive groups are present.</p>
Sensitive locations (hospitals, places of worship, schools, historic buildings)	Hospitals, places of worship, schools, historic buildings	<p>High: Where there are multiple indicators of sensitive locations.</p> <p>Medium: Where one indicator of a sensitive location is present.</p> <p>Low: Where no indicator of sensitive locations are present.</p>
People walking	Footways, PRow, crossings	<p>Medium: Indicators present on highway link.</p> <p>Low: Indicators do not present on highway link.</p>

Affected Party	Built Environment Indicator along Highway Link	Highway Link Sensitivity to Changes in Traffic Flow
People cycling	On/off road designated cycle routes	Medium: On-road designated cycle routes present along highway link. Low: Off-road designated cycle routes present along highway link.
Open spaces, recreational sites, shopping areas	Parks, play areas, shops, community centres	High: Where there are multiple instances or indicators likely to be used by sensitive groups (i.e. children). Medium: Where one indicator is present that is likely to be used by sensitive groups (i.e. children). Low: Indicators that are unlikely to be used by sensitive groups.
Road users	Roads, junctions, road classification, baseline traffic volumes, signage	Determined by the presence of other affected parties in this table.

3. MAGNITUDE OF IMPACTS

- 3.1.1. This section considers how magnitude will be considered for each of the potential effects outlined in this chapter. The guidance for thresholds of magnitude is based on DMRB guidance (Volume 11, Section 3, Part 8)² (**Ref. 8.2**), DMRB guidance LA 112 (**Ref. 8.3**), WebTAG guidance (**Ref. 8.4**), and professional judgement and is presented in **Table 2**.
- **Severance**, in the context of this assessment, relates to driver severance and the potential difficulties of local traffic gaining access onto busy roads during the construction period. The assessment considers both local traffic and the proportion of HGVs.
 - **Pedestrian Delay** occurs when there is difficulty crossing a heavily trafficked road. Effects are only likely to be realised when the total two-way traffic on the carriageway exceeds 1,400 vehicles per hour.
 - **Pedestrian Amenity** is similar to Pedestrian Delay in that there needs to be a fairly significant proportional increase in traffic for baseline effects to be considerably worsened. The IEMA guidelines suggest that traffic needs to double for effects to become significant.
 - **Driver Delay** is an effect cited in the IEMA guidance and relates to incremental increases in traffic.
 - **Fear and Intimidation** whilst not on the recommended list within the IEMA Guidelines, reference is made to effects of Fear and Intimidation and Highway Safety, which are therefore also assessed in the Traffic and Transport chapter.
- 3.1.2. **Table 2** summarises the criteria that will be assessed in the Traffic and Transport Assessment (**Chapter 17 – Traffic and Transport, Volume II**), along with the thresholds used to determine whether the effects are considered Negligible, Low, Medium or High. Within this table, neither the sensitivity of receptors, nor the duration over which the effects are experienced, is taken into consideration.

² Whilst this has been formally withdrawn, it has not been superseded by equivalent relevant guidance, and, as such, is still considered to be appropriate for use as the foundation of assessment.

Table 2 - Magnitude Criteria – Traffic and Transport

Impact	Negligible	Low	Medium	High
Severance	Increase in total traffic flows of 29% or under (or increase in HGV flows under 10%)	Increase in total traffic flows of 30-59% (or increase in HGV flows of between 20-39%)	Increase in total traffic flows of 60-89% (or increase in HGV flows between 40-89%)	Increase in total traffic flows or HGV flows of 90% or above
Pedestrian Delay	Total traffic flows under 1,400 per hour		Where traffic flows exceed 1,400 vehicles per hour the severity of the impact will be determined on a case by case basis based on receptor sensitivity	
Pedestrian Amenity	Increase in total traffic flows of 49% or under	Increase in total traffic flows of 50-69%	Increase in total traffic flows of 70-99%	Increase in total traffic flows of 100% or above
Fear and Intimidation	Increase in total traffic flows of 29% or under (or increase in HGV flows under 10%)	Increase in total traffic flows of 30-59% (or increase in HGV flows of between 20-39%)	Increase in total traffic flows of 60-89% (or increase in HGV flows between 40-89%)	Increase in total traffic flows or HGV flows of 90% or above

Impact	Negligible	Low	Medium	High
Driver Delay	Increase in total traffic flows of less than 29%	Increase in total traffic flows of 30-59% (or increase in HGV flows of between 20-39%)	Increase in total traffic flows of 60-89% (or increase in HGV flows between 40-89%)	Increase in total traffic flows or HGV flows of 90% or above
Highway Safety	Increase in traffic flows of 30% or under (or increase in HGV flows under 10%)		All links estimated to experience increases in total traffic flows above 30% or increases in HGV flows above 10% are analysed further on a case-by-case basis	

3.1.3.

In considering highway safety a methodology has been adopted in which clusters are identified on construction traffic routes based upon the density and severity (clustering) of reported collisions within the most recent 60 months for which data is available. The likely impacts of construction traffic are then considered on the basis of the location specific contributory factors and a professional judgement of the likelihood of environmental effects arising from the proposed increases in construction traffic. This is set out in **Appendix 17.3 PIA Summary (Volume III)**.

4. DURATION

- 4.1.1. **Table 3** sets out the magnitude thresholds for the respective Traffic and Transport effects. All effects have a magnitude that does not, initially, consider the duration over which the effect is likely to be experienced.
- 4.1.2. Duration is considered when assessing the overall significance of residual effects. DMRB LA104 (**Ref. 8.5**) states that:
- “The assessment of the significance of environmental effects shall cover the following factors:*
- 3) The duration (long or short term); permanence (permanent or temporary) and changes in significance (increase or decrease)”*
- 4.1.3. It is anticipated that the overall construction programme for the DCO Proposed Development would last approximately 16 months as described in **Section 3.6** of **Chapter 3 – Description of the DCO Proposed Development (Volume II)**.
- 4.1.4. All of the Traffic and Transport effects associated with the DCO Proposed Development would therefore be temporary effects. Some temporary effects would be likely to last longer than others, and these will be reported and considered in the assessment.
- 4.1.5. Following a quantified assessment based on changes to traffic flow/composition, likely residual environmental effects (after mitigation) will be assessed and reported taking into account professional judgment on the duration over which effects are likely to be experienced.

5. SIGNIFICANCE

5.1.1. Embedded mitigation has been incorporated into the Basic Design of the DCO Proposed Development to minimise the impacts and associated environmental of additional traffic arising from the DCO Proposed Development. These measures include, for example, the selected construction traffic routes and proposed access locations. The assessment contained within this Chapter therefore reflects these mitigation measures.

5.1.2. Effects are considered to be significant or not significant in EIA terms by judging the relationship between the magnitude of effect of each assessment criteria to be assessed with the sensitivity of each receptor. A Major or Moderate effect is typically considered to be significant. A Minor or Negligible effect is not considered significant. **Table 3** shows a matrix used to help determine the significance of effects.

Table 3 - Significance of Effects Matrix

Sensitivity of Receptor	Magnitude			
	High	Medium	Low	Negligible
High	Major - Significant	Major - Significant	Moderate - Significant	Minor – Not Significant
Medium	Major - Significant	Moderate - Significant	Minor – Not Significant	Negligible – Not significant
Low	Moderate - Significant	Minor – Not Significant	Negligible – Not significant	Negligible – Not significant

5.1.3. Any further requirement for mitigation, to further reduce any potentially unacceptable environmental effects, will take into account the impact magnitude criteria set out within **Table 3**, and a professional judgement of the duration of effects and location-specific factors.

6. ASSESSMENT SCENARIO

- 6.1.1. For the purposes of assessment a reasonable worst case scenario has been considered. For Traffic and Transport this relates to the Peak Month of construction traffic across the entire Hynet North West DCO, in August 2024. This has been determined on the basis of the high level schedule available at the time of writing, and may be subject to change.
- 6.1.2. Further information on the profile of construction traffic activity across the programme is presented in **Appendix 17.8 Construction Traffic Profiles (Volume III)**.

7. ASSUMPTIONS AND LIMITATIONS

7.1.1. To ensure transparency within the EIA process, the following limitations and assumptions have been identified. Some of these assumptions would be adopted to add robustness to the assessment and represent a worst-case scenario. At the time of writing, the following assumptions have been identified and will be used in the assessment:

- Construction traffic volumes have been estimated based on the constructability report and information provided separately by The Applicant;
- All HGV and LGV construction traffic is assumed to originate from the SRN and would route along prescribed construction traffic routes; and
- All vehicles movements quoted are assumed to be two-way; i.e. 40 movements would consist of 20 inbound and 20 outbound trips.

8.

REFERENCES

- **Ref. 8.1** - IEMA (1993) 'Guidelines for the Environmental Assessment of Road Traffic'.
- **Ref. 8.2** - Highways Agency (1993) 'DMRB Volume 11 Section 3 Part 8' - Environmental Assessment Techniques. Pedestrians, Cyclists, Equestrians and Community Effects (Amended August 1994 – Withdrawn).
- **Ref. 8.3** - Highways England (2020) 'DMRB LA 112' – Population and Human Health'.
- **Ref. 8.4** - Department for Transport (2021) 'TAG Unit A3' – Environmental Impact Appraisal.
- **Ref. 8.5** - DMRB LA104: Environmental assessment and Monitoring Rev 1.