Appendix 9.1 – Transport Assessment

Cruachan Expansion Project – Transport Assessment

1 Background

1.1 Introduction

1.1.1 Stantec has been commissioned by Drax Cruachan Expansion Ltd (the Applicant) to undertake a Transport Assessment (TA) in support of a Section 36 application for the proposed 'Cruachan Expansion Project', a new pumped storage electricity generating station, (referred to hereafter as the 'Proposed Development') adjacent to the existing Cruachan Power Station at Loch Awe, west of Dalmally in Argyll and Bute area.

1.1.2 It is anticipated that the Proposed Development will provide an additional 600 megawatts of electrical output in generation mode. Under Schedule 1 of the Town and Country Planning (Hierarchy of Development) (Scotland) Regulations 2009, it is considered a Nationally important development under NPF3 and NPF4 Development and will require consent from Scottish Ministers under Section 36 of the Electricity Act 1989.

1.2 Project Background

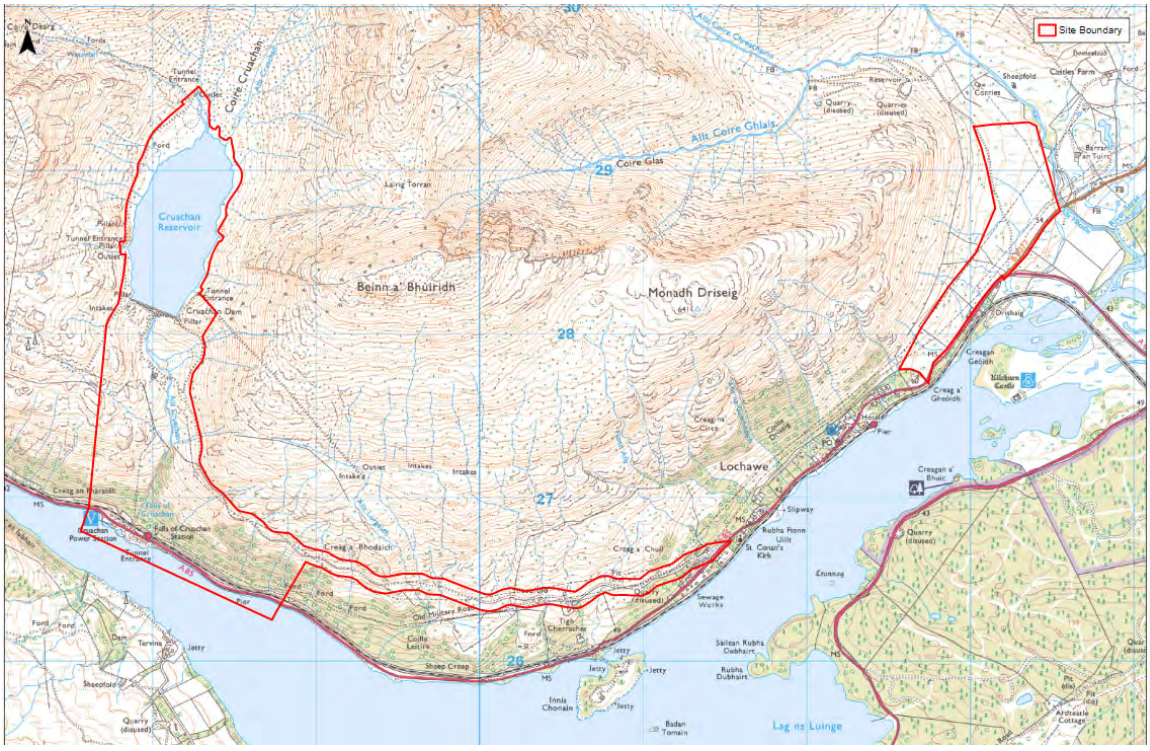
1.2.1 The Proposed Development will be constructed to the east of the existing Cruachan 1 Power Station, approximately 22 kilometres (km) east of Oban and 11 km west of Dalmally in Argyll and Bute. The Proposed Development will operate independently of Cruachan 1,although both power stations would utilise 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 proposed.

1.2.2 **Figure 1.1** below illustrates the location of the application site ('the Site') in relation to Cruachan 1 The Site comprises all areas needed for construction and operation of the Proposed Development. The Site area is broad and includes a corridor of land running from Cruachan Reservoir, extending into Loch Awe.

1.2.3 The Site encompasses the existing Cruachan 1 facilities, including Cruachan reservoir, underground power station and visitor centre. Existing private and public roads which connect the A85 to Cruachan Reservoir (including St Conan's Road), a small section of the A85, Falls of Cruachan railway station, part of the Oban to Glasgow railway line, and Loch Awe also lie within the boundaries of the Site.

1.2.4 Cruachan Reservoir, which provides the upper reservoir of Cruachan 1, is located within a natural coire on the southwest facing slope of Ben Cruachan. The reservoir is impounded by a concrete mixed gravity and buttress dam across the natural outlet to the Allt Cruachan Burn. A path around the reservoir is part of the route used by the public to access the summit of Ben Cruachan.

Figure 1.1: Site Location Plan



1.3 Scoping

1.3.1 The applicant has engaged with Transport Scotland and Argyll & Bute Council on the principles and anticipated Transport Planning aspects of the Proposed Development . Virtual meetings were held on 27 May 2021 with Transport Scotland and its term consultant and on 05 July 2021 with Mr Jim Smith of Argyll & Bute Council.

1.3.2 At those meetings the Applicant outlined the Proposed Development and reviewed the headlines of the predicted effects and impacts on the transport networks from both the construction and operational stages of the proposed development, It was agreed between the parties that the construction phase would see the greatest effects with regard to transport and access and, as such, the TA and the Transport Chapter of the Environmental Impact Assessment Report would focus on the construction phase. Specifically, the TA would consider the effect of the peak in construction traffic, recognising that that period would be the predicted "worst-case" for the Transport Planning appraisal.

1.3.3 The Scoping Report for the Environmental Impact Assessment was issued to Transport Scotland; Argyll & Bute Council; and other stakeholders in June 2021 and responses were received on 4 August 2021 and 15 October 2021. Subsequently a formalised Scoping for the TA was issued to Transport Scotland and Argyll & Bute Council in December 2021. A response to the TA Scoping Report was received from Transport Scotland in February 2022. A response from Argyll & Bute Council on the TA Scoping Report is awaited.

1.3.4 The TA Scoping Report, the minutes of the previous engagement meetings and the response from Transport Scotland and Argyll & Bute Council are attached to this TA at **Appendix A.**

1.4 Report Structure

1.4.1 The remainder of the TA is structured as follows:

- Section 2 sets the Proposed Development in the relevant national, regional and local transport policy context;
- Section 3 presents the baseline transport conditions;
- Section 4 gives an overview of the proposed site in terms of its context and accessibility;
- Section 5 outlines the agreed approach to trip generation and distribution for the Proposed Development;
- Section 6 assesses the development impact on the local road network; and
- Section 7 comprises the summary and conclusion.

2 Policy Context

2.1 Introduction

2.1.1 This section outlines the following national, regional and local transport planning policies relevant to the Proposed Development which have been considered in preparing this TA.

- Scottish Planning Policy (2020);
- Scotland's National Transport Strategy 2 (2020);
- National Planning Framework;
- Construction Logistics and Community Safety Standard (2019)
- Planning for Construction Safety (2019)
- Construction Logistics Planning Guidance, TfL & CLOCS (2021)
- Transport Assessment Guidance (2012)
- HITRANS Regional Transport Strategy (2017)
- Argyll and Bute Local Development Plan (2015) and Local Development Plan 2 (2021)

2.2 National Policy and Guidance

Scottish Planning Policy (2020)

2.2.1 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.

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

2.2.3 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.'

2.2.4 Colocation of the scheme with Cruachan 1 will reduce the need to travel through the sharing of staff and resources during the operational phase. There will be negligible increases in operational traffic as a result of the Proposed Development. A construction traffic management plan will be implemented to mitigate impacts of the scheme during the construction period.

Scotland's National Transport Strategy 2 (2020)

2.2.5 Scotland's 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.'*

2.2.6 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 Table 2.1.

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

2.2.7 The Proposed Development takes into consideration the 'climate action' objective of the NTS2. Travel arrangements (i.e. shuttle bus running between the site and the construction compound) for the temporary workforce during the construction phase will be provided, hence the need for long distance

travel is minimised. Sharing of staff and resources with Cruachan 1 during the operational phase will also reduce the need to travel and therefore effect on climate change.

National Planning Framework

2.2.8 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.

2.2.9 The National Planning Framework identifies national developments and other strategically important development opportunities in Scotland, and Cruachan 2 is identified as National Development. It is accompanied by an Action Programme which defines when the delivery of these developments is expected, how and by whom.

2.2.10 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. This would be done through measures such as sustainable workforce transport provision (shuttle busses), not providing construction workforce parking for private cars, providing an accommodation compound for construction workers and minimising the transport of exported material offsite by reusing onsite.

Construction Logistics and Community Safety Standard (2019)

2.2.11 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.

2.2.12 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.'

2.2.13 Implementing CLOCS requires the use of a construction logistics plan (CLP), which is a tool 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 ensure the burden of maintaining this falls to developers and construction contractors.

2.2.14 The Applicant'stechnical advisers 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.

Planning for Construction Safety (2019)

2.2.15 Planning for Construction Safety was published in March 2019, by the Royal Town Planning Institute, in collaboration with the Construction Logistics and Community Safety (CLOCS) organisation.

2.2.16 It states that:

'There are national variations on whether planners are required to address construction traffic, however there is a common mandate across the UK that all major developments must submit a transport assessment that considers the traffic impacts and safety of a development in its entirety. This can form the basis of construction specific conditions.'

2.2.17 In line with this requirement, this TA is submitted in support of the S36 application and includes consideration of Proposed Development's transport safety impacts during construction, and includes measures to mitigate these such as traffic management and temporary crossing facilities.

Construction Logistics Planning Guidance, TfL & CLOCS (2021)

2.2.18 A construction logistics plan (CLP) 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 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

2.2.19 Local planning authorities are responsible for reviewing and approving CLPs and bringing any community concerns forward. An effective CLP maximises benefits to the local authority and community, balanced with developer and contractor needs, such that the CLP is largely self-enforced by the developer and contractor.

2.2.1 A construction logistics plan will be prepared, likely as part of the CEMP implemented and monitored throughout the construction phase, to reduce impacts of the Proposed Development on the environment, drive construction efficiencies, and in terms of highway safety and congestion.

Transport Assessment Guidance (2012)

2.2.2 The main objective of Transport Scotland's 'Transport Assessment Guidance' document is to assist in the preparation of Transport Assessments and Transport Statements for development proposals in Scotland.

2.2.3 The Guidance sets out requirements according to the scale of development being proposed; from a local development which requires a simple Transport Statement providing an explanation of transport issues, through to a major development where detailed technical analyses will be required in a Transport Assessment accompanied by a supporting Travel Plan.

2.2.4 The guidance focuses on the format and scale of the TA to ensure a consistent and robust appraisal of the effects of the development under review and to guide the analysis of the impacts and mitigation of effects on accessibility, communities and environment. The scope of this TA has been confirmed with both Transport Scotland and Argyll & Bute Council to confirm that the geographic and topical coverage are acceptable to allow an appropriate consideration of the Transport Planning of the Proposed Development, this accords with Section 3 of the guidance and specifically paragraphs 3.6, 3.10 and 3.11. The TA recognises that the major effects on travel and access of creating the Proposed Development are associated with the construction period and therefore the appraisal concentrates on that phase of the development.

2.2.5 The TA recognises the need for the Applicant to propose measures to minimise and mitigate impacts on the travel network; and to promote environmentally sound travel and processes where appropriate. Further to the TA, a framework is provided for the CLP and workforce Travel Plan which would accompany the construction of the Proposed Development.

2.2.6 The guidance identifies that environmentally friendly modes should be embraced where feasible and appropriate, which include the use of rail and marine transport.

2.2.7 This TA has been structured and undertaken in-line with the requirements specified within Transport Scotland's 'Transport Assessment Guidance'.

2.3 Reginal and Local Policy

HITRANS Reginal Transport Strategy (2017)

2.3.1 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.

2.3.2 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.

2.3.3 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.

2.3.4 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.

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

2.3.5 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.

2.3.6 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.

2.3.7 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 A85 and A82 as strategic transport links is also recognised within the LDP.

2.3.8 LDP2 Written Statement November 2019 makes reference to the Cruachan Expansion Project under Proposal E. Argyll and Bute Council supports the delivery of this nationally identified project that would bring significant benefits in economy, communities and environment. The LDP2 identifies that the Council will work with the developer to manage the transport impacts of the construction period.

3 Baseline Review

3.1 Introduction

3.1.1 This chapter provides a background review of the Site and outlines the key transport characteristics of the Site and the surrounding area.

3.2 Site Location

3.2.1 The Proposed Development will be focused on land around and to the east of the existing Cruachan 1 Power Station on the northern banks of Loch Awe in Argyll and Bute (National Grid Ref. for Cruachan Reservoir: NN 080 282).

3.2.2 The Site Location Plan for the Proposed Development is shown in Figure 1.1 and also included in Appendix B. The Site extent is denoted with a red-line boundary on the plan which incorporates:

- all the areas that are required for construction and operation phases; the existing Cruachan Power Station facilities, including Cruachan reservoir and underground power station; and the existing private and public roads which connect the A85 to Cruachan reservoir (including St Conan's Road), the A85, and Loch Awe.

3.3 Cruachan 1

3.3.1 Cruachan 1 is an existing pumped-storage hydroelectric power station which opened in October 1965 and was the first reversible pumped storage hydro station of this scale to be built in the world. At present, it is one of only four pumped hydro storage stations in the UK and has a generation capacity of 440 MW.

3.3.2 The existing power station is comprised of Cruachan Upper Reservoir, a dam, an underground cavern, tunnels, intakes, outlets, access track, substation and associated infrastructure (stores, offices, grid infrastructure, etc.). Land surrounding the power station is associated with agricultural activities, with Loch Etive Woods Special Area of Conservation (SAC) and the Coille Leitire Site of Special Scientific Interest (SSSI) located immediately north of the A85.

Visitor Centre

3.3.3 The Cruachan Visitor Centre can be accessed directly from the A85. The Visitor Centre is open for most of the year on weekdays only and is attended by approximately 60,000 visitors per year.

3.3.4 A car park free of charge is provided at the centre which includes approximately 35 car parking spaces, including parking for the mobility impaired, and separate spaces for coaches.

3.4 Existing Conditions

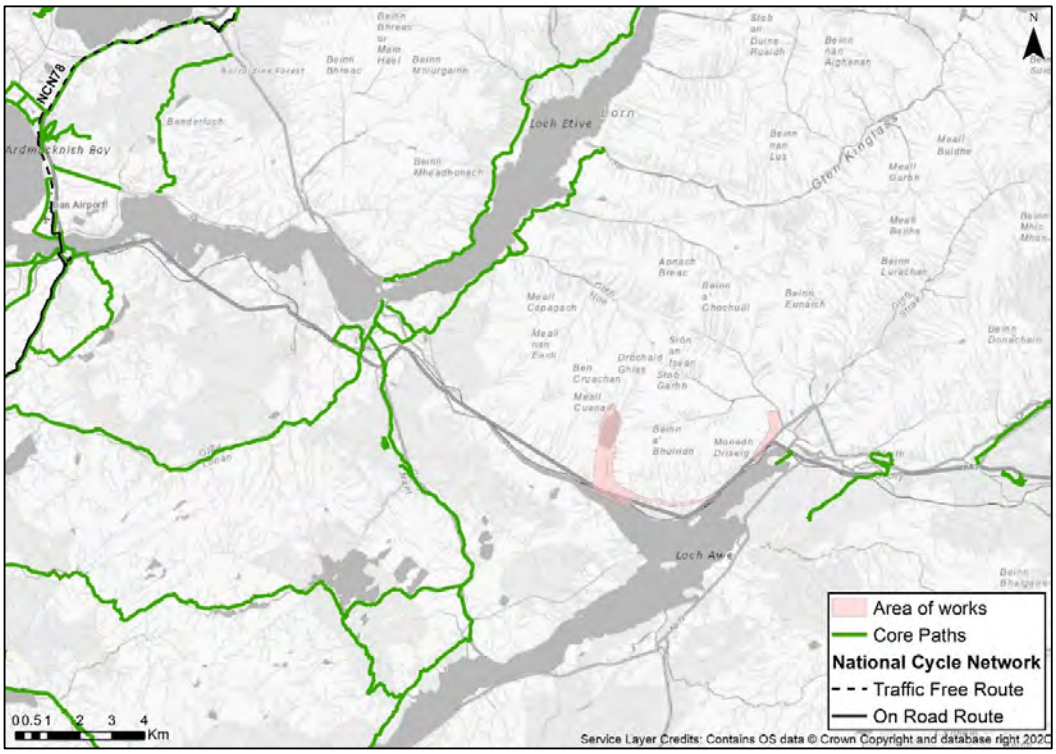
Walking and Cycling

3.4.1 Currently, pedestrian and cycle facilities are limited within the immediate locality of Cruachan 1. A narrow footway, approximately 0.5 – 1.0m in width, is present on the southern side of the A85, 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.

3.4.2 Notwithstanding the above, there are a number of tourist destinations at and surrounding the Site which attract walkers and cyclists to the area. These include Ben Cruachan, Falls of Cruachan, the visitor centre, St Conan's Kirk and Kilchurn Castle. Lochawe is the closest village to the Proposed Development (approximately 4.5 km to the east) although there are closer individual properties located on the A85.

3.4.3 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 (approximately 20km to the west of the Site). The area is an important focal point for hiking and long-distance touring cycling. **Figure 3.1** shows the adopted Core Paths and the National Cycle Network in proximity to the Site. It is noted that none of the denoted core and cycle paths will be affected by the construction of the Proposed Development based on their spatial location.

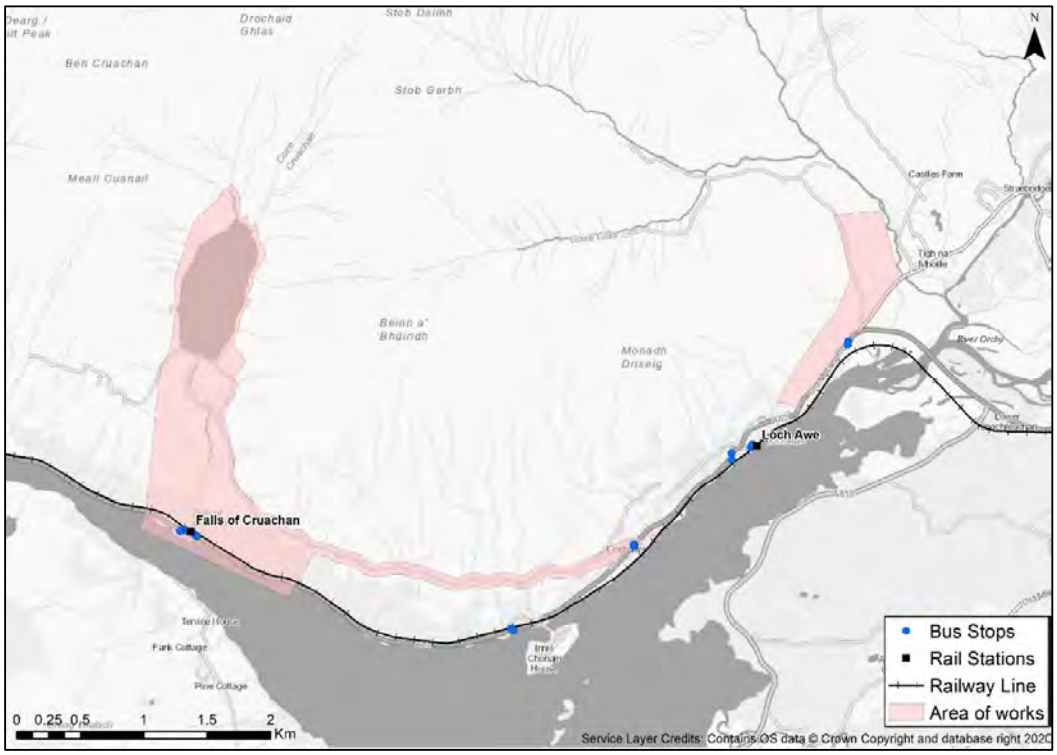
Figure 3.1: Core and Cycle Paths in Vicinity of the Site



Public Transport

3.4.4 The area within which Cruachan 1 is located, is accessible by public transport. **Figure 3.2** denotes the location of the rail stations and bus stops in the vicinity of the Proposed Development.

Figure 3.2: Rail Network and Bus Stops in Vicinity of Cruachan Power Station



Rail

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

3.4.6 The Falls of Cruachan railway station lies on the Oban branch of the West Highland Line which links Oban with Glasgow. It is only open during the summer months, from March to October as it is mainly used by hikers who walk past the falls to climb Ben Cruachan. 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.

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

3.4.8 Lochawe Station is also on the Oban branch of the West Highland Line and 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 Waverley, from late June until August.

Bus

3.4.9 The nearest bus stops to the Proposed Development are located on the A85, approximately 120m east of the Cruachan Visitor Centre. Buses that serve this bus stop include the following:

- Route 975 (Glasgow to Oban) – 3 buses daily

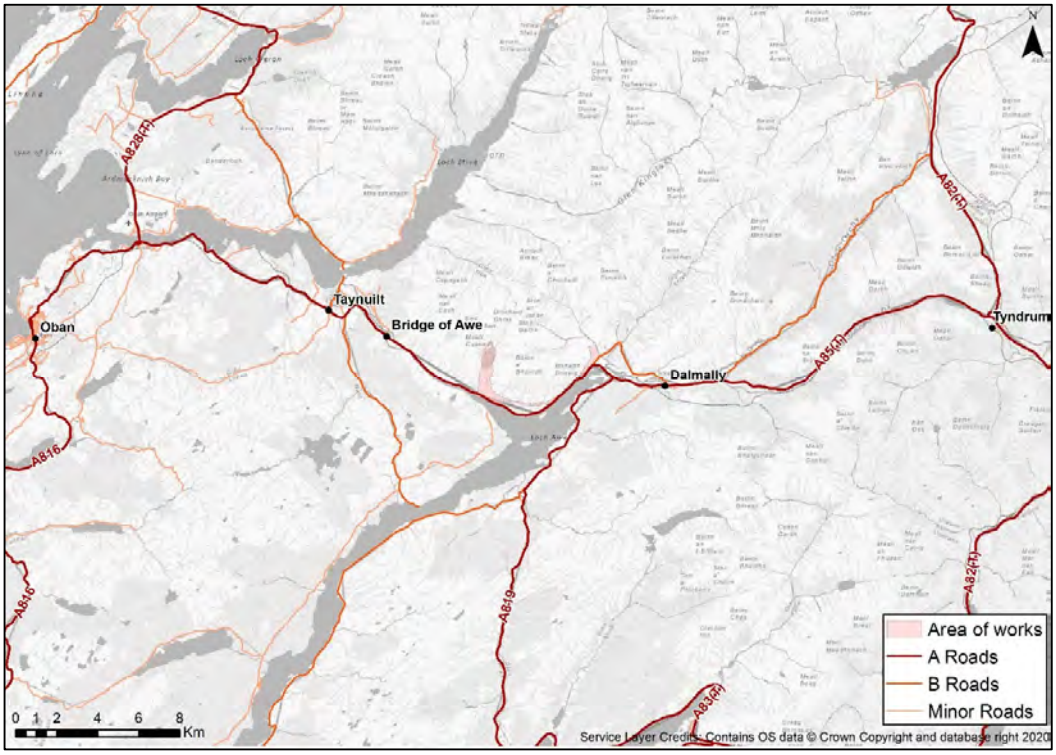
- Route 403 (Taynuilt to Dalmally) – 4 buses daily

3.4.10 Additionally, there are a number of fortnightly Scottish Express bus services serving the bus stop at Cruachan 1. These include bus routes 222, 248 and 266, each running a single departure and return journey fortnightly.

Highway Network

3.4.11 Cruachan 1 is well located to access the strategic road network, as shown below in **Figure 3.3**.

Figure 3.3: Strategic Road Network



3.4.12 The A85, which is designated as a Trunk Road by the Scottish Ministers, provides access to most areas of the Site. The A85 is a single-carriageway roadway with one lane running in each direction and has no street lighting surrounding the Site location. An parking area has been established immediately to the east of the Falls of Cruachan station. As described above, a footway of varied width is provided along the southern kerb of the carriageway to A85.

3.4.13 From the Site, the A85 provides access to the nearby villages of Lochawe (~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). The A85 continues to Tyndrum in the east where it meets the A82, and Oban in the west where it meets the A816.

3.4.14 St Conan's Road provides access to the dam access road/ haul road, under the control of Drax, which is located approximately 230m into St Conan's Road from its junction with the A85. St Conan's Road itself is unlit and with no footway provision except for the residential spur roads branching off from it. The dam access road/ haul road has locked gates to prevent unauthorised vehicular access.

3.5 Existing Traffic Flows

Traffic Count Locations

3.5.1 The baseline traffic flows for the TA have been determined using automatic traffic count (ATC) data from Transport Scotland's National Traffic Data System (NTDS) platform and ATC surveys undertaken as part of the 'Baseline Traffic and Access Report', produced by Arcus Consultancy Services Ltd in 2017. Details of all ATC locations within close proximity to the site, from both of the above-mentioned data sources, have been included in the TA Scoping Report, which is attached in this TA at **Appendix A**.

3.5.2 Following a review of the available traffic count data, the relevant and most up-to-date traffic counts for each location were taken forward and traffic counts which were determined to be erroneous or provided incomplete evidence were excluded. The final traffic counts which have been used as part of this study, along with information on their sources and latest available count dates, are listed in Table 3.1 and shown on **Figure 3.4.**

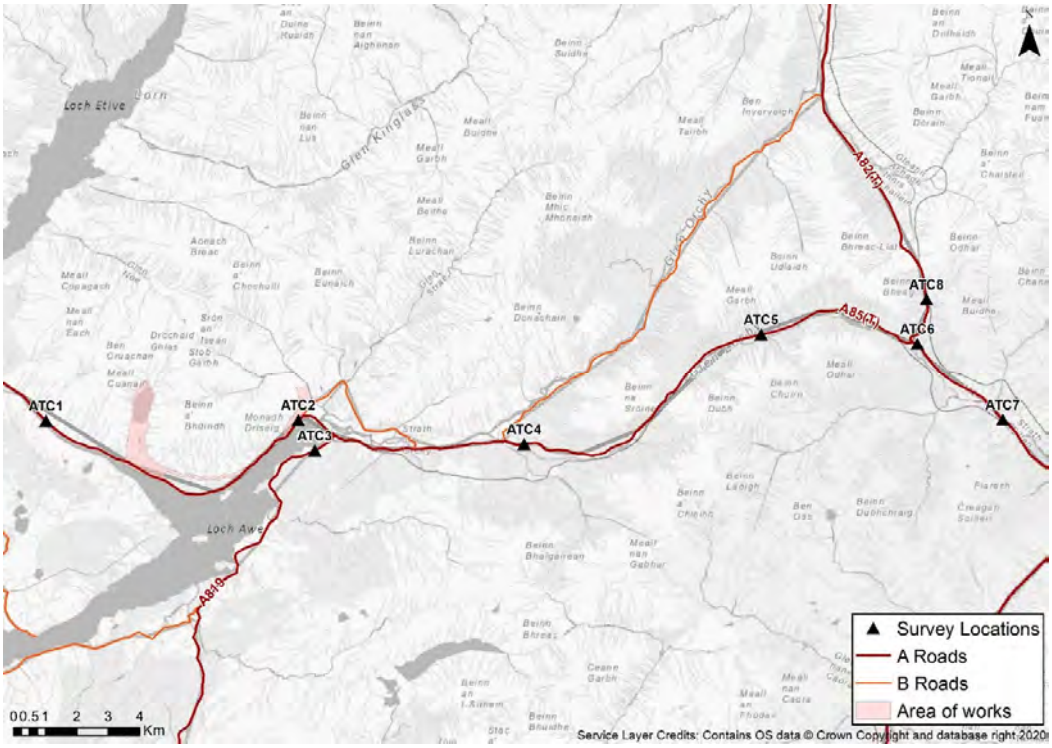
Summary details of the ATC survey data are provided in Appendix C.

Table 3.1: Baseline Traffic Counts

Reference	Source	Location	Latest Available Traffic Counts
ATC1	TS NTDS (Ref: ATC8059)	A85 - 5.5km east of the B845	Mar - Dec 2019
ATC2	Arcus (Ref: ATC 2)	A85 - East of dam access road	Sep 2017
ATC3	Arcus (Ref: ATC 3)	A819 - 0.8km south of A85 Junction)	Sep 2017
ATC4	Arcus (Ref: ATC 4)	A85 - East of B8074 Glen Orchy Road	Sep 2017
ATC5	TS NTDS (Ref:JTC00536)	A85 - 5.5km west of Tyndrum	Mar - Dec 2019
ATC6	Arcus (Ref: ATC 5)	A82 - Between A85 junction and north of Tyndrum	Sep 2017
ATC7	TS NTDS (Ref:108370)	A82 - 3.5km south of Tyndrum	Jan - Dec 2019
ATC8	TS NTDS (Ref: ATC00003)	A82 - 1.7km north of the A85 junction	Jul - Dec 2019

Note: Information on the exact date ranges included for each traffic count location is provided in **Appendix C**

Figure 3.4: Traffic Count Locations

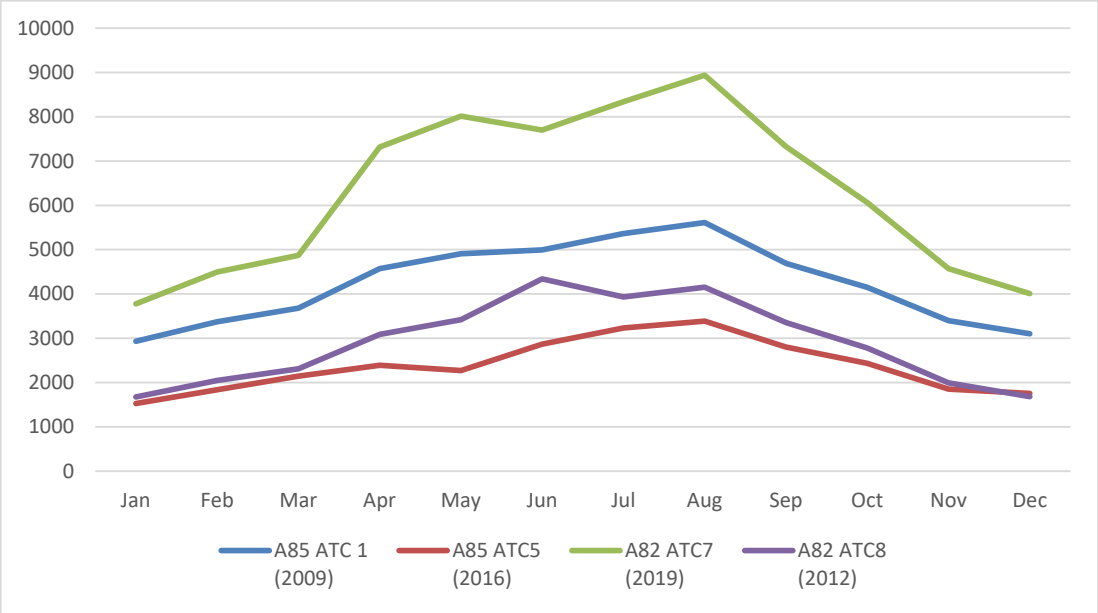


Seasonal Variation

3.5.7 The seasonal variation in traffic flows across the study area, which has been determined based on the most recent Transport Scotland NTDS counts (ATCs 1, 5, 7 and 8) that include traffic data for an entire year, has been shown on **Figure 3.5**.

3.5.8 It is evident from the traffic data that there is a very strong seasonal pattern in traffic flows with the summer months having significantly higher traffic flows compared to the winter months. Traffic flows tend to be at their lowest in January, after which point they rise gradually during the remainder of the winter months. This is followed by a steeper rise from March/ April up until the peak month of August which has the highest traffic flows across all traffic counters except for A82 (ATC 8) which peaks in June. There is a subsequent steady fall in traffic flows between August and January.

Figure 3.5: Seasonal Variation in Traffic Flows



Baseline Traffic

3.5.9 As a result of the COVID-19 pandemic, travel patterns and growth in travel are expected to change from those pre-existing and predicted prior to the pandemic. As such, it has been agreed with Transport Scotland that the current baseline traffic flows for the study will be based on 2019 data (i.e. prior to the start of the pandemic). Therefore, 2019 Transport Scotland NTDS traffic data has been used and the 2017 Arcus traffic counts have been uplifted to 2019 levels based on a factor derived by comparing the 2017 Transport Scotland NTDS traffic counts to 2019 Transport Scotland NTDS traffic counts.

3.5.10 Based on a review of the traffic count data, the AM and PM peak hours vary in time between the different count locations which is expected due to the large spatial coverage and varied character of the highway network considered. Furthermore, typical AM and PM peaks in traffic flows are not generally present as the AM and PM peak hours across the different count locations occur after 10:00 and before 17:00, respectively.

3.5.11 In order to establish the AM and PM hour flows for the purposes of assessment, for each traffic count location separately, the busiest hour between 06:00-12:00 was taken as the AM peak hour and the busiest hour between 12:00 -18:00 was taken as the PM peak hour. As such, the AM and PM peak hours used in the assessment are not uniform across all the traffic count locations and instead relate to the highest hourly AM and PM traffic flows for each location separately.

3.5.12 Traffic flows for St Conan's Road have been estimated assuming a daily and peak hour trip generation of 7 and 1 vehicle movements (one way) per house, respectively, for the 25 houses on St Conan's Road and 20 daily and 5 peak hour vehicle movements associated with the Cruachan dam access road. In terms of HGV movements, 4 daily servicing trips have been assumed all outside of the AM and PM peak hours.

3.5.13 A summary of the baseline traffic flows and 85th percentile vehicle speeds are shown in Table 3.2 and included in full within **Appendix C**. The baseline peak hour flows relate to the average weekday peak hour flows for the month of September which was chosen as a neutral month.

3.5.14 Annual Average Daily Traffic (AADT) flows have been included in Table 3.2 as a proxy for daily flows on the network. The AADT values for each location were calculated based on the available data in 2019 factored to annual average flows based on the most recent year for which complete annual data was available. The annual factors for the Arcus survey data flows were based on the nearest NTDS traffic

counter for which annual data was available. The AADT factors used have been included within **Appendix C.**

3.5.15 As can be seen, the traffic flows across all traffic counts are representative of a rural and low-traffic location and the peak hour flows are significantly lower than the typical link capacities for the road types. The A85 is a rural route and as such saturation levels for traffic lanes of this type are generally considered to be in excess of 1500 passenger car units / hour before congestion is anticipated. The peak hourly flows are substantially within that flow range.

Table 3.2: Baseline Traffic Flow and Speed

ATC Reference and Location	Direction	85th %ile Speed (mph)	AM Peak Hour[1]		PM Peak Hour[1]		AADT	
			Total	HGV	Total	HGV	Total	HGV
ATC1: A85 (5.5km east of the B845)	EB	30.4	197	32	230	32	2335	331
	WB	33.6	203	33	223	31	2362	317
	2-Way	32.0	400	65	452	62	4697	648
St Conan's Road (estimated)	NB	-	5	0	25	0	98	2
	SB	-	25	0	5	0	98	2
	2-Way	-	30	0	30	0	195	4
ATC2: A85 (East of dam access road)	EB	50.4	207	34	184	30	1759	250
	WB	51.8	164	26	185	21	1782	239
	2-Way	51.2	371	61	369	51	3541	489
ATC3: A819 (0.8km south of A85 Junction)	EB	40.5	102	14	92	15	825	118
	WB	37.0	79	18	81	13	774	126
	2-Way	38.9	181	32	173	28	1599	244
ATC4: A85 (East of B8074 Glen Orchy Road)	EB	50.6	174	29	155	23	1420	192
	WB	53.2	126	25	150	17	1390	197
	2-Way	51.9	300	53	305	40	2810	389
ATC5: A85 (5.5km west of Tyndrum)	EB	68.4	123	23	130	16	1369	235
	WB	65.2	141	27	135	27	1327	234
	2-Way	67.1	264	50	265	44	2696	469
ATC6: A82 (Between A85 junction and north of Tyndrum)	EB	33.7	366	63	370	40	3354	440
	WB	28.6	360	57	330	50	3321	423
	2-Way	31.3	725	120	699	90	6675	863
ATC7: A82 (3.5km south of Tyndrum)	EB	59.0	389	35	397	27	3359	336
	WB	57.8	380	35	364	33	3289	329
	2-Way	58.4	769	67	761	61	6648	665
	EB	50.3	251	26	255	18	2130	194

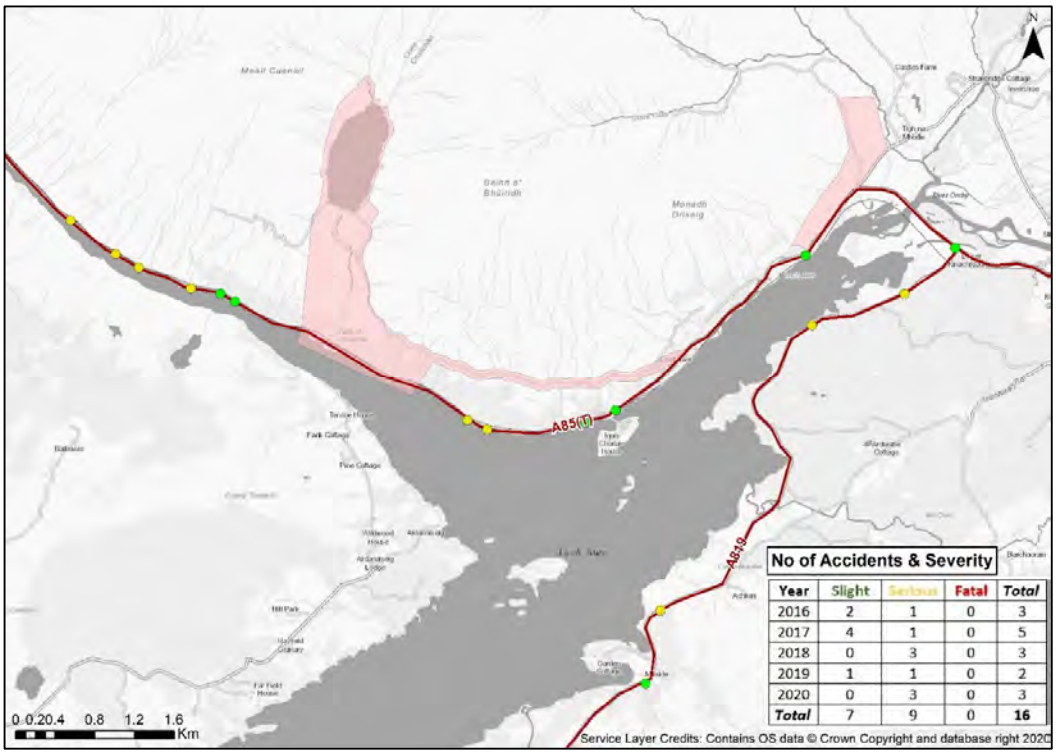
ATC Reference and Location	Direction	85th %ile Speed (mph)	AM Peak Hour[1]		PM Peak Hour[1]		AADT	
			Total	HGV	Total	HGV	Total	HGV
ATC8: A82 (1.7km north of the A85 junction)	WB	55.9	238	19	234	18	2051	181
	2-Way	54.1	489	45	489	36	4182	372

[1] Peak hour flows relate to the average weekday peak hour flows for the month of September. The AM and PM peak hour flows relate to the highest hourly flows for each location separately.

3.6 Road Safety

3.6.1 Road traffic accident data was compiled from publicly available information published by the Department for Transport and checked against accident data provided by Transport Scotland as part of the scoping process. All fatal, serious and slight accidents which occurred in proximity to the site and during the five years January 2016 to December 2020) were identified. **Figure 3.6** shows the location and severity of the collisions.

Figure 3.6: Locations & Severity of Accidents



3.6.2 No collisions occurred in the immediate vicinity of the Proposed Development on or adjacent to the A85. There are not considered to be any existing highway safety issues in the vicinity of the Proposed Development. Two serious accidents occurred approximately 1.5 km to the south-west of the Proposed Development. These incidents both occurred in July 2018, in daylight and fine weather (without high winds). One incident involved a car and motorcycle both going ahead and the other incident involved a single car going ahead.

4 Development Proposal

4.1 Proposed Development

4.1.1 The Proposed Development will comprise the following main elements:

- **Upper Control Works** – a new intake structure including tower, screens, gates, gate hoisting arrangement, etc. would be located within and adjacent to the Cruachan reservoir to direct water into a new headrace tunnel and underground waterway system
- **Underground Waterway System** – a series of underground shafts and tunnels carrying water between the upper reservoir and lower reservoir, through the underground powerhouse cavern
- **Powerhouse Cavern** – a series of underground caverns containing reversible pump-turbines and motor-generators together with associated equipment such as transformers and switchgear. The construction process will require various interconnecting tunnels to enable construction
- **Substation** – the existing substation compound requires to be extended in order to install two new 275kV circuit breakers and associated disconnectors, with each circuit breaker to be T-connected onto the existing 275kV overhead lines at the Cable Sealing Ends to provide a suitable connection to the existing 275KV circuit that connects to Dalmally sub-station, located some 7km to the east
- **Ventilation Shaft** – a ventilation shaft will be required to circulate fresh air through the underground access tunnel and cavern power station complex. It is noted that this may also include a cable shaft for the 275kV cable from the transformers to cable sealing ends/sub-station
- **Tailrace Tunnel** – a concrete-lined low-pressure tunnel including a downstream surge shaft will conduct water between the pump-turbines and Loch Awe, the lower reservoir. Upstream of the lower control works, the tailrace will contain an underground gate chamber and gate shaft, housing the tailrace tunnel gate.
- **Lower Control Works** – comprising screened inlet / outlet structure and stop logs, positioned in Loch Awe at the end of the tailrace tunnel below the water level. These structures would channel water in and out of Loch Awe
- **Quayside** – constructed on the northern shore of Loch Awe to facilitate the construction of the underground access tunnels, waterway system and powerhouse cavern, and the temporary storage of spoil prior to its off-site. During the construction phase the quayside will be used as a means of access to the lower works; construction of the tailrace and main access tunnels; and the temporary storage of tunnel excavated material prior to its off-site removal.
- **Administration Building** – above ground administration and workshop buildings required for day to day operational and maintenance tasks, located on the quayside
- **Storage Buildings** – above ground buildings required for storage and plant and equipment required for regular plant maintenance – located on the quayside
- **Access Tunnels** – a main access tunnel would be constructed to provide access to the underground power plant, close to the shore of Loch Awe. This will cross connect to the existing Cruachan 1 to allow personnel to easily move between the plants and provide a further means of access/egress; and

- **Existing Service Roads** – these will be used as far as possible to facilitate the long-term operation of the generating station. Some upgrades of these roads may be required to facilitate access by heavy machinery and the removal of spoil.

4.1.2 The Proposed Development is expected to provide employment to 5 – 10 new full-time equivalent (FTE) staff during its operational phase. That workforce will join and supplement the existing 30-person workforce, which is currently employed at the existing Cruachan Power Station.

4.2 Construction Phase Proposals

Overview

4.2.1 The construction phase of the development 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 the A85 to the northern side of A85
- Tunnelling and excavation works, and the removal of exported material off-site
- Delivery of construction materials, specialist plant and equipment and Abnormal Indivisible Loads.

4.2.2 Approximately 300 construction workers are expected during the peak period of construction. The majority of the construction workforce will be transported to the site using shuttle buses and therefore significant impacts on the local road network are not anticipated. The peak in workforce numbers will not coincide with the peak in construction traffic, since the peak in construction traffic will occur during main tunnel excavation, which requires fewer workers. This TA has, however, assumed that the two peaks will coincide so as to provide a worst-case scenario.

Temporary Construction Compounds

4.2.3 The following temporary construction compounds will be provided within the Site:

- An upper site compound to be used for construction laydown and concrete batching plant would be established in the vicinity of the existing dam. Once construction work for the Upper Control Works and sub-station is complete, this compound would be removed and the land restored;
- A lower site compound including workers welfare will be established to the North East of Lochawe village, with access from the junction of the A85 and B8077 (Stronmilchan Road). Once construction work is complete, this compound would be removed and the land restored. The total area required for this compound would be approximately 9ha;
- A temporary diversion of the A85 using an existing car-parking layby at the Falls of Cruachan Station would be required in order to facilitate construction of the initial sections of the main access tunnel and lower control works. The A85 would revert to its current alignment once the bridge structure within the A85 has been complete (after a period of approximately 3 months).

New Quayside and Temporary Management of A85

4.2.4 It is currently proposed that a large platform of reclaimed land will be created along the northern shoreline of Loch Awe, just to the east of the existing Cruachan 1 main access tunnel. The quayside area will act as temporary storage/holding facility for excavation arisings prior to onward transport and allow the construction of the main access tunnel and tailrace under the A85 and railway line. It is anticipated that the material storage on the quayside will be of short duration given the relatively limited holding capacity at the quayside and has to be substantially completed before excavation works commence.

4.2.5 To create the launch area for the construction of the access tunnel, a temporary bypass on the northern side of the A85 will be created to reroute traffic. The bypass will utilise the verge adjacent to A85 which is often used a layby and used as parking for the Falls of Cruachan train station and hill walkers. The existing verge is wide enough to allow a single lane of traffic flow without additional widening through excavation or complex diversion of the route onto the foreshore build out, reducing the risk and construction time and reducing disruption to general traffic. This strategy is a modification to the concept considered and described during the initial options for the proposals and presented to Transport Scotland / Argyll & Bute Council. The initial concept was based on an option to redirect A85 using the temporary build out on the loch foreshore. It is now proposed to manage the creation of the launch area for the access tunnel in a phased approach which allows traffic to be kept on the line of A85 through a system of temporary lane closures and rerouting adjacent to the existing A85 carriageway.

4.2.6 The construction sequence and traffic management for the main access tunnel portal is expected to be as follows:

- **Stage 1 – Existing Conditions:**
  Site set up and establish signalised shuttle working traffic management on the A85.

- **Stage 2 – Bypass Construction**
  A new 4.5m wide bypass road would be constructed on the land north of the A85 carriageway, including the existing verge and land beside the railway, which will be offset from the A85 by 4.8m. It is expected that the bypass will take two to three months to construct.

- **Stage 3 – Bridge Construction**
  The traffic on the A85 would be diverted onto the new bypass road allowing construction of a bridge across the proposed access tunnel crossing location. Signalised shuttle working will still be in operation. It is expected that the bridge would take a further two to three months to construct. Following construction of the bridge, the A85 will be diverted back to its original alignment, and shuttle working removed.

- **Stage 4 – Quayside and Tunnel Platform**
  The quayside would be constructed. The existing access to the Cruachan administrative building, off the A85, would be utilised and a link road would be created within the compound to connect to the new quayside formation.

- **Stage 5 – Access Tunnel Construction**
  The tunnel portal would be constructed. Care and consideration of the construction methods for the excavation works would be required to minimise potential disturbance to the A85 and railway, however traffic management on the A85 is not expected to be required during this period.

4.2.7 The indicative sequencing and strategy for the temporary works to the A85 indicated within the TA will be subject to refined detail by the appointed Contractor following consent of the Proposed Development and prior to establishing the works. As noted, it is anticipated that the process will involve phased lane reductions such that traffic is controlled through the road works by temporary mobile traffic signals.

Construction Programme

4.2.8 The construction phase will take place over an estimated 65-month programme. As such, the construction phase of the Proposed Development is expected to last from 2024 to 2029/30. This assumes consent is granted and work commences in 2024. As with all large projects there is a level of uncertainty over the construction programme, which would be refined when contractors are appointed and as the detailed design is developed.

4.2.9 The peak in construction traffic is anticipated to occur in 2026. The following construction activities are expected to coincide during this period:

- Disposal of the exported construction material offsite
- Transport of concrete from the lower site construction compound to the Lower Control Works site
- Upper Control Works site construction activity related to the formation of the upper intake structure, waterway tunnels and excavated material removal

Materials Handling Strategy

4.2.10 The materials that will be exported from the construction (excavation) of the underground tunnels and powerhouse cavern will be the most significant trip generator during the construction period. Careful consideration has been given to identify options for this material to be reused either on or off site.

4.2.11 It is expected that there will be 1.87 million tonnes of exported material that will be unused within the Site and require transportation to a designated material storage site or directly re-used for a large construction project. The location for the deposition of the exported material is not currently known. The optimum solution would be its beneficial use for another project that is scheduled to be constructed in nearby areas. Another potential solution would be that the material will be transported to a local quarry to be stored temporarily and then be used for other projects where applicable. Discussions with Drax, Transport Scotland and Argyll & Bute Council will further inform the handling strategy and proposed option to be taken forward.

4.2.12 The exported material to be taken off-site will be transported by road over an anticipated 54-month programme. The peak off-site haulage is expected to be about 2,987 tonnes / day and expected to occur in 2026. This figure includes allowance for a proportion of excavated materials being used for concrete lining and to create the quayside build-out.

4.2.13 The assessments included in the subsequent sections of the TA are based on the peaked profile of the material exportation programme, which is expected to occur in 2026. The assumption of 2,987 tonnes / day export rate is considered to be a worst-case scenario.

4.2.14 Movement of material by marine or rail operations is not assumed within this TA. Loch Awe is essentially a land locked body of water with no connecting navigable waterways. Moving material by barge would require off-loading at a marine to land interface elsewhere on Loch Awe which is currently not available and has not been assumed within the Proposed Development. Similarly, the use of rail for the movement of material has also not been assumed within the TA. There are no rail freight facilities within the vicinity of the Site that would allow a reduction in the number or frequency of HGV movements at the Site. Establishing a new rail freight facility could have significant environmental effects and would most likely become a redundant development following the temporary construction period. Therefore, it would not represent a viable mitigation for the 'all by road' scenario which is considered within the TA. The 'all by road' scenario is also considered the worst-case scenario in terms of traffic on the highway network.

4.2.15 The construction process will require other key materials, however, their quantum and the profile of their movement will be less than the peak in construction traffic, which is assessed as 2026, and those

movements will not coincide with the peak in construction traffic. The other key materials will be: the import of piling and infill material for the initial phase of the quayside construction; and steel and ready mixed concrete for lining and finishing works. It is assumed that some excavated material will be crushed on-site, including for use as aggregate within the construction of the Proposed Development.

4.2.16 Mechanical, electrical and control equipment will include electricity generating machinery and other power station control equipment. These will be of lesser quantum, albeit some loads will be significant Abnormal Indivisible Loads which are described in more detail in **Appendix D.**

Visitor Centre During Construction

4.2.17 Visits by the public to Cruachan 1 are occasionally expected to be suspended during part of the construction and the peak in construction traffic will be programmed to avoid the summer periods. As a consequence, visitor numbers are expected to be lower than existing visitor numbers (which are captured within the baseline traffic data) throughout the construction phase.

Abnormal Indivisible Loads

4.2.18 There will be a requirement for Abnormal Indivisible Load (AIL) deliveries during the construction period. The heaviest AIL will be power station transformers which are expected to weigh between 100 – 250 tonnes, depending on the type and configuration of the transformer(s) used. This load is expected to require a 10-axle flat top trailer with separate tractor unit. The longest load would likely be the main powerhouse crane beam, which will be approximately 27 m long by 4 m high and 3 m wide.

4.2.19 An AIL assessment has been undertaken and included in **Appendix D.**

5 Construction Trip Generation

5.1 Introduction

5.1.1 This chapter summarises the expected trip generation and distribution of traffic associated with the peak construction traffic phase of the Proposed Development, as well as the traffic management proposals to limit any impacts..

5.1.2 The assessment focuses on the peak in construction traffic in terms of trip generation, which is expected to be in 2026, as detailed in Chapter n 2.

5.1.3 The construction trip generation primarily considers the following key trip generators during the peak in construction traffic:

- Exported material from excavation arisings to be taken off-site
- Construction workforce trips
- Upper Control Works site construction activity

5.1.4 All other traffic movements associated with the peak in construction traffic are expected to be minimal in comparison to the movements related to the above-mentioned elements. Those movements could include: sundry deliveries for the welfare facilities and other site materials; fitters and mechanics; and plant and equipment swap-outs. It is considered that these movements would amount to no more than two to three loads per hour during the peak period and would be within the typical variation of the assessment.

5.1.5 The envisaged construction process is that the main access tunnel will be excavated before the work to excavate the vertical shaft/penstocks from the Upper Control Works site. This would allow material from that shaft to be exported via the Lower Control Works site, limiting the movement of material via St Conan's Road. The assessment, however, has taken an assumption that material will be exported from the Upper Control Works site concurrently with the movement of material from the Lower Control Works site.

5.1.6 As confirmed through TA and EIA scoping, it has been agreed with Transport Scotland and Argyll & Bute Council that the traffic generation during the operation phase of the Cruachan Expansion Project is not to be assessed within the TA. The project will require only 5-10 additional employees to run the combined power stations of the existing Cruachan Power Station and Proposed Development. The additional effects of the movement of those employees are concluded not to be significant or require assessment of the impacts.

5.2 Construction Trip Generation

Construction Staff Trip Generation

5.2.1 During the peak in construction traffic, it is expected that there will be a maximum of around 300 personnel onsite for the construction of the Proposed Development. Of the 310 personnel, around 200 will be working at the Lower Control Works site, with the remaining working at the Upper Control Works site.

5.2.2 The majority of construction workforce are expected to work a single shift between 08:00 – 18:00. There will be a small number of personnel who are expected to be working 2 shifts, especially during specific construction activities.

5.2.3 The majority of the construction workforce will be transported from construction compound to the site 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. Additionally, it is expected that shuttle buses will return to the accommodation compound after drop-off and will not park onsite.

5.2.4 Traffic movements associated with personnel not travelling using shuttle buses will be minimal and expected to be lower than the typical daily and hourly background traffic variation. There will be extremely limited parking within the working areas for private workforce vehicles. A very small allocation of parking will be provided within the working areas for fitters and specialists who will require tools and equipment either mounted or carried within a works vehicle.

5.2.5 Assuming that the entire construction workforce (300 personnel) is transported to site on 30-seater shuttle buses, based on a single working day shift, there would be 44 vehicle movements per day. This is comprised of 11 shuttle buses making trips to the site from the compound and returning back, once at the morning shift start time and again at the end of the day shift.

5.2.6 Of the 44 construction workforce vehicle movements, 32 movements will be to/from the Lower Control Works site, and 12 movements will be to/from the Upper Control Works site.

5.2.7 The number of permanent employees at Cruachan 1 (non-construction workforce) will remain the same during the construction phase. As such, there will be no increase in traffic by the permanent staff during the construction.

5.2.8 Workforce travel would not coincide with the movement of material as workforce travel happens before and after site operations commence or end, respectively. These movements have been included, however, in the peak movements assessed within this TA to assume a worst case.

Construction Material Trip Generation

5.2.9 As set out in Section 4, 100% of the exported construction material to be taken off-site will be transported by road and the peak off-site haulage is expected to be about 2,987 tonnes / day.

5.2.10 A heavy goods vehicle (HGV) loading capacity of 20 tonnes, based on a standard rigid tipper HGV, has been assumed in the calculation of construction material vehicle movements. It should be noted that in practice, articulated tipper vehicles with a loading capacity of 28 tonnes may be used, which is aligned with hauliers carrying out similar operations in the study area. This would result in a significantly lower number of HGVs than has been assumed in this TA. However, 20 tonne vehicles have been assumed as a worst case assessment at the request of consultees.

5.2.11 Based on the above, 300 daily HGV movements (150 trips) are expected associated with the exported materials removal, during the peak in construction traffic. All exported construction material will be transported off-site from the Lower Control Works site, as explained in Section 4.

5.2.12 The 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.

Transport of Concrete to the Lower Control Works Site

5.2.13 The transport of concrete from the lower site construction compound to the Lower Control Works site may be required and has been assumed as a worst case (there is also the potential to locate batching lant at the lower works site). This is expected to result in 100 daily HGV movements (50 trips) between

the lower site construction compound and the Lower Control Works site during the peak period of construction in 2026.

5.2.14 The transport of concrete would be made using standard concrete mixer HGVs. The HGV movements are expected to have a flat profile over 8-hours between 09:00-17:00. This equates to 13 HGV arrivals and 13 HGV departures per hour.

5.2.15 The aggregate material required for the production of concrete at the lower site construction compound would be provided from the excavated construction material described in Paragraph **Error! Reference source not found.**. The number of HGV movements related to the transport of aggregate material from the Lower Control Works site to the lower site construction compound have been included in the construction material trip generation set out under paragraphs 5.2.9 - 5.2.12

Upper Control Works Trip Generation

5.2.16 There will be construction activity related to the formation of the upper intake structure, waterway tunnels and material removal which will take place at the Upper Control Works site during the peak in construction traffic. The expected daily vehicle movements associated with these activities include the following:

- 24 vehicle/ light goods vehicle (LGV) movements (12 trips)
- 16 HGV movements (8 trips)

5.2.17 The vehicle movements at the Upper Control Works site are expected to have a flat profile across the 08:00 – 18:00 working shift. This equates to 2 movements in and 2 movements out per hour during the period.

Total Trip Generation

5.2.18 The total peak construction traffic trip generation, based on the trip generators discussed in this section, has been presented in Table 5.1. To continue the worst-case scenario, it has been assumed that the construction morning and afternoon peak periods align to the network peak periods, this is due to the flat profile of the exported material movements and the assumption that workforce travel would also coincide.

5.2.19 As noted, these figures include workforce shuttle bus movements, which in practice would occur before and after the shifts and would not typically align with network peak periods. Construction workers would arrive before the morning peak and depart after the evening peak period.

Table 5.1: Total Trip Generation

Link Location	Vehicle (HGV)		
	Daily	AM Peak	PM Peak
Upper Control Works	52 (16)	11 (2)	11 (2)
Lower Control Works	432 (400)	68 (51)	68 (51)
Total	484 (416)	79 (53)	79 (53)

5.3 Construction Trip Distribution and Assignment

Staff Trip Distribution

5.3.1 As described in Section 4, the location of the accommodation, from which around 50% of the workforce will be transported to site, is not known at the stage but is expected to be within close proximity to the site. (the remaining 50% being already resident in Argyll) For the purposes of this assessment, it has been assumed that the accommodation will be located between Taynuilt and Inverlochy and will be accessed via the A85.

Construction Material Trip Distribution and Assignment

5.3.2 Distribution of the exported material vehicle movements that will be generated during the construction phase is dependent upon the destinations of the materials being transported off-site. At this stage, the materials handling strategy has not been finalised and the final destination(s) of the exported construction material are therefore unknown. As such, for a robust assessment, two scenarios for the distribution of the traffic movements associated with the exported materials have been assessed:

- Scenario 1: 100% of traffic movements distributed to the east of the site along the A85 and onto the A82 southwards
- Scenario 2: 100% of traffic movements distributed to the west of the site along the A85

Upper Control Works Trip Distribution

5.3.3 As no construction contractor has been appointed at the time of writing, the distribution of the construction related vehicle movements for the Upper Control Works site is unknown. As such, an even distribution has been assumed (50% west along the A85 and 50% east along the A85 and onto the A82 southwards). The traffic movements associated with the Upper Control Works during the peak in construction traffic scenarios is relative minor and its assignment would have an insignificant effect on the assessment outcome.

Trip Assignment

5.3.4 Table 5.2 presents the total daily, morning and afternoon peak period construction vehicle movements, assigned to the surrounding highway network, based on the two excavated material trip distribution scenarios set out under Paragraph 5.3.2.

Table 5.2: Summary Peak Construction Traffic Trip Assignment

Link Location	Vehicle (HGV)					
	Scenario 1			Scenario 2		
	Daily	AM Peak	PM Peak	Daily	AM Peak	PM Peak
A85 (5.5km east of the B845)	20 (8)	3 (1)	3 (1)	320 (308)	41 (39)	41 (39)
St Conan's Road	52 (16)	11 (2)	11 (2)	52 (16)	11 (2)	11 (2)
A85 (East of dam access road)	464 (408)	77 (53)	77 (53)	164 (108)	39 (15)	39 (15)
A819 (0.8km south of A85 Junction)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

Link Location	Vehicle (HGV)					
	Scenario 1			Scenario 2		
	Daily	AM Peak	PM Peak	Daily	AM Peak	PM Peak
A85 (East of B8074 Glen Orchy Road)	320 (308)	41 (39)	41 (39)	20 (8)	3 (1)	3 (1)
A85 (5.5km west of Tyndrum)	320 (308)	41 (39)	41 (39)	20 (8)	3 (1)	3 (1)
A82 (Between A85 junction and north of Tyndrum)	320 (308)	41 (39)	41 (39)	20 (8)	3 (1)	3 (1)
A82 (3.5km south of Tyndrum)	320 (308)	41 (39)	41 (39)	20 (8)	3 (1)	3 (1)
A82 (1.7km north of the A85 junction)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

6 Highway Impact Assessment

6.1 Introduction

6.1.1 This Section provides an assessment of the potential impacts to the surrounding roads network as a result of the Proposed Development. The overall scope of works and methodology and principles of assessment have been determined through ongoing engagements and scoping discussions with Transport Scotland and Argyll & Bute Council.

6.2 Development Access

Lower Control Works Access

6.2.1 The main site access during both the construction and operational phases of the development will be to the Lower Control Works site from the A85, via the existing access road for the Cruachan 1 power station. A new link road will be constructed which would connect the existing access road to the proposed quayside to the east. The proposed link road would be 7m wide and the existing access road would also be widened to 7m. The access road has been designed to accommodate large construction vehicles required to deliver AILs. The main access road design and swept path analysis has been shown on Drawing 331201086_001_C_0860, within **Appendix E.**

6.2.2 The existing junction of the A85/ Cruachan access road will be maintained. Signage would be provided along the A85 on the approaches to this junction during the construction phase of the development to assist hauliers in locating the access to the works. Further details on this would be provided as part of the detailed Construction Traffic Management Plan (CTMP) once the main works' contractor is appointed and prior to construction starting.

6.2.3 In addition to the main access to the Lower Control Works site, a secondary access from the A85 will be constructed at the eastern corner of the quayside. This access junction has been designed to meet the A85 at a perpendicular angle to facilitate traffic from all directions. Signage would be provided along the A85 on the approaches to this junction during the construction phase of the development. Further details on this and the management of construction traffic using the different site access points will be provided as part of the detailed CTMP once the main works' contractor is appointed and prior to construction starting. The secondary access road design and the swept path analysis have been shown on Drawings 331201086_001_C_859 and Drawing 331201086_001_C_0867, respectively, within **Appendix E**.

Upper Control Works Access Road

6.2.4 The existing dam access road will be widened to 4.8m where possible to allow for safer use by HGVs. Additionally, intervisible passing places shall be provided where practical to allow two HGVs to pass. Other improvements to the dam access road include resurfacing, verge and earthworks improvements and new vehicle restraint barriers. It should be noted that all improvements and works to the access road will be within private land within Drax's control, beyond the existing adopted highway extents of St Conan's Road.

6.2.5 The dam access road improvement proposals are shown on Drawing 331201086-001-C-0809, within **Appendix E**.

Lower Site Construction Compound Access

6.2.6 The proposed lower site construction compound will be accessed from the existing access on B8077 Stronmilchan Road. The existing access is considered to provide sufficient width and visibility for the

required vehicles during construction. The largest construction vehicles using this access are expected to be standard concrete mixer HGVs and rigid tipper HGVs with a 20-tonne loading capacity. It is expected that removal of overgrown vegetation and resurfacing would be required at the access entrance.

6.2.7 The location of the lower site construction compound, along with the available visibility splays and swept path analysis has been shown on Drawing 331201086-001-C-0868 within **Appendix E**.

6.3 Traffic Management

6.3.1 The construction of the main access tunnel portal will require temporary traffic management on the A85. As part of this work, signalised shuttle working will be required during the A85 bypass construction and subsequently the bridge construction stages of the construction sequence, lasting approximately 4 – 6 months. Details of the construction sequence and traffic management are provided in Paragraph 4.2.6.

6.3.2 A signalised pedestrian crossing would be provided during the construction of the main access tunnel portal to minimise potential impacts on vulnerable road users and provide a safe and direct crossing point. Additionally, a temporary speed limit reduction would be considered, in consultation with Transport Scotland, for the purposes of road and construction worker safety.

6.3.3 To assess the potential impacts of the traffic management on driver delay, the shuttle working arrangement on the A85 has been modelled on LinSig V3. The following methodology and assumptions have been used as part of this assessment:

- Only the PM Peak hour on the A85 has been assessed, representing the peak hour with the highest flows;
- The maximum length of road under traffic management (i.e., the maximum distance a vehicle will need to travel under shuttle working) will be 130m;
- A signalised pedestrian crossing would be provided at the western end of the shuttle working, near the Falls of Cruachan railway station;
- An intergreen value 20 seconds has been given between the two traffic phases, which allows for an all-red time of 15 seconds between the opposing phases. This all-red time value is inline with DfT guidance under An Introduction to the Use of Portable Vehicular Signals (Updated 2016); and
- A cycle time of 90 seconds has been assessed for the traffic signals.

6.3.4 The LinSig results have been included in Table 6.1, with model outputs included in **Appendix F**. As can be seen, the shuttle working arrangement is expected to operate within capacity and minor levels of queueing and delay during the PM peak hour. Maximum queuing would be approximately 46m in length in each direction which would not impact the Cruachan 1 administrative building access road that is approximately 160m to the west.

Table 6.1: LinSig Outputs for the Proposed Shuttle Working on the A85 (PM Peak Hour)

Arm	DOS (%)	MMQ (PCU)	Average Delay (s)
A85 Eastbound	64.6%	8.2	38
A85 Westbound	62.3%	7.8	37

6.4 Road Safety Audit

6.4.1 An independent Stage 1 Road Safety Audit has been commissioned for the following works:

- Widening of St Conan's Road (Includes the section of road to the east of the cattle grid which is on the adopted highway)
- Main access road to the Lower Control Works site (including changes to the existing access to the Cruachan administrative building and the new access onto the quayside from the existing access road)
- Secondary access road to the Lower Control Works site

6.4.2 The Road Safety Audit brief and audit team were approved by Transport Scotland on 28th April 2022 and the audit site visit was carried out on 9th May 2022. Once completed, the Road Safety Audit and the Designer's Response will be submitted to Transport Scotland and included as part of the application.

6.5 Construction Vehicle Percentage Impact Assessment

Assessment Methodology

6.5.1 A percentage impact assessment has been undertaken for the peak in construction traffic which is expected to be in 2026. This assessment compares the expected uplift in traffic flows during that period of construction against the background traffic levels without any construction traffic.

6.5.2 Forecasts of the 2026 future baseline have been calculated, which together with the peak in construction traffic flows provide the 2026 With Development scenario.

6.5.3 The extents of the assessment will include the traffic count locations as listed in Table 3.1. A detailed distribution and routeing of the construction material movements would be provided in the detailed Construction Traffic Management Plan (CTMP) once the main works' contractor is appointed and prior to construction starting.

2026 Future Baseline Traffic Flows

Background Traffic Growth

6.5.4 Background traffic growth, associated with housing and employment growth, between 2021 – 2026 has been determined based on the National Road Traffic Forecast (NRTF) growth factors. The NRTF 'Low' growth factor has been used, resulting is a growth factor of 1.027 between 2021 – 2026. This factor was subsequently applied to the baseline traffic flows. It has been agreed with Transport Scotland and Argyll & Bute Council that 2019 traffic flows are used as proxy for 2021 traffic data, reflecting that data would not be reliable under the current pandemic and restrictions on travel.

Committed Developments

6.5.5 Based on the scoping discussions with Transport Scotland and Argyll & Bute Council, no committed developments have been identified which could result in cumulative transport impacts on the surrounding highway network to the Site.

6.5.6 There is aproposal for a 1.5GW pumped storage S36 application at Ford, Loch Awe (known as Balliemeanoch) approximately 12 km from the Proposed Development, which has not been submitted at the time of writing this report. The EIA Scoping Report for Balliemeanoch, dated February 2022, has been reviewed with key details presented below.

6.5.7 This proposed scheme will be located approximately 4.4 km to the south of the village of Portsonachan and 9 km northwest of Inveraray in Argyll and Bute. Access to and from the pumped storage site would be via the A819 which connects to the A83 to the south and A85 to the north. Construction traffic is expected to distribute from the wider area to the east, west and southwest and would route via both the A85 and A83. It is proposed that abnormal indivisible loads would be transported using a marine facility at Inveraray.

6.5.8 Overall, it is expected that the proposed development at Balliemeanoch would not result in material cumulative impacts on the trunk road network based on the following reasons:

- Only part of the construction traffic from the Balliemeanoch scheme would route via the A85 and overlap with the construction traffic from the Proposed Development.
- Background traffic flows on the surrounding trunk network on the A85 and A82 are considered very low (as highlighted in Section 3).
- The The construction trip generation associated with the Proposed Development as set out in Section 5, is considered to be very low relative to typical volumes on rural trunk roads and within typical daily variation in flows. The construction trip generation for the Balliemeanoch scheme is expected to be of a much lower number as the scheme will re-use the majority of spoil excavated from their tunnels within the scheme..
- The peak periods of construction at Cruachan and Balliemeanoch are not expected to overlap.

6.5.9 Based on the above, the Balliemeanoch pumped storage scheme has not been considered further within this TA. The Balliemeanoch EIA should consider potential cumulative impacts with the Cruachan Expansion Project, in terms of transport.

Committed Highway Improvements

6.5.10 No committed highway improvements have been identified based on the scoping discussion with Transport Scotland and Argyll & Bute Council.

Summary 2026 Future Baseline Traffic Flows

6.5.11 The 2026 Future Baseline traffic flows for the AM and PM peak hours have been presented in Table 6.2 below. These have been derived by uplifting the Baseline traffic flows presented in Table 3.2, which are based on average weekday peak hour flows for the month of September. The AM and PM peak hour flows relate to the highest hourly flows for each location separately.

Table 6.2: 2026 Future Baseline Traffic Flows

ATC Reference and Location	Direction	AM Peak Hour		PM Peak Hour	
		Total	HGV	Total	HGV
ATC1: A85 (5.5km east of the B845)	EB	202	33	236	33
	WB	208	34	229	32
	2-Way	411	67	464	64
ATC2: A85 (East of dam access road)	EB	213	35	189	30
	WB	168	27	190	22
	2-Way	381	62	379	52

ATC Reference and Location	Direction	AM Peak Hour		PM Peak Hour	
		Total	HGV	Total	HGV
ATC3: A819 (0.8km south of A85 Junction)	EB	104	15	94	15
	WB	81	18	84	13
	2-Way	186	33	178	28
ATC4: A85 (East of B8074 Glen Orchy Road)	EB	179	30	159	23
	WB	129	25	154	18
	2-Way	308	55	314	41
ATC5: A85 (5.5km west of Tyndrum)	EB	126	24	134	16
	WB	145	28	139	28
	2-Way	271	51	272	45
ATC6: A82 (Between A85 junction and north of Tyndrum)	EB	376	64	380	41
	WB	369	59	338	51
	2-Way	745	123	718	93
ATC7: A82 (3.5km south of Tyndrum)	EB	400	36	408	28
	WB	390	36	374	34
	2-Way	790	69	782	63
ATC8: A82 (1.7km north of the A85 junction)	EB	258	27	262	18
	WB	244	20	240	18
	2-Way	502	46	502	37

Impact Assessment

6.5.12 The percentage impact assessment for the AM and PM peak hours, at the links included as part of the study extents, is presented on Table 6.3.

Table 6.3: Link Percentage Impacts During Peak Construction Traffic Period

Link Reference and Location	Direction	Scenario 1				Scenario 2			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Total Trip Gen.	% Impact	Total Trip Gen.	% Impact	Total Trip Gen.	% Impact	Total Trip Gen.	% Impact
ATC1: A85 (5.5km east of the B845)	EB	3	1%	0	0%	22	11%	19	8%
	WB	0	0%	3	1%	19	9%	22	10%
	2-Way	3	1%	3	1%	41	10%	41	9%
ATC2: A85 (East of dam access road)	EB	37	17%	40	21%	18	8%	3	2%
	WB	40	24%	37	19%	21	12%	0	0%

Link Reference and Location	Direction	Scenario 1				Scenario 2			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Total Trip Gen.	% Impact	Total Trip Gen.	% Impact	Total Trip Gen.	% Impact	Total Trip Gen.	% Impact
	2-Way	77	20%	77	20%	39	10%	39	10%
ATC3: A819 (0.8km south of A85 Junction)	EB	0	0%	0	0%	0	0%	0	0%
	WB	0	0%	0	0%	0	0%	0	0%
	2-Way	0	0%	0	0%	0	0%	0	0%
ATC4: A85 (East of B8074 Glen Orchy Road)	EB	19	11%	22	14%	0	0%	3	2%
	WB	22	17%	19	12%	3	2%	0	0%
	2-Way	41	13%	41	13%	3	1%	3	1%
ATC5: A85 (5.5km west of Tyndrum)	EB	19	15%	22	16%	0	0%	3	2%
	WB	22	15%	19	14%	3	2%	0	0%
	2-Way	41	15%	41	15%	3	1%	3	1%
ATC6: A82 (Between A85 junction and north of Tyndrum)	EB	19	5%	22	6%	0	0%	3	1%
	WB	22	6%	19	6%	3	1%	0	0%
	2-Way	41	6%	41	6%	3	0%	3	0%
ATC7: A82 (3.5km south of Tyndrum)	EB	19	5%	22	5%	0	0%	3	1%
	WB	22	6%	19	5%	3	1%	0	0%
	2-Way	41	5%	41	5%	3	0%	3	0%
ATC8: A82 (1.7km north of the A85 junction)	EB	0	0%	0	0%	0	0%	0	0%
	WB	0	0%	0	0%	0	0%	0	0%
	2-Way	0	0%	0	0%	0	0%	0	0%

6.5.13 The A819 and A82 (north of junction with A85) show no impacts since no construction related traffic are excepted to routinely travel using these links. Percentage impacts on the other links across both scenarios range between 1% and 24%. Notwithstanding this, it is evident that the directional trip generation values are generally very low, and the percentage impact values are the result of very low hourly background traffic flows (relative to the link capacities). As such, the traffic associated with the peak in construction traffic would not result in any highway capacity impacts on the surrounding highway network.

6.6 Abnormal Indivisible Loads Assessment

6.6.1 A preliminary abnormal indivisible loads (AIL) assessment has been undertaken and included in **Appendix D**. The assessment sets out the expected AILs required and includes a high level review of potential constraints on the A85 and A82 between Oban and Crianlarich.

6.7 Parking Impacts

During Construction

Removal of Informal Parking adjacent to Lower Control Works

6.7.1 The construction of the main access tunnel portal will require a temporary realignment of the A85 to where the existing parking, adjacent to the pedestrian access to the Falls of Cruachan Railway Station, is located. This would result in the removal of the parking from the verge which can accommodate approximately 10 vehicles. It should be noted that the Falls of Cruachan Railway Station is only open during the summer months and that construction could be phased to avoid as much of the summer period as possible. Additionally, the verge is not formal parking for the railway station; National Rail advises that there is no parking available for the station.

6.7.2 Notwithstanding this, it is proposed that usage of the verge for car parking is monitored prior to construction, and the results of this discussed with Transport Scotland to agree whether alternative parking provision is required during the construction of the main access tunnel portal. If it is deemed that this is required, an appropriate number of parking spaces at the existing Cruachan 1 visitor centre could be allocated to the train station users and walkers who would have otherwise used the informal parking area. Visits by the public to the Visitor Centre is expected to be reduced during the construction period, with tours of the Power Station partially suspended, and so sufficient parking spaces would be available to accommodate the parking spaces removed at the verge.

Construction Staff Parking

6.7.3 The majority of the construction workforce will be transported from the construction compound to the site using shuttle buses. The shuttle buses would return back to the compound after drop-off and would not require parking onsite. Designated drop-off/ pick-up points would be identified and marked at the Upper Control Works and the Lower Control Works sites that would be away from the public highway and within the Site.

6.7.4 There would be limited numbers of construction staff not using shuttle buses, who would require parking onsite. For the Lower Control Works site, parking would be available at the new quayside for the limited numbers of fitters, mechanics and specialists that do need parking. At the Upper Control Works site, there will be space available at the northern end of the dam access road for parking and no parking will take place on St Conan's Road or other roads on the public highway.

During Operation

6.7.5 During the operation phase of the Proposed Development, there would be a small number of additional permanent staff employed in addition to those currently employed at Cruachan 1. This is expected to be approximately 5 – 10 full time equivalent (FTE) staff. The additional staff are able to park at the existing Cruachan 1 administrative buildings parking spaces, and the quayside area adjacent to the main access tunnel for Proposed Development.

6.8 Construction Traffic Management Plan

6.8.1 A detailed Construction Traffic Management Plan (CTMP) will be prepared and implemented prior to the construction stages of the development to ensure that construction is undertaken in a way that will minimise its impacts as far as is practical upon the local community and transport network. It is anticipated that the CTMP would include the following stages/ activities:

- Site establishment and preliminary works
- Construction of the main access tunnel portal which includes the bypass on the A85

- Construction works associated with the Upper Control Works site
- Construction works associated with the Lower Control Works site
- Exported materials removal offsite

6.8.2 The key objectives of the CTMP would be to:

- Set out the details of the construction processes for the works covered by that CTMP;
- Minimise impacts of the construction stages on the local community and transport network;
- Lower emissions from the traffic associated with those construction processes;
- Enhance traffic safety and awareness – with an emphasis on vulnerable road users;
- Identify the site boundary and study areas specific to that CTMP
- Provide information on traffic routeing and site access;
- Provide an indication of programme and key dates and the associated predictions of construction vehicle movements;
- Identify other mitigation measures, such as vehicle, haulier and driver standards requirements;
- Indicate the competencies and accreditation required for staff associated with the movement and management of site traffic;
- Set out the requirements for AIL movement management and consenting; and
- Identify temporary traffic management, waiting and loading controls and parking suspensions and highway licences and approvals required to undertake the works safely and efficiently.

6.8.3 The following potential measures have been identified to help the appointed contractor achieve the goals of the CTMP:

- Construction vehicle management systems
- Equipment management systems, including minimising plant swap-outs and optimising maintenance regimes
- Haulier standards in safety and vehicle standards
- Adherence of construction HGVs to designated routes
- Timing of the excavated material removal HGV movements
- Reuse of materials onsite
- Co-ordination of vehicle movements between the existing and the expanded power station facilities (e.g. maintenance and delivery vehicles)
- Implementation of construction staff travel plan

6.9 Summary

6.9.1 Overall, it has been shown that the construction and operational phases of the development would not result in material impacts on the surrounding highway network. This is based on the following:

- The trip generation and percentage impact assessment show that impacts to the surrounding highway network would be minimal in terms of link and junction capacity.
- Access to the development has been designed to minimise impact to the existing public highway network and to accommodate the required vehicle types during construction.
- The construction process would be managed based on a construction sequence and traffic management that ensures minimal impact to the surrounding transport network and non-motorised users. A CTMP would also be prepared and implemented prior to the start of construction.
- A Stage 1 Road Safety Audit will be undertaken for the two proposed access points onto the Lower Control Works site and the widening of St Conan's Road.
- Parking during the construction and operational stages will be managed and there would no residual impacts on the public highway in terms of parking.

7 Summary and Conclusions

7.1 Summary

7.1.1 The Applicant has undertaken a Transport Assessment (TA) in support of the Section 36 application for the proposed 'Cruachan Expansion Project' – the 'Proposed Development'.

7.1.2 The Proposed Development seeks to optimise use of the existing Cruachan Reservoir and Dam through development of a new underground power station and associated infrastructure adjacent to the existing Cruachan 1 Power Station to provide up to 600MW new generating capacity. The Proposed Development is considered a Major Development and will require consent from Scottish Ministers under Section 36 of the Electricity Act 1989.

7.1.3 This TA has been prepared in accordance with national, regional and local policy and guidance and reflects the agreed scoping, as developed though engagement with Transport for Scotland and Argyll and Bute Council. Section 2 of the TA provides a review of the applicable national, regional and local policy and guidance which have been considered in preparing this TA.

7.1.4 Section 3 provides a background review of the Site and outlines the key transport characteristics of the Site and the surrounding area. Currently, pedestrian and cycle facilities are limited within the immediate locality of Cruachan 1. However, there are a number of tourist destinations at and surrounding the Site which attract walkers and cyclists to the site. In terms of public transport connectivity, Cruachan 1is accessible by infrequent bus services and a rail station (Falls of Cruachan) that is only open during the summer months, from March to October.

7.1.5 Section 4 presents details of the Proposed Development with specific relevance to transport and movement. The construction phase of the Proposed Development will take place over an estimated 65-month programme with the peak in construction traffic expected to occur in 2026, when the transport of the exported construction material and the Upper Control Works site construction activity are expected to coincide.

7.1.6 Through Sections 5 and 6, the implications of the predicted vehicle impacts on the study area are assessed with a focus on the peak in construction traffic in 2026. The study area includes sections of the A85 and A82 trunk roads in close proximity to the site. A vehicle percentage impact assessment was undertaken between the 2026 'Future Baseline' (without development traffic but including background traffic growth based on NRTF growth factors) compared to the 2026 traffic flows with the peak in construction traffic. Based on this assessment, it was concluded that the peak in construction traffic would not result in any highway capacity impacts on the surrounding highway network. The assessment also includes details about the development access, the traffic management and associated driver delay impacts on the A85 and parking impacts during both the construction and operational phases of development.

7.1.7 A preliminary abnormal indivisible loads (AIL) assessment has been undertaken and included in **Appendix D**. The assessment sets out the expected AILs required and includes a high-level review of potential constraints on the A85 and A82 between Oban and Crianlarich.

7.1.8 A detailed Construction Traffic Management Plan (CTMP) will be prepared and implemented prior to the construction stages of the development to ensure that construction is undertaken in a way that will minimise its impacts as far as is practical upon the local community and transport network.

7.2 Conclusions

7.2.1 Overall, it has been shown that the construction and operational phases of the Proposed Development would not result in material impacts on the surrounding transport network. This is based on the following:

- The trip generation and percentage impact assessment show that impacts to the surrounding highway network would be minimal in terms of link and junction capacity.
- Access to the Proposed Development has been designed to minimise impact to the existing public highway network and to accommodate the required vehicle types during construction.
- The construction process would be managed based on a construction sequence and traffic management that ensures minimal impact to the surrounding transport network and non-motorised users. A CTMP would also be prepared and implemented prior to the start of construction.
- Parking during the construction and operational stages will be managed and there would no residual impacts on the public highway in terms of parking.

Appendix A Transport Assessment Scoping Report and Correspondence

Cruachan Expansion Project

Transport Assessment Scoping Report

On behalf of **Drax Hydro Ltd**

Project Ref: 331201086 | Rev: 01 | Date: December 2021

Registered Office: Buckingham Court Kingsmead Business Park, London Road, High Wycombe, Buckinghamshire, HP11 1JU
Office Address: Link House, 78 Cowcross Street, London, EC1M 6EJ
T: +44 (0)203 824 6600

Document Control Sheet

Project Name: **Cruachan Expansion Project**

Project Ref: **331201086**

Report Title: **Transport Assessment Scoping Report**

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	Name	Position	Signature	Date
Prepared by:	Natalia Tzelepi Morteza M. Nejad	Engineer Senior Engineer	NT MMN	10/12/2021
Reviewed by:	Sarah White	Associate	SW	10/12/2021
Approved by:	Adrian Neve	Director	AN	10/12/2021
For and on behalf of Stantec UK Limited				

Revision	Date	Description	Prepared	Reviewed	Approved
01	21/12/2021	First Draft	NT MMN	SW	AN

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Tables

1 Introduction

1.1 Background

1.1.1 Stantec has been commissioned by Drax Hydro Ltd to undertake a Transport Assessment (TA) in support of the Application for development consent for the proposed 'Cruachan Expansion Project' – a 600 megawatt (MW) generating station pumped storage development (referred to hereafter as the 'Proposed Development').

1.1.2 The application site ('the Site') is located to the east of the existing Cruachan 1 Power Station, to the west of Dalmally on the northern banks of Loch Awe in Argyll and Bute (National Grid Reference to Cruachan Reservoir: NN 080 282).

1.2 Proposed Development

1.2.1 It is anticipated that the Proposed Development will provide an additional 600 megawatts of power generation in generation mode. The Proposed Development will also be able to store energy for dispatch at times of peak demand. According to Schedule 1 of Town and Country Planning (Hierarchy of Development) (Scotland) Regulations 2009, the Proposed Development is considered a 'Major Development' because the capacity of the generating station exceeds 20 megawatts. The expansion of the Cruachan Power Station will therefore require consent from Scottish Ministers under Section 36 of the Electricity Act 1989. Concurrently with the S36 application, authorisation under the Water Environment (Controlled Activities) Scotland Regulations 2011 (CAR License) will need to be secured from Scottish Environmental Protection Agency (SEPA), and an Acquisition of Water Rights Order from Scottish Ministers.

1.2.2 The proposed development will comprise the following main elements:

- **Upper Control Works** – an additional intake structure including tower, screens, gate and gate shaft located within or adjacent to Cruachan Reservoir to direct water to a new headrace tunnel and surge shaft underground waterway system
- **Underground Waterway System** – a series of underground shafts and tunnels carrying water between the upper reservoir and lower reservoir through the underground cavern powerhouse
- **Cavern Powerhouse** – a series of underground caverns containing reversible pump-turbines and motor-generators together with associated equipment such as transformers and switchgear. The construction process will require various interconnecting tunnels to allow construction
- **Substation** – an above ground substation may be required to provide the connection to the existing 275KV circuit that connects to Dalmally sub-station
- **Ventilation Shaft** – a ventilation shaft will be required to circulate fresh air through the underground access tunnel and cavern power station complex
- **Lower Control Works** – comprising two screened inlet / outlet structures and stop logs positioned in Loch Awe at the end of the tailrace tunnel below minimum water level. These structures would channel water in and out of Loch Awe into the underground waterway system
- **Quayside** – constructed on the northern shore of Loch Awe to facilitate use of reclaimed land for access to the site and to allow the construction of the underground power complex, and the temporary storage of spoil prior to its off-site removal

- **Administration Building** – above ground administration and workshop buildings required for day to day operational and maintenance tasks, located close on the Quayside
- **Access Tunnels** – a main access tunnel would be provided for accessing the underground power plant, close to the shore of Loch Awe. This will cross connect to the existing Cruachan 1 power station to allow personnel to easily move between the plants and provide a further means of access and egress
- **Existing Service Roads** – these will be used as far as possible to facilitate the long term operation of the generating station. Some upgrades may be required to facilitate access by heavy machinery and the removal of spoil.

1.3 Collaborative Scoping and Design

1.3.1 Stantec has liaised with Transport Scotland (TS) and Argyll & Bute Council (ABC), in May 2021 and July 2021 respectively, regarding the scope of the Transport Assessment and the Transport & Access chapter of the Environmental Impact Assessment (EIA) Report.

1.3.2 Initial scoping discussions were undertaken with TS and ABC in regard to:

- the content of the TA and Environmental Statement Transport Chapter and the principles of the Proposed Development
- materials handling strategy during the construction phase
- impacts of the Proposed Development that would affect the transport network during construction and operational phases
- potential constraints on the A85 trunk road network
- available traffic surveys in proximity to the study area
- the possibility of whether any junction modelling exercise would be required to assess the additional traffic volume that the Proposed Development could generate

1.3.3 In July 2021 an EIA Scoping Report was submitted to the Scottish Government Energy Consents Unit (ECU) and key consultees as part of the overall application process for a Section 36 Application. TS and ABC responded, their key comments are summarised in Table 1.1 and Table 1.2, respectively, and will be incorporated into the EIA as appropriate.

Table 1.1: Transport Scotland Key Responses to the EIA Scoping Report

Responses from Transport Scotland
- Any proposed changes to the trunk road network must be discussed and approved (via a technical approval process) by the appropriate Area Manager.
- The application will require to be accompanied by a Stage 1 Safety Audit.
- the TA will require to address both capacity and safety issues
- Use of National Road Traffic Forecast (NRTF) low growth factors to forecast the future traffic flows would be acceptable.
- TS noted that the assessment of the construction phase will be based upon the worst-case ‘all by road’ scenario, in terms of the amount of material to be moved by road.
- TS will require to be satisfied that the size of Abnormal Indivisible Loads proposed can negotiate the selected route and that their transportation will not have any detrimental effect on structures within the trunk road route path.
- A full Abnormal Loads Assessment report should be provided with the EIA that identifies key pinch points on the trunk road network. Swept path analysis should be undertaken at identified pinch points and details provided with regard to any required changes to street furniture or structures along the route.

Table 1.2: Argyll & Bute Council Key Responses to the EIA Scoping Report

Responses from Argyll & Bute Council
- Comments from the Council's Area Roads Engineer are awaited
- It is accepted that the operational phase of the proposal is unlikely to lead to long term concerns, but the construction phase has potential for significant impacts in respect to waste and transportation matters given the locational characteristics of the site.
- Details on how the waste production, storage, processing and distribution on the Road/Rail/Water network will be coordinated should be included within the EIA, and subject to further discussion with Transport Scotland, SEPA and The Planning Authority to provide clarity on alternatives considered and reasons for solutions proposed

1.4 Structure of the Transport Assessment

1.4.1 The TA will be structured to:

- provide a comprehensive description and review of the Proposed Development
- give a commentary on the existing transport network and systems within the assessment area
- confirm the policy and guidance base that has been used for the assessment
- set out the assumptions taken within the TA for both the construction period assessment and the operational state assessment
- predict the likely impacts on the transport and travel network
- outline the mitigation that is proposed to address the transport impacts
- conclude the assessment of impacts to demonstrate that the Proposed Development will achieve at least net nil-detriment to the operation of the transport network

1.4.2 The following sections within this scoping report reflect the topics that will be covered within the TA and indicate the parameters that will be used for the assessment.

2 Policy Context

2.1 Introduction

2.1.1 A review of relevant national, regional and local planning policy and guidance documents will be presented. The purpose of the review is to indicate that the Proposed Development will be well supported by and conforms with policy at all levels.

2.1.2 The following policy and guidance documents have been identified as relevant to the Proposed Development:

- Scottish Planning Policy (2020)
- Scotland's National Transport Strategy 2 (2020)
- National Planning Framework 3 (2014)
- Draft National Planning Framework 3 (2021)
- Construction Logistics and Community Safety Standard (2019)
- Planning for Construction Safety (2019)
- Construction Logistics Planning Guidance, TfL & CLOCS (2021)
- National Roads Development Guide (2015)
- Transport Assessment Guidance (2012)
- HITRANS Regional Transport Strategy (2017)
- Argyll and Bute Local Development Plan 2 (2021)

2.1.3 The versions of the documents that are noted in the above list are the most recent at the time of writing this Scoping Report. If new versions of these documents are released while preparing the TA, the latest versions of the documents will be reviewed.

2.1.4 The TA will discuss transport policies relevant to the development and outline ways in which the development proposals seek to support policies.

3 Baseline Review

3.1 Development Proposals & Site Location

3.1.1 The Proposed Development will be constructed to the east of the existing Cruachan 1 Power Station, approximately 22 kilometres (km) east of Oban and 11 km west of Dalmally in Argyll and Bute. Figure 3.1 shows the site location.

3.1.2 The Cruachan Expansion project will operate separately to the existing Cruachan 1 Power Station 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.

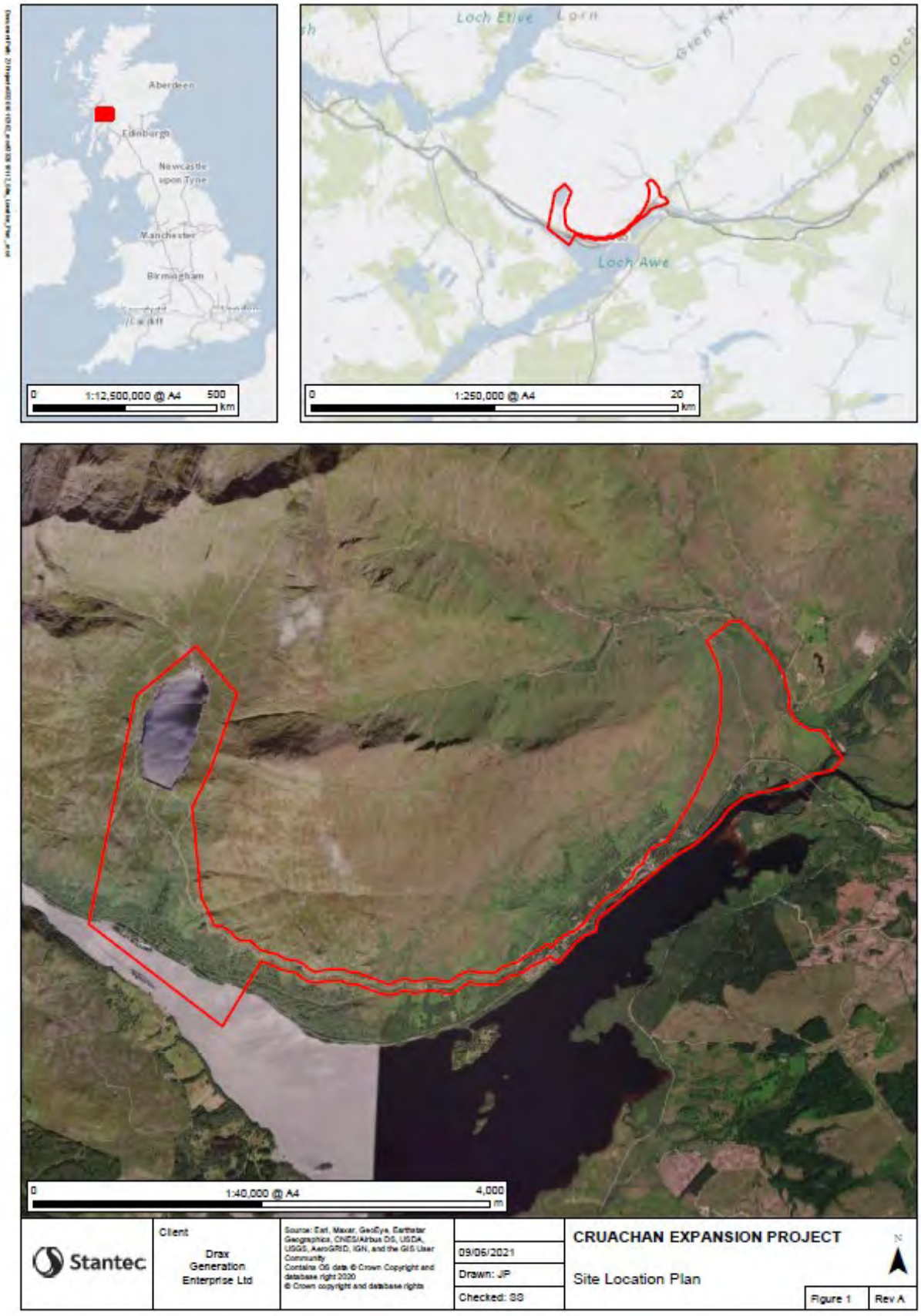

Figure 3.1: Indicative Site Location Plan

3.2 Current Accessibility Arrangements

3.2.1 The TA will include detailed description of the site's baseline accessibility characteristics. The following headlines will be expanded:

- site's existing accessibility by all modes of transport
- notable infrastructure (e.g. active travel routes, bus stops etc.)
- strategic and local vehicular routes that can be used for access to Cruachan 1 Power Station
- existing parking provision for current employees and visitors
- existing traffic conditions (e.g. speeds and traffic volumes of vehicular routes that can be used for access to the power station, comparison of traffic flow between winter and summer months)
- personal injury accident analysis that will help to identify accident clusters and any patterns of behaviour that may be affected by the Proposed Development. Personal injury accident data will be obtained from the Department for Transport (DfT) database[1],for the most recent 5-year period)

3.3 Baseline Traffic Flows

3.3.1 TS has provided access to its traffic count website. This database contains live and historic traffic demand, vehicle classification and speed information for various road links within Scotland. The counters within close proximity to the site include the following:

- A85 – 5.5km east of the B845 and approximately 3km west of Cruachan 1 Power Station;
- A85 – 5.5km west of Tyndrum;
- A82 – 1.7km north of the A85 junction; and
- A82 – 3.5km south of Tyndrum.

3.3.2 Additionally, the 'Baseline Traffic and Access Report', produced by Arcus Consultancy Services Ltd in 2017 includes automatic traffic counts (ATCs) and speed surveys at six locations in the area. The specific counter locations are:

- A85 – West of the power station and visitor centre accesses
- A85 – East of dam access road
- A819 – South of A85 junction
- A85 – East of B8074 Glen Orchy Road
- A82 – Between A85 junction and north of Tyndrum
- A82 – North of A85 junction

3.3.3 As a result of the COVID-19 pandemic, travel patterns and growth in travel are expected to change from those existing and predicted prior to the pandemic. As such, it has been agreed

[1] 'Road Accidents and Safety Statistics', Source: https://www.gov.uk/government/collections/road-accidents-and-safety-statistics

with TS that the current baseline traffic flows for the study will be based on 2019 data (i.e. prior to the start of the pandemic). This would include 2019 TS traffic counts and also 2017 Arcus traffic counts uplifted to 2019 levels based on a factor derived by comparing 2017 TS traffic counts to 2019 TS traffic counts.

4 Construction Assessment

4.1 Introduction

4.1.1 This chapter will appraise the impact of the construction of the Proposed Development over the entire construction phase, but the assessment of impacts will focus on the peak construction period.

4.1.2 The peak construction phase, in terms of vehicle movements, will be when materials handling is at its highest and the workforce quantum is greatest. This scenario will represent a level of impact much greater than the earlier and later phases of construction where the import and export of material is much lower and the workforce has not been scaled up or has been scaled back.

4.1.3 As construction progresses large items of equipment will be brought to site and will be as Abnormal Indivisible Loads (AIL). The movement of those loads will be carefully planned and will be typically low in frequency.

4.2 Temporary Construction Compounds and Workforce Accommodation

4.2.1 Temporary construction compounds will be provided within the site as shown at Figure 3.1. The compounds would be established to accommodate offices for contractors and engineers, facilities (e.g. welfare) and for the storage of materials and equipment.

4.2.2 An accommodation compound is being considered for the construction workforce within close proximity to the site. Drax is currently assessing the most suitable locations based on ongoing ecological survey work and refinements to the design. Once the construction phase of the development is complete, the compound is expected to be removed and the land restored. However, if the accommodation compound is provided by a third-party, they may decide to retain the compound for future use. Approximately 300 construction workers are expected during the peak period of construction. The majority of the construction workforce will be transported to the site using shuttle buses and therefore significant impacts on the local road network are not anticipated.

4.3 Quayside and Temporary Management of A85

4.3.1 It is currently proposed that a large platform of reclaimed land will be created along the northern shoreline of Loch Awe, just to the east of the existing Cruachan 1 main access tunnel. The quayside area will act as temporary storage/holding facility for excavation arisings prior to onward transport and allow the construction of the main access tunnel and tailrace under the A85 and railway line. It is anticipated that the spoil storage on the quayside will be of short duration given the relatively limited holding capacity at the quayside and has to be substantially completed before excavation works commence.

4.3.2 To create the launch area for the construction of the access tunnel, a temporary bypass on the northern side of the A85 will be created to reroute traffic. The bypass will utilise an existing layby on the A85 which is currently used as parking for the Falls of Cruachan train station. The width of the existing layby would remove the requirement to provide additional widening through excavation, reducing the risk and construction time and reducing disruption to general traffic. This strategy is a modification to the concept considered and described during the initial options for the proposals and presented to TS / ABC. The initial concept was based on an option to redirect A85 using the temporary build out on the loch foreshore. It is now proposed to manage the creation of the launch area for the access tunnel in a phased approach which allows traffic to be kept on the line of A85 through a system of temporary lane closures and re-routeing adjacent to the existing A85 carriageway.

4.3.3 The construction sizing, formation and sequence for the quayside will be described in the TA. The indicative sequencing and strategy for the temporary works to A85 will be indicated within the TA, subject to refined detail by the appointed Contractor following consent of the Proposed Development and prior to establishing the works.

4.4 Materials Handling Strategy

4.4.1 The materials that will be exported from the construction of the underground complex will be the most significant challenge for the local transportation system and will need to be carefully studied. All material is expected to be transported by road.

4.4.2 Careful consideration will be required to identify options for this material to be reused either on or off site. The location for the deposition of the exported material is not currently known. The optimum solution would be its beneficial use for another project that is scheduled to be constructed in nearby areas. Another potential solution would be that the material will be transported to a local quarry to be stored temporarily and then be used for other projects where applicable. Discussions with Drax, TS and Argyll and Bute Council will further inform the handling strategy and proposed option to be taken forward.

4.4.3 The construction phase of the Proposed Development is expected to last from 2024 to 2029/2030 This assumes consent is granted and work commences in 2024. As with all large projects there is a level of uncertainty over the construction programme, which would be refined when contractors are appointed and as the detailed design is developed.

4.4.4 Peak off-site haulage is expected to be about 3,375t / day and is expected to occur in 2027. This allows for a proportion of materials arisings being used within the vicinity of the upper reservoir and also used to create the quayside build-out.

4.4.5 Opportunities will be explored to flatten the peak curves of the construction programme histogram to achieve a more balanced material extraction but that reprofiling will need to reflect the available stockpiling and the implications on the length of the construction period. The TA will be based on the indicated peaked profile, with any profile flattening reducing the peaks.

4.4.6 Further to the bulk export of material, there will be a requirement for materials import for lining and formation. The largest quantum would be ready mixed concrete. The option to have on-site batching is being reviewed. The movements of imported material will be outlined in the TA and where these are concurrent and cumulative to the peak production of excavated material they will be included in the assessment of impacts.

4.5 Assessment Methodology

4.5.1 The construction assessment methodology for the TA considers the combined impacts of:

- the additional construction traffic on the network; and
- traffic management measures associated with the construction works

4.5.2 The assessment of impacts will focus on the peak construction period when materials handling is at its highest and traffic associated with other construction activities is much lower in comparison.

4.5.3 The construction phase of the Proposed Development is expected to last from 2024 to 2029/2030, with a peak construction impact expected in 2027.

Construction Workers and Permanent Staff

4.5.4 Approximately 300 construction workers are expected during the peak period of construction. The majority of the construction workforce will be transported from the temporary accommodation to the site using shuttle buses. Shuttle buses are expected to travel to and from the site each day, with timings reflecting shift patterns on site. These will likely accommodate 30 workers per bus. Due to the low number of vehicle movements, this is not expected to have any significant impact on the network capacity. Any remaining workforce traffic movements will be minimal and are expected to be lower than the typical daily and hourly background traffic variation. It is therefore proposed to exclude construction worker movements from further assessment.

4.5.5 The number of permanent employees at the site associated with the existing power station (non-construction workforce) will remain the same during the construction phase. As such, there will be no increase in traffic by the permanent staff during the construction.

HGVs

4.5.6 For robustness, the TA will assess a worst-case scenario, where 100% of the exported material will be transported by road. The peak construction period will be assessed; based on the latest design, this is expected to be in 2027.

4.5.7 A truck loading capacity of 28 tonnes will be considered in the calculation of vehicle movements during the construction. As such, it is expected that there will be 121 daily truck trips (242 movements), associated with the exported materials removal, during the peak period of construction. All other traffic movements associated with the peak construction period (such as equipment delivery and specialist contractors) are expected to be minimal in comparison to the materials handling traffic movements.

4.5.8 Distribution of the movements that will be generated during the construction phase is dependent upon the locations of where the materials and equipment are transported to and from. At this stage, the materials handling strategy has not been finalised and the destinations of construction materials are therefore unknown. As such, for a robust assessment, two scenarios for the distribution of the traffic movements associated with the exported materials will be assessed:

- 100% of traffic movements distributed to the west of the site along the A85
- 100% of traffic movements distributed to the east of the site along the A85 and onto the A82 southwards

4.5.9 The extents of the assessment will include the traffic count locations as listed in Section 3.3. A detailed distribution and routeing of the construction material movements would be provided in the detailed Construction Traffic Management Plan (CTMP) once the main works' contractor is appointed and prior to construction starting.

Visitors

4.5.10 Number of visits by the public are expected to be restricted and reduced, and site tours suspended, during the peak construction period and the peak construction period will be programmed to avoid the summer periods when visitor numbers are highest. Therefore, visitor numbers are likely to be lower, and will not exceed the existing visitor numbers (which are captured within the baseline traffic data) at any point during the construction phase, and therefore no further assessment is proposed.

Committed Development

4.5.11 With regard to the committed developments, a pumped storage facility is planned at Ford, Loch Awe, (known as Balliemeanoch) approximately 30km from the Proposed Development. It is considered that, in transport terms, there are unlikely to be cumulative effects in combination with the proposed Development, as access to and from the pumped storage site at Ford would be via the A816 and A83, based on the publicly available information, and therefore no assessment of the Balliemeanoch pumped storage scheme is planned.

4.5.12 The effects of housing and jobs growth in the wider area will be accounted for through the use of National Road Traffic Forecast (NRTF) growth factors. NRTF low growth factors will be applied to the baseline traffic flows in order to forecast the future baseline traffic flows for 2027. It should be noted the baseline traffic flows will be based on 2019 traffic data, as set out in Section 3.3.3.

Scenarios

4.5.13 Forecasts of the peak construction period traffic flows will be calculated, for the following scenarios

- 2027 future baseline
- 2027 future baseline, plus Proposed Development peak construction traffic

Expected Impacts

4.5.14 It is anticipated that the Proposed Development will not have substantive negative impact on the road network in terms of capacity as a result of the limited number of vehicle movements expected. There may be minor and temporary delays to traffic as a result of traffic management proposals.

4.5.15 The TA will assess the following matters for the construction phase of the Cruachan Expansion Project:

- Highway link percentage impacts
- Proposed provisions for non-motorised users
- Vehicular access to and from the construction site, including swept path analysis
- Parking provision, including bicycle parking
- Onsite storage of exported materials
- Abnormal Indivisible Loads Assessment, including routes that can be used by AIL vehicles and swept path analysis at the site access points for an anticipated transport combination (load + rig configuration)
- Impacts of any traffic management measures
- Stage 1 Road Safety Assessment (RSA) where changes to the highway network are proposed – i.e. at the site access and for the concepts of the temporary realignment of A85.

4.6 Construction Phase Arrangements

4.6.1 The following arrangements for the construction phase will be also outlined within the TA, for subsequent refinement by the appointed contractor:

- Construction vehicle management systems
- Equipment management systems
- Haulier standards in safety and vehicle standards
- Working hours and shifts
- Visitors' Centre operation during construction

5 Operational Assessment

5.1 Introduction

5.1.1 This section of the TA will provide information on the Proposed Development, in terms of transport, once fully operational.

5.2 Operational Arrangements

5.2.1 The anticipated opening year for the Proposed Development will be 2030.

5.2.2 Once operational, the increase in the numbers of permanent staff) will be minimal compared to the existing situation at Cruachan Power Station (around 5 to 10 additional employees are expected. Additionally, there are no plans to expand the Visitor Centre or change its hours of opening, and therefore no noticeable increase in visitor numbers is expected. Traffic movements for daily operations, maintenance and deliveries are expected to be similar to the existing situation. As such, impacts on the road network in terms of vehicle movements and capacity will be negligible.

5.2.3 Based on the above, no assessment of highway capacity during the operational phase of the development is proposed to be undertaken.

5.2.4 The following operational arrangements will be discussed within the TA:

- Permanent site access arrangements
- Co-ordination of vehicle movements between the existing and the expanded power station facilities (e.g. maintenance and delivery vehicles)
- Proposed parking arrangements including bicycle parking

6 Management of Impacts

6.1 Introduction

6.1.1 It will be set out in the TA how adverse traffic and transport impacts and effects during construction on local communities, local infrastructure and the environment associated with the Proposed Development would be managed and reduced, where practicable. A comprehensive mitigation strategy will be developed and described in the TA.

6.1.2 Following construction there will be very limited movements of materials, plant and equipment to the operational power station. Where feasible those maintenance movements would be co-ordinated with those of the existing power station, to minimise impacts. Employee movements would have an imperceptible cumulative impact on the transport network when added to the existing baseline scenario of the operational Cruachan 1 Power Station.

6.1.3 The mitigation strategy to accompany the submission is therefore focused on the temporary construction stage.

6.2 Mitigation Strategy

6.2.1 The TA will examine the requirement for initiatives and physical measures that may be implemented during construction to mitigate impacts. Those measures to be considered could include the following:

- Routes for construction vehicles, with the aim to reduce HGV impacts on sensitive public roads
- Highway measures including access junction improvements, and temporary road diversions, as required, to manage the safe and efficient movement of construction vehicles including Abnormal Indivisible Loads
- Closures and diversions of active travel routes during construction phase to protect the public

6.2.2 A Construction Traffic Management Plan (CTMP) framework will be prepared to provide a basis for further detailed development post consent once the main works contractor is appointed and prior to construction starting. This CTMP framework would focus on:

- Deliveries profiling, retiming and management strategy
- Worksite / public space interface management (e.g. gate line management, marshalling and banking
- Network traffic management including lane closures, speed control, temporary road closures and diversions
- Traffic management into and within the worksite, such as traffic routes and workforce pedestrian management
- Haulier and supplier initiatives to reduce environmental effects – raised standards of vehicles and commitments to driver training

6.2.3 A Travel Plan framework for the workforce will be also provided. Its aim is to encourage efficient and environmentally friendly methods for travelling to and from the work site, and potential measures to support this will be considered, such as:

- Flexible working – for design and support staff
- Provision of shuttle bus between the construction accommodation and the construction site
- Restraint on single occupancy car parking
- Rewards system for environmentally sensitive travel

7 Conclusion

7.1.1 The TA will culminate in a summary of the assessment, including mitigation and residual impacts expected to be generated by the construction period and the operational state of the Proposed Development.

Development Management and Strategic Road Safety
Roads Directorate

Buchanan House, 58 Port Dundas Road, Glasgow G4 0HF
Direct Line: REDACTED , Fax: 0141 272 7350
gerard.mcphillips@transport.gov.scot

TRANSPORT SCOTLAND
CÒMHDHAIL ALBA

Magnus Hughson
Energy Consents Unit
The Scottish Government
5 Atlantic Quay
150 Broomielaw
Glasgow
G2 8LU

Econsents_Admin@gov.scot

Your ref:
ECU00003298

Our ref:
GB01T19K05

Date:
04/08/2021

Dear Sirs,

ELECTRICITY ACT 1989

THE ELECTRICITY (APPLICATIONS FOR CONSENT) REGULATIONS 2017

REQUEST FOR SCOPING OPINION FOR PROPOSED SECTION 36 APPLICATION FOR CRUACHAN EXPANSION PROJECT

With reference to your recent correspondence on the above development, we acknowledge receipt of the EIA Scoping Report (SR) prepared by Stantec UK Ltd in support of the above development.

This information has been passed to SYSTRA Limited for review in their capacity as Term Consultants to Transport Scotland – Roads Directorate. Based on the review undertaken, we would provide the following comments.

Proposed Development

The Cruachan Expansion Project (CEP) comprises the development of a new underground power station and associated infrastructure on land around and to the east of the existing Cruachan 1 Power Station, approximately 8km west of Dalmally in Argyll and Bute. We understand that the site is accessed via a link road to the A85(T).

The existing Cruachan Power Station pumped storage facility has a maximum generating capacity of 440MW and the proposals will provide up to 600MW of new generating capacity, resulting in a combined generating capacity of up to 1,040 MW. The CEP will be operated independently of the existing 440 MW Cruachan 1 Power Station. We note that the construction process will take approximately 65 months to complete and will include a tailrace tunnel under the A85(T) and a temporary diversion of the A85(T) onto a temporary quayside platform on Loch Awe.

Transport Scotland would state that any proposed changes to the trunk road network must be discussed and approved (via a technical approval process) by the appropriate Area Manager. At the application stage, we would advise that 1:500 scale plans of any amendments to the trunk road should be submitted. Given the potential scale of the temporary works to the A85(T), we would recommend early engagement on this item and early submission of concept plans so that the matter can be considered and input provided. It would be helpful to engage with the Area Manager for the A85(T) in this regard who is Neil MacFarlane. Neil can be contacted on neil.macfarlane@transport.gov.scot or REDACTED .

Assessment of Environmental Impacts

Chapter 10 of the SR presents the proposed methodology for the assessment of the impact of the Traffic and Transport associated with the construction of the CEP.

This states that a supporting Transport Assessment (TA) will be prepared as an Appendix to the EIA Report, which will be subject to separate a scoping process with Transport Scotland. Transport Scotland would state that the application will require to be accompanied by a Stage 1 Safety Audit, and that the TA will require to address both capacity and safety issues.

We note that traffic counts were undertaken in 2017 at the following locations:

- A85(T) – West of the power station and visitor centre accesses
- A85(T) – East of dam access road
- A819 – South of A85(T) junction
- A85(T) – East of B8074 Glen Orchy Road
- A82(T) – Between A85(T) junction and north of Tyndrum
- A82(T) – North of A85(T) junction

The SR indicates that peak construction year base traffic flows will be derived from comparing the 2017 surveyed flows with ATC counts derived from the site on the A85(T) to the west of the development. Transport Scotland would state that the use of NRTF low growth factors would be acceptable in this instance.

The SR states that comparisons between baseline traffic flows and estimates of likely traffic flows on potentially affected roads will be made. It will then be established whether significant effects would be derived. It also states that that the thresholds as indicated within the Institute of Environmental Management and Assessment (IEMA) Guidelines for the Environmental Assessment of Road Traffic are to be used as a screening process for the assessment. These specify that road links should be taken forward for assessment if:

- Traffic flows will increase by more than 30%, or
- The number of HGVs will increase by more than 30%, or
- Traffic flows will increase by 10% or more in sensitive areas.

This screening process should include the A82(T) junctions as well as the A85(T). We note that the assessment will be based upon the worst-case 'all by road' scenario, in terms of the amount of rock to be moved by road. Transport Scotland is in agreement with this approach.

It is noted that any impacts associated with the operational phase of the development are to be scoped out of the EIA. We would consider this to be acceptable in this instance.

Abnormal Loads Assessment

We note that Abnormal Indivisible Loads (AIL) will be required during construction. No mention is made of the potential Port of Entry for such loads, however, Transport Scotland would state that if the Port of Cambeltown is proposed, we would draw specific attention to the known pinch points located on the A83(T) at the Crinan Canal / Ardrishaig Basin (swing bridge), and the mini roundabout junction of the A83(T) with the A816. There are also some significant constraints on the routes from the west which would need to be considered.

Transport Scotland will require to be satisfied that the size of AILs proposed can negotiate the selected route and that their transportation will not have any detrimental effect on structures within the trunk road route path.

A full Abnormal Loads Assessment report should be provided with the EIAR that identifies key pinch points on the trunk road network. Swept path analysis should be undertaken at identified pinch points and details provided with regard to any required changes to street furniture or structures along the route.

I trust that the above is satisfactory and should you wish to discuss any issues raised in greater detail, please do not hesitate to contact myself or alternatively, Alan DeVenny at SYSTRA's Glasgow Office on REDACTED .

Yours faithfully

REDACTED

Gerard McPhillips

Transport Scotland
Roads Directorate

cc Alan DeVenny – SYSTRA Ltd.

Argyll and Bute Council
Comhairle Earra Ghàidheal agus Bhóid

Development and Economic Growth
Acting Director: Kirsty Flanagan

Helensburgh and Lomond Civic Centre, 38East Clyde Street, Helensburgh G84 7PG
Tel: 01546-605-552

15 October 2021

Our Ref.: 21/01612/SCOPE
Your Ref. : ECU00003298

Contact : Mr D Moore
Direct Line : (01436) 658916
e-mail address: david.moore@argyll-bute.gov.uk

Scottish Government
Energy Consents Unit
5 Atlantic Quay
150 Broomielaw
Glasgow
G2 8LU

FAO

Dear Sirs,

ELECTRICITY ACT 1989

THE ELECTRICITY WORKS (ENVIRONMENTAL IMPACT ASSESSMENT) (SCOTLAND) REGULATIONS 2017, SCOPING OPINION REQUEST FOR PROPOSED NEW UNDERGROUND POWER STATION AND ASSOCIATED INFRASTRUCTURE ADJACENT TO CRUACHAN ONE TO PROVIDE UP TO 600MW NEW GENERATING CAPACITY

I write in reference to your consultation regarding the above and would thank you for agreeing to extend the response period to allow additional time for this response. Please find the Council's consultation response to the scoping request enclosed.

I should point out that the issuing of this scoping consultation advice should not be taken to indicate support for the proposal on the part of Argyll and Bute Council. The Council's recommendation on any future S36 application would rely upon the consideration of the content of any accompanying environmental information, the responses of consultees, the views of third parties and any other material planning considerations which would be reported to Members to obtain their views.

Please note that in terms of the Council's 'Argyll and Bute Local Development Plan' (adopted 2015) the Council will support renewable energy and associated infrastructure developments where these are consistent with the principles of sustainable development and it can be adequately demonstrated that there would be no unacceptable significant adverse effects, whether individual or cumulative, including on local communities, natural and historic environments, landscape character and visual amenity, and that the proposals would be compatible with adjacent land uses and the Planning Policy Objectives of the Statutory Planning Framework in placer at time of submission and determination of the S36 proposals.

It is noted and agreed that:

Having regard to the nature of the Proposed Development and known environmental sensitivities within and surrounding the Site, the Applicant is of the view that it is appropriate for an EIA to be undertaken in relation to consenting applications for the Proposed Development. A prior EIA screening request has therefore not been made, and the Applicant will be undertaking an EIA to accompany the s.36 and associated consenting applications for the Proposed Development in accordance with Regulation 6(b) of the EIA Regulations.

It is noted that the applicants also specify those matters which they consider require to be "scoped in" and addressed by the EIA as follows:

- *Climate change, including carbon balance across construction and operational periods;*
- *Socio-economic effects from the construction workforce, inward investment and the supply chain;*
- *Construction transport effects and logistics;*
- *Effects on hydrological regimes, geomorphology and the water environment;*
- *Disturbance of ornithological and ecological species, habitats and designated sites;*
- *Suitability of tunnel arisings and geomorphology to facilitate land reclamation; and,*
- *Impacts on landscape character, visual amenity and heritage interests.*

It is also noted that at 4.7.3-4.7.5 the applicants have confirmed that:

It is anticipated that a framework Construction Environmental Management Plan (CEMP) will be submitted in support of the consenting applications, which will outline methods to avoid, reduce and mitigate construction effects on the environment. This document will be updated as the Proposed Development progresses to enable the plan to be effective and account for any changes that occur during construction works. The EIA Report will identify mitigation measures for the construction and operation of the Proposed Development to avoid, minimise and reduce adverse environmental effects. Residual environmental effects remaining after mitigation measures have been incorporated will be fully described in the EIA Report. A collated schedule of mitigation would be included in the EIA Report, setting out mitigation to be delivered as part of the Proposed Development and how this will be secured.

A further list of matters the applicant suggests should be "scoped out" of an EIA is set out at 5.1.4 as follows:

- *Effects arising from the decommissioning phase of the Proposed Development;*
- *Effects arising from potential re-powering at the end of the operation lifetime of the Proposed Development, as this would be subject to a separate planning application at the time; Natural watercourses and aqueduct connections draining into Cruachan Reservoir;*
- *Watercourses draining into Loch Awe – River Orchy, River Awe;*
- *Changes to the hydrological regime of Cruachan Reservoir and Loch Awe;*
- *Effects on the following species: wildcat, freshwater pearl mussel, beaver and specially protected amphibians such as great crested newt;*
- *Operational effects on traffic and transport;*
- *Effects on public transport;*
- *Operational noise;*

- *Cumulative Landscape and Visual Impacts Assessment (CLVIA);*
- *Operational effects on heritage assets;*
- *Vulnerability of the Proposed Development due to climate change during construction;*
- *Effects from waste management; and*
- *Risk of Major Accidents and Disasters.*

It is considered by the Planning Authority to be premature at this time to scope out the following matters from the EIA for the reasons set out in this scoping consultation response:

- **Changes to the hydrological regime of Cruachan Reservoir and Loch Awe**. The Council and ECU are aware of an imminent proposal for a 1.5Gw pump storage S36 proposal which would also seek to extract water from Loch Awe. A scoping request is likely to be submitted to ECU by Mid October. Therefore there will almost certainly need to be a need for potential cumulative impacts upon the hydrological regime of Loch Awe to be examined before this matter can be agreed to be scoped in or out of the EIA.

- **Operational effects on traffic and transport;** Comments from the Council's Area Roads Engineer are awaited and shall be forwarded when received. However commentary on the relationship with waste generation, storage, transportation and potential impacts on the free flow of traffic on the A85 on the economy of Argyll and Bute are addressed in this response. It is accepted that the longer term operational characteristics of the proposal are unlikely to have significant impacts, but the construction phase has potential for significant impacts in respect of waste and transportation matters given the locational characteristics of the site.

- **Cumulative Landscape and Visual Impacts Assessment** (CLVIA); Commentary on the potential for additional large scale infrastructure projects to cumulatively impact on the North Argyll APQ is provided and this matter should be addressed in the EIA.

- **Effects from waste management**: There is little detail on what scale of waste material will require to be mitigated, how it will be stored, how it will be transported and to where and for what purpose. In the absence of greater clarity on such fundamental matters, the Planning Authority does not consider that the scoping out of waste matters is appropriate, nor to have details of this as a conditional matter on any consent that may be granted.

- **Operational effects on the setting of heritage assets**: The potential impacts upon the setting of the Category A Listed building remain uncertain at this time. This will be connected to both the extent, scale and length of time construction activities to be undertaken, and the need to ensure any visible structures/plant or machinery to be retained permanently as part of the operation requirements of the extended power station are fully considered given the sensitivity and importance of the setting of the listed building. It will also be necessary to consider carefully the wider LVIA and amenity considerations associated with this. It may be that such operational matters can be scoped out, but at this time there remains uncertainty of exactly what is proposed.

It would appear to the planning Authority that these matters could give rise to potentially significant environmental impacts given the nature of the locale in terms of environmental quality, its sensitivity to major construction operations, the setting of the Category A listed Building, and the potential impacts upon this vital trunk road network essential to the economic wellbeing of the wider area. Given the detail of information currently provided and the uncertainties about the actual scale and environmental consequences of the proposals, it is considered premature to scope these out at this time.

The Council is in agreement that Air Quality and Risk Management can be scoped out of the EIA

In respect of the Local Plan Planning Policy framework the applicant makes reference to the adopted LDP 2015 at para 6.4.14. Your attention is drawn to the emerging LDP 2. Depending upon the date of any future application this may have reached a stage in the adoption process where the weight to be afforded to this will be increased.

A report setting out the Council's Schedule 4 responses to objections to LDP2 was discussed by Full Council at their meeting 24th June 2021. It is currently expected that the adoption of LDP2 will be sometime around October 2022. The full report on schedule 4 responses is available online: Agenda for Argyll and Bute Council on Thursday, 24 June 2021, 10:30 am - Argyll and Bute Council (argyll-bute.gov.uk)

The full pLDP2 written statement, maps and supporting documents are available online: Local Development Plan 2 (argyll-bute.gov.uk)

All planning assessments will now include a dual assessment against the 2015 LDP and any issues raised by any relevant, unopposed elements of LDP 2 at time of consideration of the proposals together with any other material planning considerations.

I trust you find the enclosed information of assistance.

Yours sincerely

David Moore

Senior Planning Officer
Argyll and Bute Council

APPENDIX A
ELECTRICITY ACT 1989

THE ELECTRICITY WORKS (ENVIRONMENTAL IMPACT ASSESSMENT) (SCOTLAND) REGULATIONS 2017

SCOPING CONSULTATION RESPONSE ON BEHALF OF ARGYLL & BUTE COUNCIL FOR PROPOSED SECTION 36 APPLICATION.

PROPOSAL: PROPOSED NEW UNDERGROUND POWER STATION AND ASSOCIATED INFRASTRUCTURE ADJACENT TO CRUACHAN ONE TO PROVIDE UP TO 600MW NEW GENERATING CAPACITY

DESCRIPTION OF PROPOSALS

The Proposed Development seeks to optimise use of the existing Cruachan Reservoir and Dam through development of a new underground power station and associated infrastructure adjacent to Cruachan 1 to provide up to 600MW new generating capacity. The Proposed Development may be variously referred to as the Cruachan Expansion Project and will be operated independently of the existing 440 MW Cruachan 1 Power Station. Both power stations will use Loch Awe as the lower reservoir and Cruachan Reservoir as the upper reservoir.

The following additional information has been provided in the scoping submission in respect of currently anticipated maximum development parameters:

- 600MW powerhouse (anticipated to consist of either 4 x 150 MW generating units, 3 x 200 MW generating units or 2 x 300 MW generating units)
- The upper inlet-outlet structure will be located on the south eastern reservoir rim, approximately 200 m upstream of the main dam axis.
- The lower inlet-outlet works will be located immediately to the east of the existing Drax operational area on the Loch Awe foreshore.
- A new lochside structure in Loch Awe to allow access for the development of the inlet outlet structure as well as operational access to the Proposed Development (see below). The quayside is likely to be a maximum size of 300m x 50m.

BUILD ELEMENTS AND PROCESS

The Proposed Development would comprise the following main elements:

- Upper Control Works – An additional intake structure including tower, screens, gate and gate shaft would be located within or adjacent to Cruachan reservoir to direct water into a new headrace tunnel and surge shaft underground waterway system;
- Underground Waterway System – A series of underground shafts and tunnels carrying water between the upper reservoir and lower reservoir through the underground cavern powerhouse;
- Cavern Powerhouse - A series of underground caverns containing reversible pump-turbines and motor-generators together with associated equipment such as transformers and switchgear. The construction process will require various interconnecting tunnels to allow construction;
- Substation –an above ground substation to provide the connection to the existing 275KV circuit that connects to Dalmally sub-station.

- Ventilation Shaft – A ventilation shaft will be required to circulate fresh air through the underground access tunnel and cavern power station complex. It is noted that this may also include a cable shaft for the 400kV oil filled cable from the transformers to cable sealing ends/sub-station;

- Lower Control Works – Comprising two screened inlet / outlet structures and stop logs, positioned in Loch Awe at the end of the tailrace tunnel below minimum water level. These structures would channel water in and out of Loch Awe;

- Quayside – Constructed on the shore of Loch Awe to facilitate use of the Loch for the transport of heavy equipment and materials, and the temporary storage of tunnel spoil prior to its off-site removal;

- Administration building - above ground administration and workshop buildings required for day today operational and maintenance tasks – located close to the upper reservoir;

- Access Tunnels – A main access tunnel would be provided for accessing the underground power plant, close to the shore of Loch Awe. This will cross connect to the existing Cruachan 1 power station to allow personnel to easily move between the plants and provide a further means of access/egress; and

- Existing service roads will be used as far as possible to facilitate the long-term operation of the generation station. Some upgrades of these roads may be required to facilitate access by heavy machinery and the removal of spoil.

The following temporary works would also be required for the Proposed Development:

- An upper site compound would be established in the vicinity of the existing dam. Once construction work for the Upper Control Works and sub-station is complete, this compound would be removed and the land restored;

- A lower site compound including workers welfare and accommodation will be established to the North East of Loch Awe village, with access from the Stronmilchan Road. Once construction work is complete, this compound would be removed and the land restored;

- A section of the proposed Quayside may be temporary in nature depending on the final scheme design. If so, any temporary sections of the jetty will be removed following completion of construction works and the loch shore reinstated;

- A temporary diversion of the A85 onto the quayside may be required in order to facilitate construction of the initial sections of the main access tunnel, although work is being undertaken to avoid this need The A85 would revert to its current alignment once the initial access tunnel works at Loch Awe are complete;

- A railhead or rail sidings may be established in the vicinity of Lochawe Village in order to facilitate removal of spoil by rail. Location and required land take are currently being considered and the temporary or permanent nature of such works would be finalised following discussion with Network Rail.

In respect of construction process a considerable number of elements have been identified in the Scoping Report as follows:

- Mobilisation, site set up, camps, batching plant and haul roads.

- Construction of a working quayside platform on the foreshore of Loch Awe.

- Temporary diversion of A85 onto temporary quayside platform on Loch Awe.

- Construction of the main access and tunnel, various underground construction and access tunnels, tailrace gate chamber, ventilation tunnel, a tailrace surge shaft, and a tailrace tunnel under A85.

- Construction of the water inlet and outlet structure within loch Awe to connect to the tailrace tunnel, including gates, screens and stoplogs

- Re-divert A85 back onto permanent alignment.

- Drive and support main access tunnel to powerhouse complex.

- Excavation and support of powerhouse complex.

- Excavation and support of the high-pressure tunnel system connecting the Cruachan reservoir and the powerhouse.

- Excavation and construction and installation of a headgate to manage water flow to the powerhouse.

- Construction of the upper control works within the Cruachan reservoir to allow water in and out of the new tunnel system.

- Installation of powerhouse overhead crane.

- Installation of powerhouse electromechanical and hydromechanical equipment.

- Installation of powerhouse balance of plant (mechanical and electrical).

- Dry & Wet commissioning of turbines.

The applicant confirms that the first phase would be to establish two site offices and staging areas – one for the upper reservoir, a second for the underground works and outlet works and a third for where the main works infrastructure will be put together – where the rock disposal is – or where the concrete batching and steel yard will be. An office complex for the contractor and owner's representative would be established, together with parking and lay-down space for equipment and materials at an appropriate location within the site boundary. Initial equipment needed for constructing project site access would be staged at this area. The second phase would establish access to the main construction areas, with access roads to be completed prior to commencing construction.

The main camp and office sites would be decommissioned on completion of the works and the land returned to the owners at the end of the construction phase. Where required, on a temporary basis, land will be restored to a suitable standard in agreement with the relevant landowner(s). ,

All underground works are assumed to use drill and blast methodology. It is assumed that suitable concrete aggregates can be produced from tunnel spoil on the site. The Proposed Development will be designed to be operated 24/7 whenever called upon apart from planned and unplanned outages. It will have a design life of 100 years, after which the need for repowering or decommissioning will be considered at the time. Repowering and decommissioning are not considered in this scoping report.

LANDSCAPE CHARACTER AND VISUAL IMPACT

The proposed development is located within the North Argyll Area of Panoramic Quality (APQ). Although this is not a national designation it is a development plan designation and reflects both the high quality and sensitivity of the landscape. The qualities of the Loch Awe area and its important gateway function in landscape terms was recognised by the Reporter in dismissing proposals for

Upper Sonachan Wind Farm on the southern banks of Loch Awe within the general vicinity of the application site. Although clearly these are differing forms of development and in differing locations, the quality and sensitivity of the area to unacceptable landscape impacts is set out in this S36 decision in general terms and forms a useful reference. Viewpoints from the Cruachan Ridge are important as this is a p popular and important recreational resource in the locality with the proposed development having potentially substantial and lengthy construction impacts upon this valued amenity.

The need to ensure cumulative impacts of future development proposals are considered is acknowledged at 5.2.3 and 5.4.8. This is an area, hich is currently subject to substantial large infrastructure proposals including S37 Power Line proposals by SSEN and large scale substation proposals at the current time. All of these proposals will be subject to future applications and the Planning Authority is concerned that many separate, but related proposals require to be considered to ensure this large scale, renewable related infrastructure development successfully integrates into the landscape and does not define it or unacceptably impact upon it without appropriate mitigation. On this basis, it is not considered appropriate to scope out such matters at this stage as circumstances in respect of major infrastructure proposals in the general area are subject to foreseeable change in terms of the number, scale and extent within the landscape around the Loch Awe Area and the wider APQ within which the current proposals are located. Officers have also only recently been made aware of potential proposals for a large 1.5Gw pump storage hydro scheme within the ZTV of the current proposal. Details are awaited at time of writing.

Given the known S37 and substation proposals within the general vicinity of the development and within the ZTV, and the potential proposal for large pump storage scheme on the opposite banks of Loch Awe, this is a matter which officers consider required to be addressed through the EIA in terms of potential landscape impacts, particularly given the important vantage points such as from the Cruachan Ridge.

On this basis it is considered that landscape impacts, both in respect of the current proposals and associated infrastructure on landscape, together with a cumulative impact analysis in terms of the inter relationship between this proposal and other large infrastructure projects in the APQ area, are properly evaluated and considered in the EIA.

WASTE and TRANSPORT

These are considered to be important and potentially significant matters in respect of the development proposals and their environmental impact over what will unavoidably be a lengthy construction phase. It is accepted that the operation phase of the proposal should not lead to longer term concerns. However the construction phase impacts are considered to be complex, and potentially significant in respect of a range of matters.

In respect of such matters, the applicant states that:

7.7.7 - It is not proposed to undertake a formal Environmental Assessment of the waste arising from the Proposed Project (See Chapter 16). It is therefore not proposed to define the significance of waste impacts, rather an Outline Waste Management Plan (OWMP), focused on bulk Construction and Excavation arisings will be prepared for the planning submission and will form an appendix to the Ground Conditions Chapter (Chapter 7) of the Environmental Assessment Report.

These matters are also referenced at paragraphs 7.7.10 and 7.7.11 of the scoping report.

The Planning Authority is concerned that the significant amounts of “waste” created by the project, the constrained and sensitive characteristics of the locality and the need to clarify how this will be stored, transported (and for what purpose), all remain uncertain at this stage.

These matters are therefore not considered appropriate to scope out of the EIA at this stage. The Planning Authority is not in agreement with this approach given the landscape, cultural heritage and roads infrastructure sensitivities associated with the site and its immediate surroundings. This is an important trunk road extensively used by residents, businesses and tourists, and the potential impacts and examination of alternative solutions to waste storage, its transportation and

usage are in the opinion of the Planning Authority are an important and inter related set of issues. It is the opinion of the Planning Authority that these matters require to be addressed in the EIA to ensure that a range of options have been examined and the most appropriate solution promoted through the application process to balance the numerous and important sensitivities associated with the proposals and the context of the site.

Consideration should be given in the EIA to all potential waste streams, how waste will be reduced, re-used and/or recycled and a site and wider Waste Management Plan should be prepared in respect of formation of compounds and construction methodology for the development and included within the EIA.

In respect of Transportation it is noted that at 10.1.2 it is clarified that:

A supporting Transport Assessment (TA) will be prepared as an appendix to the EIA Report and will be subject to separate a scoping process with Transport Scotland (TS) and ABC.

It is welcomed that there is a commitment to including transportation matters within an EIA appendix, with the detail of this to be informed by a separate scoping exercise with Transport Scotland and Argyll and Bute Council.

It is the opinion of the council that waste production and management will be an important and substantive aspect of transportation matters, and therefore the need to co-ordinate waste production, storage, processing and distribution on the Road/Rail/Water network should all be included within the EIA, and subject to further discussion with Transport Scotland , SEPA and The Planning Authority to provide clarity on alternatives considered and reasons for solutions proposed in a manner which will be transparent to members of the public and other third parties and organisations.

Detailed comments of the Area Roads Engineer are awaited and will be forwarded upon receipt. However it is noted that the primary road network adjacent to the site is a Trunk Road and therefore the Planning Authority will also have regard to any comments by Transport Scotland in respect of such matters.

ECOLOGY AND NATURE CONSERVATION

The views of the Council's Biodiversity advisor and Marine Policy Officer are attached as Appendix B and C respectively.

Biodiversity Officer Comments

In respect of the proposed scoping out of potential impacts on certain protected species the Biodiversity Officer comments:

5.3 Species Surveys specifically have been carried out in 2017 and 2018 for wildcat, freshwater pearl mussel, beaver and specially protected amphibians such as great crested newt, albeit the applicant is aware that these are absent and can be scoped out of the EcIA. .

5.4 Comment: I note that the surveys are out of date but the applicant considers they are robust enough to remain valid except where the works compound is to be located. This gap needs to be addressed along with the new site boundary and those that are known to be present and active within the study area, namely fisheries, freshwater invertebrates, otter, pine marten and red squirrel.

She continues:

5.5 Ornithological interest- surveys have been completed in 2017 and 2018, I note that the applicant is to update the data for breeding golden eagle, vantage point surveys for golden eagle (and indirectly white-tailed eagle), and black grouse and also consult with the Argyll Raptor Group for their data set for 2019/2020. This is acceptable.

5.6 General Comment- surveys- prior to work commencing (albeit that a full planning

application has to be submitted is granted permission) - a pre-start ecological survey on priority construction areas i.e. works compound and the areas following this as the project develops should be carried out prior to opening up these sites by the ECoW along with Tool -box talks (contained within the Construction Environment Management Plan- detail in 6.0) be given to site staff in advance of same.

Further commenting that:

5.6.1 Request: I noted that no invasive non- native species (INNS) have been included in the EIAS, I ask that the applicant confirms that no Rhododendron ponticum or Japanese Knotweed or any INNS on the Wildlife and Country (1981) Act on the Schedule 9 list are on the development site.

6.0 Construction Environment Management Plan (CEMP) - I note that mitigation measures along with licencing contacts for ecological interest are to be embedded in the plan and over seen by the ECoW. I ask that Toolbox Talks are included too and updated as and when required.

As this development is over a number of years, I ask that ecological monitoring reports with images are submitted to the local authority on annual basis.

I would request that these comments and the content of the remainder of her consultation response are noted by The Scottish Ministers in reaching any scoping decision.

Marine Policy Officer Comments

The Council's Marine Policy Officer has also provided comment in respect of Ecological Matters associated with the proposals as follows:

Comments on section 9 - Ecology

- *The Awe catchment is the largest and most diverse freshwater catchment area in Argyll, which sustains a variety of fish species and habitats that are an important part of the region's biodiversity. These freshwater habitats include; streams, rivers and lochs, which is an important fishery for Atlantic salmon (Salmo salar) and brown trout (Salmo trutta). The Atlantic salmon is protected in its freshwater life-cycle stages under Schedule 3 of the Conservation (Natural Habitats, &c.) Regulations 1994, and is a UK Biodiversity Action Plan (BAP) priority species. Brown trout are also a UK BAP priority species. The health of salmonids and other fish populations are dependent on clean freshwater habitats throughout the catchment. The general trends in abundance of fish indicate a decline in natal species with consequences for the performance of the fisheries. Human-derived pressures acting on freshwater habitats include; forestry, agriculture, infrastructure development including the increasing development of renewable energy schemes (Awe Catchment Fishery Management Plan 2014-19).*

- *Loch Awe and River Awe is an important migratory route for salmonids. Changes to water flows can impede successful migration up stream. Correct water flows are essential for allowing access to spawning grounds, including a sufficient water level for the survival of buried eggs. It will therefore be important that throughout the construction and operational phases, the applicant is advised to ensure that all naturally available habitat is accessible to fish, including: sufficient water flows; the hydrology (drainage), underlying geology, and geomorphology is not affected, and to provide mitigation against any habitat loss/damage through a habitat restoration programme. It will be important to note that:*

  - *A walkover habitat survey should be undertaken on the main channels of Awe catchment with the aim of quantifying and evaluating the condition of freshwater habitats utilised for recruitment by fish, and in particular salmonids;*

  - *The applicant is advised to consult with Argyll Fisheries Trust (AFT), Argyll District Salmon Fishery Board (ADSFB) and the Awe District River Improvement Association (ADRIA) in the first instance for further advice.*

- *Otters are classed as European Protected Species (EPS) under the*

Conservation (Natural Habitats, &c.) Regulations 1994. Where there is a high likelihood of otters being present, it is recommended that an otter survey will be required, and an EPS Licence to conduct works may be required from NatureScot.

- *Under section 9.4.12 Non-avian protected species, it is stated that "species for which survey or data searches have determined are likely to be absent and for which no further work is needed, and they can be scoped out of the Ecological Impact Assessment," including the freshwater pearl mussel, I would disagree on this view as much of the survey data is over 6 months old and is therefore out-dated.*

    - *The Freshwater Pearl Mussel is afforded statutory protection under Schedule 5 of the Wildlife and Countryside Act 1981; listed in Annexes II and V of the EC Habitats Directive and Appendix II of the Bern Convention; it is also listed as a Priority Species under the Argyll and Bute Local Biodiversity Action Plan. I therefore recommend that a Protected Species Survey for the Freshwater Pearl Mussel be undertaken in the vicinity of the proposed development (River Awe).*

I would request that these comments and the content of the remainder of her consultation response are noted by The Scottish Ministers in reaching any scoping decision.

HYDROLOGY, HYDROGEOLOGY AND SOILS

Extracts of the Marine Policy Officer's consultation response to the scoping request are set out below;

Comments on section 5 - Proposed Scope of the EIA

1. Under Table 5-1: Technical Scope, it is stated that Waste Management is proposed to be scoped-out. If Waste Management is scoped-out, I would have concerns at this early stage. A full Site Waste Management Plan (SWMP), with appropriate mitigation measures should be included within the EIA as a supporting document;

2. A Construction Environment Management Plan (CEMP) should also be included as a supporting document to the EIA.

She further comments that:

- *Under the SEPA Loch classification system, Loch Awe is classified as having an overall Moderate ecological status and a chemical status of Pass. The Awe catchment is classified as a Heavily Modified Water Body (HMWB) due to the alterations of the water body for hydroelectricity generation. SEPA should be able to advise if the proposal is likely to further significantly impact the Awe catchment.*

- *The applicant is requested to submit full details of the Surface Water Drainage Strategy, including mitigation measures within their Flood Risk Assessment. It will be important that the proposed development does not attribute to an increase in excess surface and ground water accumulations. It will also be important that the development does not attribute to an increase in pollution and any siltation/spoil entering Loch Awe and Cruachan Reservoir, or groundwater bodies (principally Oban), including private water supplies.*

- *The applicant is advised to adhere to good practice measures for working in and near to watercourses during the construction phase, and should include:*

    - *Installation of silt interception traps to minimise unchecked contaminated run-off;*

    - *Appropriate artificial drainage must be designed and installed;*

    - *Fuels and other chemicals must be stored securely within the site*

construction compound;

- *Appropriate wash-out facilities must be available for vehicles and machinery;*
- *Trenches and excavations must be covered at the end of each working day.*

- *Abstractions are regulated by the Water Environment (Controlled Activities) (Scotland) Regulations 2011, more commonly known as the Controlled Activity Regulations (CAR) licence process. The applicant must apply for a CAR licence. Full details on how to apply for a CAR licence are located at: https://www.sepa.org.uk/regulations/water/abstractions/#one. SEPA will provide specific advice relating to the freshwater abstraction.*

- *The contractor must provide a CEMP including proposed mitigation, and Method Statement. The Method Statement must detail the proposed works. The CEMP and Method Statement should be agreed by the Council in consultation with NatureScot prior to works commencing.*

I would request that these comments and the content of the remainder of her consultation response are noted by The Scottish Ministers in reaching any scoping decision.

ARCHAEOLOGY, BUILT & CULTURAL HERITAGE

In respect of these matters the Council will have regard to the views of other consultees with expertise in such matters. However it is noted that there appears to be the possibility of the construction of infrastructure above ground associated with the proposals within the setting of the Cruachan Dam which is a Category A Listed Building of National Importance. It is also a Listed building which has an extensive setting widely used by recreational walkers both to the dam and on wider walks around the Cruachan Ridge. This is a busy and important recreational asset as well as an iconic and historic listed structure.

In this respect the Council is concerned that all elements of construction, including the timescale and phasing of activity and potential impacts are clearly set out, and in the view of the planning authority should also form part of an EIA submission due to the proximity of significant operations, and currently uncertain impacts at this stage on the setting of this nationally important Listed Building.

The Cruachan Dam, the Cruachan Ridge and the general locale are important amenity assets for the local area which are extremely popular destinations for locals and tourists. Although some impacts are unavoidable, Officers consider there should be a clear strategy of mitigation, or alternative provisions promoted through the application process as part of a wider recreation strategy to ensure that access to the outdoors and recreational usage of the general area is considered properly in respect of the construction and operational phases of the proposals.

SOCIO-ECONOMICS AND RECREATION

The A85 Trunk road is a vital link within Argyll and Bute and reference to diversions and potential impacts upon this are considered to also potentially have impacts upon the operation of the economy of Argyll and Bute if the flow of traffic on the A85 is not maintained in so far as is possible through the proper examination of options associated with construction, waste storage and waste transportation related to the proposals. These matters are considered to be potentially complex and inter related and therefore should form part of the EIA submission.

Tourism and recreational usage of the area are also vital components of the economy of the local area and any potential adverse impacts upon these requires to be fully evaluated and mitigation proposed. Details have yet to be finalised in respect of these matters and therefore the Planning Authority considers that such matters should be included within any submitted EIA to ensure that potential socio economic impacts, both beneficial and potentially harmful, are properly evaluated and presented. This will allow such matters to be weighted in the balance of any future determination by Ministers through a transparent EIA process which the local community and other third parties will be able to reference.

Officers are aware that any substantial and/or lengthy disruption to the free flow of traffic

along the A85 will be a potentially significant matter of great concern to the local politicians, businesses and the wider population who depend on this vital transportation route.

Interaction with other activities which require to be addressed in submission

The Council is required to protect public access rights to and along the foreshore for all non-motorised users. Where there is a pier or breakwater structure that will obstruct access along a foreshore or loch side, a reasonable means of passing by the obstruction should be provided to allow the public to exercise their right of access along the shore, where appropriate.

Officers also consider that if access to the Cruachan Dam or ridge are to be restricted that a wider recreational strategy, to compensate for this should form part of the proposed EIA. The applicant will be aware that in evaluating the qualities of the APQ and any citation evaluation the wider community and recreational value of this asset, not just in Landscape terms requires to be considered. This matter is clarified in the Ministers decision in respect of the Upper Sonachan Wind Farm.

The applicant is advised to consult with the Northern Lighthouse Board to determine what would be the proposed affects to safe navigation or recreational boating during site construction

PUBLIC SAFETY, AIR QUALITY AND NOISE

It is noted from the Scoping Report that an assessment of impacts on air quality from construction traffic emissions is proposed to be scoped out of the EIA but subject to a separate assessment and submission. Argyll and Bute has no identified areas of poor air quality and therefore it is agreed that these matters can be scoped out.

In respect of Noise and the details submitted, comments from the Council's Environmental Protection Department are awaited and will be forwarded when available.

David Moore
Major Applications Team
23 October 2017

Consultation Responses Awaited TO BE FORWARDED WHEN RECEIVED

West of Scotland Archaeology Service

Argyll & Bute Council Area Roads

Argyll & Bute Environmental Protection Officer

MINUTES

Meeting Title: Cruachan Power Station Expansion Project - Transport

Attendees: Neil MacFarlane (TS), Gerard McPhillips (TS), Sinead Thom (TS), Devenny Alan (Systra), Steve Marshall (Drax), Adrian Neve (Stantec), Chris Leach (Stantec), Natalia Tzelepi (Stantec)

Apologies: Jim Smith (Argyll and Bute Council), Mark Johnston (Stantec)

Date of Meeting: 27/05/2021

Job Number: 331201086/100

Item	Subject	Actions
1.	Additional information that is useful for the project: - Cruachan 1 & 2 will be connected internally for operational purposes. This connection will be used also as a means of escape in case of a catastrophic event. - Loch awe is not a protected area. All the designations are to the north of the Cruachan reservoir. - Design /opening year will be: 2030	
2.	The distance between the A85 and Loch Awe is insufficient to facilitate the construction phase without temporary works sites and compounds being introduced. Loch Awe drops dramatically from the edge of the road and the depth increases steeply (10m off the edge of the road, the depth is about 35m). Drax is looking to build out a quayside on the foreshore of Loch Awe, (part of which will be a temporary structure and part permanent structure) to be used to accommodate construction plant and machinery and potentially to temporarily store rock arisings that will be excavated and then exported from the site. The size of the quayside has not yet been determined, but it is suggested to be up to of 300m length and 50m width.	Marine engineers are undertaking bathymetric surveys and will advise on how this quay can be constructed. Primary concern is to find a way of construction that will not unduly disrupt the A85.
3.	Stantec is studying the potential options for materials handling strategy. Three options are being examined currently in relation to the way that the materials will be moved: Drax is keen to establish a use for the extracted material and is in ongoing discussions to establish the end use of the material and hence the destination for the transportation strategy.	TS agreed that the materials handling strategy is a complex topic that needs careful consideration of the available options, their associated impacts and sensitivities. TS will advise if they are aware of opportunities for materials use e.g. major roads or infrastructure projects.

MINUTES

Item	Subject	Actions
	One of the options is that the exported material could be moved by road to a railhead that is to be located close to the Loch Awe station and then it could be transported by rail. Another option is to load material onto barges from the quayside, moved to a rail head or other transfer location and then to be transported by rail or to a deposition location. The primary rail challenge is the interface between freight and passenger services. The "worst-case" scenario is for all material to be moved by road directly from the quayside. The rock that will be extracted is primarily granite. Intrusive surveys have already been undertaken at the site, so the nature of the substrate is well understood. However, additional ground investigations may be undertaken to test for pockets of contamination.	
4.	Stantec sought TS's view on constraints on A85 and A82 on construction logistics and accessibility. TS explained that if there are any projects that require movements of abnormal loads, route assessments and swept path analysis are being prepared prior to those movements. Alan Devenny suggested that there would be some challenges on the A82, but not through the A85.	Stantec requests that TS and Argyll & Bute Council provide information of likely constraints on the A85.
5.	TS has traffic counters close to the site. There are counters with good coverage on the A85, A82, A83. It was agreed that the 2019 data is the most representative as is it not Covid-19 affected. That will be used as base data for the TA and ES. TS has provided Stantec access to local traffic data. It was suggested that the seasonality of the A85 is considered and whether that can be reflected in the programming of works and movements – to reprofile effects and lessen impacts.	Stantec will study and compare the traffic demand between winter and summer.
6.	It was suggested that early engagement with SEPA and Network Rail would be very helpful for the progress of the project.	Stantec will initiate discussions with SEPA and Network Rail.
7.	Current workforce in existing Cruachan Power Station is around 30 permanent staff and is increasing by 5 FTE during the summer. Peak workforce for the construction phase will be about 300 people, but generally there will	

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Item	Subject	Actions
	be 200 people for the majority of the construction period.	
8.	The Cruachan Visitor Centre attracts about 60,000 visitors per year. It is not anticipated that this number will grow significantly with the construction of the second power station.	
9.	Stantec would like to have further information on: - Whether there are any other documents/frameworks that are needed to support the application? - Whether there are any planned projects that would affect the proposed development and therefore Stantec could assess the cumulative effects.	TS agreed that the following frameworks would support the project submission: - Construction Traffic Management Plan (CTMP) - Workforce Travel Plan The CTMP should include: designated construction routes, traffic management arrangements, mitigation of construction impacts, any special measures to minimise impacts, parking and compound arrangements, any innovative ways of reducing traffic and reducing material quantities (e.g. rail, barges)
10.	Alan Devenny suggested that the EIA might only refer to the construction phase and the TA to speak about the operational phase only.	Stantec to reflect in the TA/ES
11.	Alan Devenny suggested that the TA should include plans showing the proposed access arrangements with 1:500 scale.	Stantec to reflect in the TA/ES
12.	There are a number of windfarms in this area and the TA should reflect on cumulative effects of those proposals coming forward concurrently and to understand whether they use the same access routes.	Stantec to reflect in the TA/ES
13.	Drax confirmed that it will be publicising the proposals in late June and will broaden its engagement.	

MINUTES

Meeting Title: Cruachan Power Station Expansion Project - Transport

Attendees: Jim Smith (JS) (Argyll and Bute Council), Adrian Neve (Stantec), Chris Leach (Stantec), Natalia Tzelepi (Stantec)

Apologies: Mark Johnston (Stantec), Steve Marshall (Drax)

Date of Meeting: 05/07/2021

Job Number: 331201086/100

Item	Subject	Actions
1.	Stantec mentioned that the public consultation event went live in June.	
2.	Stantec explained the potential options that are being explored for materials handling strategy for the excavated material. The approach is based around local or remote deposition; considers the range of transport options; and contrasts the environmental implications of the range of options. It was highlighted that the primary intention is to find the most sustainable way to handle the material which would be the use of the materials for another engineering project. Alternative strategies are to be considered as well, as comparators, which may be ruled out. JS agreed on the point that the most sustainable way would be the best option. Stantec to keep Argyll and Bute Council (ABC) informed of progress with the materials handling strategies and consequential transport approach.	Stantec
3.	Stantec explained that the construction period of the expansion project will last about 4.5 years, from March 2024 to November 2028, reaching its peak construction period between May 2026 and January 2027. JS agreed with Stantec that the construction period programme is likely to be of key relevance from the effects of transport on the travel networks.	
4.	Stantec asked JS whether there are any planned projects in the area where the materials of Cruachan Expansion Project could be used. JS mentioned that an ongoing project in Oban requires some fillings, but most likely the two project timelines do not align. JS understands that Cruachan Expansion Project is very important and they will try to help with potential solutions. Drax/Stantec and JS will continue to engage to seek the optimal solution for materials handling.	Drax / Stantec / ABC
5.	Stantec explained there are proposals for temporary facilities with the purpose to accommodate the workforce, on the compound areas. The main off-site compounds are anticipated to be on the Stronmilchan Road near the A85. Workforce transport is proposed to be provided between the off-site welfare /accommodation and the main worksites. JS emphasised that accommodation is key because there are difficulties to accommodate workforce who work currently on projects. Construction of temporary accommodation would be cost effective because the project area is a two-hour journey from Glasgow, where many employees are based. Oban	

MINUTES

Item	Subject	Actions
	also has shortage of accommodation facilities. Even caravans or mobile homes could be possible solutions.	
6.	JS expressed that ABC understands the importance of the project, but they also recognise at the same time that it is quite challenging. Road closures and long (50-90 miles) diversions are unavoidable during the construction phase. These diversions have been used on other occasions when the A85 corridor has had to shut for planned or unplanned events. ABC recommends that Abnormal Indivisible Loads (AILs) are moved during the night in order not to obstruct the other traffic. JS recognised that this co-ordination will be through Transport Scotland (TS) in consultation with ABC. Stantec will work with TS on the AIL strategy for the project.	Stantec
7.	ABC mentioned that local residents have raised transport issues with ABC, previously. Most of the problems relate to the local and trunk road networks – the A85 specifically is challenging due to its alignment and relatively narrow widths in locations. The public consultation process could be very useful on highlighting the existing issues and how the Project will respond to those points. JS will speak to Jamie Salmon who works in the structures team of ABC about this project. He has dealt with AIL movements and could advise on material and equipment movements.	Drax/Stantec JS
8.	Stantec explained that TS provided it with access to the TS traffic count database. JS will contact the traffic data and development team from ABC to see if they can provide Stantec with traffic data.	JS
9.	JS suggested to have a meeting after 6 weeks with more people from ABC in order to raise awareness about the project. It would be helpful if Stantec could give an update to JS before the aforementioned meeting with ABC for any updates on the project.	Stantec

From:	Gerard.McPhillips@transport.gov.scot
To:	Nejad, Morteza
Cc:	White, Sarah; adevenny@systra.com; jgillespie@systra.com; gsmith@systra.com; Neil.MacFarlane@transport.gov.scot
Subject:	RE: Cruachan 2 - Transport Assessment Scoping Report (TS Ref. NW2113199)
Date:	18 February 2022 15:06:33

Morteza

Apologies for the delay in responding on the TA Scoping Report. Having reviewed this I can however confirm that Transport Scotland considers the proposed scope and methodology is generally appropriate and identifies the key aspects that will require to be included. Furthermore I consider the proposed approach reflects the discussions held to date with Transport Scotland.

At this stage there is little detail available in terms of the actual locations of office and welfare compounds, construction sites, material storage and accommodation compounds or where these will be accessed from the A85(T). Once these locations have been identified, more specific comment can be provided on the access and operational implications etc.

The scoping does identify that formal approval of new or improved accesses will be required and that any such proposals will require to be supported by Road Safety Audits. I would advise that Transport Scotland would require to approve the Brief and Audit Team and that the submitted reports should also include Designer Responses to any issues identified – refer to GG 119 Road Safety Audit.

During the construction phase there is reference to temporary traffic management requirements, including the realignment of the A85(T), removal of an existing layby and temporary lane closures, as detailed under section 4.3. It is indicated that car parking currently serving the Falls of Cruachan Station will be removed. That being the case, the TA should assess options for providing alternative parking arrangements for the station.

All such infrastructure proposals affecting the trunk road will require to be designed in accordance with DMRB Standards for the appropriate design speed of the A85(T) at this location. If any Departures from Standards are identified, these should be progressed in advance of any development consents being granted. Again, Road Safety Audits will be required for these temporary modifications. The details of any TTM will be expected to comply with appropriate design standards and the Traffic Signs Manual and will require to be agreed with Transport Scotland's Area Manager – Neil MacFarlane copied in to this email. The requirement for any TTROs (i.e. for temporary speed limits or waiting restrictions) would also require to be agreed with Transport Scotland.

It is noted that a full assessment of all abnormal loads is also to be undertaken. Any modifications to the trunk road to accommodate abnormal loads will require to be agreed with the Area Manger as described above.

With regards to the ***Assessment of Impacts***:

At paragraph 3.2.1 it is noted that accident analysis will be undertaken using data obtained from DfT. I would confirm that Transport Scotland can provide accident details for the A85(T) from its own database if you are able to define the extents of the route you would wish covered.

The proposed assessment year of 2027, and the use of 2019 ATC data and NRTF Low Growth forecasts to establish baseline traffic conditions, are considered appropriate. The proposed treatment of committed developments is considered acceptable.

In terms of construction staff, it is indicated that the assessment will be based on an assumed workforce of 300, all of which will be based in a temporary accommodation compound. Consideration should be given to an element of the workforce being sourced locally and who may travel to the site on a daily basis by private vehicle. It is not anticipated that this would materially increase the wider network impacts, however it may have a bearing on consideration of on-site parking and access requirements.

The assessment of construction HGVs is based on a maximum daily tonnage of 3375t/day

with an assumed 28 tonne payload. More typically a 20 tonne load is assumed for such assessments. This would increase peak daily movements from 121 vehicles to around 170 vehicles. Again this is unlikely to materially affect the overall impact of construction vehicles on the A85(T), but would provide for a robust assessment and also take account of ancillary HGV movements associated with the construction such as materials and fuel deliveries. The assumption that 100% of materials will be transported by road is considered robust but appropriate at this stage of the process. The consideration of two routing scenarios with 100% of HGV movements to/from each direction on the A85(T) is also considered appropriate.

For the operation phase, it is stated that it is not anticipated to generate significantly higher number of employees (5-10) and there is no planned expansion of the Visitor Centre. The proposed scope of assessing the operational stage is therefore considered appropriate.

With Regards to the ***Mitigation Strategy***:

The provision of a Construction Traffic Management Plan will be a requirement and the proposed contents and scope are considered appropriate. This will be a live document that will evolve through the various phases of the projects and Transport Scotland would wish to be consulted on each stage of this documents development.

The provision of a Travel Plan is also considered appropriate.

I trust this will enable you to progress with the TA, however I would be happy to discuss or clarify any aspects as required.

Regards.

Gerard

Gerard McPhillips
Transport Scotland
Development Management Quality Manager
Roads Directorate
T: 0141 272 7379
M: 07775 547 664
gerard.mcphillips@transport.gov.scot
transport.gov.scot

From: Nejad, Morteza <morteza.nejad@stantec.com>
Sent: 16 February 2022 17:16
To: McPhillips G (Gerard) <Gerard.McPhillips@transport.gov.scot>
Cc: White, Sarah <sarah.white2@stantec.com>
Subject: RE: Cruachan 2 - Transport Assessment Scoping Report

Hello Gerard,

I hope all is well. I wanted to follow up on the Cruachan Transport Assessment Scoping Report and check when we should expect some comments on our proposed overall methodology for the TA.

Many thanks,

Morteza Nejad
Senior Engineer

Appendix B Site Location Plans

Site Boundary

Stantec

Client: Drax Generation Enterprise Ltd

CRUACHAN EXPANSION PROJECT

Site Location Plan

0 0.5 1 km

1:17,500 @ A3 | Date: 03/03/2022

Drawn: JP | Checked: CL

Figure 01 | Rev D

Document Path: Z:\Projects\332010112\02_mxd\332010112_SiteLocation_20220202.mxd

Appendix C ATC Survey Data

Class Report TS_LIVE 0000JTC00536 2019-09-01 to 2019-09-30

Site Name	JTC00536
Site ID	0000JTC00536
Grid	227798730959
Description	A85 5.5km W of Tyndrum
Setup	JTC00536_pvr
Lanes	Each Lane
Show	Average
Time Period	1 hour
Averaged over	Weekdays only
Exclude data:	None

All directions

	Average Flow	Mcl	Car	Car+T	Rigid	Artic	Bus	Invalid Reading	%HGV
00:00:00	9	0	4	0	3	2	0	0	53
01:00:00	7	0	3	0	3	2	0	0	57.1
02:00:00	6	0	2	0	2	2	0	0	59.7
03:00:00	15	0	7	0	5	3	0	0	52.1
04:00:00	33	0	14	0	12	6	0	0	55.7
05:00:00	59	1	33	1	17	8	0	0	41.7
06:00:00	104	0	64	1	29	9	1	0	36.8
07:00:00	135	1	92	2	32	7	2	0	28.6
08:00:00	190	3	141	5	33	8	1	0	21.5
09:00:00	254	5	197	5	38	8	1	0	18.3
10:00:00	264	7	201	6	42	8	1	0	18.8
11:00:00	254	5	196	5	39	8	0	0	18.5
12:00:00	244	6	188	4	38	7	0	0	18.6
13:00:00	263	8	205	3	39	8	0	0	17.6
14:00:00	265	8	208	4	37	7	1	0	16.6
15:00:00	233	5	188	3	29	9	0	0	15.9
16:00:00	205	4	166	3	25	6	1	0	15
17:00:00	142	1	115	2	18	6	0	0	16.8
18:00:00	99	2	78	1	12	7	1	0	18.6
19:00:00	67	1	53	1	8	4	0	0	18.8
20:00:00	40	0	31	0	5	2	1	0	17.4
21:00:00	32	0	25	0	4	2	0	0	19
22:00:00	21	0	16	0	3	2	0	0	24.2
23:00:00	10	0	6	0	2	1	0	0	40.5
07-19	2548	56	1974	42	380	88	9	0	18.4
06-22	2791	57	2147	44	427	105	11	0	19
06-24	2822	57	2168	44	432	108	11	0	19.2
00-24	2950	59	2231	45	473	131	11	0	20.5
am Peak	10:00:00	10:00:00	10:00:00	10:00:00	10:00:00	06:00:00	07:00:00	02:00:00	02:00:00
Peak Volume	264	7	201	6	42	9	2	0	1.3
pm Peak	14:00:00	13:00:00	14:00:00	12:00:00	13:00:00	15:00:00	16:00:00	21:00:00	23:00:00
Peak Volume	265	8	208	4	39	9	1	0	0.7

Eastbound

	Average Flow	Mcl	Car	Car+T	Rigid	Artic	Bus	Invalid Reading	%HGV
00:00:00	5	0	2	0	1	1	0	0	49
01:00:00	4	0	2	0	1	1	0	0	65.2
02:00:00	4	0	1	0	1	1	0	0	63.9
03:00:00	10	0	5	0	3	2	0	0	50.2
04:00:00	21	0	9	0	7	4	0	0	54.4
05:00:00	34	0	17	0	11	5	0	0	49.1
06:00:00	60	0	35	1	19	5	0	0	39.7
07:00:00	74	0	46	1	22	3	1	0	34.2
08:00:00	92	1	66	2	20	3	0	0	24.4
09:00:00	116	2	87	2	20	3	0	0	20.3
10:00:00	123	4	92	2	19	4	1	0	18.9
11:00:00	126	3	99	3	18	3	0	0	16.8
12:00:00	126	3	102	2	15	3	0	0	14.2
13:00:00	135	4	111	1	15	3	0	0	13.6
14:00:00	130	5	106	2	14	2	0	0	12.8
15:00:00	116	2	96	1	13	3	0	0	14.2
16:00:00	107	2	89	1	11	3	0	0	13.3
17:00:00	77	1	62	1	9	3	0	0	16
18:00:00	57	1	46	0	6	3	0	0	15.7
19:00:00	39	0	32	0	4	2	0	0	15.7
20:00:00	23	0	18	0	3	1	0	0	18.7
21:00:00	20	0	16	0	2	2	0	0	17.7
22:00:00	11	0	9	0	2	1	0	0	22.7
23:00:00	6	0	4	0	1	1	0	0	32.8
07-19	1279	29	1004	21	183	38	4	0	17.2
06-22	1420	30	1105	22	210	48	5	0	18.2
06-24	1437	30	1118	22	213	49	5	0	18.3
00-24	1515	30	1154	23	238	65	5	0	20
am Peak	11:00:00	10:00:00	11:00:00	11:00:00	07:00:00	05:00:00	07:00:00	02:00:00	02:00:00
Peak Volume	126	4	99	3	22	5	1	0	1.7
pm Peak	13:00:00	14:00:00	13:00:00	12:00:00	13:00:00	13:00:00	18:00:00		23:00:00
Peak Volume	135	5	111	2	15	3	0		0.6

Westbound

	Average Flow	Mcl	Car	Car+T	Rigid	Artic	Bus	Invalid Reading	%HGV
00:00:00	4	0	1	0	2	0	0	0	58
01:00:00	3	0	1	0	1	0	0	0	45.2
02:00:00	2	0	1	0	1	0	0	0	50
03:00:00	4	0	2	0	1	1	0	0	56.7
04:00:00	12	0	5	0	5	2	0	0	57.9
05:00:00	25	0	16	0	6	2	0	0	31.8
06:00:00	44	0	28	0	11	4	1	0	32.7
07:00:00	61	1	45	1	10	4	1	0	21.8
08:00:00	98	2	74	2	14	5	1	0	18.7
09:00:00	139	3	110	2	18	5	0	0	16.6
10:00:00	141	3	108	3	23	4	0	0	18.7
11:00:00	128	2	97	3	21	4	0	0	20.1
12:00:00	117	3	86	2	23	4	0	0	23.2
13:00:00	128	4	94	2	24	4	0	0	21.8
14:00:00	135	3	102	2	22	5	0	0	20.3
15:00:00	117	3	92	1	15	5	0	0	17.6
16:00:00	98	2	77	2	13	3	1	0	16.8
17:00:00	65	0	52	1	9	3	0	0	17.7
18:00:00	42	1	32	0	6	4	0	0	22.5
19:00:00	28	0	21	0	4	2	0	0	23.1
20:00:00	17	0	13	0	2	1	0	0	15.6
21:00:00	12	0	9	0	2	1	0	0	21
22:00:00	10	0	7	0	2	1	0	0	25.7
23:00:00	4	0	2	0	1	1	0	0	50.6
07-19	1269	27	970	21	198	50	5	0	19.5
06-22	1371	27	1042	22	216	57	6	0	19.9
06-24	1385	27	1051	22	219	59	6	0	20.1
00-24	1435	28	1077	23	234	66	6	0	20.9
am Peak	10:00:00	10:00:00	09:00:00	10:00:00	10:00:00	09:00:00	06:00:00		03:00:00
Peak Volume	141	3	110	3	23	5	1		1.1
pm Peak	14:00:00	13:00:00	14:00:00	13:00:00	13:00:00	15:00:00	16:00:00	21:00:00	23:00:00
Peak Volume	135	4	102	2	24	5	1	0	0.9

Event key: QC failure | Atypical (QC) | Events | Special | Holiday | Offline | Weekends and defined holidays

Notes on data:

Averages are calculated as the simple average of values across the period.

Holidays & Events:

None

	AM Peak		PM Peak	
	Tot	HGV	Tot	HGV
NB	123	23	130	16
SB	141	27	135	27
Comb.	264	50	265	44

Monthly Volume Report TS_LIVE 0000ATC08059 2019-09-01 to 2019-09-30

Site Name ATC08059
Site ID 0000ATC08059
Grid 205100728200
Description A 85-LOCHAWE-5.5KM E OF B845

Setup Setup12186
Lanes Each Lane
Bins Volume data
Time Period 1 hour
Exclude data: None

All directions

	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Average		Total
	2019-09-01	2019-09-02	2019-09-03	2019-09-04	2019-09-05	2019-09-06	2019-09-07	2019-09-08	2019-09-09	2019-09-10	2019-09-11	2019-09-12	2019-09-13	2019-09-14	2019-09-15	2019-09-16	2019-09-17	2019-09-18	2019-09-19	2019-09-20	2019-09-21	2019-09-22	2019-09-23	2019-09-24	2019-09-25	2019-09-26	2019-09-27	2019-09-28	2019-09-29	2019-09-30	Workday	7 Day	Count
00:00:00	20	21	17	10	17	10	40	26	20	17	22	12	14	26	19	6	6	11	18	48	24	15	6	11	13	13	24	19	27	8	15	18	540
01:00:00	16	7	4	13	8	11	14	15	15	9	9	10	4	14	14	17	4	4	7	14	15	17	8	10	13	9	12	11	23	4	9	11	331
02:00:00	14	9	12	11	11	13	7	14	6	3	10	7	11	19	11	9	5	14	6	15	16	14	12	6	6	11	7	12	19	9	9	11	319
03:00:00	5	9	7	6	5	8	11	10	7	6	12	10	7	10	14	10	11	8	6	10	5	12	10	9	17	17	17	11	5	6	9	9	281
04:00:00	6	18	14	18	35	17	13	6	17	20	17	13	19	17	17	27	16	26	22	19	9	11	23	16	21	15	31	13	8	24	20	18	528
05:00:00	14	64	39	41	40	39	59	13	73	46	56	46	48	24	24	69	47	40	34	52	35	16	73	43	45	52	59	36	10	66	51	44	1303
06:00:00	48	108	118	93	100	96	67	40	120	98	100	104	116	65	47	108	103	110	125	104	55	29	101	102	114	114	93	58	32	106	106	90	2674
07:00:00	78	226	216	248	220	226	138	60	233	221	242	218	213	98	78	236	232	245	227	220	112	57	251	227	212	265	204	103	69	216	228	188	5591
08:00:00	168	392	413	412	393	384	236	114	360	433	383	415	391	250	132	396	364	375	398	396	257	128	373	371	411	414	362	222	117	404	392	332	9864
09:00:00	280	345	333	319	349	372	409	275	373	389	369	391	424	435	265	421	394	335	373	433	428	285	368	383	330	351	389	358	235	354	371	359	10765
10:00:00	386	370	413	320	394	420	469	386	398	422	358	410	414	457	382	396	386	384	364	441	460	395	332	393	367	352	410	384	356	380	387	393	11799
11:00:00	343	337	390	376	406	399	460	412	369	359	411	381	472	459	370	415	395	413	412	420	490	401	427	377	398	376	456	398	452	420	400	406	12194
12:00:00	350	377	398	384	391	452	525	446	437	421	428	443	457	458	414	348	385	384	379	471	557	394	373	367	387	397	480	487	424	414	408	420	12628
13:00:00	400	438	401	380	362	447	501	444	383	366	412	407	456	418	461	446	387	403	442	446	510	384	406	418	342	382	436	457	404	421	409	418	12560
14:00:00	428	431	456	389	399	533	550	467	424	477	456	424	551	494	438	465	410	368	426	495	532	418	403	389	386	365	508	480	440	438	438	448	13440
15:00:00	409	451	438	407	437	515	602	465	477	460	428	427	556	459	460	435	425	401	449	484	506	397	399	421	396	402	549	441	430	444	448	452	13570
16:00:00	470	451	398	472	519	491	539	420	470	444	438	478	500	394	414	399	378	428	453	509	529	362	430	420	422	384	560	436	421	455	452	450	13484
17:00:00	295	441	441	406	464	485	435	351	434	469	405	433	478	348	347	397	409	413	436	499	409	301	364	407	389	423	485	396	273	409	433	409	12242
18:00:00	282	280	274	290	315	350	346	286	287	290	309	288	417	241	276	352	288	334	316	342	289	262	284	281	269	280	361	290	389	291	309	305	9159
19:00:00	210	183	199	193	182	222	209	206	179	182	180	190	252	164	210	156	178	197	193	225	233	154	176	156	170	181	174	195	187	172	188	190	5708
20:00:00	102	105	123	140	161	175	146	147	133	139	140	172	172	119	146	147	150	138	165	144	138	126	128	125	129	145	161	129	126	125	144	140	4196
21:00:00	88	89	92	87	103	126	84	97	74	88	73	110	130	72	134	81	89	82	109	139	78	70	79	99	110	125	113	85	72	78	99	95	2856
22:00:00	41	62	67	62	55	73	56	57	38	40	49	44	70	46	53	39	51	45	51	125	49	55	50	53	58	68	68	63	39	45	58	56	1672
23:00:00	27	23	26	26	27	54	34	16	14	20	32	28	39	22	30	23	21	51	42	59	18	24	25	45	16	42	44	36	21	17	32	30	902
07-19	3889	4539	4571	4403	4649	5074	5210	4126	4645	4751	4639	4715	5329	4511	4037	4706	4453	4483	4675	5156	5079	3784	4410	4454	4309	4391	5200	4452	4010	4646	4676	4581	137296
06-22	4337	5024	5103	4916	5195	5693	5716	4616	5151	5258	5132	5291	5999	4931	4574	5198	4973	5010	5267	5768	5583	4163	4894	4936	4832	4956	5741	4919	4427	5127	5213	5097	152730
06-24	4405	5109	5196	5004	5277	5820	5806	4689	5203	5318	5213	5363	6108	4999	4657	5260	5045	5106	5360	5952	5650	4242	4969	5034	4906	5066	5853	5018	4487	5189	5302	5183	155304
00-24	4480	5237	5289	5103	5393	5918	5950	4773	5341	5419	5339	5461	6211	5109	4756	5398	5134	5209	5453	6110	5754	4327	5101	5129	5021	5183	6003	5120	4579	5306	5417	5293	158606
am Peak	10:00:00	08:00:00	08:00:00	08:00:00	11:00:00	10:00:00	10:00:00	11:00:00	10:00:00	08:00:00	11:00:00	08:00:00	11:00:00	11:00:00	10:00:00	09:00:00	11:00:00	11:00:00	11:00:00	10:00:00	11:00:00	11:00:00	11:00:00	10:00:00	08:00:00	08:00:00	11:00:00	11:00:00	11:00:00	11:00:00	11:00:00	11:00:00		
Peak Volume	386	392	413	412	406	420	469	412	398	433	411	415	472	459	382	421	395	413	412	441	490	401	427	393	411	414	456	398	452	420	400	406	
pm Peak	16:00:00	15:00:00	14:00:00	16:00:00	16:00:00	14:00:00	15:00:00	14:00:00	15:00:00	14:00:00	14:00:00	16:00:00	15:00:00	14:00:00	13:00:00	14:00:00	15:00:00	16:00:00	16:00:00	16:00:00	12:00:00	14:00:00	16:00:00	15:00:00	16:00:00	17:00:00	16:00:00	12:00:00	14:00:00	16:00:00	16:00:00	15:00:00		
Peak Volume	470	451	456	472	519	533	602	467	477	477	456	478	556	494	461	465	425	428	453	509	557	418	430	421	422	423	560	487	440	455	452	452	

Eastbound

	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Average		Total
	2019-09-01	2019-09-02	2019-09-03	2019-09-04	2019-09-05	2019-09-06	2019-09-07	2019-09-08	2019-09-09	2019-09-10	2019-09-11	2019-09-12	2019-09-13	2019-09-14	2019-09-15	2019-09-16	2019-09-17	2019-09-18	2019-09-19	2019-09-20	2019-09-21	2019-09-22	2019-09-23	2019-09-24	2019-09-25	2019-09-26	2019-09-27	2019-09-28	2019-09-29	2019-09-30	Workday	7 Day	Count
00:00:00	9	11	7	5	4	6	18	8	8	11	6	7	8	13	10	3	3	6	8	9	8	8	3	5	9	3	12	6	11	4	7	8	229
01:00:00	7	4	4	6	4	5	7	6	5	4	6	2	3	5	6	7	2	1	5	6	5	10	3	5	5	5	3	6	13	1	4	5	151
02:00:00	7	1	1	1	4	5	1	7	2	3	3	2	6	10	1	3	3	5	1	3	9	7	5	1	4	5	4	4	8	1	3	4	117
03:00:00	3	1	2	2	1	4	4	7	3	3	7	2	1	5	10	2	9	0	1	4	1	4	3	2	13	9	7	3	2	0	4	4	115
04:00:00	3	9	7	9	14	9	6	4	9	12	9	5	6	11	7	10	9	13	10	8	6	5	10	9	11	8	11	6	6	13	10	9	255
05:00:00	2	25	16	17	17	19	13	8	33	22	27	24	23	13	8	22	29	19	13	28	13	4	30	21	26	24	25	12	8	26	23	19	567
06:00:00	24	52	48	38	43	38	32	19	54	57	48	42	44	33	29	55	65	52	61	53	26	14	50	38	64	50	45	30	15	47	50	43	1266
07:00:00	47	96	80	101	94	99	81	39	101	139	101	93	94	58	47	102	145	95	96	87	73	33	111	109	128	117	98	59	25	89	104	89	2637
08:00:00	112	143	159	174	158	155	150	74	145	277	141	166	173	141	85	149	233	149	175	173	157	85	139	149	249	169	163	122	62	168	172	154	4595
09:00:00	160	185	166	174	189	210	238	168	201	197	182	214	243	280	162	209	189	177	207	255	247	199	213	181	154	193	228	204	76	209	199	197	5910
10:00:00	207	198	223	152	207	217	267	220	208	217	173	218	228	265	222	220	206	198	177	237	231	253	193	204	184	198	217	203	136	243	206	210	6322
11:00:00	179	164	184	175	207	188	233	224	164	174	210	204	241	216	198	194	229	222	196	189	225	224	192	176	203	204	203	173	198	226	197	200	6015
12:00:00	180	175	202	186	189	237	236	234	220	216	204	220	208	202	225	140	209	231	186	215	232	228	185	196	182	223	233	231	191	250	205	209	6266
13:00:00	223	196	192	166	176	222	200	214	175	187	218	221	252	183	233	205	196	200	222	206	188	210	213	198	158	215	200	170	184	238	203	202	6061
14:00:00	223	202	238	191	210	236	213	253	193	217	251	210	288	249	226	206	169	182	220	216	242	233	181	210	208	186	228	218	219	226	213	218	6544
15:00:00	238	195	210	219	208	237	237	264	238	231	198	210	250	215	252	212	204	224	227	245	281	225	189	218	194	212	246	224	203	223	219	224	6729
16:00:00	258	224	222	261	270	243	251	228	244	193	238	254	241	188	209	199	174	217	228	267	271	195	237	222	173	189	255	214	179	270	230	227	6814
17:00:00	139	216	262	223	249	241	206	162	223	206	222	229	236	167	164	203	177	224	225	284	214	147	190	230	180	233	231	234	110	225	224	209	6252
18:00:00	138	142	141	143	163	164	164	135	149	150	167	148	189	106	145	216	134	204	186	146	147	126	147	147	130	149	159	148	253	160	159	157	4696
19:00:00	88	82	104	105	87	77	108	92	79	96	95	100	93	66	83	83	98	112	86	103	131	56	79	74	83	80	69	80	90	81	89	89	2660
20:00:00	51	51	61	77	106	62	79	76	68	71	68	83	87	62	66	81	67	79	86	65	82	63	60	57	67	70	62	42	58	72	71	69	2079
21:00:00	37	57	48	45	56	73	43	45	45	41	46	73	67	26	78	51	46	50	60	62	40	32	48	44	43	66	50	40	34	39	53	50	1485
22:00:00	15	42	37	27	20	33	29	20	25	18	34	25	36	20	27	21	20	13	22	64	27	17	22	23	21	37	39	38	25	19	28	27	816
23:00:00	11	12	17	12	14	23	17	3	6	13	22	12	15	10	10	14	12	14	13	22	7	8	11	25	10	15	14	21	14	9	15	14	406
07-19	2104	2136	2279	2165	2320	2449	2476	2215	2261	2404	2305	2387	2643	2270	2168	2255	2265	2323	2345	2520	2508	2158	2190	2240	2143	2288	2461	2200	1836	2527	2329	2296	68841
06-22	2304	2378	2540	2430	2612	2699	2738	2447	2507	2669	2562	2685	2934	2457	2424	2525	2541	2616	2638	2803	2787	2323	2427	2453	2400	2554	2687	2392	2033	2766	2592	2547	76331
06-24	2330	2432	2594	2469	2646	2755	2784	2470	2538	2700	2618	2722	2985	2487	2461	2560	2573	2643	2673	2889	2821	2348	2460	2501	2431	2606	2740	2451	2072	2794	2635	2587	77553
00-24	2361	2483	2631	2509	2690	2803	2833	2510	2598	2755	2676	2764	3032	2544	2503	2607	2628	2687	2711	2947	2863	2386	2514	2544	2499	2660	2802	2488	2120	2839	2685	2635	78987
am Peak	10:00:00	10:00:00	10:00:00	11:00:00	10:00:00	10:00:00	10:00:00	11:00:00	10:00:00	08:00:00	11:00:00	10:00:00	09:00:00	09:00:00	10:00:00	10:00:00	08:00:00	11:00:00	09:00:00	09:00:00	09:00:00	10:00:00	09:00:00	10:00:00	08:00:00	11:00:00	09:00:00	09:00:00	11:00:00	10:00:00	10:00:00	10:00:00		
Peak Volume	207	198	223	175	207	217	267	224	208	277	210	218	243	280	222	220	233	222	207	255	247	253	213	204	249	204	228	204	198	243	206	210	
pm Peak	16:00:00	16:00:00	17:00:00	16:00:00	16:00:00	16:00:00	16:00:00	15:00:00	16:00:00	15:00:00	14:00:00	16:00:00	14:00:00	14:00:00	15:00:00	18:00:00	12:00:00	12:00:00	16:00:00	17:00:00	15:00:00	14:00:00	16:00:00	17:00:00	14:00:00	17:00:00	16:00:00	17:00:00	18:00:00	16:00:00	16:00:00	16:00:00		
Peak Volume	258	224	262	261	270	243	251	264	244	231	251	254	288	249	252	216	209	231	228	284	281	233	237	230	208	233	255	234	253	270	230	227	

Westbound

	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Average		Total
	2019-09-01	2019-09-02	2019-09-03	2019-09-04	2019-09-05	2019-09-06	2019-09-07	2019-09-08	2019-09-09	2019-09-10	2019-09-11	2019-09-12	2019-09-13	2019-09-14	2019-09-15	2019-09-16	2019-09-17	2019-09-18	2019-09-19	2019-09-20	2019-09-21	2019-09-22	2019-09-23	2019-09-24	2019-09-25	2019-09-26	2019-09-27	2019-09-28	2019-09-29	2019-09-30	Workday	7 Day	Count
00:00:00	11	10	10	5	13	4	22	18	12	6	16	5	6	13	9	3	3	5	10	39	16	7	3	6	4	10	12	13	16	4	9	10	311
01:00:00	9	3	0	7	4	6	7	9	10	5	3	8	1	9	8	10	2	3	2	8	10	7	5	5	8	4	9	5	10	3	5	6	180
02:00:00	7	8	11	10	7	8	6	7	4	0	7	5	5	9	10	6	2	9	5	12	7	7	7	5	2	6	3	8	11	8	6	7	202
03:00:00	2	8	5	4	4	4	7	3	4	3	5	8	6	5	4	8	2	8	5	6	4	8	7	7	4	8	10	8	3	6	6	6	166
04:00:00	3	9	7	9	21	8	7	2	8	8	8	8	13	6	10	17	7	13	12	11	3	6	13	7	10	7	20	7	2	11	11	9	273
05:00:00	12	39	23	24	23	20	46	5	40	24	29	22	25	11	16	47	18	21	21	24	22	12	43	22	19	28	34	24	2	40	28	25	736
06:00:00	24	56	70	55	57	58	35	21	66	41	52	62	72	32	18	53	38	58	64	51	29	15	51	64	50	64	48	28	17	59	57	47	1408
07:00:00	31	130	136	147	126	127	57	21	132	82	141	125	119	40	31	134	87	150	131	133	39	24	140	118	84	148	106	44	44	127	125	100	2954
08:00:00	56	249	254	238	235	229	86	40	215	156	242	249	218	109	47	247	131	226	223	223	100	43	234	222	162	245	199	100	55	236	221	178	5269
09:00:00	120	160	167	145	160	162	171	107	172	192	187	177	181	155	103	212	205	158	166	178	181	86	155	202	176	158	161	154	159	145	172	162	4855
10:00:00	179	172	190	168	187	203	202	166	190	205	185	192	186	192	160	176	180	186	187	204	229	142	139	189	183	154	193	181	220	137	181	183	5477
11:00:00	164	173	206	201	199	211	227	188	205	185	201	177	231	243	172	221	166	191	216	231	265	177	235	201	195	172	253	225	254	194	203	206	6179
12:00:00	170	202	196	198	202	215	289	212	217	205	224	223	249	256	189	208	176	153	193	256	325	166	188	171	205	174	247	256	233	164	203	212	6362
13:00:00	177	242	209	214	186	225	301	230	208	179	194	186	204	235	228	241	191	203	220	240	322	174	193	220	184	167	236	287	220	183	206	216	6499
14:00:00	205	229	218	198	189	297	337	214	231	260	205	214	263	245	212	259	241	186	206	279	290	185	222	179	178	179	280	262	221	212	225	230	6896
15:00:00	171	256	228	188	229	278	365	201	239	229	230	217	306	244	208	223	221	177	222	239	225	172	210	203	202	190	303	217	227	221	229	228	6841
16:00:00	212	227	176	211	249	248	288	192	226	251	200	224	259	206	205	200	204	211	225	242	258	167	193	198	249	195	305	222	242	185	223	222	6670
17:00:00	156	225	179	183	215	244	229	189	211	263	183	204	242	181	183	194	232	189	211	215	195	154	174	177	209	190	254	162	163	184	208	200	5990
18:00:00	144	138	133	147	152	186	182	151	138	140	142	140	228	135	131	136	154	130	130	196	142	136	137	134	139	131	202	142	136	131	151	149	4463
19:00:00	122	101	95	88	95	145	101	114	100	86	85	90	159	98	127	73	80	85	107	122	102	98	97	82	87	101	105	115	97	91	99	101	3048
20:00:00	51	54	62	63	55	113	67	71	65	68	72	89	85	57	80	66	83	59	79	79	56	63	68	68	62	75	99	87	68	53	72	71	2117
21:00:00	51	32	44	42	47	53	41	52	29	47	27	37	63	46	56	30	43	32	49	77	38	38	31	55	67	59	63	45	38	39	46	46	1371
22:00:00	26	20	30	35	35	40	27	37	13	22	15	19	34	26	26	18	31	32	29	61	22	38	28	30	37	31	29	25	14	26	29	29	856
23:00:00	16	11	9	14	13	31	17	13	8	7	10	16	24	12	20	9	9	37	29	37	11	16	14	20	6	27	30	15	7	8	18	17	496
07-19	1785	2403	2292	2238	2329	2625	2734	1911	2384	2347	2334	2328	2686	2241	1869	2451	2188	2160	2330	2636	2571	1626	2220	2214	2166	2103	2739	2252	2174	2119	2347	2285	68455
06-22	2033	2646	2563	2486	2583	2994	2978	2169	2644	2589	2570	2606	3065	2474	2150	2673	2432	2394	2629	2965	2796	1840	2467	2483	2432	2402	3054	2527	2394	2361	2621	2550	76399
06-24	2075	2677	2602	2535	2631	3065	3022	2219	2665	2618	2595	2641	3123	2512	2196	2700	2472	2463	2687	3063	2829	1894	2509	2533	2475	2460	3113	2567	2415	2395	2668	2595	77751
00-24	2119	2754	2658	2594	2703	3115	3117	2263	2743	2664	2663	2697	3179	2565	2253	2791	2506	2522	2742	3163	2891	1941	2587	2585	2522	2523	3201	2632	2459	2467	2732	2658	79619
am Peak	10:00:00	08:00:00	08:00:00	08:00:00	08:00:00	08:00:00	11:00:00	11:00:00	08:00:00	10:00:00	08:00:00	08:00:00	11:00:00	11:00:00	11:00:00	08:00:00	09:00:00	08:00:00	08:00:00	11:00:00	11:00:00	11:00:00	11:00:00	08:00:00	11:00:00	08:00:00	11:00:00	11:00:00	11:00:00	08:00:00	08:00:00	11:00:00		
Peak Volume	179	249	254	238	235	229	227	188	215	205	242	249	231	243	172	247	205	226	223	231	265	177	235	222	195	245	253	225	254	236	221	206	
pm Peak	16:00:00	15:00:00	15:00:00	13:00:00	16:00:00	14:00:00	15:00:00	13:00:00	15:00:00	17:00:00	15:00:00	16:00:00	15:00:00	12:00:00	13:00:00	14:00:00	14:00:00	16:00:00	16:00:00	14:00:00	12:00:00	14:00:00	14:00:00	13:00:00	16:00:00	16:00:00	16:00:00	13:00:00	16:00:00	15:00:00	15:00:00	14:00:00		
Peak Volume	212	256	228	214	249	297	365	230	239	263	230	224	306	256	228	259	241	211	225	279	325	185	222	220	249	195	305	287	242	221	229	230	

	AM Peak		PM Peak	
	Tot	HGV	Tot	HGV
NB	197	32	230	32
SB	203	33	223	31
Comb.	400	65	452	62

Event key: QC failure | Atypical (QC) | Events | Special | Holiday | Offline | Weekends and defined holidays

Notes on data:

Weekly (7-day) averages are calculated as the average of workday values and weekend values, weighted in the proportion 5:2.

Class Report TS_LIVE 000000108370 2019-09-01 to 2019-09-30

Site Name 108370
Site ID 000000108370
Grid 235470728230
Description A82 Crianlarich (Core 903)

Setup Setup13282
Lanes Each Lane
Show Average
Time Period 1 hour
Averaged over All days
Exclude data: None

All directions

	Average Flow	Mcl	Car	LGV	Car+T	R2X	R3X	R4X	R2+T1/2	R2+T3	R3+T2	R3+T3	A2+T1	A2+T2	A3+T1	A3+T2	A2+T3	A3+T3	Bus	7+Axle	UC	Invalid Reading	%HGV
00:00:00	28	0	16	6	0	1	0	0	0	0	0	0	0	0	0	0	2	3	0	0	0	0	23.8
01:00:00	21	0	10	5	0	1	0	0	0	0	0	0	0	0	0	0	2	3	0	0	0	0	31
02:00:00	18	0	8	4	0	2	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	30.7
03:00:00	17	0	7	4	0	1	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	32.6
04:00:00	35	0	14	8	0	4	0	0	0	0	0	0	0	1	0	0	2	4	0	0	0	0	34.7
05:00:00	59	0	26	13	0	7	1	0	0	0	0	0	0	2	0	0	2	6	1	0	0	0	32.5
06:00:00	111	1	54	27	1	9	1	1	1	0	0	0	1	1	0	0	4	9	0	0	0	0	24.8
07:00:00	214	1	120	55	1	15	2	2	2	0	0	0	1	1	0	0	4	6	2	0	1	0	15.7
08:00:00	292	4	178	65	2	19	3	2	2	0	0	0	1	2	0	0	4	6	3	0	1	0	13.7
09:00:00	460	13	295	88	5	31	4	1	3	0	0	0	2	3	0	0	5	6	5	0	1	0	11.9
10:00:00	676	25	440	119	9	44	4	1	3	0	0	0	2	3	0	0	5	7	10	0	2	0	10.5
11:00:00	769	34	512	137	14	43	3	1	3	0	0	0	2	2	0	0	5	8	4	0	1	0	8.6
12:00:00	761	35	507	142	12	37	3	1	3	0	0	0	2	2	0	0	6	7	4	0	1	0	7.9
13:00:00	714	36	480	132	10	31	2	1	3	0	0	0	2	2	0	0	5	8	2	0	1	0	7.6
14:00:00	714	35	481	133	8	33	2	1	3	0	0	0	2	2	0	0	4	6	3	0	1	0	7.5
15:00:00	714	30	492	131	5	31	2	1	3	0	0	0	2	1	0	0	4	7	3	0	1	0	7.2
16:00:00	643	25	440	118	4	29	1	1	3	0	0	0	1	1	0	0	6	9	4	0	1	0	7.9
17:00:00	578	19	402	103	3	24	3	1	3	0	0	0	1	1	0	0	4	8	3	0	2	0	7.8
18:00:00	437	9	309	79	2	18	1	0	2	0	0	0	1	0	0	0	4	7	3	0	1	0	7.7
19:00:00	290	4	210	50	1	9	1	0	1	0	0	0	1	1	0	0	5	5	2	0	1	0	7.9
20:00:00	184	2	129	34	1	7	0	0	1	0	0	0	0	0	0	0	4	3	1	0	0	0	9.3
21:00:00	119	1	81	23	1	5	0	0	1	0	0	0	0	1	0	0	3	2	1	0	0	0	11.1
22:00:00	76	0	52	16	0	3	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	10.2
23:00:00	44	0	29	8	0	2	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0	15.2
07-19	6973	265	4656	1302	76	354	29	15	30	0	1	0	17	20	0	2	56	86	46	2	13	0	8.8
06-22	7677	273	5130	1435	79	385	32	16	34	0	2	1	19	23	0	3	73	105	50	2	15	0	9.1
06-24	7797	273	5210	1459	80	390	32	16	35	0	2	1	19	23	0	3	77	108	51	2	15	0	9.1
00-24	7976	273	5290	1499	80	406	35	17	36	0	2	1	20	27	0	4	88	126	52	3	16	0	9.6
am Peak	11:00:00	11:00:00	11:00:00	11:00:00	11:00:00	10:00:00	10:00:00	08:00:00	10:00:00	07:00:00	10:00:00	04:00:00	11:00:00	10:00:00	10:00:00	06:00:00	11:00:00	06:00:00	10:00:00	08:00:00	10:00:00		00:00:00
Peak Volume	769	34	512	137	14	44	4	2	3	0	0	0	2	3	0	0	5	9	10	0	2		0
pm Peak	12:00:00	13:00:00	12:00:00	12:00:00	12:00:00	12:00:00	17:00:00	14:00:00	14:00:00	12:00:00	17:00:00	16:00:00	12:00:00	13:00:00	12:00:00	16:00:00	12:00:00	16:00:00	16:00:00	13:00:00	17:00:00		23:00:00
Peak Volume	761	36	507	142	12	37	3	1	3	0	0	0	2	2	0	0	6	9	4	0	2		0

Channel 1

	Average Flow	Mcl	Car	LGV	Car+T	R2X	R3X	R4X	R2+T1/2	R2+T3	R3+T2	R3+T3	A2+T1	A2+T2	A3+T1	A3+T2	A2+T3	A3+T3	Bus	7+Axle	UC	Invalid Reading	%HGV
00:00:00	14	0	8	3	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	19.5
01:00:00	11	0	5	2	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	29.3
02:00:00	10	0	4	2	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	37.2
03:00:00	10	0	3	2	0	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	44.8
04:00:00	23	0	9	5	0	3	0	0	0	0	0	0	0	1	0	0	2	2	0	0	0	0	39
05:00:00	40	0	17	10	0	5	1	0	0	0	0	0	0	2	0	0	1	4	1	0	0	0	32.1
06:00:00	73	0	32	19	0	7	1	1	1	0	0	0	0	1	0	0	3	6	0	0	0	0	28.2
07:00:00	143	1	78	38	1	12	1	1	1	0	0	0	0	1	0	0	2	4	1	0	0	0	16.5
08:00:00	181	2	107	44	1	14	2	2	2	0	0	0	1	1	0	0	2	3	2	0	0	0	14.1
09:00:00	249	7	156	49	1	19	3	1	2	0	0	0	1	1	0	0	2	2	3	0	0	0	12.7
10:00:00	347	15	213	64	3	30	3	1	2	0	0	0	1	1	0	0	3	3	8	0	1	0	12.2
11:00:00	389	20	254	69	6	24	2	0	1	0	0	0	1	1	0	0	3	3	4	0	1	0	9.1
12:00:00	397	22	267	71	6	17	1	0	1	0	0	0	1	1	0	0	3	3	2	0	1	0	7
13:00:00	363	20	248	67	5	12	1	0	1	0	0	0	1	1	0	0	2	2	1	0	0	0	5.7
14:00:00	342	18	234	64	4	12	0	0	1	0	0	0	1	1	0	0	2	2	2	0	1	0	5.7
15:00:00	329	13	230	62	3	12	0	0	1	0	0	0	1	1	0	0	2	2	1	0	1	0	5.7
16:00:00	288	11	199	57	2	9	0	0	1	0	0	0	1	1	0	0	3	2	1	0	0	0	6.2
17:00:00	237	8	164	47	2	7	1	0	1	0	0	0	1	0	0	0	2	3	1	0	0	0	6.5
18:00:00	186	4	130	37	1	6	1	0	1	0	0	0	0	0	0	0	2	3	1	0	0	0	7.1
19:00:00	132	2	92	26	0	4	0	0	0	0	0	0	0	0	0	0	3	2	1	0	0	0	8.1
20:00:00	88	0	60	18	0	4	0	0	0	0	0	0	0	0	0	0	3	1	0	0	0	0	10.5
21:00:00	61	0	38	13	0	3	0	0	0	0	0	0	0	0	0	0	3	1	0	0	0	0	12.9
22:00:00	37	0	25	8	0	2	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	11.1
23:00:00	22	0	15	4	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	15.1
07-19	3451	140	2279	671	36	173	15	7	15	0	0	0	9	9	0	1	28	32	27	1	6	0	8.5
06-22	3805	143	2501	746	37	191	16	8	17	0	1	0	10	10	0	2	40	43	30	1	7	0	8.9
06-24	3865	143	2541	758	37	194	17	8	17	0	1	0	10	10	0	2	42	44	30	1	8	0	9
00-24	3972	144	2586	782	38	205	19	9	18	0	1	0	11	14	0	2	49	54	32	1	8	0	9.7
am Peak	11:00:00	11:00:00	11:00:00	11:00:00	11:00:00	10:00:00	10:00:00	08:00:00	09:00:00	07:00:00	07:00:00	04:00:00	11:00:00	05:00:00	11:00:00	06:00:00	06:00:00	06:00:00	10:00:00	08:00:00	10:00:00		04:00:00
Peak Volume	389	20	254	69	6	30	3	2	2	0	0	0	1	2	0	0	3	6	8	0	1		0
pm Peak	12:00:00	12:00:00	12:00:00	12:00:00	12:00:00	12:00:00	12:00:00	12:00:00	12:00:00	16:00:00	21:00:00	14:00:00	12:00:00	14:00:00	12:00:00	16:00:00	20:00:00	17:00:00	12:00:00	13:00:00	15:00:00		23:00:00
Peak Volume	397	22	267	71	6	17	1	0	1	0	0	0	1	1	0	0	3	3	2	0	1		0

Channel 2

	Average Flow	Mcl	Car	LGV	Car+T	R2X	R3X	R4X	R2+T1/2	R2+T3	R3+T2	R3+T3	A2+T1	A2+T2	A3+T1	A3+T2	A2+T3	A3+T3	Bus	7+Axle	UC	Invalid Reading	%HGV
00:00:00	14	0	8	2	0	1	0	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0	28.1
01:00:00	10	0	5	2	0	1	0	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0	32.8
02:00:00	8	0	4	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23.3
03:00:00	7	0	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16.6
04:00:00	12	0	5	3	0	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	26.4
05:00:00	19	0	9	3	0	2	1	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0	33.4
06:00:00	38	1	22	8	0	2	0	0	0	0	0	0	0	0	0	0	2	3	0	0	0	0	18.3
07:00:00	71	1	42	17	0	3	1	0	0	0	0	0	0	0	0	0	2	2	1	0	0	0	13.9
08:00:00	111	2	71	21	1	6	1	0	1	0	0	0	0	1	0	0	2	3	1	0	0	0	13
09:00:00	211	5	139	39	3	12	1	0	1	0	0	0	1	2	0	0	2	4	1	0	0	0	11.1
10:00:00	329	10	227	54	6	14	1	1	1	0	0	0	1	2	0	0	3	4	2	0	1	0	8.7
11:00:00	380	13	258	68	8	19	1	1	1	0	0	0	1	1	0	0	3	5	1	0	1	0	8.2
12:00:00	364	14	240	70	6	19	1	1	1	0	0	0	1	1	0	0	3	4	1	0	1	0	8.8
13:00:00	352	16	231	65	4	19	1	1	2	0	0	0	1	1	0	0	3	6	1	0	1	0	9.6
14:00:00	372	17	247	69	3	21	2	1	2	0	0	0	1	1	0	0	2	4	2	0	0	0	9.1
15:00:00	385	17	262	69	2	19	1	1	2	0	0	0	1	1	0	0	2	5	2	0	1	0	8.4
16:00:00	355	14	241	60	2	19	1	0	2	0	0	0	0	0	0	0	3	6	3	0	1	0	9.3
17:00:00	341	11	239	56	2	17	2	0	2	0	0	0	1	1	0	0	2	5	2	0	1	0	8.7
18:00:00	251	6	179	43	1	12	1	0	1	0	0	0	0	0	0	0	2	4	2	0	0	0	8.2
19:00:00	158	2	118	24	1	5	1	0	1	0	0	0	0	0	0	0	2	3	0	0	0	0	7.8
20:00:00	96	1	70	16	0	3	0	0	0	0	0	0	0	0	0	0	1	2	1	0	0	0	8.2
21:00:00	58	0	42	9	0	2	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	9.1
22:00:00	39	0	27	8	0	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	9.3
23:00:00	22	0	14	5	0	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	15.3
07-19	3522	125	2377	632	40	181	14	7	15	0	1	0	8	12	0	1	28	54	19	1	7	0	9.2
06-22	3872	129	2629	689	42	193	16	8	17	0	1	0	8	13	0	1	33	62	20	1	8	0	9.2
06-24	3933	129	2670	701	42	196	16	8	17	0	1	0	9	13	0	1	35	64	21	1	8	0	9.2
00-24	4004	130	2704	717	42	201	16	8	18	0	1	0	9	13	0	1	38	72	21	1	8	0	9.5
am Peak	11:00:00	11:00:00	11:00:00	11:00:00	11:00:00	11:00:00	10:00:00	11:00:00	10:00:00	10:00:00	10:00:00	07:00:00	10:00:00	10:00:00	10:00:00	09:00:00	11:00:00	11:00:00	10:00:00	08:00:00	11:00:00		05:00:00
Peak Volume	380	13	258	68	8	19	1	1	1	0	0	0	1	2	0	0	3	5	2	0	1		0
pm Peak	15:00:00	14:00:00	15:00:00	12:00:00	12:00:00	14:00:00	17:00:00	14:00:00	14:00:00	12:00:00	17:00:00	16:00:00	12:00:00	13:00:00	12:00:00	12:00:00	16:00:00	16:00:00	16:00:00	17:00:00	17:00:00		23:00:00
Peak Volume	385	17	262	70	6	21	2	1	2	0	0	0	1	1	0	0	3	6	3	0	1		0

Event key: QC failure | Atypical (QC) | Events | Special | Holiday | Offline

Weekends and defined holidays

Notes on data:

Averages are calculated as the simple average of values across the period.

Holidays & Events:

None

	AM Peak		PM Peak	
	Tot	HGV	Tot	HGV
NB	389	35	342	19
SB	380	35	372	33
Comb.	769	67	714	53

Class Report TS_LIVE 000000000003 2019-09-01 to 2019-09-30

Site Name	ATC00003
Site ID	000000000003
Grid	232855732029
Description	A82 Glencoe East
Setup	3_Pvr
Lanes	Each Lane
Show	Average
Time Period	1 hour
Averaged over	All days
Exclude data:	None

All directions

	Average Flow	Mcl	Car	Car+T	Rigid	Artic	Bus	Invalid Reading	%HGV
00:00:00	22	2	17	0	1	2	0	0	13.4
01:00:00	14	1	10	0	2	2	0	0	25.7
02:00:00	13	1	10	0	2	0	0	0	16.5
03:00:00	12	1	9	0	1	1	0	0	16.7
04:00:00	22	2	16	0	2	3	0	0	22.7
05:00:00	32	2	23	0	2	4	0	0	20.6
06:00:00	70	2	54	0	6	7	0	0	19.1
07:00:00	127	5	107	0	8	7	0	0	11.9
08:00:00	179	6	151	0	13	9	0	0	12
09:00:00	276	8	236	1	22	10	0	0	11.7
10:00:00	429	7	368	2	40	12	0	0	12
11:00:00	489	9	432	4	32	13	0	0	9.2
12:00:00	489	12	438	3	25	11	0	0	7.4
13:00:00	468	9	424	2	20	12	0	0	7
14:00:00	473	9	432	2	21	9	0	0	6.3
15:00:00	461	9	419	1	21	11	0	0	6.8
16:00:00	414	6	372	1	22	13	0	0	8.4
17:00:00	379	6	340	1	21	12	0	0	8.5
18:00:00	285	6	258	0	11	9	0	0	7.3
19:00:00	185	4	167	0	6	7	0	0	7.1
20:00:00	122	3	109	0	5	4	0	0	7.7
21:00:00	78	2	70	0	3	3	0	0	8
22:00:00	49	2	43	0	2	2	0	0	7.6
23:00:00	29	2	24	0	1	2	0	0	9
07-19	4470	91	3977	19	257	127	0	0	8.6
06-22	4925	103	4377	19	276	149	0	0	8.6
06-24	5004	107	4445	19	279	153	0	0	8.6
00-24	5119	116	4529	20	288	166	0	0	8.9
am Peak	11:00:00	11:00:00	11:00:00	11:00:00	10:00:00	11:00:00	11:00:00	01:00:00	01:00:00
Peak Volume	489	9	432	4	40	13	0	0	0.5
pm Peak	12:00:00	12:00:00	12:00:00	12:00:00	12:00:00	16:00:00	16:00:00	15:00:00	23:00:00
Peak Volume	489	12	438	3	25	13	0	0	0.2

Northbound

	Average Flow	Mcl	Car	Car+T	Rigid	Artic	Bus	Invalid Reading	%HGV
00:00:00	12	1	9	0	1	1	0	0	13.5
01:00:00	8	0	5	0	1	1	0	0	29.5
02:00:00	7	0	5	0	1	0	0	0	22.1
03:00:00	7	1	5	0	1	1	0	0	21
04:00:00	15	1	9	0	2	3	0	0	30
05:00:00	23	1	17	0	2	3	0	0	24.2
06:00:00	48	1	36	0	5	5	0	0	21.5
07:00:00	86	1	74	0	6	4	0	0	12.6
08:00:00	109	2	95	0	8	4	0	0	11.2
09:00:00	151	4	129	0	14	4	0	0	11.9
10:00:00	222	4	185	1	27	5	0	0	14.5
11:00:00	251	5	218	1	21	5	0	0	10.4
12:00:00	255	6	229	2	13	5	0	0	7.2
13:00:00	240	5	219	2	10	5	0	0	6
14:00:00	233	5	214	1	10	4	0	0	5.7
15:00:00	219	4	202	1	8	4	0	0	5.5
16:00:00	187	3	173	1	7	5	0	0	6
17:00:00	147	2	135	0	6	4	0	0	6.6
18:00:00	120	2	110	0	4	4	0	0	7
19:00:00	85	1	78	0	3	3	0	0	6.7
20:00:00	60	1	54	0	2	3	0	0	7.8
21:00:00	43	1	38	0	1	2	0	0	8.6
22:00:00	25	1	22	0	1	1	0	0	8.4
23:00:00	16	1	13	0	0	1	0	0	10.4
07-19	2222	43	1983	9	134	53	0	0	8.4
06-22	2458	47	2189	10	145	66	0	0	8.6
06-24	2498	49	2224	10	146	69	0	0	8.6
00-24	2570	54	2274	10	154	78	0	0	9
am Peak	11:00:00	11:00:00	11:00:00	11:00:00	10:00:00	06:00:00	11:00:00	01:00:00	04:00:00
Peak Volume	251	5	218	1	27	5	0	0	0.7
pm Peak	12:00:00	12:00:00	12:00:00	12:00:00	12:00:00	12:00:00	16:00:00		23:00:00
Peak Volume	255	6	229	2	13	5	0		0.2

Southbound

	Average Flow	Mcl	Car	Car+T	Rigid	Artic	Bus	Invalid Reading	%HGV
00:00:00	10	1	8	0	0	1	0	0	13.4
01:00:00	6	1	4	0	0	1	0	0	20.7
02:00:00	5	0	5	0	0	0	0	0	9.1
03:00:00	5	1	4	0	0	0	0	0	11.1
04:00:00	8	1	6	0	0	0	0	0	8.9
05:00:00	9	1	7	0	0	1	0	0	11.4
06:00:00	22	1	17	0	1	2	0	0	13.6
07:00:00	41	4	33	0	2	2	0	0	10.3
08:00:00	70	4	56	0	5	4	0	0	13.3
09:00:00	125	4	106	0	8	6	0	0	11.4
10:00:00	207	3	183	2	13	7	0	0	9.4
11:00:00	238	4	214	2	11	8	0	0	7.9
12:00:00	234	5	209	2	12	6	0	0	7.7
13:00:00	229	4	206	1	11	7	0	0	8
14:00:00	240	4	218	1	11	5	0	0	6.9
15:00:00	241	5	216	1	13	7	0	0	8.1
16:00:00	227	4	199	0	15	8	0	0	10.3
17:00:00	232	4	205	0	15	8	0	0	9.8
18:00:00	165	4	148	0	7	5	0	0	7.6
19:00:00	101	3	90	0	3	4	0	0	7.5
20:00:00	61	2	55	0	3	2	0	0	7.6
21:00:00	35	1	31	0	1	1	0	0	7.2
22:00:00	24	1	22	0	1	1	0	0	6.8
23:00:00	14	1	11	0	0	1	0	0	7.4
07-19	2249	48	1995	9	123	74	0	0	8.8
06-22	2468	55	2188	9	132	83	0	0	8.7
06-24	2506	58	2221	9	133	85	0	0	8.7
00-24	2549	62	2255	10	135	88	0	0	8.7
am Peak	11:00:00	08:00:00	11:00:00	11:00:00	10:00:00	11:00:00		10:00:00	01:00:00
Peak Volume	238	4	214	2	13	8		0	0.4
pm Peak	15:00:00	12:00:00	14:00:00	12:00:00	16:00:00	16:00:00		15:00:00	23:00:00
Peak Volume	241	5	218	2	15	8		0	0.2

Event key: QC failure | Atypical (QC) | Events | Special | Holiday | Offline
Weekends and defined holidays

Notes on data:

Averages are calculated as the simple average of values across the period.

Holidays & Events:

None

	AM Peak		PM Peak	
	Tot	HGV	Tot	HGV
NB	251	26	233	14
SB	238	19	240	16
Comb.	489	45	473	30

Tracsis plc
Traffic and Data Services

3479-SCO - Dalmally
prepared for Arcus
18 Sep 2017 - 24 Sep 2017

2-A85 – Between Loch Awe Village and Kilchurn Castle 56.40916, -5.03094

60-min Volume Summary

Avg W'kday Total	**2,007**
7 Day Avg Total	**1,990**

Northbound

Time	Day of Week							W'kday Avg	7 Day Avg
	Mon	Tue	Wed	Thu	Fri	Sat	Sun		
	18-Sep	19-Sep	20-Sep	21-Sep	22-Sep	23-Sep	24-Sep		
AM Peak	***163***	***163***	***127***	***165***	***218***	***131***	***106***	***167***	***153***
PM Peak	***192***	***167***	***156***	***188***	***151***	***143***	***193***	***171***	***170***
00:00	5	4	4	13	5	6	4	**6**	**6**
01:00	3	1	4	4	2	3	3	**3**	**3**
02:00	4	0	1	4	4	2	3	**3**	**3**
03:00	2	4	2	4	1	3	3	**3**	**3**
04:00	4	1	6	1	3	3	3	**3**	**3**
05:00	10	11	15	13	18	9	4	**13**	**11**
06:00	41	31	33	35	31	16	9	**34**	**28**
07:00	***68***	***74***	***61***	***62***	***59***	***53***	***14***	***65***	***56***
08:00	103	112	120	108	109	111	57	**110**	**103**
09:00	163	163	127	165	218	131	106	**167**	**153**
10:00	204	172	205	211	243	247	205	**207**	**212**
11:00	207	154	155	181	216	196	204	**183**	**188**
12:00	192	142	152	127	183	151	227	**159**	**168**
13:00	150	143	144	146	159	126	203	**148**	**153**
14:00	162	157	158	160	196	160	188	**167**	**169**
15:00	182	192	182	181	181	201	181	**184**	**186**
16:00	***192***	167	156	***188***	151	143	***193***	**171**	**170**
17:00	147	153	128	128	144	132	161	**140**	**142**
18:00	126	98	80	109	124	64	86	**107**	**98**
19:00	44	64	41	37	59	53	55	**49**	**50**
20:00	38	43	33	37	42	32	59	**39**	**41**
21:00	23	29	16	21	17	15	26	**21**	**21**
22:00	21	12	12	10	20	10	19	**15**	**15**
23:00	9	14	14	7	10	8	6	**11**	**10**
Total	**2100**	**1941**	**1849**	**1952**	**2195**	**1875**	**2019**	**2007**	**1990**

07:00-19:00	1896	1727	1668	1766	1983	1715	1825	**1808**	**1797**
06:00-22:00	2042	1894	1791	1896	2132	1831	1974	**1951**	**1937**
06:00-24:00	2072	1920	1817	1913	2162	1849	1999	**1977**	**1962**
00:00-24:00	2100	1941	1849	1952	2195	1875	2019	**2007**	**1990**

MCycle & PCycle	Cars	LGV & PSV 2Axle	OGV1 & PSV 3Axle	OGV2	**Total**
1.5%	81.3%	12.0%	1.3%	3.9%	-

2-A85 – Between Loch Awe Village and Kilchurn Castle 56.40916, -5.03094

60-min Volume Summary

Avg W'kday Total	**2,074**
7 Day Avg Total	**2,016**

Southbound

Time	Day of Week							W'kday Avg	7 Day Avg
	Mon	Tue	Wed	Thu	Fri	Sat	Sun		
	18-Sep	19-Sep	20-Sep	21-Sep	22-Sep	23-Sep	24-Sep		
AM Peak	*133*	*124*	*110*	*104*	*106*	*102*	*49*	*115*	*104*
PM Peak	*199*	*167*	*144*	*171*	*287*	*202*	*147*	*194*	*187*
00:00	3	8	3	8	14	13	6	**7**	**8**
01:00	3	8	5	4	4	9	6	**5**	**6**
02:00	6	0	12	8	7	6	8	**7**	**7**
03:00	4	4	6	5	12	10	5	**6**	**7**
04:00	8	7	4	3	26	6	4	**10**	**8**
05:00	26	10	14	19	15	11	8	**17**	**15**
06:00	58	54	36	35	36	14	5	**44**	**34**
07:00	104	101	85	82	68	38	15	**88**	**70**
08:00	118	124	105	100	97	57	33	**109**	**91**
09:00	133	121	110	104	106	102	49	**115**	**104**
10:00	198	151	154	148	168	186	114	**164**	**160**
11:00	194	182	161	138	167	239	136	**168**	**174**
12:00	225	178	150	149	173	207	175	**175**	**180**
13:00	169	164	156	142	194	219	154	**165**	**171**
14:00	185	155	129	166	223	223	140	**172**	**174**
15:00	181	150	158	123	314	236	138	**185**	**186**
16:00	199	167	144	171	287	202	137	**194**	**187**
17:00	128	147	114	144	212	140	147	**149**	**147**
18:00	90	95	58	102	188	90	95	**107**	**103**
19:00	51	68	74	79	112	80	83	**77**	**78**
20:00	38	46	35	51	73	29	40	**49**	**45**
21:00	30	28	20	37	52	29	40	**33**	**34**
22:00	20	19	20	19	30	16	21	**22**	**21**
23:00	5	8	10	9	13	8	9	**9**	**9**
Total	**2176**	**1995**	**1763**	**1846**	**2591**	**2170**	**1568**	**2074**	**2016**

07:00-19:00	1924	1735	1524	1569	2197	1939	1333	**1790**	**1746**
06:00-22:00	2101	1931	1689	1771	2470	2091	1501	**1992**	**1936**
06:00-24:00	2126	1958	1719	1799	2513	2115	1531	**2023**	**1966**
00:00-24:00	2176	1995	1763	1846	2591	2170	1568	**2074**	**2016**

M'Cycle & P'Cycle	Cars	LGV & PSV 2Axle	OGV1 & PSV 3Axle	OGV2	**Total**
1.7%	82.0%	11.6%	1.2%	3.5%	-

2-A85 – Between Loch Awe Village and Kilchurn Castle 56.40916, -5.03094

60-min Volume Summary

Avg W'kday Total	**4,082**
7 Day Avg Total	**4,006**

Combined

Time	Day of Week							W'kday Avg	7 Day Avg
	Mon	Tue	Wed	Thu	Fri	Sat	Sun		
	18-Sep	19-Sep	20-Sep	21-Sep	22-Sep	23-Sep	24-Sep		
AM Peak	*296*	*284*	*237*	*269*	*324*	*233*	*155*	*282*	*257*
PM Peak	*391*	*334*	*300*	*359*	*438*	*345*	*330*	*364*	*357*
00:00	8	12	7	21	19	19	10	**13**	**14**
01:00	6	9	9	8	6	12	9	**8**	**8**
02:00	10	0	13	12	11	8	11	**9**	**9**
03:00	6	8	8	9	13	13	8	**9**	**9**
04:00	12	8	10	4	29	9	7	**13**	**11**
05:00	36	21	29	32	33	20	12	**30**	**26**
06:00	99	85	69	70	67	30	14	**78**	**62**
07:00	172	175	146	144	127	91	29	**153**	**126**
08:00	221	236	225	208	206	168	90	**219**	**193**
09:00	296	284	237	269	324	233	155	**282**	**257**
10:00	402	323	359	359	411	433	319	**371**	**372**
11:00	401	336	316	319	383	435	340	**351**	**361**
12:00	417	320	302	276	356	358	402	**334**	**347**
13:00	319	307	300	288	353	345	357	**313**	**324**
14:00	347	312	287	326	419	383	328	**338**	**343**
15:00	363	342	340	304	495	437	319	**369**	**371**
16:00	391	334	300	359	438	345	330	**364**	**357**
17:00	275	300	242	272	356	272	308	**289**	**289**
18:00	216	193	138	211	312	154	181	**214**	**201**
19:00	95	132	115	116	171	133	138	**126**	**129**
20:00	76	89	68	88	115	61	99	**87**	**85**
21:00	53	57	36	58	69	44	66	**55**	**55**
22:00	41	31	32	29	50	26	40	**37**	**36**
23:00	14	22	24	16	23	16	15	**20**	**19**
Total	**4276**	**3936**	**3612**	**3798**	**4786**	**4045**	**3587**	**4082**	**4006**

07:00-19:00	3820	3462	3192	3335	4180	3654	3158	**3598**	**3543**
06:00-22:00	4143	3825	3480	3667	4602	3922	3475	**3943**	**3873**
06:00-24:00	4198	3878	3536	3712	4675	3964	3530	**4000**	**3928**
00:00-24:00	4276	3936	3612	3798	4786	4045	3587	**4082**	**4006**

M'Cycle & P'Cycle	Cars	LGV & PSV 2Axle	OGV1 & PSV 3Axle	OGV2	**Total**
1.6%	81.7%	11.8%	1.2%	3.7%	-

Tracsis plc
Traffic and Data Services

3479-SCO - Dalmally
prepared for Arcus
18 Sep 2017 - 24 Sep 2017

3-A819 – South of A85 Junction 56.40076, -5.02167

60-min Volume Summary

Avg W'kday Total	**972**
7 Day Avg Total	**934**

Northbound

Time	Day of Week							W'kday Avg	7 Day Avg
	Mon	Tue	Wed	Thu	Fri	Sat	Sun		
	18-Sep	19-Sep	20-Sep	21-Sep	22-Sep	23-Sep	24-Sep		
AM Peak	*58*	*59*	*57*	*61*	*87*	*52*	*30*	*64*	*58*
PM Peak	*101*	*85*	*84*	*80*	*109*	*78*	*77*	*92*	*86*
00:00	2	1	2	6	1	5	2	**2**	**3**
01:00	1	2	1	1	2	2	4	**1**	**2**
02:00	0	0	2	0	3	1	0	**1**	**1**
03:00	2	0	1	0	3	0	3	**1**	**1**
04:00	1	3	2	0	7	1	0	**3**	**2**
05:00	7	3	1	1	7	1	1	**4**	**3**
06:00	16	14	16	12	17	6	1	**15**	**12**
07:00	38	34	33	26	27	11	5	**32**	**25**
08:00	58	43	42	51	49	21	*14*	**49**	**40**
09:00	57	59	57	61	87	52	30	**64**	**58**
10:00	108	102	83	77	138	85	56	**102**	**93**
11:00	91	79	69	52	80	102	73	**74**	**78**
12:00	109	87	68	78	106	93	62	**90**	**86**
13:00	95	74	68	66	86	94	80	**78**	**80**
14:00	97	93	69	95	115	105	91	**94**	**95**
15:00	88	84	66	69	116	100	86	**85**	**87**
16:00	101	85	84	80	109	78	66	**92**	**86**
17:00	70	77	63	70	82	63	77	**72**	**72**
18:00	38	30	28	60	61	32	36	**43**	**41**
19:00	23	29	33	39	27	19	29	**30**	**28**
20:00	15	18	12	21	18	16	21	**17**	**17**
21:00	14	17	4	18	13	8	20	**13**	**13**
22:00	8	6	6	9	9	5	11	**8**	**8**
23:00	2	1	3	3	9	3	2	**4**	**3**
Total	**1041**	**941**	**813**	**895**	**1172**	**903**	**770**	**972**	**934**

07:00-19:00	950	847	730	785	1056	836	676	**874**	**840**
06:00-22:00	1018	925	795	875	1131	885	747	**949**	**911**
06:00-24:00	1028	932	804	887	1149	893	760	**960**	**922**
00:00-24:00	1041	941	813	895	1172	903	770	**972**	**934**

M'Cycle & P'Cycle	Cars	LGV & PSV 2Axle	OGV1 & PSV 3Axle	OGV2	**Total**
3.2%	80.3%	10.5%	1.3%	4.7%	-

3-A819 – South of A85 Junction 56.40076, -5.02167

60-min Volume Summary

Avg W'kday Total	**930**
7 Day Avg Total	**875**

Southbound

Time	Day of Week							W'kday Avg	7 Day Avg
	Mon	Tue	Wed	Thu	Fri	Sat	Sun		
	18-Sep	19-Sep	20-Sep	21-Sep	22-Sep	23-Sep	24-Sep		
AM Peak	*90*	*68*	*57*	*79*	*59*	*45*	*32*	*71*	*61*
PM Peak	*84*	*84*	*63*	*88*	*112*	*80*	*78*	*81*	*81*
00:00	1	3	3	3	1	2	1	**2**	**2**
01:00	0	1	2	0	0	1	1	**1**	**1**
02:00	0	0	0	2	0	2	0	**0**	**1**
03:00	0	1	0	1	1	0	0	**1**	**0**
04:00	2	1	2	1	6	0	1	**2**	**2**
05:00	3	5	6	7	9	1	0	**6**	**4**
06:00	14	17	16	20	16	3	5	**17**	**13**
07:00	47	38	38	32	33	19	8	**38**	**31**
08:00	41	59	52	53	37	34	21	**48**	**42**
09:00	90	68	57	79	*59*	45	32	**71**	**61**
10:00	78	65	74	91	88	72	57	**79**	**75**
11:00	109	67	65	91	83	75	75	**83**	**81**
12:00	82	69	55	76	90	58	91	**74**	**74**
13:00	72	63	60	64	98	58	63	**71**	**68**
14:00	79	87	66	63	99	83	78	**79**	**79**
15:00	72	97	80	70	97	76	73	**83**	**81**
16:00	84	60	63	88	112	80	78	**81**	**81**
17:00	65	84	62	78	89	67	46	**76**	**70**
18:00	52	52	43	64	71	20	27	**56**	**47**
19:00	20	35	25	22	28	31	20	**26**	**26**
20:00	15	17	13	14	25	24	21	**17**	**18**
21:00	6	10	6	7	10	6	5	**8**	**7**
22:00	5	5	3	4	8	4	5	**5**	**5**
23:00	7	8	7	4	2	2	4	**6**	**5**
Total	**944**	**912**	**798**	**934**	**1062**	**763**	**712**	**930**	**875**

07:00-19:00	871	809	715	849	956	687	649	**840**	**791**
06:00-22:00	926	888	775	912	1035	751	700	**907**	**855**
06:00-24:00	938	901	785	920	1045	757	709	**918**	**865**
00:00-24:00	944	912	798	934	1062	763	712	**930**	**875**

M'Cycle & PCycle	Cars	LGV & PSV 2Axle	OGV1 & PSV 3Axle	OGV2	**Total**
2.2%	79.0%	11.5%	1.7%	5.6%	-

3-A819 – South of A85 Junction 56.40076, -5.02167

60-min Volume Summary

Avg W'kday Total	**1,902**
7 Day Avg Total	**1,809**

Combined

Time	Day of Week							W'kday Avg	7 Day Avg
	Mon	Tue	Wed	Thu	Fri	Sat	Sun		
	18-Sep	19-Sep	20-Sep	21-Sep	22-Sep	23-Sep	24-Sep		
AM Peak	*147*	*127*	*114*	*140*	*146*	*97*	*62*	*135*	*119*
PM Peak	*185*	*161*	*147*	*168*	*221*	*158*	*144*	*173*	*167*
00:00	3	4	5	9	2	7	3	**5**	**5**
01:00	1	3	3	1	2	3	5	**2**	**3**
02:00	0	0	2	2	3	3	0	**1**	**1**
03:00	2	1	1	1	4	0	3	**2**	**2**
04:00	3	4	4	1	13	1	1	**5**	**4**
05:00	10	8	7	8	16	2	1	**10**	**7**
06:00	30	31	32	32	33	9	6	**32**	**25**
07:00	85	72	71	58	60	30	13	**69**	**56**
08:00	99	102	94	104	86	55	35	**97**	**82**
09:00	147	127	114	140	146	97	62	**135**	**119**
10:00	186	167	157	168	226	157	113	**181**	**168**
11:00	200	146	134	143	163	177	148	**157**	**159**
12:00	191	156	123	154	196	151	153	**164**	**161**
13:00	167	137	128	130	184	152	143	**149**	**149**
14:00	176	180	135	158	214	188	169	**173**	**174**
15:00	160	181	146	139	213	176	159	**168**	**168**
16:00	185	145	147	168	221	158	144	**173**	**167**
17:00	135	161	125	148	171	130	123	**148**	**142**
18:00	90	82	71	124	132	52	63	**100**	**88**
19:00	43	64	58	61	55	50	49	**56**	**54**
20:00	30	35	25	35	43	40	42	**34**	**36**
21:00	20	27	10	25	23	14	25	**21**	**21**
22:00	13	11	9	13	17	9	16	**13**	**13**
23:00	9	9	10	7	11	5	6	**9**	**8**
Total	**1985**	**1853**	**1611**	**1829**	**2234**	**1666**	**1482**	**1902**	**1809**

07:00-19:00	1821	1656	1445	1634	2012	1523	1325	**1714**	**1631**
06:00-22:00	1944	1813	1570	1787	2166	1636	1447	**1856**	**1766**
06:00-24:00	1966	1833	1589	1807	2194	1650	1469	**1878**	**1787**
00:00-24:00	1985	1853	1611	1829	2234	1666	1482	**1902**	**1809**

M'Cycle & PCycle	Cars	LGV & PSV 2Axle	OGV1 & PSV 3Axle	OGV2	**Total**
2.7%	79.7%	11.0%	1.5%	5.1%	-

Tracsis plc
Traffic and Data Services

3479-SCO - Dalmally
prepared for Arcus
18 Sep 2017 - 24 Sep 2017

4-A85 – Between B8074 Junction and Arrivain 56.40516, -4.91429

60-min Volume Summary

Avg W'kday Total	**1,549**
7 Day Avg Total	**1,564**

Eastbound

Time	Day of Week Mon 18-Sep	Tue 19-Sep	Wed 20-Sep	Thu 21-Sep	Fri 22-Sep	Sat 23-Sep	Sun 24-Sep	W'kday Avg	7 Day Avg
AM Peak	*90*	*92*	*90*	*117*	*133*	*113*	*85*	*104*	*103*
PM Peak	*136*	*129*	*124*	*148*	*139*	*93*	*151*	*135*	*131*
00:00	4	1	3	8	3	5	2	**4**	**4**
01:00	4	3	4	6	3	2	4	**4**	**4**
02:00	2	0	2	3	4	1	2	**2**	**2**
03:00	4	2	3	3	4	3	4	**3**	**3**
04:00	4	3	6	3	3	3	3	**4**	**4**
05:00	9	9	12	11	6	6	2	**9**	**8**
06:00	30	25	28	32	30	24	10	**29**	**26**
07:00	59	54	54	53	50	45	13	**54**	**47**
08:00	76	68	73	60	77	84	36	**71**	**68**
09:00	90	92	90	117	133	113	85	**104**	**103**
10:00	159	159	148	160	197	194	166	**165**	**169**
11:00	153	115	143	147	178	164	199	**147**	**157**
12:00	161	127	114	93	147	121	186	**128**	**136**
13:00	122	136	114	121	119	105	171	**122**	**127**
14:00	144	114	119	120	165	116	156	**132**	**133**
15:00	150	151	138	133	153	170	146	**145**	**149**
16:00	136	129	124	148	139	93	146	**135**	**131**
17:00	98	99	82	102	125	87	151	**101**	**106**
18:00	101	73	53	74	103	56	85	**81**	**78**
19:00	42	44	31	50	57	42	60	**45**	**47**
20:00	24	32	20	25	32	17	47	**27**	**28**
21:00	18	20	12	21	11	9	26	**16**	**17**
22:00	20	7	10	6	14	7	17	**11**	**12**
23:00	5	9	8	7	12	8	7	**8**	**8**
Total	**1615**	**1472**	**1391**	**1503**	**1765**	**1475**	**1724**	**1549**	**1564**

07:00-19:00	1449	1317	1252	1328	1586	1348	1540	**1386**	**1403**
06:00-22:00	1563	1438	1343	1456	1716	1440	1683	**1503**	**1520**
06:00-24:00	1588	1454	1361	1469	1742	1455	1707	**1523**	**1539**
00:00-24:00	1615	1472	1391	1503	1765	1475	1724	**1549**	**1564**

M'Cyde & P'Cycle	Cars	LGV & PSV 2Axle	OGV1 & PSV 3Axle	OGV2	**Total**
2.2%	80.9%	11.2%	1.0%	4.6%	-

4-A85 – Between B8074 Junction and Arrivain 56.40516, -4.91429

60-min Volume Summary

Avg W'kday Total	**1,574**
7 Day Avg Total	**1,530**

Westbound

Time	Day of Week							W'kday Avg	7 Day Avg
	Mon	Tue	Wed	Thu	Fri	Sat	Sun		
	18-Sep	19-Sep	20-Sep	21-Sep	22-Sep	23-Sep	24-Sep		
AM Peak	*113*	*90*	*81*	*80*	*120*	*73*	*43*	*95*	*84*
PM Peak	*131*	*107*	*106*	*135*	*205*	*166*	*108*	*137*	*136*
00:00	1	10	4	6	8	8	3	**6**	**6**
01:00	5	5	7	3	3	9	4	**5**	**5**
02:00	4	1	9	7	6	7	8	**5**	**6**
03:00	4	5	7	6	13	7	5	**7**	**7**
04:00	12	7	4	7	20	6	5	**10**	**9**
05:00	19	14	20	20	19	12	6	**18**	**16**
06:00	56	43	31	41	36	16	9	**41**	**33**
07:00	73	72	62	58	*59*	27	10	*65*	**52**
08:00	86	90	78	80	78	*53*	26	**82**	**70**
09:00	113	88	81	73	120	73	43	**95**	**84**
10:00	129	115	92	111	149	126	89	**119**	**116**
11:00	159	134	110	121	131	162	129	**131**	**135**
12:00	137	145	122	118	130	159	124	**130**	**134**
13:00	130	115	105	111	131	160	94	**118**	**121**
14:00	138	114	101	105	179	177	109	**127**	**132**
15:00	138	117	111	102	235	173	93	**141**	**138**
16:00	131	107	106	135	205	166	101	**137**	**136**
17:00	90	99	67	95	169	99	108	**104**	**104**
18:00	58	71	59	93	145	66	87	**85**	**83**
19:00	35	51	39	53	114	70	60	**58**	**60**
20:00	28	31	24	33	61	26	30	**35**	**33**
21:00	20	20	14	29	46	26	21	**26**	**25**
22:00	15	18	13	15	21	14	16	**16**	**16**
23:00	8	6	9	17	11	9	9	**10**	**10**
Total	**1589**	**1478**	**1275**	**1439**	**2089**	**1651**	**1189**	**1574**	**1530**

07:00-19:00	1382	1267	1094	1202	1731	1441	1013	**1335**	**1304**
06:00-22:00	1521	1412	1202	1358	1988	1579	1133	**1496**	**1456**
06:00-24:00	1544	1436	1224	1390	2020	1602	1158	**1523**	**1482**
00:00-24:00	1589	1478	1275	1439	2089	1651	1189	**1574**	**1530**

M'Cycle & P'Cycle	Cars	LGV & PSV 2Axle	OGV1 & PSV 3Axle	OGV2	**Total**
1.7%	80.3%	11.8%	1.4%	4.7%	-

4-A85 – Between B8074 Junction and Arrivain 56.40516, -4.91429

60-min Volume Summary

Avg W'kday Total	**3,123**
7 Day Avg Total	**3,094**

Combined

Time	Day of Week							W'kday Avg	7 Day Avg
	Mon	Tue	Wed	Thu	Fri	Sat	Sun		
	18-Sep	19-Sep	20-Sep	21-Sep	22-Sep	23-Sep	24-Sep		
AM Peak	*203*	*180*	*171*	*190*	*253*	*186*	*128*	*199*	*187*
PM Peak	*267*	*236*	*230*	*283*	*344*	*259*	*259*	*272*	*267*
00:00	5	11	7	14	11	13	5	**10**	**9**
01:00	9	8	11	9	6	11	8	**9**	**9**
02:00	6	1	11	10	10	8	10	**8**	**8**
03:00	8	7	10	9	17	10	9	**10**	**10**
04:00	16	10	10	10	23	9	8	**14**	**12**
05:00	28	23	32	31	25	18	8	**28**	**24**
06:00	86	68	59	73	66	40	19	**70**	**59**
07:00	132	126	116	111	109	72	23	**119**	**98**
08:00	162	158	151	140	155	137	62	**153**	**138**
09:00	203	180	171	190	253	186	128	**199**	**187**
10:00	288	274	240	271	346	320	255	**284**	**285**
11:00	312	249	253	268	309	326	328	**278**	**292**
12:00	298	272	236	211	277	280	310	**259**	**269**
13:00	252	251	219	232	250	265	265	**241**	**248**
14:00	282	228	220	225	344	293	265	**260**	**265**
15:00	288	268	249	235	388	343	239	**286**	**287**
16:00	267	236	230	283	344	259	247	**272**	**267**
17:00	188	198	149	197	294	186	259	**205**	**210**
18:00	159	144	112	167	248	122	172	**166**	**161**
19:00	77	95	70	103	171	112	120	**103**	**107**
20:00	52	63	44	58	93	43	77	**62**	**61**
21:00	38	40	26	50	57	35	47	**42**	**42**
22:00	35	25	23	21	35	21	33	**28**	**28**
23:00	13	15	17	24	23	17	16	**18**	**18**
Total	**3204**	**2950**	**2666**	**2942**	**3854**	**3126**	**2913**	**3123**	**3094**

07:00-19:00	2831	2584	2346	2530	3317	2789	2553	**2722**	**2707**
06:00-22:00	3084	2850	2545	2814	3704	3019	2816	**2999**	**2976**
06:00-24:00	3132	2890	2585	2859	3762	3057	2865	**3046**	**3021**
00:00-24:00	3204	2950	2666	2942	3854	3126	2913	**3123**	**3094**

M'Cycle & P'Cycle	Cars	LGV & PSV 2Axle	OGV1 & PSV 3Axle	OGV2	**Total**
2.0%	80.6%	11.5%	1.2%	4.7%	-

Tracsis plc
Traffic and Data Services

3479-SCO - Dalmally
prepared for Arcus
18 Sep 2017 - 24 Sep 2017

5-A82 – Between A85 Junction and North of Tyndrum 56.4385, -4.71428

60-min Volume Summary

Avg W'kday Total
7 Day Avg Total

Northbound

Time	Day of Week							W'kday Avg	7 Day Avg
	Mon	Tue	Wed	Thu	Fri	Sat	Sun		
	18-Sep	19-Sep	20-Sep	21-Sep	22-Sep	23-Sep	24-Sep		
AM Peak	***252***	***212***	***148***	***183***	***241***	***299***	***140***	***207***	***211***
PM Peak	***253***	***228***	***214***	***290***	***506***	***359***	***291***	***298***	***306***
00:00	18	13	10	11	17	24	11	**14**	**15**
01:00	10	12	13	4	9	21	8	**10**	**11**
02:00	10	6	17	19	10	6	10	**12**	**11**
03:00	15	9	13	10	24	18	9	**14**	**14**
04:00	19	19	13	15	43	19	10	**22**	**20**
05:00	52	37	39	39	39	32	9	**41**	**35**
06:00	137	75	67	63	72	47	27	**83**	**70**
07:00	181	148	131	127	135	104	38	**144**	**123**
08:00	212	188	140	156	192	187	76	**178**	**164**
09:00	252	212	148	183	241	299	140	**207**	**211**
10:00	365	277	228	265	373	470	236	**302**	**316**
11:00	403	333	261	298	393	571	307	**338**	**367**
12:00	340	319	287	263	381	505	304	**318**	**343**
13:00	328	254	235	235	411	469	297	**293**	**318**
14:00	312	270	211	246	429	508	304	**294**	**326**
15:00	316	252	211	238	759	425	289	**355**	**356**
16:00	253	228	214	290	506	359	291	**298**	**306**
17:00	223	164	160	220	384	229	214	**230**	**228**
18:00	121	136	130	209	345	176	180	**188**	**185**
19:00	95	96	92	153	244	107	126	**136**	**130**
20:00	68	63	62	89	172	57	67	**91**	**83**
21:00	49	45	26	59	83	44	58	**52**	**52**
22:00	27	28	25	34	63	24	34	**35**	**34**
23:00	15	13	17	33	32	10	21	**22**	**20**
Total	**3821**	**3197**	**2750**	**3259**	**5357**	**4711**	**3066**	**3677**	**3737**

07:00-19:00	3306	2781	2356	2730	4549	4302	2676	**3144**	**3243**
06:00-22:00	3655	3060	2603	3094	5120	4557	2954	**3506**	**3578**
06:00-24:00	3697	3101	2645	3161	5215	4591	3009	**3564**	**3631**
00:00-24:00	3821	3197	2750	3259	5357	4711	3066	**3677**	**3737**

M'Cycle & P'Cycle	Cars	LGV & PSV 2Axle	OGV1 & PSV 3Axle	OGV2	**Total**
1.7%	81.8%	11.8%	0.9%	3.8%	-

5-A82 – Between A85 Junction and North of Tyndrum 56.4385, -4.71428

60-min Volume Summary

Avg W'kday Total	**3,441**
7 Day Avg Total	**3,700**

Southbound

Time	Day of Week							W'kday Avg	7 Day Avg
	Mon	Tue	Wed	Thu	Fri	Sat	Sun		
	18-Sep	19-Sep	20-Sep	21-Sep	22-Sep	23-Sep	24-Sep		
AM Peak	*193*	*163*	*170*	*167*	*221*	*286*	*215*	*183*	*202*
PM Peak	*329*	*278*	*250*	*295*	*327*	*338*	*462*	*295*	*319*
00:00	9	7	5	13	12	9	14	**9**	**10**
01:00	12	4	10	8	6	11	11	**8**	**9**
02:00	7	2	7	6	8	4	5	**6**	**6**
03:00	4	3	4	5	13	5	6	**6**	**6**
04:00	6	8	11	11	9	7	7	**9**	**8**
05:00	17	18	18	18	18	11	10	**18**	**16**
06:00	50	53	37	40	47	36	15	**45**	**40**
07:00	96	85	77	88	77	78	43	**85**	**78**
08:00	135	105	117	96	139	146	81	**118**	**117**
09:00	193	163	170	167	221	286	215	**183**	**202**
10:00	326	225	291	270	384	400	431	**299**	**332**
11:00	378	251	279	348	404	398	500	**332**	**365**
12:00	343	264	290	239	385	391	464	**304**	**339**
13:00	340	266	275	252	372	358	453	**301**	**331**
14:00	348	296	292	304	374	294	393	**323**	**329**
15:00	338	299	276	280	391	440	428	**317**	**350**
16:00	329	275	250	295	327	338	419	**295**	**319**
17:00	283	278	236	272	327	307	462	**279**	**309**
18:00	224	203	159	191	250	231	241	**205**	**214**
19:00	147	122	105	126	153	176	170	**131**	**143**
20:00	83	73	59	75	74	78	117	**73**	**80**
21:00	51	42	33	51	54	35	73	**46**	**48**
22:00	35	26	22	24	42	26	46	**30**	**32**
23:00	15	17	20	20	24	13	14	**19**	**18**
Total	**3769**	**3085**	**3043**	**3199**	**4111**	**4078**	**4618**	**3441**	**3700**

07:00-19:00	3333	2710	2712	2802	3651	3667	4130	**3042**	**3286**
06:00-22:00	3664	3000	2946	3094	3979	3992	4505	**3337**	**3597**
06:00-24:00	3714	3043	2988	3138	4045	4031	4565	**3386**	**3646**
00:00-24:00	3769	3085	3043	3199	4111	4078	4618	**3441**	**3700**

M'Cycle & PCyde	Cars	LGV & PSV 2Axle	OGV1 & PSV 3Axle	OGV2	**Total**
2.4%	82.3%	10.2%	1.3%	3.8%	-

5-A82 – Between A85 Junction and North of Tyndrum 56.4385, -4.71428

60-min Volume Summary

Avg W'kday Total	**7,118**
7 Day Avg Total	**7,438**

Time	Day of Week							W'kday Avg	7 Day Avg
	Mon	Tue	Wed	Thu	Fri	Sat	Sun		
	18-Sep	19-Sep	20-Sep	21-Sep	22-Sep	23-Sep	24-Sep		
AM Peak	*445*	*375*	*318*	*350*	*462*	*585*	*355*	*390*	*413*
PM Peak	*582*	*503*	*464*	*585*	*833*	*697*	*710*	*593*	*625*
00:00	27	20	15	24	29	33	25	**23**	**25**
01:00	22	16	23	12	15	32	19	**18**	**20**
02:00	17	8	24	25	18	10	15	**18**	**17**
03:00	19	12	17	15	37	23	15	**20**	**20**
04:00	25	27	24	26	52	26	17	**31**	**28**
05:00	69	55	57	57	57	43	19	**59**	**51**
06:00	187	128	104	103	119	83	42	**128**	**109**
07:00	277	233	208	215	212	182	81	**229**	**201**
08:00	347	293	257	252	331	333	157	**296**	**281**
09:00	445	375	318	350	462	585	355	**390**	**413**
10:00	691	502	519	535	757	870	667	**601**	**649**
11:00	781	584	540	646	797	969	807	**670**	**732**
12:00	683	583	577	502	766	896	768	**622**	**682**
13:00	668	520	510	487	783	827	750	**594**	**649**
14:00	660	566	503	550	803	802	697	**616**	**654**
15:00	654	551	487	518	1150	865	717	**672**	**706**
16:00	582	503	464	585	833	697	710	**593**	**625**
17:00	506	442	396	492	711	536	676	**509**	**537**
18:00	345	339	289	400	595	407	421	**394**	**399**
19:00	242	218	197	279	397	283	296	**267**	**273**
20:00	151	136	121	164	246	135	184	**164**	**162**
21:00	100	87	59	110	137	79	131	**99**	**100**
22:00	62	54	47	58	105	50	80	**65**	**65**
23:00	30	30	37	53	56	23	35	**41**	**38**
Total	**7590**	**6282**	**5793**	**6458**	**9468**	**8789**	**7684**	**7118**	**7438**

07:00-19:00	6639	5491	5068	5532	8200	7969	6806	**6186**	**6529**
06:00-22:00	7319	6060	5549	6188	9099	8549	7459	**6843**	**7175**
06:00-24:00	7411	6144	5633	6299	9260	8622	7574	**6949**	**7278**
00:00-24:00	7590	6282	5793	6458	9468	8789	7684	**7118**	**7438**

M'Cycle & P'Cycle	Cars	LGV & PSV 2Axle	OGV1 & PSV 3Axle	OGV2	**Total**
2.0%	82.0%	11.0%	1.1%	3.8%	-

2017 to 2019 Factors (To uplift Arcus 2017 flows to 2019 baseline)

ATC08059

2017 to 2019 Factor (based on Mid July to end of Dec

	18Hr Weekday	24 Hr Weekday	18hr Weekly	24hr Weekly
All	100.0%	100.3%	100.2%	100.5%
EB	99.8%	100.2%	99.9%	100.3%
WB	100.1%	100.3%	100.5%	100.7%

18 Hr Factor	1.00
24 Hr Factor	1.00

JTC00536

2017 to 2019 Factor (based on Mar, Apr, Jul-Dec)

	18Hr Weekday	24 Hr Weekday	18hr Weekly	24hr Weekly
All	106.9%	108.3%	106.4%	107.5%
EB	109.5%	111.7%	106.5%	108.4%
WB	104.4%	104.9%	106.3%	106.5%

18 Hr Factor	1.07
24 Hr Factor	1.07

108370

2017 to 2019 Factor (Jan-Mar, May-Jul, Oct)

	18Hr Weekday	24 Hr Weekday	18hr Weekly	24hr Weekly
All	107.1%	107.3%	107.2%	107.3%
EB	111.8%	113.3%	107.7%	109.1%
WB	102.6%	101.5%	106.6%	105.4%

18 Hr Factor	1.07
24 Hr Factor	1.07

AADT/AAWT Factors

ATC08059

2009 (Mar-Dec) Compared to 2009 (All months)

	18Hr Weekday	24 Hr Weekday	18hr Weekly	24hr Weekly
All	0.92	0.94	0.92	0.93
EB	0.92	0.94	0.92	0.93
WB	0.92	0.93	0.92	0.93

18 Hr Factor	0.92
24 Hr Factor	0.93

Second to last full week of September 2009 Compared to 2009 (All months)

	18Hr Weekday	24 Hr Weekday	18hr Weekly	24hr Weekly
All	0.89	0.91	0.87	0.88
EB	0.88	0.90	0.86	0.87
WB	0.89	0.91	0.88	0.89

18 Hr Factor	0.89
24 Hr Factor	0.88

JTC00536

2016 (Mar-Dec) Compared to 2016 (All months)

	18Hr Weekday	24 Hr Weekday	18hr Weekly	24hr Weekly
All	0.94	0.94	0.93	0.93
EB	0.93	0.93	0.92	0.92
WB	0.94	0.95	0.93	0.94

18 Hr Factor	0.94
24 Hr Factor	0.93

Second to last full week of September 2016 Compared to 2016 (All months)

	18Hr Weekday	24 Hr Weekday	18hr Weekly	24hr Weekly
All	0.85	0.85	0.85	0.85
EB	0.86	0.85	0.87	0.87
WB	0.84	0.84	0.82	0.82

18 Hr Factor	0.85
24 Hr Factor	0.85

108370

Second to last full week of September (16/09/2019 - 22/09/2019) Compared to 2019

	18Hr Weekday	24 Hr Weekday	18hr Weekly	24hr Weekly
All	0.86	0.86	0.83	0.84
EB	0.85	0.86	0.85	0.85
WB	0.86	0.86	0.82	0.83

18 Hr Factor	0.86
24 Hr Factor	0.84

ATC00003

2012 (Jul-Dec) Compared to 2012 (All months)

	18Hr Weekday	24 Hr Weekday	18hr Weekly	24hr Weekly
All	0.97	0.97	0.96	0.97
EB	0.97	0.97	0.97	0.97
WB	0.97	0.97	0.96	0.96

18 Hr Factor	0.97
24 Hr Factor	0.97

Appendix D Abnormal Indivisible Loads Assessment

Cruachan Expansion Project – Abnormal Indivisible Loads Assessment

drax

1 Background

1.1 Introduction

1.1.1 Stantec has been commissioned by Drax Cruachan Expansion Ltd to provide transport planning and highways advice in support of the Section 36 application for the proposed 'Cruachan Expansion Project', a new pumped storage electricity generating station, (referred to hereafter as the 'Proposed Development') adjacent to the existing Cruachan Power Station at Loch Awe, west of Dalmally in Argyll and Bute.

1.1.2 An Environmental Impact Assessment Report (EIAR) has been prepared which includes a Transport and Access chapter. A separate Transport Assessment (TA) has also been prepared for the Proposed Development.

1.1.3 Scoping discussions were undertaken with Transport Scotland and Argyll & Bute Council in relation to the assessment approach and methodology of the EIAR Transport and Access Chapter and the TA. As part of this, the following comments were provided by Transport Scotland in relation to the assessment of Abnormal Indivisible Loads (AILs):

- *Transport Scotland will require to be satisfied that the size of Abnormal Indivisible Loads proposed can negotiate the selected route and that their transportation will not have any detrimental effect on structures within the trunk road route path.*
- *A full Abnormal Loads Assessment report should be provided with the EIA that identifies key pinch points on the trunk road network. Swept path analysis should be undertaken at identified pinch points and details provided with regard to any required changes to street furniture or structures along the route.*
- *Any modifications to the trunk road to accommodate abnormal loads will require to be agreed with the Area Manger*.

1.1.4 This report has been prepared to provide a preliminary assessment for access corridors for the loads and vehicles that are not covered by the Road Vehicles (Constructions and Use) Regulations 1986 and are as such classified as AILs. This AIL assessment has been prepared based on the emerging details, at the time of writing, in relation to the AILs required as part of the construction and management of the Proposed Development.

1.1.5 It should be noted that detailed AIL access route assessments would be undertaken for each required AIL at the time of the programmed movement dates in the project once the specification/ dimensions of those loads are known and following the appointment of the haulage company who will determine the required vehicle and trailer arrangements. This would be undertaken in consultation with Transport Scotland, other affected local highway authorities and Police Scotland. The transport of all AILs would follow the standard notification and application procedures to derive a Movement Order for that occasion. Details of the application process are set out at Section 4 of this report.

1.1.6 The remainder of this report has been structured as follows:

- Section 2 sets out the key elements of the construction phase of the Proposed Development and the expected AILs that would be required;
- Section 3 provides an assessment of potential routes for AILs, including the identification of key height, width and weight constraints and swept path analysis at key locations; and

- Section 4 sets out the proposed approach for the management of AILs and the processes to be followed.

- Section 5 summarises the report and provides the commitments to be adopted by Drax Hydro Ltd; its main works contractors and any other associated sub-contractor which will be engaged in moving AILs.

2 Proposed Development and Expected AILs

2.1 Proposed Development

2.1.1 The Proposed Development will comprise the following main elements:

- **Upper Control Works** – a new intake structure including tower, screens, gates, gate hoisting arrangement, etc. would be located within and adjacent to the Cruachan reservoir to direct water into a new headrace tunnel and underground waterway system
- **Underground Waterway System** – a series of underground shafts and tunnels carrying water between the upper reservoir and lower reservoir, through the underground powerhouse cavern
- **Powerhouse Cavern** – a series of underground caverns containing reversible pump-turbines and motor-generators together with associated equipment such as transformers and switchgear. The construction process will require various interconnecting tunnels to enable construction
- **Substation** – the existing substation compound requires to be extended in order to install two new 275kV circuit breakers and associated disconnectors, with each circuit breaker to be T-connected onto the existing 275kV overhead lines at the Cable Sealing Ends to provide a suitable connection to the existing 275KV circuit that connects to Dalmally sub-station, located some 7km to the east
- **Ventilation Shaft** – a ventilation shaft will be required to circulate fresh air through the underground access tunnel and cavern power station complex. It is noted that this may also include a cable shaft for the 275kV cable from the transformers to cable sealing ends/sub-station
- **Tailrace Tunnel** – a concrete-lined low-pressure tunnel including a downstream surge shaft will conduct water between the pump-turbines and Loch Awe, the lower reservoir. Upstream of the lower control works, the tailrace will contain an underground gate chamber and gate shaft, housing the tailrace tunnel gate.
- **Lower Control Works** – comprising screened inlet / outlet structure and stop logs, positioned in Loch Awe at the end of the tailrace tunnel below the water level. These structures would channel water in and out of Loch Awe
- **Quayside** – constructed on the northern shore of Loch Awe to facilitate the construction of the underground access tunnels, waterway system and powerhouse cavern, and the temporary storage of spoil prior to its removal off-site. During the construction phase the quayside will be used as a means of access to the lower works; construction of the tailrace and main access tunnels; and the temporary storage of tunnel excavated material prior to its removal off-site.
- **Administration Building** – above ground administration and workshop buildings required for day to day operational and maintenance tasks, located on the quayside
- **Storage Buildings** – above ground buildings required for storage and plant and equipment required for regular plant maintenance – located on the quayside
- **Access Tunnels** – a main access tunnel would be constructed to provide access to the underground power plant, close to the shore of Loch Awe. This will cross connect to the existing

Cruachan 1 to allow personnel to easily move between the plants and provide a further means of access/egress; and

- **Existing Service Roads** – these will be used as far as possible to facilitate the long-term operation of the generating station. Some upgrades of these roads may be required to facilitate access by heavy machinery and the removal of spoil.

2.1.2 The construction phase of the Proposed Development 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 the A85 to the northern side of A85 close to Falls of Cruachan railway station
- Tunnelling and excavation works and the removal of exported material off-site
- Delivery of construction materials, specialist plant and equipment and Abnormal Indivisible Loads

2.2 AILs Expected During the Construction Phase

2.2.1 The following items and equipment, required as part of the construction phase of the Proposed Development, are expected to be loads and vehicle types that are considered to be traffic outside of the Road Vehicles (Constructions and Use) Regulations 1986 and the Authorised Weight load:

- Transformers;
- Intake gates;
- Generator turbine;
- Crane beam;
- Mobile and static cranes;
- Rotor shaft; and
- Penstock liners.

2.2.2 The transformers are expected to be the heaviest item from the list provided above. The weight and dimensions of the transformer(s) will vary depending on the type and configuration of the transformer(s) used. The expected weight of a 150 MW transformer unit ranges between 100 – 150 tonnes and typical dimensions would be 3.5m height x 4.5m width x 5.5m length.

2.2.3 The construction process will require some large plant, such as non-road-based cranes, excavators and piling rigs, and mobile cranes and their associated ballast. Many of these vehicles will be classified as AILs but are typically configured to travel under their own power (mobile cranes); on reasonably standard multi-axle articulated rigs (crane ballast); or partially disassembled to create smaller AILs (excavators or tracked cranes). Many of these would be configured in such a way as to require either no escort vehicle or to require only a private escort vehicle. Police assistance and escorting will only

be required when the vehicle and load are expected to have to contravene traffic regulations or are anticipated to be travelling such that the police determine that their assistance must be used. The escorting requirements will be determined during the planning of each AIL movement – into or away from the worksites or the operational power station.

2.2.4 It should be noted that some of the items listed above can either be transported to the site in parts and assembled onsite or can otherwise be stripped down to the core to reduce their overall dimension. This is expected to reduce the number of loads that will need to be transported as AILs, others will remain as AILs but the exceedance beyond standard loads will be reduced. That process will minimise the effects on the road network of transporting AILs to the construction sites.

2.2.5 During operation of the plant very few elements of the Proposed Development will need to be removed or swapped out as AILs. Any such movements will be infrequent and will be planned to follow the approach proposed within this document which, in turn, reflects the processes observed for recent AILs to the existing Cruachan power station.

3 AIL Routeing and Constraint

3.1 Proposed AIL Routes

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

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

3.1.2 In 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 on the route.

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

3.1.4 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.

3.2 Constraints on the Trunk Network

3.2.1 The locations and procurement strategy for the required AILs are not known at this stage. This assessment, therefore, considers the section of the trunk road network that directly connects the site to the west and to the east, and subsequently to the wider strategic road network.

3.2.2 As such, constraints on the A85 and A82 trunk network between Oban to the west and Crianlarich to the east have been identified as part of this assessment. This included identifying potential height, width and weight restrictions through a desktop study using Google Street View imagery, Argyll and Bute Council's Road, Bridge & Pier Restrictions Plan[1] and Transport Scotland's Road restriction database available through Traffic Scotland [2].

3.2.3 Table 3.1 lists the identified restrictions on the A85 and A82 in terms of the restriction type, location and description of restrictions. The plan included in Appendix A illustrates the location of each restriction in terms of the wider road network.

3.2.4 It should be noted that the review of constraints provided is based on a preliminary desktop study. Subject to the configuration of each AIL and the transporting vehicle combination, a fuller route assessment would be undertaken at a later stage once the load specifications, pick-up locations and AIL vehicle specifications are known and the likely constraints on those movements. This would

[1] Road, Bridge & Pier Restrictions Plan, Argyll and Bute Council. Available at: 00022-02d A0 (argyll-bute.gov.uk) (Accessed 01/03/2022)

[2] Road Restrictions, Traffic Scotland, Transport Scotland. Available at: https://trafficscotland.org/freight/roadrestrictions/index.aspx (Accessed 01/03/2022)

include a more detailed assessment of constraints including identifying other constraints such as culverts, an assessment of loading capacities on structures, enquiries on overhead cable heights and swept path analysis.

Table 3.1: Height, Width and Weight Restrictions on the A85 and A82 between Oban and Crianlarich

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
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

Reference	Restriction Type	Longitude	Latitude	Description
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)
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

3.3 Swept Path Analysis

3.3.1 Swept path analysis has been undertaken at the Cruachan access junction on the A85 and at the following locations which are considered to have major width restrictions on the section of the A85 and A82 trunk road under consideration:

- Constraint 36 – bridge over railway line on the A85 at Innis Chonain Island
- Constraint 68 – A82/ A85 roundabout junction
- Constraint 69 and 71 – tight bends on the A85 at the underpass with rail bridge at Crianlarich

3.3.2 The swept path analysis has been based on transporting a 100 – 150 tonne transformer assuming the following load and vehicle dimension and arrangement:

- Transformer Dimensions: 3.65m height x 4.50m width x 5.55m length
- 4-axle tractor with 10-axle flat top trailer
- 3m trailer width, 1.13m trailer height, 4.78m combined trailer and load height
- 3m trailer connection
- Minimum turning radii:5.8m inside wall, 6.6m inside track, 12.2m outside wall, 11.7m outside track

3.3.3 The swept path analysis drawings have been included in Appendix B.

3.3.4 The width restrictions at the A82/ A85 roundabout and at the Crianlarich underpass on A85 are not expected to cause any issues based on the AIL type and arrangement assessed. The width restrictions

and tight bends at the bridge over the railway line on A85 at Innis Chonain Island, however, may restrict the type and arrangement of AIL that can route via this segment of the A85.

3.3.5 Based on the swept path analysis, potential issues with manoeuvrability of large AILs on the A85 at the bridge over the railway line at Innis Chonain Island have been noted. This includes the AIL body (which is raised off the ground) running over the vehicle restraint system (VRS) at the location of a tight bend on the bridge. This section of the A85 would be assessed further as part of future detailed AIL assessments 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. Potential mitigation measures could include:

- Temporary dismounting of the VRS and a temporary road closure
- Creation of a new (temporary) bridging structure;
- Consideration of an alternative local detour routes on the trunk road network for large AILs
- Reducing the size of the AIL arrangement if routeing via this section of the A85.

3.3.6 As mentioned under Paragraph 3.1.4, a transformer of a similar dimension and weight to the one assumed in the assessment was successfully transported to Cruachan Power Station from Longannet Power Station in Fife. This AIL was transported during the night via the M876, M9, A84, A85, A82 and A85. This required police escort, road closures on the A82 between Crianlarich and Tyndrum and the temporary reinforcement of a bridge at Inverherive. Similar measures may be required as part of the Proposed Development and would be assessed as part of future detailed AIL assessments.

4 AIL Management and Processes

4.1.1 This section of the report sets out the proposed approach for the management of required AILs and the processes to be followed.

AIL Management and Processes

4.1.2 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.

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

4.1.4 Vehicles carrying AILs will route to and from the worksite along the corridors agreed through notice submissions to Police Scotland's Abnormal Loads Unit.

- 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).

4.1.5 The Abnormal Loads Unit will be notified by the haulier of vehicles and load movements that exceed standard dimensions or operating weights. The necessary notices and processes will be observed where a vehicle is carrying an AIL that exceed the size and weight regulations, as contained in the Road Vehicles (Authorisation of Special Types) (General) Order 2003.

4.1.6 Routes for the AIL transport will be assessed, potentially using the ESDAL system, or similar methodology.

4.1.7 Suppliers, operators and their hauliers will work to ensure the necessary notices and submissions are made to Police Scotland's Abnormal Loads Unit, as necessary, to agree the timings and routes for the delivery of the AILs.

4.1.8 The supplier / haulier will inform the Main Works Contractor about the routes they are advised to follow. The Main Works Contractor will work with Argyll and Bute Council and Transport Scotland to agree the access strategy for larger vehicles, including when temporary closures and other road controls will be required.

AIL Driver Briefing and Advice

4.1.9 The following measures will be considered, related to briefing and providing advice to AIL drivers, focused on the safe transport of AILs whilst minimising potential disruptions and impacts on the road network and communities along AIL routes.

4.1.10 All drivers will be provided with route information specific to the material/item they are transporting. The information will include a map of the route to and from the site.

4.1.11 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, the haulier and driver will be advised of the safe locations and timings where police escort and assistance will be met.

4.1.12 Drivers will be provided with emergency contact details to report accidents or route disruption.

4.1.13 The Main Works Contractor will investigate reports of driver's breaching the behaviours and standards set out in their induction and training and review with their associated supplier or haulier. In instances of severe or continued breaches the contractor may remove the driver from the permitted drivers' list

5 Summary and Conclusion

5.1.1 This report has been prepared to provide a preliminary assessment for access corridors for the loads and vehicles that are not covered by the Road Vehicles (Constructions and Use) Regulations 1986 and are as such classified as AILs. This AIL assessment has been prepared based on the emerging details, at the time of writing, in relation to the anticipated AILs required as part of the construction and management of the Proposed Development.

5.1.2 It is expected that all AILs transported to the site and the power station would be routed on the Scottish trunk road network for the majority of their journey. The AILs are expected to be transported from major port locations nearby and from inland locations where parts and equipment are assembled and/or stored. This may include exiting assets and locations under the control of Drax.

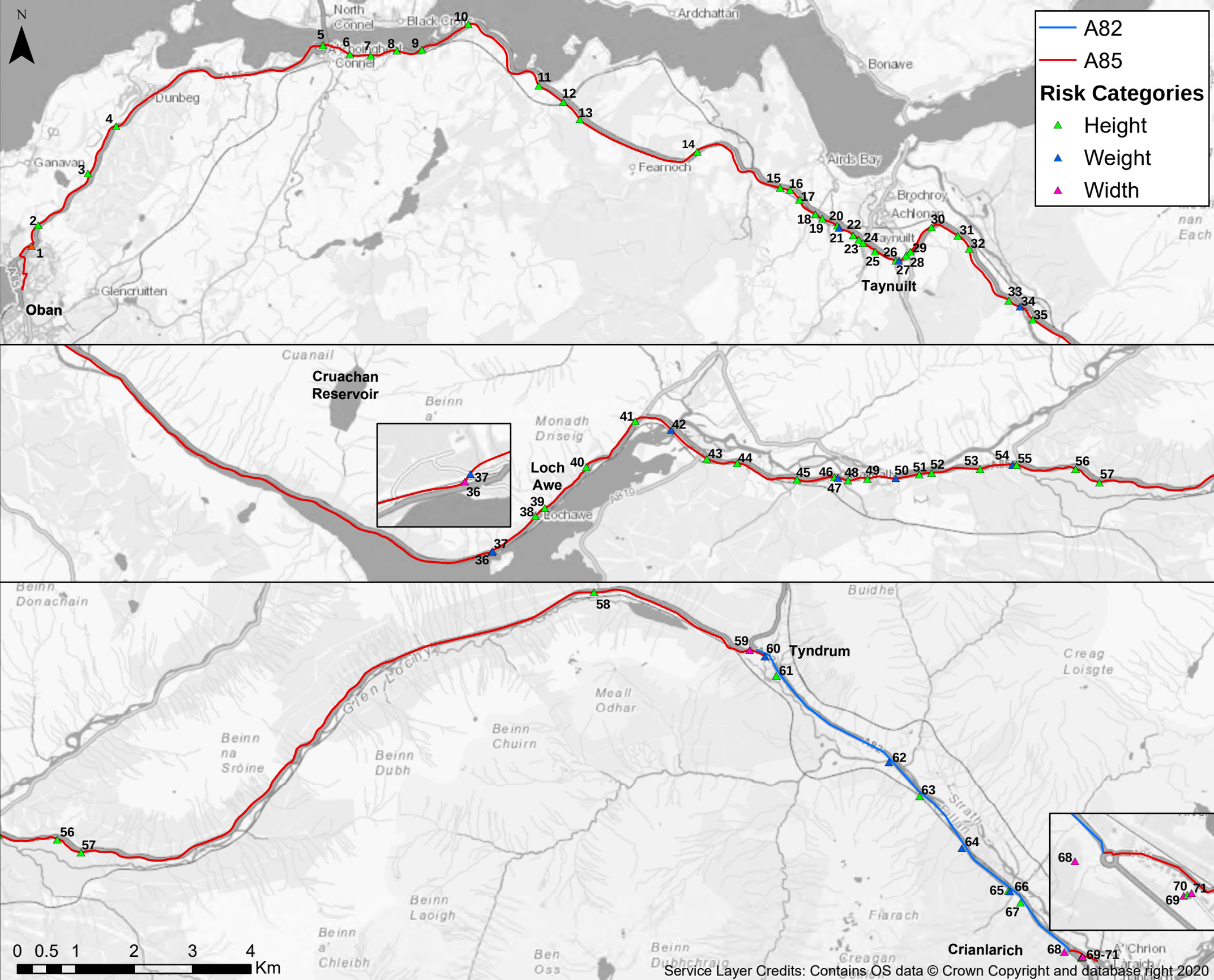
5.1.3 A review of the height, width and weight constraints on the A85 and A82 trunk network between Oban to the west and Crianlarich to the east has been undertaken based on a desktop study. A detailed route assessment would be undertaken at a later stage once the specification/ dimensions of the loads 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.

5.1.4 Swept path analysis has been undertaken at the Cruachan access junction on the A85 and at three other locations on the A85 which were considered to have major width restrictions between Oban and Crianlarich. Based on the swept path analysis, potential issues with manoeuvrability of large AILs on the A85 at the bridge over the railway line at Innis Chonain Island have been noted and would be assessed further as part of future detailed AIL assessments.

5.1.5 AILs would be managed and processes followed to minimise any potential impacts the AILs may cause. This would include:

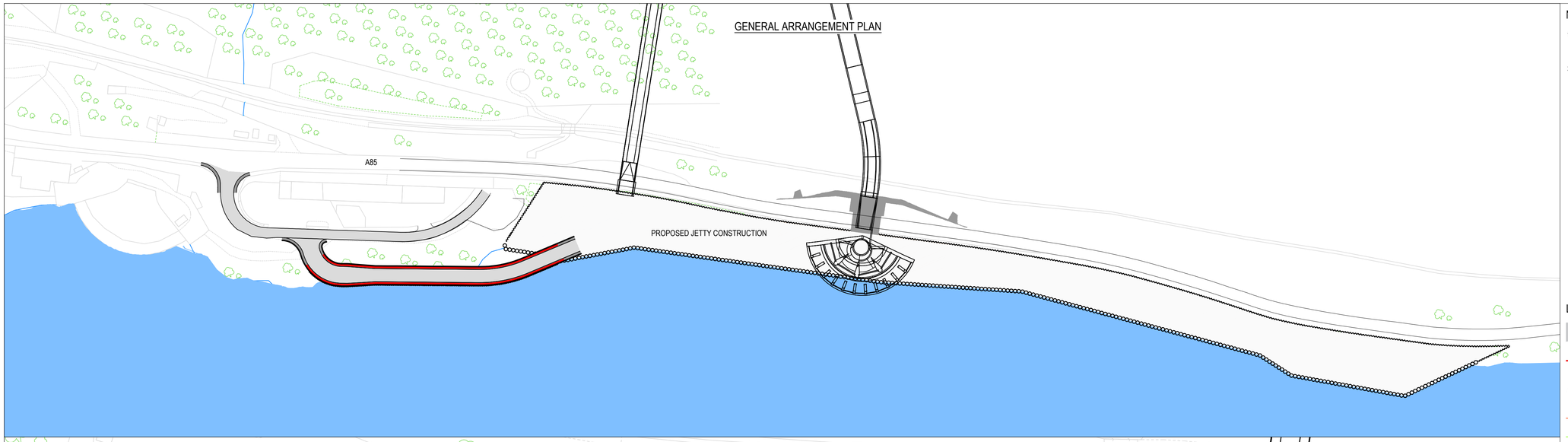
- The necessary notices and processes will be observed where a vehicle is carrying an AIL that exceed the size and weight regulations, as contained in the Road Vehicles (Authorisation of Special Types) (General) Order 2003.
- Where practicable, the Main Works Contractors, their sub-contractors and hauliers will work with the police, Transport Scotland and affected local Highway and Bridge Authorities in the planning and consenting of the movement of AILs.
- AILs may be delivered outside standard working hours, subject to the requirements of the affected highways authorities and Police Scotland.
- Vehicles carrying AILs will only route to and from the worksite along the corridors agreed through notice submissions to Police Scotland's Abnormal Loads Unit.
- Briefing and advice would be provided to AIL drivers focused on the safe transport of AILs whilst minimising potential disruptions and impacts on the road network and communities along AIL routes.

Appendix A AIL Constraints Plan

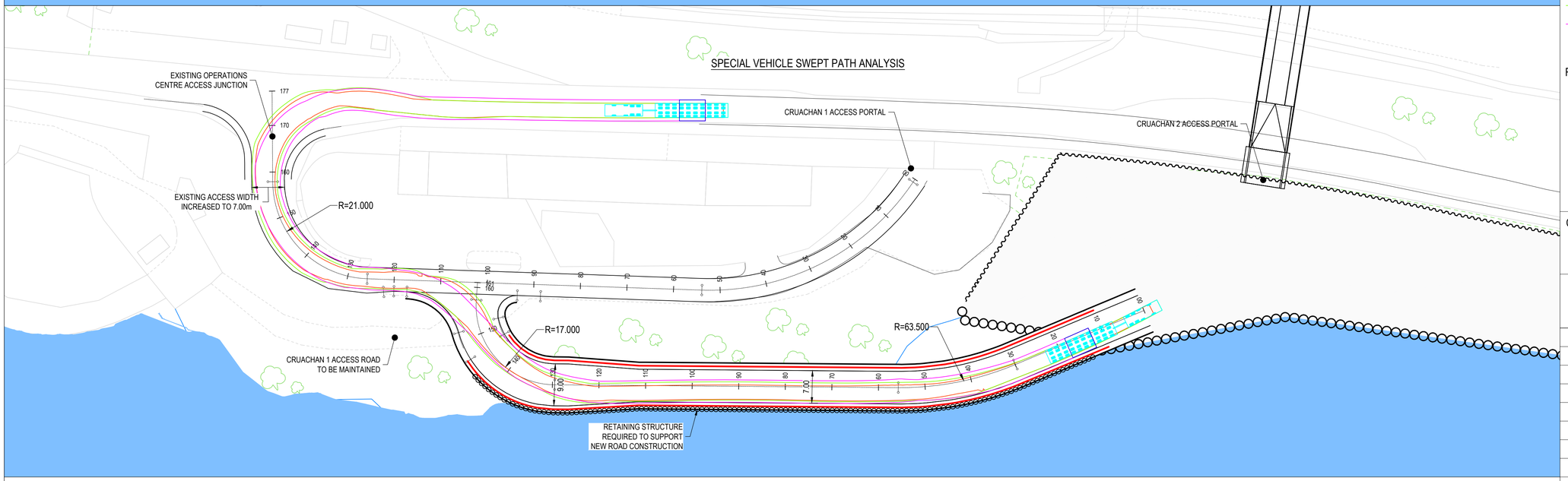

N
A82
A85
Risk Categories
Height
Weight
Width
Oban
Glencruitten
Dunbeg
Ganavan
North Connel
Connel
Black Crag
Ardchattan
Bonawe
Fearnoch
Airds Bay
Brochroy
Achlonan
Taynuilt
Cruachan Reservoir
Cuanail
Beinn a'
Monadh Driseig
Loch Awe
Lochawe
Tyndrum
Beinn Donachain
Beinn na Sròine
Beinn Dubh
Beinn Chuirn
Meall Odhar
Creag Loisgte
Beinn Laoigh
Beinn a' Chleibh
Ben Oss
Beinn Dubhchraig
Creagan
Fiarach
Crianlarich
0 0.5 1 2 3 4 Km
Service Layer Credits: Contains OS data © Crown Copyright and database right 2020

Appendix B Swept Path Analysis

GENERAL ARRANGEMENT PLAN

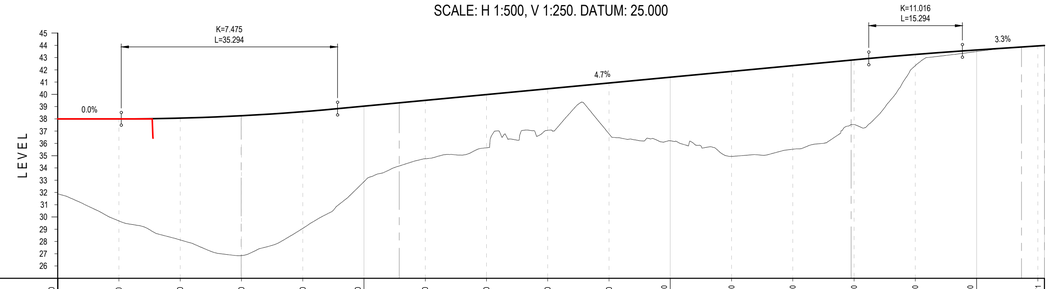


SPECIAL VEHICLE SWEPT PATH ANALYSIS



JETTY RAMP FROM OPERATIONS CENTRE

SCALE: H 1:500, V 1:250. DATUM: 25.000



CHAINAGE	00.000	10.000	20.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	100.000	110.000	120.000	130.000	140.000	150.000	161.071
EXISTING LEVELS	31.874	29.673	28.124	26.849	25.964	25.870	34.747	35.642	37.065	36.782	36.212	34.942	35.523	37.542	42.344	43.491	43.990
PROPOSED LEVELS	38.000	38.000	38.062	38.257	38.587	39.037	39.510	39.982	40.454	40.926	41.398	41.871	42.343	42.815	43.261	43.621	43.990
HORIZONTAL		L =29.963		R: 63.500 L: 25.791			L =73.773							R: 17.000 L: 27.805		L =3.739	
VERTICAL		G=0.0% L=10.381		R =747.482 K =7.475 L =35.294			G=4.7% L=86.715							R =1101.561 K =11.016 L =15.294		G=3.3% L=13.387	

NOTES

1. SWEPT PATHS ARE BASED ON A 160 TONNE SPHERICAL VALVE CARRIED ON A 10 AXLE FLAT TOP TRAILER. ACTUAL SIZE OF WORST-CASE ABNORMAL LOAD AND VEHICLE CONFIGURATION MAY VARY DEPENDING ON THE APPOINTED HAULIER.
2. ALL SWEPT PATHS ARE SUBJECT TO CONFIRMATION THROUGH IN-SITU TEST-RUN. SWEPT PATHS REFLECT MANUAL (REAR AXLE CONTROLLED) STEERING AS REQUIRED. AN EXPERIENCED DRIVER MAY BE ABLE TO IMPROVE THE SWEPT PATH ON-SITE AND REDUCE VEHICLE IMPACT FURTHER. BANKSMAN MARSHALLING IS REQUIRED TO MANAGE AREAS OF POTENTIAL CONFLICT WITH PEDESTRIANS / VEHICLES / OBSTRUCTIONS

LEGEND

- PROPOSED JETTY RAMP
- PROPOSED VEHICLE RESTRAINT BARRIER
- PROPOSED CONTIGUOUS PILE RETAINING WALL
- PATH OF VEHICLE CHASSIS
- PATH OF VEHICLE BODY
- EXTENTS OF VEHICLE LOAD

REFERENCE

CURRENT VERSION INFORMATION

DATE	DRWN	CHKD	REVD	VER	REASON FOR ISSUE
2022.02.24	BR	DMcL	MP	P04	JETTY LEVEL AND RAMP AMENDED
2022.01.31	GD	DMcL	MP	P03	GENERAL ARRANGEMENT PLAN SCALE AMENDED
2021.11.30	GD	DMcL	MP	P02	JETTY LEVEL AND RAMP AMENDED
2021.11.17	GD	DMcL	MP	P01	FIRST ISSUE FOR COMMENT

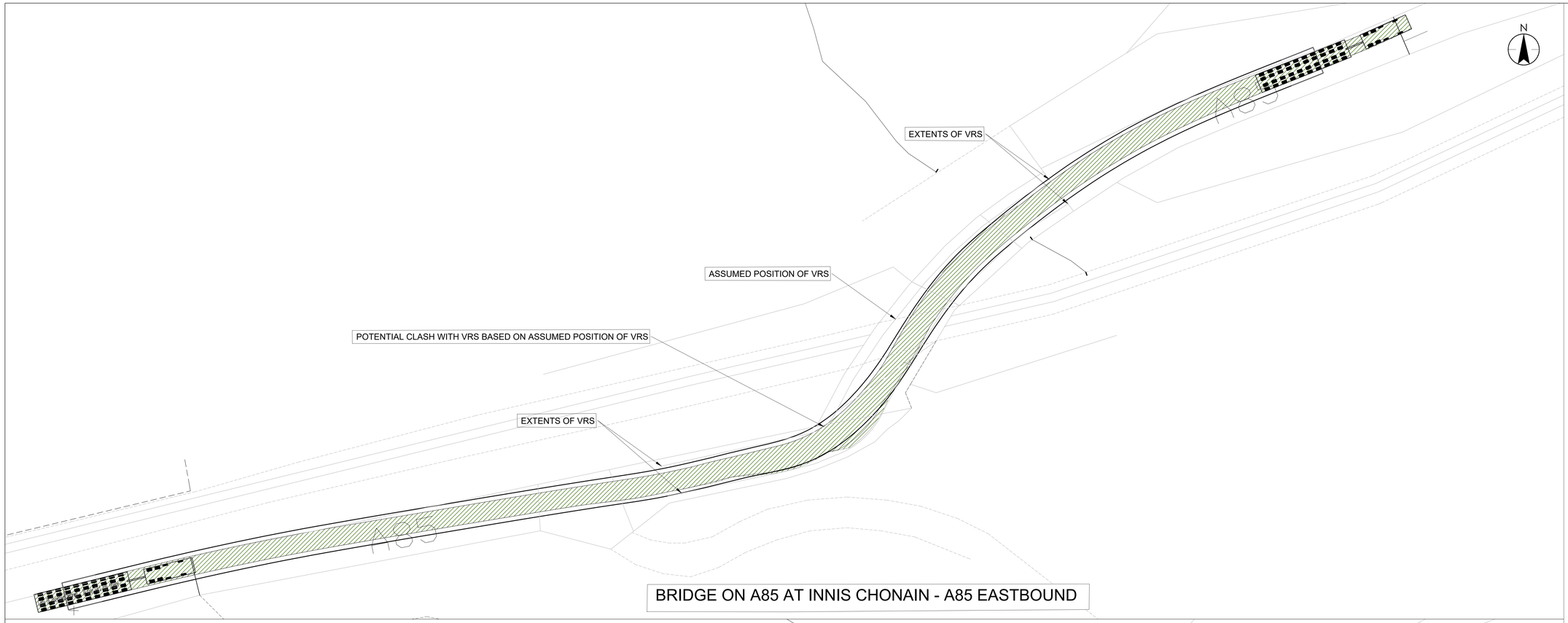
Drax

CRUACHAN 2

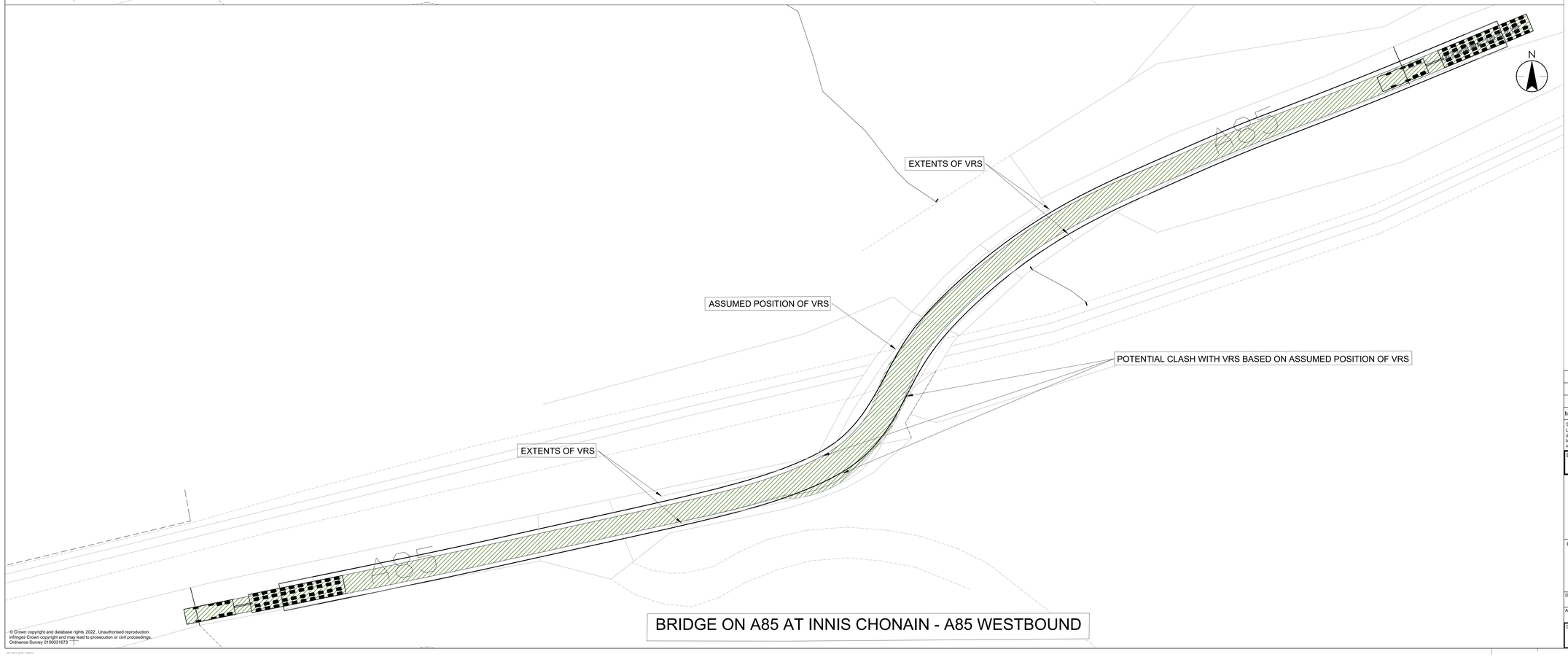
JETTY ACCESS RAMP FROM OPERATIONS CENTRE
PLAN AND PROFILE

Stantec

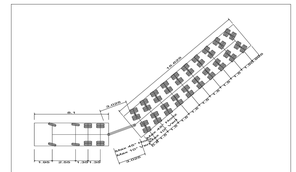
CONTRACT NO.	SCALE	MASTER SIZE
001	1:1250 / 1:500	A1
DRAWING NO.		VERSION
331201086_001_C_0860		P04



BRIDGE ON A85 AT INNIS CHONAIN - A85 EASTBOUND



BRIDGE ON A85 AT INNIS CHONAIN - A85 WESTBOUND



Copy Of Overload Dinorwig - 10 axle flat top trailer

Overall Length	26.420m
Overall Width	3.000m
Overall Body Height	4.020m
Min. Ground Clearance	0.400m
Max Track Width	2.400m
Lock to lock time	6.00s
Wall to Wall Turning Radius	16.808m

Every Effort Has Been Made To Ensure The Accuracy Of This Information
Please Check Data From Your Own Sources

NOTES:

1. DRAWING IS BASED ON OS MAPPING
2. CARRIAGEWAY WIDTH OVER THE BRIDGE ASSUMED TO BE 5M
3. TRACKING SPEED MEASURED AT 10MPH

Mark	Revision	Date	Drawn	Chkd	Appd

SCALING NOTE: Do not scale this drawing - any errors or omissions shall be reported to Stantec without delay.
UTILITIES NOTE: The position of any existing public or private sewers, utility services, plant or apparatus shown on this drawing is believed to be correct, but no warranty to this is expressed or implied. Other such plant or apparatus may also be present but not shown. The Contractor is therefore advised to undertake their own investigation where the presence of any existing sewers, services, plant or apparatus may affect their operations.

Drawing Issue Status

FOR INFORMATION

CRUACHAN EXPANSION PROJECT SWEPT PATH ANALYSIS FOR ABNORMAL INDIVISIBLE LOADS SHEET 1 OF 5

Client

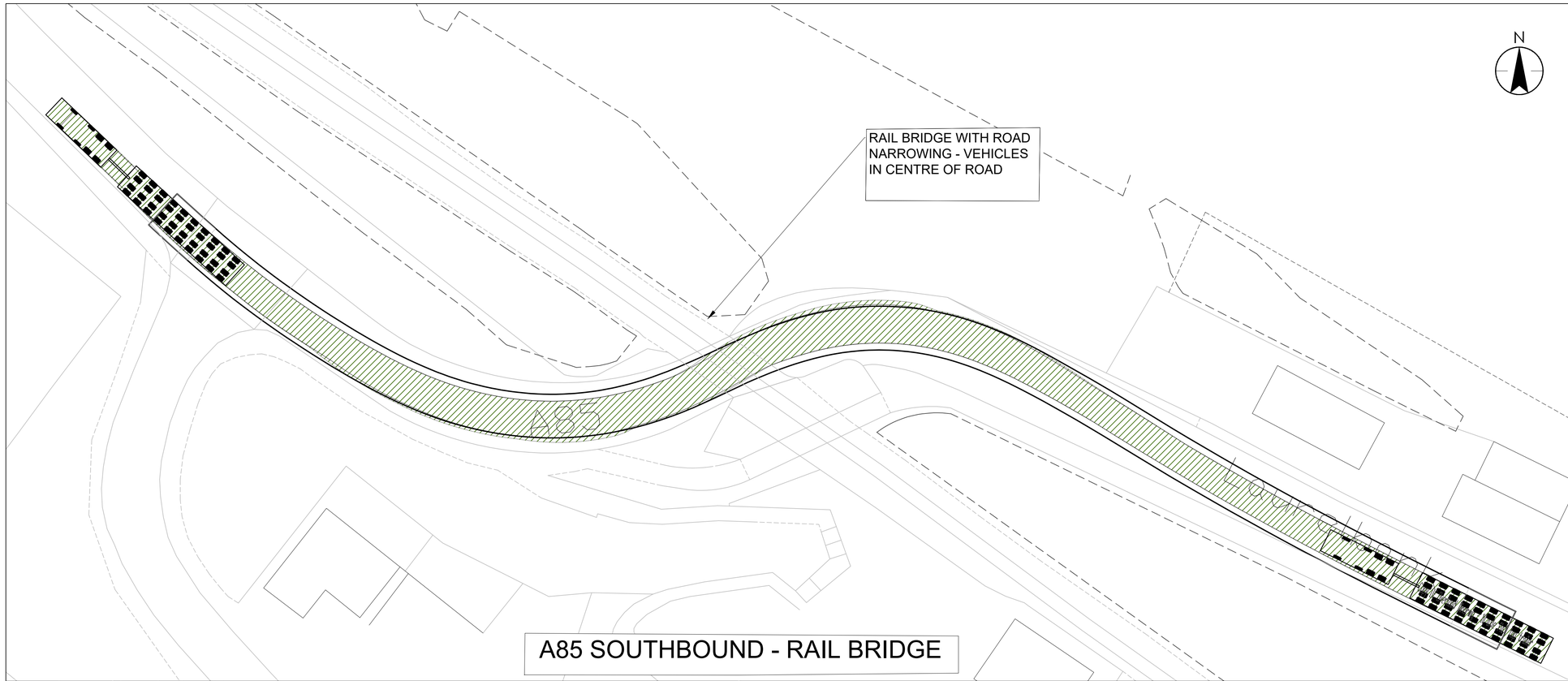
drax

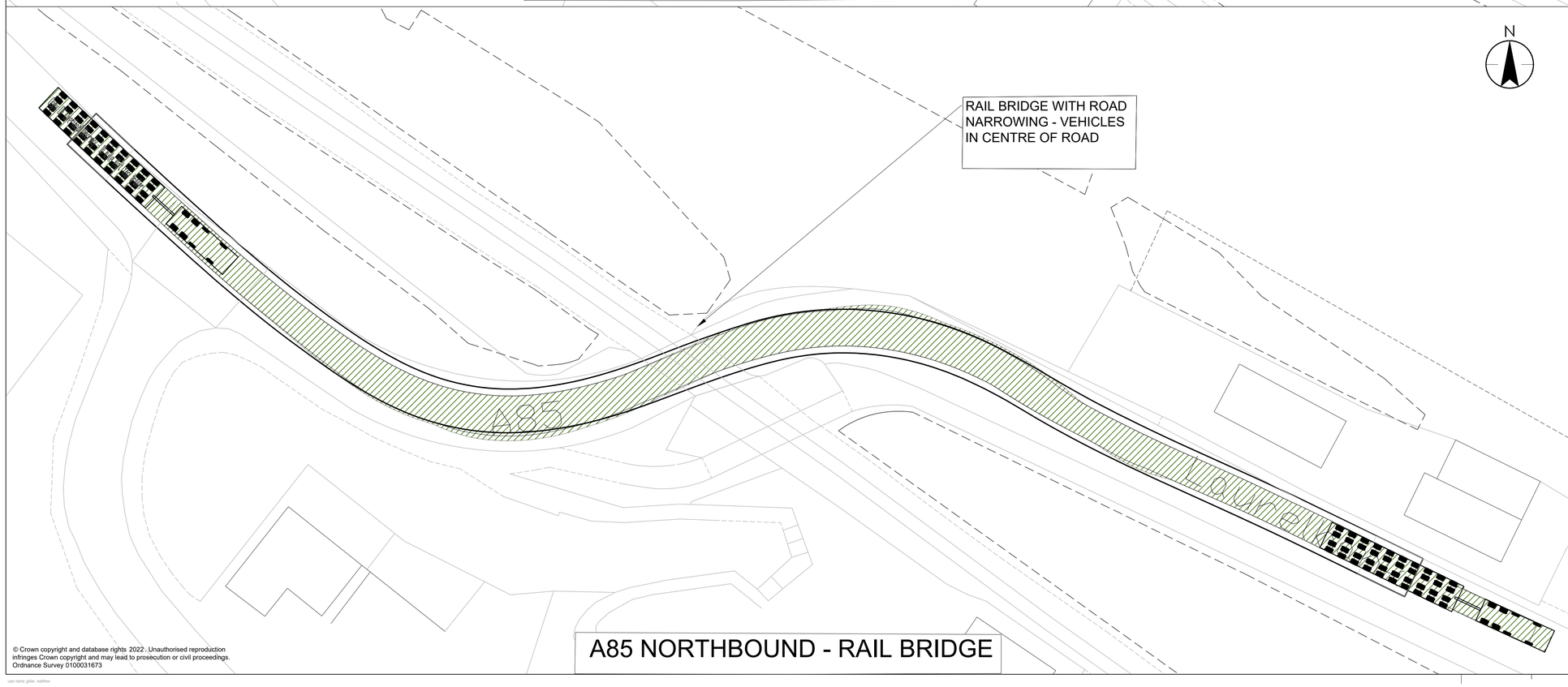
Date of 1st Issue	Designed	Drawn
29.03.2022	MG	MG
AO Scale	Checked	Approved
1:250	MMN	-

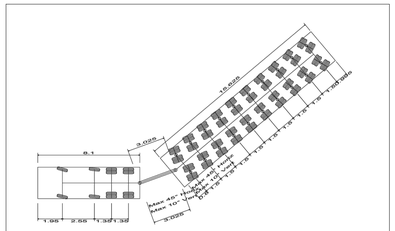
Drawing Number: 331201086-SPA-000001

Revision: -

Stantec







Copy Of Overload Dinorwig - 10 axle flat top trailer

Overall Length	26.420m
Overall Width	3.000m
Overall Body Height	3.620m
Min Body Ground Clearance	0.400m
Max Track Width	2.400m
Lock to lock time	6.00s
Wall to Wall Turning Radius	16.808m

NOTES:

1. DRAWING IS BASED ON OS MAPPING
2. TRACKING SPEED MEASURED AT 10MPH

Mark	Revision	Date	Drawn	Chkd	Appd

SCALING NOTE: Do not scale this drawing - any errors or omissions shall be reported to Stantec without delay.
UTILITIES NOTE: The position of any existing public or private sewers, utility services, plant or apparatus shown on this drawing is believed to be correct, but no warranty to this is expressed or implied. Other such plant or apparatus may also be present but not shown. The Contractor is therefore advised to undertake their own investigation where the presence of any existing sewers, services, plant or apparatus may affect their operations.

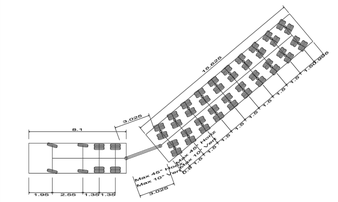
Drawing Issue Status
FOR INFORMATION

CRUACHAN EXPANSION PROJECT
SWEPT PATH ANALYSIS FOR ABNORMAL INDIVISIBLE LOADS
SHEET 2 OF 5

Client: drax

Date of 1st Issue: 29.03.2022	Designed: MG	Drawn: MG
A1 Scale: 1:250	Checked: MMN	Approved: -
Drawing Number: 331201086-SPA-000002		Revision: -

Stantec



Copy Of Overload Dinorwig - 10 axle flat top trailer

Overall Length	26.420m
Overall Width	3.000m
Overall Body Height	3.620m
Min Body Ground Clearance	0.400m
Max Track Width	2.400m
Lock to lock time	6.00s
Wall to Wall Turning Radius	16.808m

Every Effort Has Been Made To Ensure The Accuracy Of This Information
Please Check Data From Your Own Sources

NOTES:

1. DRAWING IS BASED ON OS MAPPING
2. TRACKING SPEED MEASURED AT 10MPH

Mark	Revision	Date	Drawn	Chkd	Appd

SCALING NOTE: Do not scale this drawing - any errors or omissions shall be reported to Stantec without delay.
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Drawing Issue Status

FOR INFORMATION

CRUACHAN EXPANSION PROJECT
SWEPT PATH ANALYSIS FOR ABNORMAL INDIVISIBLE LOADS
SHEET 3 OF 5

Client

drax

Stantec

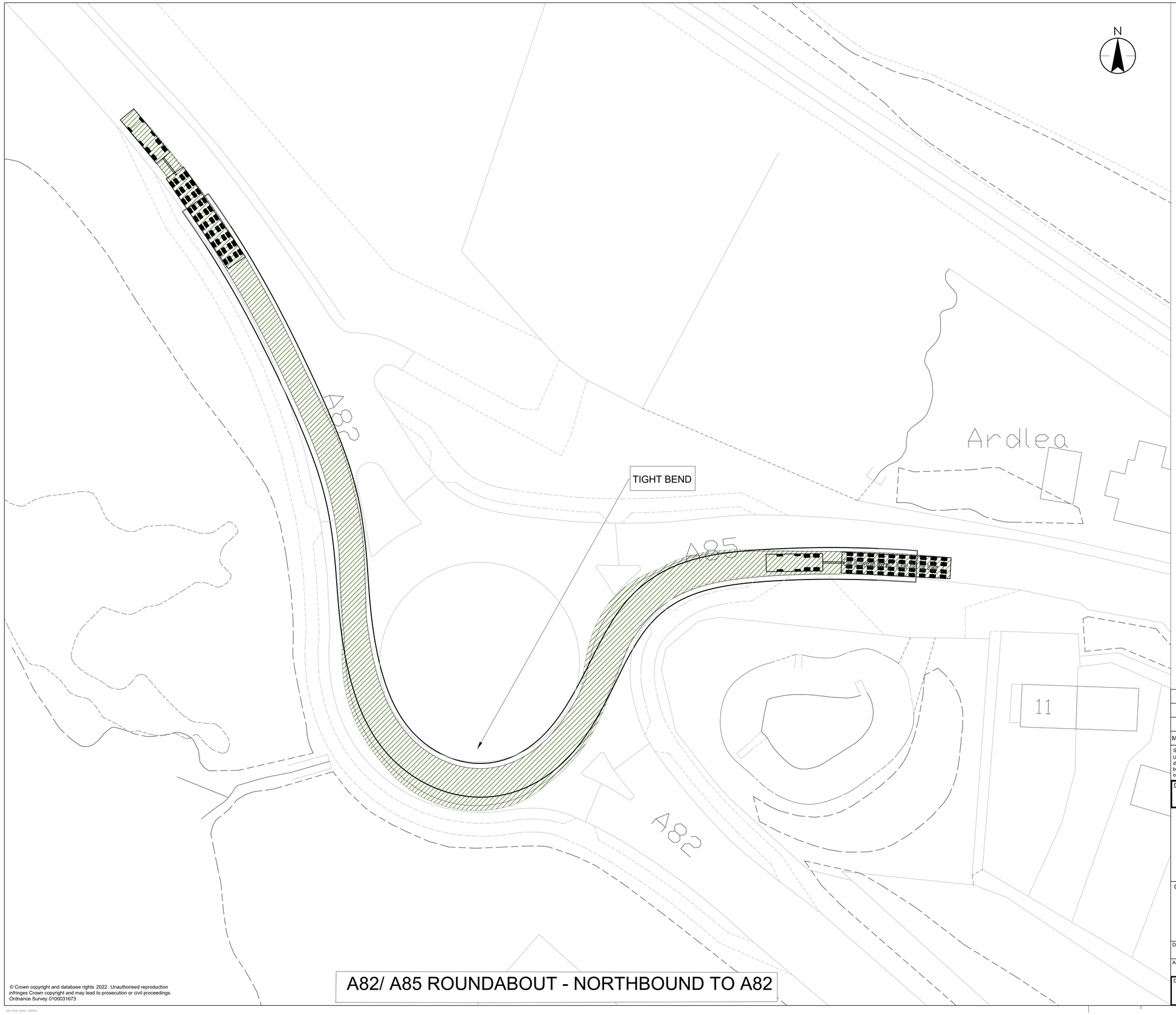
Date of 1st Issue	Designed	Drawn
29.03.2022	MG	MG
A1 Scale	Checked	Approved
1:250	MMN	-

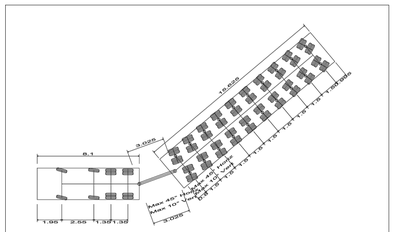
Drawing Number	Revision
331201086-SPA-000003	-

A82/ A85 ROUNDABOUT - NORTHBOUND AND SOUTHBOUND ON A82

user name: gibbr, matthew

File Location: \\gla-ifps-007\projects$\00355 - cruachan 2, drax\working\transport\all\swept path analysis\cranlarich-a85-spa.dwg





Every Effort Has Been Made To Ensure The Accuracy Of This Information
Please Check Data From Your Own Sources

NOTES:

1. DRAWING IS BASED ON OS MAPPING
2. TRACKING SPEED MEASURED AT 10MPH

Mark	Revision	Date	Drawn	Chkd	Appd

SCALING NOTE: Do not scale this drawing - any errors or omissions shall be reported to Stantec without delay.
UTILITIES NOTE: The position of any existing public or private sewers, utility services, plant or apparatus shown on this drawing is believed to be correct, but no warranty to this is expressed or implied. Other such plant or apparatus may also be present but not shown. The Contractor is therefore advised to undertake their own investigation where the presence of any existing sewers, services, plant or apparatus may affect their operations.

Drawing Issue Status
FOR INFORMATION

CRUACHAN EXPANSION PROJECT
SWEPT PATH ANALYSIS FOR ABNORMAL INDIVISIBLE LOADS
SHEET 4 OF 5

Client

Date of 1st Issue	Designed	Drawn
29.03.2022	MG	MG
A1 Scale	Checked	Approved
1:250	MMN	-

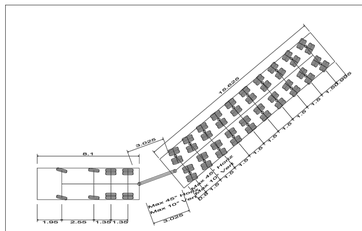
Drawing Number: 331201086-SPA-000004
Revision: -

Stantec

A82/ A85 ROUNDABOUT - NORTHBOUND TO A82

user name: gilder, matthew

File Location: \\gla-vfps-001\projects$\00355 - cruachan 2, drax\working\transport\all\swept path analysis\crainlarich-a85-spa.dwg



Copy Of Overload Dinorwig - 10 axle flat top trailer

Overall Length	26.420m
Overall Width	3.000m
Overall Body Height	3.620m
Min Body Ground Clearance	0.400m
Max Track Width	2.400m
Lock to lock time	6.00s
Wall to Wall Turning Radius	16.808m

Every Effort Has Been Made To Ensure The Accuracy Of This Information
Please Check Data From Your Own Sources

NOTES:

1. DRAWING IS BASED ON OS MAPPING
2. TRACKING SPEED MEASURED AT 10MPH

Mark	Revision	Date	Drawn	Chkd	Appd

SCALING NOTE: Do not scale this drawing - any errors or omissions shall be reported to Stantec without delay.
UTILITIES NOTE: The position of any existing public or private sewers, utility services, plant or apparatus shown on this drawing is believed to be correct, but no warranty to this is expressed or implied. Other such plant or apparatus may also be present but not shown. The Contractor is therefore advised to undertake their own investigation where the presence of any existing sewers, services, plant or apparatus may affect their operations.

Drawing Issue Status
FOR INFORMATION

CRUACHAN EXPANSION PROJECT
SWEPT PATH ANALYSIS FOR ABNORMAL INDIVISIBLE LOADS
SHEET 5 OF 5

Client

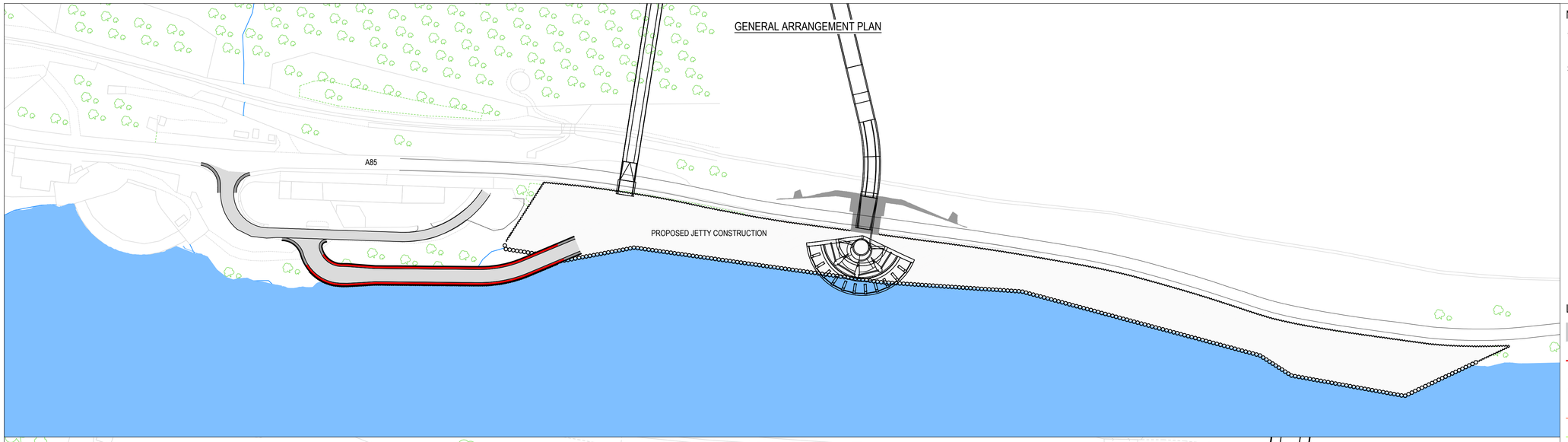
Date of 1st Issue	Designed	Drawn
29.03.2022	MG	MG
A1 Scale	Checked	Approved
1:250	MMN	-
Drawing Number		Revision
331201086-SPA-000005		-

A82/ A85 ROUNDABOUT - SOUTHBOUND TO A85

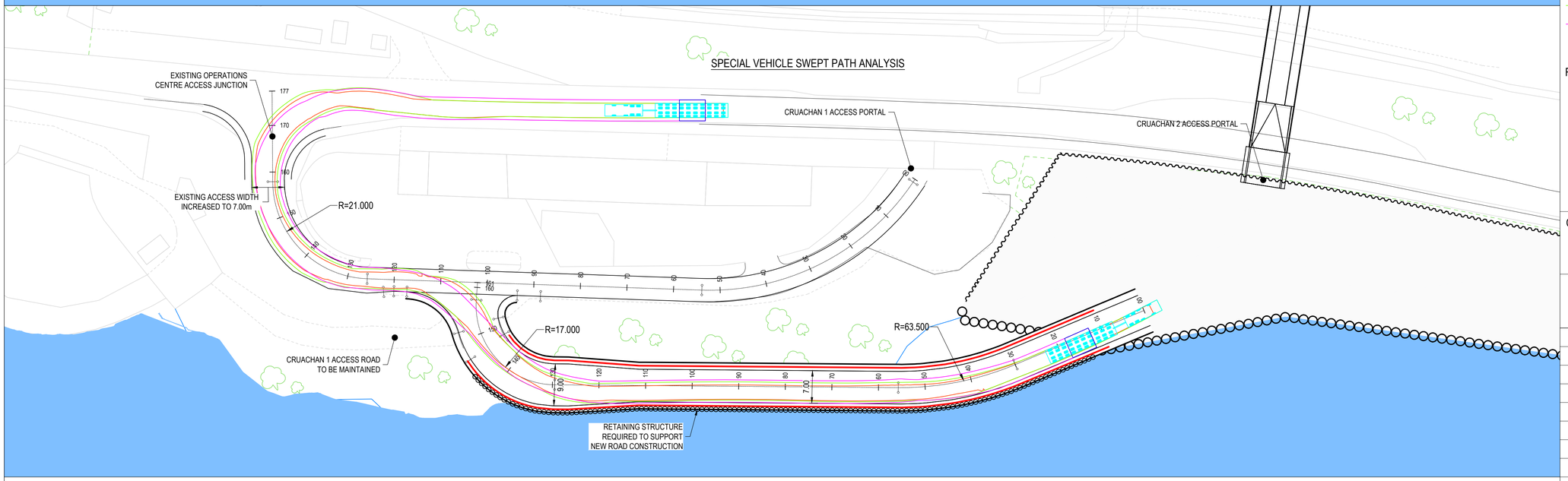
File Location: \\gla-ifps-001\projects$\60355 - cruachan 2, dras\working\transport\all\swept path analysis\cranlarich-a85-spa.dwg

Appendix E Technical Drawings

GENERAL ARRANGEMENT PLAN

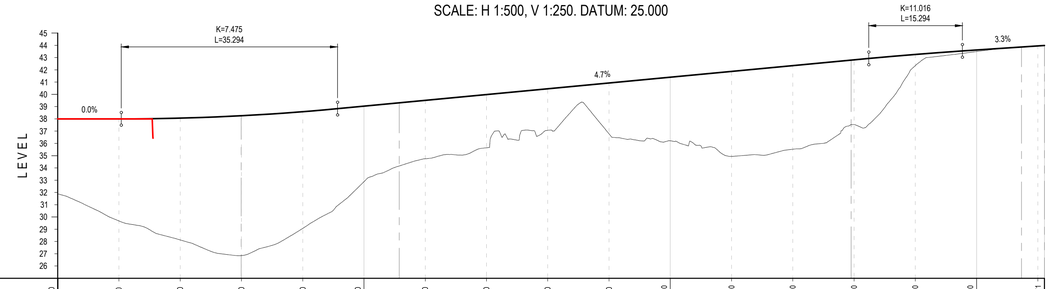


SPECIAL VEHICLE SWEPT PATH ANALYSIS



JETTY RAMP FROM OPERATIONS CENTRE

SCALE: H 1:500, V 1:250. DATUM: 25.000



CHAINAGE	00.000	10.000	20.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	100.000	110.000	120.000	130.000	140.000	150.000	161.071
EXISTING LEVELS	31.874	29.673	28.124	26.849	25.964	25.870	34.747	35.642	37.065	36.782	36.212	34.942	35.523	37.542	42.344	43.491	43.990
PROPOSED LEVELS	38.000	38.000	38.062	38.257	38.587	39.037	39.510	39.982	40.454	40.926	41.398	41.871	42.343	42.815	43.261	43.621	43.990
HORIZONTAL		L =29.963		R: 63.500 L: 25.791			L =73.773							R: 17.000 L: 27.805		L =3.739	
VERTICAL		G=0.0% L=10.381		R =747.482 K =7.475 L =35.294			G=4.7% L=86.715							R =1101.561 K =11.016 L =15.294		G=3.3% L=13.387	

NOTES

1. SWEPT PATHS ARE BASED ON A 160 TONNE SPHERICAL VALVE CARRIED ON A 10 AXLE FLAT TOP TRAILER. ACTUAL SIZE OF WORST-CASE ABNORMAL LOAD AND VEHICLE CONFIGURATION MAY VARY DEPENDING ON THE APPOINTED HAULIER.
2. ALL SWEPT PATHS ARE SUBJECT TO CONFIRMATION THROUGH IN-SITU TEST-RUN. SWEPT PATHS REFLECT MANUAL (REAR AXLE CONTROLLED) STEERING AS REQUIRED. AN EXPERIENCED DRIVER MAY BE ABLE TO IMPROVE THE SWEPT PATH ON-SITE AND REDUCE VEHICLE IMPACT FURTHER. BANKSMAN MARSHALLING IS REQUIRED TO MANAGE AREAS OF POTENTIAL CONFLICT WITH PEDESTRIANS / VEHICLES / OBSTRUCTIONS

LEGEND

- PROPOSED JETTY RAMP
- PROPOSED VEHICLE RESTRAINT BARRIER
- PROPOSED CONTIGUOUS PILE RETAINING WALL
- PATH OF VEHICLE CHASSIS
- PATH OF VEHICLE BODY
- EXTENTS OF VEHICLE LOAD

REFERENCE

CURRENT VERSION INFORMATION

DATE	DRWN	CHKD	REVD	VER	REASON FOR ISSUE
2022.02.24	BR	DMcL	MP	P04	JETTY LEVEL AND RAMP AMENDED
2022.01.31	GD	DMcL	MP	P03	GENERAL ARRANGEMENT PLAN SCALE AMENDED
2021.11.30	GD	DMcL	MP	P02	JETTY LEVEL AND RAMP AMENDED
2021.11.17	GD	DMcL	MP	P01	FIRST ISSUE FOR COMMENT

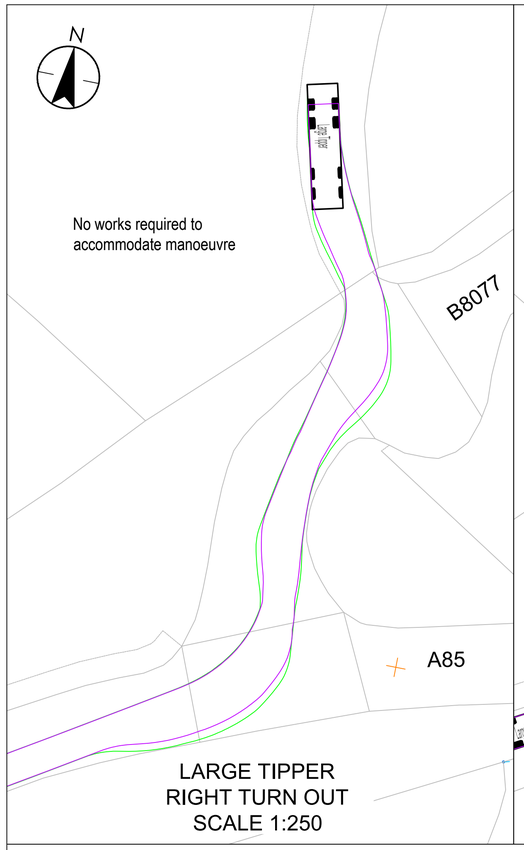
Drax

CRUACHAN 2

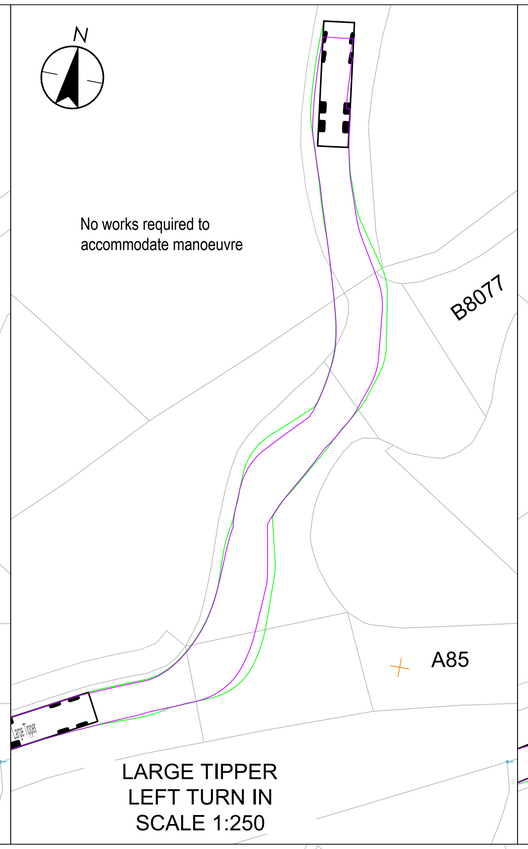
JETTY ACCESS RAMP FROM OPERATIONS CENTRE
PLAN AND PROFILE

Stantec

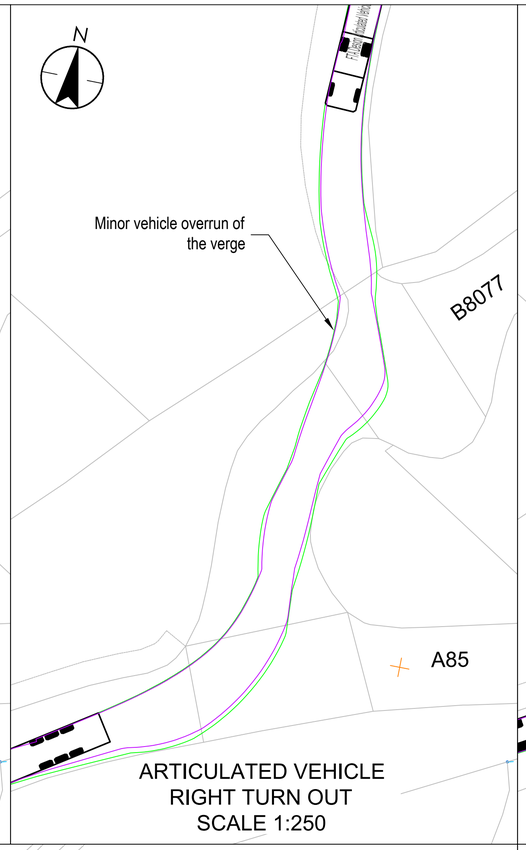
CONTRACT NO.	SCALE	MASTER SIZE
001	1:1250 / 1:500	A1
DRAWING NO.		VERSION
331201086_001_C_0860		P04



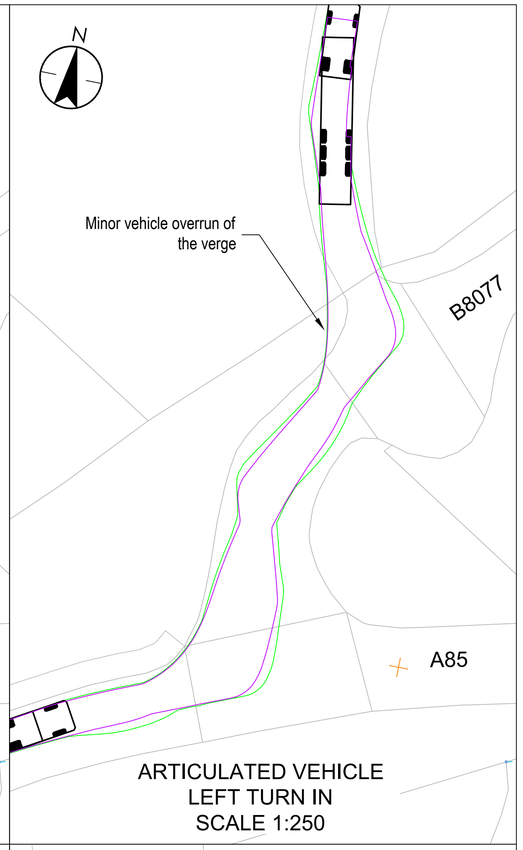
LARGE TIPPER
RIGHT TURN OUT
SCALE 1:250



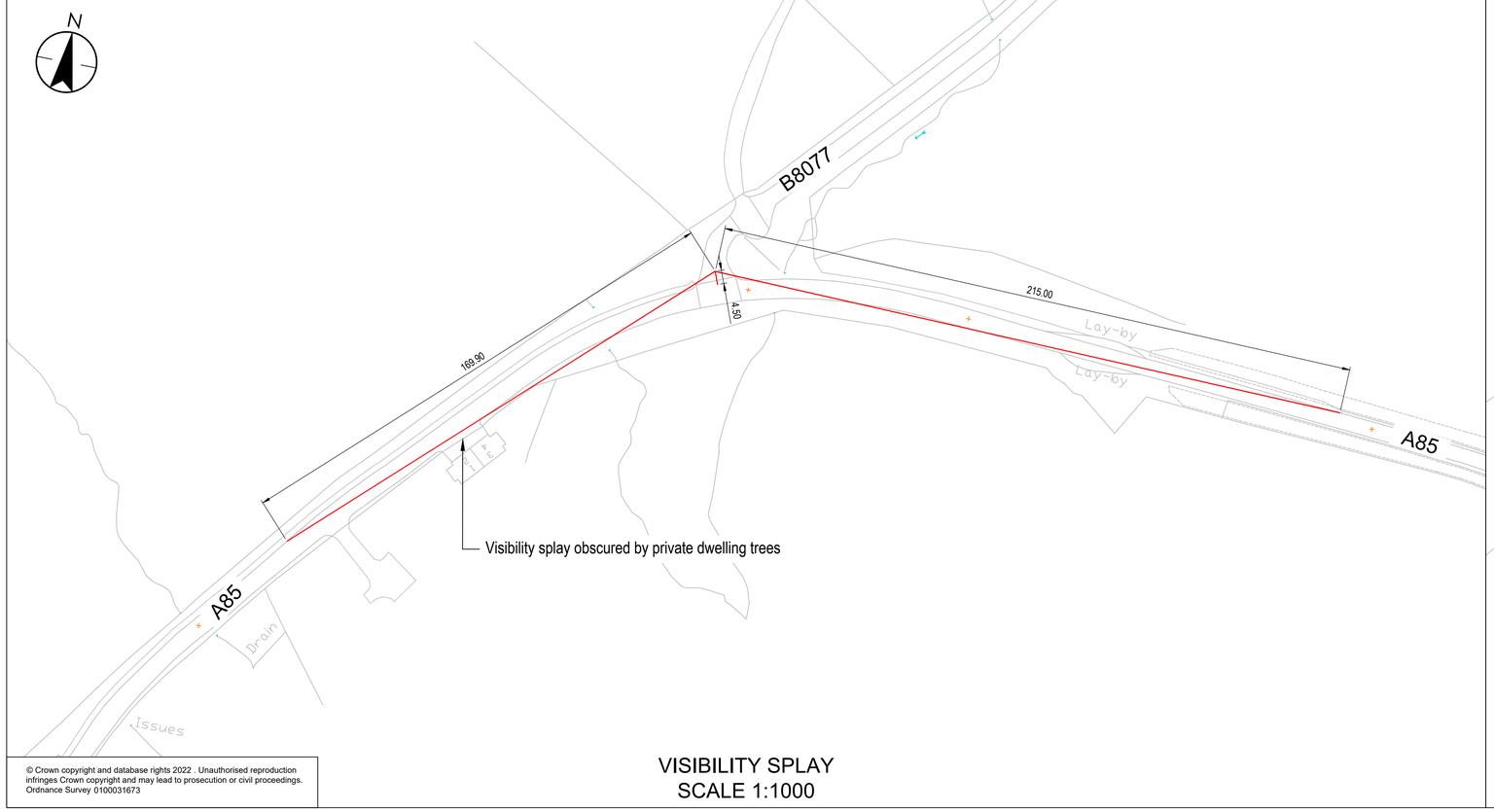
LARGE TIPPER
LEFT TURN IN
SCALE 1:250



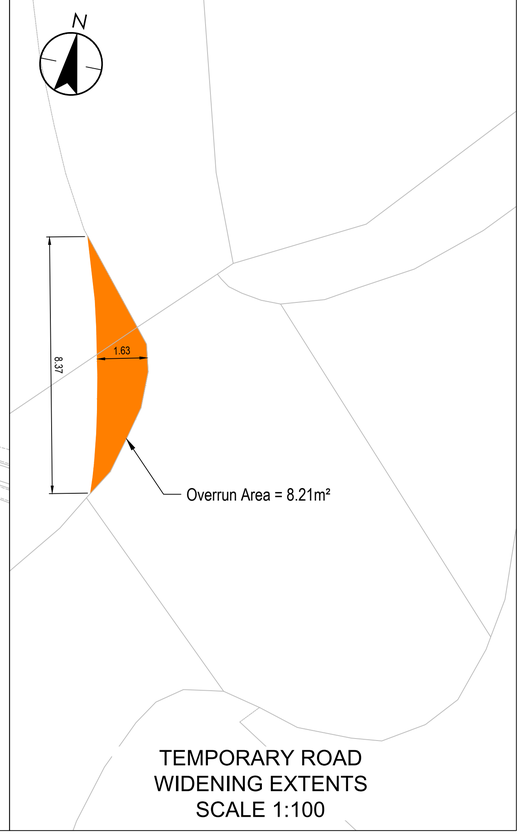
ARTICULATED VEHICLE
RIGHT TURN OUT
SCALE 1:250



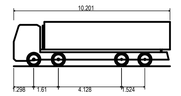
ARTICULATED VEHICLE
LEFT TURN IN
SCALE 1:250



VISIBILITY SPLAY
SCALE 1:1000



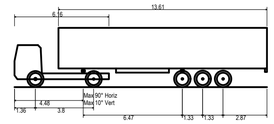
TEMPORARY ROAD
WIDENING EXTENTS
SCALE 1:100



Large Tipper

Overall Length	10.201m
Overall Width	2.495m
Overall Body Height	2.890m
Min Body Ground Clearance	0.341m
Track Width	2.471m
Lock to lock time	6.00s
Kerb to Kerb Turning Radius	11.550m

VEHICLE PROFILE



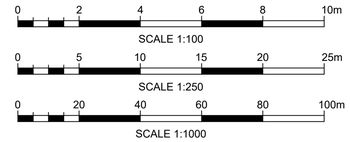
FTA Design Articulated Vehicle (2016)

Overall Length	16.480m
Overall Width	2.550m
Overall Body Height	3.870m
Min Body Ground Clearance	0.515m
Max Track Width	2.470m
Lock to lock time	3.00s
Kerb to Kerb Turning Radius	6.600m

VEHICLE PROFILE

LEGEND

- VEHICLE WHEEL OUTLINE
- VEHICLE BODY OUTLINE
- VISIBILITY SPLAY
- VEHICLE OVERRUN AREA



CURRENT VERSION INFORMATION

B. LIST OF CURRENT VERSION

DATE	DRWN	CHKD	REVD	VER	REASON FOR ISSUE
31.03.22	CS	BR	DMcL	P01	FOR INFORMATION

DRAX CRUACHAN EXPANSION LTD.
CRUACHAN 2

A85 DIVERSIONARY CONCEPT SKETCHES
SWEPT PATH ANALYSIS & VISIBILITY SPLAY

CONTRACT NO.	SCALE	MASTER SIZE
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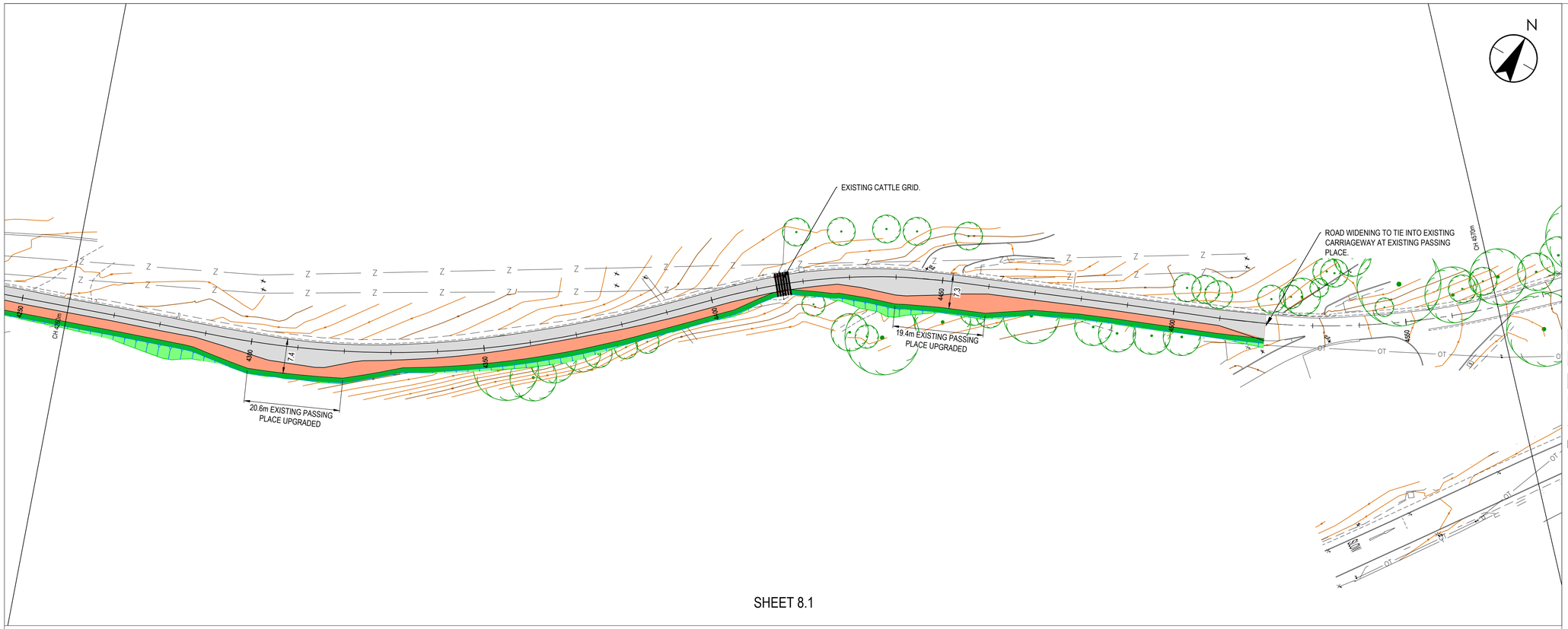
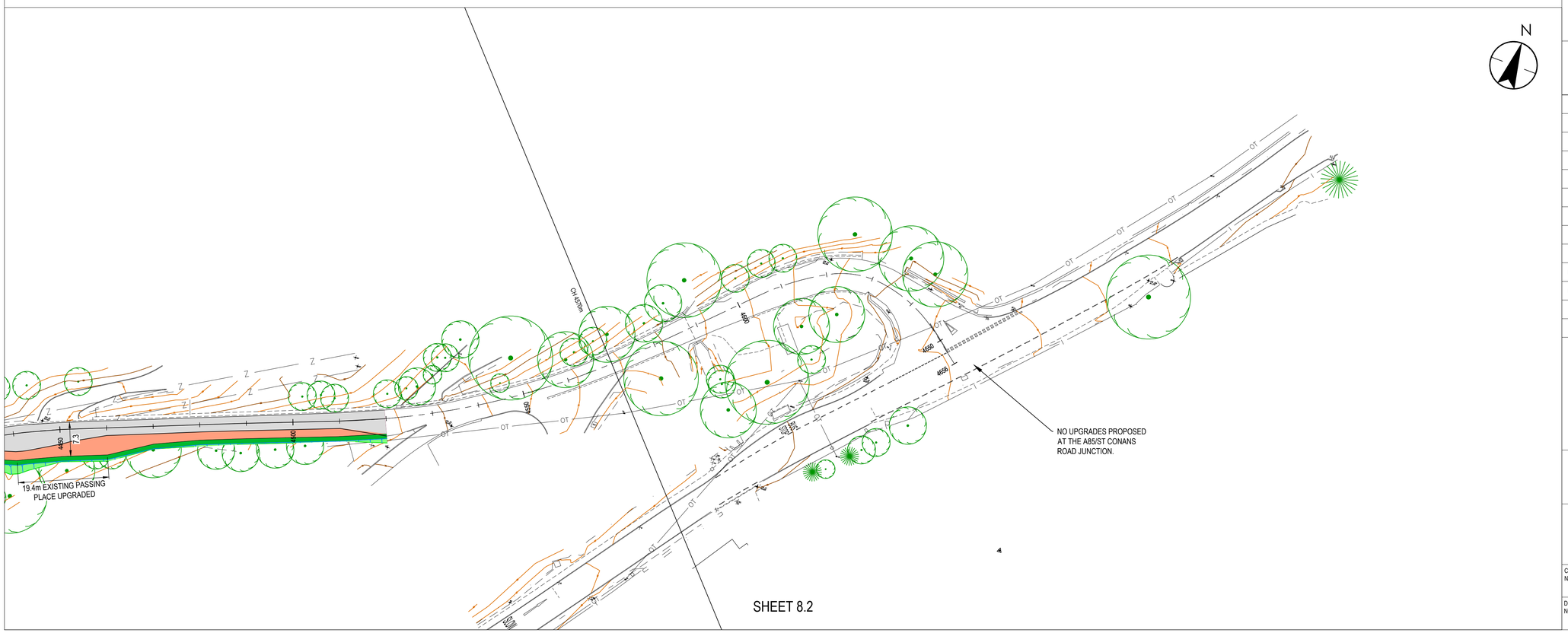
DRAWING NO. 331201086/001/C/0868		VERSION P01



SHEET 8.1



SHEET 8.2

NOTES

1. ALL DIMENSIONS IN METERS AND ALL LEVELS IN METERS UNLESS SHOWN OTHERWISE.
2. EARTHWORK SLOPES ASSUMED TO BE 1:2. SLOPE STABILITY ANALYSIS TO BE CARRIED OUT TO CONFIRM
3. ROAD SIGNAGE REQUIREMENTS TO BE CONFIRMED
4. ROAD DRAINAGE REQUIREMENTS TO BE CONFIRMED

LEGEND

- EXISTING ROAD SURFACE TO BE SCARIFIED AND RESURFACED
- NEW HAUL ROAD CONSTRUCTION
- NEW VERGE
- NEW EARTHWORKS
- NEW VEHICLE RESTRAINT BARRIER

REFERENCE

CURRENT VERSION INFORMATION

DATE	DRWN	CHKD	REVD	VER	REASON FOR ISSUE
08.03.22	BR	DMcL	MP	P03	EXISTING CATTLE GRID HIGHLIGHTED
09.12.21	BR	DMcL	MP	P02	FOR INFORMATION
15.09.21	BR	DMcL	MP	P01	DRAFT

DRAX CRUACHAN EXPANSION LTD

CRUACHAN 2

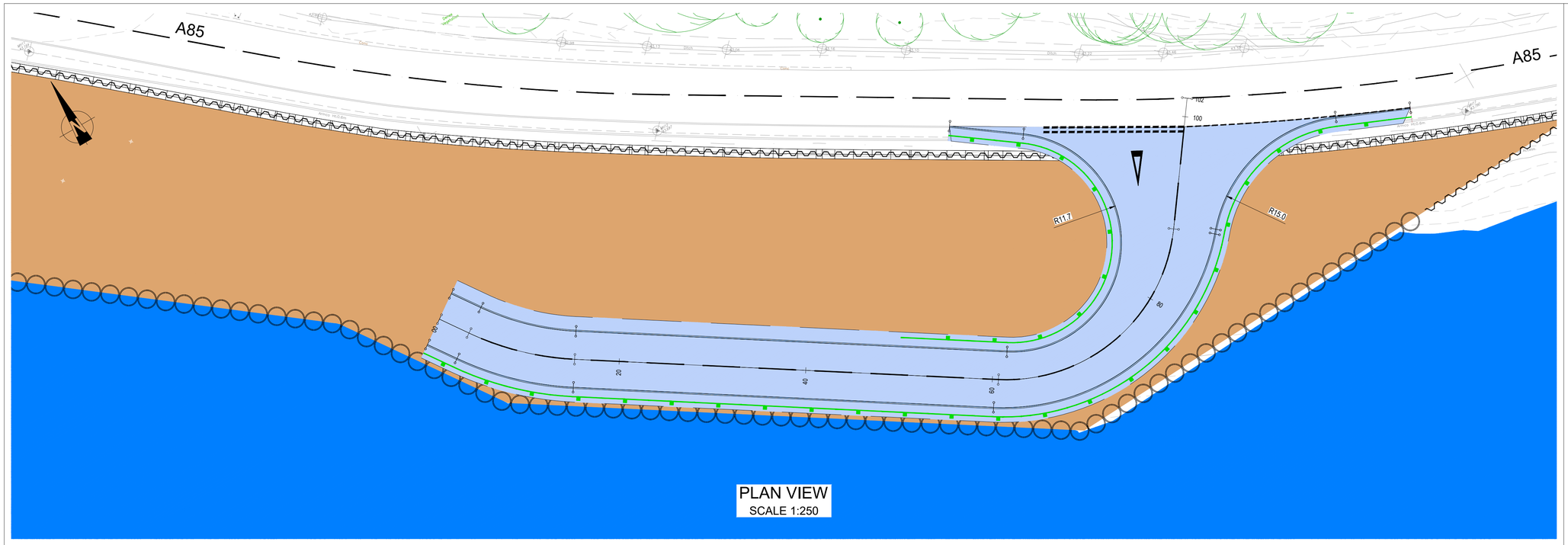
HAUL ROAD

PLAN LAYOUT SHEET 8 OF 8

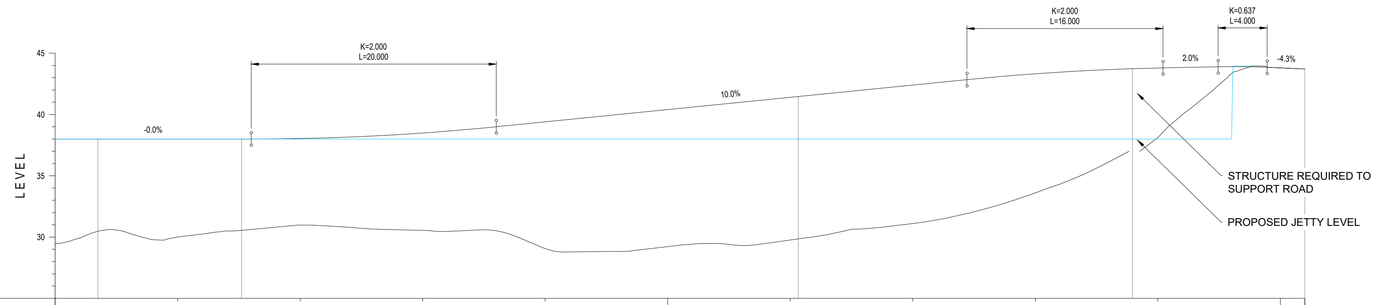
drax

Stantec

CONTRACT NO.	SCALE	MASTER SIZE
001	1:500	
DRAWING NO.		VERSION
331201086-001-C-0809		P03

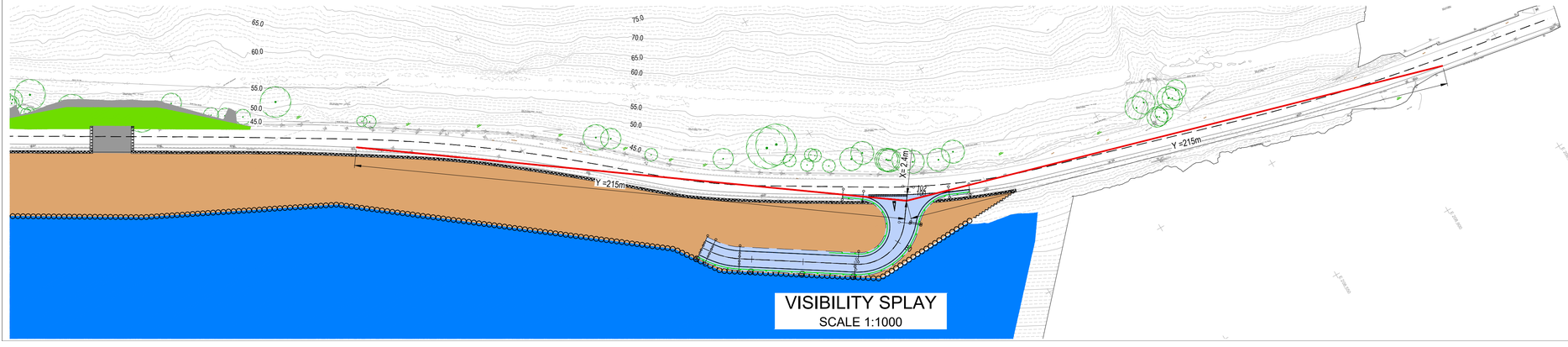


PLAN VIEW
SCALE 1:250



CHAINAGE	00.000	10.000	20.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	100.000	101.997
EXISTING LEVELS	29.454	30.005	30.382	30.549	29.982	29.219	29.757	31.104	33.607	38.129	43.804	43.716
PROPOSED LEVELS	38.000	38.000	38.040	38.490	39.400	40.400	41.400	42.400	43.322	43.793	43.801	43.716
HORIZONTAL	L =3.491	R: 30.000 L: 11.732	L =45.427				R: 18.000 L: 27.280			L =14.066		
VERTICAL	G=-Horizontal L=16.002	R =200.000 K =2.000 L =20.000	G=1:10.0 L=38.423				R =200.000 K =2.000 L =16.000	G=1:50.0 L=4.500	R =63.742 K =0.637 L =4.000	G=-1:23.4 L=3.071		

PROFILE VIEW
SCALE 1:250



VISIBILITY SPLAY
SCALE 1:1000

NOTES

1. ALL DIMENSIONS IN MILLIMETRES AND ALL LEVELS IN METRES UNLESS SHOWN OTHERWISE.

LEGEND

PROPOSED ROAD ACCESS TO JETTY

PROPOSED PARAPET

REFERENCE

SCALE 1 : 250
m 0 5 25m

SCALE 1 : 1000
m 0 20 100m

CURRENT VERSION INFORMATION

B. LIST OF CURRENT VERSION

DATE	DRWN	CHKD	REVD	VER	REASON FOR ISSUE
08.03.22	BR	DMcL	MP	P02	VISIBILITY SPLAY ADDED
15.09.21	BR	DMcL	MP	P01	DRAFT

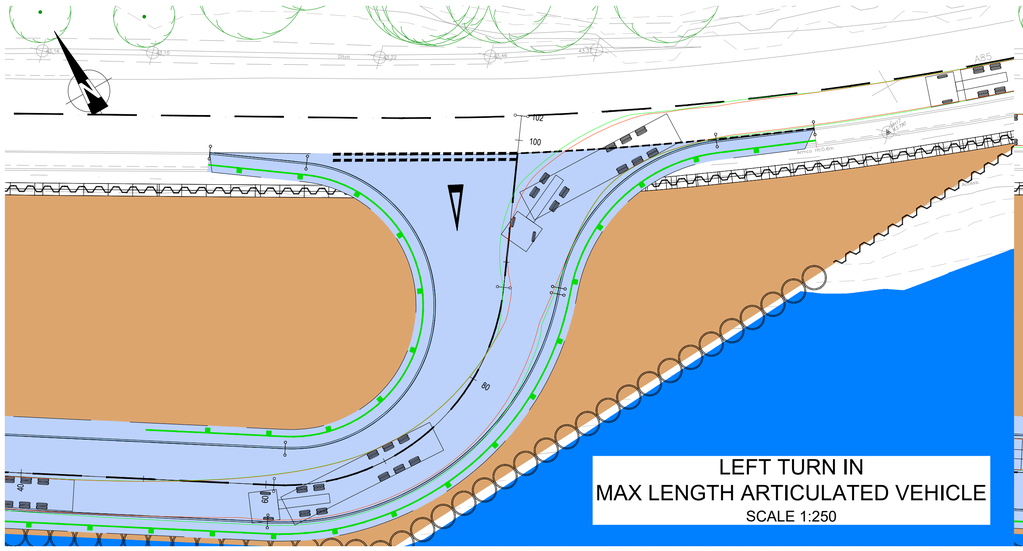
DRAX CRUACHAN EXPANSION LTD.
CRUACHAN 2

A85 DIVERSIONARY CONCEPT SKETCHES
JETTY ACCESS OPTION 3

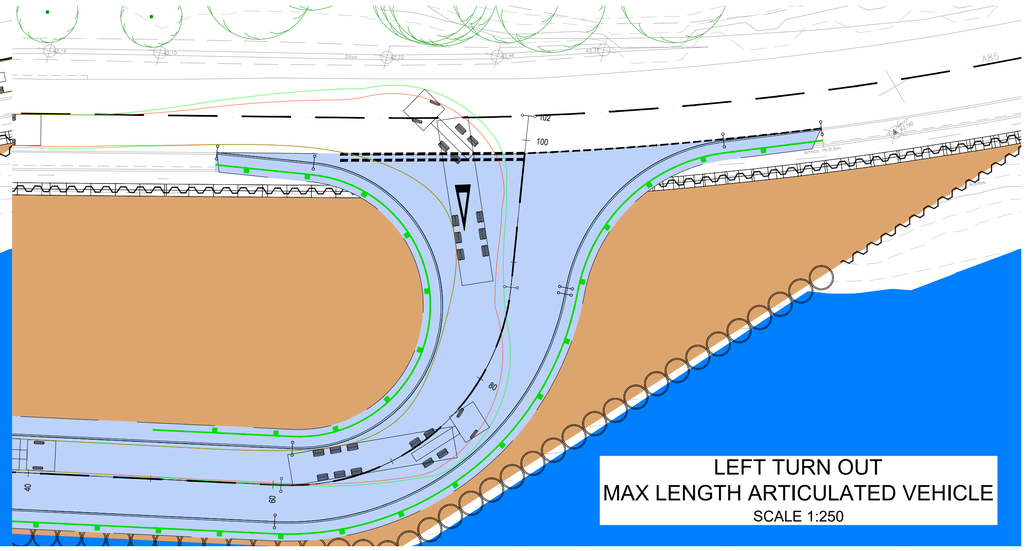
drax

Stantec

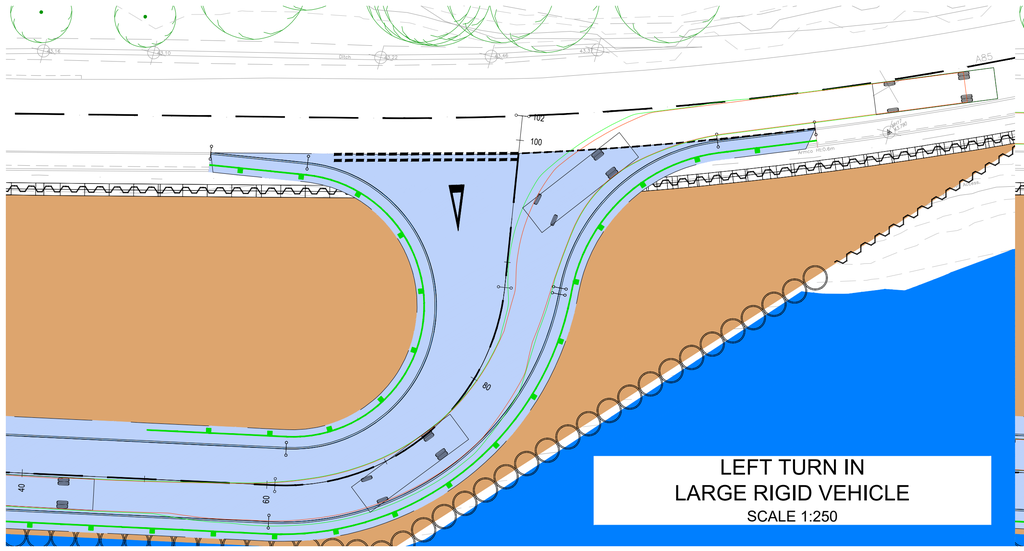
CONTRACT NO.	SCALE	MASTER SIZE
001	As Shown	A1
DRAWING NO.		VERSION
331201086/001/C/0859		P02



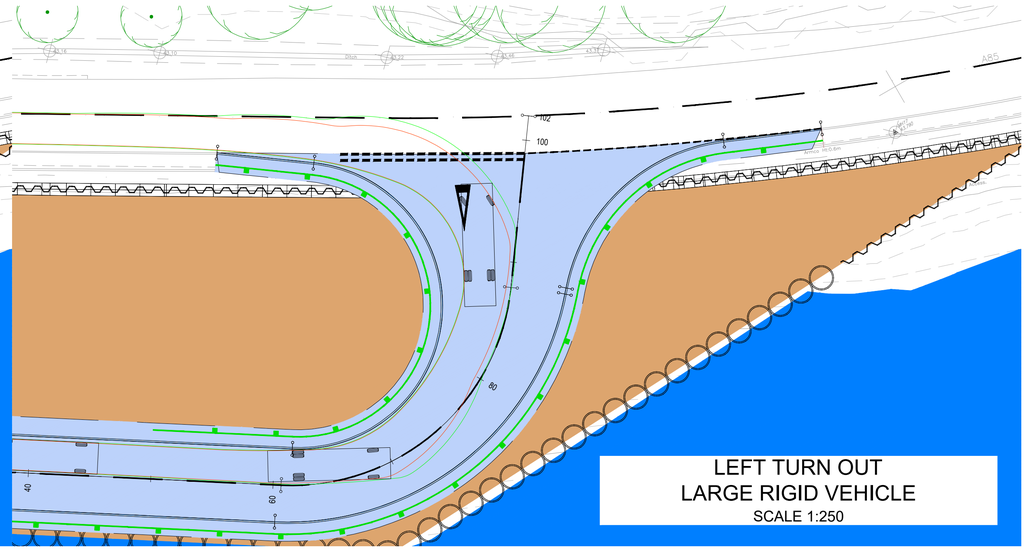
LEFT TURN IN
MAX LENGTH ARTICULATED VEHICLE
SCALE 1:250



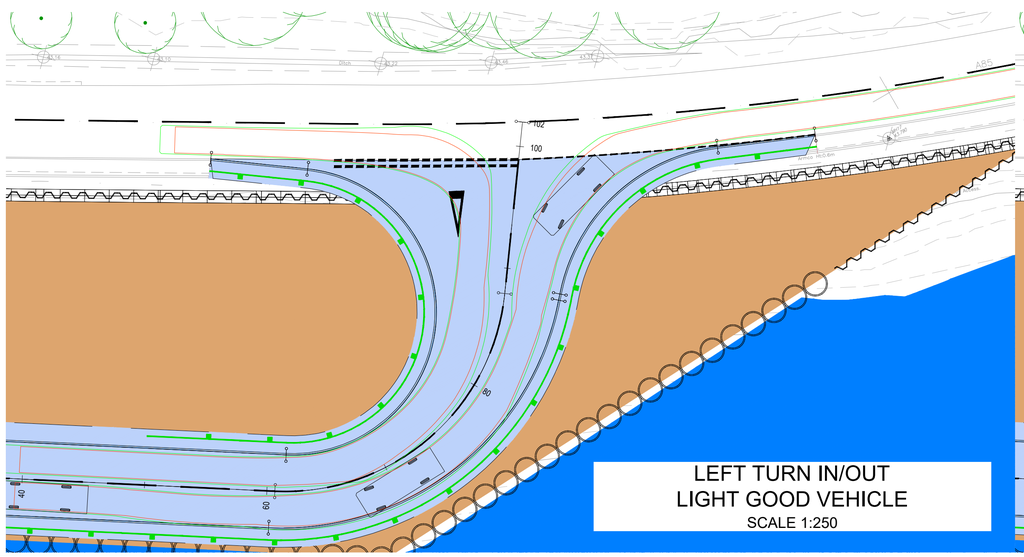
LEFT TURN OUT
MAX LENGTH ARTICULATED VEHICLE
SCALE 1:250



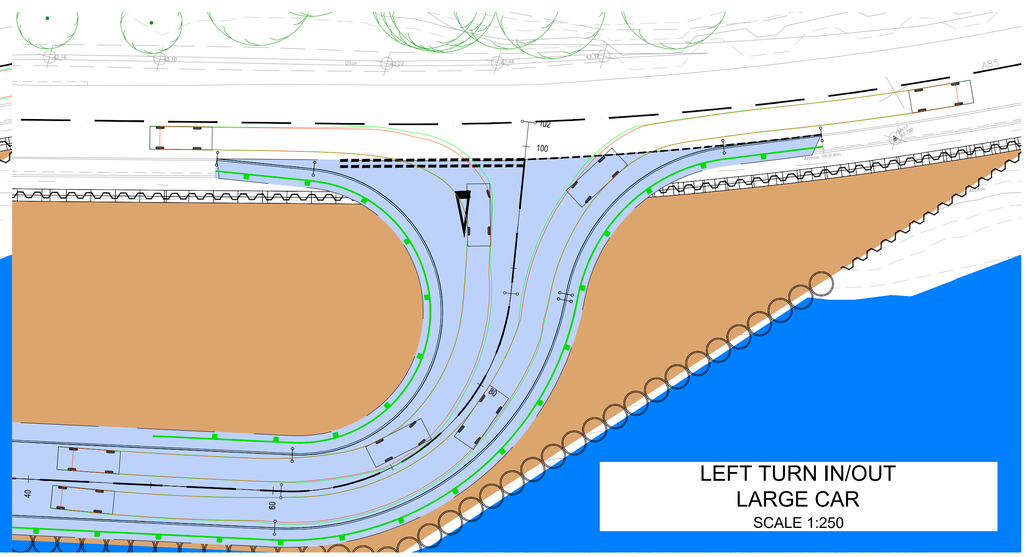
LEFT TURN IN
LARGE RIGID VEHICLE
SCALE 1:250



LEFT TURN OUT
LARGE RIGID VEHICLE
SCALE 1:250



LEFT TURN IN/OUT
LIGHT GOOD VEHICLE
SCALE 1:250

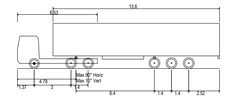


LEFT TURN IN/OUT
LARGE CAR
SCALE 1:250

NOTES

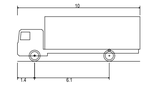
1. ALL DIMENSIONS IN MILLIMETRES AND ALL LEVELS IN METRES UNLESS SHOWN OTHERWISE.

REFERENCE



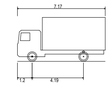
Max Legal Length (UK) Articulated Vehicle (16.5m)

Overall Length	16.500m
Overall Width	2.550m
Overall Body Height	3.681m
Min Body Ground Clearance	0.411m
Max Track Width	2.500m
Lock to lock time	6.00s
Kerb to Kerb Turning Radius	6.530m



FTA Design 13/18 Tonne Rigid Vehicle (2016)

Overall Length	10.000m
Overall Width	2.550m
Overall Body Height	3.645m
Min Body Ground Clearance	0.440m
Track Width	2.470m
Lock to lock time	3.00s
Kerb to Kerb Turning Radius	11.000m



FTA Design 7.5 Tonne Rigid Vehicle (2016)

Overall Length	7.170m
Overall Width	2.300m
Overall Body Height	3.580m
Min Body Ground Clearance	0.375m
Track Width	2.120m
Lock to lock time	3.00s
Kerb to Kerb Turning Radius	7.000m

Large Car (2006)

Overall Length	5.079m
Overall Width	1.872m
Overall Body Height	1.525m
Min Body Ground Clearance	0.310m
Max Track Width	1.831m
Lock to lock time	4.00s
Kerb to Kerb Turning Radius	5.900m

SCALE 1 : 250

m 0 5 25m

CURRENT VERSION INFORMATION

B. LIST OF CURRENT VERSION

DATE	DRWN	CHKD	REVD	VER	REASON FOR ISSUE
08.03.22	BR	DMcL	MP	P01	DRAFT

DRAX CRUACHAN EXPANSION LTD.
CRUACHAN 2

A85 DIVERSIONARY CONCEPT SKETCHES
JETTY ACCESS OPTION 3
SWEPT PATH ANALYSIS

drax

Stantec

CONTRACT NO. 001	SCALE 1:250	MASTER SIZE A1	
DRAWING NO. 331201086/001/C/0867		VERSION P01	

Appendix F LinSig Outputs

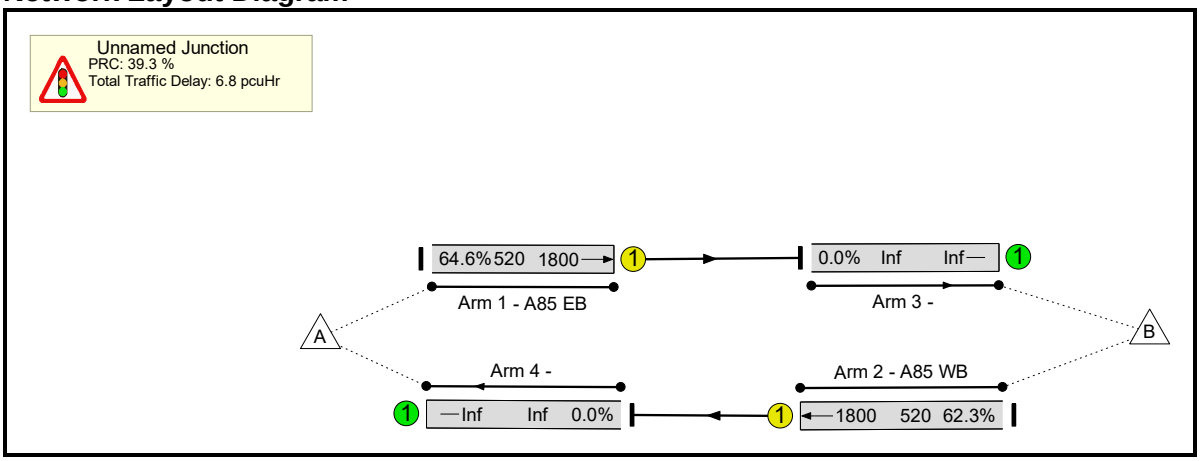
Basic Results Summary

User and Project Details

Project:	**Cruachan Expansion Project**
Title:	**A85 Bypass Shuttle Working**
Location:	A85, ABC
Additional detail:	PM Peak Hour modelled only
File name:	A85 Shuttle Working V2.lsg3x
Author:	MMN
Company:	Stantec
Address:	London Office

Scenario 1: 'Scenario 1' (FG1: 'Flow Group 1', Plan 1: 'Network Control Plan 1')

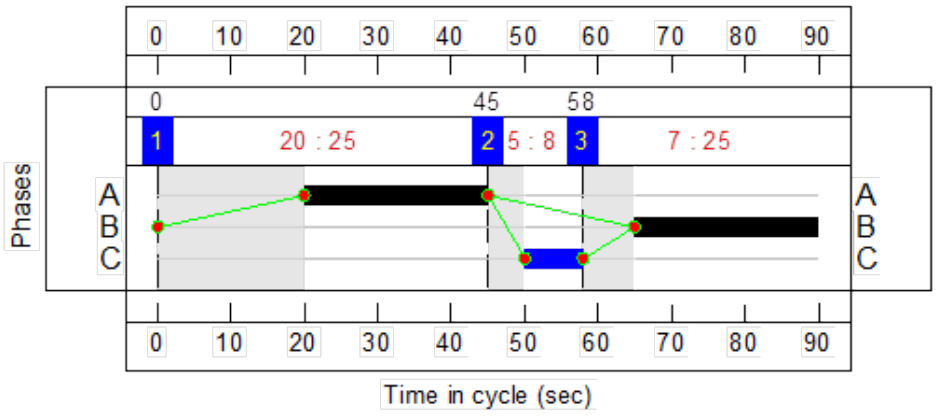
Network Layout Diagram



Phase Intergreens Matrix

	Starting Phase			
		A	B	C
Terminating Phase	A		20	5
	B	20		-
	C	-	7	

Signal Timings Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	**64.6%**	**0**	**0**	**0**	**6.8**	-	-
Unnamed Junction	-	-	-		-	-	-	-	-	-	**64.6%**	**0**	**0**	**0**	**6.8**	-	-
1/1	A85 EB Ahead	U	A		1	25	-	336	1800	520	64.6%	-	-	-	3.5	37.7	8.2
2/1	A85 WB Ahead	U	B		1	25	-	324	1800	520	62.3%	-	-	-	3.3	36.9	7.8

C1 PRC for Signalled Lanes (%): 39.3 Total Delay for Signalled Lanes (pcuHr): 6.83 Cycle Time (s): 90

PRC Over All Lanes (%): 39.3 Total Delay Over All Lanes(pcuHr): 6.83