Kintore Hydrogen Plant

Environmental Impact Assessment Report
Chapter 9: Transport and Access

Date: August 2024

Kintore Hydrogen
A STATERA COMPANY

Environmental Impact Assessment Report

Volume 2

Chapter 9

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https://www.kintorehydrogen.co.uk/

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1 Introduction

1.1 Purpose of this chapter

1.1.1 This chapter of the Environmental Impact Assessment Report (EIAR) presents the findings of Environmental Impact Assessment (EIA) work undertaken concerning potential impacts of Kintore Hydrogen Plant on Transport and Access.

1.1.2 This chapter considers the likely significant effects on receptors along the transport routes resulting from vehicle movements associated with the construction and operation of the Proposed Development.

1.1.3 Further information is contained within technical appendices in Volume 3:

- Appendix 9.1: Transport Assessment; and
- Appendix 9.2: Abnormal Indivisible Load (AIL) Route Survey Report.

1.1.4 This EIAR chapter:

- presents the environmental baseline established from desk studies, surveys and consultation to date;
- presents the potential environmental effects on Transport and Access arising from Kintore Hydrogen Plant, based on the information gathered and the analysis and assessments undertaken;
- identifies any assumptions and limitations encountered in compiling the environmental information; and
- highlights any necessary monitoring and/or mitigation measures that could prevent, minimise, reduce or offset the possible environmental effects identified in the EIA process.

1.2 Planning policy and guidance

1.2.1 This assessment has been undertaken in accordance with policies and guidance outlined in the following plans:

- National Planning Framework 4 (NPF4) (2023)[1];
- Planning Advice Note (PAN) (1995) 75[2];
- Transport Assessment Guidance (2012)[3];
- Aberdeenshire Local Development Plan (2023)[4];
- Use of Energy in Aberdeenshire: Guidance for Developers Supplementary Planning Guidance (2005)[5];
- Institute of Environmental Assessment, Guidelines for the Environmental Assessment of Road Traffic (1993)[6];
- Institute of Environmental Assessment, Environmental Assessment of Traffic and Movement (2023)[7];
- Institution of Environmental Management and Assessment (IEMA) ‘Guidelines for Environmental Impact Assessment’ (2005)[8];
- Design Manual for Roads and Bridges (DMRB), LA 104 Environmental Assessment and Monitoring (Revision 1) (2020)[9];
- Table 2.2 of Volume 11, Section 2, Part 5 of the DMRB (2008)[10]; and
- Design Manual for Roads and Bridges, Volume 15, Part 5 “The NESA Manual” (2013)[11].

1.3 Legislation

1.3.1 The assessment has been undertaken in accordance with the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 (hereafter referred to as the “EIA Regulations”). There is, however, no legislation which is specific to transport assessments, that is required to be considered as part of this assessment.

1.4 Consultation

1.4.1 Key issues raised during scoping and consultation specific to Transport and Access are listed in Table 1.1, together with how details of how these issues have been considered in the production of this EIAR and cross-references to where this information may be found.

Table 1.1: Key points raised during scoping and consultation to date

Date	Consultee and type of response	Points raised	How and where addressed
September 2023	Aberdeenshire Council (AC) – Infrastructure Services Roads Development	Parking should be fully accommodated within the site.	Comment noted. All parking for the Proposed Development is accommodated within the red line boundary.
		An access appears to be proposed opposite East Leylodge this access would have a visibility requirement of 2.4m x 120m. The existing Womblehill access to the north of Leylodge appears to be used during the construction phase, this access would have a 2.4m x 160m visibility requirement. The visibility splays must be clear of all permanent obstructions above adjacent carriageway level.	Comment noted. Drawing number SK01 included within Annex A of Appendix 9.1: Transport Assessment shows the proposed main construction access, including junction visibility and swept path assessments.
		The width, radii, length of access to be surfaced in bituminous material etc would depend on the types and numbers of vehicles likely to utilise the junctions, vehicle tracking for the largest vehicle likely to utilise the access may also be required.	Comment noted. An AIL route survey report is included as Volume 3, Appendix 9.2: AIL Route Survey Report and shows the largest vehicle required to access the application site.
April 2024 and June 2024	Public consultation	Concerns raised about the speed of traffic (in the baseline) along the B977 and past accidents along this road. Suggestion of introducing a 40 mph speed limit section.	A review of Personal Injury Accident (PIA) data has been undertaken within the chapter and within Appendix 9.1: Transport Assessment, in line with the methodology set out as part of the scoping exercise. In addition, speed surveys were undertaken at two locations on the B977 at locations where concerns around speeding and road safety were raised by local residents. Further information in this regard can be found in Section 3.1 of this chapter.

2 Assessment Approach

2.1 Effects assessed in full

2.1.1 This assessment focusses on the effects of construction traffic and operational traffic of the Proposed Development upon those receptors identified during the review of desk-based information and field surveys (the extents of the study areas are set out in the 'Method of Baseline Characterisation' section below).

2.1.2 The following potential effects were identified at the EIA Scoping stage for consideration in this assessment:

- direct effects on road users during construction due to changes in traffic flows in the surrounding study area;
- direct effects on local residents as a result of increased traffic during construction;
- direct effects on road users during operation due to changes in traffic flows in the surrounding study area; and
- direct effects on local residents as a result of increased traffic during operation.

2.1.3 The assessment scenarios used for this topic are as follows:

- Future baseline flows (2026 – which are estimated by applying National Road Traffic Forecast (NRTF) low growth factors to traffic flow information obtained from automatic traffic counts (ATCs) undertaken and from the Department for Transport (DfT) database;
- Future baseline + construction development flows (2026) – which are estimated by applying the distributed development trips to the future baseline traffic flow information; and
- Future baseline + operational development flows (2030) – which are estimated by applying the distributed development trips to the future baseline traffic flow information.

2.2 Effects scoped out of the assessment

2.2.1 On the basis of the desk based and field survey work undertaken, the professional judgement of the EIA team, experience from other relevant projects and policy guidance or standards, the following topic areas have been 'scoped out' of detailed assessment through the EIA scoping process as noted in Chapter 5: Scoping and Consultation:

- Decommissioning Phase: The traffic effects during the decommissioning phase can only be fully assessed closer to that period, as elements of the Proposed Development are likely to remain in-situ (such as cable trenches, some access tracks, etc.). The traffic flows associated with the decommissioning works will be lower than those associated with the construction phase. The construction phase therefore represents a worst-case assessment, and as such decommissioning effects are considered to be less than or equal to, the predicted construction phase effects.

2.3 Assessment methodology

2.3.1 The methodology adopted in this assessment involved the following key stages:

- determine the baseline for traffic and transport;
- review and identify potential impacts related to the construction of the Proposed Development;
- evaluate significance of effects on receptors;
- identify mitigation; and
- assess residual effects.

2.4 Study area

2.4.1 The study area has been based on those roads that are expected to experience increased traffic flows associated with the construction of the Proposed Development. The geographic scope was determined through a review of the other developments in the area, Ordnance Survey (OS) plans and an assessment of the potential origin locations of construction staff and supply locations for construction materials.

2.4.2 The study area for the assessment has therefore been determined to include sections of the following roads:

- A96 to the north and south of Kintore;
- The B987 between its junction with the A96 and B994;
- The B994 between its junction with the B987 and B977;

- The B977 between its junction with the B944 and Leylodge;
- The minor road network used to provide connections to the water abstraction and discharge point as highlighted below:
    - Unclassified road from the B977 to Bogfold;
    - Private road from the B977 through to Womblehill;
    - Hawthorne Cottage from the A96 roundabout to 200m west of its junction with Heathland Park;
    - Unclassified road from the A96 past Boghead Farm House;
    - Kirkton Cottages;
    - The Rushlach from Kinellar Parish Church on Kirkton Cottages to the River Don;
    - Unclassified road from Cairntradlin on Kirkton Cottages to the B979;
    - The B979 north of Blackburn and Hatton of Fintray; and
    - The B977 between Hatton of Fintray and the A90.

2.4.3 The above study area is illustrated in Figure 2.1.

2.4.4 Note the above relates to those roads likely to be subject to the biggest increase in construction traffic i.e. those closest to the application site and does not include all roads used in the movement of construction materials and potential abnormal indivisible loads (AIL) traffic required for transporting the transformers.

2.4.5 Effects associated with construction traffic and operational traffic generated by the Proposed Development would be most pronounced in close proximity to the site access junction and on the final approaches to the application site. As vehicles travel away from the Proposed Development, they would disperse across the wider road network, thus diluting any potential effects. It is therefore expected that the effects relating to construction traffic are unlikely to be significant beyond the study area identified above.

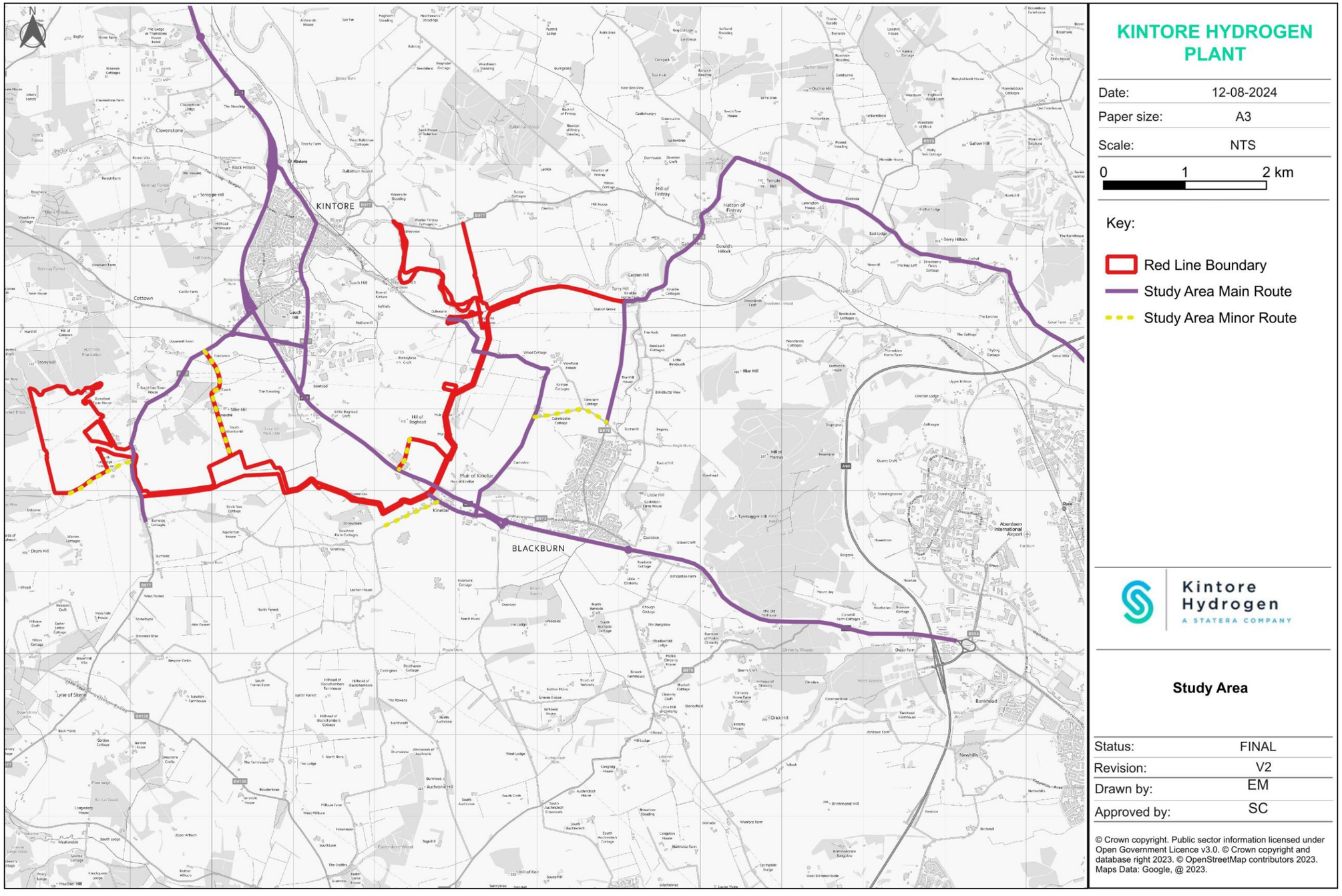


Figure 2.1: Study area

2.5 Baseline study

Desktop study

2.5.1 Information on Transport and Access was collected through a detailed desktop review of existing studies and datasets. These are summarised at Table 2.1 below.

Table 2.1: Summary of desktop study sources

Title	Source	Year	Ref.
Relevant transport planning policy	Aberdeenshire Council	2024	4
Baseline traffic data – ATC surveys	Independent traffic survey company (Streetwise Services Ltd.)	2024	-
Baseline traffic data – DfT surveys	DfT	2024	12
Personal Injury Accident data	CrashMap	2024	13
National Cycle Network (NCN) map	Sustrans	2024	14
Sensitive locations within the study area (as defined by IEMA such as settlements, schools etc.)	Google Maps	2024	15
Any other traffic sensitive receptors in the area (core paths, routes, communities, etc.) – googlemaps.co.uk, SBC core path plans, ScotWays maps etc;	Google Maps, Aberdeenshire Council Core Path Plans, ScotWays plans etc.	2024	15, 16, 17
OS plans	Ordnance Survey Ltd.	2024	18
Potential origin locations of construction staff and supply locations for construction materials to inform extent of local area roads network to be included in the assessment	Google Maps	2024	15

Site specific surveys

2.5.2 In order to inform the EIA, the site-specific surveys listed in Table 2.2 have been undertaken.

Table 2.2: Summary of site-specific surveys undertaken

Title	Extent of survey	Overview of survey	Survey provider	Year	Reference to further information
ATC – Traffic Surveys	1. B987 to the south of the B994 junction; 2. B994 to the west of the B987 junction; 3. B977 to the north of Leylodge; 4. Hawthorne Cottage to the east of Heathland Park junction; 5. Kirkton Cottages to the north of Old Turnpyke Road junction; 6. B979 to the north of Blackburn; 7. B979 to the south of Hatton of Fintray to B977 at the A90; 8. The Rushlach to the west of Wood Cottage; and 9. Unclassified road between the B977 and Bogfold.	ATC surveys undertaken at eight locations within the Study Area. Surveys undertaken for a period of seven days, recording vehicle classifications, direction of travel and speeds.	Streetwise Services Ltd. and Tracsis Traffic Data Ltd.	2024	Volume 3, Appendix 9.1: Transport Assessment

2.6 Uncertainties and/or data limitations

2.6.1 The assessment for the construction phase is based upon average traffic flows in one month periods. During the month, activities at the application site may fluctuate between one day and another and it is not possible to fully develop a day by day traffic flow estimate until a Balance of Plant (BoP) contractor has been appointed; and external factors can impact upon activities on a day by day basis (weather conditions, availability of materials, time of year, etc). Average traffic flows are appropriate for assessment of impacts, and day to day flows would be managed through a Construction Traffic Management Plan (CTMP) as set out in Appendix 9.1: Transport Assessment.

2.6.2 Assumptions on the original points for materials have been made to provide a worst-case assessment scenario. Should these origin points change, the effects on the study area may alter to those presented in the assessment but would be no greater.

2.6.3 Construction material estimates set out in Appendix 9.1 are based on past experience. They are considered to be appropriate for enabling a robust assessment of potential effects to be made.

2.6.4 The applicant intends to develop the facility in at least two phases. The initial phase would provide up to 500 MWe of electrolysis capacity. Subsequently the remaining planned 2,500 MWe capacity could be built in a single second phase or a series of further phases, subject to market conditions, electricity supply agreement with SSEN, progression of hydrogen blending in the UK gas network and progression of Project Union.

2.6.5 In order to develop average monthly traffic flow data for the Proposed Development, it has however been assumed the construction of all elements would run in a single phase, thus allowing for a worst case assessment to be undertaken. This is the maximum case scenario because it concentrates all construction traffic in one period, i.e. generating the highest flows on road links on a daily basis.

2.6.6 It is considered that there is sufficient information to enable an informed decision to be taken in relation to the identification and assessment of likely significant environmental effects on Traffic and Access.

2.7 Criteria for assessing the sensitivity of receptors

2.7.1 IEMA Guidelines for Environmental Impact Assessment (2005) notes that the topic specific IEMA Guidelines should be used for characterising the environmental traffic and transport effects (off-site effects) and the assessment of significance of major new developments. Recent guidance published by the IEMA, namely Environmental Assessment of Traffic and Movement (2023) provides an update to the previous guidance (Guidelines for the Environmental Assessment of Road Traffic (1993)), that should be used to characterise the environmental traffic and transport effects (off-site effects) and the assessment of significance of major new developments. The guidelines are intended to complement professional judgement and the experience of trained assessors.

2.7.2 Sensitive receptors for traffic and transport impacts are the users of the roads within the study area and the locations through which those roads pass.

2.7.3 The IEMA Guidelines in relation to transport include guidance on how the sensitivity of receptors should be assessed. Using that as a base, professional judgement was used to develop a classification of sensitivity for users based on the characteristics of roads and locations. This is summarised in Table 2.3.

Table 2.3: Classification of receptor sensitivity

Receptor	Sensitivity			
	High	Medium	Low	Negligible
Users of Roads	Where the road is a minor rural road, not constructed to accommodate frequent use by HGVs. Includes roads with traffic control signals, waiting and loading restrictions, traffic calming measures.	Where the road is a local A or B class road, capable of regular use by HGV traffic. Includes roads where there is some traffic calming or traffic management measures.	Where the road is Trunk or A-class, constructed to accommodate significant HGV composition. Includes roads with little or no traffic calming or traffic management measures.	Where roads have no adjacent settlements. Includes new strategic trunk roads that would be little affected by additional traffic and suitable for Abnormal Loads and new strategic trunk road junctions capable of accommodating Abnormal Loads.
Users / Residents of Locations	Where a location is a large rural settlement containing a high number of community and public services and facilities.	Where a location is an intermediate sized rural settlement, containing some community or public facilities and services.	Where a location is a small rural settlement, few community or public facilities or services.	Where a location includes individual dwellings or scattered settlements with no facilities.

2.7.4 It is acknowledged that there will be locations both in terms of users of roads or users / residents of locations that may not fit within one of the sensitivity classifications highlighted above. In these situations professional judgement has been applied and justification for any changes provided.

2.7.5 Where a road passes through a location, road users (pedestrian, cyclists, drivers, etc.) are considered subject to the highest level of sensitivity defined by either the road or location characteristics.

2.8 Criteria for assessing the magnitude of change

2.8.1 The following rules, also taken from the 1993 and 2023 IEMA Guidelines, were used as a screening tool to determine which links within the study area should be considered for detailed assessment:

- Rule 1: Include highway links where traffic flows are predicted to increase by more than 30% (or where the number of heavy goods vehicles (HGVs) is predicted to increase by more than 30%).
- Rule 2: Include any other specifically sensitive areas where total traffic flows are predicted to increase by 10% or more.

2.8.2 Examples of sensitive areas are presented in the 1993 and 2023 IEMA Guidelines as hospitals, churches, schools and historical buildings. These locations are to be assessed in relation to "Rule 2". Factors identified for assessment in the IEMA guidance are:

- Severance – the 2023 IEMA Guidelines advises that, *"The Department for Transport has historically set out a range of indicators for determining the significance of severance. Changes in traffic flow of 30%, 60% and 90% are regarded as producing 'slight', 'moderate' and 'substantial' [or minor, moderate and major] changes in severance respectively. Although these thresholds no longer appear in Department for Transport guidance, they have not been superseded by subsequent changes to guidance and are established through planning case law. However, caution needs to be observed when applying these thresholds as very low baseline flows are unlikely to experience severance impacts even with high percentage changes in traffic."* (Para 3.16). The Guidelines acknowledge that changes in traffic flows should be used cautiously, stating *that "the assessment of severance should pay full regard to specific local conditions, e.g. sensitivity of adjacent land uses, prevalence of vulnerable people, whether or not crossing facilities are provided, traffic signal settings, etc."* (Para 3.17).
- Driver delay – the 2023 IEMA Guidelines note that these delays are only likely to be *"significant when the traffic on the network surrounding the development is already at, or close to, the capacity of the system"* (Para 3.20).
- Pedestrian delay (incorporating delay to all non-motorised users) – the 2023 IEMA Guidelines advises that *"pedestrian delay and severance are closely related effects and can be grouped together. Changes in the volume, composition or speed of traffic may affect the ability of people to cross roads. In general, increases in traffic levels are likely to lead to greater increases in delay. Delays will also depend on the general level of pedestrian activity, visibility and general physical conditions of the development site."* (Para 3.24). Furthermore, the guidelines advise that *"…it is not considered wise to set down definitive thresholds. Instead it is recommended that the competent traffic and movement expert use their judgement to determine whether pedestrian delay constitutes a significant effect."* (Para 3.26).
- Non-motorised user amenity – the 2023 IEMA Guidelines advises that, *"The 1993 Guidelines suggest that a tentative threshold for judging the significance of changes in pedestrian amenity would be where the traffic flow (or HGV component) is halved or doubled"*. Although these thresholds no longer appear in Department for Transport guidance, they have not been superseded by subsequent changes to guidance and are established through planning case law." (Para 3.30).
- Fear and intimidation – there are no commonly agreed thresholds for estimating levels of fear and intimidation, from known traffic and physical conditions. However, as the impact is considered to be sensitive to traffic flow, changes in traffic flow of 30%, 60% and 90% are regarded as producing minor, moderate and substantial changes respectively as detailed in the 2023 IEMA Guidelines (Para 2.19). As such, this has been used to assess the potential impacts associated with construction activities around fear and intimidation on people in close proximity to the Proposed Development.
- Road safety – professional judgement would be used to assess the implications of local circumstances, or factors which may elevate or lessen risks of accidents. In line with the 2023 IEMA Guidelines , those areas of collision clusters would be subject to detailed review.
- Road safety audits – It would be proposed to undertake any necessary Road Safety Audits (RSA) post consent and it is considered that this can be secured via a planning condition.
- Large loads – AILs are required to transport components relating to the transformers used within the application site. A separate Route Survey Report, which is included as Volume 3, Appendix 9.2: AIL Route Survey Report identifies the physical mitigation measures required to accommodate the predicted loads.

2.8.3 While not specifically identified as more vulnerable road users, cyclists are considered in similar terms to pedestrians.

2.8.4 Table 3.7 of LA104 Environmental Assessment Methodology of the DMRB sets out four levels against which the magnitude of these impacts should be assessed – major, moderate, minor and negligible. The typical descriptions are provided below in Table 2.4.

Table 2.4: Magnitude of effect

Magnitude	Description
Major	These effects are considered to be material in the decision-making process.
Moderate	These effects may be important but are not likely to be material factors in decision making. The cumulative effects of such factors may influence decision-making if they lead to an increase in the overall adverse effect on a receptor.
Minor	These effects may be raised as local factors. They are unlikely to be critical in the decision-making process but are important in improving the subsequent design of the project.
Negligible	No effects or those that are imperceptible.

2.9 Criteria for assessing significance

2.9.1 To determine the overall significance of effects, the results from the receptor sensitivity and magnitude of change assessments are correlated and classified using a scale set out in DMRB LA 104 Environmental Assessment and Monitoring (Revision 1*)* and summarised in Table 2.5.

Table 2.5: Classification of magnitude of effects

Receptor sensitivity	Magnitude of effects			
	Major	Moderate	Minor	Negligible
High	Major	Major / Moderate	Moderate / Minor	Minor
Medium	Major / Moderate	Moderate	Minor	Minor / Negligible
Low	Moderate / Minor	Minor	Minor	Minor / Negligible
Negligible	Minor	Minor	Minor / Negligible	Negligible

2.9.2 Significance is categorised as major, moderate, minor or negligible. Effects judged to be major or moderate are considered to be significant in with the context of the EIA Regulations and require mitigation.

2.9.3 Where an effect could be one of major / moderate or moderate / minor significance, professional judgement is used to determine which option should be applicable. Effects judged to be minor or negligible are considered not significant in the context of EIA Regulations.

2.10 Design envelope parameters for assessment

2.10.1 The maximum design envelope parameters identified in Table 2.6 have been selected as those having the potential to result in the greatest effect on an identified receptors or receptor groups. These parameters have been identified based on the overview description of the development provided in Chapter 2: Project Description and Site Setting

2.10.2 Effects of greater adverse significance are not predicted to arise should other development designs, within the project design envelope parameters, be taken forward.

Table 2.6: Maximum design envelope parameters assessed

Potential impact	Maximum design parameter	Justification
Construction phase		
Increased number of construction vehicles generated and distributed within the study area.	Construction programme of 36 months has been assumed together with a single construction phase, to allow for a worst case assessment on construction vehicle trip generation.	Allows for a worst case assessment to be undertaken on sensitive receptors within the study area.
Operation phase		
Increased number of operational vehicles generated and distributed within the study area.	Assumption that the whole facility is operational from day one, with a full complement of staff on-site.	Allows for a worst case assessment to be undertaken on sensitive receptors within the study area at the outset of the operational phase.

2.11 Impacts scoped out of the assessment

2.11.1 The impacts listed in Table 2.7 have been scoped out of the assessment for Transport and Access as agreed through the EIA scoping process detailed in Chapter 5: Scoping and Consultation.

Table 2.7: Impacts scoped out of the assessment

Potential impact	Justification
Decommissioning phase	
Vehicular trips during the decommissioning phase and their potential impacts on sensitive receptors.	Prior to decommissioning of the application site, a traffic assessment would be undertaken, and appropriate traffic management procedures followed. The decommissioning phase would result in fewer trips on the road network than the construction or operational phases as it is considered likely that elements of infrastructure such as access tracks would be left in place and structures may be broken up on-site to allow transport by a reduced number of HGV.

2.12 Mitigation measures adopted as part of Kintore Hydrogen Plant

2.12.1 A number of measures have been designed in to Kintore Hydrogen Plant to reduce the potential for impacts on Transport and Access. These are listed in Table 2.8.

Table 2.8: Designed-in mitigation measures

Measures adopted as part of Kintore Hydrogen Plant	Justification
Staff Travel Plan	A Staff Travel Plan will be produced to reduce reliance on private car use and this would be implemented once the application site is operational. A framework travel plan is provided in Volume 3, Appendix 9.1: Transport Assessment, and outlines a series of objectives and measures aimed at demonstrating how the existing conditions and measures incorporated into the Proposed Development will encourage future employees and visitors to make use of sustainable travel options.
Reduced parking provision	The level of parking provision is significantly below the allowable level based on the AC parking standards. The applicant is committed to reducing the number of car trips into and out of the Proposed Development during the construction and operational phase.
Operational staff shuttle bus	In order for staff to travel to and from the Proposed Development with the reduced level of parking and limited existing public transport facilities in the immediate vicinity of the application site, a staff shuttle bus service will be provided for staff on-site during the operational phase, the routing of which has yet to be confirmed, but will likely run between Kintore rail station, Aberdeen and the wider network of Park & Ride sites, and the application site.
Construction staff shuttle bus / coach	It is estimated that at the peak of construction activities, there will be in the order of 1,400 staff per day on site, working across all elements. In order to reduce the potential impact of construction staff traveling to and from the application site, it is proposed that they would be transported in coaches from one or more off-site locations. For the purpose of this assessment, it has been assumed that they would travel in 50 seat coaches via the A96 from the Aberdeen area. Confirmation on the exact location of the transfer point(s) would be provided post-consent and agreed with AC. The applicant has engaged with Aberdeen City Council Passenger Transport Unit (Public Transport) in relation to the use of Park & Ride sites and discussions in this regard are ongoing, however based on the current proposals, the proposals would fall within the current permitted use guidance for the Park & Ride sites. See correspondence enclosed in Appendix 9.1. It is considered that the details of the shuttle bus service can be confirmed post consent and secured by condition.
On-site concrete batching	Batching of concrete for use on-site is considered feasible and economic and facilities to enable this are being provided at the Proposed Development. The assessment, has, however, taken into consideration the importation of concrete batching materials, including water. This will result in a reduction of HGV vehicle trips compared to the delivery of ready-mix concrete during the construction phase of the Proposed Development.

3 Baseline environment

3.1 Current baseline

Pedestrian and cycle networks

3.1.1 There are limited pedestrian facilities in the immediate vicinity of the application site, reflecting the rural nature of the site.

3.1.2 Further away from the Proposed Development in the wider study area, there are pedestrian facilities within the larger local settlements, including Kintore and Hatton of Fintray, which are commensurate with the scale of the settlements.

3.1.3 A review of the AC Core Path plan shows a number of Core Path routes within the study area. Those Core Paths either on the study area roads or crossing the roads are summarised below and shown in Volume 3, Appendix 9.1: Transport Assessment, Figure 5.

- 410.01: Castle Road / Castle Walk between the B994 to the south and B987 to the North, 1.77 kilometres (km);
- 41005P: B994 between the B977 to the east and Castle Road junction, 0.68 km;
- 410.05: B977 between the B994 junction and Hallforest Avenue junction, 0.46 km;
- 410.04: Off-road within Cruach Hill, between the B977 and B987, 0.99 km;
- 410.03P: Off-road linking Core Path 410.02 with Core Path 410.032.49 km;
- 402.03: Track linking Kingsfield Road in the north with Core Path 402.04 in Blackburn to the south, 4.33 km;
- 402.01: Path linking Core Path 402.03R in the west with Core Path 402.04 in Blackburn to the west, 1.5 km;
- 402.02R: Road section linking Core Path 402.03 in the south with Core Path 402.02 in the north, 0.25 km;
- 406.01: Predominantly off-road loop in Hill of Hatton Wood in Hatton of Fintry, ties in with the B977, 1.55 km; and
- 408.06: Path linking northern extents of Kintore on the B987 with Port Elphinstone in the north, includes a short section of on-road path (408.06R), 2.83 km.

3.1.4 A review of the Sustrans National Cycle Network (NCN) route map does not show any national cycle routes in the immediate vicinity of the application site. The closest route lies to the east in the vicinity of Aberdeen along the A90 corridor, where sections of NCN route 1 passes. The NCN route 1 connects Aberdeen City to the Highland capital of Inverness and is part of both the long-distance Coasts and Castles route and the North Sea Cycle Route.

3.1.5 With regards to local cycle routes, the AC cycle plan on the AC website indicates that the closest routes to the Proposed Development lie to the west in the vicinity of Kemany and Dunecht. Details of these routes are provided below, while their location can be seen in Volume 3, Appendix 9.1: Transport Assessment, Figure 6.

- The Great Inverurie Bike Ride – 36.1 km; and
- Midmar to Dunecht – 32.3 km.

3.1.6 In addition, there are a small number of combined walking and cycling routes within Kintore, which are designed to simplify walking and cycling within the town. The routes for cycling are a combination of on-road and traffic-free paths, linking key destinations. An extract of the map can be seen in Volume 3, Appendix 9.1: Transport Assessment, Figure 7, while full details of the routes can be sourced from AC.

Study area road network

A96

3.1.7 The A96 is part of the Scottish trunk road network and is managed and maintained by Amey. The road links the cities of Inverness and Aberdeen, beginning at Raigmore Interchange east of Inverness and ending at the Aberdeen Western Peripheral Route Craibstone Junction. The A96 connects a number of communities along the corridor including Nairn, Forres, Elgin, Fochabers, Keith, Huntly, Inverurie and Kintore.

3.1.8 The section of the A96 closest to the Proposed Development is dual carriageway, with two lanes operating in each direction. The speed limit on the A96 varies, however on the section that passes Kintore, the national speed limit for dual carriageways is in place (70 miles per hour (mph)). There are sections where this decreases to 60 mph on single carriageway sections.

3.1.9 The road is considered to be in good condition and maintained to a high standard by Amey.

B987

3.1.10 The B987 is a single carriageway road with one lane operating in each direction, running from its junction with the A96 at the north of Kintore to its junction with the A96

to the south of Kintore. The road is mainly subject to a 30 mph speed limit, with the exception of a temporary 20 mph speed limit along the frontage of the Kintore Primary School and at the southern extents of the town where there is a short section that is 40 mph.

3.1.11 The road is generally considered to be in good condition and is maintained by AC.

B994

3.1.12 The B994 is a single carriageway road with one lane operating in each direction, running from its junction with the B987 in Kintore to the east and its junction with the B993 in Kemnay to the west. The road is mainly subject to the national speed limit, with the exception of the section between Kintore and the B977 / B994 roundabout where a 40 mph speed limit is in place.

3.1.13 The road is generally considered to be in good condition and is maintained by AC.

B977

3.1.14 The B977 is a single carriageway road with one lane operating in each direction, running from its junction with the A980 at Raemoir, to its junction with the A975 to the south of Newburgh. The road is mainly subject to the national speed limit in rural areas, reducing to 40, 30 or 20 mph in towns and villages, for example Hatton of Fintray, Balmedie, Kintore and Leylodge.

3.1.15 The road is generally considered to be in good condition and is maintained by AC.

Unclassified road between the B977 and Bogfold

3.1.16 The unclassified road where the permanent access for the Proposed Development will be located runs from the B977, passing Bogfold before terminating at Lauchintilly. The road is a single track road with passing places, providing access to individual properties and land used for agricultural purposes. The road is subject to the national speed limit for the most part, with the exception of a short section at its junction with the B977, where it reduces to 40 mph.

3.1.17 The road is generally considered to be in a reasonable condition and is maintained by AC.

Hawthorne Cottage

3.1.18 Hawthorne Cottage runs parallel to the A96 and ties in to the A96 Kinellar Roundabout at its eastern extents and to Marshall's Farm Shop at its western extents. Beyond this is provides access to Broomhill Plantation and online imagery suggests that the road through this section is private. The road is subject to the national speed limit.

3.1.19 The road is generally considered to be in a reasonable condition and is maintained by AC for the most part.

Unclassified road between the A96 past Boghead Farm House

3.1.20 The short section of unclassified road is accessed from the A96 and provides access to a section of Hawthrone Cottage and the associated land uses at this location. The junction operates as a left in, left out only. The adopted section of the road is approximately 40 m in length and beyond this is private, providing access to land used for agricultural purposes.

Kirkton Cottages

3.1.21 Kirkton Cottages runs from its junction with Hawthorn Cottage in the south to its junction with The Rushlach in the north for a distance of approximately 2.1 km. The road is a single track road with passing places, providing access to individual properties and land used for agricultural purposes. The road is subject to the national speed limit.

3.1.22 The road is generally considered to be in a reasonable condition and is maintained by AC.

The Rushlach

3.1.23 The Rushlach runs from its junction with Kirkton Cottages at its eastern extents to east of Kintore, where it becomes Kingsfield Road, running parallel to the River Don. The road is a single track road with passing places, providing access to individual properties and land used for agricultural purposes. The road is subject to the national speed limit.

3.1.24 The road is generally considered to be in a reasonable condition and is maintained by AC.

Unclassified road between Cairntradlin and Kirkton Cottages to the B979

3.1.25 The unclassified road between Cairntradlin and the B979 is a short section of single track road with passing places, approximately 930 m in length, providing access to individual properties and land used for agricultural purposes. The road is subject to the national speed limit.

3.1.26 The road is generally considered to be in a reasonable condition and is maintained by AC.

B979

3.1.27 The B979 road is broken up in to a number of sections across its length. Within the study area, the B979 is a single carriageway road with one lane operating in each direction, running from its junction with the A96 in Blackburn to its junction with the

B977 in Hatton of Fintray. The road is mainly subject to the national speed limit in rural areas, reducing to 20 or 30 mph in towns and villages, for example Hatton of Fintray and Blackburn.

3.1.28 The road is generally considered to be in good condition and is maintained by AC.

General road suitability

3.1.29 A number of the roads within the study area form part of the agreed route network used for the extraction of timber and are therefore regularly used by heavy goods vehicle (HGV) traffic. This includes the A96, which is an 'Agreed Route'.

3.1.30 The Agreed Timber Route Map[19] has been developed by The Timber Transport Forum who are a partnership of the forestry and timber industries, local government, national government agencies, timber hauliers and road and freight associations. One of the key aims of the forum is to minimise the impact of timber transport on the public road network, on local communities and the environment and a way of achieving this is to categorise the roads leading to forest areas in terms of their capacity to sustain the likely level of timber haulage vehicles i.e., HGVs. The routes are categorised into four groups, namely; 'Agreed Routes', 'Consultation Routes', 'Severely Restricted Routes' and 'Excluded Routes'.

3.1.31 'Agreed Routes' are categorised as routes used for timber haulage without restriction as regulated by the Road Traffic Act 1988. A-roads are classified as 'Agreed Routes' by default unless covered by one of the other road classifications. Those links classed as 'Consultation Routes' are categorised as a route which is key to timber extraction, but which are not up to 'Agreed Route' standard. Consultation with the local authority is required, and it may be necessary to agree limits of timing, allowable tonnage etc. before the route can be used. B-roads are classified as 'Consultation Routes' by default unless covered by one of the other classifications. 'Severely Restricted Routes' are not normally to be used for timber transport in their present condition. These routes are close to being Excluded Routes. Consultation with the local authority is required prior to use. Finally, 'Excluded Routes' should not be used for timber transport in their present condition. These routes are either formally restricted, or are close to being formally restricted, to protect the network from damaging loads.

Existing traffic conditions

3.1.32 In order to assess the impact of development traffic on the study area, ATC sites were established in April 2024 and June 2024. The ATC surveys were conducted over a 7-day period, recording vehicle classifications, direction of travel and speeds. The count sites were as follows:

- B987 to the south of the B994 junction;
- B994 to the west of the B987 junction;
- B977 to the north of Leylodge;
- Hawthorne Cottage to the east of Heathland Park junction;
- Kirkton Cottages to the north of Old Turnpyke Road junction;
- B979 to the north of Blackburn;
- B979 to the south of Hatton of Fintray to B977 at the A90;
- The Rushlach to the west of Wood Cottage; and
- Unclassified road between the B977 and Bogfold.

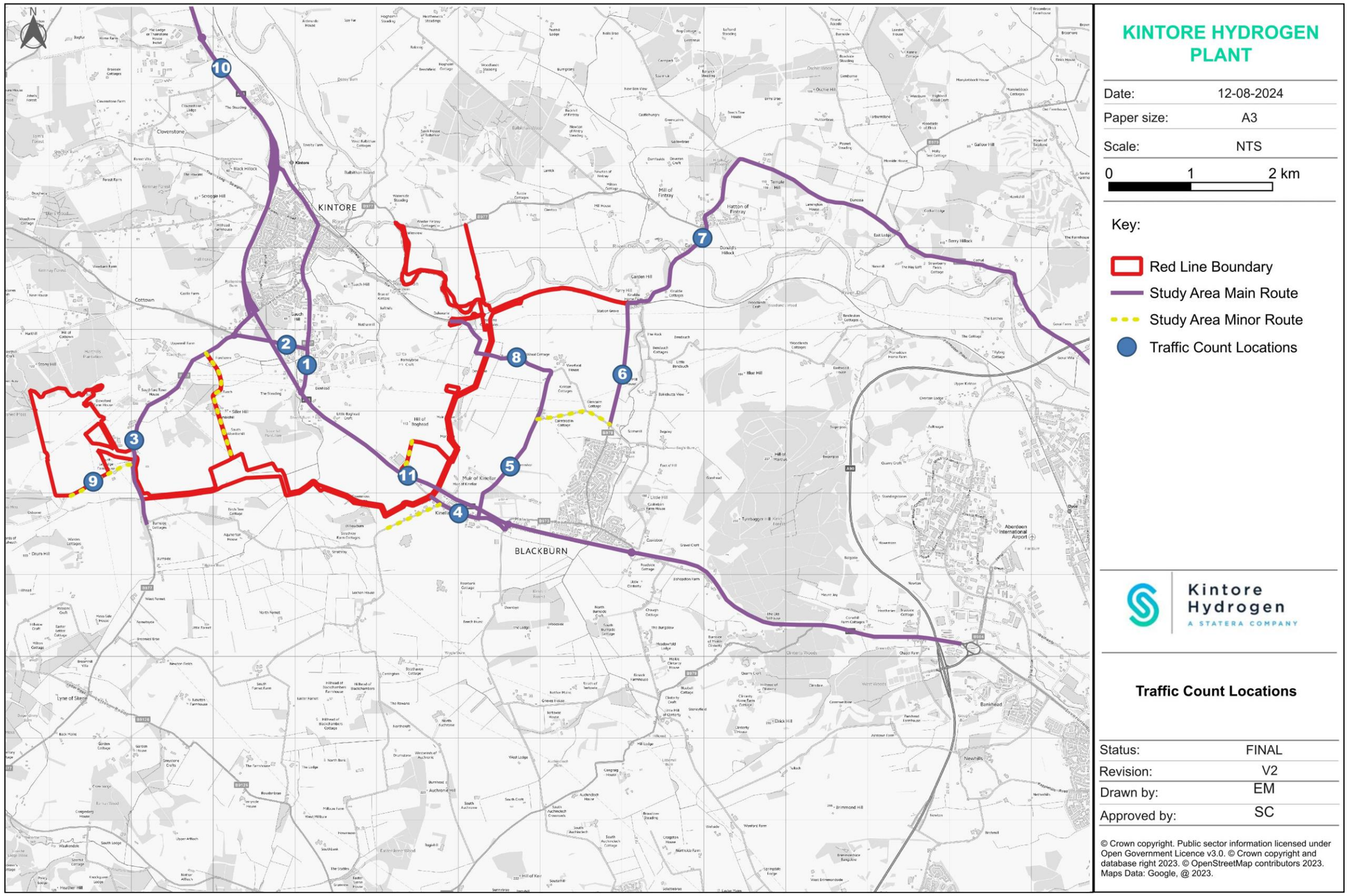
3.1.33 In addition to the ATC data, further traffic count data was obtained from the DfT database. With regards to the traffic data obtained from this database, 2019 has been used. The traffic data allow the traffic flows to be split into vehicle classes. The data was summarised into Cars / Light Goods Vehicles (LGVs) and HGVs (all goods vehicles >3.5 tonnes gross maximum weight).

3.1.34 Traffic data has been used for the following locations:

- A96 to the north of Kintore (DfT ref. 50784); and
- A96 to the south of Kintore (DfT ref. 20784).

3.1.35 A NRTF low growth factor was applied to the DfT data, to bring the traffic data up to the base year of 2024. The NRTF low growth factor for 2019 to 2024 is 1.033.

3.1.36 The location of the ATC traffic surveys and DfT traffic count points are presented in Figure 3.1 while Table 3.1 summarises the Annual Average Daily Traffic (AADT) data collected and used in this assessment.



KINTORE HYDROGEN PLANT

Date:	12-08-2024
Paper size:	A3
Scale:	NTS

0 1 2 km

Key:

- Red Line Boundary
- Study Area Main Route
- Study Area Minor Route
- Traffic Count Locations

Kintore Hydrogen
A STATERA COMPANY

Traffic Count Locations

Status:	FINAL
Revision:	V2
Drawn by:	EM
Approved by:	SC

Figure 3.1: Traffic count locations

Table 3.1: 24-hour average traffic data (2024)

Survey Location	Cars/LGV	HGV	Total
B987 to the south of the B994 junction	7,365	1,311	8,676
B994 to the west of the B987 junction	4,057	842	4,898
B977 to the north of Leylodge	2,280	622	2,902
Hawthorne Cottage to the east of Heathland Park junction	685	249	934
Kirkton Cottages to the north of Old Turnpyke Road junction	113	44	158
B979 to the north of Blackburn	756	176	933
B979 to the south of Hatton of Fintray to B977 at the A90	799	155	954
The Rushlach to the west of Wood Cottage	64	22	87
Unclassified road between the B977 and Bogfold	127	34	160
A96 to the north of Kintore	27,943	1,263	29,206
A96 to the south of Kintore	27,392	1,208	28,600

Please note that variances may occur due to rounding.

3.1.37 As noted above the ATCs undertaken to inform the study also collected speed data and a summary of this can be seen in Table 3.2.

Table 3.2: Speed summary

Survey location	Data source	Mean speed (mph)	85%ile speed (mph)	Speed limit (mph)
B987 to the south of the B994 junction	ATC	34.8	39.9	40
B994 to the west of the B987 junction	ATC	39.2	45.2	40
B977 to the north of Leylodge	ATC	38.1	42.5	40
Hawthorne Cottage to the east of Heathland Park junction	ATC	39.3	46.7	60
Kirkton Cottages to the north of Old Turnpyke Road junction	ATC	33.6	40.6	60
B979 to the north of Blackburn	ATC	50.9	58.7	60
B979 to the south of Hatton of Fintray to B977 at the A90	ATC	28.6	34.4	20
The Rushlach to the west of Wood Cottage	ATC	33.3	40.3	60
Unclassified road between the B977 and Bogfold	ATC	34.6	41.1	60
A96 to the north of Kintore	DfT	No data available		70
A96 to the south of Kintore	DfT			70

3.1.38 The speed survey data indicates that speed limits are broadly being adhered to within the study area. At locations where the recorded speeds are significantly over the posted speed limit, Police Scotland may wish to consider enforcement spot checks in these areas as part of their wider road policing measures.

3.1.39 Issues around speeding and safety in the vicinity of the Proposed Development site at additional locations within the study area have been raised by local residents. As such an additional ATC was undertaken on the B977 in the vicinity of the junction to Uppermill Farm in June 2024. A summary of the recorded speed information is provided in Table 3.3 below.

Table 3.3: B977 speed summary

Survey location	Data source	Mean speed (mph)	85%ile speed (mph)	Speed limit (mph)
B977 in the vicinity of the junction to Uppermill Farm	ATC	45.2	50.9	60

3.1.40 The speed survey data for this location indicates that the posted speed limit is being adhered to, with both the mean speed and 85%tile speed below the posted speed limit of 60 mph.

Accident review

3.1.41 Personal Injury Accident (PIA) data for the five-year period covering 2018 to 2022 for the local road network has been obtained from CrashMap. This covers the roads leading through to the main electrolysis plant site development area, the above-ground installation (AGI) for the hydrogen pipeline connection, construction compounds and areas used for the construction of the pipeline route corridors.

3.1.42 Transport Assessment Guidance requires an analysis of the PIA on the road network in the vicinity of any development to be undertaken for at least the most recent three-year period, or preferably a five-year period, particularly if the site has been identified as being within a high accident area. Whilst the study area has not been identified as having a high accident rate, a five-year review has been undertaken to ensure a comprehensive assessment has been undertaken.

3.1.43 The statistics are categorised into three categories, namely “Slight” for damage only incidents, “Serious” for injury accidents and “Fatal”, for those accidents that result in a death. The locations and severity of the recorded accidents are summarised in Table 3.4 while Figure 3.2 shows their locations.

Table 3.4: Personal injury accident summary

Survey location	Slight	Serious	Fatal	HGV incidents
B987 to the south of the B994 junction	0	0	0	0
B994 to the west of the B987 junction	1	0	0	0
B977 to the north of Leylodge	0	0	0	0
Hawthorne Cottage to the east of Heathland Park junction	0	0	0	0
Kirkton Cottages to the north of Old Turnpyke Road junction	0	0	0	0
B979 to the north of Blackburn	0	0	0	0
B979 to the south of Hatton of Fintray to B977 at the A90	0	0	1	0
The Rushlach to the west of Wood Cottage	0	0	0	0
Unclassified road between the B977 and Bogfold	0	0	0	0
Total	**1**	**0**	**1**	**0**
Percentage	**50%**	**0**	**50%**	**-**

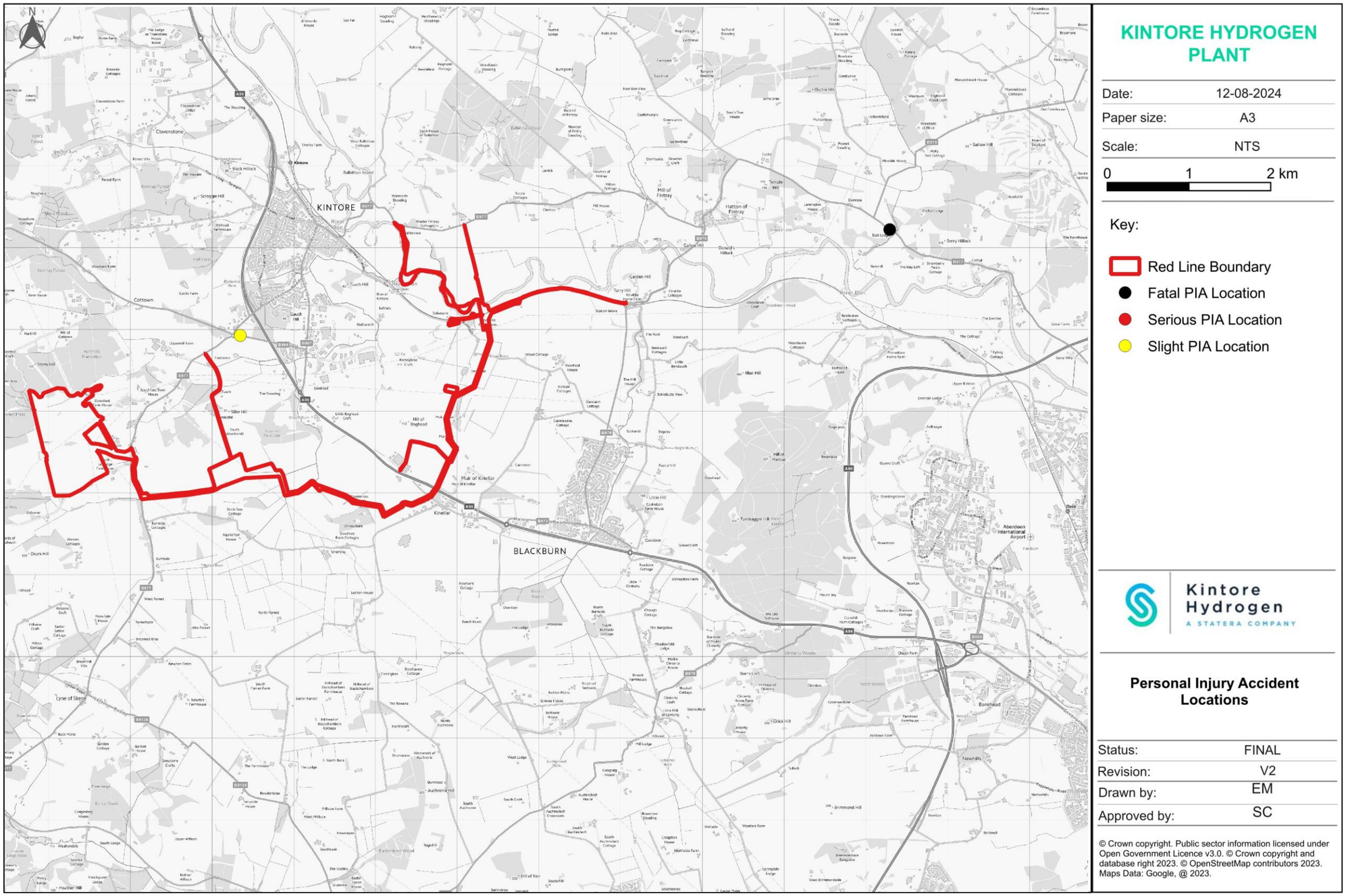


Figure 3.2: PIA locations

3.1.44 A summary analysis of the incidents indicates that:

- A total of two PIAs were recorded on the local road network leading through to areas of proposed development works within the last five-year period.
- Of those two PIAs, one was classified as “Slight” (50%) and one was classified as “Fatal” (50%).
- No PIAs recorded involved a cyclist or pedestrian.
- No PIAs recorded involved a motorcycle, HGV or young driver.
- The “Slight” PIA was recorded in February (winter) and was a two vehicle accident (cars) and occurred on approach to a roundabout.
- The “Fatal” PIA was recorded in November (winter) and was a single vehicle accident (car) and occurred on approach to a bend where there was also a change in the vertical alignment of the carriageway.

3.1.45 There are no clusters of PIAs at any location or high numbers of accidents involving HGVs for example on the local road network. Based on the information available, it has been established that there are no specific road safety issues within the immediate vicinity of the application site that currently require to be addressed or would be exacerbated by the construction of the Proposed Development. The recorded accidents occurred on or in the approach to bends on the carriageway or in the vicinity of junctions, where there is an increased level of vehicle interaction.

3.2 Future baseline

2026 construction phase traffic flows

3.2.1 Construction of the Proposed Development could commence during 2026 if consent is granted and is anticipated to take 36-48 months for the first phase, depending on weather conditions and ecological considerations, which would allow for commissioning by 2029/30.

3.2.2 Depending on the number of subsequent construction phases, these may each be of a shorter duration or a single further construction phase of around 36 months’ duration to deliver all the remaining capacity. Overall, completion of all construction is anticipated by the early 2030s. As set out above, construction would be intermittent in phases during the 2026 to early 2030s period.

3.2.3 To assess the likely effects during the construction, base year traffic flows were determined by applying an NRTF low growth factor to the surveyed traffic flows and DfT traffic flows. The NRTF low growth factor for 2024 to 2026 is 1.011. This growth factor has been applied to the data to estimate the 2026 Base traffic flows, as shown in Table 3.5. This will be used as the baseline in the Construction Peak Traffic Impact Assessment.

Table 3.5: 24-hour average traffic data (2026)

Survey location	Cars/LGV	HGV	Total
B987 to the south of the B994 junction	7,446	1,325	8,771
B994 to the west of the B987 junction	4,101	851	4,952
B977 to the north of Leylodge	2,305	629	2,934
Hawthorne Cottage to the east of Heathland Park junction	693	252	944
Kirkton Cottages to the north of Old Turnpyke Road junction	114	45	159
B979 to the north of Blackburn	765	178	943
B979 to the south of Hatton of Fintray to B977 at the A90	808	157	965
The Rushlach to the west of Wood Cottage	65	23	88
Unclassified road between the B977 and Bogfold	128	34	162
A96 to the north of Kintore	28,250	1,277	29,527
A96 to the south of Kintore	27,693	1,221	28,914

Please note that variances may occur due to rounding.

3.2.4 In the scenario that the Proposed Development does not proceed, traffic growth will still occur and the links within the study area will experience increased traffic flows resulting from other development pressures, tourism traffic and population flows.

2030 operational phase traffic flows

3.2.5 Following construction starting in 2026, current estimates are that Phase 1 of the Proposed Development could be commissioned by 2029/30.

3.2.6 To assess the likely effects during the operational phase, base year traffic flows were determined by applying a NRTF low growth factor to the 2026 traffic flows. The NRTF low growth factor for 2026 to 2030 is 1.020. This growth factor has been applied to the data to estimate the 2030 base traffic flows, as shown in Table 3.6. This will be used as the baseline in the operational traffic impact assessment for when the whole facility will be operational.

Table 3.6: 24-hour average traffic data (2030)

Survey location	Cars/LGV	HGV	Total
B987 to the south of the B994 junction	7,595	1,352	8,947
B994 to the west of the B987 junction	4,183	868	5,051
B977 to the north of Leylodge	2,351	641	2,992
Hawthorne Cottage to the east of Heathland Park junction	706	257	963
Kirkton Cottages to the north of Old Turnpyke Road junction	117	46	162
B979 to the north of Blackburn	780	182	962
B979 to the south of Hatton of Fintray to B977 at the A90	824	160	984
The Rushlach to the west of Wood Cottage	66	23	89
Unclassified road between the B977 and Bogfold	131	35	165
A96 to the north of Kintore	28,815	1,303	30,118
A96 to the south of Kintore	28,247	1,245	29,493

Please note that variances may occur due to rounding.

4 Assessment of Effects

4.1.1 The assessment of effects has been undertaken prior to any further transport-related mitigation measures in place and is based on the project description as outlined in Chapter 2: Project Description and Site Setting and the embedded mitigation by design. Proposed traffic management and worker travel plans, as further mitigation, are set out within the Transport Assessment at Appendix 9.1.

4.1.2 A review of sensitive receptors has been undertaken within the study area. Table 4.1: details the receptors and their sensitivities for use within the following assessment. A justification for the sensitivity has been provided, based upon the details contained in Table 2.3.

Table 4.1: Receptor sensitivity summary

Receptor	Sensitivity	Justification
B987 Users	Medium	Where the road is a local A or B class road, capable of regular use by HGV traffic.
B994 Users	Medium	Where the road is a local A or B class road, capable of regular use by HGV traffic.
B977 Users	Medium	Where the road is a local A or B class road, capable of regular use by HGV traffic.
Hawthorne Cottage Users	Medium	Where the road is a local A or B class road, capable of regular use by HGV traffic.
Kirkton Cottages Users	High	Where the road is a minor rural road, not constructed to accommodate frequent use by HGVs.
B979 Users	Medium	Where the road is a local A or B class road, capable of regular use by HGV traffic.
The Rushlach Users	High	Where the road is a minor rural road, not constructed to accommodate frequent use by HGVs.
Unclassified road from the A96 past Boghead Farm House Users	High	Where the road is a minor rural road, not constructed to accommodate frequent use by HGVs.
Unclassified road from Cairntradlin on Kirkton Cottages to the B979 Users	High	Where the road is a minor rural road, not constructed to accommodate frequent use by HGVs.
Unclassified road between the B977 and Bogfold Users	High	Where the road is a minor rural road, not constructed to accommodate frequent use by HGVs.
A96 Users	Low	Where the road is Trunk or A-class, constructed to accommodate significant HGV composition.
Residents along B987	Negligible	Where a location includes individual dwellings or scattered settlements with no facilities.
Residents along B994	Negligible	Where a location includes individual dwellings or scattered settlements with no facilities.
Residents along B977	Negligible	Where a location includes individual dwellings or scattered settlements with no facilities.
Residents along Hawthorne Cottage	Negligible	Where a location includes individual dwellings or scattered settlements with no facilities.
Residents along Kirkton Cottages	Negligible	Where a location includes individual dwellings or scattered settlements with no facilities.
Residents along B979	Negligible	Where a location includes individual dwellings or scattered settlements with no facilities.
Residents along The Rushlach	Negligible	Where a location includes individual dwellings or scattered settlements with no facilities.
Residents along Unclassified road from the A96 past Boghead Farm House	Negligible	Where a location includes individual dwellings or scattered settlements with no facilities.
Residents along Unclassified road from Cairntradlin on Kirkton Cottages to the B979	Negligible	Where a location includes individual dwellings or scattered settlements with no facilities.
Residents along Unclassified road between the B977 and Bogfold	Negligible	Where a location includes individual dwellings or scattered settlements with no facilities.
Kintore Residents	High	Where a location is a large rural settlement containing a high number of community and public services and facilities.
Kinellar Residents	Low	Where a location is a small rural settlement, few community or public facilities or services.
Blackburn Residents	High	Where a location is a large rural settlement containing a high number of community and public services and facilities.
Hatton of Fintray Residents	Low	Where a location is a small rural settlement, few community or public facilities or services.
Leylodge Residents	Negligible	Where a location includes individual dwellings or scattered settlements with no facilities.

4.1.3 As previously noted in Section 2.7: Criteria for assessing the sensitivity of receptors, examples of sensitive areas are presented in the 2023 IEMA Guidelines as locations which include hospitals, churches, schools, historical buildings, tourist attractions for example. Based on these indicators which are stated within the 2023 IEMA Guidelines, the following locations have been identified as sensitive receptors in this assessment:

- residents of Kintore, Blackburn and Hatton of Fintray (schools, places of worship, tourist attractions and retail areas);
- Kirkton Cottage (place of worship); and
- path / Core Path users in the immediate vicinity of the application site and on construction access routes (recreational areas).

4.1.4 These locations are therefore subject to 'Rule 2' of the IEMA Guidelines which requires a full assessment of effects if the locations are subject to a total traffic increase of 10% or more. All other locations within the study area are subject to 'Rule 1' and are assessed if total traffic flows (or HGV flows) on highway links increase by more than 30%.

4.2 Potential construction phase effects

4.2.1 The assessment is based upon the construction effects that may occur within the study area. In order to assess the effects, it is necessary to determine the likely traffic generation associated with the Proposed Development.

4.2.2 During the 36 to 48 month construction period, the following traffic will require access to the application site:

- staff transport, in coach or minibuses;
- construction equipment and materials, deliveries of machinery and supplies such as concrete and crushed rock;
- import of fuel for construction plant;
- daily movements associated with servicing a large construction site and compound;
- occasional deliveries of larger items of plant; and
- components relating to the Proposed Development and associated infrastructure.

4.2.3 Average daily traffic flow data was used to establish the construction trips associated with the Proposed Development based on the assumptions detailed in Volume 3, Appendix 9.1: Transport Assessment. It should be noted that there may be variations in the following calculations due to rounding, which are not considered significant.

4.2.4 Daily construction traffic estimates have been developed and are detailed in Volume 3, Appendix 9.1: Transport Assessment. The peak of construction activity occurs in month six of the programme and results in 278 daily movements (139 inbound and 139 outbound movements per day). Of these 278 daily movements, 212 movements are HGVs, which would be bringing equipment, construction materials, components etc. to the application site, 56 movements are associated with construction staff arriving at and departing the application site and the remaining movements are car / LGV movements associated with general site deliveries and visitors.

4.2.5 The distribution of development traffic on the network would vary depending on the types being transported. Full details of the access strategy and distribution of trips is provided in Volume 3, Appendix 9.1: Transport Assessment.

4.2.6 The estimated construction traffic was compared against the future baseline traffic (2026) to estimate the increase in traffic associated with this phase of the Proposed Development. Table 4.2 illustrates the potential traffic impact at the peak of construction activity (Month 6) across the study area.

Table 4.2: Peak construction traffic network impact

Survey Location	Cars/LGV	HGV	Total	Cars/LGV % increase	HGV % increase	Total % increase
B987 to the south of the B994 junction	7,456	1,429	8,885	0.00%	7.83%	1.30%
B994 to the west of the B987 junction	4,111	955	5,066	0.00%	12.21%	2.30%
B977 to the north of Leylodge	2,315	877	3,192	0.00%	39.50%	8.81%
Hawthorne Cottage to the east of Heathland Park junction	693	258	950	0.00%	2.38%	0.63%
Kirkton Cottages to the north of Old Turnpyke Road junction	114	51	165	0.00%	13.33%	3.76%
B979 to the north of Blackburn	765	180	944	0.00%	0.67%	0.13%
B979 to the south of Hatton of Fintray to B977 at the A90	808	157	965	0.00%	0.00%	0.00%
The Rushlach to the west of Wood Cottage	65	27	92	0.00%	21.26%	5.47%
Unclassified road between the B977 and Bogfold	128	34	162	0.00%	0.00%	0.00%
A96 to the north of Kintore	28,250	1,436	29,686	0.00%	12.40%	0.54%
A96 to the south of Kintore	27,703	1,329	29,032	0.00%	8.84%	0.41%

Please note that variances may occur due to rounding.

4.2.7 The highest total traffic movement increase within the study area is on the B977 to the north of Leylodge, where there will be an 8.81% increase, which is where the main site

access will be located for the electrolysis plant element of Kintore Hydrogen Plant and the hydrogen export connection AGI. The next highest total traffic increase (5.47%) is on The Rushlach to the west of Wood Cottage, where access to the pipe corridor and water abstraction area at the River Don.

4.2.8 The total HGV traffic movements will increase by 39.50% on the B977 to the north of Leylodge, where the main site access is located. This is not considered to be a significant increase, with only 248 HGV movements per day predicted, which equates to approximately 25 two-way movements per hour over a typical 10 hour working day. On the rest of the public road network, the highest HGV traffic increase is 21.26% (five HGV movements), which is on The Rushlach to the west of Wood Cottage.

4.2.9 Access to the pipeline corridor will be taken from a number of locations within the study area, including on minor routes, as shown on Figure 3 within Volume 3, Appendix 9.1: Transport Assessment. A review of these locations, which are provided below, has confirmed that the number of construction trips on these links will be minimal and as such no further assessment is considered necessary:

- Unclassified road from the A96 past Boghead Farm House (six HGV movements per day); and
- Unclassified road from Cairntradlin on Kirkton Cottages to the B979 (two HGV movements per day).

4.2.10 It should be noted the construction phase is transitory in nature and the peak of construction activities is short lived, occurring over a relatively short timeframe when taking account of the whole construction programme.

4.2.11 A review of existing theoretical road capacity has been undertaken using the NESA Manual, formerly part of the Design Manual for Roads and Bridges, Volume 15, Part 5. The theoretical road capacity has been estimated for each of the road links that makes up the study area for a 12-hour period. The results are summarised in Table 4.3.

Table 4.3: 2026 theoretical road capacity

Survey location	2026 baseline flow (total traffic)	2026 base + development flows (total traffic)	Theoretical road capacity (12hr)	Spare road capacity %
B987 to the south of the B994 junction	8,771	8,885	19,200	53.72%
B994 to the west of the B987 junction	4,952	5,066	19,200	73.61%
B977 to the north of Leylodge	2,934	3,192	21,600	85.22%
Hawthorne Cottage to the east of Heathland Park junction	944	950	19,200	95.05%
Kirkton Cottages to the north of Old Turnpyke Road junction	159	165	3,360	95.08%
B979 to the north of Blackburn	943	944	19,200	95.08%
B979 to the south of Hatton of Fintray to B977 at the A90	965	965	19,200	94.97%
The Rushlach to the west of Wood Cottage	88	92	3,360	97.25%
Unclassified road between the B977 and Bogfold	162	162	3,360	95.17%
A96 to the north of Kintore	29,527	29,686	72,000	58.77%
A96 to the south of Kintore	28,914	29,032	72,000	59.69%

Please note that variances may occur due to rounding.

4.2.12 The results indicate there are no road capacity issues with the addition of construction traffic associated with the Proposed Development and ample spare capacity exists to accommodate all construction phase traffic.

4.2.13 In accordance with the 2023 IEMA Guidelines Rule 1, where total traffic flows (or HGV flows) on highway links would increase by more than 30% and Rule 2 with regards to sensitive areas within the study area, where total traffic increases of 10% or more, detailed assessments have been undertaken on the following receptors:

- B977 users (medium sensitivity);
- Kintore residents (high sensitivity);
- Users and residents along Kirkton Cottages (high and negligible sensitivity respectively); and

- path / Core Path users in the immediate vicinity of the application site and on construction access routes (high sensitivity).

4.2.14 Given that the majority of construction traffic will access the Proposed Development site via the B977 in the vicinity of a number of standalone properties, the effect on both users of the road and residents could potentially be considered significant notwithstanding the limited magnitude of change from the baseline (discussed above. As such, a combined assessment on the effect of construction traffic has also been undertaken on these receptors to ensure a robust assessment.

4.2.15 The significance of the potential effects on the above receptors has been determined using the rules and thresholds previously outlined in Section 2.9. Table 4.4 summarises the significance of the effect on the receptors for the construction phase. Although proposals for further mitigation are identified in this table (and detailed in the section following it), the effects assessed in Table 4.4 are stated prior to further mitigation.

Table 4.4: Peak construction traffic network impact

Receptor	Potential effect	Magnitude of impact	Significance of effect	Comment
B977 Users and Residents	Severance	Minor	Minor (Not Significant)	The maximum increase in HGV traffic is anticipated to be 39.5% which is due to the low level of existing HGV traffic at this location. The overall increase in traffic is forecast to be only 8.81%. There is a section of Core Path (410.05) on the section of the road in the vicinity of the A96 and as such may be subject to increased use by cyclists and walkers. Appropriate mitigation will be included within the CTMP to ensure potential impacts to cyclist and pedestrians are appropriately mitigated. The majority of the rest of the B977 which will be used by construction traffic has little or no pedestrian facilities. The main site access will be located in the vicinity of residential properties along the B977 and as such they will likely be impacted by construction vehicles entering and exiting the Proposed Development site. While the percentage increases both in terms of HGV traffic and total traffic are not considered significant, appropriate mitigation will be included within the CTMP to ensure any potential impacts on residents are appropriately managed. The effect of severance is therefore considered to be **minor**.
	Driver Delay	Minor	Minor (Not Significant)	When considering the effects purely in numerical terms based on the assessment criteria, there is ample spare capacity on the B977 (85.22%), with the addition of construction traffic. This however does not take cognisance of the character of the road and the potential for other road users to become frustrated at potential delays caused by construction vehicles. There is also the potential for residents of properties along the B977 potentially being affected while trying to enter and exit the road from their properties, again leading to driver frustration. As such, cognisance of HGV traffic would be included within the proposed mitigation measures. The effect on driver delay is therefore considered **minor**.
	Pedestrian Delay	Negligible	Minor / Negligible (Not Significant)	With the exception of the Core Path, there are limited pedestrian facilities located along the B977 within the study area with a negligible impact expected. The effect on pedestrian delay is therefore considered to be **negligible**.
	Non-motorised User Amenity	Moderate	Moderate (**Significant**)	It is estimated that there would be 258 vehicle movements per day during the peak month of construction on the B977. This equates to approximately 26 vehicles per hour over a typical 10 hour working day. Based on the assessment guidance, the magnitude of increase would be unlikely to affect non-motorised user amenity. Nevertheless, as non-motorised users can be vulnerable particularly to HGV traffic and there are no pedestrian/cycle facilities on the B977 in this area, cognisance would be given to the presence of this within the CTMP to ensure that any potential impacts to users are appropriately mitigated. The effect on non-motorised user amenity is therefore considered to be **moderate** to be precautionary and to inform mitigation in the CTMP.

Receptor	Potential effect	Magnitude of impact	Significance of effect	Comment
	Fear & Intimidation	Minor	Minor (Not Significant)	The increase in total traffic would be less than 9% and changes in total traffic flows of less than 30% are considered minor. The change in HGV traffic is however 39.5% and as such cognisance of this will be given in the CTMP, to ensure that any potential impacts are appropriately mitigated. This would apply to both users of the road and residents of properties in close proximity to the site access location. The effect on fear & intimidation is therefore considered to be **minor**.
	Road Safety	Minor	Minor (Not Significant)	No accidents were recorded on the B977 within the study area over the last 5-year period. The character of the road could lead to driver frustration however, and as such, cognisance of HGV traffic movements will be included within the proposed mitigation measures. Therefore the effect of road safety is considered **minor**.
	Large Loads	Moderate	Moderate (**Significant**)	It is anticipated that the Proposed Development will require AIL vehicles to deliver components relating to the transformer, which will be accompanied by escort vehicles and the Police as required. The effect is therefore considered **moderate**.
Kintore Residents	Severance	Minor	Moderate / Minor (Not Significant)	The maximum increase in HGV traffic on any of the roads within Kintore is anticipated to be 39.5%, which is on the B977. The next highest increase within Kintore is on the B994, where a 12.21% increase is predicted. The overall increase in traffic is forecast to be only 8.81% on the B977 and 2.30% on the B994. There is a section of Core Path (410.05) on the B977 in the vicinity of the A96 and as such may be subject to increased use by cyclists and walkers. Appropriate mitigation will be included within the CTMP to ensure potential impacts to cyclist, pedestrians and other vulnerable road users within the town are appropriately mitigated. The effect of severance is therefore considered to be **minor**.
	Driver Delay	Minor	Moderate / Minor (Not Significant)	When considering the effects purely in numerical terms based on the assessment criteria, there is ample spare capacity on the B977 (85.22%), B994 (73.61%) and B987 (53.72%) with the addition of construction traffic. This however does not take cognisance of the character of the roads and the potential for other road users to become frustrated at potential delays caused by construction vehicles. As such, cognisance of HGV traffic would be included within the proposed mitigation measures. The effect on driver delay is therefore considered **minor**.
	Pedestrian Delay	Minor	Moderate / Minor (Not Significant)	There are pedestrian facilities along the B987 and B994 within Kintore. With regards to the B977 there are facilities at its northern extents only. The highest increase would occur on the B977, which would see 258 vehicle movements per day during the peak month of construction. This equates to approximately 26 vehicles per hour over a typical 10 hour working day. On the B987 and B994 there would be an increase of 58 vehicles movements per day. These increases would be unlikely to cause pedestrian delay. Nevertheless, cognisance would be given to the presence of this within the CTMP to ensure that any potential impacts to users are appropriately mitigated. The effect on pedestrian delay is therefore considered to be **minor**.

Receptor	Potential effect	Magnitude of impact	Significance of effect	Comment
	Non-motorised User Amenity	Moderate	Major / Moderate (**Significant**)	The highest increase would occur on the B977, which would see 258 vehicle movements per day during the peak month of construction. This equates to approximately 26 vehicles per hour over a typical 10 hour working day. On the B987 and B994 there would be an increase of 58 vehicles movements per day. These increases would be unlikely to affect non-motorised user amenity. Nevertheless, as non-motorised users can be vulnerable particularly to HGV traffic and there are no pedestrian/cycle facilities on the B977 in this area, cognisance would be given to the presence of this within the CTMP to ensure that any potential impacts to users are appropriately mitigated. The effect on non-motorised user amenity is therefore considered to be **moderate** to be precautionary and to inform mitigation in the CTMP..
	Fear & Intimidation	Minor	Moderate / Minor (Not Significant)	The highest increase in total traffic would be less than 9% and changes in total traffic flows of less than 30% are considered minor. The change in HGV traffic is however 39.5% and as such cognisance of this will be given in the CTMP, to ensure that any potential impacts are appropriately mitigated. The effect on fear & intimidation is therefore considered to be **minor**.
	Road Safety	Minor	Moderate / Minor (Not Significant)	Only one accident has been recorded on the road links within the study area in Kintore, on the B994. This was a slight accident (damage only) and involved two vehicles at a junction. There have been no other No other accidents were recorded in the last 5-year period. The character of the roads could lead to driver frustration however, and as such, cognisance of HGV traffic movements will be included within the proposed mitigation measures. Therefore the effect of road safety is considered **minor**.
	Large Loads	Moderate	Moderate (**Significant**)	It is anticipated that the Proposed Development will require AIL vehicles to deliver components relating to the transformer, which will be accompanied by escort vehicles and the Police as required. The effect is therefore considered **moderate**.
Residents and users along Kirkton Cottages	Severance	Negligible	Minor (Not Significant)	The maximum increase in HGV traffic on Kirkton Cottages in the vicinity of the sensitive receptor (place of worship) is 13.33%. The total traffic increase is 3.76%. Appropriate mitigation will be included within the CTMP to ensure potential impacts to cyclist, pedestrians and other vulnerable road users in the vicinity of the church are appropriately mitigated. The effect of severance is therefore considered to be **minor**.
	Driver Delay	Negligible	Minor (Not Significant)	When considering the effects purely in numerical terms based on the assessment criteria, there is ample spare capacity on Kirkton Cottages (95.05%) with the addition of construction traffic. This however does not take cognisance of the character of the roads and the potential for other road users to become frustrated at potential delays caused by construction vehicles. As such, cognisance of HGV traffic would be included within the proposed mitigation measures. The effect on driver delay is therefore considered **minor**.
	Pedestrian Delay	Negligible	Minor (Not Significant)	There are limited pedestrian facilities located on Kirkton Cottages within the study area. The increase in construction traffic at this location is predicted to be 6 vehicles per day. This increase would be unlikely to cause pedestrian delay. Nevertheless, cognisance would be given to the presence of this within the CTMP to ensure that any potential impacts to users are appropriately mitigated. The effect on pedestrian delay is therefore considered to be **minor**.
	Non-motorised User Amenity	Minor	Moderate / Minor (Not Significant)	The increase in construction traffic at this location is predicted to be 6 vehicles per day. This increase would be unlikely to affect non-motorised user amenity. Nevertheless, cognisance would be given to the presence of this within the CTMP to ensure that any potential impacts to users are appropriately mitigated. The effect on non-motorised user amenity is therefore considered to be **minor**.

Receptor	Potential effect	Magnitude of impact	Significance of effect	Comment
	Fear & Intimidation	Minor	Moderate / Minor (Not Significant)	The increase in total traffic would be less than 4% and changes in total traffic flows of less than 30% are considered minor. The change in HGV traffic is however 13.33% and as such cognisance of this will be given in the CTMP, to ensure that any potential impacts are appropriately mitigated. The effect on fear & intimidation is therefore considered to be **minor**.
	Road Safety	Minor	Moderate / Minor (Not Significant)	No accidents were recorded on Kirkton Cottages within the study area over the last 5-year period. The character of the road could lead to driver frustration however, and as such, cognisance of HGV traffic movements will be included within the proposed mitigation measures. Therefore the effect of road safety is considered **minor**.
	Large Loads	N/A	N/A	AILs will not utilise this section of the study area.
Path / Core Path users in the immediate vicinity of the application site and on construction access routes	Severance	Negligible	Minor (Not Significant)	The presence of construction traffic associated with the Proposed Development, could lead to severance of the path network, or inconvenience to users at certain locations, for example on Kirton Cottages where there are a number of Core Paths, both on-road and off-road. It should however be noted that the maximum increase in HGV traffic on Kirkton Cottages is 13.33%. The total traffic increase is 3.76%. Appropriate mitigation will be included within the CTMP to ensure potential impacts to vulnerable road users and Core Path users appropriately mitigated. The effect of severance is therefore considered to be **minor**.
	Driver Delay	N/A	N/A	N/A
	Pedestrian Delay	Negligible	Minor (Not Significant)	Pedestrians could experience delays if their movements interact with construction traffic, for example at crossing points on Kirkton Cottages. It should however be noted that the maximum increase in HGV traffic on Kirkton Cottages is 13.33%. The total traffic increase is 3.76%. Appropriate mitigation will be included within the CTMP to ensure potential impacts to vulnerable road users and Core Path users appropriately mitigated. The effect of severance is therefore considered to be **minor**.
	Non-motorised User Amenity	Minor	Moderate / Minor (Not Significant)	The increase in construction traffic where the Core Paths cross the public road is predicted to be 6 vehicles per day. This increase would be unlikely to affect non-motorised user amenity. Nevertheless, cognisance would be given to the presence of this within the CTMP to ensure that any potential impacts to users are appropriately mitigated. The effect on non-motorised user amenity is therefore considered to be **minor**.
	Fear & Intimidation	Minor	Moderate / Minor (Not Significant)	The increase in total traffic would be less than 4% where the Core Paths cross the public road and changes in total traffic flows of less than 30% are considered minor. The change in HGV traffic is however 13.33% and as such cognisance of this will be given in the CTMP, to ensure that any potential impacts are appropriately mitigated. The effect on fear & intimidation is therefore considered to be **minor**.
	Road Safety	Minor	Moderate / Minor (Not Significant)	There is potential to impact the safety of the path users interacting with construction delivery vehicles, however the increase in construction traffic is minimal. Cognisance of path users will be given in the CTMP, to ensure that any potential impacts are appropriately mitigated. Therefore the effect of road safety is considered **minor**.

Receptor	Potential effect	Magnitude of impact	Significance of effect	Comment
	Large Loads	Moderate	Moderate (**Significant**)	It is anticipated that the Proposed Development will require AIL vehicles to deliver components relating to the transformer, which will be accompanied by escort vehicles and the Police as required to manage this safely. There is potential for path users to interact with AILs on the B977 at its northern extents in Kintore. Standard control measures in place through escorts and Police management, where required, limit the potential severity of any effect. The effect is therefore considered **moderate**.

4.2.16 The assessment of significance suggests that the following receptors are likely to experience significant effects, prior to the application of further mitigation measures:

- B977 users and residents;
- Kintore residents; and
- path / Core Path users in the immediate vicinity of the application site and on construction access routes.

4.2.17 It should be noted that the impacts assessed above relate solely to the peak of construction activities and that the peak construction period is short lived with the effects being transitory in nature. Whilst it is acknowledged that other months within the construction programme may cause significant effects, these would be less than those assessed and for which further mitigation measures have been proposed.

Further mitigation or enhancement

Construction Traffic Management Plan (CTMP)

4.2.18 The CTMP would be agreed with AC and Transport Scotland prior to construction works commencing, with proposed measures to be included provided below. These are additional to the embedded mitigation of providing a coach transport service for construction workers.

4.2.19 The following measures would be implemented during the construction phase through the CTMP:

- where possible, the detailed design process would minimise the volume of material to be imported to the application site to help reduce HGV numbers;
- a site worker transport and travel arrangement plan, including transport modes to and from the worksite (including pick up and drop off times);
- a Transport Management Plan for abnormal indivisible loads (AIL) deliveries (if required following detailed design);
- all materials delivery lorries (dry materials) should be sheeted to reduce dust and stop spillage on public roads;
- specific training and disciplinary measures should be established to ensure the highest standards are maintained to prevent construction vehicles from carrying mud and debris onto the carriageway;
- wheel cleaning facilities may be established at the site entrances, depending on the views of AC and Transport Scotland;
- normal site delivery hours would be limited to between 0800 and 1800 Monday to Saturday;
- appropriate traffic management measures would be put in place on the on the roads leading through to all proposed access locations to avoid conflict with general traffic, subject to the agreement of AC. Typical measures would include HGV turning and crossing signs and / or banksmen at the site accesses and warning signs;
- provide construction updates on the project website and or a newsletter to be distributed to residents within an agreed distance of the application site;
- adoption of a voluntary reduced speed limits for site operatives / deliveries at locations to be agreed with AC and Transport Scotland;
- all drivers would be required to attend an induction to include:
  - a toolbox talk safety briefing;
  - the need for appropriate care and speed control;
  - a briefing on driver speed reduction agreements (to slow site traffic at sensitive locations through the villages); and
  - identification of the required access routes and the controls to ensure no departure from these routes.

4.2.20 AC are likely to request that an agreement to cover the cost of abnormal wear on the roads in the vicinity of the Proposed Development.

4.2.21 Video footage of the pre-construction phase condition of the construction vehicles route would be recorded to provide a baseline of the condition of the road prior to any construction work commencing. This baseline would provide evidence of any change in the road condition during the construction phase. Any necessary repairs would be coordinated with AC. Any damage caused by traffic associated with the proposed development during the construction period, which would be hazardous to public traffic, would be repaired immediately.

4.2.22 Damage to road infrastructure caused directly by construction traffic would be remediated, and street furniture that is removed on a temporary basis would be fully reinstated.

4.2.23 There would be a regular road review, and any debris and mud would be removed from the carriageway using an on-site road sweeper to ensure road safety for all road users.

Construction Staff Travel Plan

4.2.24 A Staff Travel Plan will be deployed where necessary, to manage the arrival and departure profile of staff and to encourage sustainable modes of transport. As stated in the embedded mitigation, it is proposed that all construction staff will travel to the application site in coaches from an off-site transfer point, thus reducing the potential impact of vehicular trips on the local road network. Other additional measures for a Staff Travel Plan could include:

- appointment of a Travel Plan Coordinator (TPC);
- provision of public transport information;
- additional mini-bus service for transport of site staff from Kintore rail station, should they not use the proposed coach service; and
- car parking management.

Abnormal Load Transport Management Plan (if required)

4.2.25 There are a number of traffic management measures that could help reduce the effect of AIL traffic.

4.2.26 All abnormal load deliveries would be undertaken at appropriate times (to be discussed and agreed with the local authority and police) with the aim to minimise the effect on the local road network. It is likely that the abnormal load convoys would travel in the early morning periods before peak times while general construction traffic would generally avoid the morning and evening peak periods.

4.2.27 The majority of potential conflicts between construction traffic and other road users will occur with abnormal load traffic. General construction traffic is not likely to come into conflict with other road users as the vehicles are smaller and road users are generally more accustomed to them.

4.2.28 Advance warning signs would be installed on the approaches to the affected road network. Information signage could be installed to help assist drivers. Flip up panels would be used to mask over days where convoys would not be operating. When no convoys are moving, the sign would be bagged over by the Traffic Management contractor.

4.2.29 This signage will assist in helping improve driver information and allow other road users to consider alternative routes or times for their journey (where such options exist).

4.2.30 The location and numbers of signs would be agreed post consent and would form part of the Traffic Management Proposal for the project.

4.2.31 The Abnormal Load Transport Management Plan would also include:

- procedures for liaising with the emergency services to ensure that police, fire and ambulance vehicles are not impeded by the loads. This is normally undertaken by informing the emergency services of delivery times and dates and agreeing communication protocols and lay over areas to allow overtaking;
- a diary of proposed delivery movements to liaise with the communities to avoid key dates such as local events;
- a protocol for working with local businesses to ensure the construction traffic does not interfere with deliveries or normal business traffic; and
- proposals to establish a construction liaison group to ensure the smooth management of the project / public interface with the applicant, the construction contractors, the local community, and if appropriate, the police forming the committee. This committee would form a means of communicating and updating on forthcoming activities and dealing with any potential issues arising.

Public Information

4.2.32 Information on the AIL convoys would be provided to local media outlets such as local papers and local radio to help assist the public.

4.2.33 Information would relate to expected vehicle movements from the POE through to the site access junction. This will assist residents becoming aware of the convoy movements and may help reduce any potential conflicts.

4.2.34 The applicant would also ensure information was distributed through its communication team via the project website, local newsletters, and social media.

Convoy system

4.2.35 A police escort would be required to facilitate the delivery of the predicted AILs. The police escort would be further supplemented by a civilian pilot car to assist with the escort duty. It is proposed that an advance escort would warn oncoming vehicles ahead of the convoy, with one escort staying with the convoy at all times. The escorts and convoy would remain in radio contact at all times where possible.

4.2.36 The abnormal loads convoys would be no more than three AIL long, or as advised by the police, to permit safe transit along the delivery route and to allow limited overtaking opportunities for following traffic where it is safe to do so.

4.2.37 The times in which the convoys would travel will need to be agreed with Police Scotland who have sole discretion on when loads can be moved.

On-site measures delivered using a Path Management Plan (PMP)

4.2.38 Consideration has been given to pedestrians and cyclists alike due to potential interactions between construction traffic and users of the paths and public roads. If required, a Path Planning Study will be conducted post consent and will be secured through a planning condition. Findings from the study will be used to formulate a set of measures into a Path Management Plan (PMP).

4.2.39 Users of the Core Paths and other paths in the vicinity of the Proposed Development and the various access routes and access gates will be separated from construction traffic through the use of barriers. Crossing points will be provided where required, with path users having right of way. Appropriate Traffic Signs Manual Chapter 8[20] compliant temporary road signage would be provided to assist at these crossing for the benefit of all users.

4.2.40 The principal contractor will ensure that speed limits are always adhered to by their drivers and associated subcontractors. This is particularly important within close proximity to the Core Paths and at crossing points. Advisory speed limit signage will also be installed on approaches to areas where path users may interact with construction traffic.

4.2.41 Signage will be installed on the application site exit that makes drivers aware of local speed limits and reminding drivers of the potential presence of pedestrians and cyclists in the area. This will also be emphasised in the weekly toolbox talks.

4.2.42 No scoping response has been received from The British Horse Society, however measures implemented on similar schemes will be given consideration as part of the Proposed Development. These measures are predominantly focused around the interactions between HGV traffic and horses. Horses are normally nervous of large vehicles, particularly when they do not often meet them. Horses are flight animals and will run away in panic if really frightened. Riders will do all they can to prevent this but, should it happen, it could cause a serious accident for other road users, as well as for the horse and rider.

4.2.43 The main factors causing fear in horses in this situation are:

- something approaching them, which is unfamiliar and intimidating;
- a large moving object, especially if it is noisy;
- lack of space between the horse and the vehicle;
- the sound of air brakes; and
- anxiety on the part of the rider.

4.2.44 The British Horse Society has previously recommended the following actions that will be included in the site training for all HGV staff:

- on seeing riders approaching, drivers must slow down and stop, minimising the sound of air brakes, if possible;
- if the horse still shows signs of nervousness while approaching the vehicle, the engine should be shut down (if it is safe to do so);
- the vehicle should not move off until the riders are well clear of the back of the HGV;
- if drivers are wishing to overtake riders, please approach slowly or even stop in order to give riders time to find a gateway or lay by where they can take refuge and create sufficient space between the horse and the vehicle. Because of the position of their eyes, horses are very aware of things coming up behind them; and
- all drivers delivering to the application site must be patient. Riders will be doing their best to reassure their horses while often feeling a high degree of anxiety themselves.

Residual effects

4.2.45 Residual effects on traffic and access are assessed following the incorporation of the identified mitigation measures above.

4.2.46 With the further mitigation, the impacts and the resulting magnitude of effect to the receptors of high sensitivity are considered to the reduced to minor, with the residual effects therefore being:

- B977 users (**not significant**);
- Kintore residents (**not significant**); and
- path / Core Path users in the immediate vicinity of the application site and on construction access routes (**not significant).**

4.2.47 A summary of the assessment of residual effects, including the proposed mitigation measures is presented in Table 6.1.

4.2.48 The assessment confirms temporary construction phase effects would be minor in nature and they will be not significant, following the implementation of a comprehensive CTMP, together with appropriate signage and path management plan (if required). The traffic effects would be transitory in nature and appropriate mitigation measures are proposed to reduce the potential impacts. No long-term detrimental transport or access issues would be associated with the construction phase of the Proposed Development.

Future monitoring

4.2.49 Monitoring of traffic during the construction phase would be as proposed above, within the CTMP.

4.3 Operational phase

4.3.1 The assessment is based upon the construction effects that may occur within the study area. In order to assess the effects, it is necessary to determine the likely traffic generation associated with the Proposed Development whilst operational.

4.3.2 It is estimated that up to 120 staff could be on-site during a typical day shift when the whole site is fully operational. It is proposed that parking within the Proposed Development will be limited to 40 spaces, with the applicant committed to reducing the number of vehicular trips to and from the site associated with single occupancy staff trips.

4.3.3 It is proposed that a shuttle bus service (likely to be a 30 seater) will be provided for staff on-site, the routing of which has yet to be confirmed, but will likely run between Kintore rail station, Aberdeen and the wider network of Park & Rides sites, and the Application site. Other options under consideration include home pick up and drop offs for employees who live close to the Proposed Development.

4.3.4 The applicant has engaged with Aberdeen City Council Passenger Transport Unit (Public Transport) in relation to the use of Park & Ride sites and discussions in this regard are ongoing, however based on the current proposals, the proposals would fall within the current permitted use guidance for the Park & Ride sites.

4.3.5 It is considered that the details of the shuttle bus service can be confirmed post consent and secured by condition and the applicant is committed to providing this in perpetuity while the Proposed Development is operational.

4.3.6 Daily traffic flow data were used to establish the operational trips associated with the Proposed Development based on the assumptions detailed in Volume 3, Appendix 9.1: Transport Assessment.

4.3.7 The traffic generation during the operational phase, suggests that up to 54 two-way vehicle movements (27 inbound and 27 outbound) would occur in a typical AM and PM peak hour.

4.3.8 An allowance has also been made for regular visitors and general deliveries to the Proposed Development during the day shift. For the purposes of the assessment, a total of 16 vehicle movements have been included (eight inbound and eight outbound), which would occur throughout the day.

4.3.9 Over the course of a typical day, it is estimated that there would be a total of 124 two-way vehicle movements comprising day and night shift staff, travelling by car and staff shuttle bus and daily visitors and deliveries.

4.3.10 Full details of the access strategy and distribution of trips is provided in Volume 3, Appendix 9.1: Transport Assessment.

4.3.11 The typical operational traffic data was combined with the future year (2030) traffic to estimate the increase in traffic associated with this phase of the Proposed Development. Table 4.5 illustrates the potential traffic impact at the peak of operational activity across the study area.

Table 4.5: Peak operational traffic network impact

Survey location	Cars/LGV	HGV	Total	Cars/LGV % increase	HGV % increase	Total % increase
B987 to the south of the B994 junction	7,653	1,352	9,005	0.76%	0.00%	0.65%
B994 to the west of the B987 junction	4,241	868	5,109	1.39%	0.00%	1.15%
B977 to the north of Leylodge	2,475	641	3,116	5.27%	0.00%	4.14%

Survey location	Cars/LGV	HGV	Total	Cars/LGV % increase	HGV % increase	Total % increase
Hawthorne Cottage to the east of Heathland Park junction	706	257	963	0.00%	0.00%	0.00%
Kirkton Cottages to the north of Old Turnpyke Road junction	117	46	162	0.00%	0.00%	0.00%
B979 to the north of Blackburn	780	182	962	0.00%	0.00%	0.00%
B979 to the south of Hatton of Fintray to B977 at the A90	824	160	984	0.00%	0.00%	0.00%
The Rushlach to the west of Wood Cottage	66	23	89	0.00%	0.00%	0.00%
Unclassified road between the B977 and Bogfold	255	35	289	94.79%	0.00%	74.95%
A96 to the north of Kintore	28,873	1,303	30,176	0.20%	0.00%	0.19%
A96 to the south of Kintore	28,305	1,245	29,551	0.21%	0.00%	0.20%

Please note that variances may occur due to rounding.

4.3.12 Across a typical day it is estimated that there could be in the order of 124 two way vehicle movements including staff journeys and visitors / general site deliveries. This would equate to a 4.14% increase on the B977 to the north of Leylodge, which is within typical daily traffic flow variations on the road network. On the unclassified road between the B977 and Bogfold from which operational access will be taken, the potential increase on traffic at this location is predicted to be 74.95%, which while statistically significant is due to the existing low levels of traffic using this road. A total of 124 two-way vehicle movements are predicted over the course of a typical day, which is not considered significant in traffic terms.

4.3.13 A review of existing theoretical road capacity has been undertaken using the NESA Manual, formerly part of the Design Manual for Roads and Bridges, Volume 15, Part 5. The theoretical road capacity has been estimated for each of the road links for a 12-hour period that makes up the study area. The results are summarised in Table 4.6.

Table 4.6: 2030 Theoretical road capacity

Survey location	2030 baseline flow (total traffic)	2030 base + development flows (total traffic)	Theoretical road capacity (12hr)	Spare road capacity %
B987 to the south of the B994 junction	8,947	9,005	19,200	53.10%
B994 to the west of the B987 junction	5,051	5,109	19,200	73.39%
B977 to the north of Leylodge	2,992	3,116	21,600	85.57%
Hawthorne Cottage to the east of Heathland Park junction	963	963	19,200	94.98%
Kirkton Cottages to the north of Old Turnpyke Road junction	162	162	3,360	95.16%
B979 to the north of Blackburn	962	962	19,200	94.99%
B979 to the south of Hatton of Fintray to B977 at the A90	984	984	19,200	94.87%
The Rushlach to the west of Wood Cottage	89	89	3,360	97.34%
Unclassified road between the B977 and Bogfold	165	289	3,360	91.39%
A96 to the north of Kintore	30,118	30,176	72,000	58.09%
A96 to the south of Kintore	29,493	29,551	72,000	58.96%

Please note that variances may occur due to rounding.

4.3.14 The results indicate there are no road capacity issues with the addition of operation traffic associated with the Proposed Development and ample spare capacity exists to accommodate all operational phase traffic.

4.3.15 In accordance with the 2023 IEMA Guidelines Rule 1, where total traffic flows (or HGV flows) on highway links would increase by more than 30% and Rule 2 with regards to sensitive areas within the study area, where total traffic increases of 10% or more, detailed assessments have been undertaken on the following receptors:

- Users of unclassified road between the B977 and Bogfold (high sensitivity); and
- Residents along unclassified road between the B977 and Bogfold (negligible sensitivity).

4.3.16 Given that all operational traffic will access the Proposed Development via the unclassified road between the B977 and Bogfold, based on professional judgement,

the effect on both users of the road and residents will be **significant**, because the increase in vehicular activity on the road will be a relatively large change to the existing situation (where the road is lightly used). As such, a combined assessment on the effect of operational traffic has been undertaken on these receptors to ensure a robust assessment. Table 4.7 summarises the significance of the effect on the receptors for the operational phase.

4.3.17 However it should also be noted that if the characteristics of a location or road do not fit wholly within the standardised receptor classifications and where there are very low baseline flows, caution should be applied to the assessment and professional judgement applied accordingly, as it is unlikely that magnitude of potential impacts, even with high percentage changes in traffic flows, will result in a '**significant**' effect.

Table 4.7: Peak operational traffic network impact

Receptor	Potential effect	Magnitude of impact	Significance of effect	Comment
Users of and residents along Unclassified road between the B977 and Bogfold	Severance	Moderate	Major / Moderate (**Significant**)	The character of the road and surrounding area, where there are limited pedestrian facilities or places residents would be crossing, for example, would suggest that interactions would be expected to be minimal. With regard to potential impacts on other road users, the overall increase in traffic is forecast to be 74.95% which while potentially significant as a percentage change, is due to the low level of existing traffic on the road. When looking at the theoretical road capacity of the road in Table 4.6, it can be seen that there is 91.39% spare capacity at this location. The base plus development trips accounts for a total of 289 vehicular trips, and assuming the majority of these occurred between 07:00 and 19:00 for example, this would equate to only 24 vehicle movement per hour, which is not considered significant. This would be further reduced if spread across the whole day. Specifically in relation to the Proposed Development, it is estimated that 54 two-way vehicle movements (27 inbound and 27 outbound) could occur in a typical AM and PM peak hour. Assuming the vehicles (cars / buses) arrive in a flat profile over the hour, this would equate to less than one vehicle per minute during the peak hour. Appropriate mitigation will be included by way of a staff travel plan to ensure vehicular trips are kept to a minimum and potential impacts to cyclist and pedestrians in the vicinity of their homes are appropriately mitigated.
				Following the classification of magnitude of effects in Table 2.5, the effect on severance would initially be considered to be **major / moderate.** However, when taking account for the existing situation in terms of the character of the road and surrounding area and magnitude of impact as discussed above, based on professional judgement, the effect on severance is considered to be **moderate**.
	Driver Delay	Minor	Moderate / Minor (**Significant**)	When considering the effects purely in numerical terms based on the assessment criteria, there is ample spare capacity on the road (91.39%), with the addition of operational traffic. This, however, does not take cognisance of the character of the road and the potential for other road users to become frustrated by the increase in traffic on what was previously lightly trafficked. As noted above, it is estimated that 54 two-way vehicle movements (27 inbound and 27 outbound) would occur in a typical AM and PM peak hour as a result of staff arriving and departing the Proposed Development. Assuming the vehicles (cars / buses) arrive in a flat profile over the hour, this would equate to less than one vehicle per minute. Given that there is significant spare capacity on the road and adequate passing place provision, which adheres to the requirements based on Aberdeenshire Council's design guidelines, driver frustration would be expected to be minimal. Appropriate mitigation will be included within the staff travel plan, to ensure vehicular trips are kept to a minimum and information on potential impacts of travel behaviours and travel choices on local residents and other road users are highlighted. The effect on driver delay is therefore considered **minor**.
	Pedestrian Delay	Negligible	Minor (Not Significant)	There are no pedestrian facilities located along the road within the study area. The effect on pedestrian delay is therefore considered to be **minor**.
	Non-motorised User Amenity	Moderate	Major / Moderate (**Significant**)	The overall increase in traffic is forecast to be 74.95% which is statistically significant but is due to the low level of existing traffic on the road. It is estimated that 54 two-way vehicle

Receptor	Potential effect	Magnitude of impact	Significance of effect	Comment
				movements (27 inbound and 27 outbound) would occur in a typical AM and PM peak hour. Assuming the vehicles (cars / buses) arrive in a flat profile over the hour, this would equate to less than one vehicle per minute. Following the classification of magnitude of effects in Table 2.5, the effect on non-motorised user amenity would initially be considered to be **major** / **moderate.** However, when taking account for the existing situation in terms of the character of the road and surrounding area and magnitude of impact as discussed above, based on professional judgement, the effect on severance is considered to be **moderate**. Nevertheless, cognisance would be given to the presence of this within the staff travel plan to ensure vehicular trips are kept to a minimum and potential impacts are appropriately mitigated.
	Fear & Intimidation	Moderate	Major / Moderate (**Significant**)	The increase in total traffic would be 74.95% which while potentially significant as a percentage change, is due to the low level of existing traffic on the road. Even with the addition of the operational traffic, the road would still lightly trafficked, with high remaining spare capacity and fewer than one vehicle per minute on average during the peak hour, as discussed in rows above. Nevertheless, cognisance of potential impacts on fear & intimidation will be given in the staff travel plan to ensure vehicular trips are kept to a minimum with information on potential impacts of travel behaviours and travel choices on local residents highlighted and measures reviewed as needed. Similarly to other potential effects, when considering the character of the road and the environment in terms of the people in close proximity to the proposed development, professional judgement has been applied, and the effect on fear & intimidation is considered to be **moderate**.
	Road Safety	Minor	Moderate / Minor (**Significant**)	No accidents were recorded on the road in the last 5-year period. The character of the road could potentially lead to driver frustration, however, with a consequent possibility of road safety impact due to impatient driving behaviour. Given the significant spare capacity on the road, adequate passing place provision and low absolute traffic frequency at peak times (discussed above), driver frustration with road safety implications would be expected to be minimal. As such, cognisance will be given to this within the staff travel plan to ensure vehicular trips are kept to a minimum. Nevertheless, cognisance of potential impacts on driver frustration will be given in the staff travel plan to ensure vehicular trips are kept to a minimum with information on potential impacts of travel behaviours and travel choices on local residents highlighted and measures reviewed as needed. The effect of road safety is considered **minor**.
	Large Loads	N/A	N/A	N/A

4.3.18 The assessment of significance suggests that users of and residents along the unclassified road between the B977 and Bogfold are likely to experience **significant** effects, prior to the application of further mitigation measures.

Further mitigation or enhancement

Staff Travel Plan

4.3.19 The applicant does not see the Staff Travel Plan as a one-off exercise, rather an effective management system for staff travel behaviours. The Staff Travel Plan would be reviewed on an annual basis with staff surveys undertaken and targets set accordingly to ensure that buy in from both staff and management.

4.3.20 It would also be proposed that a Staff Travel Plan steering group is formed, as this is a useful tool to ensure that representatives from all parties are involved in the running of the Staff Travel Plan. The steering group will be used as a forum to generate new ideas, to put forward suggestions for new measures, to provide feedback on existing measures, and perhaps most importantly, to raise awareness and ensure that all staff members are aware of the travel plan and the different travel options that are available to them. Another key aspect of the steering group is to maintain the momentum of the Staff Travel Plan.

4.3.21 The enhanced Staff Travel Plan would include a comprehensive action plan, including specific actions, how they will be delivered, who is responsible for them and timescales for delivering them. In addition, a monitoring plan will be included detailing the output targets, who is responsible for meeting said target and the timescale in which it is

expected to meet each target. Output targets relate to the implementation of the measures to be introduced as part of the staff travel plan. They will help to ensure that the Staff Travel Plan Co-ordinator remains on course with the delivery of the different measures.

4.3.22 The enhanced Staff Travel Plan would be prepared once the Proposed Development is operational and the requirement for this can be conditioned. For information, a framework Staff Travel Plan has been included in Section 4 of Volume 3, Appendix 9.1: Transport Assessment detailing typical measures that could be employed within the Proposed Development.

Staff shuttle bus

The operation of the staff shuttle bus would be kept under constant review, with changes made to the routing, frequency etc. as necessary to ensure it is providing the best opportunities for staff to travel to and from work.

Off-site road improvements

4.3.23 The unclassified road between the B977 and Bogfold, where the operational access will be located, is currently subject to the national speed limit (60 mph) along the application site frontage. There is an existing short section from its junction with the B977 where a 40 mph speed limit is in place and the applicant proposes extending this along the application site frontage (southern boundary of the site) westwards.

4.3.24 Speed surveys undertaken at this location as part of the baseline traffic data collection exercise show that the 85%tile and mean speeds were recorded at 41.1 mph and 34.6 mph respectively, suggesting that road users at this location are driving significantly below the posted speed limit of 60 mph. Coupled with the change in character of the road at this location as a result of the Proposed Development and the traffic associated with the operational phase, it is considered that a reduction in the speed limit at this location would provide a betterment to the existing situation.

Residual effects

4.3.25 It should be noted that the level of mitigation required to reduce the significance of effect from **significant** to **not significant** should take account of both the baseline conditions in terms of traffic flows and characteristics of the location, applying professional judgement. As such, it is considered that the combination of committed and additional mitigation measures proposed would be adequate to address the residual effects on traffic and access.

4.3.26 With the further mitigation, the impacts and the resulting magnitude of effect to the receptors of high sensitivity are considered to the reduced to minor, with the residual effects therefore being:

- Users of and residents along unclassified road between the B977 and Bogfold (**not significant**).

4.3.27 A summary of the assessment of residual effects, including the proposed mitigation measures is presented in Table 6.1.

4.3.28 The effects of operational traffic on the study area are not significant and can be readily accommodated on the existing road network. There are no significant residual effects to be considered.

Future monitoring

4.3.29 Monitoring of traffic during the operational phase would be as set out in the proposed Staff Travel Plan, described in Appendix 9.1.

4.4 Inter-related effects

4.4.1 The IEMA guidelines also refer to visual effects, noise and hazardous loads associated with traffic generation. Visual effects and noise are addressed in Chapter 6: Landscape and Visual and Chapter 10: Noise and Vibration. In addition, potential for effects of traffic generation on air quality are assessed in Chapter 11: Air Quality.

5 Cumulative Effects Assessment

5.1.1 As set out in Chapter 17: Summary of Cumulative Effects, a review of the AC online planning portal[21] in addition to the Scottish Government's Energy Consents Unit[22] portal was undertaken to identify cumulative developments.

5.1.2 Projects in scoping or not yet determined are not included in cumulative assessments for traffic and transport as they are not considered to be committed development. As traffic impacts are short lived for construction projects, the potential traffic impact is highly speculative and as such, cannot be included in the assessment.

5.1.3 Furthermore, it would only be possible to individually assess cumulative traffic generation impacts for developments that have published information about their expected traffic generation on relevant road links.

5.1.4 Volume 3, Appendix 9.1: Transport Assessment identifies those consented developments within the vicinity of the Proposed Development which could generate significant traffic. These are development numbers 1–3, 5, 6, 8, 10 and 12. Development number 7 was also potentially relevant but has now been constructed.

5.1.5 The review examined consented developments whose trips are considered potentially significant in scale (i.e., has associated traffic impact of over 10%). This shows that nine cumulative developments are relevant to consider. However, of these nine, one is already constructed, five have not published a Transport Assessment, and two are expected to have construction complete by 2026 and not to generate a material volume of operational traffic. The remaining two cumulative developments are a planning permission in principle with no clear timeframe for traffic generation, and a battery storage scheme with only 30 daily HGV movements at the construction peak.

5.1.6 On this basis, it is considered that the scenario already used in this chapter to generate future baseline traffic flows, in which potential growth is accounted for within the NRTF growth factors, already provides a suitably robust assessment of potential cumulative effects. This allows for a scenario whereby the potential impact of the Proposed Development (as an percentage increase in baseline traffic flows) has been assessed fully and not diluted through the addition of further trips associated with committed developments, which may not in practice be on the network at the time of construction or operation.

5.1.7 Should the situation change and should there be potential for multiple sites in the vicinity of the Proposed Development to be constructed at the same time, this will be mitigated through the use of an overarching Construction Traffic Management Plan (CTMP), which would include consideration of managing development phasing, to be agreed with AC and Transport Scotland.

5.1.8 This is may be relevant particularly in the case of cumulative development reference number 2 in Chapter 17 (APP/2023/2310, a 49.9 MW battery storage development in relatively close proximity to Kintore Substation), which was granted planning permission at the end of August 2024, although the peak daily HGV movements predicted for this development are only 30. Should its construction period overlap with that of Kintore Hydrogen Plant, co-ordinated management of traffic through both developments' Construction Traffic Management Plans will be important to minimise impacts. Similarly, should SSEN's proposed 400 kV overhead line construction from Kintore Substation be approved, and overlap with construction of Kintore Hydrogen Plant, traffic co-ordination can be provided under the projects' respective CTMPs.

6 Conclusion and Summary

6.1.1 This chapter presents the findings of the potential effects of the proposed development on transport and access during the construction and operational phases.

6.1.2 Traffic count surveys and a review of Department for Transport traffic flow data, road condition, paths and cycle routes, and personal injury accident data have been used to establish the baseline conditions. A traffic growth factor has been used to predict future baseline flows. The baseline assessment has shown that there are no specific road safety issues, speed limits are broadly being adhered to within the study area, and that the condition of roads to be used for access to the proposed development site is generally good. There is little opportunity for pedestrian or cycle access to the proposed development using designated routes due to its rural location. The available headroom in road capacity to accommodate proposed development traffic flows has been considered in the assessment of impacts.

6.1.3 The proposed development would lead to a temporary increase in traffic volume within the study area during the construction phase. Traffic volume would fall considerably outside the peak period of construction.

6.1.4 Designed-in mitigation measures for the construction phase comprise the creation of a dedicated temporary construction access road and junction from the B977 at Leylodge, provision of a construction staff shuttle coach service to minimise private car access to the site, and use of on-site concrete batching.

6.1.5 The peak of construction activity is expected to occur in month six of the programme and to result in 278 daily movements (139 inbound and 139 outbound movements per day). Of these 278 daily movements, 212 movements would be HGVs, which would be bringing equipment, construction materials, components etc. to the application site. Fifty-six movements would be associated with construction staff arriving at and departing the application site and the remaining ten movements would be car / LGV movements associated with general site deliveries and visitors. The effects of construction traffic would be temporary in nature and would be transitory.

6.1.6 The assessment indicates that moderate adverse (significant) effects on amenity for non-motorised road users, and for residents and road users during movements of large indivisible abnormal loads, are likely prior to further mitigation. All other effects on all receptors would be minor or negligible, and not significant. A comprehensive Construction Traffic Management Plan incorporating an Abnormal Load Transport Management Plan is proposed to be developed prior to construction, for agreement with Aberdeenshire Council and Police Scotland. With the implementation of this further mitigation, residual effects are predicted to reduce to a minor adverse, non-significant level.

6.1.7 Designed-in mitigation measures for the operational phase comprise a dedicated access road and junction from an unclassified road off the B977, separate to the construction access, and the provision of limited car parking on site (with 40 spaces). A Staff Travel Plan will be implemented (see the framework for this presented in Appendix 9.1), which will include a shuttle bus service that is likely to run between Kintore rail station, Aberdeen and the wider network of park & rides sites, and the electrolysis plant site. Other options under consideration include home pick up and drop offs for employees who live close to the proposed development.

6.1.8 The assessment of traffic generation during the operational phase shows that up to 124 two-way vehicle movements (62 inbound and 62 outbound) would occur per day on average for the maximum anticipated operational workforce. This includes staff journeys made across the two operating shifts in both cars and staff shuttle buses. In addition, an allowance has been included for visitors and general deliveries made to the Proposed Development.

6.1.9 The effects on all bar one receptor in the study area would be negligible to minor adverse and not significant. Effects at a single receptor group, the residents and users of the short section of unclassified road between the B977 and Bogfold from which the operational access would be taken, could range up to a major impact with significant adverse effect prior to further mitigation. This is due to the relatively large percentage change in traffic flow on a short section of this single-track road that is lightly used in the baseline. Further mitigation proposed comprises careful management and monitoring of traffic through an enhanced Staff Travel Plan, extension of a 40 mph speed limit to this road section and ongoing monitoring of the staff shuttle bus provision to ensure any changes to routing and frequency are updated as necessary.

6.1.10 There are no significant road capacity issues with the addition of construction traffic associated with the proposed development and significant spare capacity exists within the trunk and local road network to accommodate all operational phase traffic.

6.1.11 Table 6.1 summarises the proposed development impacts, embedded and further mitigation, and predicted residual effects.

Table 6.1: Summary of potential environment effects, mitigation and monitoring

Description of impact	Measures adopted as part of the project	Magnitude of impact	Sensitivity of receptor	Significance of effect	Additional mitigation measures	Residual effect	Proposed monitoring
Construction phase							
B977 users and residents							
Non-motorised User Amenity	Note: see measures in the 'additional measures' column. Although these form project commitments, set out in the outline management plans (Volume 3, Appendix 9.1), details are proposed to be approved post-consent. In accordance with guidance for assessment of transport impacts, the potential project impacts are therefore initially assessed prior to approval of the details of this mitigation.	Moderate	Medium	Moderate adverse: significant	A CTMP and a PMP – would be secured through a planning condition and delivered by the Principal Contractor. An Abnormal Load Transport Management Plan – would be prepared and delivered by the Abnormal Load supplier. A Staff Travel Plan – would be delivered by the Principal Contractor.	Minor adverse: not significant	N/A
Large Loads		Moderate	Medium	Moderate adverse: significant	An Abnormal Load Transport Management Plan – would be prepared and delivered by the Abnormal Load supplier.	Minor adverse: not significant	N/A
Kintore residents							
Non-motorised User Amenity	Note: see measures in the 'additional measures' column and note above.	Moderate	High	Moderate adverse: significant	A CTMP would be secured through a planning condition and delivered by the Principal Contractor. An Abnormal Load Transport Management Plan – would be prepared and delivered by the Abnormal Load supplier. A Staff Travel Plan – would be delivered by the Principal Contractor.	Minor adverse: not significant	N/A
Large Loads		Moderate	High	Moderate adverse: significant	An Abnormal Load Transport Management Plan – would be prepared and delivered by the Abnormal Load supplier.	Minor adverse: not significant	N/A
Path / Core Path users in the immediate vicinity of the application site and on construction access routes							
Large Loads	Note: see measures in the 'additional measures' column and note above.	Moderate	High	Moderate adverse: significant	An Abnormal Load Transport Management Plan – would be prepared and delivered by the Abnormal Load supplier.	Minor adverse: not significant	N/A

Description of impact	Measures adopted as part of the project	Magnitude of impact	Sensitivity of receptor	Significance of effect	Additional mitigation measures	Residual effect	Proposed monitoring
Other impacts to B977 users and residents; Kintore residents; residents along Kirkton Cottages; path / Core Path users in the immediate vicinity of the application site and on construction access routes							
Severance, driver delay, pedestrian delay, fear & intimidation and road safety	Note: see measures in the 'additional measures' columns and notes above, which would also be applicable to further mitigate these non-significant effects.	Negligible-minor	Medium-high	Negligible to minor adverse: not significant	A CTMP would be secured through a planning condition and delivered by the Principal Contractor. An Abnormal Load Transport Management Plan – would be prepared and delivered by the Abnormal Load supplier. A Staff Travel Plan – would be delivered by the Principal Contractor.	Negligible to minor adverse: not significant	N/A
Operation phase							
Users of and residents along unclassified road between the B977 and Bogfold							
Severance	Staff Travel Plan and shuttle bus	Moderate	High	Moderate adverse: significant	Enhanced Staff Travel Plan – adopted by the applicant and updated as necessary to provide a strategy for all employees and visitors of the Proposed Development, as well as to the wider local community. Shuttle bus – review of proposed routes to ensure suitable pick-up / drop-off points and make changes as necessary to promote its use.	Minor adverse: not significant	The Travel Plan will need to be reviewed on an annual basis to ensure that it is achieving its modal share objectives. This will require a staff survey to be undertaken by the Travel Plan co-ordinator every year, with the results compared on a year-on-year basis.
Non-motorised User Amenity	Staff Travel Plan and shuttle bus	Moderate	High	Moderate adverse: significant	Enhanced Staff Travel Plan – adopted by the applicant and updated as necessary to provide a strategy for all employees and visitors of the Proposed Development, as well as to the wider local community. Shuttle bus – review of proposed routes to ensure suitable pick-up / drop-off points and make changes as necessary to promote its use. Proposed Speed reduction from 60mph to 40mph.	Minor adverse: not significant	
Fear & Intimidation	Staff Travel Plan and shuttle bus	Moderate	High	Moderate adverse: significant	Enhanced Staff Travel Plan – adopted by the applicant and updated as necessary to provide a strategy for all employees and visitors of the Proposed Development, as well as to the wider local community. Shuttle bus – review of proposed routes to ensure suitable pick-up / drop-off points and make changes as necessary to promote its use. Proposed Speed reduction from 60mph to 40mph.	Minor adverse: not significant	
Other impacts to B977 users and residents; Kintore residents; residents along Kirkton Cottages; path / Core Path users in the immediate vicinity of the application site and on operational access routes							
Severance, non-motorised user amenity, driver delay, pedestrian delay, fear & intimidation, road safety and large loads	Staff Travel Plan and shuttle bus which would also be applicable to further mitigate these non-significant effects (see notes above)	Negligible-minor	Medium-high	Negligible to minor adverse: not significant	Enhanced Staff Travel Plan, shuttle bus and speed limit as described above.	Negligible to minor adverse: not significant	As above for Travel Plan review.

References

[1] Scottish Government. (2014) National Planning Framework 4: Available at: https://www.transformingplanning.scot/national-planning-framework/, accessed June 2024

[2] Scottish Government. Planning Advice Note (PAN) 75. Available at: https://www.gov.scot/publications/planning-advice-note-pan-75-planning-transport/, accessed June 2024

[3] Transport Scotland. (2012) Transport Assessment Guidance. Available at: https://www.transport.gov.scot/media/4589/planning_reform_-_dpmtag_-_development_management__dpmtag_ref__17__-_transport_assessment_guidance_final_-_june_2012.pdf, accessed June 2024

[4] Aberdeenshire Council (2023) Aberdeenshire Local Development Plan. Available at: https://www.aberdeenshire.gov.uk/planning/plans-and-policies/ldp-2023/, accessed June 2024

[5] Aberdeenshire Council (2005) Use of Energy in Aberdeenshire: Guidance for Developers Supplementary Planning Guidance. Available at: https://www.aberdeenshire.gov.uk/media/5945/wind_developers06.pdf, accessed June 2024

[6] The Institution of Environmental Management and Assessment. (1993) Guidelines for the Environmental Assessment of Road Traffic

[7] Institute of Environmental Assessment (2023), Environmental Assessment of Traffic and Movement

[8] The Institution of Environmental Management and Assessment (2005) Guidelines for Environmental Impact Assessment

[9] Highways England, Transport Scotland, Welsh Government & Department for Infrastructure (2020), LA104, Environmental assessment and monitoring, the Design Manual for Roads and Bridges (DMRB)

[10] Table 2.2 of Volume 11, Section 2, Part 5 of the Design Manual for Roads and Bridges (DMRB) (2008)

[11] Design Manual for Roads and Bridges, Volume 15, Part 5 “The NESA Manual” (2013)

[12] Department for Transport (2024). Available at: https://roadtraffic.dft.gov.uk/#6/55.254/-11.096/basemap-regions-countpoints, accessed May 2024

[13] CrashMap (2024) Available at: https://www.crashmap.co.uk/, accessed May 2024

[14] Sustrans (2023). The National Cycle Network. Available at: https://www.sustrans.org.uk/national-cycle-network, accessed May 2024

[15] Google Maps (2024) Available at: https://maps.google.co.uk/, accessed May 2024

[16] Aberdeenshire Council Core Path Plans. Available at https://gis.aberdeenshire.gov.uk/maps/Map.aspx?MapName=Paths&baselayer=OS%20Greyscale, accessed May 2024

[17] ScotWays (2024). Available at: https://scotways.com/

[18] Ordnance Survey (2024). Available at: https://osdatahub.os.uk/

[19] Timber Transport Forum (2024) Available at: https://timbertf.maps.arcgis.com/apps/webappviewer/index.html?id=4a23d4910e604b71872956441113c83c, accessed May 2024

[20] Department for Transport/Highways Agency, Department for Regional Development (Northern Ireland), Transport Scotland & Welsh Assembly Government (2009): Traffic Signs Manual, Chapter 8 – Traffic Safety Measures and Signs for Road Works and Temporary Situations

[21] https://upa.aberdeenshire.gov.uk/online-applications/search.do?action=simple&searchType=Application, accessed May 2024

[22] Scottish Government (2024). Energy Consents Unit. Available at: https://www.energyconsents.scot/ApplicationSearch.aspx?T=1, accessed May 2024