Cruachan Power Station Units 3 & 4 Upgrade Project

Outline Construction Traffic Management Plan

On behalf of Drax

Project Ref: 331201279 | Rev: AA | Date: January 2023

Registered Office: Buckingham Court Kingsmead Business Park, London Road, High Wycombe, Buckinghamshire, HP11 1JU
Office Address:
T: E:

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Report Title: **Outline Construction Traffic Management Plan**

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	Name	Position	Signature	Date
Prepared by:	Freddie Lewis	Graduate Transport Planner	FL	January 2023
Reviewed by:	Tim Hapgood	Associate	TH	January 2023
Approved by:	Adrian Neve	Director	AN	January 2023
For and on behalf of Stantec UK Limited				

Revision	Date	Description	Prepared	Reviewed	Approved

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1 Introduction

1.1.1 Stantec UK Ltd (Stantec) on behalf of Drax Limited (the Applicant) has been commissioned to produce an outline Construction Traffic Management Plan (CTMP) in respect of construction works to be carried out as part of an application submission for consent under Section 36 of the Electricity Act 1989. The application is to upgrade Units 3 and 4 of existing pumped storage hydro power station, Cruachan Power Station (the 'Proposed Development').

Project Background

1.1.2 Cruachan Power Station opened in 1965, and was acquired by Drax in 2018. It is one of only four pumped storage hydro-electric power stations in the UK and currently has a capacity of 440MW. The original Cruachan Units were designed and constructed during the 1960s, and whilst equipment has been replaced over the intervening years, other components are reaching the end of their operational lifespan. Following an assessment of current operations at Cruachan, Drax has identified the potential to improve the operational efficiency of Units 3 & 4 and such that the power output can be increased by 20%.

1.2 Site Location and Development Proposals

1.2.1 The application site ('the Site') is the existing Cruachan Power Station at Cruachan, Loch Awe, Argyll & Bute, PA33 1AN. The Site is accessible via a tunnel located off of A85, east of the Cruachan Dam Visitor Centre.

1.2.2 Th Proposed Development seeks to upgrade Units 3 & 4 of the existing pumped storage hydro power station. The capacity of the individual units will increase from 100MW to 120MW. This would bring the power station's total output to 480MW.

1.2.3 This project is separate to the Cruachan 2 Expansion Project. However, the synergy between the two projects including their overlapping construction programmes will be considered as part of this CTMP.

1.3 CTMP Objectives

1.3.1 The objectives of this CTMP are to:

- Demonstrate that construction materials can be delivered, and waste removed, in a safe, efficient, and sustainable way
- Identify construction deliveries that could be reduced, re-timed or consolidated, particularly during periods of peak traffic
- Encourage greater use of water and rail freight modes where practicable
- Encourage use of modern, low emission vehicles
- Enable all contractors, suppliers, and hauliers to be familiar and compliant with the requirements of the CTMP
- Encourage construction workers to travel by non-car modes to the development site.

1.4 Consultation

1.4.1 A public exhibition took place on Wednesday the 14 September 2022 (14:00 – 18:30) at Taynuilt Village Hall. Members of both DRAX Group and Stantec were present at the

exhibition to allow attendees to discuss their thoughts on the project and ask any questions directly.

1.4.2 The information boards shown at the exhibition were uploaded onto the project website from the 13th of September 2022, alongside a feedback form. This feedback form was open until the 5th of October 2022.

1.5 CTMP structure

1.5.1 The remainder of this CTMP is set out as follows:

- Chapter 2: Context, Considerations and Challenges – Provides an overview of the site location, size and nature of the development and parking, public transport, walking and cycling access.
- Chapter 3: Construction Programme and Methodology – Provides information on the construction programme and stages, materials quantities and construction method.
- Chapter 4: Vehicle Routeing and Access – Provides details on strategic and local vehicle routes for construction vehicle movements and site access/egress arrangements.
- Chapter 5: Strategies to Reduce Impacts – Outlines the planned measures that will be used and indicates how construction vehicles will be managed to / from and on-site.
- Chapter 6: Estimated Vehicle Movements – Provides an indication of the construction vehicle trip generation profile for the duration of the construction programme.
- Chapter 7: Implementing, Monitoring and Updating – Identifies how the implementation of the CTMP will be monitored and managed.

2 Context, Considerations and Challenges

2.1 Policy context

2.1.1 This section outlines the national, regional and local transport planning policies relevant to the Proposed Development which have been considered in preparing this CTMP. The following policy and guidance documents have been identified as relevant to this CTMP:

- Scottish Planning Policy (2020);
- Scotland's National Transport Strategy 2 (2020);
- National Planning Framework 3 (2014);
- Construction Logistics and Community Safety Standard (v4 2022);
- Construction Logistics Planning Guidance, TfL & CLOCS (2021);
- HITRANS Regional Transport Strategy (2017);
- Argyll and Bute Local Development Plan 2 (2021).

National Policy and Guidance

Scottish Planning Policy (2020)

2.1.2 In December 2020, the Scottish Government published the updated Scottish Planning Policy (SPP) which supersedes the earlier 2014 Policy document. The purpose of the SPP is to set out national planning policies which are relevant for the operation and development of the planning system as well as the use of land.

2.1.3 The SPP sits alongside the *National Planning Framework (NPF)*, *Creating Places*, *Designing Streets* and *Circulars* planning policy documents.

2.1.4 The pertinent paragraphs within SPP, with regard to Transport Planning, commence at paragraph 270. The most relevant paragraphs that are related to the Proposed Development are outlined below.

Paragraph 270:

- *'The planning system should support patterns of development which:*
- *optimise the use of existing infrastructure;*
- *reduce the need to travel;*
- *provide safe and convenient opportunities for walking and cycling for both active travel and recreation, and facilitate travel by public transport; and*
- *enable the integration of transport modes; and*
- *facilitate freight movement by rail or water.'*

Paragraph 271:

'Development plans and development management decisions should take account of the implications of development proposals on traffic, patterns of travel and road safety.'

Paragraph 291:

'Consideration should be given to appropriate planning restrictions on construction and operation related transport modes when granting planning permission, especially where bulk material movements are expected, for example freight from extraction operations.'

2.1.5 The Proposed Development does not include any additional operational staff on site. Construction vehicle movements will be minimised, wherever possible, and timed and managed to reduce potential impact on the highway network.

Scotland's National Transport Strategy 2 (2020)

2.1.6 Scotland's National Transport Strategy (NTS2) published in February 2020 sets out an ambitious vision for Scotland's transport system for the next 20 years. The Strategy aims for *'a sustainable, inclusive, safe and accessible transport system, helping deliver a healthier, fairer and more prosperous Scotland for communities, businesses and visitors.'*

2.1.7 The Vision of NTS2 consists of four interconnected objectives, each with three associated outcomes which would assist in evaluating the success towards achieving these objectives. These are outlined in **Error! Reference source not found.**.

Table 2-1 - Scotland's National Transport Strategy – Objectives and Outcomes

Table	Example
Inequalities reduction	– Fair access to services – Easy to be used – Affordable for all
Climate action	– Net-zero target – Effects of climate change – Greener and clearer choices
Inclusive economic growth delivery	– Get people and goods where they need to get to – Reliability, efficiency and high-quality – Beneficial Innovation
Health and wellbeing improvement	– Safety and security for all – Healthier travel choices – Communities to be great places to live

National Planning Framework

2.1.8 The current National Planning Framework 3 (NPF3) was published in 2014 and will remain in place until a fourth NPF (NPF4) is adopted by Scottish Ministers.

2.1.9 In terms of transport, the Proposed Development will support the NPF's objectives through minimising vehicle trips on the highway network, where possible, throughout the construction

phase. The most relevant paragraph related to the Proposed Development is Paragraph 5.2.5 shown below:

2.1.10 *'Freight transport networks are critical to our economy. Our transport plans will benefit the sector through continued investment in infrastructure. This will help to reduce congestion and encourage modal shift where this is practical and feasible. We will continue to work with industry to ensure efficiency of road movements from both a business and carbon reduction perspective. Over the long-term, wider efforts to increase the use of public transport, and promote walking and cycling for everyday journeys will help to reduce congestion arising from personal travel and benefit the freight sector.'*

Construction Logistics and Community Safety Standard (v4 2022)

2.1.11 The national Construction Logistics and Community Safety (CLOCS) Standard is a national industry standard that was initially developed in 2012 aiming to manage construction traffic safety that operates between planning authorities, construction clients, contractors and fleet operators, who have decided to take responsibility for construction traffic safety. The Standard covers a wide range of issues including precise urban routeing for deliveries, site access/ egress, and controlled delivery times, heavy goods vehicle driver vision, and vehicle safety features.

2.1.12 The CLOCS Standard embeds strategies to mitigate the impacts of construction traffic into the planning process with having ultimate intention for:

- 'zero collisions between construction vehicles and the community;
- improved air quality and reduced emissions;
- fewer vehicle journeys; and
- reduced reputational risk.'

2.1.13 Implementing CLOCS requires the use of a Construction Logistics Plan (CLP) or CTMP, which are tools to plan vehicle and resource movements for a building site in order to reduce its impact on the road network and local community. They allow planners to impose restrictions, control the impact of construction traffic, and set out that the burden of maintaining this falls to developers and construction contractors.

2.1.14 The Applicant's technical adviser has a number of accredited Construction Logistics Practitioners who are advising on this project and have significant experience across the planning and implementation of major construction projects.

Construction Logistics Planning Guidance, TfL & CLOCS (2021)

2.1.15 A CLP or CTMP (with each term being largely interchangeable is an important tool for planners, developers and construction contractors; it focuses on construction supply chains (i.e. movements of goods, plant and equipment; workforce and waste and servicing activity to and from the site) and how their impact on the road network can be reduced. More specifically, well-planned construction logistics and traffic management will reduce:

- **Environmental impact:** Lower vehicle emissions and noise levels
- **Road risk:** Improving the safety of road users
- **Congestion:** Reduced vehicle trips, particularly in peak periods
- **Cost:** Efficient working practices and reduced deliveries

2.1.16 Local planning authorities are responsible for reviewing and approving CLPs/CTMPs and bringing any community concerns forward. An effective CLP/CTMP maximises benefits to the local authority and community, balanced with developer and contractor needs, such that the construction logistics and traffic management process is largely self-enforced by the developer and contractor.

2.1.17 This outline CTMP can be considered equivalent to a CLP and seeks to reduce the impact of the Proposed Development on the environment, drive construction efficiencies and reduce the potential impact on the highway network .

2.2 Regional and Local Policy

HITRANS Regional Transport Strategy (2017)

2.2.1 The Highlands and Islands Transport Partnership (HITRANS) is the Regional Transport Partnership covering the Highlands and Islands. The HITRANS covers most of the Argyll and Bute area, where Cruachan Power Station is located.

2.2.2 The Highlands and Islands Regional Transport Strategy (RTS) 2008-2022 was approved in 2008. The document sets out the key policies and proposals required to deliver a shared vision for transport in the region which will enhance economic wellbeing; promote safety, social inclusion and equal opportunities; plan for a sustainable transport system; and integrate across boundaries with other Partnerships.

2.2.3 A refresh to the RTS was published in 2017 and captured many changes to the policy, economic, societal and environmental contexts. Its vision is to deliver connectivity across the region which enables sustainable economic growth and helps communities to actively participate in economic and social activities.

2.2.4 HITRANS aims to contribute, make the case for and deliver the following nationally significant transport objectives.

- Reducing journey times and improving journey reliability and resilience.
- Improving/maintaining the safety of transport and travel.
- Tackling capacity constraints across the network.
- Improving the quality, accessibility, affordability and integration of travel.
- Protecting the environment and mitigating adverse impacts of transport and travel.
- Improving health and wellbeing.

2.2.5 Whilst the Proposed Development relates to the renewal of an element of the existing power station and not to new development, the application and the proposed construction processes will be cognisant of the aspirations of the HITRANS Transport Strategy. It is proposed that the logistics operations will not negatively impact in the safe operation of the network; vehicle movements will be profiled to avoid impacting on network operations and are de minimis such that they will not create network congestion.

Argyll & Bute Local Development Plan (2015) and Local Development Plan 2 (2021)

2.2.6 The Argyll and Bute Local Development Plan (LDP), which was published in 2015, provides the local planning framework for the Argyll and Bute Council area, excluding the Loch Lomond and Trossachs National Park area. A new Local Development Plan (LDP2), which will replace the adopted Local Development Plan is currently in preparation.

2.2.7 Both Plans are made up of a Written Statement and Proposals Maps. The Written Statement provides the general policy context against which planning applications for new development proposals should be assessed. This is supported by the proposal maps which illustrate the range of development opportunities and constraints within the area. The LDP2 sets out the council's Vision and Objectives in order to deliver sustainable and inclusive development and meet wider government aims.

2.2.8 The 2015 LDP Lorn Proposal map does not indicate any policies or development allocations that would impact on the delivery of the Proposed Development. Section 7 "*Improving our Connectivity and Infrastructure Together*" and associated Policy LDP11 deal most specifically with the considerations of access, travel and transport within the LDP. That section considers how infrastructure should be retained and enhanced and that new development integrates with existing transport networks including rail and marine, and active travel. Paragraphs 7.1.6 and 7.1.7 identify the importance that Argyll & Bute can contribute to renewable energy infrastructure. The Written Statement further recognises the importance of environmentally sound travel and the need for safe travel. The importance of the A85 and A82 as strategic transport links is also recognised within the LDP.

2.3 Site Location and Plans

2.3.1 Three site plans have been provided below and indicate the following:

2.3.2 **Figure 2.1:** shows the overall site location in the context of Cruachan reservoir, the existing power station, A85, the visitor centre and Loch Awe.

2.3.3 **Figure 2.2:** provides an overview of the site indicating the power station control centre, parking arrangements, potential locations for site cabins and welfare and the access tunnel entrance.

2.3.4 **Figure 2.3:** indicates the existing access tunnel route to the turbine cavern from the power station control centre.

Site Plans

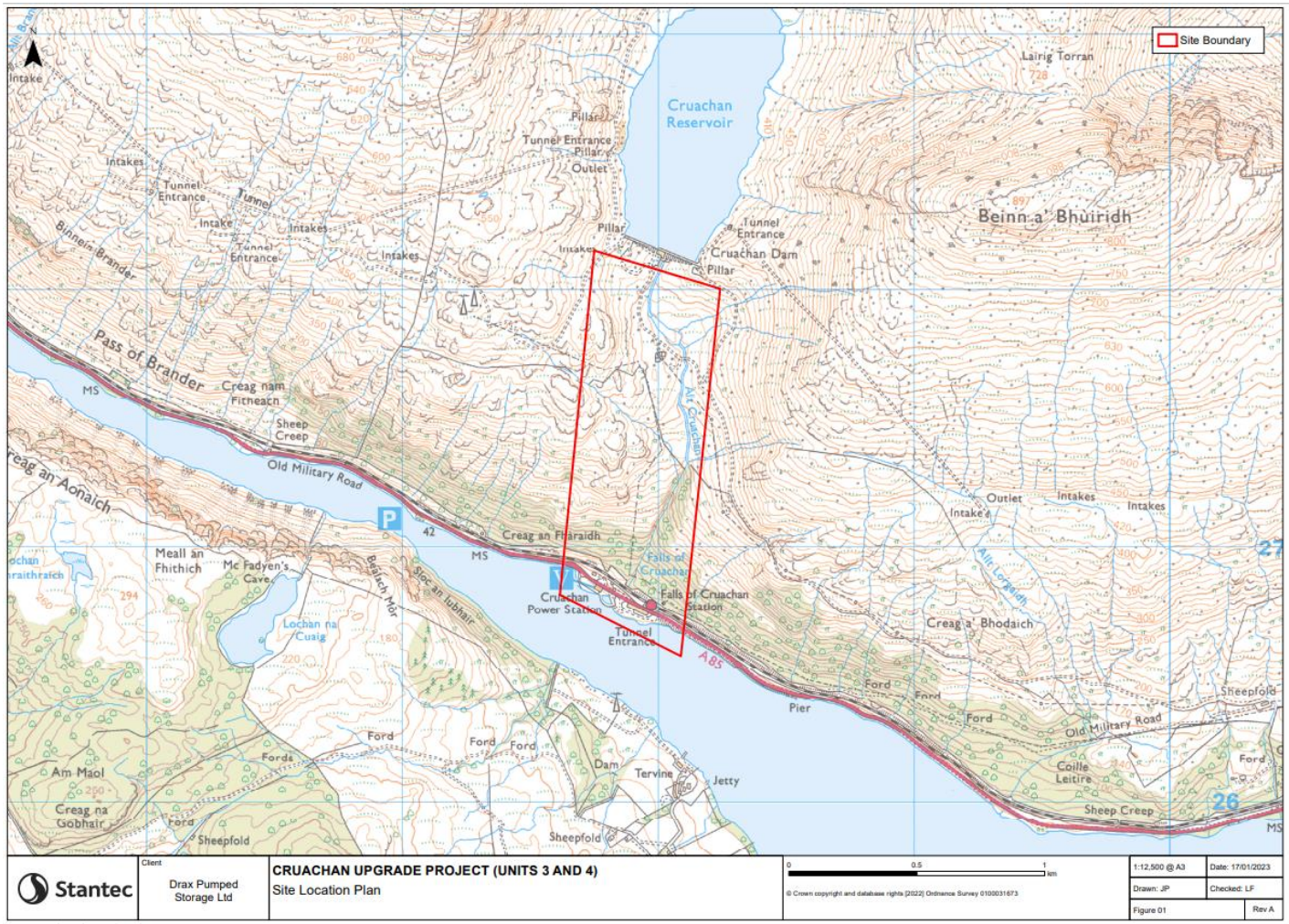

Figure 2-1 - Site Plan

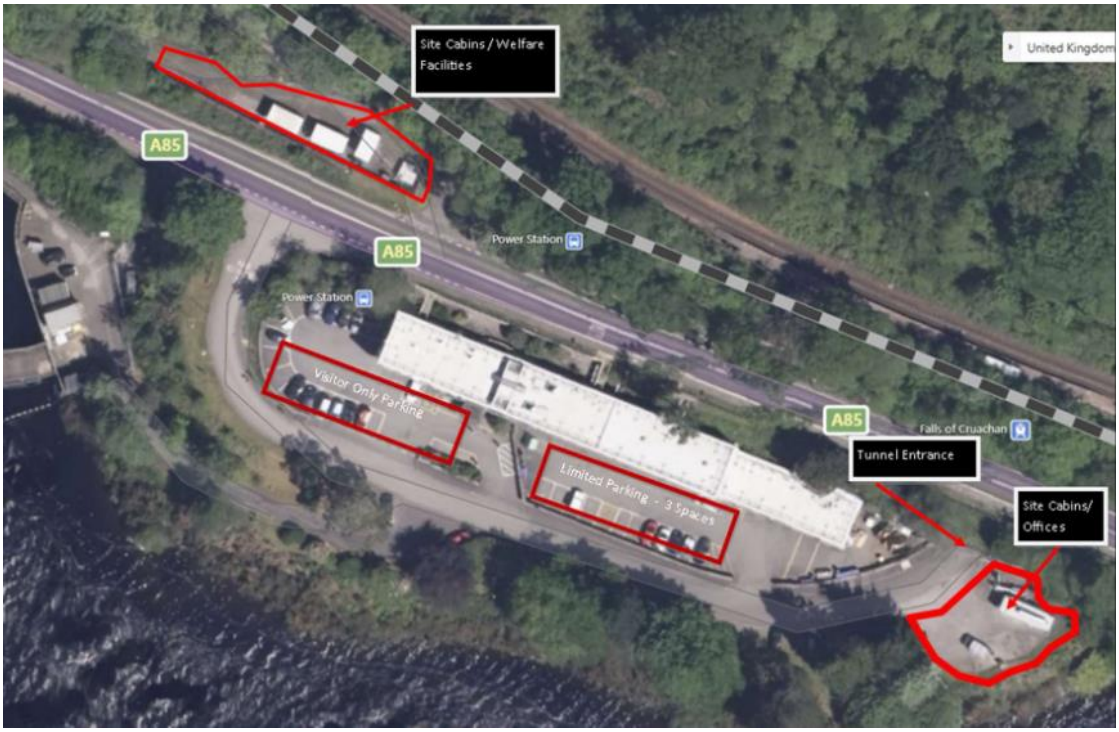

Figure 2-2 - Site Overview

Figure 2-3 - Existing Site Access Tunnel

2.4 Local Access Including Highway, Public Transport, Cycling and Walking

Road Access

2.4.1 A85, which is designated as a Trunk Road, provides access to most areas of the Site. A85 is a single-carriageway road with one lane running in each direction and has no street lighting in the vicinity of the Site.

2.4.2 From the Site, A85 provides access to the nearby villages of Loch Awe (~4.5km to the east), Dalmally (~8km to the east), Bridge of Awe (~6km to the north west) and Taynuilt (~8.5km to the north west). A85 continues to Tyndrum in the east where it meets A82, and Oban in the west where it meets A816. The highway network is shown in Figure 2.4 below.

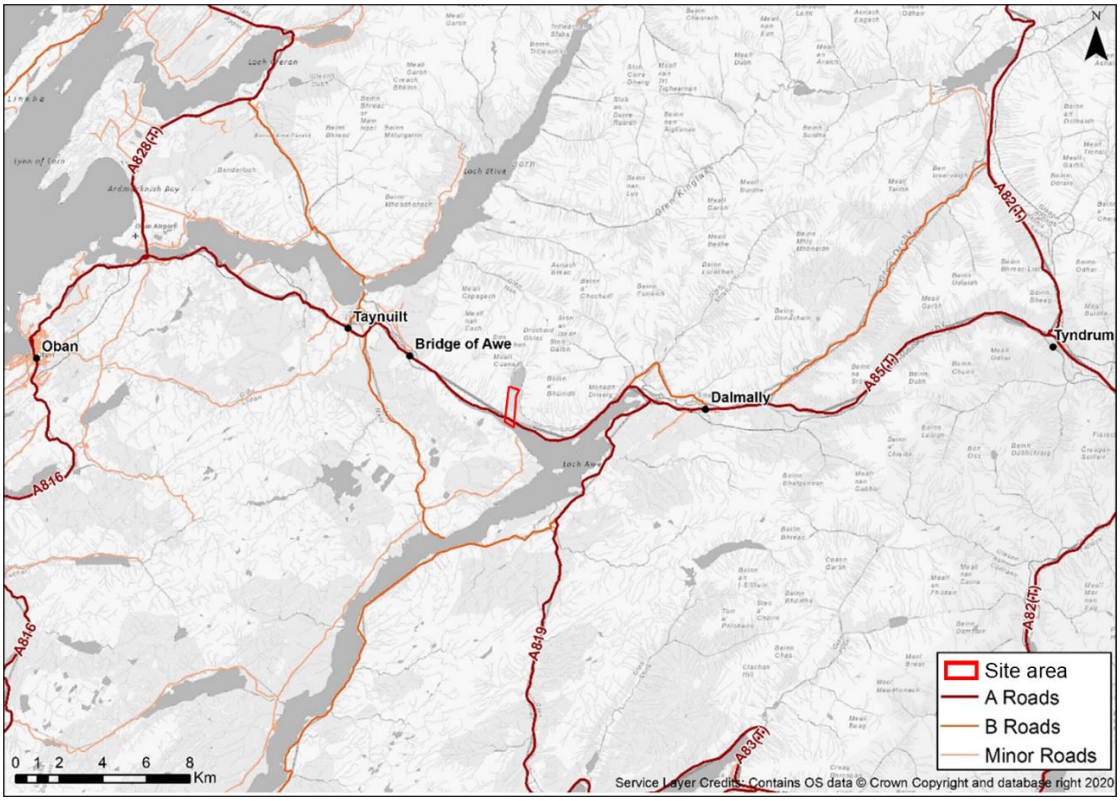

Figure 2-4 - Highway Network

Railway

2.4.3 The nearest train station to Cruachan Power Station is the Falls of Cruachan Station, located at the foot of Ben Cruachan, approximately 250m east of Cruachan Visitors' Centre. The train station can be accessed on foot from the Visitors' Centre / administrative building using the footway on the southern side of A85.

2.4.4 The Falls of Cruachan railway station lies on the Oban branch of the West Highland Line which links Oban with Glasgow Queen Street. It is only open during the summer months, from March to October. When the station is operational, four eastbound trains to Glasgow Queen Street and five westbound trains to Oban stop on weekdays and Saturdays along with three each way on Sundays.

2.4.5 The second nearest rail station to Cruachan Power Station is Loch Awe station, located approximately 5.3km east of Cruachan Visitor Centre. This distance corresponds to a 45–60-minute walk (5.0km/hr) or 5-minute drive and approximately a 10-minute bus ride. Bus no. 976, operated by Scottish Citylink, connects Loch Awe rail station with Cruachan Visitors' Centre three times per day and for each direction.

2.4.6 Loch Awe station is also on the Oban branch of the West Highland Line which operates all year round. There are 7 departures in each direction Mondays to Saturdays eastbound to Glasgow Queen Street and westbound to Oban. On Sundays, there are three departures each way throughout the year, plus a fourth in the summer months only which operates to Edinburgh Waverly, from late June until August. The public transport network is shown in Figure 2.5 below.

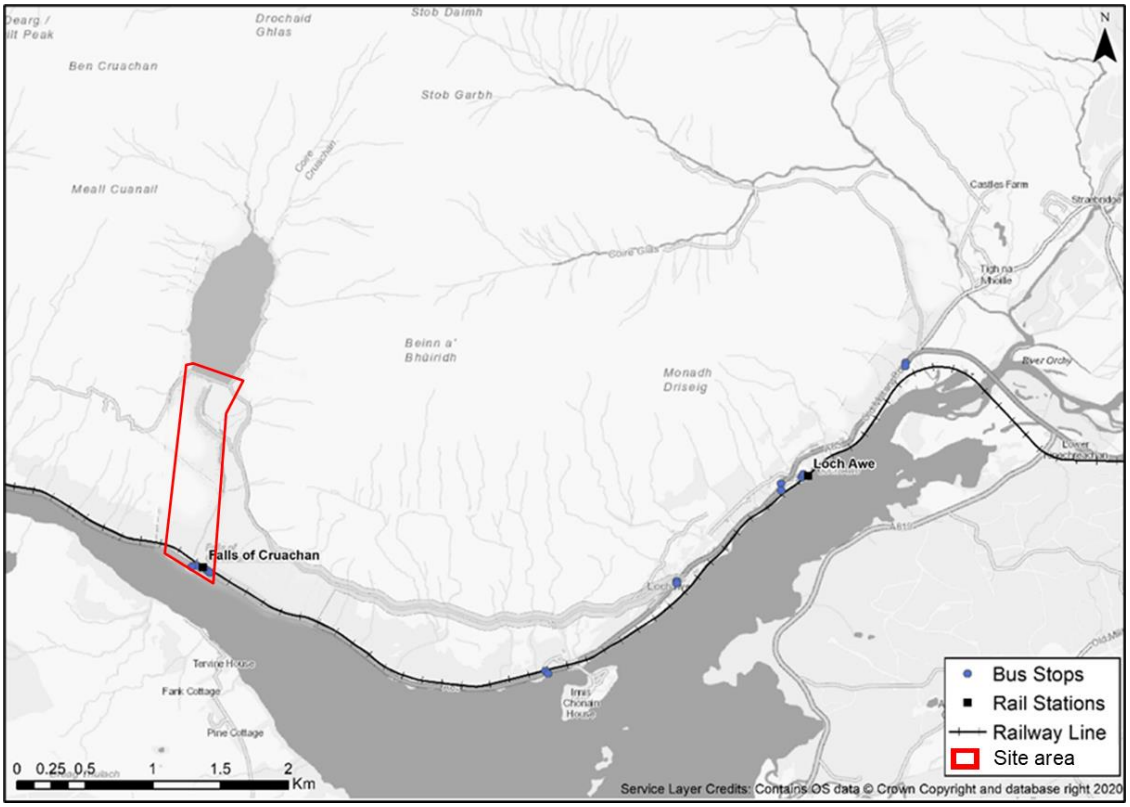

Figure 2-5 - Public Transport Network

Bus Routes

2.4.7 The worksite for the Proposed Development at loch level is accessible also by bus. The nearest bus stops are located on A85, approximately 120m east of the Cruachan Visitors' Centre. Buses that serve this stop include the following:

- Route 975 (Glasgow to Oban) – 3 buses daily
- Route 403 (Taynuilt to Dalmally) – 4 buses daily

2.4.8 Additionally, there are a number of fortnightly Scottish Express bus services serving the bus stop at Cruachan Power Station at loch level. These include bus routes 222, 248, and 266, each running a single departure and return journey fortnightly.

Walking and Cycling

2.4.9 Currently, pedestrian and cycle facilities are limited within the immediate locality of Cruachan Power Station. A narrow footway, approximately 0.5 – 1.0m in width, is present on the southern side of A85 in the vicinity of the Site, widening to approximately 2.8m to the east and 1.6m to the west from the existing Power Station administrative building. Additionally, footways are present, mostly on a single side of the A85, from approximately 200m west of the A85 / St Conan's Road junction eastwards to the A85 / B8077 junction.

2.4.10 Notwithstanding the above, there are a number of tourist destinations at and surrounding the Site which attracts walkers and cyclists to the site. These include Ben Cruachan, Falls of Cruachan, the Visitor Centre, St Conan's Kirk and Kilchurn Castle. There are no settlements immediately located around the Visitor Centre with Loch Awe being the closest settlement (approximately 4.5km to the east).

2.4.11 There are a number of designated walking and recreational routes in close proximity to the Site, identified as Argyll & Bute Council's Core Paths. The nearest cycling route to the Site is the National Cycle Network Route 78 between Oban and Fort Augustus, which crosses the A85 at Connel Ferry (approximately 20km to the west of the Site). The area is an important focal point for hiking and long-distance touring cycling. The walking and cycling network is shown in Figure 2.6 below

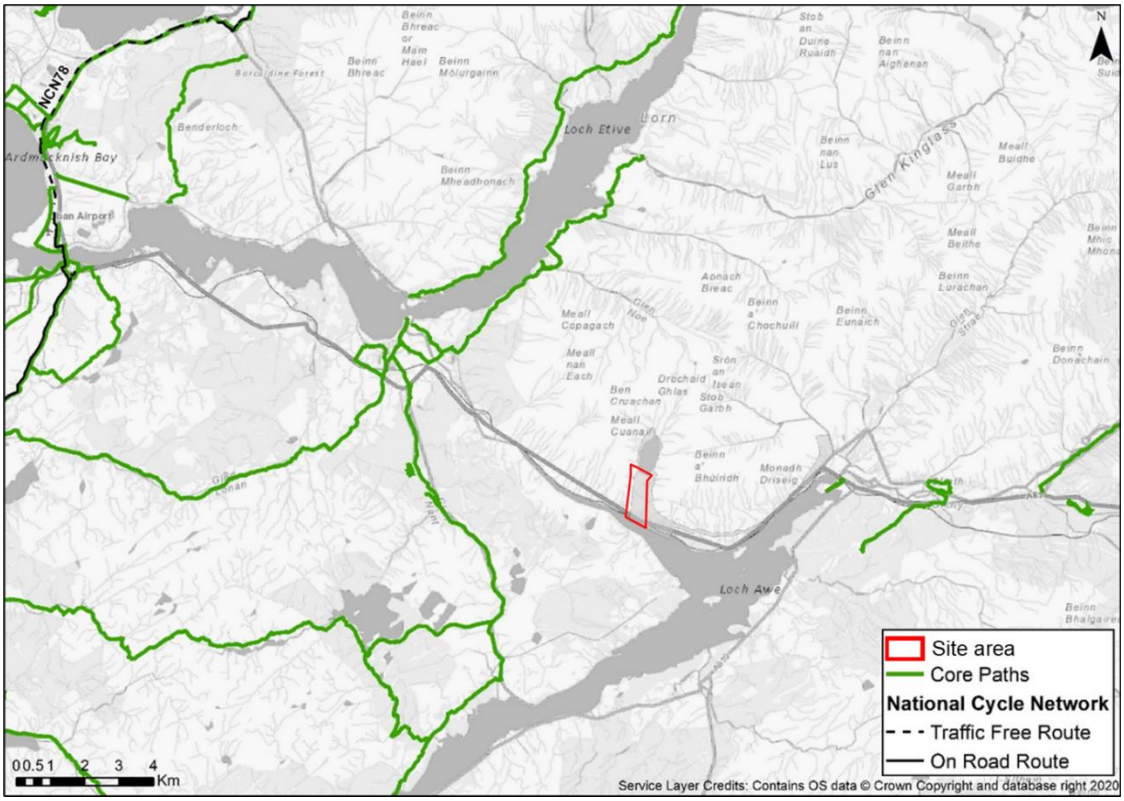

Figure 2-2 - Walking and Cycling Network

2.5 Considerations and challenges

Cruachan 2 Expansion Project

2.5.1 The Cruachan 2 expansion project is anticipated to provide an additional 600 megawatts in generation mode. The proposed development will be constructed to the east of the existing Cruachan Power Station and will operate separately. Both power stations would utilise Loch Awe as the lower reservoir and Cruachan Reservoir as the upper reservoir and no major modifications to either of these bodies of water are currently proposed.

2.5.2 The construction timelines of the two projects are currently scheduled to coincide and therefore how the projects are managed, interact and coordinate with each other needs to be considered. Relevant information on the Cruachan 2 project from the Transport Assessment (also produced by Stantec) that was submitted to Scottish Ministers earlier this year, has been assimilated with references made at appropriate points in this CTMP to cover this matter.

3 Construction Programme and Methodology

3.1.1 Prior to consent, the details of the construction programme are not known and will need to be confirmed in a detailed CTMP once a Main Works Contractor (MWC) has been appointed, subject to planning permission being granted. However, the indicative timeline for the project gives an overview of the key dates and provides an estimate of when construction works are likely to start on site.

3.2 Construction Programme

3.2.1 Key dates on the project timeline include:

- December 2022 – Tender period for contractors ends
- Q1 2023 – Section 36 Application to be submitted to Scottish Minsters
- 2023 – New turbine impellor designed
- Q3 2023 – Section 36 Decision Issued
- 2023 - 2025 – New turbine impellor manufactured
- 2026 – Construction expected to commence
- 2026 – Outage of Unit 3 for approximately six months
- 2027 – Outage of Unit 4 for approximately six months
- Q4 2027 - Q1 2028 Units 3 and 4 upgrade complete and operational

3.2.2 As shown above, due to the length of time associated with the design and manufacture of the impellor components, construction is not set to commence on-site until 2026. Construction is then set to last until the end of 2027 giving a construction programme length of approximately 24 months.

3.3 Construction Method

3.3.1 The detailed construction method is currently not confirmed. However, it is possible to provide an overview of the turbine components and supplementary works that will be required.

3.3.2 The new turbine Units 3 and 4 will each weigh over 650 tonnes and house many parts which together operate to generate the electricity to feed to the grid or power the pumped storage operation. Table 3-1 below provides the dimensions of the key components which will be upgraded and therefore brought to site.

Table 3-1 - Component Dimensions

Item No.	Total Quantity	Description of Equipment / Item	Dimensions in [m]			Volume in [m³]		Mass in [to]	
			Length	Width	Height	Volume per Item	Total Volume	Mass per Item	Total Mass
1	2	Turbine Runner	2.5	2.5	2	12.5	25	9.2	18.4
2	2	Head Cover	4.1	4.1	1.2	20.17	40.3	35.0	70.0
3	2	Bottom Ring	3.9	3.9	1	15.21	30.4	13.0	26.0
4	2	Turbine Shaft	1.3	1.3	3	5.07	10.1	9.0	18.0
	MIV:								
4	2	Spherical Valve	2.10	3.20	3.10	20.83	41.7	40.0	80.0
	Generator:								
6	4	Stator Stacked Wound	7.14	3.67	3.80	99.57	199.1	91.0	182.0
7	2	Solid Rotor Body	3.44	3.44	2.56	30.29	30.3	67.7	67.7

3.3.3 In addition to the turbine replacement works the Applicant will also be undertaking the following complementary works:

- Refurbishment of the busbars from the generator / motor to the generator transformer.
- Refurbishment of the Liquid Regulators for the Pony Motors.
- Replacement of the unit auxiliary transformers.
- Replacement of the CTs / VTs for the higher load of the unit.
- Protection modifications for the increased output.
- Automatic Voltage Regulator maintenance and modifications.
- Supporting instrumentation removal and replacement to support the new upgraded Units.

3.3.4 These complementary works will be built into the overall construction method and programme to be provided in a detailed CTMP produced subject to consent being granted.

Cruachan 2 Works

3.3.5 As stated at Section 2.5 there is likely to be overlap between the two Cruachan projects. The proposed construction phase of Cruachan 2 comprises the following key activities:

- Establishment of the Upper and Lower Control Works areas.
- Establishment of compounds for the construction workforce and storage of materials required for construction.
- New quayside in Loch Awe – to facilitate construction works.
- Localised widening works to the existing dam access road to 4.8m width to allow passing of HGVs and cars side-by-side.
- Temporary diversion of A85 to the northern side of A85.
- Tunnelling and excavation works, and the removal of material off-site.
- Delivery of construction materials, specialist plant and equipment and Abnormal Indivisible Loads (AILs).

3.3.6 The point of overlap, construction activities and durations between the two construction programmes is unclear prior to consent and will be clarified in a detailed CTMP produced post planning for each project. The two projects and the associated contractors will be able to work together to overcome any potential conflicting risks, especially as they will each be working to the same end client organisation.

4 Vehicle Routeing and Access

4.1.1 With access to the Proposed Development directly from A85, vehicle routes will adhere to the Trunk Road network wherever possible. General construction traffic and workforce vehicle movements will be similar in nature to existing traffic on the A85 and further afield on the Trunk Road network. AILs will be the subject of further prescription of routeing at the time of submission for the associated Movement Order. As such, vehicle routes have been reviewed with respect to minimising potential impacts, conflicts and hazards with sensitive points. Hauliers and suppliers will be made aware that this routeing is always required to be followed, unless otherwise agreed or diversions are in place.

4.1.2 Due to the rural and remote location of the site there are limited vehicle routes available as noted and described in Section 2 of this oCTMP. It is anticipated that all vehicles (workforce cars, vans, HGVs and AILs) will use the same routes to reach the site. These will principally involve the A85 that runs from the site to Oban to the west and to Perth to the east. The A82 (extending to and from the A85) heads south to Glasgow.

4.1.3 Regional and local route plans indicating the routes to site are provided in Figure 4.1 and Figure 4.2.

Regional Vehicle Route Plan

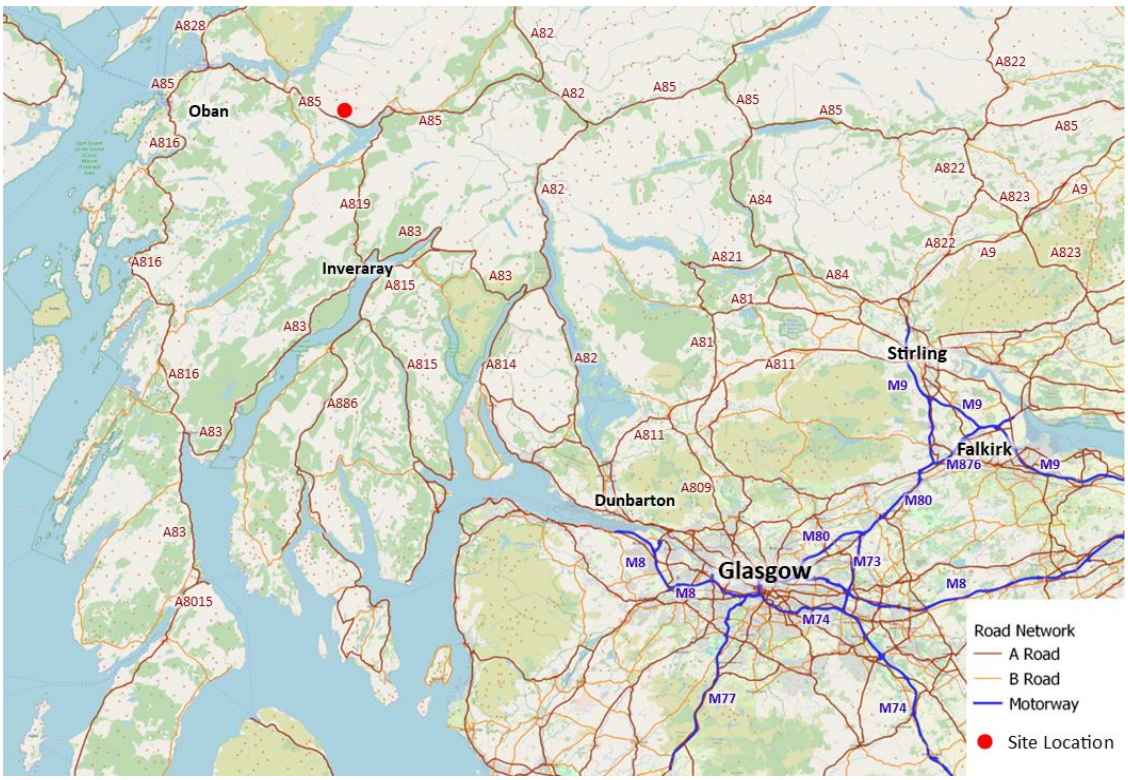

Figure 4-1 - Regional Vehicle Route Plan

Local Vehicle Route Plan

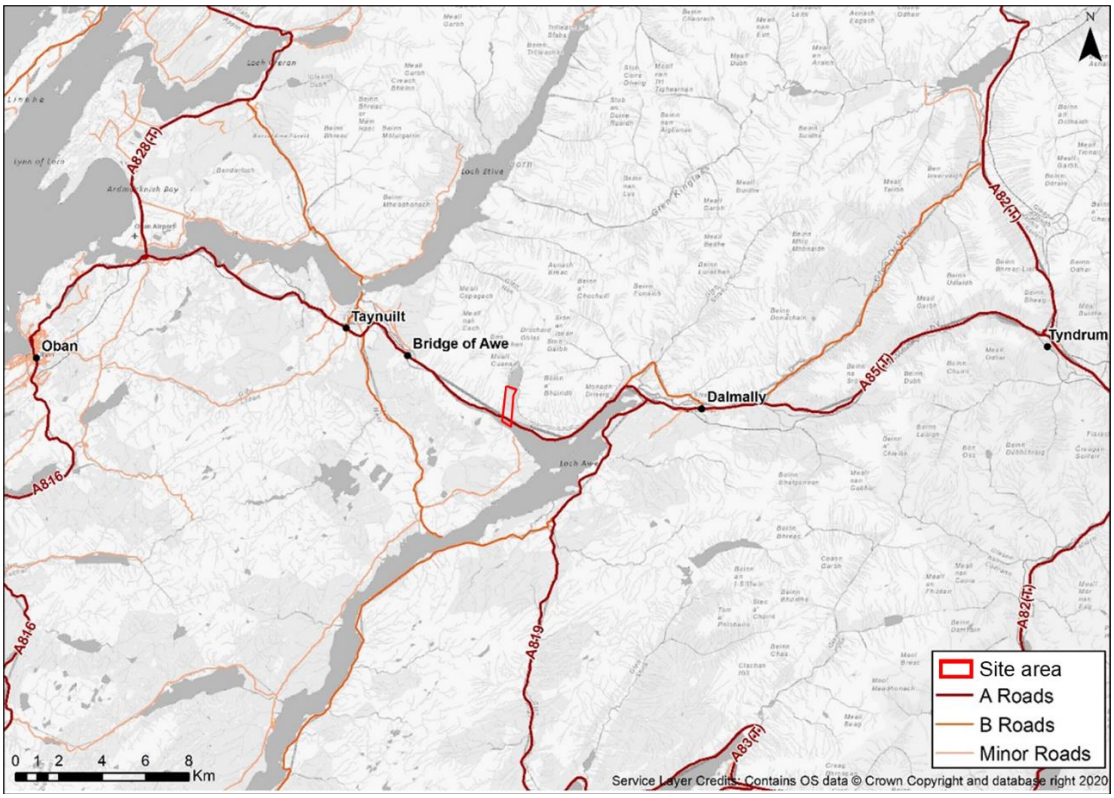

Figure 4-2 - Local Vehicle Route Plan

4.2 AIL Route Assessment

4.2.1 It is anticipated that a number of AILs will be required to bring components to site. Therefore, an initial route assessment has been undertaken which provides detailed information on the routes to site and identifies constraints and outlines the notification and management procedures. Identified constraints are set out in Table 4.1 and then mapped in Figure 4.1. This review of the anticipated routeing for AILs would be adjusted and refreshed at the time of applying through the standard Movement Order notification process with affected Highways and Bridges Authorities and Police Scotland.

4.2.2 It should be noted that in October 2019, Drax successfully transported two 115 tonne transformers between Longannet Power Station in Fife to Cruachan Power Station. This required two short road closures on the A82 between Crianlarich and Tyndrum, as well as the temporary reinforcement of a bridge on the A82 at Inverherive, north of Crianlarich. It is also understood that Police escorting may also be required which will be planned with Police Scotland at the time of applying for the Movement Orders.

4.2.3 It is expected that all AILs transported to the site and the power station would be routed on the Trunk Road network for the majority of their journey. Potential port locations where AILs may be transport from their routeing include (but are not limited to) the following:

- Forth Estuary (most likely via Leith or Grangemouth) – Via M876, M9, A84, A85, A82 and A85
- Clydeport – via M8, M898, A82 and A85
- Dundee – Via A90, M90, A9, A85, A82, A85

- Oban Port – via A85 westbound

4.2.4 It should be noted that the routes included above include the most direct routes to the site using the Trunk Road network. Alternative routes and detour routes are available and would be considered depending on the specific AIL, its origin and the restrictions of the route.

4.2.5 In addition, to the above, AILs may be transported from inland locations where parts and equipment are assembled and/or stored. This may include existing assets and locations under the control of Drax.

4.2.6 An AIL is regarded as any load and/or vehicle combination that exceeds any of the following:

- Any part of the vehicle combination is over 2.9 metres wide;
- Any part of the vehicle combination is over 18.65 metres rigid length;
- The load projects over the front or rear of the vehicle by more than 3.05 metres;
- Is an articulated vehicle (tractor unit and trailer) of greater than 16.5m in total length;
- Is a Part 2 vehicle combination (N3 vehicle + trailer) of greater than 25.9m total length; or
- Gross weight of the vehicle combination exceeds 44,000kg and / or axle loadings are over 10 tonne (11.5 tonne for driving axles).

4.2.7 The Main Works Contractors, their sub-contractors and hauliers will work with the police, Transport Scotland and affected local Highway and Bridge Authorities in the planning and consenting of the movement of AILs. Where those loads are AILs that are judged to be appropriate for self-movement or under the direction of a private escort the haulier will prepare the notifications to the affected authorities, either using the Electronic Service Delivery for Abnormal Loads (ESDAL) system or a similar method (e.g AbLoads/AbHaulier). If it is expected that the movement of the AIL is to be more complex, then early engagement with the affected authorities and police will be carried out by the haulier in partnership with the Main Works Contractor, prior to submitting the formal movement notification. No less than the minimum notice periods for the category of AIL, VR1 and Special Order movements (ranging from 2 clear days' to 2 weeks' notice) will be observed and where practical the Main Works Contractor and its agents will seek to provide a week more notice than the minimum, particularly, if police escorting is required. It is not anticipated that loads over 6.1m wide or 30m long will be required for the construction or maintenance of the Proposed Development.

4.2.8 Abnormal and special loads may be delivered outside standard working hours, subject to the requirements of the affected highways authorities and Police Scotland.

4.2.9 Table 4-1 below presents the identified height, width, and weight restrictions on the A85 and A82 between Oban and Crianlarich.

Table 4-1 - Identified Constraints

Reference	Restriction Type	Longitude	Latitude	Description
1	Width	-5.468180	56.424926	Sharp corner on a section of highway incline with land on one side of highway supported by a retaining wall
2	Height	-5.467431	56.425908	Overhead Cable
3	Height	-5.459623	56.437369	Overhead Cable
4	Height	-5.446956	56.441394	Overhead Cable
5	Height	-5.390938	56.455054	Underpass with A828 (Connel Bridge)
6	Height	-5.382220	56.453675	Overhead Cable

Reference	Restriction Type	Longitude	Latitude	Description
7	Height	-5.377470	56.453851	Overhead Cable
8	Height	-5.370832	56.454402	Overhead Cable
9	Height	-5.363164	56.455216	Overhead Cable
10	Height	-5.340692	56.460901	Overhead Cable
11	Height	-5.326313	56.452695	Overhead Cable
12	Height	-5.323172	56.447931	Underpass with rail bridge (4.1m height restriction)
13	Height	-5.322470	56.449119	Overhead Cable
14	Height	-5.282416	56.442547	Overhead Cable
15	Height	-5.258858	56.437349	Overhead Cable
16	Height	-5.254130	56.436824	Overhead Cable
17	Height	-5.252153	56.435082	Overhead Cable
18	Height	-5.242903	56.434363	Overhead Cable
19	Height	-5.242903	56.434363	Overhead Cable
20	Height	-5.244035	56.431169	Overhead Cable
21	Weight	-5.243851	56.431392	Bridge (approximate span: 50m)
22	Height	-5.237219	56.428980	Overhead Cable
23	Height	-5.236172	56.429198	Overhead Cable
24	Height	-5.236172	56.429198	Overhead Cable
25	Height	-5.232253	56.427698	Overhead Cable
26	Height	-5.226608	56.427307	Overhead Cable
27	Weight	-5.227602	56.426559	Bridge (approximate span: 40m)
28	Height	-5.224423	56.427342	Overhead Cable
29	Height	-5.223272	56.427726	Overhead Cable
30	Height	-5.216174	56.432043	Overhead Cable
31	Height	-5.211724	56.430754	Overhead Cable
32	Height	-5.208608	56.428732	Overhead Cable
33	Height	-5.194930	56.420541	Overhead Cable
34	Weight	-5.194191	56.419984	Bridge (approximate span: 90m)
35	Height	-5.186574	56.418282	Overhead Cable
36	Width	-5.067992	56.388796	Narrow section and sharp corner
37	Weight	-5.067893	56.388759	Bridge (approximate span: 30m)
38	Height	-5.054413	56.395511	Overhead Cable
39	Height	-5.050056	56.396671	Overhead Cable
40	Height	-5.039475	56.403726	Overhead Cable
41	Height	-5.029244	56.410356	Overhead Cable
42	Weight	-5.019727	56.408764	Bridge (approximate span: 150m)
43	Height	-5.005387	56.405590	Overhead Cable
44	Height	-4.999531	56.404935	Overhead Cable
45	Height	-4.984203	56.402638	Overhead Cable
46	Height	-4.972179	56.402474	Overhead Cable
47	Weight	-4.971710	56.402921	Bridge (approximate span: 30m)
48	Height	-4.969753	56.402819	Overhead Cable
49	Height	-4.965092	56.402914	Overhead Cable
50	Weight	-4.956133	56.403085	Bridge (approximate span: 10m)
51	Height	-4.950403	56.403599	Overhead Cable
52	Height	-4.946969	56.403940	Overhead Cable
53	Height	-4.933591	56.404850	Overhead Cable
54	Weight	-4.924611	56.405723	Bridge (approximate span: 40m)
55	Height	-4.923536	56.405746	Overhead Cable
56	Height	-4.907146	56.405454	Overhead Cable
57	Height	-4.900348	56.403574	Overhead Cable
58	Height	-4.760997	56.446848	Overhead Cable
59	Width	-4.717790	56.439379	A85 priority junction with A82
60	Weight	-4.718494	56.443862	Bridge (approximate span: 10m)

Reference	Restriction Type	Longitude	Latitude	Description
61	Height	-4.709466	56.435100	Overhead Cable
62	Weight	-4.677285	56.422495	Bridge (approximate span: 100m)
63	Height	-4.668372	56.417455	Overhead Cable
64	Weight	-4.656159	56.409766	Bridge (approximate span: 80m)
65	Height	-4.642758	56.403477	Overhead Cable
66	Weight	-4.642376	56.403341	Bridge (approximate span: 30m)
67	Height	-4.639232	56.401701	Overhead Cable
68	Width	-4.621845	56.392851	A82 roundabout junction with A85
69	Width	-4.622029	56.393907	Underpass with rail bridge and tight bend
70	Height	-4.621874	56.393877	Underpass with rail bridge (no posted height restriction)
71	Width	-4.655343	56.393043	Underpass with rail bridge and tight bend

4.2.10 Figure 4-.3 below presents a map of the identified constraints between Oban and Crianlarich

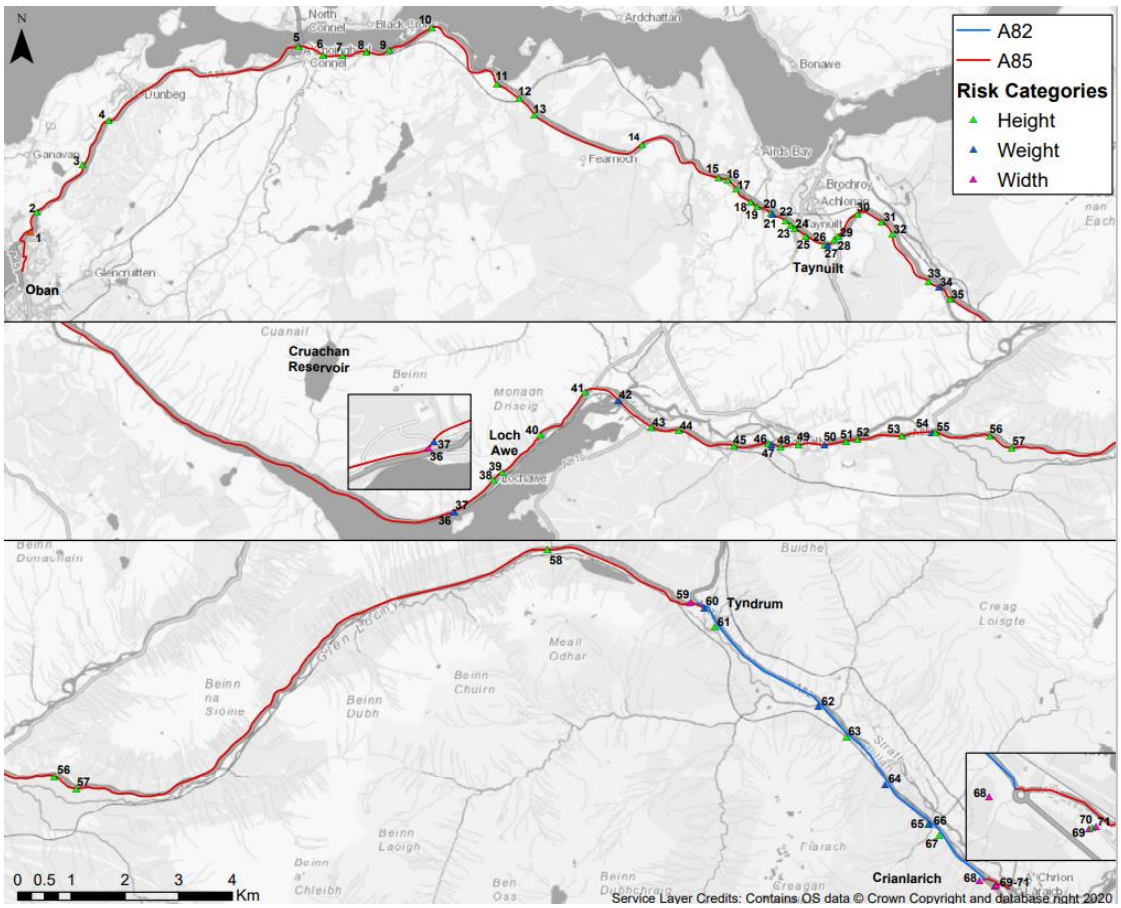

Figure 4-3 - Map of Identified Constraints

A review of the height, width and weight constraints on the A85 and A82 trunk network between Oban to the west and Crianlarich to the east has been undertaken based on a desktop study. A detailed route assessment would be undertaken at a later stage once the specification/ dimensions of the loads are known and following the appointment of the haulage company who will determine the required vehicle and trailer arrangements. This would include a more detailed assessment of already identified constraints, as well as identifying other

constraints such as culverts, an assessment of loading capacities on structures, enquiries on overhead cable heights and swept path analysis.

Site Plans, Access and Egress and Construction Compounds

4.2.11 An initial overview of the site was provided in Figure 2.2 with site access taken directly from A85. The final configuration of the site identifying any hoarding lines, access gates, construction compounds, laydown areas, site offices and welfare and vehicle unloading areas will be developed in due course and provided in a detailed CTMP subject to planning permission.

4.2.12 It is anticipated that final site plans and construction vehicle management measures will be developed in conjunction with the Cruachan 2 expansion project. It is expected that the two projects will coordinate, share resources and make sure that both projects can be delivered efficiently and safely.

Traffic Marshals

4.2.13 Traffic Marshals will be available for the management of vehicles entering and exiting the site. Their task will be to oversee the arrival and departure of vehicles and check for the movement of pedestrians and cyclists to make sure safe passage is maintained for all concerned. Banks-people will assist with vehicle manoeuvring within the site.

Wheel Wash

4.2.14 Wheel washing equipment is not proposed as the access/egress from site, compound and laydown areas and tunnel access roads are all hard tarmac/concrete surfaces. This well prevent the transfer of dirt and stones onto the public highway. However, all drivers will be required to check that their vehicle is free of dirt, stones and dust prior to departing from the site.

Temporary Traffic Management

4.2.15 The need for temporary closures of footways, footpaths, cycle paths and traffic lanes along with road closures, suspensions of access restrictions will be determined once detailed proposals for the turbine replacement construction vehicle movements are known and prior to the final CTMP being prepared. Any permits and licences, deemed necessary, would be identified in the CTMP and progressed in accordance with the processes set out in relevant guidance. The layouts of temporary traffic management will be in accordance with the Traffic Signs Manual Chapter 8 and the associated Safety at Street Works and Road Works – A Code of Practice.

4.2.16 It is not anticipated currently that temporary changes to the Highway will be required to facilitate the Proposed Development.

5 Strategies to Reduce Impacts

5.1 Measures Influencing Construction Vehicles & Deliveries

5.1.1 Table 5-1 provides information on which measures the Applicant will observe and install to manage vehicle visits and delivery/ collections at the site. Those measures adopted or not considered are outlined in subsequent paragraphs.

Table 5-1 - Medium Impact Site Planned Measures Checklist

Planned Measures Checklist	Committed	Proposed	Considered
Measures influencing construction vehicles and deliveries			
Safety and environmental standards and programmes	x		
Adherence to designated routes	x		
Delivery scheduling		x	
Re-timing for out of peak deliveries		x	
Re-timing for out of hours deliveries		x	
Use of holding areas and vehicle call off areas			x
Use of logistics and consolidation centres			x
Measures to encourage sustainable freight			
Freight by Water*			x
Freight by Rail*			x
Material procurement measures			
DfMA and off-site manufacture		x	
Re-use of material on site			x
Smart procurement		x	
Collaboration amongst other sites in the area		x	
Implement a staff travel plan			x

** If site, consolidation centre or holding areas are within 100m of foreshore of navigable water-way or rail freight siding.*

5.1.2 It is anticipated that the construction vehicle management measures will be developed in conjunction with the Cruachan 2 expansion project. It is expected that the two projects will coordinate, share resources and proactively manage vehicle movements so that both projects can be delivered efficiently and safely.

Safety and environmental standards and programmes

5.1.3 The Applicant is committed to making sure all contractor and sub-contractor vehicles arriving at site comply with relevant safety measures and requirements relating to Work Related Road Risk.

5.1.4 Industry best practice will be adopted wherever possible to support the construction phase of the development. This will be achieved by through the procurement process such that the sub-contractors and supply chain will be members of or signed up to relevant best practice schemes and initiatives including, for example:

- **Considerate Constructors Scheme (CCS):** Promotes best practice that relates to on-site activities and those in the vicinity of the site. It is noted that the site will be registered under this scheme.

- **Fleet Operator Recognition Scheme (FORS):** For suppliers that deliver to, and hauliers that visit the site, businesses will be actively encouraged to be members of FORS. The Applicant's procurement teams will look favourably on suppliers, operators and hauliers who reach the FORS Silver or Gold standard, or similar equivalent, which would mean they also reach the CLOCS standard as set out below. It is not proposed that this will be mandated for this project.

- **Construction Logistics and Community Safety (CLOCS):** CLOCS brings the construction logistics industry together to revolutionise the management of work-related road risk and embed a road safety culture across the industry. The aim is to ultimately help protect vulnerable road users who share the roads with construction vehicles.

Adherence to designated routes

5.1.5 Routes to and from the site via the local and strategic road network are as specified in Section 4. These access routes have been reviewed with respect to minimising potential impacts, conflicts and hazards. A copy of the route plan will be given to all suppliers when orders are placed so that drivers are fully briefed on the required route to take. The supplier will be made aware that these routes are always required to be followed unless otherwise agreed or diversions are in place. All drivers will be provided with route information specific to the material/item they are transporting.

5.1.6 The driver will also receive instruction on any restriction to vehicle movements relating to the material/item they are transporting. Subject to agreement with the Local Highway Authorities, to assist drivers the site may be signposted on the approaches. Where deemed necessary for AILs, the haulier and driver will be advised of the safe locations and timings where police escort and assistance will be met. Drivers will be provided with emergency contact details to report accidents or route disruption.

Delivery scheduling

5.1.7 The Cruachan Unit 3 & 4 project is anticipated to generate a low number of daily construction vehicle movements due to the nature of the works. However, due to the anticipated overlap with the Cruachan 2 expansion project it is expected that a Vehicle Booking Management System (VBMS) will be utilised to schedule and manage construction vehicle movements for both projects. It is anticipated that deliveries and collections will be scheduled in advance by booking the vehicle visits with a logistics manager using the VBMS. It will likely be required that suppliers and hauliers pre-book delivery or collection slots at least 24 hours in advance or agree on a pre-planned vehicle visit schedule.

5.1.8 Persistent offenders that do not comply with the VBMS and that turn up without a booking will be turned away from site. It is contrary to sustainable principles to turn away vehicles on the first occasion as this would increase the use of fossil fuels and add undue safety risk to the road network by introducing a subsequent return journey. On first breaching the rule the relevant supplier/haulier will be notified of the requirement to book a delivery slot. Continued failure to comply with this requirement will result in suppliers/hauliers being removed from the project. Longer booking periods will also be available where there is certainty on the requirements of specific materials.

5.1.9 The specification of the VBMS and booking requirements will be confirmed in a detailed CTMP subject to planning permission being granted.

Re-timing for out of peak deliveries

5.1.10 Due to the rural and remote location of the site, the large spatial coverage and varied character of the highway network in the vicinity of the site typical network peak congestion and the value of retiming deliveries or movements is diminished and could have unintended impacts at the start or end of the journey, where peak period congestion or impacts could be more pronounced. However, delivery and collections will be scheduled to occur at appropriate times across the day and will be coordinated to avoid multiple vehicles arriving or departing at site at the same time.

Use of holding and vehicle call off areas

5.1.11 Due to the nature of the works and the low number of construction vehicles expected per day it is not currently proposed to use a vehicle holding or call off area. However, this will be kept under review based on the needs of the two Cruachan projects.

Use of logistics and consolidation centres

5.1.12 Due to the nature of the works and the relatively low number of construction vehicles expected per day it is not proposed to use a consolidation centre.

5.2 Measures to encourage sustainable freight

Freight by Water

5.2.1 The site is located on the banks of Loch Awe. However, there is not a navigable waterway from which to enter or exit the loch. There are also no existing loading/unloading facilities available. It should be noted that it is likely that some of the components will be shipped to a Scottish port such as Grangemouth or Clydeport and therefore part of the overall journey to site will be via water freight.

Freight by Rail

5.2.2 The site is not within 100m of a useable rail head or siding, so it is not considered that transporting freight by rail is appropriate for this development for the end of the journey to the Site. It might be that certain materials and components are moved by rail as part of the former sections of their journeys e.g. aggregates to commercial batching plants for ready mixed concrete, or components for pre-assembly. This will be outside the control of the Applicant.

5.3 Material procurement measures

DfMA and off-site manufacture

5.3.1 The nature of some of the components needed for the Unit 3 & 4 upgrade means a high level of off-site manufacturing will be utilised. This will help minimise the overall number of construction vehicle trips needed to complete the project.

Re-use of material on site

5.3.2 The nature of the works mean it is unlikely that material suitable for re-use on site will be generated. However, the potential to re-use material generated by the Cruachan 2 expansion project will be explored should an opportunity arise.

Smart procurement

5.3.3 The Applicant is committed to preferring suppliers that are members of best practice schemes such as FORS and CLOCS. In addition, the Applicant will seek to use local suppliers if deemed efficient and appropriate and meets the contractor's standards for materials and operations.

5.4 Other measures

Collaboration amongst other sites in the area

5.4.1 It is anticipated that site plans and construction vehicle management measures will be developed in conjunction with the Cruachan 2 expansion project. It is expected that the two projects will coordinate, share resources and proactively manage vehicle movements so that both projects can be delivered efficiently and safely.

Staff Travel to Work

5.4.2 The Applicant has indicated there will be around 50 additional construction related staff on-site at peak times during the build process. The Applicant has also indicated that where possible local recruitment will be prioritised.

5.4.3 It is anticipated that these workers will be integrated with the wider Cruachan 2 expansion project staff travel proposals and could access the site utilising the same shuttle bus method.

5.4.4 For Cruachan 2 approximately 300 construction workers are expected during the peak period of construction and the majority of the construction workforce will be transported to the site from the bespoke accommodation using shuttle buses. These will likely accommodate 30 workers per bus. Shuttle buses are expected to travel to and from the site each day, with timings reflecting shift patterns on site. The majority of construction workforce are expected to work a single shift between 08:00 – 18:00. Additionally, it is expected that shuttle buses will return to the accommodation compound after drop-off and will not park onsite.

5.4.5 The peak in workforce numbers at the Proposed Development will not coincide with the combined project peak in construction traffic, since the peak in construction traffic for Cruachan 2 will occur during main tunnel excavation, which requires fewer workers than during the completion and fit out processes for the Cruachan 2 project.

5.4.6 The final arrangements for construction worker travel will be confirmed in a detailed CTMP subject to consent being granted.

Working Hours

5.4.7 Works within the turbine hall are proposed to take place 24 hours per day 7 days a week. This is due to the enclosed nature of the turbine hall and helps to minimise the overall works programme.

5.4.8 Deliveries to site will largely follow the typical working hours shown below.

- 0800-1800 Monday to Friday
- 0800-1300 Saturday
- No working on Sunday or Bank Holidays

5.4.9 There will be some deliveries that arrive at site out of hours. This will be due to either the requirements for transportation to site such as abnormal loads or for transportation requirements along the access tunnel. The final arrangements for deliveries to site will be confirmed in a detailed CTMP subject to consent being granted.

6 Estimated Vehicle Movements

6.1 Proposed Development Vehicles

6.1.1 Prior to consent, the details of the likely material quantities, components for the construction phase are not known and therefore it is not possible to provide a detailed vehicle trip generation profile. Information on the plant, equipment and materials required for each stage of the works would be provided within the detailed CTMP once a main contractor has been appointed and the construction method and programme have been confirmed.

6.1.2 It is possible to give an indication on likely construction vehicle trip generation profile based on previous experience and professional judgement. The number of weekly and daily trips will vary depending on the exact activities happening on site and could be exacerbated by overlap between construction stages in the programme. It is estimated that across the construction programme the number of construction vehicles arriving at site could vary between five and 20 vehicles per day. This equates to between 10 and 40 two-way vehicle movements per day, which is considered a maximum.

6.1.3 It is expected that a wide range of vehicle types would access the site to enable construction, which would comprise of the following (but not limited to):

- Service Vans – Plant maintenance, PPE, fixings, sundry items for site office services and deliveries, canteen supplies, courier/post and small parcel deliveries;
- 2 axle rigid lorries – building materials, waste skips, sundry items, PPE fixings, courier and parcel deliveries;
- 3 axle rigid lorries – plant deliveries, access platforms, refuse collection, ready mixed concrete;
- 4 axle rigid lorries – excavated material removal, aggregate supplies, ready mixed concrete, turbine and transformer components;
- Multi axle articulated lorries – materials and component deliveries, plant deliveries, access platforms; and
- Abnormal Indivisible Loads (AIL) – mobile cranes and large adapted articulated lorry combinations (for items such as non-road mobile machinery, transformers, turbines and generators).

6.2 Cruachan 2 Expansion Project

6.2.1 The peak in construction traffic is anticipated to occur in 2026. The daily construction material HGV movements are expected to have a flat profile over 8-hours between 09:00-17:00. This equates to 15 HGV arrivals and 15 HGV departures per hour during the peak shifts. This gives a total of 240 two-way vehicle movements across the day at peak construction.

6.2.2 In order to manage and monitor the construction vehicle movements associated with the two projects it is anticipated that management measures will be developed collaboratively. It is expected that the two projects will coordinate, share resources and proactively manage vehicle movements so that both projects can be delivered efficiently and safely.

6.2.3 The final construction vehicle trip generation profile will be confirmed in a detailed CTMP subject to consent being granted.

7 Implementing, Monitoring and Updating

7.1 Overview

7.1.1 This section provides an overview of how the construction vehicle movements will be managed and monitored.

7.1.2 An appointed Construction Logistics Manager will oversee the managing and monitoring of construction vehicles on behalf of the Main Works Contractor. A record will be kept of vehicle visits to site to provide evidence on the number and type of vehicles, and the efficiency and accuracy of the visits made. The information collected of vehicle movements may include:

- Total vehicle count by day
- Vehicle type/ size /age
- Vehicle arrival, departure and dwell time

7.1.3 Breaches and complaints including:

- Vehicle routeing
- Unacceptable queuing
- Unacceptable parking
- Supplier FORS and CLOCS accreditation

7.1.4 Safety including:

- Logistics-related accidents
- Record of associated fatalities and serious injuries
- Vehicles and operations not meeting safety requirements

7.2 Compliance Arrangements

7.2.1 For those suppliers and hauliers that fail to follow advice to avoid delivering during peak periods or conform to other instructions, the site manager will liaise with these operators to seek improvements in their level of compliance. Should no improvement be forthcoming the supplier may be removed from the contract.

7.2.2 An incident/ complaints register will be created into which incidents/ complaints can be recorded. Once entered, the incident/ complaint will be dealt with using the normal procedures that the main contractor has in place for its development site construction works.

7.3 Reporting & Review Arrangements

Weekly reviews of vehicle activity will be held between the site management group using the data collected as stated above. Where and issue or compliant is identified the site management group and the Construction Logistics Manager will implement remedial actions to provide a resolution.