

Appendix 11D

Preliminary Transport and Logistics Report

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1. Introduction

- 1.1.1 This document has been prepared to set out the details of the development of the traffic generation predictions that have been used within **Chapter 11: Traffic and Transport**. These traffic predictions have been developed by the Project Engineers based on anticipated construction methodologies, schedules and site locations.
- 1.1.2 Project engineers have developed preliminary project logistical considerations including potential methods of line pipe delivery, other material deliveries, expectations of plant requirements and proposed staffing considerations.
- 1.1.3 It should be noted that the development of these traffic predictions will be further developed during the DCO process as the Traffic Management Plan progresses and following future discussions with the various local and national Highway Authorities and other relevant consultees. The Project Access Strategy and subsequent traffic assessment are considered a conservative indication of how the project construction may feasibly be carried out to inform the PEIR and is not a commitment to a finalised strategy.

1.2 Methods of Transportation

- 1.2.1 The current project logistics and associated traffic assessment is based on the premise of all materials, including line pipe being delivered to site via road, with no use of rail or sea transportation.
- 1.2.2 Depending on the details of the line pipe procurement, including the location of the pipe mill and coating mills it may be possible to deliver line pipe by rail. However, for worst case assessment at PEIR for local highways impacts traffic generation assumes all road based movements.

1.3 Logistics Configuration

- 1.3.1 It has been assumed for the purposes of this assessment that all construction crews will travel directly to site (i.e. pipeline construction corridor, HAGI or compound) from their accommodation, with no intermediate travel made to a centralised temporary construction compound. It has been assumed that the majority of crew (70%) will travel to site within individual cars with a utilisation rate (crew/vehicle) of 1.8. The remaining 30% of crew are assumed to travel to site in minibuses or welfare vans with an average vehicle utilisation of 10.
- 1.3.2 It is assumed that all materials will be delivered directly to site, with sufficient land allocated to allow for the temporary storage of bulk aggregates and any other construction materials, with exception of line pipe and induction bends, which are assumed to be delivered to local material storage areas for temporary storage before being subsequently transported to site.
- 1.3.3 The sizing, quantity and location of any Temporary Construction Compounds (TCCs) and material storage areas are to be confirmed, with many potential

locations currently under consideration. For the purposes of estimating traffic generation, provisional sizing of 5ha is assumed for a TCC, with material storage areas sized individually considering the associated pipeline route length and line pipe sizing. It has been assumed that a primary material storage area will be used at the Central Hub, with four secondary material storage areas used to service the North, South, East and West corridors individually, including associated spur lines.

1.3.4

For the construction of HAGIs, the TCCs and material storage areas it is assumed that an on-site temporary construction area is to be set up, with the necessary welfare and storage facilities to allow for all materials to be delivered directly to site, and all construction crew to arrive as described.

1.4 Access Points and Access Strategy

1.4.1

The development of these traffic generation predictions is based on the Proposed Access Strategy set out in **Figure 11.9** in **Chapter 11: Traffic and Transport** and these traffic predictions determines vehicle movements in and out of each construction access point. This is also based on the access points set out in **Figure 11.14** in the **Chapter 11**.

2. Construction Traffic Assessment

2.1 Assessment Methodology

- 2.1.1 This section presents a high-level overview of the methods adopted to estimate the vehicle movements of both high-impact (HGVs) and low-impact (Light Vehicles - cars, LGV) throughout project construction.
- 2.1.2 It is important to note that throughout this appendix calculations considered the quantity of vehicle movements, with a vehicle movement defined as a one-way journey between two locations. For example, a delivery to site only would consider a one-way movement, a delivery to site followed by return to base would be considered a two-way movement (i.e. two movements).
- 2.1.3 The estimates within this appendix have been calculated against a conservative set of assumptions based on the best available information at present. During detailed design, these calculations will be updated following the finalised project configuration and construction methodology considering the working arrangements favoured by the contractor(s). These factors will heavily influence the number of vehicle movements and personnel requirements. For this assessment, each key pipeline construction activity has been assessed individually considering the following:
- Mobilisation/demobilisation duration;
 - Plant & equipment quantities;
 - Duration of activity;
 - Approximate size of workforce (during mobilisation, construction, and demobilisation); and
 - Material quantities during mobilisation / demobilisation (e.g. setup of temporary workspaces) and for construction activity (e.g. delivery of line pipe, construction aggregate for HAGIs, foundations etc).
- 2.1.4 HAGI, construction compound and material storage area vehicle movements have been determined on a similar basis, following the latest revision of the project civil plot plans.

Pipeline Route and Configuration

- 2.1.5 This assessment applies to the HyNet North West Hydrogen Pipeline Project, including High-Pressure (HP) transmission and Intermediate and Medium Pressure (IP, MP) distribution pipelines and associated HAGIs.
- 2.1.6 In order to undertake a route assessment of vehicle movements a fixed scheme is required with regards to route, HAGI/ compound design and location. To inform this assessment, vehicle movements have been calculated for each construction site and activity based on the following:
- The pipeline and HAGI configuration assumed here is in line with the latest base case route and configuration;

- A single TCC is assumed and sized at 5ha, to be used to support all pipeline construction activities. Four material storage areas are also assumed, one to service each line of the network and sized as follows:
 - ▶ Material Storage Area North - 0.23ha;
 - ▶ Material Storage Area South - 0.96ha;
 - ▶ Material Storage Area East - 0.52ha;
 - ▶ Material Storage Area West -1.00ha; and
 - ▶ Material Storage Area Central - 2.71ha.

2.1.7 Note that at this stage the quantity, sizing, and location of TCCs and material storage areas are unconfirmed, with provisional conservative assumptions made here to facilitate this assessment.

2.1.8 **Table 2.1** sets out the proposed lines used to inform the traffic predictions including the material to be used, pressure rating, length of route and where these routes route between

Table 2.1 HyNet Pipeline Details

Line Number	From	To	Pressure Rating	Material	Length (m)
1	HPP	Central Hub	HP	Carbon Steel	21,380
2	Central Hub	HSF	HP	Carbon Steel	19,720
3	Central Hub	Partington	HP	Carbon Steel	23,800
1 (Spur)	Runcorn HAGI	Intergen	HP	Carbon Steel	470
1 (Spur)	Rocksavage	Runcorn HAGI	HP	Carbon Steel	1,440
4	Central Hub	Clockface	HP	Carbon Steel	20,850
Spur	Central Hub	Tata Chemicals	IP	Carbon Steel	8,860
4	Clockface (Chapel Lane)	St Helens	IP	Carbon Steel	6,990
4 (Spur)	Higher Walton	Novelis Latchford	MP	PE 80	6,710
1 (Spur)	Runcorn HAGI	Heath Park	MP	PE 80	2,380
3 (Spur)	Partington	SAICA	HP	Carbon Steel	660
4 (Spur)	Higher Walton	Solvay	HP	Carbon Steel	730

Line Number	From	To	Pressure Rating	Material	Length (m)
4 (Spur)	Clockface	Pilkington NGF	MP	PE 80	2,320
4 (Spur)	St Helens	Glass Futures	MP	PE 80	900
4 (Spur)	St Helens	Greengate	IP	Carbon Steel	250
3 (Spur)	Partington	Partington Blending	HP	Carbon Steel	320
3 (Spur)	Partington	Basell Polyolefins	HP	Carbon Steel	470
3 (Spur)	Warburton	Warburton Blending	HP	Carbon Steel	190

Construction Activities

2.1.9

Construction activities have been categorised as follows:

- Pipeline Construction activities, broken down into:
 - ▶ Survey;
 - ▶ Clearing (clearing, grading, pre-drainage works, soil stripping, pegging);
 - ▶ Access works (construction corridor haul roads, temporary access roads);
 - ▶ Trenching (centreline marking, trenching, and bedding);
 - ▶ Material delivery (delivery of line pipe to dumps and on to site);
 - ▶ Fabrication (stringing, field bending, welding & tie-ins);
 - ▶ Non destructive examination (NDE) (Butt weld NDE & Inspection), Field Joint Coating;
 - ▶ Installation (inspections, lower in, Cathodic protection (CP));
 - ▶ Backfilling (general backfilling and grading);
 - ▶ Reinstatement (clean-up, post-drainage works, land rehabilitation, as-built survey etc);
 - ▶ Pre-commissioning (Clean, Gauge, Fill, Stabilise, Test, Dewater, Swab, Calliper Pig and Dry); and
 - ▶ Other activities (welfare facilities, HSE auditing, water management, project management and client representation, security, plant maintenance, plant fuelling etc.).
- Trenchless Crossing activities, broken down into:

- ▶ Horizontal Directional Drilling (setup, drilling and reinstatement);
- ▶ Auger Bore Crossing (setup, boring and reinstatement); and
- ▶ Microtunnelling (setup, tunnelling, and reinstatement);
- Compound construction activities, broken down into:
 - ▶ HAGI, TCC and pipe dumps construction and use; and
 - ▶ TCC and pipe dump reinstatement.

Access Points

- 2.1.10 Currently a large quantity of potential access points to the project route corridor have been identified and are under consideration for use during project construction, as presented within the **Appendix 11A CTMP Figure 3.1**. These accesses may be utilised in different ways due to safety and efficiency, for example traffic may use one access for incoming traffic to a pipeline route section and another access for traffic to exit. For the purposes of this assessment a reduced quantity of accesses has been selected assuming access to and from the route via the same access point as set out in **Figure 11.14 in the Chapter 11**. For simplicity, in many cases where multiple access points are available for a single section of the pipeline route a single access point has been selected.

Scheduling and Construction Rates

- 2.1.11 The traffic predictions are based on the following key dates and construction rates summarised within **Table 2.2 and 2.3**.

Table 2.2 Key Construction Dates (from current programme September 2022)

Activity	Locations	Start Date
Temporary Compound / Yard Construction	All TCCs, Material Storage Areas	01/10/2024
HAGI Construction	Central HAGI	02/12/2024
HAGI Construction	HSF	01/01/2025
Trenchless Crossing	Line 1 (Mainline and Spurs)	01/02/2025
Pipeline Construction	Line 1 (Mainline and Spurs)	01/02/2025
Pipeline Construction	Central Hub to TATA	01/02/2025
HAGI Construction	HPP	01/02/2025
HAGI Construction	Rocksavage	01/04/2025
Pipeline Construction	Line 2 (Mainline and Spurs)	01/05/2025

HAGI Construction	Runcorn	01/05/2025
Trenchless Crossing	Line 2 (Mainline and Spurs)	02/06/2025
HAGI Construction	Warburton	02/06/2025
HAGI Construction	Partington	01/07/2025
HAGI Construction	Higher Walton	01/09/2025
Trenchless Crossing	Line 3 (Mainline and Spurs)	01/10/2025
HAGI Construction	St Helens	01/10/2025
HAGI Construction	Clockface	01/12/2025
Trenchless Crossing	Line 4 (Mainline and Spurs)	02/02/2026
Pipeline Construction	Line 3 (Mainline and Spurs)	02/03/2026
Pipeline Construction	Line 4 (Mainline and Spurs)	02/03/2026
Yard Reinstatement	All Material Storage Areas	01/10/2026
Temporary Compound Reinstatement	All TCCs	01/01/2027

Table 2.3 Assumed Construction Rates used in modelling

Activity	Description	Rate
Survey	Survey Works	1000m/day
Access Works	Access Works	250m/day
ROW Preparation	Clearing & Excavation	150m/day (NPS=42") 250m/day (NPS<42") Streetworks: 10m/day (PE) 3.3m/day (CS)
Pipelay	Fabrication, NDE, Field Joint Coating, Installation, Backfilling	150m/day (NPS=42") 250m/day (NPS<42") Streetworks: 10m/day (PE) 3.3m/day (CS)
Reinstatement	Reinstatement works (haul road, access etc.)	150m/day (NPS=42") 250m/day (NPS<42")

Activity	Description	Rate
Pre-commissioning	Clean, Gauge, Fill, Stabilise, Test, Dewater, Swab, Calliper Pig & Dry	Assumed 21-day period per test section.
HDDing	Average Drilling rate (excluding site setup, demob and reinstatement)	50m/day (NPS≤24") 35m/day (NPS>24")
Auger Boring	Average Boring rate (excluding site setup, demob and reinstatement)	20m/day (NPS≤24") 10m/day (NPS>24")
Microtunnelling	Average Tunnelling rate (excluding site setup, demob and reinstatement)	
HAGI Construction	HAGI Construction	50-175 days in line with project preliminary construction schedule.

Timing of Movements

2.1.12 It is assumed that a typical working day is 10 hours in duration (08:00 – 18:00) Monday to Saturday. Twelve hour-working has been conservatively assumed for trenchless crossing works (i.e. drilling/tunnelling), with the potential in practice to increase construction rates using a mixture of 12 hour and 24 hour working.

2.1.13 The following critical operations may require 24hr working:

- Critical Crossings – Tunnelling;
- Critical Crossings – HDD;
- (Hydro)Testing and Pre-Commissioning; and
- Commissioning.

Vehicle Capacities

2.1.14 **Table 2.4** sets out construction vehicle capacities that have been assumed for the purposes of traffic generation predictions.

Table 2.4 Assumed Vehicle capacities

Vehicle	Purpose	Load Capacity (tonnes)
Tipper Truck	Delivery / removal of bulk aggregates, bentonite, cuttings etc.	20.0
Trailer	Delivery of line pipe to dump/site	20.3
Water/Slurry Tanker	Delivery of water for trenchless crossings. Removal of waste slurry	19.0
Concrete Mixer Truck	Delivery of concrete to HAGIs	18.1

2.2 Key Assumptions

2.2.1 To provide this high-level traffic estimate, the following key assumptions have been used:

- For pipeline construction activities, all workers are assumed to travel to the TCC once per day with one worker per vehicle before travelling to the construction corridor via 4x4 or in groups within welfare vans (depending on role). Workers are assumed to return in to the TCC in matching groups before travelling home individually;
- Plant and equipment required to complete each activity is assumed to be stored on site, as opposed to within the TCC or other yards. As a result, construction equipment is associated with only two movements (ingress & egress) per access point;
- All materials are brought directly to site, with exception of line pipe which will first be stored within material storage areas;
- No topsoil or subsoil is to be removed from the site, with exception of at trenchless crossings due to drilling/boring/tunnelling. All waste soil is assumed to be spread about within the construction corridor prior to reinstatement, with no waste soil sent to landfill (with exception of trenchless crossings);
- Concrete for HAGI construction works has been assumed to arrive in mixer trucks, as opposed to the use of a batching plant as a worst-case assumption;
- Access road stone requirements have been assessed on a per access basis to determine construction stone requirements. All roads have been assumed as 4.8m wide on average (4m wide with overtake segments). Both access roads and haul roads are assumed to consist of 300mm thick gravel with geogrid. This conservatively assumes use of stone for all roads and does not account for the potential use of trackway in fluvial floodplains or any regions in which

soil conditions are sufficient to prevent the need for road construction as a worst-case assumption;

- A single 5ha TCC has been assumed of which 50% of the land is assumed to be covered with 300mm stone with geogrid. 15% of the TCC (7,500m²) is assumed to be road within the compound;
- A 1,800m² (36m x 50m) area is assumed at each trenchless crossing location as a TCC, of which 25% is assumed to consist of 300mm thick gravel with geogrid;
- Trenchless crossing calculations assume all spoil and waste drilling fluid is disposed of offsite and all bentonite material is to be trucked in. This is considered conservative as in practice local abstraction without trucking may be viable at river crossings and is considered a worst-case assumption;
- At each access point a provisional allowance of an additional 240m² (equivalent to 50m of haul road) is assumed to allow for temporary vehicle parking, storage, washing etc;
- 12.2m metallic line pipe length and 12m medium density polyethylene (MDPE) pipe lengths have been assumed;
- HAGI construction calculations assume all open space to be covered with 300mm stone with geogrid. An additional area, sized at 40% of the HAGI area is included to act as a temporary construction area, of which 50% is assumed to be 300mm stone covered with geogrid;
- It is assumed that hydrotesting of line pipe will be carried out using locally sourced water without use of tankers;
- Trenchless crossing methodology assumes the worst-case option provided with HDDing primarily selected where applicable, followed by microtunnelling followed by auger boring in that order.

Plant and Personnel Requirements

- 2.2.2 Plant and crew requirement assumptions for pipeline construction activities have been used to inform HGV movements during the mobilisation/demobilisation of plant, as well as daily LV movements by crew to site as well as at the TCC. A summary of activity plant and crew sizes is provided within **Table 2.5**, note that there will be a number of crews working in parallel.

Table 2.5 Assumed Activity Plant and Personnel

Activity	Total Personnel	Total HGV Plant
Yard / TCC Operation	20	4
Survey	10	0
Clearing	13 (0 ¹)	5
Access Works	27 (9 ¹)	16
Trenching	29 (15 ¹)	18
Fabrication	96 (48 ¹)	19
NDE & Field Joint Coating	22	1
Installation	32	10
Backfilling	22	12
Re-instatement	33	18
Pre-commissioning	45	22
HDD	6	6
Microtunnel	6	22
Auger Bore	6	9
Trenchless Crossing Reinstatement	16	18
HAGI Construction	26 (16 Average Daily)	16
Compound Reinstatement	16	18

Material Requirements

Pipeline Construction

- 2.2.3 The primary material requirement associated with pipeline construction activities is the delivery of line pipe, induction bends and bulk aggregates for the construction of haul/temporary access roads.

¹ Reduced crew size taken for streetworks

2.2.4 As described above, road calculations are assumed to consist of 300mm thick gravel with geogrid. Line pipe delivery has been determined for both metallic and non-metallic pipe considering requirements and guidance provided by the Plastic Pipe Institute, with a provisional 10% increase in truck movements allocated to account for induction bend delivery. **Table 2.6** below summarises assumed line pipe delivery quantities.

Table 2.6 Assumed Trailer Capacities

Pipeline	Nominal Pipe Size (NPS)	Material	Quantity of Line pipe Per HGV
Central Hub to Clockface	18	Carbon Steel	11
Central Hub to Partington	30	Carbon Steel	3
Central Hub to HSF	42	Carbon Steel	2
Stanlow to Central Hub	42	Carbon Steel	2
Rock Savage to Runcorn HP Branch	24	Carbon Steel	6
Runcorn to Intergen	24	Carbon Steel	6
Partington to SAICA	9	Carbon Steel	45
Higher Walton to Solvay	8	Carbon Steel	45
Central Hub to TATA	16	Carbon Steel	15
Clockface to St Helens	16	Carbon Steel	15
Higher Walton to Novelis Latchford	10	MDPE	45
Runcorn to Heath Park	8	MDPE	66
Clockface to Pilkington NGF	8	MDPE	66
St Helens to Glass Futures	8	MDPE	66
St Helens to Greengate	8	Carbon Steel	49

2.2.5 For other pipeline construction activities provisional values have been assumed to accommodate the transport of minor components as set out in **Table 2.8 Activity Summary**.

Trenchless Crossings

- 2.2.6 Calculations have been produced to estimate trenchless crossing material requirements, considering the construction of temporary construction spaces, as well as bringing to site bentonite, water, and drilling slurry as appropriate and disposal of cuttings.
- 2.2.7 For conservatism, trenchless crossing methodologies have been assumed in-line with the worst-case currently under consideration at PEIR.
- 2.2.8 HDDing is considered the most onerous crossing methodology with regards to HGV movements and so has been assumed where applicable. This is due to the trucking of water and bentonite to site, and removal of waste drilling slurry. Microtunnelling is considered more onerous than auger-boring and has been assumed where applicable, this is primarily due to the trucking of concrete casing pipes to site.

HAGIs, Compounds and Yards

- 2.2.9 In order to determine HGV movements associated with the construction of HAGIs, the TCC and material storage areas, material requirements have been broken down as follows:
- **Plan Area** – As per the latest project design for HAGIs. A provisional area of 5ha is assumed for the TCC. Material storage area sizing has been estimated assuming a size sufficient to store all associated line pipe, with an additional 40% contingency to allow for roads, containers, offices, storage of equipment etc;
 - **Temporary Construction Area** – For all HAGIs, TCCs and material storage areas a temporary construction area sized at 40% the compound area has been assumed (i.e. 0.4ha of land for temporary construction per 1ha of HAGI/TCC/Materials storage area). Of this area 50% of open land is assumed to consist of 300mm thick gravel with geogrid;
 - **Roads** – Road lengths are as per the associated preliminary project design for HAGIs. Within the TCC and material storage areas it has been assumed that 15% of the land is to be used for roads;
 - **Gravel** – It is assumed that all uncovered land within HAGIs and compounds is covered with 300mm thick gravel with geogrid. An additional 10% allowance is included to account for muck away and surplus aggregates;
 - **Foundations** – HAGI foundation estimates are in-line with the latest revision of the project design for the HAGIs;
 - **Fencing** – A provisional estimate of one HGV per 50m of fencing has been assumed for HAGI/compound fencing construction;
 - **Steel** – Construction steel (reinforcement, walkways, pipe supports etc.) are as per the associated project design; and

- **Equipment** – Provisional vehicle movements have been assumed depending on HAGI purpose and size to account for all equipment, piping and bulks, based on historical project AGI logistics planning.

2.2.10 **Table 2.7** below summarises the total HGV movements associated with HAGI/compound construction.

Table 2.7 HAGI, Compound and Yard Material Requirement Summary

Location	Access Number	Area (ha)	Total Material HGV Movements
Temporary Construction Compound	TCC1	5.00	2258
Material Storage Area (North)	NH-42 ²	0.23	108
Material Storage Area (South)	SH-37	0.96	436
Material Storage Area (East)	EH-08	0.52	236
Material Storage Area (West)	WH-01	1.00	4520
Material Storage Area (Central)	WH-23	2.71	1230
HAGIS			
Hynet Production Plant (HPP)	WH-02	2.44	1966
Rocksavage	WH-01	1.49	1158
Runcorn	WS2	1.96	1504
St Helens	NH-60	1.08	854
Clockface	NH-51	1.56	1226
Partington	EH-51	2.10	1614
Warburton	EH-42	1.49	1164
Central Hub	WH-23	2.10	1662

² Material Storage Area locations have been apportioned to a specific access for the purpose of assessment.

Location	Access Number	Area (ha)	Total Material HGV Movements
Hydrogen Storage Facility (HSF)	SH-38	2.90	2206
Higher Walton	NH-29	1.90	1446
<u>Block Valve Stations (BVS)</u>			
Sworton Heath BVS	EH-25	2.50	204
Hartford Comberbach BVS	SH-15	2.50	204

Activity Summary

2.2.11 **Table 2.8** presents a summary of assumptions around each activity, including mob/demob durations and associated plant/material movements as well as HGV and LV movements associated with the main construction activity.

Table 2.8 Activity Summary

Activity	Mobilisation/Demobilisation			Activity (Total Movements per Access Point)	
	Duration (days)	Plant ³ (Movements)	Material (Movements)	Light Vehicles ³	HGVs
Pipeline Construction Activities					
Survey	0	0	0	10/day	0
No mob/demob period. Activity assumes crew travelling directly to site individually.					
Access Works	1	16	0	24/day	320/km
Assumed 1 day mob/demob period for delivery of plant to site. Work is assumed to progress in line with the project preliminary construction schedule, with construction rates as summarised within Table 2.3 .					

³ Additional movements have been accounted for considering the movement of plant and personnel along the construction right of way via designated access points.

Activity	Mobilisation/Demobilisation			Activity (Total Movements per Access Point)	
	Duration (days)	Plant ³ (Movements)	Material (Movements)	Light Vehicles ³	HGVs
Note that calculations conservatively assume use of stone for all roads and does not account for the potential use of trackway in fluvial floodplains or any regions in which soil conditions are sufficient to prevent the need for road construction.					
Clearing	1	5	0	12/day	8/km
Assumed 1 day mob/demob period for delivery of plant to site. Work is assumed to progress in line with the project preliminary construction schedule, with construction rates as summarised within Table 2.3 . A provisional value of 4 HGVs per km (i.e., 8 movements) is accommodated to allow for removal of cleared vegetation. Note that calculations assume no topsoil is removed from site for storage.					
Trenching	1	18	0	26/day	0/km
Assumed 1 day mob/demob period for delivery of plant to site. Work is assumed to progress in line with the project preliminary construction schedule, with construction rates as summarised within Table 2.3 . A provisional value of 1 HGV per km (i.e., 2 movements) is accommodated to allow for bringing of equipment (e.g. markers) to site. Note that calculations assume no topsoil is removed from site for storage.					
Material Delivery	0	0	0	18/day (at pipe dumps only)	NPS dependant. Refer to Table 2.3 .
Activity is associated with the delivery of line pipe to pipe dumps and subsequently to site. Trailer capacity is line pipe size/weight dependant and is as summarised within Table 2.6 . LGV movements apply to storage yard only.					
Fabrication	1	19	0	82/day	4/km
Assumed 1 day mob/demob period for delivery of plant to site. Work is assumed to progress in line with the project preliminary construction schedule. A provisional value of 2 HGV per km (i.e., 4 movements) is accommodated to allow for bringing of equipment (e.g. weld consumables) to site.					
NDE and Field Joint Coating	1	1	0	20/day	4/km

Activity	Mobilisation/Demobilisation			Activity (Total Movements per Access Point)	
	Duration (days)	Plant ³ (Movements)	Material (Movements)	Light Vehicles ³	HGVs
Assumed 1 day mob/demob period for delivery of plant to site. Work is assumed to progress in line with the project preliminary construction schedule. A provisional value of 2 HGV per km (i.e., 4 movements) is accommodated to allow for bringing of equipment (e.g. Fluid Jointing Compound materials) to site.					
Installation	1	10	0	28/day	4/km
Assumed 1 day mob/demob period for delivery of plant to site. Work is assumed to progress in line with the project preliminary construction schedule. A provisional value of 2 HGV per km (i.e., 4 movements) is accommodated to allow for bringing of equipment (e.g. Cathodic protection (CP) materials) to site.					
Backfilling	1	12	0	20/day	4/km
Assumed 1 day mob/demob period for delivery of plant to site. Work is assumed to progress in line with the project preliminary construction schedule. A provisional value of 2 HGV per km (i.e., 4 movements) is accommodated to allow for bringing of equipment (e.g. CP materials) to site. Note that it is assumed that no special backfill will be brought to site.					
Reinstatement	1	18	0	28/day	320/km
Assumed 1 day mob/demob period for delivery of plant to site. Work is assumed to progress in line with the project preliminary construction schedule.					
Other	0	0	0	100/day	10/day
Non access specific movements are included within the project totals to account for other activities, including: Moving portable welfare and toilets around with the work fronts, also servicing as required. Assumed 2 flatbed lorries + one waste lorry. 3 drivers + three mates. Three Health and Safety Executive auditors/supervisors. Each travelling separately by 4x4. Environmental crew to set up and maintain pumping, surface water management etc. 4x4 plus 2 persons. Onsite project manager/client representatives: 5 persons each with 4x4. Provisional 20 persons assumed to allow for 24 hr security at sites such as compounds, road crossings etc. Vehicle/plant maintenance crew – 1 transit and 2 persons. Plant fuelling bowsters – two tanker vehicle typically fixed wheelbase plus drivers. No AILs expected.					

Activity	Mobilisation/Demobilisation			Activity (Total Movements per Access Point)	
	Duration (days)	Plant ³ (Movements)	Material (Movements)	Light Vehicles ³	HGVs
Pre-Commissioning	0	22	0	38	4/km
Assumed no trucking of water to site for hydrotesting. Note that vehicle movements provided apply to selected HAGI locations, with a provisional value of 8 LVs per pipeline ROW access point assumed.					
Trenchless Crossing Activities					
HDD	10	6	30	12/day	Figure E22 and E22 - Appendix 11E
A 10-day mob and demob period has been provisionally assumed in order to account for the delivery of plant to site, setup of temporary construction workspaces, pipeline pullback, installation, and compound reinstatement. It is assumed that line pipe fabrication and testing will occur parallel to drilling activities. A 6-man crew is assumed, each travelling to/from the site individually. Material movements have been allocated to allow for setup of the trenchless crossing compound, assuming a 1800m² area, of which 25% is aggregate (300mm roadstone) covered. HGV movements are calculated assuming all drilling spoil and excess fluid is disposed of offsite, all water for drilling is to be trucked in, as is raw bentonite material. Note that line pipe delivery, and fabrication is considered separately within pipeline construction activities.					
Microtunnel	10	22	30	12/day	Figure E24 and E25 - Appendix 11E
A 10-day mob and demob period has been provisionally assumed in order to account for the delivery of plant to site, setup and reinstatement of temporary construction workspaces including entry/exit pits etc. A 6-man crew is assumed, each travelling to/from the site individually. Material movements have been allocated to allow for setup of the trenchless crossing compound, assuming a 1800m² area, of which 25% is aggregate (300mm roadstone) covered. HGV movements are calculated assuming all spoil is disposed of offsite. Note that line pipe delivery, and fabrication is considered separately within pipeline construction activities.					
Auger Bore	10	9	30	12/day	Figure E22 and E22 -

Activity	Mobilisation/Demobilisation			Activity (Total Movements per Access Point)	
	Duration (days)	Plant ³ (Movements)	Material (Movements)	Light Vehicles ³	HGVs
Appendix 11E					
A 10-day mob and demob period has been provisionally assumed to account for the delivery of plant to site, setup and reinstatement of temporary construction workspaces etc. A 6-man crew is assumed, each travelling to/from the site individually. Material movements have been allocated to allow for setup of the trenchless crossing compound, assuming a 1800m² area, of which 25% is aggregate (300mm roadstone) covered. HGV movements are calculated assuming all spoil is disposed of offsite. Note that line pipe delivery, and fabrication is considered separately within pipeline construction activities.					
Compound Construction Activities					
HAGIs	10	16	Figure E28 – E29 – Appendix 11E	32/day average	Figure E28 – E29 – Appendix 11E
Assumed 10-day mob/demob period for delivery of plant to site and setup of temporary construction areas is assumed for all HAGIs. It is assumed all crew arrive directly to site individually. Refer to Table 2.5 for plant and personnel assumptions.					
TCC/Yards	5	16	66/ha	32/day	452/ha
Assumed 10-day mob/demob period for delivery of plant to site and setup of temporary construction areas. It is assumed all crew arrive directly to site individually. Crew and plant quantities are assumed to match that of HAGI construction.					

3. Traffic Generation Prediction Results

3.1 Vehicle Movements

- 3.1.1 Following the methodology and input data set out in Section 2, a traffic assessment has been carried out to determine the total quantity of vehicle movements generated as a result of construction activities throughout the project construction period. Movements have been estimated per working day, per access point and split between HGVs and LV movements.
- 3.1.2 **Appendix 11E to the Chapter 11 of the PEIR (Traffic and Transport)** sets out the traffic generation per activity across the days of the programme and proposed accesses used at PEIR. **Appendix 11E** has removed accesses with zero traffic and days with no traffic to make the data easier to interpret.
- 3.1.3 **Table 3.1** sets out the total traffic flows based on the current project design and details in Section 2 across the total construction period.

Table 3.1 Estimated Vehicle Movements

Result	2024	2025	2026	2027
No. Working Days	79	313	313	27
Annual Average Daily Traffic Across the Entire Site				
Light Vehicles	262	912	512	32
HGVs	198	270	228	222
Total	460	1,182	740	254
Peak Daily Traffic Across the Entire Site				
Light Vehicles	366	1,826	1,150	32
HGVs	250	684	638	272
Total Vehicle Movement				
Light Vehicles	20,612	285,236	159,916	864
HGVs	15,620	83,922	771,148	5,984

3.2 Typical Access Result

- 3.2.1 To provide an indication of the traffic volume **Figure 3.1** has been included to provide a summary of HGV and LGV vehicle movements for the Project across the anticipated construction period.

Figure 3.1 Total Daily Traffic Movements Breakdown



3.2.2 The resultant traffic for LV and HGV traffic across the proposed accesses used for the PEIR assessment over the preliminary construction programme based on the details set out in this document is provided within the **Traffic and Transport PEIR Chapter (11) as Figures 11.15 and 11.16.**

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