

P e l l F r i s c h m a n n

Kintore Hydrogen Plant

Appendix 9.1: Transport Assessment

September 2024

107505

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Contents

1	Introduction	1
1.1	Purpose of the Report.....	1
1.2	Report Structure	1
2	Policy Context.....	2
2.1	Introduction	2
2.2	National Policy and Guidance	2
2.3	Local Policy and Guidance	3
2.4	Policy and Guidance Summary.....	3
3	Proposed Development.....	4
3.1	Site Location	4
3.2	Proposed Development Content	4
3.3	Proposed Development Access Arrangements	8
3.4	Parking Provision.....	10
4	Framework Operational Staff Travel Plan	11
4.1	Introduction	11
4.2	Travel Plan Benefits	11
4.3	Benefits for Employees and Visitors.....	11
4.4	Travel Plan Aims	12
4.5	Travel Plan Objectives.....	12
4.6	Travel Plan Coordinator.....	12
4.7	Travel Plan Promotion and Measures	13
4.8	Staff Surveys.....	15
4.9	Mode Share Targets.....	15
4.10	Review and Management Process.....	15
4.11	Summary.....	15
5	Study Methodology	16
5.1	Introduction	16
5.2	Project Phases – Transport Overview	16
5.3	Scoping Discussions.....	16
6	Baseline Conditions	17
6.1	Study Area Determination.....	17
6.2	Pedestrian and Cycle Networks	18
6.3	Road Access	21
6.4	Existing Traffic Conditions	24
6.5	Accident Review.....	26
6.6	Future Baseline Traffic Conditions	28
7	Trip Generation and Distribution.....	30
7.1	Construction Phase	30
7.2	Operational Phase.....	32
7.3	Decommissioning Phase	34
8	Traffic Impact Assessment	35
8.1	Construction Impact.....	35
8.2	Operational Impact	36
8.3	Committed Developments.....	37

9	Proposed Traffic Mitigation Measures.....	41
9.1	Introduction	41
9.2	Construction Phase	41
9.3	Construction Staff Travel Plan	42
9.4	Abnormal Load Transport Management Plan (if required)	42
9.5	On-site Measures delivered using a Path Management Plan (PMP).....	43
9.6	Operational Phase Mitigation	44
10	Summary & Conclusions	46

Figures

Figure 1	Site Location	4
Figure 2	An Illustrative Possible Proposed Site Layout	7
Figure 3	Proposed Access Locations During Construction	9
Figure 4	Transport Assessment Study Area	18
Figure 5	AC Core Path Plan.....	19
Figure 6	AC Cycle Plan.....	20
Figure 7	AC Kintore Walking and Cycling Routes	21
Figure 8	Traffic Count Locations	25
Figure 9	PIA Locations.....	27
Figure 10	Example Information Sign	42

Tables

Table 1	Indicative Construction Access Locations	9
Table 2	Core Paths in the vicinity of the Proposed Development	18
Table 3	24-hour Average Traffic Data (2024)	25
Table 4	Speed Summary	26
Table 5	B977 Speed Summary	26
Table 6	Personal Injury Accident Summary	27
Table 7	24-hour Average Traffic Data (2026)	28
Table 8	24-hour Average Traffic Data (2030)	29
Table 9	Proposed Development Access Strategy	31
Table 10	Peak Construction Traffic	32
Table 11	Mode Share	33
Table 12	Operational Staff Trip Generation Summary	33
Table 13	Peak Operational Traffic.....	34
Table 14	Peak Construction Traffic Network Impact	35
Table 15	2026 Theoretical Road Capacity.....	36
Table 16	Peak Operational Traffic Network Impact.....	36
Table 17	2030 Theoretical Road Capacity.....	37
Table 18	Committed Developments	38

Annexes

Annex A	Proposed Site Access Drawings
Annex B	Local Authority Correspondence
Annex C	Construction Phase Trip Estimates

1 Introduction

1.1 Purpose of the Report

Pell Frischmann Ltd. (PF) have been commissioned by Statera Energy Ltd. (Statera) on behalf of Kintore Hydrogen Ltd. (the Applicant), to undertake a Transport Assessment (TA) for the proposed hydrogen production plant (the Proposed Development). The Site is located next to the existing Kintore Substation, to the southwest of Kintore in the Aberdeenshire Council (AC) administrative area.

The report identifies the key transport and access issues associated with the Proposed Development and identifies where the Proposed Development may require mitigation works to accommodate the predicted traffic; however, the detailed design of these remedial works is beyond the agreed scope of this report. Any mitigations works will be agreed with AC and Transport Scotland prior to construction works taking place.

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1.2 Report Structure

Following this introduction, the TA report is structured as follows:

- section two three reviews the relevant transport and planning policies;
- section three describes the Proposed Development;
- section four provides a framework Staff Travel Plan;
- section five sets out the methodology used within this assessment;
- section six describes the baseline transport conditions;
- section seven describes the trip generation and distribution of traffic in the study area for both the construction and operational phases;
- section eight summarises the traffic impact assessment both the construction and operational phases;
- section nine considers mitigation proposals for development related traffic within the study network; and
- section ten summarises the findings of the TA and outlines the key conclusions.

2 Policy Context

2.1 Introduction

An overview of relevant transport planning policies has been undertaken and is summarised below for national and local government policies.

2.2 National Policy and Guidance

2.2.1 National Planning Framework (NPF4) (2023)

The National Planning Framework (NPF) is a long-term plan for Scotland that sets out where development and infrastructure is needed in the country. NPF4 sets out the Government's plan looking forward to 2045 that will guide spatial development, set out national planning policies, designate national developments and highlight regional spatial priorities. It is part of the development plan, and so influences planning decisions across Scotland.

Policy 11: Energy within the NPF4 notes that:

“Development proposals for all forms of renewable, low-carbon and zero emissions technologies will be supported. These include:

- *Wind farms including repowering, extending, expanding and extending the life of existing wind farms; and*
- *Energy storage, such as battery storage and pumped storage hydro.*

In addition, project design and mitigation will demonstrate how the following impacts are addressed:

- *Impacts on communities and individual dwellings, including, residential amenity, visual impact, noise and shadow flicker;*
- *Public access, including impact on long distance walking and cycling routes and scenic routes;*
- *Impacts on road traffic and on adjacent trunk roads, including during construction; and*
- *Cumulative impacts.”*

NPF4 puts the climate and nature crises at the heart of the Scottish planning system and was adopted in February 2023.

2.2.2 Planning Advice Note (PAN) 75 (2005)

Planning Advice Note (PAN) 75: Planning for Transport provides advice on the requirements for Transport Assessments. The document notes that:

“... transport assessment to be produced for significant travel generating developments. Transport Assessment is a tool that enables delivery of policy aiming to integrate transport and land use planning.”

“All planning applications that involve the generation of person trips should provide information which covers the transport implications of the development. The level of detail will be proportionate to the complexity and scale of the impact of the proposal...For smaller developments the information on transport implications will enable local authorities to monitor potential cumulative impact and for larger developments it will form part of a scoping exercise for a full transport assessment. Development applications will therefore be assessed by relevant parties at levels of detail corresponding to their potential impact.”

2.2.3 Transport Assessment Guidance (2012)

Transport Scotland's Transport Assessment Guidance was published in 2012. It aims to assist in the preparation of Transport Assessments (TA) for development proposals in Scotland such that the likely transport

impacts can be identified and dealt with as early as possible in the planning process. The document sets out requirements according to the scale of development being proposed.

The document notes that a TA will be required where a development is likely to have significant transport impacts but that the specific scope and contents of a TA will vary for developments, depending on location, scale and type of development.

2.3 Local Policy and Guidance

2.3.1 Aberdeenshire Local Development Plan (2023)

The Aberdeenshire Local Development Plan (ALDP) was adopted in January 2023. In relation to the Proposed Development, the ALDP's Policy C2 Renewable Energy C2.1 notes that:

"We will support renewable energy developments, including solar, wind, biomass (energy from biological material derived from living, or recently living organisms) and hydroelectricity projects, as well as energy storage projects, which are in appropriate sites and of the appropriate design. Assessment of the acceptability of such developments will take account of any effects on: socio-economic aspects; renewable energy targets; greenhouse gas emissions; communities; landscape and visual aspects; natural heritage; carbon rich soils; the historic environment; tourism and recreation; aviation, defence, telecommunications and broadcasting interests; road traffic; hydrology; and opportunities for energy storage."

Section 14: The Responsibilities of Developers, Policy RD1.8 Access to New Development notes that:

"Any new private access onto a public road must be designed to the satisfaction of Aberdeenshire Council's Road and Transportation Service and, in the case of a trunk road, Transport Scotland. Developers should be aware of the Aberdeenshire Standards for Road Construction Consent and Adoption, and the need for Roads Construction Consent in most instances. A Transport Assessment (or for smaller proposals a Transport Statement) may be asked for, to demonstrate that the development (and any proposed mitigation measures) will not have significant transport impacts on existing transport infrastructure and services."

2.4 Policy and Guidance Summary

The Proposed Development can align with the stated policy objectives and the design of the Proposed Development and proposed mitigation measures will ensure compliance with national and local objectives.

3 Proposed Development

3.1 Site Location

The electrolysis plant site is located on land to the west of the existing Kintore Substation, approximately 2.8 kilometres (km) to the southwest of Kintore, Aberdeenshire, 0.3 km northwest of Leylodge and 0.5 km to the west of the B977.

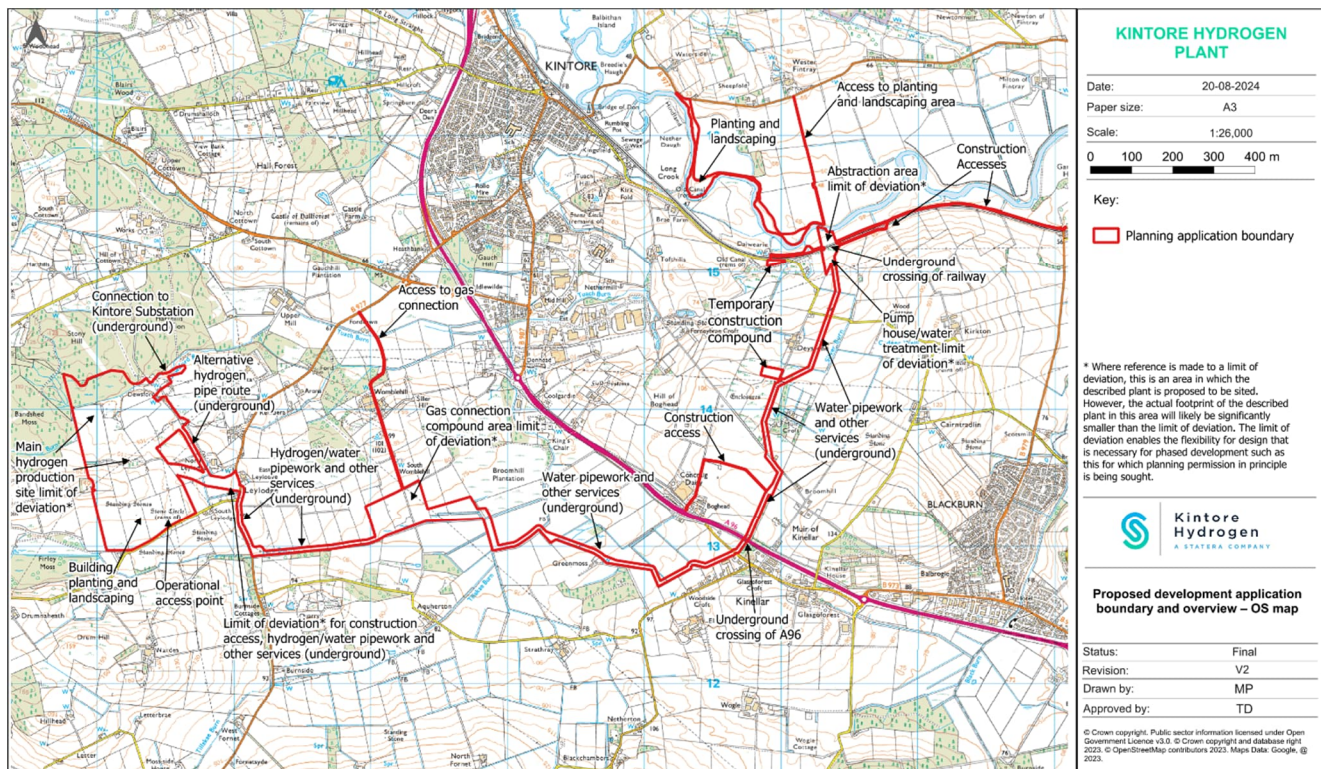
The hydrogen export pipeline route corridor would run south and westwards from the electrolysis plant site to a connection and blending point with the existing National Gas NTS. The connection point would be located on farm land around 1 km south-west of the A96 and Kinellar.

The raw water pipeline route corridor between the electrolysis plant and the River Don would be through farm land to the south of Kintore, crossing under the A96 at the north edge of Kinellar, with the abstraction and discharge point being located on the south bank of the River Don off The Rushlach Road, around 1.5 km south-east of the edge of Kintore.

The main electrolysis site encompasses an area of approximately 86 hectares (ha) at this stage, within which design work is ongoing on the optimal layout and siting of development buildings and equipment, which are expected to require up to around 50 ha of the available site. The overall application boundary is approximately 137 ha in total. The hydrogen pipeline route is around 2.2 km in length and the water abstraction and discharge pipeline route is around 7.7 km in length.

The British National Grid coordinates are NJ762137 for the electrolysis plant site and NJ812153 for the water abstraction and discharge site at the River Don. The location of the site is shown in Figure 1.

Figure 1 Site Location



3.2 Proposed Development Content

The Proposed Development would be a facility for production of hydrogen from water by electrolysis using renewable electricity. This is sometimes called ‘green hydrogen’. Hydrogen is a zero carbon fuel at the point of

combustion. The hydrogen would initially be supplied for blending with natural gas in the existing high-pressure gas network in order to aid in decarbonising industrial uses that rely on gas fuel in the UK.

The electricity would be supplied from Scottish and Southern Electricity Networks (SSEN's) Kintore Substation, which provides transmission capacity for the increasing wind power generation in Scotland among other renewable sources.

Producing hydrogen using excess renewable power generation provides a solution to storing and transmitting this energy in a form that can readily be used for industry and heating, making best use of existing natural-gas-adapted infrastructure.

The raw water would be supplied from the River Don, which has sufficient capacity under a range of flow conditions to support the water demand of Kintore Hydrogen.

The location of the Proposed Development has therefore been chosen due to being adjacent to the newly expanded capacity of Kintore Substation (not requiring a new overhead transmission line), close proximity to the FM10 and FM24 gas pipelines (requiring a connection pipe of less than 3 km) and proximity to a more than sufficient raw water supply.

The rate at which hydrogen can be blended with natural gas in the existing transmission network is dictated by a number of factors including the compatibility of gas users' equipment to accept the hydrogen blend. This rate likely to change over time as the UK's hydrogen transition progresses, and ultimately pure hydrogen transmission is anticipated under Project Union.. Kintore Hydrogen therefore intends to develop the facility and introduce its hydrogen supply in phases, starting with production capacity from up to 500 megawatts of electricity (MWe) and then developing further phases to reach a planned 3,000 MWe capacity in total (3 GWe).

The Proposed Development would be developed 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.

The principal permanent components of the two phases of the Proposed Development would comprise:

Phase One

- one or more electrolysis buildings or external electrolysis equipment with associated external transformer and rectifier skids, and gas treatment equipment (if this is external to the buildings) ;
- one compressor plant structure/building;
- control room, stores and workshop sized for the full development;
- pads and other external plant sized for the first phase;
- bank of cooling towers sized for the first phase;
- water treatment plant building sized for the full capacity;
- electrical switchyard equipment and underground high voltage cable(s) sized for the first phase;
- B977 junction and temporary construction access route, to be retained for all phases of construction
- permanent operational access road and gatehouse;
- internal roads and car park sized for the first phase;
- all three water supply and return pipelines and pumping station for the full development;
- hydrogen export pipelines and above-ground installation for the full development;
- foul drainage connection sized for the full development; and
- clean surface runoff attenuation and discharge sized for the whole development but implemented in phases as required (subject to detailed drainage design).

Phase Two

- remaining electrolysis buildings or equipment;
- remaining compressor structure(s)/building(s);

- remaining electrical switchyard equipment and further high voltage underground cables;
- remaining pads and external plant;
- any remaining connections and drainage required for the whole development not constructed in the first phase; and
- remaining internal access roads and car parking capacity.

During each phase of the construction, there would be the requirement for a temporary construction compound area, which would be within the main electrolysis plant site, with space available being facilitated by the phased nature of the construction programme.

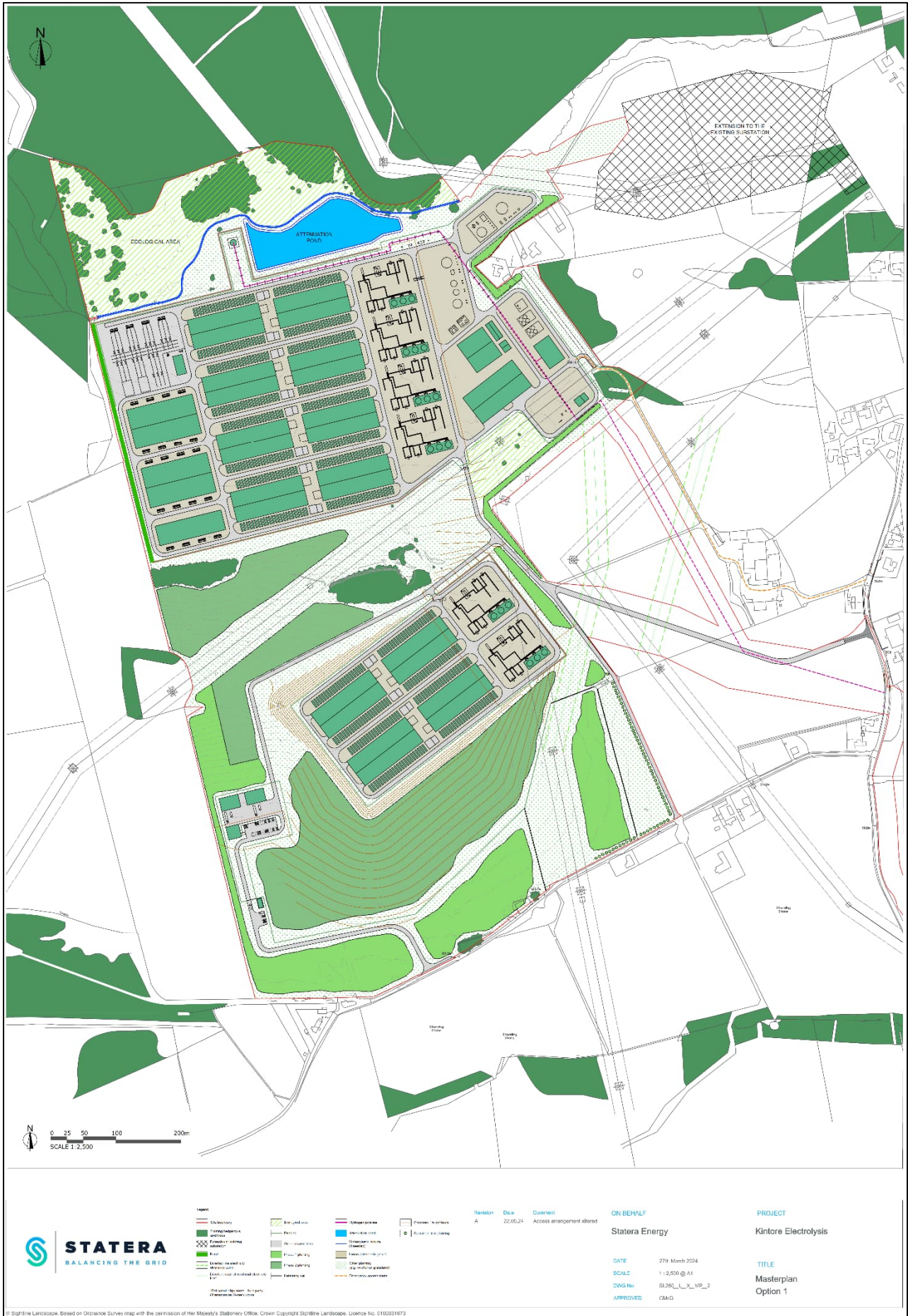
In terms of the operational phase of the Proposed Development, the facility would be capable of operating on up to a 24/7/365 basis (with periods of downtime for planned maintenance) to enable flexibility in hydrogen production. In practice actual operation of the site would likely be around 30-40% of that time over the course of a year, to respond to intermittency of renewable energy generation peaks.

The main electrolysis site would be staffed in a shift pattern with employees holding a variety of skillsets for operating the control room, undertaking maintenance and providing site security and administration. An operational workforce of typically 30-50 full-time equivalent (FTE) staff in total, across two or three shifts, is expected for the initial 500 MWe phase of development. For the full 3 GWe development this is expected to rise to 200 FTE staff.

It is estimated that up to 120 staff could be on-site during a typical day shift when the whole site is fully operational.

One illustrative example of a possible layout of the main development site is shown in Figure 2. However, the Planning Permission in Principle is based on a Planning Parameters Plan, within which a detailed site layout will be developed for approval by Aberdeenshire Council in due course.

Figure 2 An Illustrative Possible Proposed Site Layout



A complete description of the Proposed Development for the purposes of the Environmental Impact Assessment (EIA) regulations is provided in **EIA Report Volume 2: Chapter 2**.

3.3 Proposed Development Access Arrangements

3.3.1.1 Operational Access Arrangements

Access to the main electrolysis plant site in operation would be taken from an unclassified road off the B977 near Leylodge, with a new junction and new private road within the site to be developed, which can be seen in Figure 2 and in Annex A at a larger scale. During the construction phase, a temporary access road would be created from a new junction off the B977 in close proximity to Kintore Substation. The temporary construction access road would be removed (reinstated to farmland) following construction but the junction with the B977 would be retained, blocked to traffic, should it be needed in future for maintenance access such as replacement of a large item of equipment.

Access to the hydrogen pipeline connection point to the National Gas NTS would also be taken from the B977, located approximately 400 m from the roundabout with the B994, using an existing private farm access road.

Access to construct the abstraction and discharge point with pumping station would be taken from The Rushlach road where there is an existing short tunnel under the railway embankment serving the adjacent residence, which is constrained in width and height. Access could also be taken from further east off the B979, if needed, to facilitate access by construction machinery to the north side of the railway, with a temporary haul road in farm land adjacent to the railway alignment.

Access to construct the water pipeline route corridor would be taken at a number of locations from roads along the route.

3.3.1.2 Construction Access Arrangements

Access to the Proposed Development during the construction phases will be taken at a number of locations, providing access to the main electrolysis plant development area, the above ground installation (AGI) for the hydrogen export pipeline connection to the gas network, construction compounds and areas used for the construction of the pipeline route corridors. The main access (highlighted as Gate 01 on Table 1 and shown in Figure) to be used during the construction phase only, will be located on the B977 in the vicinity of East Leylodge. Drawing SK01 included in Annex A shows the proposed site access junction and associated swept path assessments.

Access to the AGI site for construction would be taken from the B977, around 400 m from the roundabout with the B994, using an existing private farm access road.

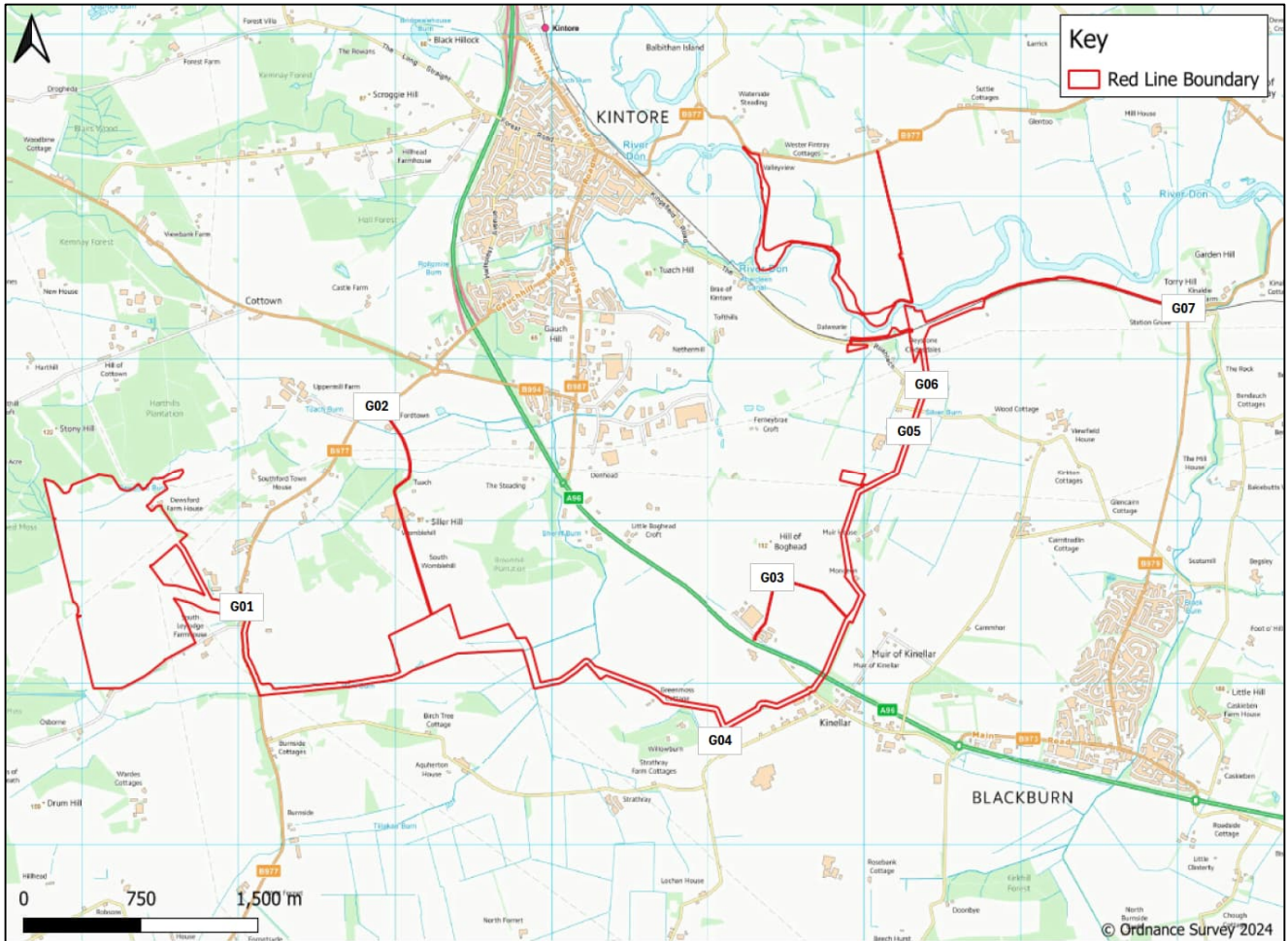
Access to construct the abstraction and discharge point with pumping station would be taken from the B977 (The Rushlach Road) where there is an existing box tunnel under the railway embankment serving the adjacent residence, which is constrained in width and height. A temporary construction and laydown compound would be located on farmland at this location and restored to its pre-development condition after construction. Access could also be taken from further east off the B979, if needed to facilitate access by construction machinery to the north side of the railway, with a temporary haul road in farm land adjacent to the railway alignment.

Access to construct the water pipeline route corridor would be taken at a number of locations from roads along the route, with machinery then moving along the pipeline corridor. The AGI site and the electrolysis plant site would provide access for machinery to construct the hydrogen pipeline within the working corridor for this. In both cases, the pipelines would be constructed in sections, with machinery moving across the land to open trenches (or trenchless crossing points), lay pipe and reinstate the trench cover.

Horizontal directional drilling (HDD) would be used for the A96 crossing by the water pipelines. The crossing point would be in the vicinity of Kinellar, south of the Marshall's Farm Shop layby. The HDD drilling compounds would be located within the pipeline corridor, either side of the A96.

The locations of the newly provided access junctions along the route of the Proposed Development are shown in Figure 3.

Figure 3 Proposed Access Locations During Construction



The locations of the accesses are as detailed in Table 1.

Table 1 Indicative Construction Access Locations

Gate Number	Gate Location
Gate 01	B977
Gate 02	B977 at Womblehill (Private Road)
Gate 03	Boghead Farm Access
Gate 04	C99C Road
Gate 05 (north & south)	The Rushlach
Gate 06	B979
Gate 07	The Rushlach

The proposed access junctions located along the local road network will comprise bellmouth junctions and will be designed in accordance with AC's standards. Applications for the junctions will be made to AC through the technical approval process and applications for Road Opening Permits would be made following technical approval.

3.4 Parking Provision

Parking will be provided within the Proposed Development for staff and visitors, with 40 spaces proposed, with Electric Vehicle (EV) and disabled parking spaces provided at the required level, based on AC development guidelines.

The level of parking provision on the Proposed Development is significantly below the allowable level based on the AC parking standards. Whilst there is sufficient space within the application site to provide the appropriate level of parking, the Applicant is committed to reducing the number of car trips into and out of the Proposed Development during the operational phase. As such, it is proposed that a shuttle bus service will be provided for staff on-site, the routing of which has yet to be confirmed but could run between Kintore rail station, Aberdeen and the wider network of Park & Rides sites, and the Application site. It is considered that the details of this 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.

A staff travel plan would be produced to reduce reliance on private car use and this would be prepared once the site is operational. A framework Staff Travel Plan has been included in Section 4 at this time, detailing typical measures that could be employed within the Proposed Development once operational.

The wider site will also provide parking / loading areas for vehicles associated with the delivery of material to and from the Proposed Development.

4 Framework Operational Staff Travel Plan

4.1 Introduction

This framework Travel Plan (TP) for the operational phase has been prepared to complement the proposals set out within the TA, in the interests of promoting sustainable development. This Section 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 where possible.

This framework TP has been produced to provide a strategy for all employees and visitors of the Proposed Development, as well as to the wider local community. The exact level of engagement from employees and management will reflect their own priorities and application of this plan during the operational phase.

It is considered that whilst the framework TP will provide a strategy for the Proposed Development, certain aspects of the plan should be viewed as providing a framework for measures as the scheme develops. The framework TP should be seen as a starting point for the process of developing a sustainable development, which will evolve throughout the lifecycle of the proposals.

4.2 Travel Plan Benefits

A TP can provide a variety of benefits for different stakeholders including but not limited to:

- an enhanced relationship between the Proposed Development and the local community;
- an enhancement and reinforcement of the community-orientated image and public profile of the business;
- the Proposed Development can take advantage of the existing infrastructure in the local area;
- to support healthy lifestyles for the local community and improving positive corporate social responsibility for the business; and
- supporting environmental and management initiatives and accreditations.

4.3 Benefits for Employees and Visitors

A TP can bring specific benefits, including:

Accessibility

- providing improvements to public transport access as well as public transport provision;
- assisting with removing walking and cycling deterrents such as poor / limited pedestrian and cycle facilities; and
- providing greater choice of travel options for how people travel to destinations, giving people greater flexibility and improvements to their mobility.

Safety

- contributing to improved road safety in the local area, providing safer access between other key facilities in the area; and
- contributing to tackling any congestion on local roads in and around the Proposed Development.

Environment

- Contributing to improving amenity in the Proposed Development and maintaining the public environment created when the development is constructed.

Lifestyles

- contributing to healthier lifestyles of employees by promoting and increasing cycling and walking to and from the Proposed Development; and

- contributing to developing community life by providing betterment to existing walking and cycling facilities.

4.4 Travel Plan Aims

There is not one mode of transport which is suitable for everyone who will travel to / from the Proposed Development and a number of balanced transport options are needed.

Delivering sustainable development and travel patterns is an important objective of both national and local planning and transport policy. This can be achieved by introducing positive measures to encourage modal shift from cars onto more low carbon travel options, such as walking, cycling, local bus services / shuttle bus service and car sharing.

4.5 Travel Plan Objectives

To achieve the aims of the TP and in accordance with national and local aspirations for enhancing sustainable and active transport choice, the following are examples of objectives that could be applied:

- to understand the likely travel patterns of employees and visitors;
- to encourage a greater use of sustainable transport in preference to the use of the private car;
- to discourage the use of the private car for short trips which can feasibly be undertaken by other modes;
- to encourage community integration;
- to protect and enhance the environment in and around the Proposed Development;
- to encourage healthy, sustainable lifestyle for employees;
- to encourage sustainability in all ways including cost, health and environment – reducing the local and wider impacts of traffic congestion and improving air quality; and
- continually develop, implement, monitor, evaluate, and review the progress of the TP.

The objectives provide a focus to deliver the vision and aims of the full TP and help inform a package of measures that focus on promoting access to the Proposed Development by sustainable modes of transport as an alternative to the private car, from the outset.

4.6 Travel Plan Coordinator

The key to any effective TP is to have an identified person responsible for its operation and updating. In order for the TP to be effective and responsive, it must be kept up to date and relevant otherwise it may become ineffective.

In order to maintain and develop the TP, it is important to designate a member of staff from the business to be the TP co-ordinator. The key tasks for a TP co-ordinator would be:

- develop, implement and promote the TP;
- maintaining the support and commitment of the staff, management, union representatives, etc.;
- design and implement travel awareness campaigns for the promotion of the TP;
- chairing, co-ordinating and attending internal TP staff groups;
- undertaking the necessary survey work required to develop the TP and maintaining the database;
- acting as a point of contact and reference for staff with queries relating to any transport issues;
- co-ordinating the monitoring process and setting targets;
- develop a condensed version of the TP report for staff reference;
- provide input into the development of a website and marketing literature to encourage the use of sustainable transport modes to the site e.g. providing links to bus timetables; and
- presenting the business case for the TP and securing a budget for continued development and ensuring its efficient and effective use.

The role of a TP co-ordinator is one that should never be overlooked. The person identified for the job should be someone that can combine enthusiasm and commitment with pragmatic thinking. They also need to be effective and robust communicators who have the backing of management. Qualities required of co-ordinators include:

- popularity amongst staff and the ability to command respect;
- marketing skills;
- adaptable;
- capability to be able to deal with a wide variety of people both internal to the company and external;
- computer literate;
- ability to lead by example; and
- practical and realistic.

The backing of management is essential for the success of the TP. Ideally, if managers and directors can be seen to be actively using some of the TP measures; it builds in some level of normality and security and will help encourage other members of staff to participate.

4.7 Travel Plan Promotion and Measures

This section outlines a range of measures that can be implemented as part of any future TP. The measures presented are considered to be relevant to the scale of the Proposed Development and have the greatest potential for encouraging the use of sustainable transport modes amongst employees and visitors.

The measures have been broken down into the following sections:

- information and promotion;
- walking;
- cycling;
- public transport;
- car sharing; and
- other initiatives.

Information and Promotion

Information and promotion form an important part of a TP. This involves engaging with individuals about the TP and raising awareness of travel options and 'smart' working.

The TP co-ordinator should market and promote the TP as follows:

- displaying information about travel choices on notice boards and public areas within the Proposed Development;
- provision of 'Sustainable Travel Information Packs' for employees containing details of sustainable travel options;
- providing content for email, social media or website distribution to employees as well as, customers and visitors;
- organising events to coincide with national / local events; and
- displaying updates on TP targets.

Notice Boards

The notice boards should be located in public areas of the Proposed Development and provide up-to-date travel information such as public transport timetables, location of the nearest bus stops, rail station, cycle routes, cycle parking as well as details of any upcoming promotional campaigns.

Travel Options Leaflet / welcome pack

A Travel Options Leaflet (TOL) or welcome pack can encompass the majority of the measures recommended in this TP. The TOL / welcome pack would be provided to all new employees. This will include, but is not limited to:

- map(s) identifying the location of bus stops, local facilities, cycle routes and approximate walking times;
- example of carbon and costs saved as well as calories burned by undertaking a journey by different modes of travel;
- links to travel planning websites;
- links to travel challenges and competitions; and
- links to Liftshare.com and local car clubs.

Events

Regular events can raise awareness of facilities on site and sustainable travel in general. These could tie into national events such as Bike Week, Walk to Work Week, Car Free World Day etc.

Walking

Walking is cheap, offers reliable journey times and is environmentally friendly. The following measures could be implemented to encourage walking to and from the Proposed Development.

- provision of showers and changing areas for staff, where feasible;
- provision of information on noticeboards and other media channels providing directions and walking times to key destinations such as public transport nodes and local amenities; and
- use of online cycling resources.

Cycling

It is important that the TP encourages cycling to the Proposed Development by staff and visitors. The following measures could be introduced to encourage cycling to and from the Proposed Development:

- provision of information on notice boards and other media channels providing cycle maps and cycling times to key destinations and local amenities;
- provision of sheltered and secure cycle parking – to be provided as part of the development proposals;
- provision of showers and changing facilities, where feasible;
- provision of an on-site cycle repair stand and odometers;
- provision of appropriate signage to direct cyclists to other amenities and off-site cycle routes;
- consideration of setting up Cycle-to-Work scheme for staff, where feasible;
- Dr Bike maintenance visits;
- cycle training courses and events;
- opportunity to create a Bicycle User Group (BUG) amongst employees; and
- use of online cycling resources.

Public Transport

The following measures could be introduced to increase public transport use:

- provision of maps and timetables of local bus and rail networks including location of public transport nodes and information on walking times to these nodes;
- working with local transport operators to negotiate discounts on public transport;
- offer interest free loans for the purchase of season tickets for staff; and
- use of online public transport resources, including timetable and service information.

Car Sharing

Car sharing is often the most effective measure for encouraging staff to reduce the number of single occupancy car trips. The following measures could promote the use of car sharing on those journeys made by car:

- use of online car sharing resources including; and
 - <https://liftshare.com/uk>
- an employee car share matching service which can be created by the TP coordinator.

Other Initiatives

As detailed in Section 3 of the report, the Applicant is committed to providing a shuttle bus service for employees at the Proposed Development. This is seen as a key driver in reducing single occupancy car trips and moving employees on to more sustainable travel choices. The routing of which has yet to be confirmed but could 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.

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. Correspondence with Aberdeen City Council in relation to this can be seen in Annex B.

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.

4.8 Staff Surveys

In order to start up a TP, a survey of those working in the Proposed Development would need to be conducted within a few months of the development becoming operational. This survey would establish the travel characteristics of those employed on site, allowing an informed choice to be made on what travel plan measures would be further refined for use on the site.

The survey would also establish the base modal shifts for the site, allowing targets to be set for future years.

4.9 Mode Share Targets

Realistic mode targets would be set within the TP upon completion of the staff surveys which would incorporate any comments received from AC following the granting of planning permission. Mode share targets must be SMART i.e., Specific, Measurable, Appropriate, Realistic, and Timed.

4.10 Review and Management Process

An effective management system for the TP is essential in order to make the plan as effective as possible. The TP will need to be reviewed on an annual basis to ensure that it is achieving its modal share objectives. This will require roughly the same survey to be undertaken by the TP co-ordinator every year, with the results compared on a year-on-year basis.

Should the review of the survey results indicate that changes to the TP are needed, the co-ordinator will need to assess what alternative measures should be put in place or identify any information gaps that may have arisen.

4.11 Summary

It is intended that this framework TP will form the basis for a full TP, which will support the Proposed Development. It sets out a range of measures and incentives which could be adopted at the development to promote access by sustainable travel modes. The framework is flexible enough to be implemented within a site wide travel plan covering all employers within the site if required.

5 Study Methodology

5.1 Introduction

There are three phases of the Proposed Development, which have been considered in this assessment and are as follows:

- the construction phase;
- the operational phase; and
- any possible future decommissioning phase, although the planning permission is not proposed to be time limited and require decommissioning and site restoration.

5.2 Project Phases – Transport Overview

Of the three phases, the construction phase and operational phase are considered to have the greatest impact in terms of transport and potential impacts on the road network and sensitive receptors. Construction plant, bulk materials and components will be transported to site during the construction phase, while staff transport to and from the site are anticipated during the operational phase, potentially resulting in a significant increase in traffic within the study area.

Any future decommissioning phase would involve fewer trips on the road network than the construction and operational phases, as some elements would likely be left in place on the site. As such, this has not been considered further within the assessment.

5.3 Scoping Discussions

The Applicant submitted a request for scoping opinion to AC in respect of the EIA which included a section considering traffic and transport. A full review of that scoping opinion and other correspondence relating to the scope of the study including pre-application advice is provided in the **Transport and Access Chapter of the EIA Report (Volume 2: Chapter 9)**.

6 Baseline Conditions

6.1 Study Area Determination

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.

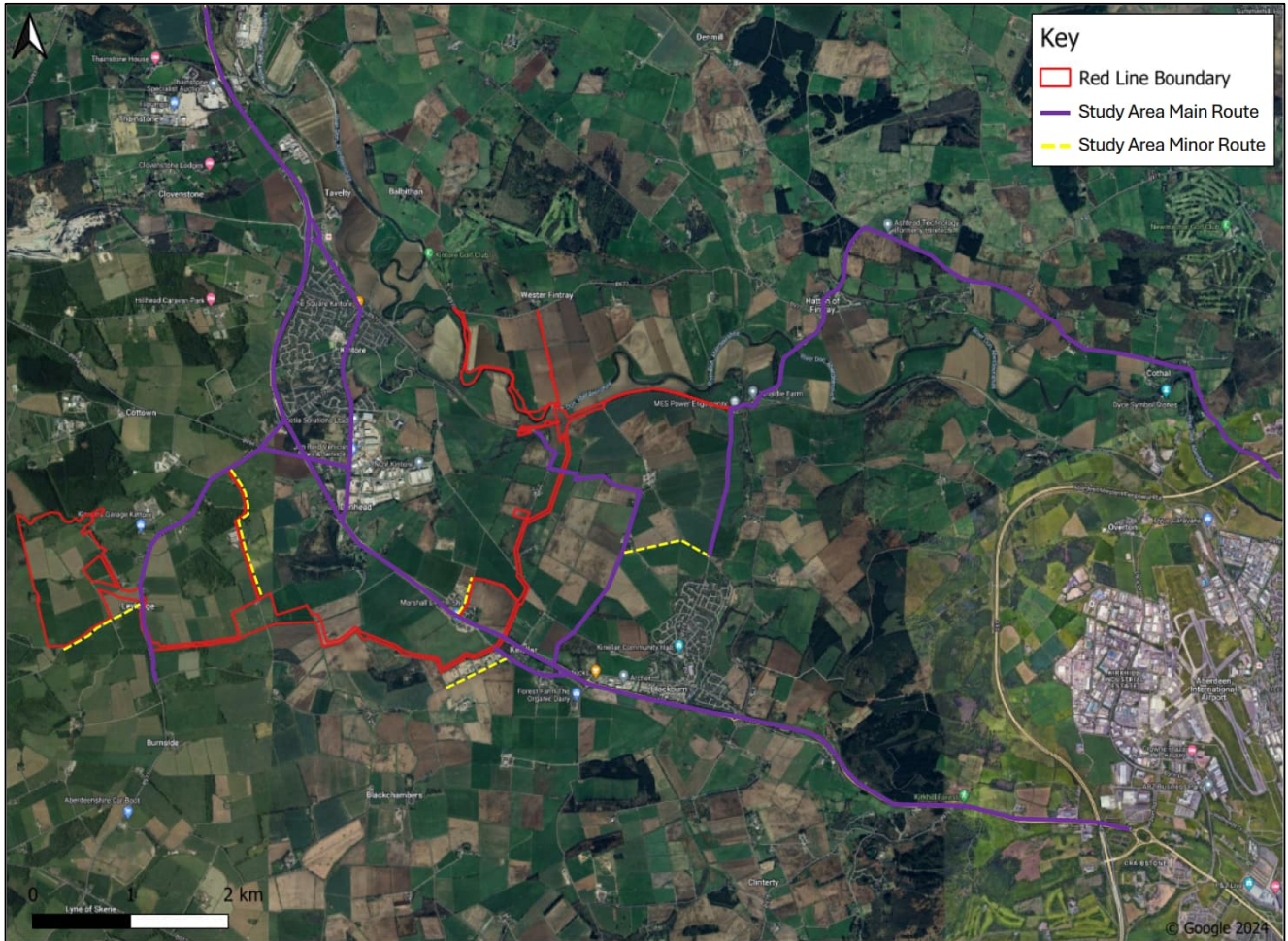
The study area for the assessment has therefore been assumed to include sections of the following roads:

- 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.

The above study area is illustrated in Figure 4.

Effects associated with construction 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 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 4 Transport Assessment Study Area



6.2 Pedestrian and Cycle Networks

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

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.

A review of the Core Paths Plan¹ on the AC website indicates that the following Core Paths detailed in Table 2 are located within the vicinity of the Proposed Development. Those Core Paths either on the study area roads or crossing the roads are highlighted in 'bold'.

Table 2 Core Paths in the vicinity of the Proposed Development

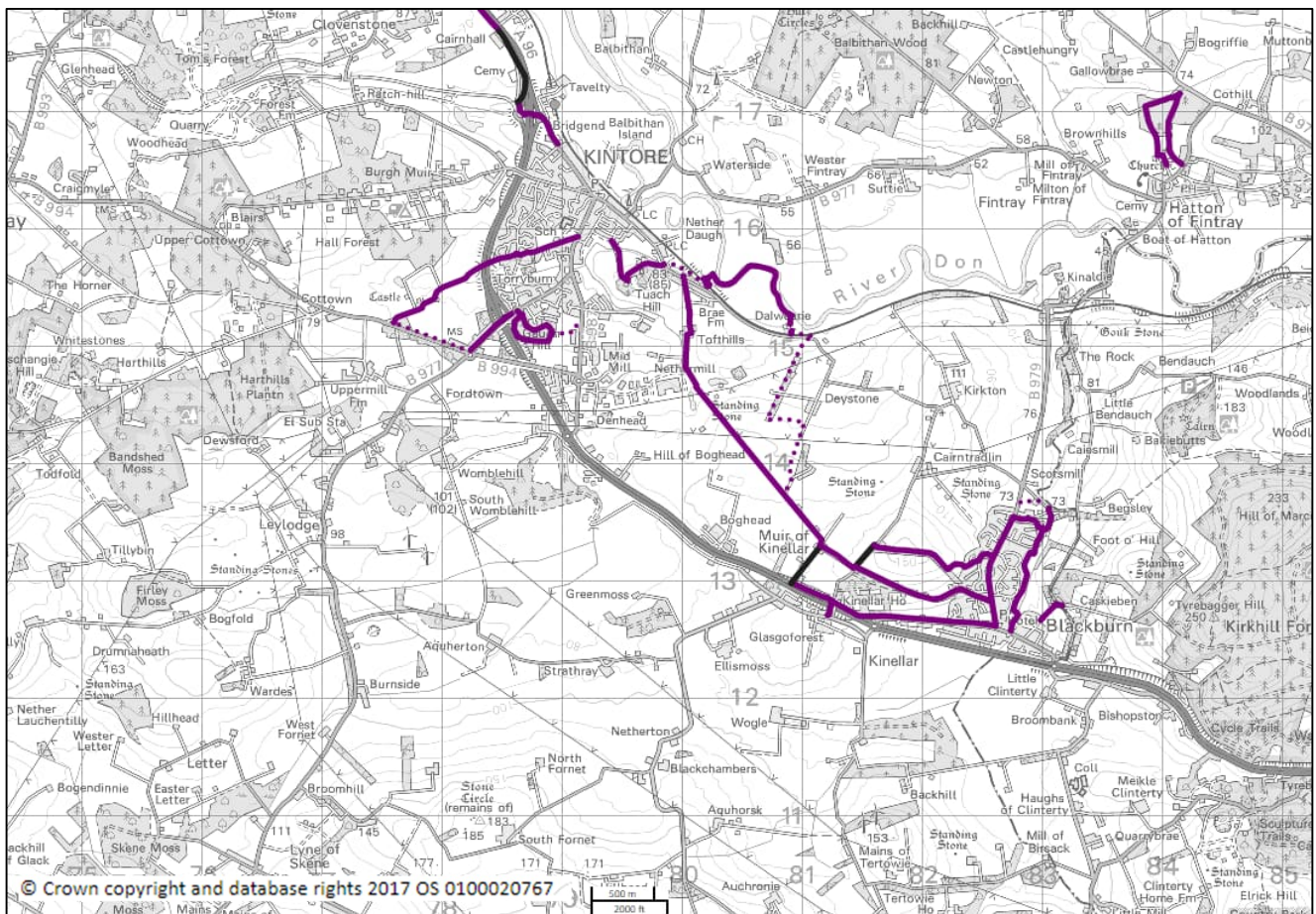
Path No.	Location	Path Type	Length (km)
410.01	Castle Road / Castle Walk between the B994 to the south and B987 to the North	Existing Core Path	1.77
410.05P	B994 between the B977 to the east and Castle Road junction	Proposed Core Path	0.68
410.05	B977 between the B994 junction and Hallforest Avenue junction	Existing Core Path	0.46
410.04	Off-road within Cruach Hill, between the B977 and B987	Existing Core Path	0.99
410.04P	Off-road linking Core Path 410.04 with the B987	Proposed Core Path	0.28
410.02	Off-road linking Eastburn Road with Kingsfield Road	Existing Core Path	0.77

¹ Available at: <https://gis.aberdeenshire.gov.uk/maps/Map.aspx?MapName=Paths&baselayer=OS%20Greyscale>

Path No.	Location	Path Type	Length (km)
410.03P	Off-road linking Core Path 410.02 with Core Path 410.03	Proposed Core Path	2.49
402.03	Track linking Kingsfield Road in the north with Core Path 402.04 in Blackburn to the south	Existing Core Path	4.33
402.03R	Road section linking 402.03 at Broomhill to the A96	Existing Core Path	0.40
410.03	Off-road section following southern banks of River Don	Existing Core Path	1.36
410.03P	Path linking Core Path 410.03 in the north with Core Path 402.03 in the south	Proposed Core Path	2.49
402.01	Path linking Core Path 402.03R in the west with Core Path 402.04 in Blackburn to the west	Existing Core Path	1.50
402.02R	Road section linking Core Path 402.03 in the south with Core Path 402.02 in the north	Existing Core Path	0.25
402.02	Off-road section linking Core Path 402.02R on Kirkton Cottages in the west with Averton Park in Blackburn	Existing Core Path	1.13
406.01	Predominantly off-road loop in Hill of Hatton Wood in Hatton of Fintry, ties in with the B977	Existing Core Path	1.55
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)	Existing Core Path	2.83

The above Core Paths can be seen in Figure 5, which is a map extract from the AC Core Paths Plan.

Figure 5 AC Core Path Plan



A review of Sustrans' National Cycle Network (NCN) route map² 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

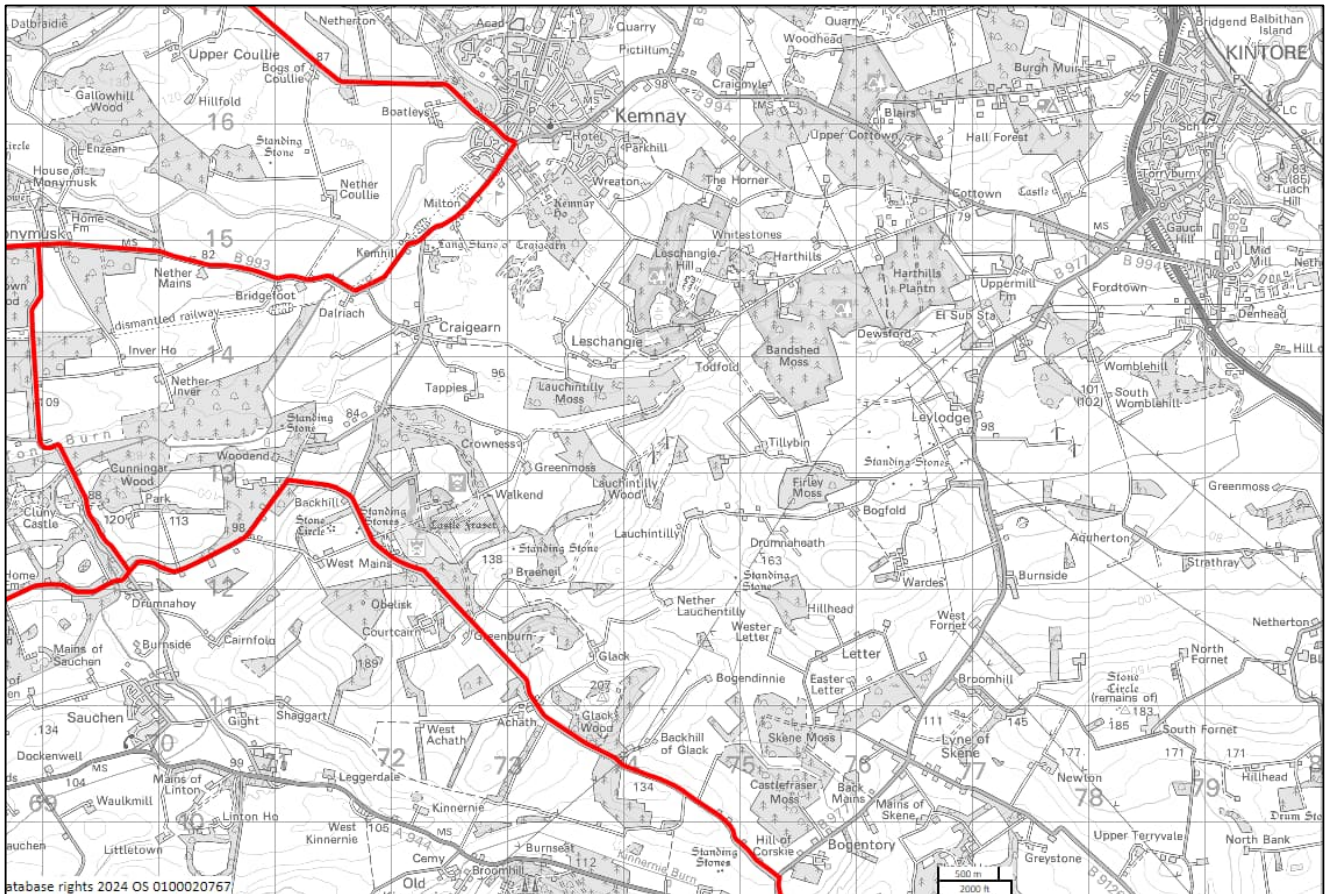
² <https://www.sustrans.org.uk/national-cycle-network>

capital of Inverness and is part of both the long-distance Coasts and Castles route and the North Sea Cycle Route.

With regards to local cycle routes, the AC cycle plan³ on the AC website indicates that the closest routes to the Proposed Development lie to the west in the vicinity of Kemnary and Dunecht. Details of these routes are provided below, while their location can be seen in Figure 6, which is a map extract from the AC cycle plan.

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

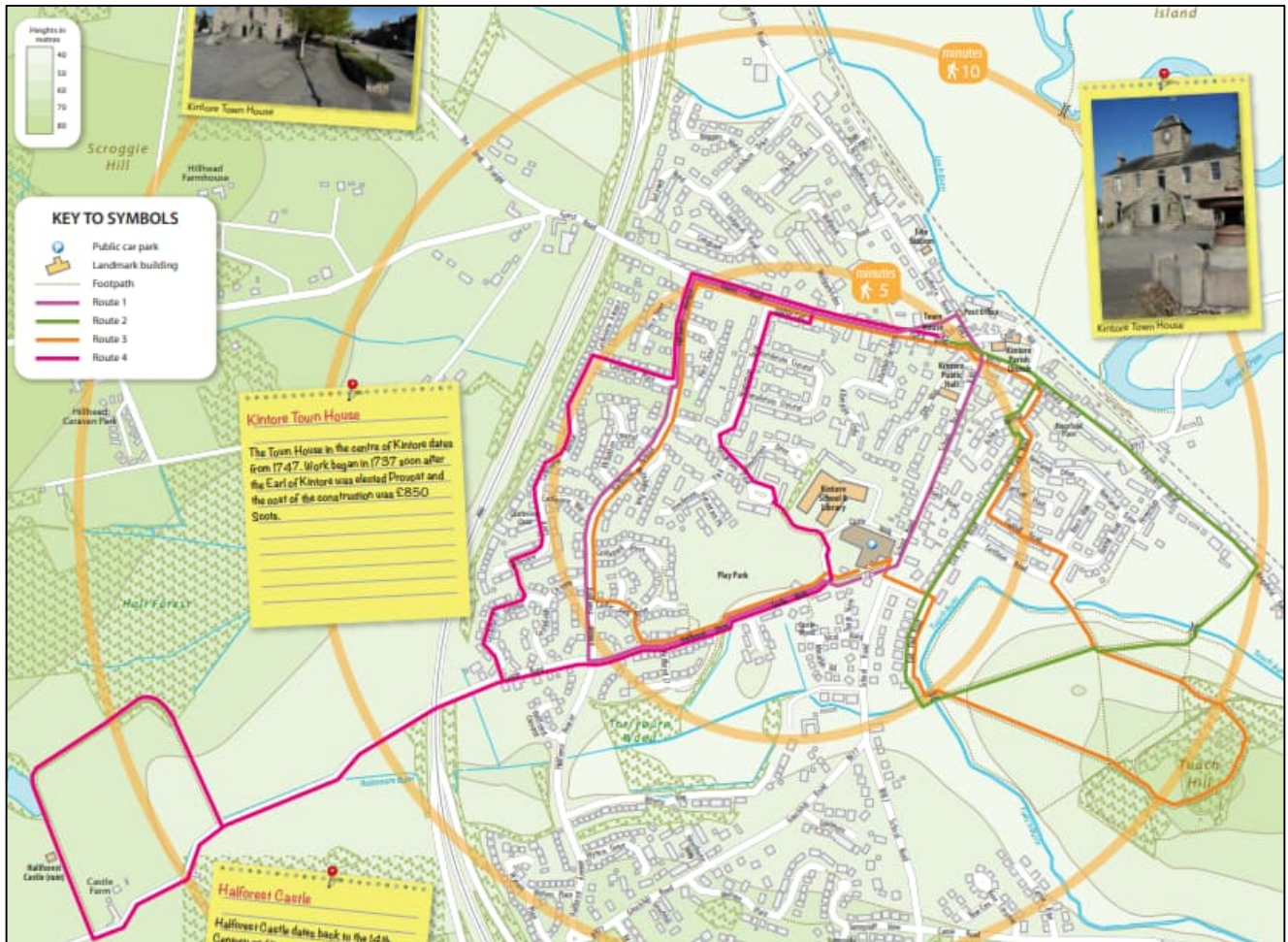
Figure 6 AC Cycle Plan



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 Figure 7 below, while full details of the routes can be sourced from AC⁴.

³ Available at:
<https://gis.aberdeenshire.gov.uk/maps/map.aspx?x=337908&y=813529&resolution=200&epsg=27700&mapname=aberdeenshire&baseLayer=OS%20Greyscale&datalayers=Cycle%20Routes#>
⁴ https://www.aberdeenshire.gov.uk/media/25838/kintore_walking_routes.pdf

Figure 7 AC Kintore Walking and Cycling Routes



6.3 Road Access

A96

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.

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 this decreases to 60 mph on single carriageway sections.

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

B987

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.

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

B994

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.

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

B977

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.

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

Unclassified road between the B977 and Bogfold

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.

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

Hawthorne Cottage

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 it 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.

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

The short section of unclassified road is accessed from the A96 and provides access to a section of Hawthorne 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 on beyond this is private, providing access to land used for agricultural purposes.

Kirkton Cottages

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.

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

The Rushlach

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.

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

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.

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

B979

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.

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

General Road Suitability

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'.

The Agreed Timber Route Map⁵ 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'.

'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.

⁵ <http://timbertransportforum.org.uk/>

6.4 Existing Traffic Conditions

In order to assess the impact of development traffic on the study area, Automatic Traffic Count (ATC) sites were established in April 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:

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.

In addition to the ATC data, further traffic count data was obtained from the Department for Transport (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 >3.5tonnes gross maximum weight).

Traffic data has been used for the following locations:

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

A National Road Traffic Forecast (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.

These sites were identified as being areas where sensitive receptors on the access routes would be located. A full receptor sensitivity and effect review is prepared in the **Transport and Access Chapter of the EIA Report (Volume 2: Chapter 9)**.

Figure 8 shows the location of the surveys, while Table 3 summarises the Annual Average Daily Traffic (AADT) data collected and used in this assessment.

Figure 8 Traffic Count Locations

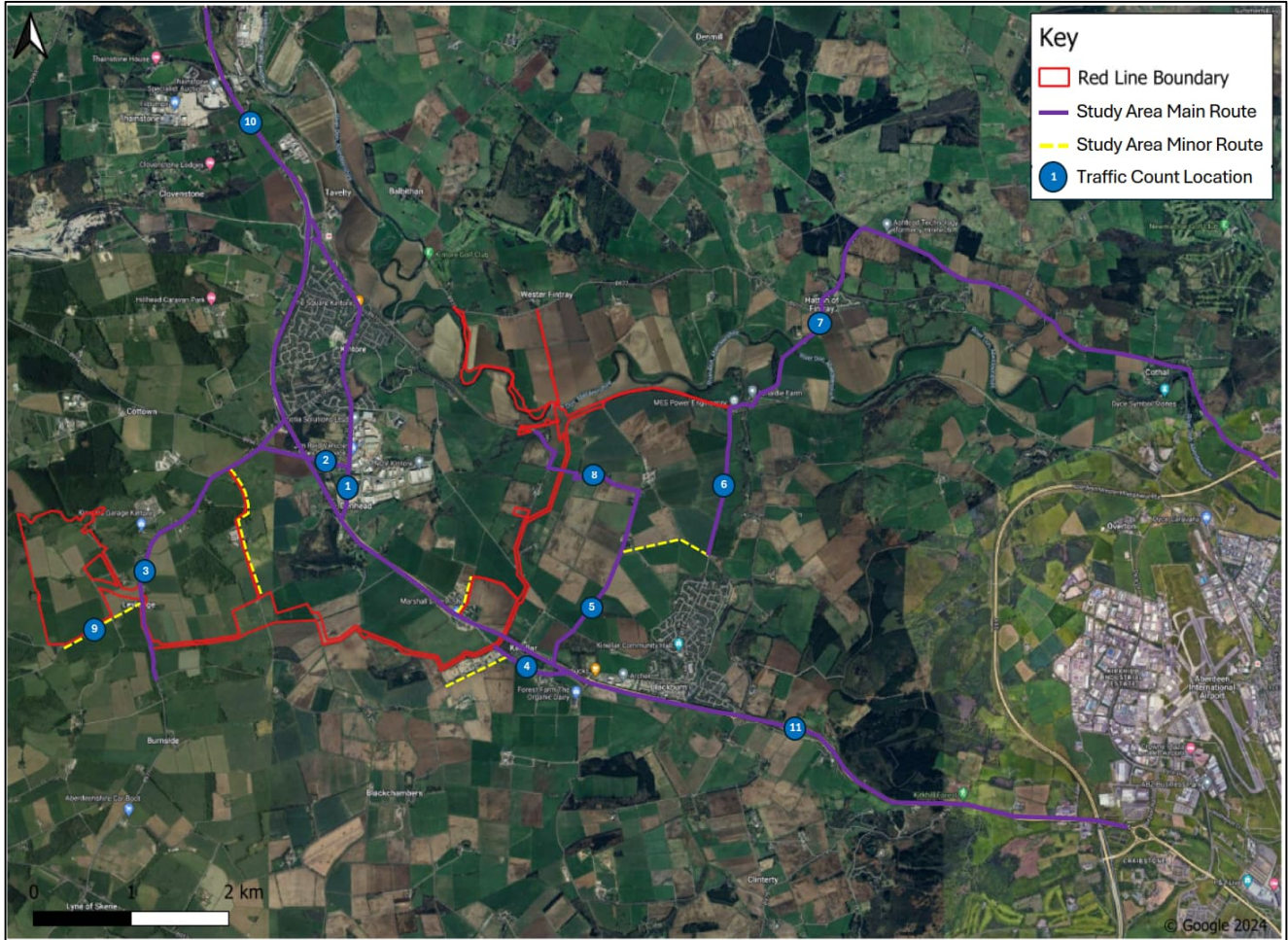


Table 3 24-hour Average Traffic Data (2024)

Ref. No.	Survey Location	Cars/LGV	HGV	Total
1	B987 to the south of the B994 junction	7,365	1,311	8,676
2	B994 to the west of the B987 junction	4,057	842	4,898
3	B977 to the north of Leylodge	2,280	622	2,902
4	Hawthorne Cottage to the east of Heathland Park junction	685	249	934
5	Kirkton Cottages to the north of Old Turnpyke Road junction	113	44	158
6	B979 to the north of Blackburn	756	176	933
7	B979 to the south of Hatton of Fintray to B977 at the A90	799	155	954
8	The Rushlach to the west of Wood Cottage	64	22	87
9	Unclassified road between the B977 and Bogfold	127	34	160
10	A96 to the north of Kintore	27,943	1,263	29,206
11	A96 to the south of Kintore	27,392	1,208	28,600

Please note that variances may occur due to rounding.

As noted above the ATCs undertaken to inform the study also collected speed data and a summary of this can be seen in Table 4 below.

Table 4 Speed Summary

Survey Location	Data Source	Mean Speed (mph)	85%tile 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

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.

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 5 below.

Table 5 B977 Speed Summary

Survey Location	Data Source	Mean Speed (mph)	85%tile Speed (mph)	Speed Limit (mph)
B977 in the vicinity of the junction to Uppermill Farm	ATC	45.2	50.9	60

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 60mph.

6.5 Accident Review

Personal Injury Accident (PIA) data for the five-year period covering 2018 to 2022 for the local road network has been undertaken. This covers the roads leading through to the main development area (AGI), construction compounds and areas used for the construction of the pipeline route corridors.

TA Guidance⁶ 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 3-year period, or preferably a 5-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.

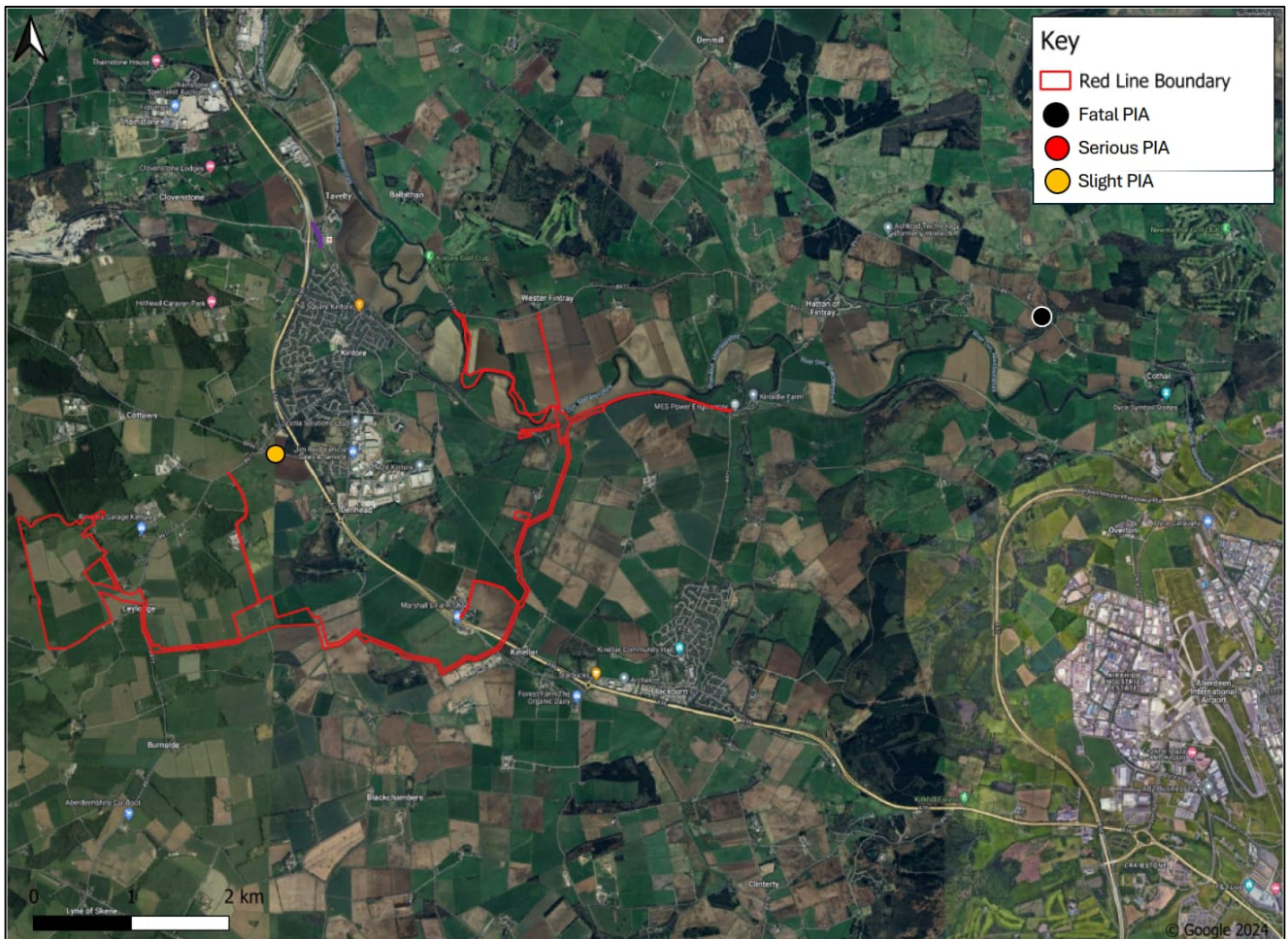
⁶ https://www.transport.gov.scot/media/4589/planning_reform_-_dpmtag_-_development_management_dpmtag_ref_17_-_transport_assessment_guidance_final_-_june_2012.pdf

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 6, while Figure 9 shows their locations.

Table 6 Personal Injury Accident Summary

Road Links	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 9 PIA Locations



A summary analysis of the incidents indicates that:

- A total of two PIAs were recorded on the local road network leading through to the main development area (AGI), construction compounds and areas used for the construction of the pipeline route corridors, 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.

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 approach to bends on the carriageway or in the vicinity of junctions, where there is an increased level of vehicle interaction.

6.6 Future Baseline Traffic Conditions

6.6.1 2026 Construction Phase Traffic Flows

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.

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.

To assess the likely effects during the construction, base year traffic flows were determined by applying a 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 7. This will be used in the Construction Peak Traffic Impact Assessment.

Table 7 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.

In the scenario that the Proposed Development did 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.

6.6.2 2030 Operational Phase Traffic Flows

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

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 8. This will be used in the operational Traffic Impact Assessment for when the whole facility will be operational.

Table 8 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.

7 Trip Generation and Distribution

7.1 Construction Phase

During the 36 to 48 month construction period, the following traffic will require access to the 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; and
- occasional delivery of larger items of plant; and
- components relating to the Proposed Development and associated infrastructure.

7.1.1 Construction Traffic Trip Derivation

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 500 MWe phases, subject to market conditions, electricity supply agreement with SSEN, progression of hydrogen blending in the UK gas network and progression of Project Union.

Despite this, in order to develop average monthly traffic flow data for the Proposed Development, it has been assumed the construction of all elements would run in a single phase, thus allowing for a worst case assessment to be undertaken. Based on the level of information available from the preliminary design of the Proposed Development and PF have estimated traffic movements based upon experience from similar projects.

It should be noted that as the assessment is based upon an indicative construction programme for the Proposed Development, alterations in this programme may increase or decrease traffic flows per month.

Daily construction traffic estimates have been developed and are detailed in Annex C. The peak of construction activity occurs in Month 6 of the programme and results in 278 daily movements (139 inbound and 139 outbound movements per day). Of these 278 daily movements, 268 movements are associated with HGVs, which would be bringing equipment, construction materials, components etc. to the site and with construction staff arriving at and departing the site and 10 movements are associated with car / LGV movements associated with general site deliveries and visitors.

Specifically in relation to construction staff, 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 site, it is proposed that they would be transported in coaches from one or more off-site locations. For the purposes 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.

Construction staff would be transported to the main electrolysis plant site, in the first instance before being transported to the wider construction areas via the pipeline corridor where practicable, which will have a haul road running parallel. There will be a requirement to move some of the construction staff to certain locations via minibus however the information in relation to this is unknown at this time, and the number is expected to be negligible and well within the daily variations in traffic flows on the local road network.

7.1.2 Construction Trip Distribution

The distribution of construction traffic on the network would vary depending on the types of loads being transported to and from the site. The construction supply contracts have not yet been let and the Applicant will confirm exact sources of material with the Council prior to construction works commencing.

A number of assumptions have therefore been made in relation to the routing of construction trips, which are as follows:

- all construction staff will be transported to the site in coaches from an off-site transfer point, likely to be located to the southeast towards Aberdeen;
- sand, aggregate, concrete batching materials etc. will arrive from the local quarries and will travel through to the site either via the A96 from the north and then the B977 or via the local road network before joining the B977. The Balance of Plant (BoP) contractor will confirm final quarry and material sourcing with the Council in the Construction Traffic Management Plan (CTMP); and
- general site deliveries, including building materials, pipe materials, electrical components will arrive predominantly from the A96 from the southeast.

Access will be required at the main development area, the AGI, pipeline corridor and grid connection areas. The location of the access points can be seen on Figure 3, while a summary of the proposed access points, including routing options is provided in Table 9 below. Note, the routing and distribution of those construction trips associated with the pipeline corridor, have taken account of the length of corridor, available access opportunities, with the resultant trips assigned accordingly.

Table 9 Proposed Development Access Strategy

Proposed Development Area	Gate	Gate Location	Routing
Electrolysis Plant and Grid Connection area	Gate 01	B977	A96 northbound, B987, B994 and B977 or A96 southbound and B977
Hydrogen Pipeline and Gas Grid Connection	Gate 02	B977 at Womblehill (Private Road)	A96 northbound, B987, B994 and B977 or A96 southbound and B977
Pipeline Corridor	Gate 02	B977 at Womblehill (Private Road)	A96 northbound, B987, B994 and B977 or A96 southbound and B977
	Gate 03	Boghead Farm Access	A96 northbound, A96 southbound and Unclassified road from the A96 past Boghead Farm House or A96 southbound and Unclassified road from the A96 past Boghead Farm House
	Gate 04	C99C Road	A96 northbound, Hawthorne Cottage and C99C road or A96 southbound, Hawthorne Cottages and C99C road
	Gate 05 (N)	The Rushlach	A96 northbound, Hawthorne Cottage, Kirkton Cottages, The Rushlach from Kinellar Parish Church on Kirkton Cottages or A96 southbound Hawthorne Cottage, Kirkton Cottages, The Rushlach from Kinellar Parish Church on Kirkton Cottages
	Gate 05 (S)	The Rushlach	A96 northbound, Hawthorne Cottage, Kirkton Cottages, The Rushlach from Kinellar Parish Church on Kirkton Cottages to the River Don or A96 southbound Hawthorne Cottage, Kirkton Cottages, The Rushlach from Kinellar Parish Church on Kirkton Cottages to the River Don
	Gate 06	B979	A96 northbound, Hawthorne Cottage, Kirkton Cottages, Unclassified road from Cairntradlin on Kirkton Cottages to the B979 or A96 southbound, Hawthorne Cottage, Kirkton Cottages, Unclassified road from Cairntradlin on Kirkton Cottages to the B979
Water Pipeline Intake	Gate 07	The Rushlach	A96 northbound, Hawthorne Cottage, Kirkton Cottages, The Rushlach from Kinellar Parish Church on Kirkton Cottages to the River Don or A96 southbound Hawthorne Cottage, Kirkton Cottages, The Rushlach from Kinellar Parish Church on Kirkton Cottages to the River Don

7.1.3 Peak Construction Traffic

Following the distribution and assignment of traffic flows to the study area network, the resultant daily traffic during the peak of construction are summarised in Table 10.

Table 10 Peak Construction Traffic

Survey Location	Cars/LGV	HGV	Total
B987 to the south of the B994 junction	10	104	114
B994 to the west of the B987 junction	10	104	114
B977 to the north of Leylodge	10	248	258
Hawthorne Cottage to the east of Heathland Park junction	0	6	6
Kirkton Cottages to the north of Old Turnpyke Road junction	0	6	6
B979 to the north of Blackburn	0	1	1
B979 to the south of Hatton of Fintray to B977 at the A90	0	0	0
The Rushlach to the west of Wood Cottage	0	5	5
Unclassified road between the B977 and Bogfold	0	0	0
A96 to the north of Kintore	0	158	158
A96 to the south of Kintore	10	108	118

Please note minor variances due to rounding may occur.

7.2 Operational Phase

7.2.1 Operational Trip Derivation

The Applicant has undertaken a detailed review of the operation at other locations and provided the estimated vehicle trip generation for the operational phase of the Proposed Development. For the purposes of estimating the trip generation, it has been assumed that the whole site is operational.

The Proposed Development would be capable of operating on up to a 24/7/365 basis (with periods of downtime for planned maintenance) to enable flexibility in hydrogen production. In practice actual operation of the site would likely be around 30-40% of that time over the course of a year, to respond to intermittency of renewable energy generation peaks.

The main electrolysis site would be staffed in a shift pattern with employees holding a variety of skillsets for operating the control room, undertaking maintenance and providing site security and administration. An operational workforce of typically 30-50 FTE staff in total, across two or three shifts, is expected for the initial 500 MWe phase of development. For the full 3 GWe development this is expected to rise to 200 FTE staff.

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.

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.

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.

A staff travel plan would be produced to reduce reliance on private car use and this would be prepared once the site is operational. A framework Staff Travel Plan has been included in Section 4 at this time, detailing typical measures that could be employed within the Proposed Development.

The Applicant has set targets in relation to the modal split for staff working at the Proposed Development, which are shown in Table 11. This has been based on 120 day shift employees and 80 night shift employees.

Table 11 Mode Share

Mode of Travel	Percentage	Day Shift	Day Shift Admin	Night Shift
Car (single occupancy)	10%	10	3	12
Car Share (assumed two staff per car)	24%	24	6	20
Walk	0%	0	0	0
Cycle	2%	2	0	0
Motorcycle	4%	4	0	4
Staff Shuttle Bus (30 seater)	60%	60	11	44
Total	100%	100	20	80

Based on the above modal split, the vehicular trip generation for the Proposed Development relating to staff for the AM and PM peak periods has been estimated and is shown in Table 12.

Table 12 Operational Staff Trip Generation Summary

Mode of Travel	AM Peak		PM Peak	
	Day Shift In	Night Shift Out	Night Shift In	Day Shift Out
Staff Car	28	22	22	28
Staff Shuttle Bus (30 seater)	2 (4 including return trip to station)	Assumed to use bus returning to station	Assumed to use bus returning to station	2 (4 including return trip to station)
Total	30 (32 including return trip to station)	22	22	30 (32 including return trip to station)

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. Assuming the vehicles (cars / buses) arrive in a flat profile over the hour, this would equate to less than one vehicle per minute.

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 (8 inbound and 8 outbound), which would occur throughout the day.

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

7.2.2 Operational Trip Distribution

With regards to the distribution of traffic in relation to the operation phase, the following assumptions have been made:

- staff travelling through to the Proposed Development on the staff shuttle bus will do so from Kintore rail station⁷ via the B987, A96 (southbound), B977 and the unclassified road between the B977 and Bogfold;
- staff arriving by car will arrive from the north and south on the A96, split 50/50. Those arriving from the south will do so via the A96 (northbound), B987, B994, B977 and the unclassified road between the B977 and Bogfold. Thos arriving from the north will do so via the A96 (southbound), B977 and the unclassified road between the B977 and Bogfold; and

⁷ Although a wider shuttle bus routing is proposed and use of park and ride facilities has been discussed positively with Aberdeen City Council Passenger Transport Unit, the assumption of the shuttle bus route as described in this bullet point is assessed as a maximum case for transport along the road links within the study area.

➤ visitors and general deliveries have been split as per the staff arrivals noted above.

7.2.3 Peak Operational Traffic

Following the distribution and assignment of traffic flows to the study area network, the resultant daily traffic during the peak of operation are summarised in Table 13.

Table 13 Peak Operational Traffic

Survey Location	Cars/LGV	HGV	Total
B987 to the south of the B994 junction	58	0	58
B994 to the west of the B987 junction	58	0	58
B977 to the north of Leylodge	124	0	124
Hawthorne Cottage to the east of Heathland Park junction	0	0	0
Kirkton Cottages to the north of Old Turnpyke Road junction	0	0	0
B979 to the north of Blackburn	0	0	0
B979 to the south of Hatton of Fintray to B977 at the A90	0	0	0
The Rushlach to the west of Wood Cottage	0	0	0
Unclassified road between the B977 and Bogfold	124	0	124
A96 to the north of Kintore	58	0	58
A96 to the south of Kintore	58	0	58

Please note minor variances due to rounding may occur.

7.3 Decommissioning Phase

Prior to any decommissioning of the 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 onsite to allow transport by a reduced number of HGV.

8 Traffic Impact Assessment

8.1 Construction Impact

The peak month traffic data was combined with the future year (2026) traffic data to allow a comparison between the baseline results to be made. The increase in traffic volumes is illustrated in percentage increases for each class of vehicle. This is illustrated in Table 14.

Table 14 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	0.13%	7.83%	1.30%
B994 to the west of the B987 junction	4,111	955	5,066	0.24%	12.21%	2.30%
B977 to the north of Leylodge	2,315	877	3,192	0.43%	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	0.04%	8.84%	0.41%

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, this is where the main site access will be located for the 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.

The total HGV traffic movements will increase by 39.50% on the B977 to the north of Leylodge, where the main site access to the AGI 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%, which is on The Rushlach to the west of Wood Cottage.

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.

A review of existing theoretical road capacity has been undertaken using The NESAs 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 15.

Table 15 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	59.68%

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.

8.2 Operational Impact

The typical operational traffic data was combined with the future year (2030) traffic data to allow a comparison between the baseline results to be made. The increase in traffic volumes is illustrated in percentage increases for each class of vehicle. This is illustrated in Table 16.

Table 16 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%
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%

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. In terms of potential impacts on the local road network, 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. With regards to the unclassified road between the B977 and Bogfold where operational access will be taken from, 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 review of existing theoretical road capacity has been undertaken using The NESAs 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 17.

Table 17 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%

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 operational phase traffic.

8.3 Committed Developments

A review of the AC online planning portal⁸, in addition to the Scottish Government's Energy Consents Unit portal⁹ was undertaken to identify any consented developments within the vicinity of the Proposed Development which would generate significant traffic. The review examined consented developments whose trips are considered significant in scale (i.e., has associated traffic impact of over 10%).

Projects in scoping or not yet determined cannot be included in cumulative assessments as they have yet to be determined. 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.

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.

⁸ <https://upa.aberdeenshire.gov.uk/online-applications/search.do?action=simple&searchType=Application>

⁹ <https://www.energyconsents.scot/ApplicationSearch.aspx?T=1>

Table 18 includes those committed developments in the vicinity of the Proposed Development given further consideration.

Table 18 Committed Developments

Reference	Description	Current Status	
APP/2022/2022	Scheme comprises formation of battery energy storage system (BESS) (49.9 megawatts), construction of substation, welfare facility, security fencing, CCTV, floodlighting, formation of access, attenuation basin and associated infrastructure.	Consented (April 2023)	<p>No detailed Transport Assessment has been provided as part of the planning application. A CTMP has however been provided, which indicates that the construction of the development will occur over a 12 month period, with a total of 954 two-way vehicle movements or approximately 30 two-way movements per day. Given the relatively small number of temporary construction trips associated with the development, it is assumed that these trips would be accounted for in the NRTF growth factors.</p> <p>Should construction activities overlap, the impacts of construction trips would be managed via an overarching Traffic Management and Monitoring Plan.</p>
APP/2021/2903	Scheme comprises construction of workshop (class 5) and office (class 4) and formation of bus / taxi depot with SUDS. Scheme also includes translucent rooflights. This project also includes associated infrastructure works and access roads.	Consented (December 2023)	No Transport Assessment available. Assumed that trips are accounted for in the NRTF growth factors.
APP/2022/0651	Scheme comprises national for construction of enclosed 132 kV gas insulated switchgear substation and associated infrastructure (formation of substation platform, fenced compound with cctv, siting of battery storage container, formation of access tracks, sustainable urban drainage system basin, temporary construction of compound and landscaping electricity substation comprising platform area, control building, battery storage container, associated plant and infrastructure, fencing, cctv, access tracks, sustainable urban drainage system basin and landscaping.	Consented (October 2022)	<p>The submitted Transport Assessment advises that construction works are scheduled to be completed by 2026. Traffic estimates included within the assessment indicate that during January 2023 to December 2025 there would be a total of 50 LGV and 30 HGV movements per day.</p> <p>Given that the Proposed Development is not expected to commence construction until after construction of the development has been completed, this has not been included in the Future Baseline Flows.</p>
APP/2020/1437	Scheme comprises national for electricity substation comprising platform area, control building, associated plant and infrastructure, ancillary facilities, landscape works and road alterations and improvement works.	Consented (April 2021)	<p>The submitted Transport Assessment advises that construction works are scheduled to be completed by 2026. Traffic estimates included within the assessment indicate that for Phase 1 between June 2021 and October 2023 there would be a total of 50 LGV and 30 HGV movements per day. For Phase 2 between June 2021 and October 2023 there would be a total of 35 LGV and 20 HGV movements per day.</p> <p>Given that the Proposed Development is not expected to commence construction until after construction of the development has been completed, this has not been included in the Future Baseline Flows.</p>

Reference	Description	Current Status	
APP/2020/1673	Scheme comprises formation of battery energy storage compound, siting of substation, construction of boundary fencing, 4 security cameras, suds and access track (as approved by APP/2019/0373) with the addition of additional new planting on these side. This project also includes associated infrastructure works and access roads.	Consented (February 2021)	No Transport Assessment available. Assumed that trips are accounted for in the NRTF growth factors.
APP/2022/0249	Scheme comprises formation of battery energy storage compound (up to 49 megawatts), siting of switch room, HV container, site office, construction of boundary fencing, 5 CCTV masts and formation of access track, including sustainable urban drainage system and parking.	Consented (July 2022)	No Transport Assessment available. Assumed that trips are accounted for in the NRTF growth factors.
APP/2022/2613	Scheme comprises construction of 4 holiday cabins, associated car parking and associated service buildings (amended layout to planning permission app/2021/1327).	Consented (February 2023)	No Transport Assessment available. Assumed that trips are accounted for in the NRTF growth factors.
APP/2022/0283	Residential Development comprising of 600 Dwellinghouses, Neighbourhood Centre, Landscaping, Open Space and Associated Infrastructure Without Compliance with Conditions 3 (Dwellinghouse Occupation Date), 4 (Dwellinghouse Occupation until Kintore Primary School opened), 9 (Formation of Access to Supermarket consented under APP/2014/1953 to be formed), 12 (Construction in the Floodplain); and Amendments to the Wording of Conditions 1 and 2 (Timing and Content of MSC submission), 5 (Energy Statement Submission), 6 (Remediation Work Phasing), 7 (Landscaping), 8 (Archaeology), 11 (Approved Use Class of Neighbourhood Centre/Community Facilities) and 13 (Foul Sewerage Details); (Change to Condition numbering) 10 (Travel Plan Phasing), 14 (Public Transport Strategy Phasing) and 15 (Junction Improvement Works Submission) of Planning Permission Reference APP/2013/3830	Consented (July 2023)	<p>The submitted Transport Assessment undertook a detailed assessment for the development using AC's Paramics microsimulation model of Kintore, which included the cumulative impact of the known committed developments in the town, Local Plan content, potential development areas and options for associated highways mitigation measures. The information provided relates solely to the AM and PM peak periods only, whereas the assessment of the Proposed Development takes account of a 12 hour period. As such, there is insufficient data available to include the scheme in the Future Baseline Flows with any accuracy.</p> <p>It should also be noted that the consented scheme was for Planning Permission in Principle (PPiP) and no information on start dates for the scheme have been provided.</p> <p>Therefore, given the scale of the development and unknown timeframes for construction commencing, the development has not been included in the Future Baseline Flows, rather it has been assumed that that the trips are accounted for in the NRTF growth factors.</p>
APP/2023/2310	Installation of Battery Energy Storage System (BESS) with Installed Capacity of 49.9MW, Substation and Associated Infrastructure	Consented (August 2024)	<p>The submitted Planning Statement, advises that the development will be constructed over a 12 month period and will generate a total 450 HGV deliveries (900 two-way movements). During the peak construction period, it is expected that there will be a maximum of 15 daily HGV deliveries (30 two-way movements).</p> <p>Given that the level of construction traffic generated during the peak period for the development is well within the daily variations in traffic flows on the local road</p>

Reference	Description	Current Status	
			<p>network at this location, based on surveyed flows, it is not considered necessary to include this within Future Baseline Flows.</p> <p>Therefore, given the relatively small number of temporary construction trips associated with the development, it is assumed that these trips would be accounted for in the NRTF growth factors.</p>

The 2026 construction impact assessment, which is the most onerous in terms of trip generation, has demonstrated that there is ample spare capacity on the network with the addition of construction traffic associated with the Proposed Development and the application of Low NRFT growth factors. It is considered that this provides a suitably robust assessment scenario for the temporary increase during the construction phase.

It should be noted that the use of Low NRTF growth assumptions has provided a basis for general local development growth within the study area.

Specifically in relation to the assessment within the **Transport and Access Chapter of the EIA Report (Volume 2: Chapter 9)** it is considered that the above scenario whereby potential growth is accounted for within the Low NRTF growth factors provides a suitably robust assessment to be undertaken. This allows for a scenario whereby the potential impact of the Proposed Development has been considered in full and not diluted, for example, if additional trips associated with committed developments were not on the network at the time of construction.

Should the situation change, and the potential for multiple sites in the vicinity of the Proposed Development being constructed at the same time will be mitigated through the use of an overarching Traffic Management and Monitoring Plan and by introducing a phased delivery plan which will be agreed with AC and Transport Scotland.

9 Proposed Traffic Mitigation Measures

9.1 Introduction

This Section outlines a series of objectives and measures that could be implemented at the Proposed Development during both the construction and operational phases to mitigate any potential impacts. These framework measures have been produced to provide a starting point for discussion with AC and other relevant parties, with the applicable measures secured by way of condition.

9.2 Construction Phase

9.2.1 Outline Construction Traffic Management Plan Measures

The full Construction Traffic Management Plan (CTMP) would be agreed with AC and Transport Scotland prior to construction works commencing, with proposed measures to be included provided below.

The following suggested 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 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 detail 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 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.

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.

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.

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.

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.

9.3 Construction Staff Travel Plan

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 previously highlighted, it is proposed that all construction staff will travel to the Site in coaches from an off-site transfer point, thus reducing the potential impact of vehicular trips on the local road network. Other 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.

9.4 Abnormal Load Transport Management Plan (if required)

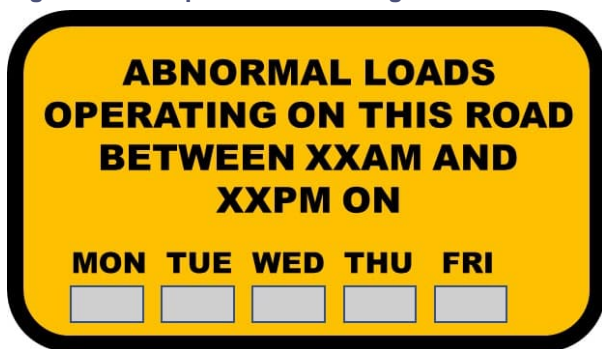
There are a number of traffic management measures that could help reduce the effect of AIL traffic. The exact measures would be agreed post consent following confirmation on the proposed loads, however suggested measures have been included below.

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.

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.

Advance warning signs would be installed on the approaches to the affected road network. Information signage could be installed to help assist drivers and an example is illustrated in Figure 10. Flip up panels (shown in grey) 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.

Figure 10 Example Information Sign



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).

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

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.

9.4.1 Public Information

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

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

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

9.4.2 Convoy System

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.

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.

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.

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

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 by AC, 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). Suggested measures which would be included within the full PMP are provided below.

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 compliant temporary road signage would be provided to assist at these crossing for the benefit of all users.

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.

Signage will be installed on the 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.

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.

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.

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 site must be patient. Riders will be doing their best to reassure their horses while often feeling a high degree of anxiety themselves.

9.6 Operational Phase Mitigation

9.6.1 Staff / Internal Development Measures

Site entrance roads will be well maintained and monitored during the operational life of the Proposed Development. Regular maintenance will be undertaken to keep the site access drainage systems fully operation and to ensure there are no run-off issues onto the public road network.

Parking will be provided within the Proposed Development for staff and visitors, with 40 spaces proposed, with Electric Vehicle (EV) and disabled parking spaces provided at the required level, based on AC development guidelines.

The Applicant is committed to reducing the number of car trips into and out of the Proposed Development during the operational phase. As such, 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.

A staff travel plan would be produced to reduce reliance on private car use and this would be prepared once the site is operational. A framework Staff Travel Plan has been included in Section 4 at this time, detailing typical measures that could be employed within the Proposed Development.

9.6.2 Off-site Development Measures

The Unclassified road between the B977 and Bogfold, where the operational access will be located is currently subject to the national speed limit (60mph) along the site frontage. There is an existing short section from its junction with the B977 where a 40mph speed limit is in place and the Applicant proposes extending this along the site frontage (southern boundary of the site) westwards. A speed survey has been undertaken at this location, with the 7-day mean speed and 85%tile speeds recorded at 34.6mph and 41.1mph respectively, both significantly below the posted speed limit of 60mph. The Applicant would welcome further discussions with AC on this matter.

10 Summary & Conclusions

Pell Frischmann have been commissioned by Statera Energy Ltd. (Statera) on behalf of Kintore Hydrogen Ltd. (the Applicant), to undertake a Transport Assessment for the proposed hydrogen production plant (the Proposed Development). The site is located next to the existing Kintore Substation, to the southwest of Kintore in the Aberdeenshire Council administrative area.

Existing traffic data established a base point for determining the potential impact during the construction and operational phases. This data was factored to future levels to determine the effect of traffic associated with the Proposed Development on the local road network.

The peak of construction activity occurs in Month 6 of the programme and results in 278 daily movements (139 inbound and 139 outbound movements per day). Of these 278 daily movements, 268 movements are associated with HGVs, which would be bringing equipment, construction materials, components etc. to the site and with construction staff arriving at and departing the site and 10 movements are associated with car / LGV movements associated with general site deliveries and visitors.

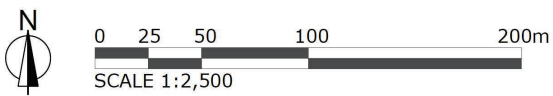
The traffic generation during the operational phase, suggests that up to 124 two-way vehicle movements (62 inbound and 62 outbound) would occur. This includes staff journeys made across the two operating shifts in both cars and staff shuttle buses. In addition an allowance has been included for visitors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

No link capacity issues are expected on any of the roads assessed during the construction or operational phases, will significant spare capacity on all roads within the study area.

A series of mitigation measures and management plans have been proposed and a draft CTMP and operational Staff Travel Plan has been provided to help mitigate and offset the impacts of both the construction and operational phase traffic flows. It is considered that these can be secured by condition with Aberdeenshire Council.

The Proposed Development will lead to a temporary increase in traffic volumes within the study area during the construction phase, however this can be appropriately and effectively managed. During the operational phase, the level of traffic generated is low and would not result in any significant impacts on the local road network. It is therefore concluded that there are no transport related matters which would preclude the construction of the Proposed Development on the subject site.

Annex A Proposed
Site Access Drawings



Legend

- | | | | |
|--|--------------------|--|------------------------|
| Site boundary | Ecological area | Hydrogen pipeline | Proposed 1m contours |
| Existing hedgerows and trees | Fencing | Attenuation pond | Specimen tree planting |
| Extension to existing substation | Stone access track | Watercourse reroute (if needed) | |
| Bund | Phase 1 planting | Loose permeable gravel | |
| Diverted line electricity clearance zone | Phase 2 planting | Other planting (e.g. wildflower grassland) | |
| Diverted route of overhead electricity line* | Retaining wall | Emergency access route | |

*Estimated alignments - third party (Transmission Owner) works

Revision	Date	Comment
A	22.05.24	Access arrangement altered

ON BEHALF
Statera Energy

DATE 27th March 2024
SCALE 1 : 2,500 @ A1
DWG No SL260_L_X_MP_2
APPROVED CMcD

PROJECT
Kintore Electrolysis

TITLE
Masterplan
Option 1

Junction Location & Tracking
FTA Max Design Artic HGV



9m x 120m Visibility Splay



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Pell Frischmann 93 GEORGE STREET, EDINBURGH, EH2 3ES Tel: +44 (0)131 240 1270 Email: pfe@pellfrischmann.com www.pellfrischmann.com	Project	Kintore Hydrogen Plant		
	Client	Kintore Hydrogen Limited		
Key Wheel SPA Body SPA Load SPA Indicative Over-run Over-sail	Drawing Title	Site Access Plan & Swept Path		
	SPA Location	Proposed B977 Site Access Junction		
		Name	Date	Scale
	Drawn	GB	19/01/2024	1:500 @ A3
	Designed	SMcG	19/01/2024	File No. 240119 access junction.dwg
	Checked	GB	19/01/2024	Drawing Status Draft
	Point of Interest	1		
	Drawing No.	SK01		Revision
		Notes: 1. All mitigation is subject to confirmation through a test run. 2. This is not a construction drawing and is intended for illustration purposes only. 3. Do not scale from this drawing.		2



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	Client	Kintore Hydrogen Limited		Designed	SMcG	Date	19/01/2024	File No.	240119 access junction.dwg	
Key — Wheel SPA — Body SPA — Load SPA — Indicative Over-run Over-sail	Drawing Title	Site Access Plan & Swept Path		Checked	GB	Date	19/01/2024	Drawing Status	Draft	
	SPA Location	Proposed B977 Site Access Junction		Point of Interest	1		Drawing No.	SK01A	Notes:	Revision
								1. All mitigation is subject to confirmation through a test run. 2. This is not a construction drawing and is intended for illustration purposes only. 3. Do not scale from this drawing.	2	

Junction Location & Tracking
Proposed AIL Delivery



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	Client	Kintore Hydrogen Limited		Designed	SMcG	19/01/2024	File No.	240119 access junction.dwg		
Key — Wheel SPA — Body SPA — Load SPA — Indicative Over-run Over-sail	Drawing Title	Site Access Plan & Swept Path		Checked	GB	19/01/2024	Drawing Status	Draft		
	SPA Location	Proposed B977 Site Access Junction		Point of Interest	1		Drawing No.	SK01B	Notes:	Revision
								1. All mitigation is subject to confirmation through a test run. 2. This is not a construction drawing and is intended for illustration purposes only. 3. Do not scale from this drawing.		2

Junction Location & Tracking
Proposed AIL Delivery



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	Client	Kintore Hydrogen Limited		Designed	SMcG	Date	19/01/2024	File No.	240119 access junction.dwg	
Key — Wheel SPA — Body SPA — Load SPA — Indicative Over-run Over-sail	Drawing Title	Site Access Plan & Swept Path		Checked	GB	Date	19/01/2024	Drawing Status	Draft	
	SPA Location	Proposed B977 Site Access Junction		Point of Interest			1			
			Drawing No.	SK01C	Notes: 1. All mitigation is subject to confirmation through a test run. 2. This is not a construction drawing and is intended for illustration purposes only. 3. Do not scale from this drawing.				Revision	2

From: [PublicTransport](#)
To: [Fraser Smith](#)
Cc: [William Summerlin](#)
Subject: Statera Energy_Kintore Hydrogen_Sustainable transport
Date: 23 August 2024 16:45:23

Dear Fraser

On 1st July we spoke to discuss the proposal to include Aberdeen City Council's park and ride facilities within a sustainable transport strategy to be employed during construction and operation of Statera Energy Limited's proposed Kintore Hydrogen project.

During our call it was confirmed that your proposal to use both Craibstone and Kingswells parking hubs as pick-up locations on a privately operated bus route servicing Kintore Hydrogen was permitted within current guidance. It was explained that private companies may use park and ride facilities in this way where there is no existing public transport route servicing the intended destination from these locations. It was also confirmed that no public bus routes currently operate between Craibstone or Kingswells and the proposed site adjacent to Kintore substation.

In addition to the two locations mentioned above, we discussed Statera Energy Limited's intention for a private shuttle bus to intersect with other public transport networks in the area, such as at Kintore train station, to ensure a range of sustainable travel options are available to staff, contractors and visitors to the site.

We discussed that parking spaces at Aberdeen City Council's park and ride facilities cannot be set aside for private companies' sole use however both sites currently have available capacity. Craibstone has in the region of 1000 parking spaces with no public routes operating at the moment while Kingswells does feature on regular local bus routes and has available capacity, particularly in the lower section. The Kingswells site has in the region of 950 parking spaces in total.

We discussed use of onsite welfare facilities and it was explained that the Craibstone building is currently closed while Kingswells is operating on restricted opening hours. In time, should Kintore Hydrogen's use of either location be to the extent that users would require access to a waiting room and toilets, there may be scope to discuss this. Including the provision of funding to assist with associated operating costs.

Please be aware that any permission granted would be reviewed, particularly in line with usage of the site and your acknowledgement that there are longer-term proposals to increase use at the sites through Bus Service Improvement Partnerships (BSIPs) and Aberdeen Rapid Transit (ART), which in turn should hopefully improve PT accessibility to your workplace. For example, a direct service between Craibstone and Kintore, may result in withdrawn permission. Below is for your information.

The Council are undertaking several transport corridor studies ([Transport corridor studies overview | Aberdeen City Council](#)) which are considering the main corridors movements to, from, and around Aberdeen and these will identify solutions that will deliver a more sustainable transport system, which would include, for example, bus priority. These projects will be progressed towards implementation, an example of which is the recent bus priority introduced in the City Centre. A focus of these is for movements

between the P&R sites and the City Centre. Any public investment made in bus priority or measures which improve bus journeys, there is an expectation that bus operators make commitments also, such as reinvesting any savings back into the transport network. These will be achieved through Bus Service Improvement Partnerships (BSIPs), which are currently being progressed through the [North East of Scotland Bus Alliance](#) and the implementation of measures under the ongoing transport corridor studies and Bus Partnership Funding (<https://www.transport.gov.scot/public-transport/buses/bus-partnership-fund/>). BSIPs are a new type of statutory partnership between Local Transport Authorities and bus operators. As part of a partnership, a range of service standards, including on the frequency or timing of services, the vehicles used, maximum fares charged for particular journeys, and the pricing of multi-operator travel cards are established.

In addition, work is ongoing to look at the future options for delivery of public transport services through Aberdeen Rapid Transit. ([Aberdeen Rapid Transit | NESTRANS](#)), of which the P&R sites will play a pivotal role.

Regards

Derek



Derek McCann | Senior Transport Officer

Aberdeen City Council | Passenger Transport Unit | Corporate Landlord | Families & Communities

Marischal College | Broad Street | Aberdeen | AB10 1AB

Direct Dial: [REDACTED]

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Annex C Construction
Phase Trip Estimates

