Scottish & Southern Electricity Networks

TRANSMISSION

Hurlie 400 kV Substation
Environmental Impact Assessment (EIA)
Volume 4 | Appendix 13.1

Transport Assessment

November 2024

Scottish & Southern Electricity Networks

TRANSMISSION

CONTENTS

LIST OF ABBREVIATIONS

Term in full	Abbreviations	Definition
Aberdeenshire Council	AC	Aberdeenshire Council
Abnormal Indivisible Load	AIL	Loads / vehicles which exceed the maximum vehicle weight, axle weight or dimensions which are set out in the Road Vehicles (Construction and Use) Regulations 1986 as amended.
Automatic Traffic Counter	ATC	Equipment which is laid across a road and measures traffic characteristics such as the number of vehicles passing over it, speed and classification.
Average Daily Traffic	AADT	The average traffic flow over the course of a day which passes a particular location on the road network each day.
Construction Traffic Management Plan	CTMP	Document which outlines traffic management measures to mitigate adverse impacts associated with construction related traffic.
Department for Transport	DfT	UK Government Department for Transport
Design Manual for Roads and Bridges	DMRB	Design Manual for Roads and Bridges
Environmental Impact Assessment Report	EIAR	A document detailing the effects a project would have on the environment.
Heavy Goods Vehicle	HGV	All goods vehicles > 3.5 tonnes gross maximum weight.
Light goods vehicles	LGV	All commercial vehicles < 3.5 tonnes gross maximum weight.
Miles per Hour	mph	Measurement unit of speed on British roads.
National Cycle Network	NCN	Designated National Cycle Routes within the UK.
National Road Traffic Forecast	NRTF	Factors used to apply future year growth to traffic flows.
Ordnance Survey	OS	Great Britain's national mapping agency.
Planning Advice Note	PAN	Scottish Government's planning guidance documents.
Route Survey Report	RSR	Report assessing the suitability of a route to transport abnormal loads.
Transport Scotland	TS	Transport Scotland

1. INTRODUCTION

1.1 Purpose of the Transport Assessment

1.1.1 Pell Frischmann (PF) has been commissioned by LUC, on behalf of Scottish & Southern Electricity Networks Transmission (SSEN Transmission), to undertake a Transport Assessment (TA) for a proposed electrical substation (the Proposed Development), known as Hurlie.

1.1.2

1.1.3 This appendix identifies the key transport and access issues associated with the Proposed Development and provides a review of the likely traffic impacts in the study area. The TA identifies where mitigation works may be required to accommodate the predicted traffic impacts associated with the Proposed Development, to be developed during detailed design. It should be read in conjunction with **Chapter 13: Transport and Access** of the **EIA Report** for full details of the Proposed Development.

1.1.4 This appendix is supported by the following:

- Annex A –Route Survey Report

1.2 TA Structure

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

- Chapter Two describes the site background and Proposed Development;
- Chapter Three reviews the relevant transport and planning policies;
- Chapter Four sets out the methodology used within this assessment;
- Chapter Five describes the baseline transport conditions;
- Chapter Six describes the trip generation and distribution of traffic in the study area;
- Chapter Seven summarises the traffic impact assessment;
- Chapter Eight considers mitigation proposals in the form of a Framework Construction Traffic Management Plan; and
- Chapter Nine summarises the findings of the TA and outlines the key conclusions.

2. SITE BACKGROUND

2.1 Site Location

2.1.1 The Proposed Development would be constructed on an area of commercial forestry in the Fetteresso Forest, to the east of the existing Fetteresso Substation, located to the west of Stonehaven, within the Aberdeenshire Council (AC) administrative area.

2.1.2 The Proposed Development would occupy an area currently used for commercial forestry. Access to the Site would be taken from the existing access junction for Fetteresso Substation, located on the A957 Slug Road, a public road maintained by AC.

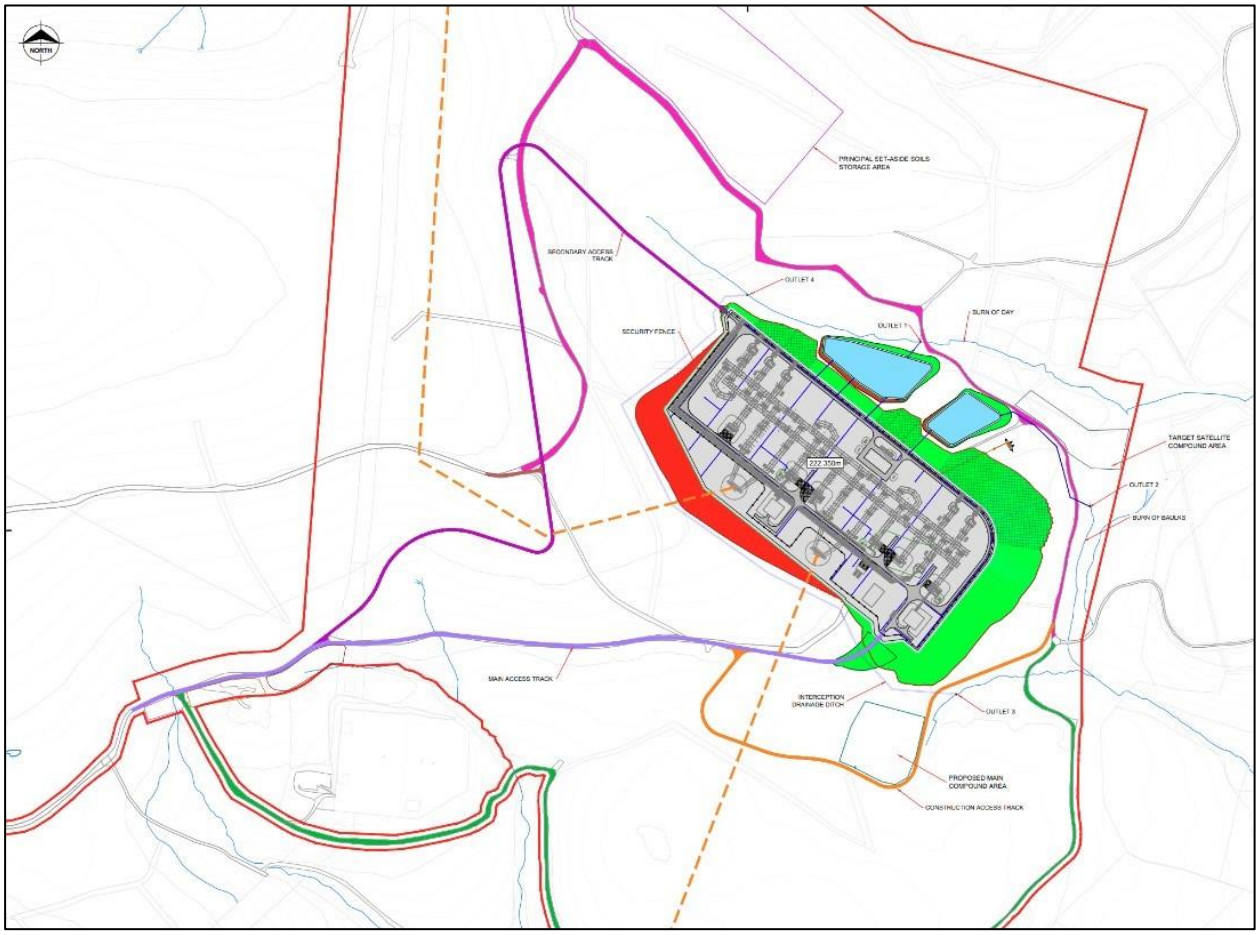
2.1.3 The location of the Proposed Development is shown on **Figure 2.1: Site Location** below.

Figure 2.1 Site Location

2.2 Description of the Proposed Development

2.2.1 The proposed works would involve the construction of a new substation, together with associated High Voltage (HV) equipment. The layout of the Proposed Development is illustrated in **Figure 2.2: Proposed Development Layout**.

Figure 2.2: Proposed Development Layout



2.2.2 The Proposed Development will include the following:

- A 400 kV Gas Insulated Switchgear (GIS) building and associated HV equipment;
- Creation of a new substation platform to accommodate the above, including access for vehicles and staff within the compound. A security fence would be erected around the platform;
- Creation of Sustainable Drainage Systems (SuDS) basins;
- Formation of a new access track leading from the existing Fetteresso Substation access tracks to the Proposed Development;
- A temporary construction compound; and
- A landscaping scheme to mitigate the visual impact of the Proposed Development.

2.3 Proposed Abnormal Indivisible Loads

2.3.1 The UK Government describes an Abnormal Indivisible Load (AIL) as "*any load that cannot be broken down into smaller loads without undue expense or risk of damage*". AIL movements remain a reserved matter for the UK parliament.

2.3.2 There are four main pieces of legislation that cover AIL movements:

- *The Road Vehicles (Construction & Use) Regulations 1986*;

2.3.3 This covers all aspects of the vehicles setup from the weights and dimensions through to the braking system and environmental standards.

- *The Road Vehicles (Authorised Weight) Regulations 1998*;

2.3.4 These regulations set the limited maximum weight of the vehicle and axle loading of different vehicle categories.

- *The Road Vehicles (Authorisation of Special Types) (General) Order 2003*;

2.3.5 The Special Types General Orders (STGO) is for vehicles not covered by either of the above Regulations and covers transformer and reactor delivery vehicles which are categorised as N3 for the tractor units and O4 for the specifically designed trailers. It states that the police, the relevant highway and bridge authorities or the Secretary of State may need to be notified of vehicle movement, dependent on the size of the load.

2.3.6 Notifications can be made online through the 'Highway Agency's Electronic Service Delivery for Abnormal Loads (ESDAL) System' or in paper form using the BE16 form for Special Orders.

- *The Road Vehicles Lighting Regulations 1989 (Authorisation of Special Types) (General) Order 2003*;

2.3.7 These regulations defines whether front, side and rear lamps and reflectors are mandatory and which ones are permitted, and which are not permitted.

2.3.8 Applications for a 'Vehicle Special Order' (VSO) should be made to the Vehicle Certification Agency (VCA) and it is recommended that applications are applied for at least 8 weeks prior to planned vehicle movements.

2.3.9 The largest plant items for the substation would be the transformer (one load) and reactors (two loads). Whilst the transformer manufacturer is not fully confirmed, it is anticipated that these items would be classed as AILs. Indicative dimensions of the transformer are anticipated to be approximately 6.5 m long, 2.5 m wide and 4 m tall.

2.3.10 Other AILs predicted for the Proposed Development would be the delivery of the erection crane, classed as an AIL due to its width at 3 m.

3. TRANSPORT & PLANNING POLICY

3.1 Introduction

This part of the TA provides an overview of the relevant national and local transport planning policy and guidance.

3.2 National Policy and Guidance

National Planning Framework 4 (2023)

3.2.1 The National Planning Framework 4 (NPF4) was approved by Scottish Parliament on 11 January 2023 and was adopted by Scottish Ministers on 13 February 2023.

3.2.2 Policy 11: Energy within the NPF4 notes that:

> *"Development proposals for all forms of renewable, low-carbon and zero emissions technologies will be supported. These include:*
>
> - *…Enabling works, such as grid transmission and distribution infrastructure."*
>
> *In addition, project design and mitigation will demonstrate how the following impacts are addressed:*
>
> - *"Impacts on communities and individual dwellings, including, residential amenity, visual impact, noise and shadow flicker;*
> - *Public access, including impact on long distance walking and cycling routes and scenic routes;*
> - *Impacts on road traffic and on adjacent trunk roads, including during construction; and*
> - *Cumulative impacts".*

3.2.3 Policy 13: Sustainable Transport within the NPF4 notes the following in relation to Transport Assessments and Travel Plans:

> *"Where a development proposal will generate a significant increase in the number of person trips, a transport assessment will be required to be undertaken in accordance with the relevant guidance."*
>
> *"Development proposals for significant travel generating uses, or smaller-scale developments where it is important to monitor travel patterns resulting from the development, will only be supported if they are accompanied by a Travel Plan with supporting planning conditions/obligations. Travel plans should set out clear arrangements for delivering against targets, as well as monitoring and evaluation."*

Planning Advice Note (PAN) 75

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

> *"… transport assessment to be produced for significant travel generating developments. Transport Assessment is a tool that enables delivery of policy aiming to integrate transport and land use planning."*
>
> *"All planning applications that involve the generation of person trips should provide information which covers the transport implications of the development. The level of detail will be proportionate to the complexity and scale of the impact of the proposal...For smaller developments the information on transport implications will enable local authorities to monitor potential cumulative impact and for larger developments it will form part of a scoping exercise for a full transport assessment. Development applications will therefore be assessed by relevant parties at levels of detail corresponding to their potential impact."*

Transport Assessment Guidance (2012)

3.2.5 Transport Scotland's Transport Assessment Guidance was published in 2012. It aims to assist in the preparation of TA reports for development proposals in Scotland such that the likely transport impacts can be identified and dealt with as early as possible in the planning process. The document sets out requirements according to the scale of development being proposed.

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

3.3 Local Policy and Guidance

3.4 Aberdeenshire Local Plan

3.4.1 The current Aberdeenshire Local Development Plan (LDP), adopted in January 2023, does not specifically reference substation developments. It does note that for wind farms that:

C2.4: "Unacceptable significant adverse effects on the amenity of dwellinghouses, such as from noise, or on tourism and recreation interests including core paths and other established routes used for public walking, riding or cycling, or to protected species should also be avoided."

3.4.2 And for other renewable development, the LDP notes that:

"C2.8 Other renewable energy developments are required to relate well to the source of the renewable energy required for operation and satisfactory steps must be taken to mitigate any negative impacts on occupiers of affected properties. "

3.4.3 Whilst these polices are not specific to the Proposed Development, their general commentary are considered relevant.

3.5 Policy and Guidance Summary

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

4. ASSESSMENT METHODOLOGY

4.1 Introduction

4.1.1 There are three phases of the life of the Proposed Development. These are:

- The Construction Phase;
- The Operational Phase; and
- The Decommissioning Phase.

4.2 Project Phases – Transport Overview

4.2.1 Of all of the three phases, the construction phase is considered to have the greatest impact in terms of transport. Construction plant, bulk materials and staff will travel to Site, these may potentially cause a significant increase in traffic on the study network.

4.2.2 The operational phase is restricted to occasional maintenance operations which generate significantly lower volumes of traffic that are not considered to be in excess of daily traffic variation levels on the road network.

4.2.3 The decommissioning phase involves fewer trips on the network than the construction phase, as elements of infrastructure are likely to be left in place (such as access tracks and platform areas), adding to local infrastructure that can potentially be used for further agricultural or leisure uses in the future.

4.2.4 It should be noted however the construction effects are short lived and transitory in nature.

5. BASELINE TRANSPORT CONDITIONS

5.1 Access Arrangement

5.1.1 Access to the Site will be taken from the public road network at the existing substation access junction on the A957 Slug Road, with material deliveries originating from the A90 corridor located to the east, A93 corridor to the north and the B9077 corridor to the northeast.

5.1.2 The access junction has been used for the construction of the nearby Fred. Olsen Renewables Midhill Wind Farm, commercial forestry operations and the recently upgraded Fetteresso Substation. The junction and access track are considered suitable for the proposed construction access use.

5.1.3 Once complete, the Proposed Development will not result in significant traffic generation, with trips restricted to circa 10 movements (five in and five outbound) per day to undertake general maintenance and operational monitoring duties.

5.2 Study Area

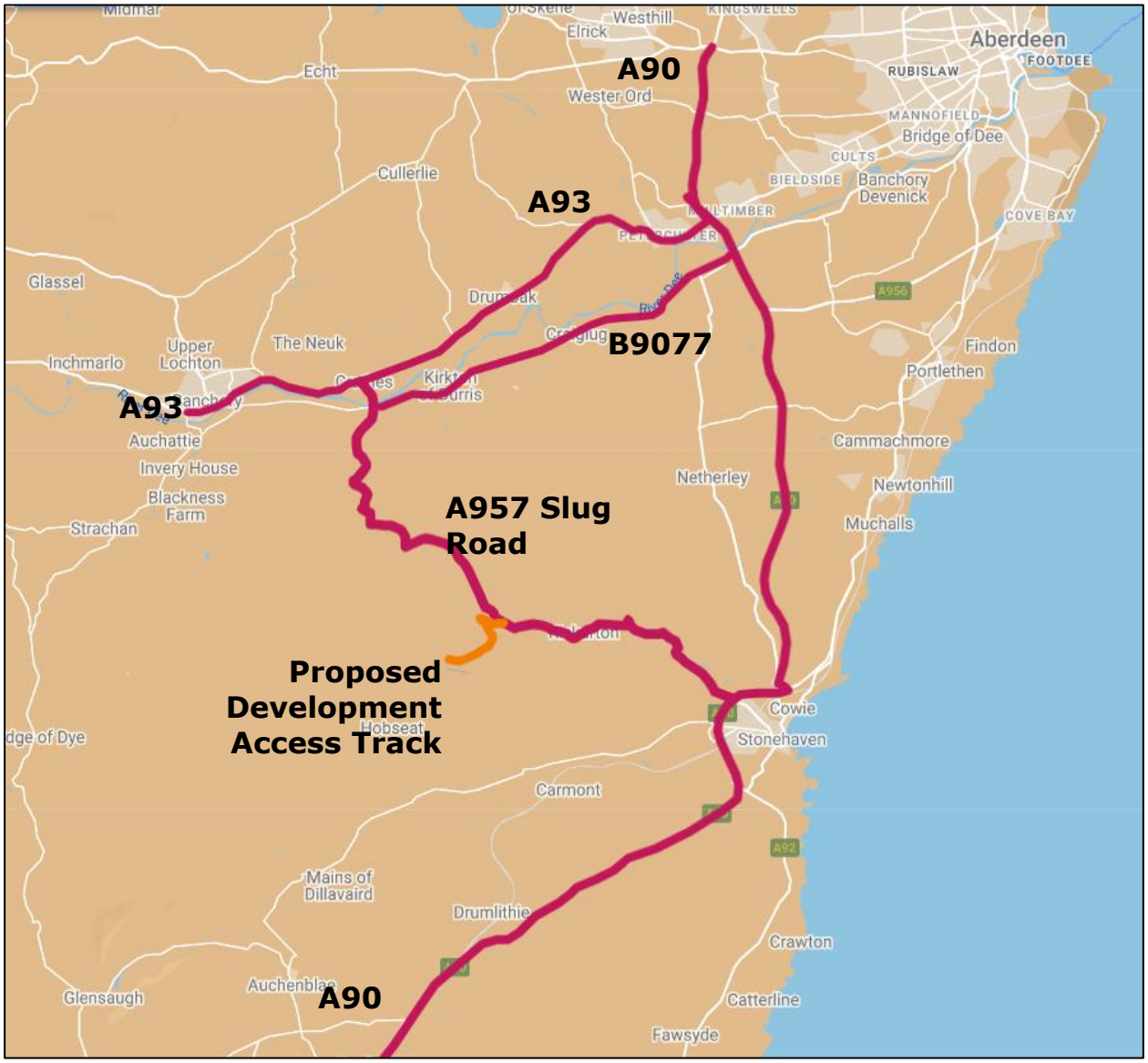
5.2.1 The proposed study area is based upon the route that would be used by construction traffic accessing the Proposed Development. These include routes used for bulk material deliveries, staff movements and component transport.

5.2.2 The study area assessed is as follows:

- A957 Slug Road (between the A90 and A93);
- A90 (between Laurencekirk and Kingsford);
- A93 (between Peterculter and Banchory); and
- B9077 (between the B979 and A957 Slug Road).

5.2.3 The proposed study area is illustrated in **Figure 5.1: Proposed Study Area**.

Figure 5.1: Proposed Study Area

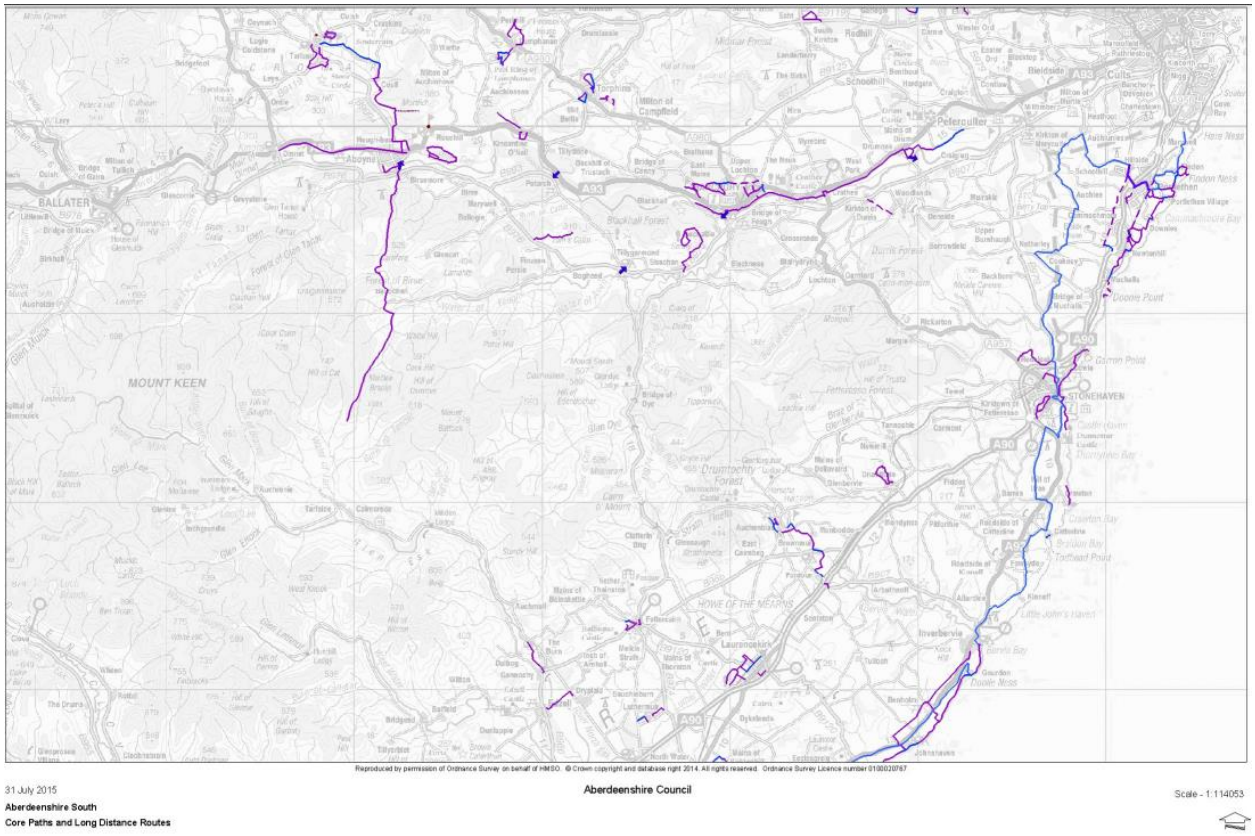


5.3 Pedestrian & Cyclist Links

5.3.1 A review of the AC Core Paths Plan has been undertaken. An extract for the study area is provided in **Figure 5.2: Core Path Plan Extract**. No Core Paths are present on the A957 Slug Road.

5.3.2 No pedestrian facilities are provided on the study area road network, outwith towns and villages served by the A93, A957 and B9077.

Figure 5.2: Core Path Plan Extract



5.3.3 https:// https://aberdeenshire.gov.uk/media/7508/aberdeenshiresouthcorepathplan.pdf

5.3.4 A review of the Sustrans National Cycle Network (NCN) indicates that there are no national cycle routes located in close proximity to the Site. NCN 195 is located to the north and runs parallel to the A93 and is on the alignment of the former Royal Deeside Railway. It crosses the A957 Slug Road close to the road junction with the A93.

5.4 Road Access

5.4.1 The A957 Slug Road local distributor road operated by AC. The road provides links from the A90 at Stonehaven through to its junction with the A93 at Crathes. The road varies in its width along its length and is circa 6.5 – 7.3 m in width and capable of accommodating HGV traffic.

5.4.2 The A93 is a district distributor road operated by AC that provides connections from Aberdeen through to Perth via Deeside and Glenshee. The road is approximately 7m in width and capable of accommodating HGV traffic.

5.4.3 The B9077 is a local distributor road operated by AC and connects the communities of the South Deeside Road between Aberdeen and its junction with A957 Slug Road. The road is of good standard and is between 6.5m and 7m in width.

5.4.4 The A90 forms the trunk road connection between Perth and Aberdeen and is operated on behalf of Scottish Ministers by Transport Scotland. The road is a dual carriageway and is generally subject to a 70 mph speed limit for car and Light Goods Vehicle (LGV) traffic, with all major junctions illuminated.

5.4.5 The Agreed Timber Route Map[1] has been developed by The Timber Transport Forum who are a partnership of the forestry and timber industries, local government, national government agencies, timber hauliers and road and freight associations. One of the key aims of the forum is to minimise the impact of timber transport on the public road network, on local communities and the environment and a way of achieving this is to categorise the roads leading to forest areas

[1] https://timbertf.maps.arcgis.com/apps/webappviewer/index.html?id=4a23d4910e604b71872956441113c83c (accessed October 2024)

in terms of their capacity to sustain the likely level of timber haulage vehicles i.e., HGVs. The routes are categorised into four groups, namely; 'Agreed Routes', 'Consultation Routes', 'Severely Restricted Routes' and 'Excluded Routes'.

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

5.4.7 The study area roads of the A957 Slug Road, A93 and A90 are all classed as 'Agreed Routes' and as such are suitable for HGV traffic, similar to that proposed with the construction phase of the Proposed Development.

5.4.8 The B9077 is not listed with a classification, however it does have a number of U and C class roads leading from it that are noted as being 'Agreed Routes'. In addition, the road also has a quarry and concrete works located on it, noting that the road is suitable for HGV traffic.

5.5 Existing Traffic Conditions

5.5.1 A review of traffic flow has been undertaken using new Automatic Traffic Count (ATC) surveys, the Transport Scotland traffic database and the Department for Transport (DfT) traffic database.

5.5.2 ATC traffic surveys were undertaken at the following locations between the 16th and 22nd of April 2024:

1. A957 Slug Road (near the location of the proposed access junction);

5.5.3 Traffic Scotland Annual Average Daily Traffic (AADT) data was obtained for the following locations:

2. A93 Peterculter (site reference ATC00054);
3. A93 Banchory (site reference ATC00329);
4. A90 North of Stonehaven (site reference 123488);
5. A90 Kingsford (site reference NTC01512); and
6. A90 south of Stonehaven (site reference JTC00056).

DfT road traffic database for the following location

7. B9077 (site reference 983159)

5.5.4 The locations of the survey points are illustrated in **Figure 5.3: Traffic Survey Locations**. The two-way traffic flows for 2024 (factored using National Road Traffic Forecast (NRTF) low growth assumptions to a common year of 2024) are summarised in **Table 5.1: 24 Hour Daily Traffic Flows (2024).**

Figure 5.3: Traffic Survey Locations

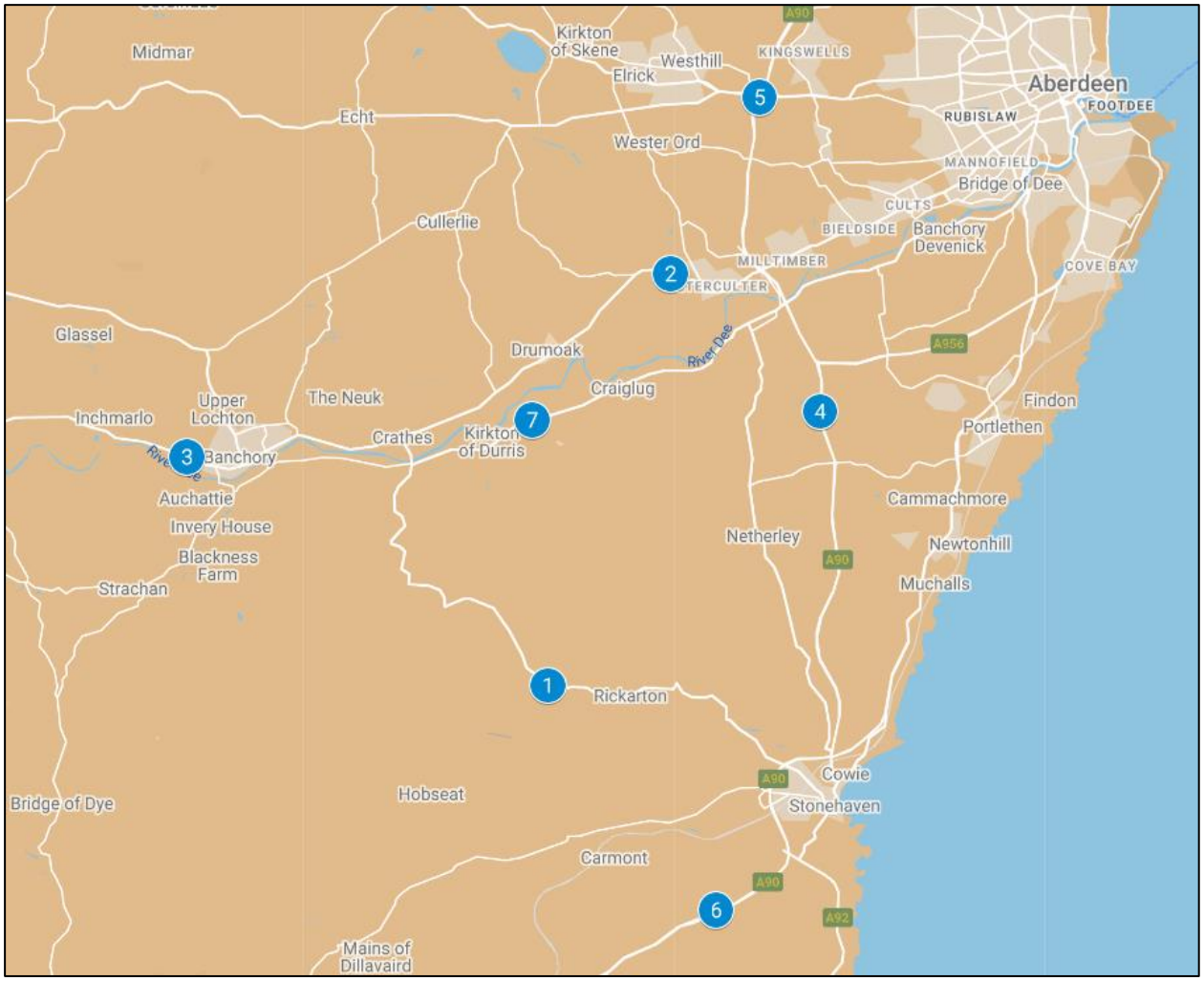


Table 5.1: 24 Hour Average Daily Traffic Flows (2024)

Site Ref.	Survey Location	Cars & LGV	HGV	Total
1	A957 Slug Road	901	309	1,210
2	A93 Peterculter	6,002	749	6,752
3	A93 Banchory	3,470	487	3,957
4	A90 North of Stonehaven	12,051	1,643	13,694
5	A90 Kingsford	4,982	1,643	6,625
6	A90 South of Stonehaven	18,246	4,821	23,067
7	B9077	3,125	148	3,273

5.6 Accident Review

5.6.1 Road traffic accident data for the five-year period commencing 01 January 2018 through to the 31 December 2022 was obtained from the online resource crashmap.co.uk which uses data collected by the police about road traffic crashes occurring on British roads. Accident data recorded along the local roads within the study area, and in the vicinity of junctions joining the local road network, was analysed.

5.6.2 Transport Assessment guidance requires an analysis of the accident data on the road network in the vicinity of any development to be undertaken for at least the most recent 3-year period, or preferably a 5-year period, particularly if the site has been identified as being within a high accident area. Whilst the study area has not been identified as having a high accident rate, a five-year review has been undertaken to ensure a comprehensive assessment has been undertaken.

5.6.3 The statistics are categorised into three categories, namely “Slight” for damage only incidents, “Serious” for injury accidents and “Fatal” for accidents that result in a death.

5.6.4 A review of accidents trends within the immediate study area (A957 Slug Road) has been undertaken using data from the online resource crashmap.co.uk.

5.6.5 In total, five accidents occurred on the A957 Slug Road. These included three “Slight” accidents and two “Serious” accidents. Of these incidents, one “Slight” accident occurred during winter. Four of the accidents recorded involved one vehicle, suggesting that the driver lost control of their vehicle.

5.6.6 Both “Serious” and one “Slight” accident involved motorcycles. Young drivers (under the age of 25) were involved in two “Slight” accidents. HGV traffic was not involved in any of the recorded incidents.

5.6.7 There were no recorded accidents at the site access junction.

5.6.8 There are no apparent trends that would be exacerbated by the proposed construction traffic. A Construction Traffic Management Plan (CTMP) however will be provided to assist all road users.

5.7 Future Baseline

5.7.1 Construction of the Proposed Development is expected to commence in 2026, if consent is granted, and is anticipated to take approximately three and a half years, depending on weather conditions. The peak of construction traffic activities is expected to occur in February 2028 and this has been used as the future assessment year.

5.7.2 To assess the likely effects during the construction phase, base year flows were forecast by applying a NRTF low growth factor to the 2024 flows in **Table 5.2: 24 Hour Average Daily Traffic Flows (2028).** The NRTF low growth factor for 2024 to 2028 is 1.021. This will be used in the Construction Peak Traffic Impact Assessment.

Table 5.2: 24 Hour Average Daily Traffic Flows (2028)

Site Ref.	Survey Location	Cars & LGV	HGV	Total
1	A957 Slug Road	920	316	1,235
2	A93 Peterculter	6,128	765	6,893
3	A93 Banchory	3,543	497	4,040
4	A90 North of Stonehaven	12,304	1,678	13,982
5	A90 Kingsford	5,087	1,678	6,764
6	A90 South of Stonehaven	18,629	4,922	23,551
7	B9077	3,190	151	3,341

Please note that rounding errors can occur.

6. TRIP GENERATION & DISTRIBUTION

6.1 Trip Generation

6.1.1 During the construction period, the following traffic will require access to the Sites:

- Staff transport, in either cars or staff minibuses;
- Construction equipment and materials, deliveries of machinery and supplies such as concrete and crushed rock; and
- Abnormal loads associated with the substation development.

6.1.2 At the peak of construction activity, 278 staff are expected on the Site. A Staff Travel Plan will be implemented to control access and it is assumed that 60% will access the Site via minibus, 30% by van, with the rest accessing using private car access.

6.1.3 SSEN Transmission civil engineers have undertaken a preliminary design of the substation. Using this design a Bill of Quantities and resulting traffic generation has been undertaken. The peak of construction activities is predicted to occur in February 2028 and will result in the peak daily traffic generation described below.

- Peak Car & LGV Movements (2 way): 152 vehicles;
- Peak HGV Movements (2 way): 56 vehicles;
- Peak Total Traffic (2 way): 208 vehicles.

6.1.4 Traffic levels will fall following the peak month. The assessment however has used the peak as the worst-case scenario to ensure a robust assessment has been undertaken and that all relevant mitigation has been considered.

6.2 Traffic Distribution

6.2.1 Aggregate, ready mix concrete and other bulk materials are expected to be sourced from local sources.

6.2.2 General construction traffic and the supply of specialist items, including cabling, ducting, etc, is assumed to originate from the Central Belt and Aberdeen and will access the study area via the A93 and A957 from the northeast

6.2.3 Staff working at the Site will be based locally and it is assumed that 20% will be based in Stonehaven, 15% in Banchory, 20% in the south of Aberdeen, 40% in the north of Aberdeen and the remaining 5% to the south of Stonehaven.

6.2.4 Traffic associated with the construction phase has been distributed to these routes. The resulting traffic generation is summarised in **Table 6.1.: Distributed Construction Traffic (2 Way / Day)**.

Table 6.1: Distributed Construction Traffic (2 Way / Day)

Site Ref.	Survey Location	Cars & LGV	HGV	Total
1	A957 Slug Road	152	56	208
2	A93 Peterculter	61	2	63
3	A93 Banchory	23	0	23
4	A90 North of Stonehaven	0	1	1
5	A90 Kingsford	61	2	63
6	A90 South of Stonehaven	8	1	9

Site Ref.	Survey Location	Cars & LGV	HGV	Total
7	B9077	31	54	84

Please note rounding errors can occur.

6.3 Abnormal Indivisible Load Deliveries

6.3.1 The largest plant items for the substation would be the transformer loads. Whilst the transformer manufacturer is not fully confirmed, it is anticipated that these items would be classed as abnormal loads. Indicative dimensions of the transformer are illustrated below in **Table 6.2: AIL Dimensions**.

Table 6.2: AIL Dimensions

Transport Dimensions	Length	Width	Height	Weight
Transformer	8.5 m	4.5 m	4.7 m	170,000 kg

6.3.2 The transformer can be transported without all of its cooling oil to reduces its overall weight. To provide a robust review, a margin of 10% on all dimensions and properties has been included and will be used in the subsequent swept path assessment.

6.3.3 It is expected that the transformer will be delivered from either the Port of Dundee, located to the south of the Proposed Development or from the Port of Aberdeen, located to the east. Access to the Site will be via the A90, A93 and A957. Given the presence of bridges with structural issues for AIL traffic, no abnormal loads will be permitted to use the B9077. A detailed Route Survey Report (RSR), featuring swept path assessments has been undertaken and is provided in **Annex A**.

6.3.4 To enable the delivery of the transformer to Site, minor modifications to the existing public road network will be required. These, along with a detailed structural review of the route will be undertaken post consent once the exact dimensions of the transformer have been established.

6.3.5 The detailed design pack will include swept path assessments at constrained locations and a full mitigation design pack will be provided along with ecological and drainage reviews of the proposed works.

6.3.6 The AIL movement will be escorted by the police at the Applicant's cost and will avoid peak network times as far as is possible. A detailed Construction Transport Management Plan (TMP) will be prepared to assist in the operational planning of the movement of AILs.

6.4 Operational and Decommissioning Phases

6.4.1 The operational phase is likely to result in occasional traffic accessing the Site for maintenance and monitoring works. This is likely to be in the region of less than 10 movements per day. This level of traffic is well within the accepted limits of daily traffic variation, and as such, no separate operational assessment is required.

6.4.2 Prior to decommissioning of the Site, a traffic assessment would be undertaken and appropriate traffic management procedures followed.

6.4.3 The decommissioning phase would result in fewer trips on the road network than the construction phase as it is considered likely that elements of infrastructure such as access tracks would be left in place and structures may be broken up onsite to allow transport by a reduced number of HGVs.

7. TRAFFIC IMPACT ASSESSMENT

7.1 Construction Impact

7.1.1 The combined average daily development traffic was added to the future year (2028) traffic data. A comparison was then made between this traffic and the baseline flows to determine the percentage increase in traffic flows. The impact is detailed in **Table 7.1: Peak Month Construction Traffic Impact**.

Table 7.1: Peak Month Construction Traffic Impact

Site Ref.	Survey Location	Cars & LGV	HGV	Total	% Car & LGV	% HGV	% Total Traffic
1	A957 Slug Road	1,072	372	1,443	16.5%	17.8%	16.8%
2	A93 Peterculter	6,189	767	6,957	1.0%	0.3%	0.9%
3	A93 Banchory	3,566	497	4,063	0.6%	0.0%	0.6%
4	A90 North of Stonehaven	12,304	1,679	13,982	0.0%	0.0%	0.0%
5	A90 Kingsford	5,148	1,680	6,827	1.2%	0.1%	0.9%
6	A90 South of Stonehaven	18,637	4,923	23,560	0.0%	0.0%	0.0%
7	B9077	3,221	205	3,426	1.0%	35.7%	2.5%

Please note rounding errors can occur.

7.1.2 With the exception of the A957 Slug Road, total traffic movements are not predicted to increase by more than 2.5% across the study network. Traffic on the A957 Slug Road is predicted to increase by 16.8%. Whilst this is statistically significant, the actual increase in traffic is 208 vehicles, which on average is an additional 17 vehicles per hour (assuming a 12-hour working period).

7.1.3 The highest increase in HGV traffic movements is anticipated to occur on the B9077, where they are estimated to increase by 35.7 %. To put the increase into perspective, the B9077 at this location will see an additional 54 HGV movements per day or 5 HGV movements per hour over the course of a typical 12-hour shift. The next highest HGV traffic movement increase would occur on the A958 Slug Road with an anticipated HGV increase of 16.8.%

7.1.4 It should be noted that the increases in HGV flows are not considered significant in terms of overall total flows and are high due to the low base HGV flows. It should also be noted the construction phase is transitory in nature.

7.1.5 A review of existing road capacity has been undertaken using the “The NESA Manual”, formally part of the Design Manual for Roads and Bridges (DMRB), Volume 15. The theoretical road capacity has been estimated for each of the road links for a 12-hour period that makes up the study area. The results are summarised in **Table 7.2: Theoretical Capacity Review**.

Table 7.2: Theoretical Capacity Review

Site Ref.	Survey Location	2028 Baseline	Theoretical Capacity (12hr)	2028 Base + Development Flows	Spare Capacity (%)
1	A957 Slug Road	1,235	21,600	1,443	93.3%
2	A93 Peterculter	6,893	28,800	6,957	75.8%
3	A93 Banchory	4,040	19,200	4,063	78.8%
4	A90 North of Stonehaven	13,982	81,600	13,982	82.9%
5	A90 Kingsford	6,764	81,600	6,827	91.6%
6	A90 South of Stonehaven	23,551	81,600	23,560	71.1%
7	B9077	3,341	21,600	3,426	84.1%

Please note rounding errors can occur.

7.1.6 The results indicate there are no road capacity issues with the Proposed Development and ample spare capacity exists within the trunk and local road network to accommodate construction phase traffic.

8. FRAMEWORK CONSTRUCTION TRAFFIC MANAGEMENT PLAN

8.1 Proposed Measures

8.1.1 The following measures would be implemented through a Construction Traffic Management Plan (CTMP) during the construction phase. The CTMP would be agreed with AC prior to construction works commencing:

- Where possible the detailed design process would minimise the volume of material to be imported to Site to help reduce HGV numbers;
- A Site worker transport and travel arrangement plan, including transport modes to and from the work site (including pick up and drop off times);
- All materials delivery lorries (dry materials) should be sheeted to reduce dust and stop spillage on public roads;
- Specific training and disciplinary measures should be established to ensure the highest standards are maintained to prevent construction vehicles from carrying mud and debris onto the carriageway;
- Wheel cleaning facilities may be established at the Site entrance, depending on the views of AC;
- Appropriate traffic management measures would be put in place on the A957 Slug Road at the Site access junction to avoid conflict with general traffic, subject to the agreement of AC. Typical measures would include HGV turning and crossing signs and / or banksmen at the Site access and warning signs;
- Provide construction updates on the project website and or a newsletter to be distributed to residents within an agreed distance of the Site;
- Adoption of a voluntary speed limit of 20 mph for all construction vehicles travelling through villages and towns on the A957, A93 and B9077, where such restrictions are not already in place;
- All drivers would be required to attend an induction to include:
- A toolbox talk safety briefing;
    - The need for appropriate care and speed control;
    - A briefing on driver speed reduction agreements (to slow Site traffic at sensitive locations through the urban areas); and
    - Identification of the required access routes and the controls to ensure no departure from these routes.

8.1.2 AC may require an agreement to cover the cost of abnormal wear and tear on roads within the study area. Video footage of the pre-construction phase condition of the construction vehicle's route would be recorded to provide a baseline of the state of the road prior to any construction work commencing. This baseline would inform any change in the road condition during the construction stage of the Proposed Development. Any necessary repairs would be coordinated with the Council. Any damage caused by traffic associated with the Proposed Development, during the construction period that would be hazardous to public traffic, would be repaired immediately.

8.1.3 Any damage to road infrastructure caused directly by construction traffic would be made good, and street furniture that is removed on a temporary basis would be fully reinstated.

8.1.4 There would be a regular road edge review and any debris and mud would be removed from the public carriageway to keep the road clean and safe during the initial months of construction activity, until the construction junction and immediate access track works are complete.

8.2 Public Information

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

8.3 Pedestrian Management

8.3.1 The Principal Contractor would ensure that speed limits are always adhered to by their drivers and associated subcontractors. This is particularly important within close proximity to the core path and at crossing points. Advisory

speed limit signage would also be installed on approaches to areas where path users may interact with construction traffic.

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

8.4 AIL Management Measures

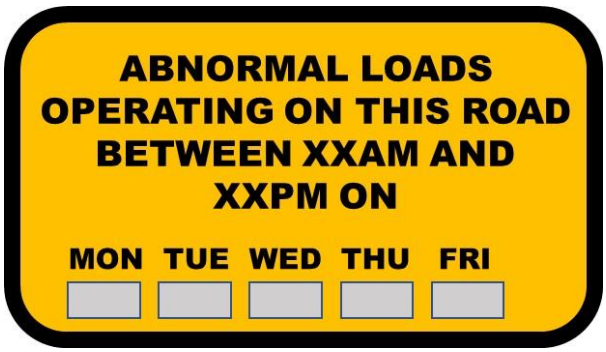
8.4.1 There are a number of traffic management measures that could help reduce the effect of the proposed six abnormal load convoys.

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

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

8.4.4 Advance warning signs will be installed on the approaches to the affected road network. Information signage could be installed to help assist drivers and an example is illustrated in **Figure 8.1: Example Information Sign**. Flip up panels (shown in grey) will be used to mask over days where convoys would not be operating. When no convoys are moving, the sign would be bagged over by the traffic management contractor.

Figure 8.1: Example Information Sign



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

8.4.6 The location and numbers of signs will be agreed post consent and will form part of the wider Traffic Management Proposal for the Proposed Development.

8.4.7 The Abnormal Load Transport Management Plan will also include:

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

Public Information

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

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

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

Convoy System

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

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

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

8.5 Operational Phase Mitigation

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

9. SUMMARY & CONCLUSIONS

9.1.1 Pell Frischmann (PF) has been commissioned by LUC, on behalf of SSEN Transmission, to undertake a Transport Assessment (TA) for a proposed electrical substation at Hurlie, referred to above as the Proposed Development.

9.1.2 The assessment has reviewed access to the Site and likely traffic generation associated with the construction phase. It is estimated that 208 daily trips would be associated with the Proposed Development at the peak of construction resulting in a maximum impact of total traffic of 16.8% on the northern section of the A957 Slug Road.

9.1.3 A series of mitigation measures and management plans have been proposed to help mitigate and offset the impacts of both the construction and operational phase traffic flows.

9.1.4 No link capacity issues are expected on any of the roads assessed due to the additional movements associated with the Proposed Development. The effects of construction traffic are temporary in nature and are transitory.

ANNEX A: ROUTE SURVEY REPORT

Fetteresso Substation

SGT Abnormal Indivisible Load Route Appraisal

Scottish & Southern Electricity Networks (Transmission)

Project number: 60697195

07 March 2023

Delivering a better world

Quality Information

Prepared by	Checked by	Verified by	Approved by
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Revision History

Revision	Revision date	Details	Authorized	Name	Position
01	31/03/2023	Client Comments	DD	David Dewar	Associate Director

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Tables

1. Introduction

Study Brief

1.1 AECOM has been commissioned by SSE to undertake a transport appraisal for an Abnormal Indivisible Load (AIL) into Fetteresso Substation. The appraisal investigates the routing, constraints, and mitigation required to transport the AIL from the Port of Aberdeen to the substation. The location of Fetteresso Substation is provided at **Appendix A.**

1.2 Consultation with the client during the commissioning process led to a revised scope of appraisal from that contained in the study brief. The revised scope of appraisal is contained in **Appendix B**.

Abnormal Indivisible Load (AIL)

1.3 The appraisal covers the transportation of a super grid transformer (SGT) from Aberdeen Port to Fetteresso Substation. For AIL appraisal an Efacec Three Phase SGT as specified in the study brief is used. The transport dimensions for this SGT are provided at **Appendix C**. The key transport parameters for this SGT are.

- Length = 11.0m.
- Width = 4.0m
- Height = 5.0m
- Weight = 290,000kg.

1.4 The Efacec Three Phase SGT has a height of 5m. Commentary will also be provided on any route constraints identified during the appraisal for this SGT that could impact on the transport of an alternative SGT with a transport dimension / height of 5.8m (the Efacec Disassociated Phase transformer).

AIL Appraisal

1.5 This report provides an appraisal and vehicle swept-path analysis to identify the most suitable route to transport the SGT from port of entry (PoE) to site.

1.6 The most appropriate transport vehicle will be identified, and the suitability of the route confirmed. The following are considered in this appraisal;

- Review supporting information provided by client.
- Identification of suitable AIL route.
- Identification of suitable AIL vehicle and transport arrangement.
- Schedule of constraints (bridges / structures / power lines etc.) along preferred route.
- Vehicle swept-path analysis for transformer movements at identified locations of constraint.
- AIL transport appraisal reporting.

2. Identification of Suitable AIL Route

Previous A93 AIL Route

2.1 The study brief identifies a route previously used to deliver a 275/132kV transformer to Fetteresso. This route is from Aberdeen via the A93 and the A957 (Slug Road) to the Fetteresso access track. The study brief acknowledges that the specific route taken from Aberdeen Port to the A93 (i.e. through the city) by the previous transport vehicle is unknown.

2.2 AECOM have reviewed the previous A93 route as an option for transporting the SGT under consideration in this study. In combination with advice from Allelys (see Chapter 3 on identification of vehicle type) a number of potential constraints within the city of Aberdeen were identified. This lead to a conclusion that a route through to city towards the A93 would unlikely be viable for the SGT under consideration. Potential city centre constraints include bridges (Union Bridge / Guild Street) and avoiding emergency vehicle routes near Aberdeen Royal Infirmary on route towards the A93.

Proposed AIL Route

2.3 Given the potential A93 constraints identified at paragraph 2.2 an alternative proposed AIL route from Aberdeen to the A957 (Slug Road) has been identified via the B0977. This route avoids potential city centre constraints within Aberdeen and once on the B9077 provides a direct route to the A957. **Figure 1** shows the proposed B9077 route from Aberdeen to the Fetteresso Forest access track on the A957.

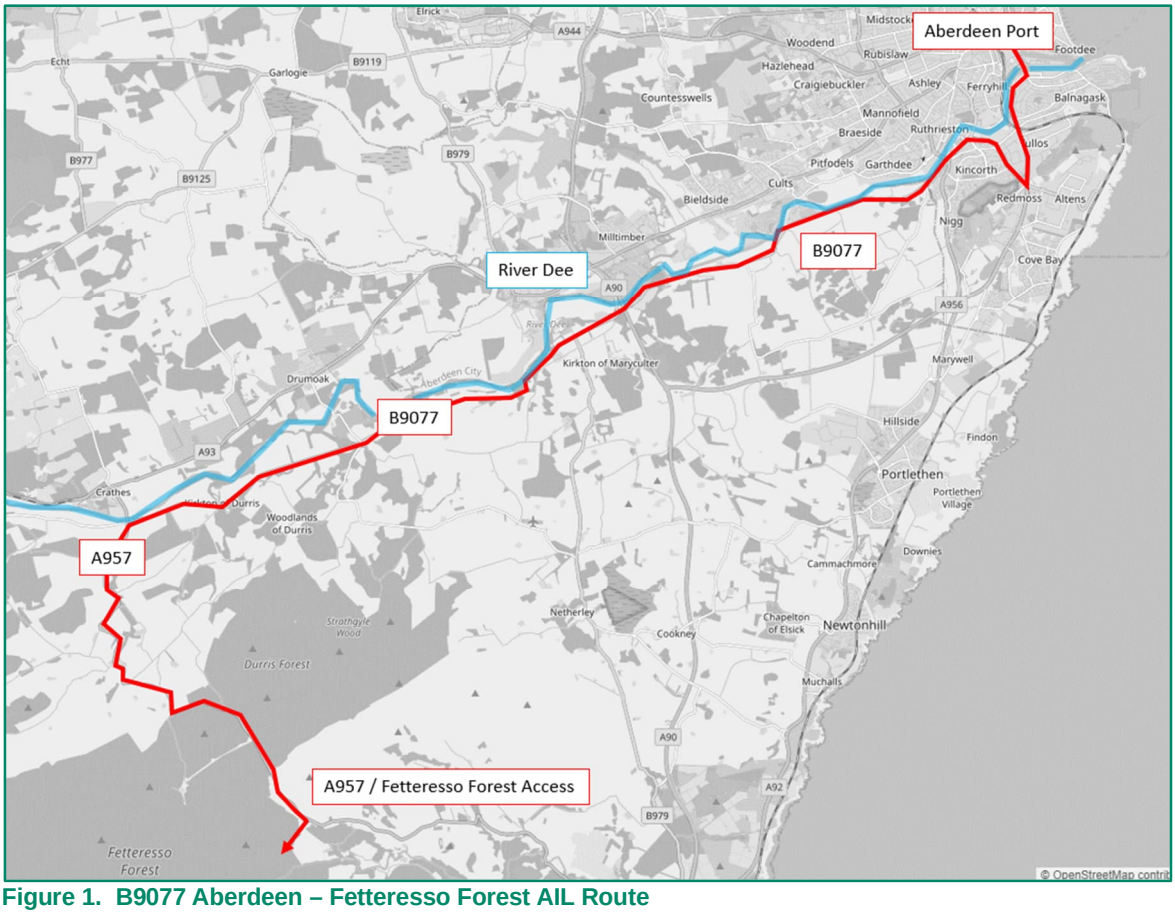


Figure 1. B9077 Aberdeen – Fetteresso Forest AIL Route

2.4 The route leaves Aberdeen Port and crosses the River Dee on the A956 via Victoria Bridge. It continues on the A956 until the roundabout junction with West Tullos Road. On West Tullos Road the route heads northwest to the roundabout junction with the B9077. On the B9077 the route continues westbound away from the city, following the B9077 until it meets the A957 (Slug Road) at the Durris junction immediately south of the River Dee. From this location the route follows the same A957 / Fetteresso Forest access route as previously used to deliver the 275/132kV transformer to Fetteresso Substation.

3. Identification of Suitable AIL Vehicle

Allelys Group

3.1 AECOM commissioned Allelys Group to identify a suitable AIL vehicle to transport the transformer loads. Allelys are specialists in the transport of AIL.

3.2 For an SGT load of up to 290 tonnes routing between Aberdeen and Fetteresso on the B9077 / A957 corridor Allelys recommendation is a 28-axle girder frame trailer.

3.3 The proposed transport arrangement has a gross weight of 450 tonnes and the load would be carried under Special Order legislation.

3.4 **Figure 2** shows the configuration of the proposed AIL transport vehicle**. Appendix D** contains further technical details and specifications for the proposed AIL transport.

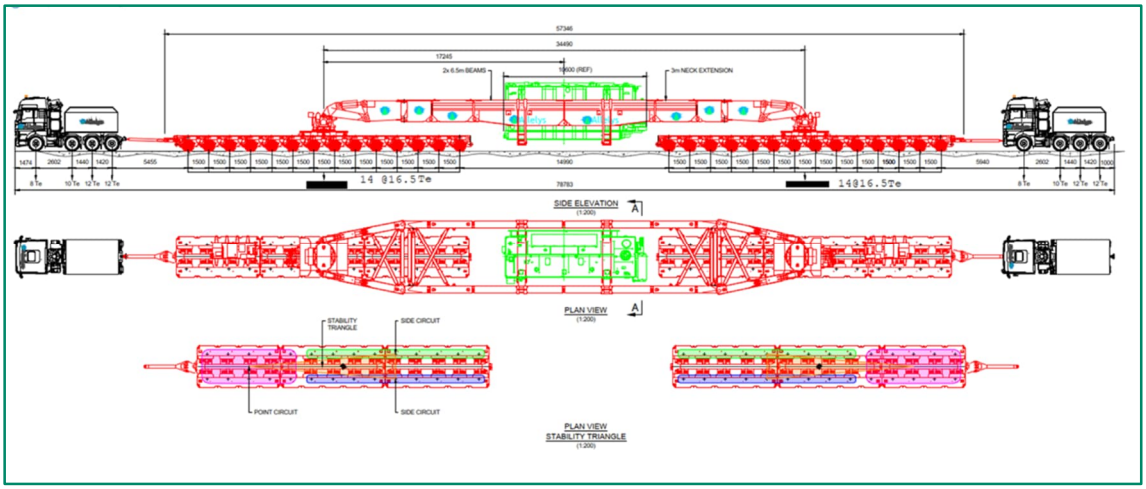


Figure 2. Proposed AIL Transport – 28 Axle Girder Frame Trailer

4. Route Assessment

Allelys Route Report

4.1 AECOM commissioned Allelys Group to undertake an assessment of the proposed Aberdeen to Fetteresso Substation AIL route. The Allelys Route Report is provided at **Appendix D**.

4.2 Allelys Route Report concludes the proposed route for AIL transport is feasible. Some additional infrastructure checks (out with the revised scope of this assessment) will be required to obtain the specific permissions required for AIL transport. The conclusion reached at this stage is the proposed route is feasible for the AIL load under consideration and the AIL transport vehicle proposed.

Aberdeen Port to B9077

4.3 Allelys report describes the AIL route from Aberdeen Port through the city to the B9077. Over this section of route AECOM note the following.

- If the Regent Quay exit from the port is used temporary removal of street furniture will be required at the A956 Trinity Quay / Market Street junction; 2 no. traffic signal poles and 2 no. illuminated bollards (Allelys page 15). This would be the least onerous street furniture requirement.
- If the Commercial Quay exit from the port is used temporary removal of street furniture will be required at the Commercial Quay / A956 junction. Due to shunt manoeuvring 5 no. traffic signal poles, 2 no. sections of pedestrian guard railing,1 no. illuminated bollard, 1 no. lighting column and 1 no. road sign (Allelys page 17&18).
- If the Albert Quay exit from the port is used temporary removal of street furniture will be required at the Albert Quay / A956 junction. Due to shunt manoeuvring 9 no. traffic signal poles, 5 no. sections of pedestrian guard railing, 2 no. illuminated bollards, and 1 no. road sign (Allelys page 21&22). This would be the most onerous street furniture requirement.
- River Dee Victoria Bridge. The stone arch construction of Victoria Bridge is structurally more suitable to AIL transports than some other types of bridge construction.
- Victoria Bridge / South Esplanade West. Temporary removal of street furniture required; 4 no. traffic signal poles, 1 no. bollard, and 2 no. road signs (Allelys page 25). South Esplanade West would also be used if the AIL transport departed the port from Torry Quay.
- A956 Wellington Road / West Tullos Road roundabout. Temporary removal of street furniture; 1 no. illuminated bollard, and 3 no. road signs on central island (Allelys page 31).

B9077 to A957 (Slug Road)

4.4 Allelys report describes the AIL route along the B9077 corridor to its junction with the A957 (Slug Road) just south of the Durris Bridge. Over this section of route AECOM note the following.

- B9077 Bridge of Dee Roundabout. Temporary removal of street furniture; 2 no. illuminated bollards, 1 no. illuminated sign, 1 no. sign, 1 no. section pf pedestrian guard railings, and 1 no. chevron sign on roundabout island (Allelys pages 35&36).
- Allelys note the presence of various road bridges along the B9077 corridor. The bridge alignments do not present geometric constraints for the AIL transport as B9077 road geometry is essentially benign (relatively flat & straight for the most part). The bridges are mostly the responsibility of Aberdeenshire Council (see paragraphs 5.7 to 5.14)
- Tree trimming may be required along the B9077 corridor to lift foliage above 5m. Specific locations are not identified within this report.

A957 to Fetteresso Forest Access

4.5 Allelys report describes the A957 AIL route from the B9077 junction to the Fetteresso Forest access. Over this section of route AECOM note the following.

- Blairydryne Bridge. Oversail of third-party land on inside of bend likely required. Also a requirement to ensure AIL transport can oversail bridge parapets (Allelys page 47). To enable the height to be achieved bridging plates and ramps will be required to raise the height of the bogies on the approach. Vehicle swept-path analysis has been undertaken at this constraint. The turning space currently

available on the north of the bridge may require to be extended on the west edge to allow the forward and rear bogies to line up with the bridge/plating (see paragraph 4.8).

- Cryne Corse Road. Oversail of third-party land on inside of bend likely required. Also a requirement to ensure AIL transport does not compromise stone retaining wall on inside of bend (Allelys page 48). Vehicle swept-path analysis has been undertaken at this constraint (see paragraph 4.9) and further investigation of the retaining wall is recommended (outside scope of this report).

Fetteresso Forest Track

4.6 Allelys report describes the AIL route from the A957 to Fetteresso Substation. This section of route is forestry access track. Over this section of route AECOM note the following.

- Forestry track bridges are present at Black Burn and Cowie Water. The bridges over the Black Burn and Cowie Water within the Forestry area are likely to have been designed for 40Te single track vehicles. This will not be adequate for the proposed AIL and overbridging should be allowed for on both structures. Allelys recommend a structural assessment of the Black Burn bridge for the AIL transport (outside scope of this work - see paragraph 5.8).
- At Cowie Bridge Allelys recommend temporarily overbridging the existing bridge. Most likely using a temporary steel spanning structure on the alignment of the existing bridge for the transport to pass across, and removed after transport passage. The culvert at Whiting Burn should also be assessed for bearing capacity or suitability for temporary overbridging in similar fashion to Cowie Water Bridge.
- Forestry Access Track. For the majority of its length the forestry access track is negotiable by the AIL transport. Allelys recommendation is the vehicle negotiates the route at slow speed with banksmen. Some vegetation pruning may be required depending on seasonal growth.
- The last two significant right-hand turn on the access track (the latter being the right-hand turn into the environs of the substation entrance) are identified as constraints. Track widening and vegetation clearance for oversail will be required (see paragraphs 4.10 and 4.11).

AIL Swept-Path Analysis

4.7 Allelys report at their Appendix D (Swept Path Analysis) provides vehicle swept-path drawings for identified constraints along the AIL route. At these locations public road improvements (PRI) or forestry access track improvements are identified as likely requirements.

4.8 A957 Blairydryne (Allelys Drawing Number **ALL-A220899-SPA-01**). Shows a requirement for oversail of third-party land on inside of left-hand bend onto bridge. Some use of the existing offside overrun area on approach to bridge is made, although the full extent of the existing overrun area cannot be utilised as manoeuvring into this area would be an additional constraint for AIL transport.

4.9 A957 Cryne Course Road (Allelys Drawing Number **ALL-A220978-SPA-02**). Shows requirement for oversail of third-party land on inside of left-hand bend. The AIL transport's nearside wheels will run along the edge of the surfaced carriageway immediately adjacent to a stone retaining wall. Public road improvement (PRI) on outside of bend (circa 135m^2) will provide greater clearance between nearside wheels and edge of carriageway, reducing loading on retaining wall. Some oversail on inside of bend will remain.

4.10 Forestry Access Track at approximate OS Grid Reference NO772863 (Allelys Drawing Number **ALL-220978-SPA-03**). Shows requirement for overrun and oversail on inside of right-hand bend. AIL transport offside wheels overrun edge of forestry track, and ground falls away at this point. Public road improvement (PRI) on outside of bend (circa 250m^2) needed to address wheel overrun on inside of bend. Some oversail on inside of bend will remain.

4.11 Forestry Access Track at approximate OS Grid Reference NO785861 (Allelys Drawing Number **ALL-220978-SPA-04**). Shows requirement for oversail on inside of right-hand bend. Further study required to assess requirements for circa 160m^2 of vegetation and ground clearance to facilitate required oversail.

4.12 The above listed drawings confirm that only a limited amount of PRI / forest track widening would be required on the proposed route for the AIL transport to deliver the transformer to Fetteresso Substation.

5. Schedule of Constraints

Schedule of Constraints

5.1 AECOM have reviewed the proposed AIL route between Aberdeen Port and Fetteresso Substation to identity potential constraints that may impact on the AIL transport.

5.2 **Appendix E** of this report contains a schedule of constraints for the proposed AIL route. At this stage of work minor culverts have not been specifically or individually identified. Only culverts identified by Aberdeenshire Council as Tier 3 Bridges are included by name in the schedule of constraints.

5.3 The schedule of constraints encompasses the following.

- 6 no. street furniture locations.
- 13 no. bridges.
- 3 no. culverts.
- 1 no. retaining wall.
- 37 no. overhead (36 power or telecom lines & 1 no. structure)

5.4 An initial assessment of the above constraints is provided in this chapter. Their significance, potential mitigation, and further work that may be required outside the scope of this study are summarised.

Street Furniture

5.5 The 6 no. locations identified where temporary street furniture removal will be required are within Aberdeen City. The quay used by the AIL at the port will determine the level of street furniture intervention required. The need for street furniture temporary removals could be reduced – i.e. through the use of Albert Quay for instance.

5.6 The identified street furniture removals are classified as medium risk by Allelys for AIL departing Aberdeen Port. Temporary Traffic Regulation Orders will be required for (shunt) manoeuvring of the AIL. This matter should be raised with Aberdeen City Council as relevant roads authority. Vehicle swept-path analysis on topographic survey (showing all street furniture) may be required to establish and finalise requirements for street furniture temporary removals.

Bridges

5.7 The 13 no. bridge locations on the proposed AIL route are potential weight and width constraints. Detailed assessments of these structures are excluded from the scope of this work.

5.8 Structures information has not been requested from the asset owners at this stage. A general review of the structures has been carried out and it is believed any constraints which may arise can be dealt with in the final route design. The findings of this study regarding bridge constraints are summarised in **Table 1**. Details of all structures will require to be obtained from the asset owners and be screened out for the proposed loads. Assessments of the structures identified by the owners will require to be carried out.

5.9 Aberdeenshire Council classify bridges into ‘Tiers’ based on size and heritage. Tier 1 are large bridges with deck length over 20 metres for single span and over 30 metres for multi span, and include all Category A listed heritage structures. Tier 2 are medium sized bridges with deck length over 8-20m for single span and 12-30m for multi span, and include all Category B and C listed heritage structures. Tier 3 are small bridges with deck lengths up to 8 metres for single span and up to 12 metres for multi-span.

5.10 Allelys Route Report at their Appendix A gives loads of 16.07 tonnes per axle for the bogies carrying the SGT. This equates to a load of 161 kN per axle. Each axle has 8-wheels, giving a load of 2.01 tonnes or 20.1kN per wheel (if uniformly distributed).

5.11 On the proposed AIL route Kirkton of Durris and Blairydryne bridges have previously been assessed at ratings of 45HB and 26.5HB respectively. HB units are used when considering AIL loading. One unit of HB loading is equivalent to 10kN per axle. The Blairydryne rating of 26.7HB units therefore equates to an axle loading of 26.7 x 10 kN = 267 kN per axle.

5.12 In simple terms the AIL vehicle proposed to transport the SGT should provide sufficient axles per bogie (14 no.) and wheels per axle (8 no.) to distribute the weight of the SGT to below the HB ratings for the roads and bridges along the route. The minimum rating for roads is 30HB (rising to 37.5HB and 45HB for primary roads and motorways respectively).

5.13 None of the bridges on the B9077 or A957 roads are identified as 'Bridges with weight restrictions' by Aberdeenshire Council. On the B9077 corridor all bridges except one are Tier 3 small bridges, and could be spanned temporarily for passage of the AIL transport using spanning steels if necessary. The one exception is Tilbouries Bridge (Ref 030) which is a Tier 1 bridge (reinforced concrete arch with deck length likely > 20m). This bridge should provide a minimum rating of 30HB (300 kN per axle) and should accommodate the AIL Transport as per paragraph 5.9 (AIL load forecast at 161 kN per axle). As per paragraph 5.8 details of this structure will require to be obtained from the asset owners and be screened out for the proposed loads. If required by the owners an assessment of this structure will require to be carried out in the final route design.

5.14 On the forestry track a previous investigation of Cowie Bridge found it would be able to sustain a 14-axle / 12.5 tonnes per axle AIL transport. The proposed AIL transport for Fetteresso is 14-axle / 16.07 tonnes per axle, so exceeds the previously studied loads. The previous investigation also measured the clear width of the Cowie Bridge deck to be 3.23m. The proposed Fetteresso AIL will have a wheel width of 3.0m. Given the above Alleys conclude the Cowie Water bridge is not suitable for the proposed AIL transport and overbridging will be required. It should be assumed this requirement also will apply to the forestry track Black Burn bridge encountered immediately on turning off the A957.

AECOM Ref	Authority	Notes	AIL Constraint
004 Victoria Bridge	Aberdeen City	Masonry Arch bridge	Unlikely to be a constraint. Check with bridge authority. Alternative via A956.
006 Wellington Road	Network Rail	Railway Bridge	Unlikely to be a constraint. Temporary spannable. Check with bridge authority.
010 Hilldowntree	Aberdeenshire City	Tier 3 Bridge	Small bridge. Temporary spannable. Check with bridge authority.
013 Banchory Devenick	Aberdeenshire Council	Tier 3 Bridge	Small bridge. Temporary spannable. Check with bridge authority.
017 Ardoe	Aberdeenshire Council	Tier 3 Bridge	Small bridge. Temporary spannable. Check with bridge authority.
024 Mill Inn	Aberdeenshire Council	Tier 3 Bridge	Small bridge. Temporary spannable. Check with bridge authority.
030 Tilbouries	Aberdeenshire Council	Tier 1 Bridge	Unlikely to be a constraint. Check with bridge authority.
035 White Cottage	Aberdeenshire Council	Tier 3 Bridge	Small bridge. Temporary spannable. Check with bridge authority.
036 Durris Mains	Aberdeenshire Council	Tier 3 Bridge	Small bridge. Temporary spannable. Check with bridge authority.
041 Kirkton of Durris	Aberdeenshire Council	Tier 2 Bridge. Previously assessed at 45HB rating	Unlikely to be a constraint. Check with bridge authority.
049 Blairydryne	Aberdeenshire Council	Tier 2 Bridge. Previously assessed at 26.7HB rating.	Unlikely to be a constraint. Check with bridge authority.
058 Black Burn	Forestry Commission	Access Track Bridge	Potential constraint. Temporary spannable. Check with bridge authority.
059 Cowie Burn	Forestry Commission	Access Track Bridge	Potential constraint. Temporary spannable. Check with bridge authority.

Table 1. Summary of Bridge Constraints

Culverts

5.15 At this stage only three culverts are identified on the proposed AIL route; at Spyhill and Black Burn on the A957, and at Whiting Burn on the forestry access track.

5.16 Typically, a culvert is deemed to have sufficient cover if it has >0.5m depth of road construction above it, and pre and post AIL load inspection would be carried out as necessary. Where culverts are at a shallow depth (<0.5m road cover) or inspection shows there are obvious structural defects they can be temporarily plated over with spanning steel to distribute loads across the culvert for AIL passage.

5.17 At this stage of work AECOM have not requested culvert details or undertaken any condition surveys of culverts. All culverts on route are presently regarded as suitable for the proposed AIL transport given most culverts can be crossed by use of temporary spanning steels if required. Should any concerns subsequently arise during final design of the route, then culverts should be inspected and appropriate spanning measures planned in advance of the proposed AIL transport.

Retaining Walls

5.18 A single retaining wall location on the proposed AIL route is identified as a potential constraint. The retaining wall is located on the A957 on the inside of the left-hand bend at Cryne Corse Road. It is a low-level masonry / stone wall on the low side of the road.

5.19 To avoid adverse loads from the AIL the road position of the transport will be moved to the opposite side of the carriageway as far from the retaining wall as the route allows. Some PRI is recommended at this location to reduce potential adverse loading on the retaining wall – see **Appendix F** of this report.

5.20 **Figure 3** shows a typical cross-section through a carriageway and retaining wall and demonstrates how positioning the vehicle on the opposite side of the carriageway from the retaining wall minimises the influence of vehicle loads on the retaining wall.

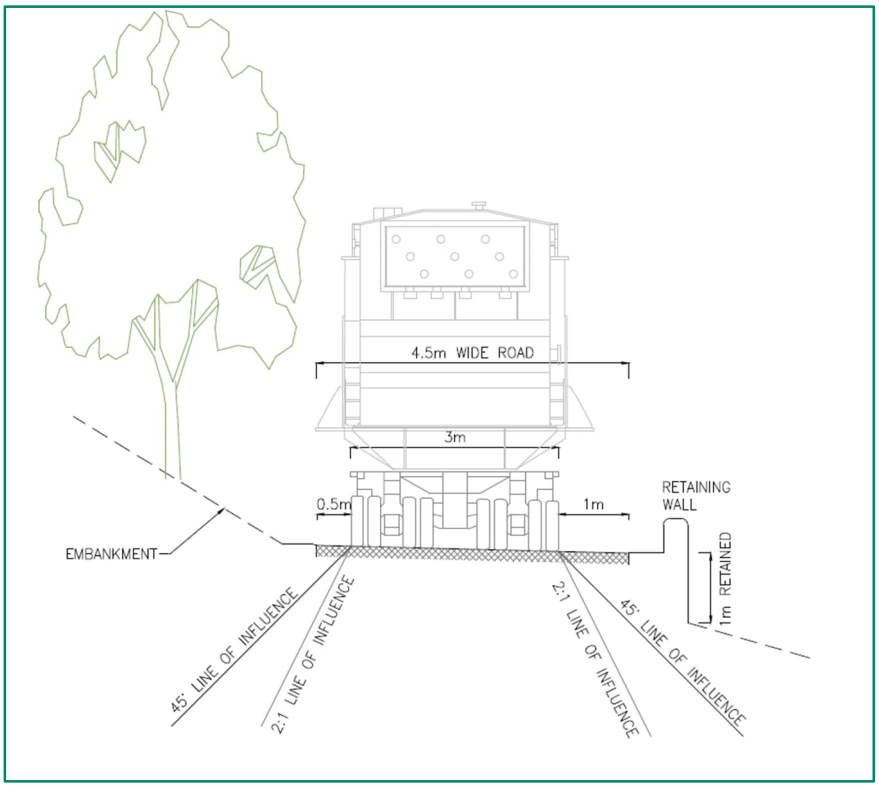


Figure 3. Carriageway and Retaining Wall – Typical Lines of Influence

Overhead Constraints

Structures

5.21 The A90 Dee Viaduct over the B9077 at Maryculter is the only structural overhead constraint on the proposed route. The viaduct has a published clearance height on the B9077 of 5.8m (Aberdeenshire Council – Bridges Sensitive to High Loads). This clearance should be suitable for the AIL load. The vehicle specification in the Allelys Route Report (Appendix D) indicates the SGT load can travel at a minimum road clearance of 0.15m, giving the transport a height of 5.15m. This will pass under the A90 Dee viaduct on the B9077.

5.22 The A90 Dee Viaduct over the B9077 could impact on the transport of the alternative Efacec Disassociated Phase SGT. This SGT has a height of 5.8m, meaning its minimum transport dimension will exceed the published viaduct clearance of 5.8m. For this SGT an alternative route to the B9077 under the A90 Dee Viaduct may need to be considered. The weight and dimensions of this SGT may mean the A93 corridor could be a viable alternative AIL transport route.

Overhead Lines

5.23 36 overhead line locations (15 power and 21 telecom) are identified on the proposed AIL route. The AIL minimum transport height is 5.15m. High voltage lines power lines (6 locations) visually have ample clearance for AIL passage.

5.24 Low voltage power lines (9 locations) should have at least the minimum 5m clearance required for the passage of road vehicles. Additional clearance to allow passage of a 5.15m height AIL transport may be required. Requirements and mitigation for clearing low voltage power lines should be addressed during final design of the route.

5.25 Telecom lines (21 locations) should have at least the minimum 5m clearance required for the passage of road vehicles. Additional clearance to allow passage of a 5.15m height AIL transport may be required. This is not a material constraint as telecom lines can be temporarily raised (manually) for passage of AIL transport if need be. Requirements and mitigation for clearing telecom lines should be addressed during final design of the route.

5.26 Low voltage power and telecom overhead lines along the B9077 could impact on the transport of the alternative Efacec Disassociated Phase SGT. This SGT has a height of 5.8m, meaning its minimum transport dimension will exceed the minimum road clearances of 5m. Requirements and mitigation for clearing low voltage power lines should be addressed during final design of the route if the Efacec Disassociated Phase SGT were to be transported.

Public Road Improvements

5.27 In addition to the constraints listed above a requirement for a limited amount of public road improvements has also been identified. AIL swept-path analysis is reported at paragraphs 4.7 to 4.12 of this report. A need for road improvements is identified at four locations – two on the A957 and two on the forestry access track. **Appendix F** of this report highlights the location of the road improvement works.

5.28 Following this initial assessment of road improvement requirements, specific further assessment for the four identified locations is recommended as follows.

- Detailed topographic surveys of the four road locations.
- AIL vehicle swept-path analysis carried out using the topographic survey.
- Define exact extents of road improvements required and land take requirements.
- Procure appropriate public road improvement designs as required.

6. Summary & Conclusions

6.1 AECOM has been commissioned by SSE to undertake a transport appraisal for an Abnormal Indivisible Load (AIL) into Fetteresso Substation. The appraisal investigates the routing, constraints, and mitigation required to transport the AIL from the Port of Aberdeen to the substation.

6.2 AECOM have reviewed the previous A93 route as an option for transporting the SGT under consideration in this study. In combination with advice from Allelys a number of potential constraints within the city of Aberdeen were identified. This lead to a conclusion that a route through to city towards the A93 would unlikely be viable for the SGT under consideration. An alternative route via the B9077 has been identified.

6.3 The proposed route leaves Aberdeen Port and crosses the River Dee on the A956 via Victoria Bridge. It continues on the A956 until the roundabout junction with West Tullos Road. On West Tullos Road the route heads northwest to the roundabout junction with the B9077. On the B9077 the route continues westbound away from the city, following the B9077 until it meets the A957 (Slug Road) at the Durris junction immediately south of the River Dee. From this location the route follows the same A957 / Fetteresso Forest access route as previously used to deliver the 275/132kV transformer to Fetteresso Substation.

6.4 AECOM commissioned Allelys Group to undertake an assessment of the proposed route for AIL transport. The Allelys Route Report is provided as a main appendix to this report. AECOM in conjunction with Allelys reviewed the proposed route between Aberdeen and Fetteresso to identity potential constraints that may impact on AIL transport. Potential constraints are summarised as follows.

- 6 no. street furniture locations.
- 13 no. bridges.
- 3 no. culverts.
- 1 no. retaining wall.
- 37 no. overhead (36 power or telecom lines & 1 no. structure)
- 4 no. Public Road Improvements (PRI)

6.5 Structures information has not been requested from the asset owners at this stage. A general review of the structures has been carried out and it is believed any constraints on route can be dealt with in the final route design. Details of all structures will require to be obtained from the asset owners and be screened out for the proposed loads. Any assessments of the structures identified by the owners will require to be carried out in the final design of the route.

6.6 Only the public road improvements (two on the A957 and two on the forestry access track) are flagged as high-risk constraints at this time. Third-party land may be involved with either AIL overrun or oversail. Recommendations on next steps with regard to the PRI locations are provided within this report.

Appendix A

Site Location


A944
Westhill
Aberdeen City
Aberdeen
Midmar Forest
A90
A956
A93
A957
Banchory
Blackhall Forest
Portlethen
Newtonhill
Fetteresso Substation
Stonehaven

Appendix B

Study Scope

AECOM Limited
1 Tanfield
Edinburgh EH3 5DA
United Kingdom

T: +44 131 301 8600
aecom.com

19 October 2022

David Murphy
Scottish & Southern
Electricity Networks
1 Waterloo Street
Glasgow G2 6AY

Fetteresso Substation Upgrade Transport Assessment – Revised Proposal

Dear David,

Further to our Teams meeting on Monday 17 October the AECOM proposal has been revised as discussed. It is set out below for your consideration.

Understanding Brief

- Undertake a detailed transportation assessment and swept path analysis on behalf of the Fetteresso project to confirm a suitable route for transport of a new 400/132kV SGT to site and identify the most appropriate transportation vehicle. The SGT will be delivered to Aberdeen Port for subsequent road transport to site;
- Assessment output must identify the location of key public road improvement works (PRI) and any temporary road widening and bridge/culvert strengthening measures necessary to ensure safe transportation to site;
- The assessment of abnormal loads shall be limited to the following;
    - Replacement 400/132kV SGT arriving at Aberdeen Port and transported to Fetteresso substation by road;
    - Three Phase Efacec with transport dimensions = 11m (L) 4m (W) 5m (H) and weight 290T;
    - Vertical constraints for transport of Disassociated Phase Efacec SGT will be identified (transport height 5.8m excluding vehicle).

AECOM Response to Brief and Proposed Methodology

AECOM work closely with Allelys Heavy Haulage throughout the UK carrying out route assessments, bridge assessments and certification, liaison with local authorities and highways agencies, and public road improvements for abnormal indivisible loads. AECOM / Allelys have undertaken a range of abnormal load route studies in this area and have an understanding of constraints on the regional highway network.

The AECOM response to the brief and proposed methodology are set out below. The section references are those from section 2.5 Scope Requirements in the LT270 Fetteresso - Transportation Assessment Scope of Works.

2.5.1 Transport Assessment for Transformer Movements

A detailed abnormal load assessment will be produced as follows;

a) Review Supporting Information. Supporting information has been reviewed and will be kept under review during the study to inform the transport assessment. The information on abnormal loads and dimensions will be utilised early to inform thinking on the type of vehicle required for transporting the proposed SGT.

b) Determine if the route shown in Figure 2 (of the brief) is suitable for delivery of the transformer. Figure 2 shows the A93 was used to deliver the existing SGT to site via the A957 Slug Road and Forestry Commission access track. The review of supporting information and likely transport vehicle requirements will inform a route visit by AECOM and Allelys. The route visit will encompass;

i. Aberdeen Port to A90 / A93. We will use experience and knowledge of abnormal load assessments in the region to identify a preferred route from the port to the environs of the A93 west of the A90;

ii. The A93 from the A90 to the A957 at Crathes, and the A957 Slug Road to the Forestry Commission track entrance;

iii. The Forestry Commission track to Fetteresso Substation, and the on-site substation layout.

Liaison with the client and Forestry Commission will ensure appropriate access permissions and protocols are in place for visiting sections of route that are not public roads. The route visit will provide an understanding of the feasibility and practicality of transportation with reference to safety and impacts on communities and infrastructure along the route.

c) Identify the most suitable vehicle and transportation arrangement. As per above AECOM have an excellent working relationship with Allelys. We will use this relationship to make clear recommendations on vehicle type for the load to be transported in light of SGT transport specifications and information gathered from route visit.

d) Schedule of Constraints. Information collated through the route visit will form a schedule of constraints. This will be a spreadsheet log populated as the study progresses. The spreadsheet will be a working document listing bridges, culverts, structures, height constraints and will include;

- Constraint name and location [co-ordinates]
- Nature of constraint [highway width, bridge, culvert, overhead line etc.]
- Details of constraint [width, height, weight limits]
- Statutory Bodies responsible for constraint [where relevant]
- For structures a clear statement abouts its condition and its suitability to accommodate abnormal vehicle loads.

e) Schedule of Constraints. The suitability of structures on route to accommodate vehicle type and load will be recorded. 3rd party statutory bodies will be consulted, and relevant structural / inspection records sought. 3rd parties will primarily be relevant roads authorities including Transport Scotland. AECOM have well established contacts with relevant roads authorities regarding abnormal load route assessments.

Structures on route where potential concerns exist regarding the abnormal load will be identified. Recommendations to mitigate impacts and identification of further assessment required to validate the constraint for the abnormal load will be made.

f) Detailed Swept Path Analysis. Detailed vehicle swept-path analysis will be limited to constrained locations along the preferred route. Stretches of the preferred route where swept-paths are unlikely to be a material constraint will not be assessed. Such stretches will be identified in reporting with clear reasons explaining why swept-path analysis is not required. AECOM will liaise with the client regarding route mapping held by the client from previous studies.

AECOM recommend using Ordnance Survey Master Map to undertake swept path analysis along the preferred route. This mapping is sufficiently accurate to identify swept-path constraints and areas of overrun / oversail out with the carriageway. Recommendations will be made regarding areas where detailed topographic survey may be required in future to resolve specific swept-path oversail / overrun issues.

g) Engage with relevant and necessary 3rd Party Statutory Bodies. We will use our knowledge and experience of the design and approval of abnormal load routes to engage all relevant stakeholders and ensure the assessment process complies with relevant legislation. This exercise will also inform the study of any other external works that should be taken account of by this study.

h) Identify Key Public Road Improvements [PRI]. Swept path analyses will identify areas where PRI may be required along the preferred transport route. A schedule will record relevant PRI elements as set out in the brief.

i) Detailed Route Drawings. These will be produced to relevant scale showing the location of PRI / bridge and culvert strengthening / temporary land-take. The drawings will be informed by and reference the Constraints and PRI schedules.

j) Transport Assessment Report. A detailed transport assessment report will be prepared suitable for submission to Transport Scotland's Abnormal Routing Section, and all other relevant statutory bodies (primality Aberdeen City Council and Aberdeenshire Council). AECOM are practised and experienced in delivering abnormal route assessments, including producing required reporting for relevant legislative organisations.

Appendix C

Proposed Transformer Dimensions

2) New 400/132kV Super Grid Transformer to be transported to Fetteresso Substation:

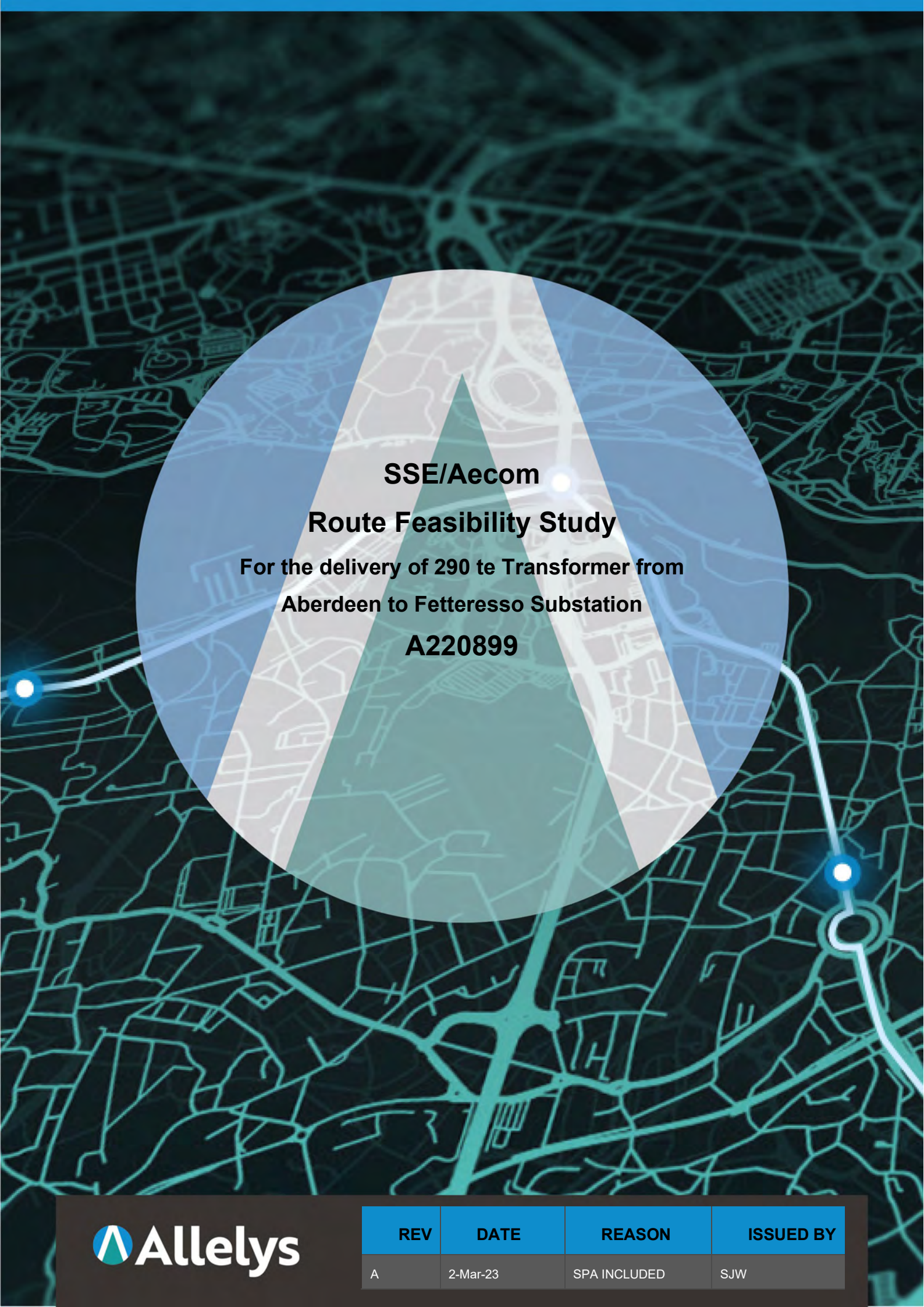
Refer to Table 2 below for the potential transport dimensions and weights for the proposed SGT.

Type 11A: 480MVA (400/132kV) – Three Phase				
Manufacturer	Transport Dimensions (m)			Transport Weight (T)
	Length	Width	Height	
Efacec	11	4	5	290
Tamini	10.5	3.9	4.45	215
Smit	11.21	3.846	4.77	271
Type 11B: 480 MVA (400/132kV) – Single Phase				
Manufacturer	Transport Dimensions (m)			Transport Weight (T)
	Length	Width	Height	
Tamini	5	3.4	3.9	81
Smit	5.748	3.686	3.945	90
Type 11: 480MVA (400/132kV) – Disassociated Phase				
Manufacturer	Transport Dimensions (m)			Transport Weight (T)
	Length	Width	Height	
Efacec	5	3.3	5.8	109

Table 2 - Proposed Super Grid Transformer Dimensions and Weights

Appendix D

Allelys Route Report



SSE/Aecom

Route Feasibility Study

For the delivery of 290 te Transformer from Aberdeen to Fetteresso Substation

A220899

Allelys

REV	DATE	REASON	ISSUED BY
A	2-Mar-23	SPA INCLUDED	SJW

Table of Contents

All the way with Allelys.

Together, we move it all. We believe any challenge, no matter how big or small, is better tackled as a team. We ALL have a part to play and that starts with getting to know each other better.

Allelys provides heavy lift, specialist transport, heavy haulage and logistics solutions to our diverse and innovative customers. We face together all the unique projects with a creative solution, listening from the start and communication at every opportunity.

Our non-defeatist attitude and agile approach means you will be partnering with a team that never gives up. Even in the face of the toughest challenges we aim for joint success.

SERVICES

All the right expertise in **All** the right areas.

Heavy Lift & Specialist Transport

Industrial Plant Services

Heavy Haulage

General Haulage

Our technical knowhow and **experience**

Specialist Equipment Hire

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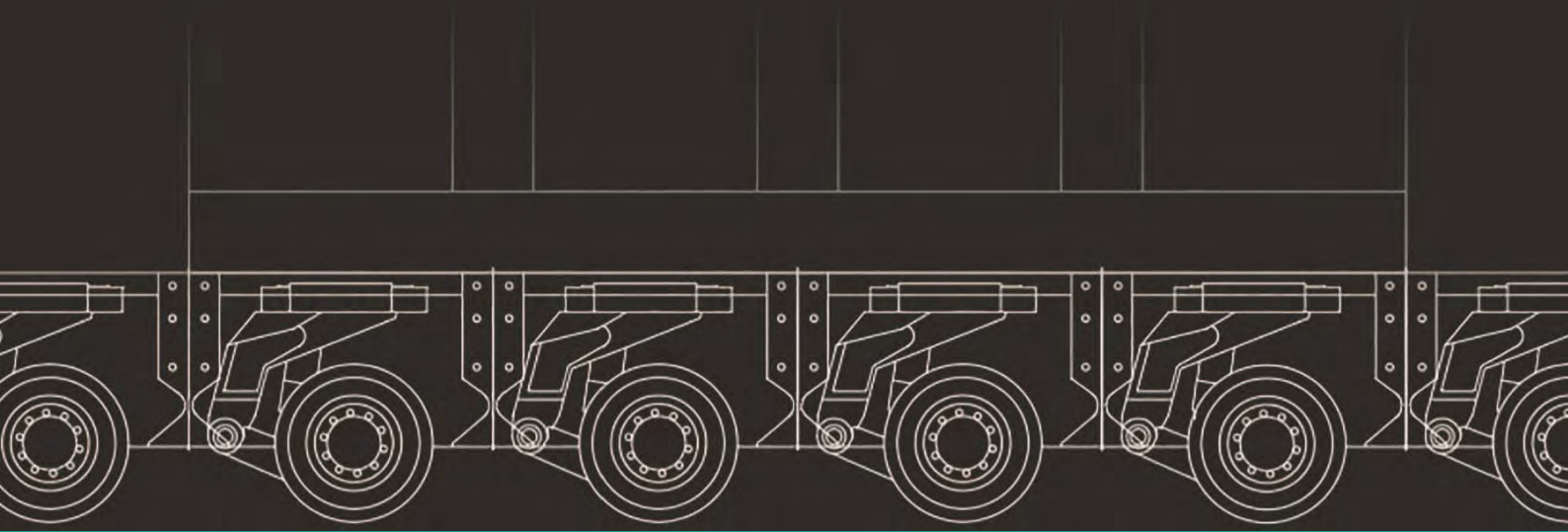
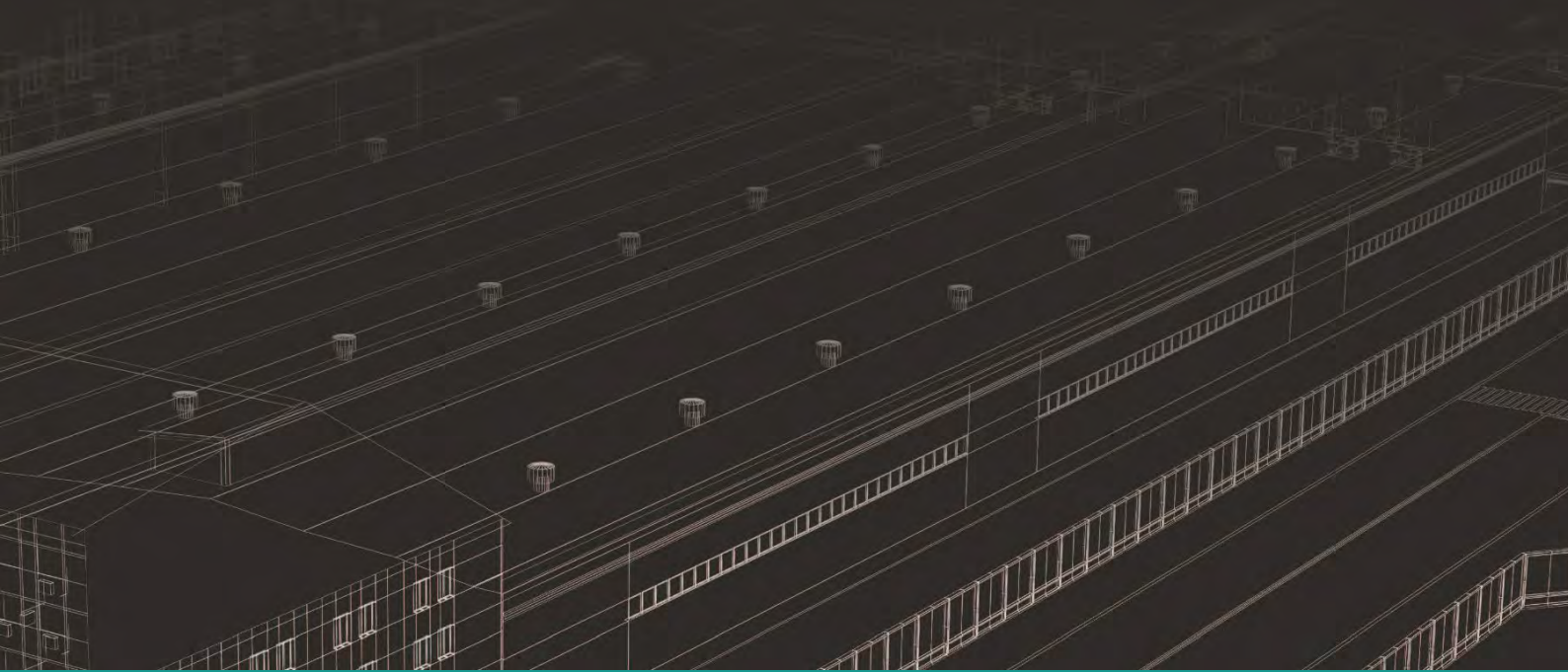
Pallet Haulage

Warehousing & Storage



SECTORS

Whatever field you're in, we cover them **All.**



1. Executive Summary

1.1. Allelys have been asked by Aecom to provide a feasibility survey for the transport of 290 te transformer from Port of Aberdeen to Fetteresso Substation.

1.2. The objective of this document is to clearly outline a workable delivery concept for the enclosed cargo whilst adhering to UK legislation and equipment capabilities. Our recommendations are based on a wealth of knowledge and experience however, are subject to relevant permissions at the time of delivery.

1.3. The 290 te transformer is to be delivered into Port of Aberdeen and offloaded by either crane or Ro-Ro operation.

1.4. There are several quays that would be suitable as receiving points for the cargo and access is possible from all quays, subject to street furniture removals.

1.5. Offload by crane would be possible from Albert Quay, Regent Quay and Torry Quay. Maximum ground bearing pressure at Regent Quay to be confirmed by the port authority.

1.6. Offload by Ro-Ro would be possible at Commercial Quay although detailed investigations have not been made into this offload method.

1.7. The route from Port of Aberdeen is considered negotiable with Police Escort, TTROs and street furniture removal(s). TTROs can take 12 weeks plus to process and should be planned accordingly.

1.8. The structural capacity of the route should be investigated further, details of all structures are included in Appendix C. However, it is known that the forestry track structure crossing Cowie Water is not suitable for AILs and will require overbridging. Further investigation will be required into the overbridging design and methods of build.

1.9. Oversail beyond the assumed highway boundary is required to the inside of two bends on A957 for which third party land owner(s) permission will be required.

1.10. The ground bearing pressure of a retaining wall to the nearside edge of the A957 is to be assessed at the left-hand bend at the junction with Cryne Course Road due to minimal clearance between the vehicle track and the edge of the road.

1.11. Remedial works are required at three locations on the forestry track to permit access for the vehicle including minor road widening and vegetation clearance.

2. Definitions & Terminology

2.1. *Definition of Abnormal Indivisible Load (AIL)*

2.1.1. The Department of Transport, of which the National Highways (NH) is an executive agency, state that the strict definition of an AIL refers to a load which cannot, without undue expense or risk of damage, be divided into two or more loads for the purpose of carriage on roads which, owing to its dimensions or weight, cannot be carried on a vehicle which complies in all respect with the 'standard vehicle regulations' these are:

- The Road Vehicles (Construction and Use) Regulations 1986 (as amended)
- The Road Vehicles (Authorised Weight) Regulations 1998 (as amended)
- The Road Vehicles Lighting Regulations 1989 (as amended)

2.1.2. All equipment should be stripped of their ancillaries before they are transported. The HA will only accept that further dismantling is not required where it cannot be economically achieved due to the requirement for its construction within factory environments or where extremely high tolerances have to be maintained.

2.2. *Legislation*

2.2.1. Conventional heavy goods vehicles have an operating weight limit of 44 tonnes. The category known as (AIL) covers those vehicles where the gross weight exceeds 44 tonnes. An Abnormal Load is defined as that which cannot be carried under Construction and Use (C&U) Regulations. Items which, when loaded on the load carrying vehicle exceed the weights encompassed by the C&U Regulations, but do not exceed Special Order Permission Limits are governed by Special Types General Order (STGO) categories 1 to 3 depending on size.

2.2.2. Where dimensions exceed 6,100 mm in width, 30,000 mm in rigid length or 150 tonnes gross weight, Special Order from National Highways, is required.

2.2.3. Special Order category AIL movements are authorised by the NH Abnormal Loads team, an executive agency of the Department for Transport (DfT, based in Birmingham).

3. Cargo Summary

3.1. The below information has been supplied by Aecom/SSE.

Description	Qty	Dimensions [mm]	Weight [kg]
Transformer	1	L 11,000 x W 4,000 x H 5,000	290,000

4. Locations

4.1. Delivery Address

4.1.1. Fetteresso Substation is located 21.4 miles south of Port of Aberdeen and is accessed via the A956, B9077, B979 and A957.

4.1.2. The final section of the route from the public road network to site is via private forestry roads.

4.1.3. The general condition of the local roads is good; however, some junctions require further assessment. See Section 7 for more detail.

4.2. Route Details

4.2.1. The nominated route is as follows, as shown in Figure 1:

Port of Aberdeen (port of delivery)
TL onto **A956 Market Street**
Continue onto **Victoria Bridge**
TR onto **South Esplanade W** (in contraflow)
Continue straight over roundabout onto **A956 Wellington Road**
TR at roundabout onto **W Tullos Road**
Continue straight over roundabout onto **A9077 Great Southern Road**
Continue straight over roundabout onto **B9077 Leggart Terrace**
Continue straight onto **B979**
Continue straight onto **B9077**
TL onto **A957 Slug Road**
TR onto **forestry track**
TL on **forestry track**
TL on **forestry track**
TL on **forestry track**
TR on **forestry track**
TR onto **site**
Fetteresso Substation (delivery point)

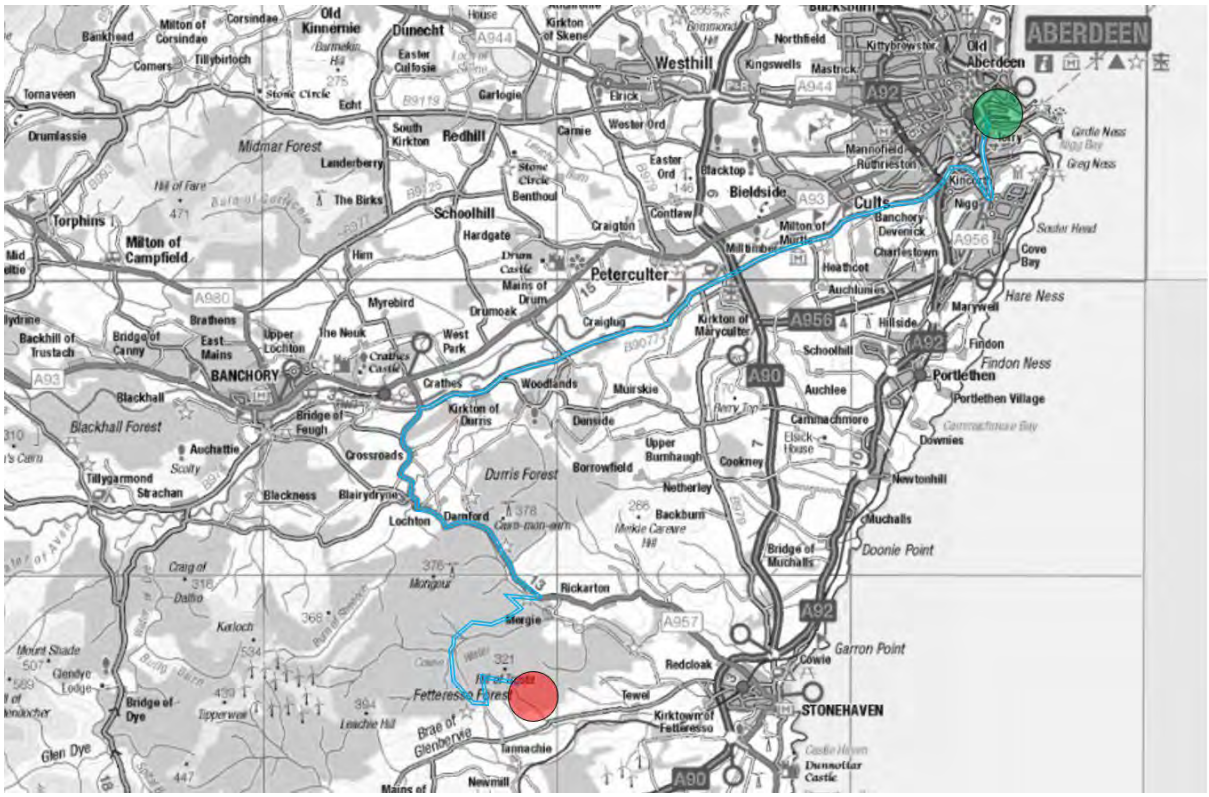


Figure 1 Port of Aberdeen to Fetteresso Substation delivery route

4.2.2. Full maps of the route are included under Appendix B.

4.3. Structures Details

4.3.1. There are multiple structures on the route, details of which are included in A220899 Fetteresso Structures List included in Appendix C.

5. Port of Entry

5.1. Port of Aberdeen

5.1.1. Port of Aberdeen is situated to the south of Aberdeen City Centre and has links to the only major A road in the area, the A956.

5.1.2. The port is made up of several docks, with Albert Dock and Victoria Docks being used for the majority of breakbulk cargo, see Figure 2 for more detail.

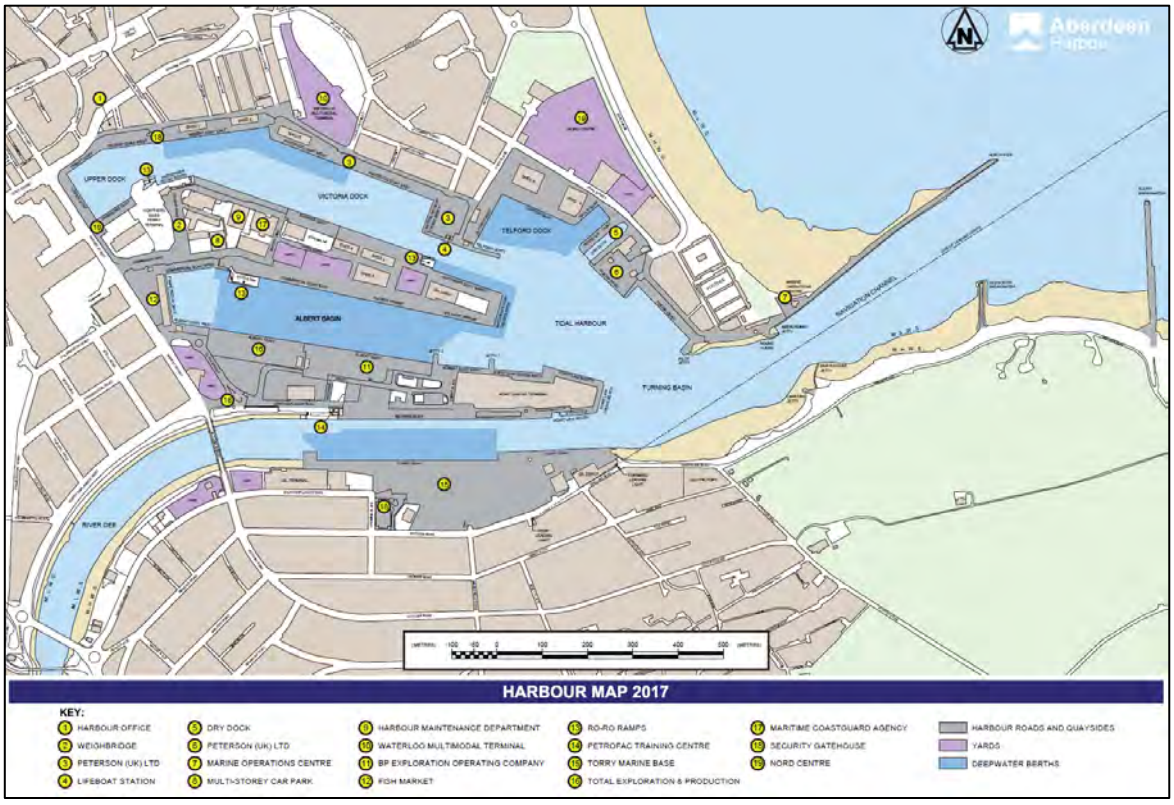


Figure 2 Port of Aberdeen Harbour Map 2017

5.1.3.Albert Quay (basin)

5.1.3.1. Suitable for heavy lift cranes and heavy cargo i.e., transformers and large electricals.

5.1.3.2. Heavy lift pad outrigger loads – 50 te on a 1 m x 1 m pad or 100 te on a 2.5 m x 2.5 m pad.

5.1.3.3. Will need to cross Victoria Bridge with trailer.

5.1.4.Regent Quay

5.1.4.1. Suitable for mobile cranes. Further checks will be required.

5.1.4.2. Will need to cross Victoria Bridge with trailer.

5.1.5.Commercial Quay

5.1.5.1. Suitable for Ro-Ro operations.

5.1.6.Torry Quay 3-6

5.1.6.1. Suitable for heavy lift cranes and heavy cargo i.e., transformers and large electricals.

5.1.6.2. Heavy lift pad outrigger loads – 115 te on a 1.5 m x 1.5 m pad or 134 te on a 2 m x 2 m pad.

5.1.6.3. Will not need to cross Victoria Bridge with trailer as quay is located on the south side of River Dee.

6. Equipment

6.1. Delivery Vehicle

6.1.1.For this assessment, it is proposed that the 290 te transformer be transported on a 28-axle girder frame trailer, as seen in Figure 3.

6.1.2.This transport arrangement has a gross weight 450.02 te, width 5.0 m, height 4.15 m and axle line load 16.1 te. Therefore, it is to be carried under Special Order legislation. Full technical drawing no. ALL-A220899-TA-01 is included under Appendix A.

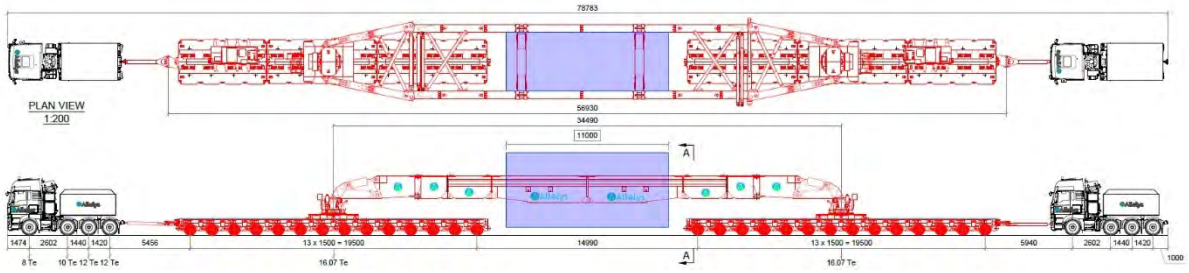


Figure 3 290 te transformer loaded within 28-axle girder frame trailer

7. Route Survey

7.1. *Route Survey Reference Sheet Notes*

7.1.1. Route feasibility recommendations have been identified in Section 7.3 and classified in terms of risk to delivery as follows:

High risk

- Third party land owner(s) permission
- PRI works

Medium risk

- Special manoeuvre e.g., shunt, contraflow, etc.
- Street furniture removals
- Vegetation pruning
- Independent structural assessment

Low risk

- Swept path analysis
- Temporary surfacing
- Parking restrictions
- Additional tractor unit
- Oversail of low-level street furniture and verges

7.1.2. Risk has been assessed in terms of enabling works time and complexity.

7.1.3. It should be noted that where route survey photos are of insufficient quality, Google Streetview images have been used.

7.2. *Route Survey High Level Notes*

7.2.1. B9077 and B979 are single carriageway from the Bridge of Dee Roundabout to the junction with A957. Therefore, it is recommended that the road be closed under Temporary Traffic Restriction Order (TTRO) or Police to hold eastbound traffic once the vehicle has joined the B9077 and exited onto the A957.

7.2.2. Pruning of vegetation will be required along the length of B9077 and B979 from Bridge of Dee Roundabout to the junction with A957.

7.2.3. A957 is single carriageway from the junction with B9077 and the junction with the forestry track. Therefore, it is recommended that the road be closed under Temporary Traffic Restriction Order (TTRO) or Police to hold northbound traffic once the vehicle has joined the A957 and exited onto the forestry track.

7.2.4. The forestry track is single carriageway throughout. Therefore, it is recommended that the road be closed once the vehicle has joined from the A957 and exited onto the substation.

7.3. Route Survey Reference Sheets

Ref. ALL-RS-A220899-01

Port of Aberdeen Regent Quay exit

Note- vehicle travels towards camera

Direction of Travel Location:	**Coordinates:**
LH turn from Port of Aberdeen onto Regent Quay	57.146317, -2.091767
Enabling Works Required:	**Enabling Work Grade:**
N/A	N/A
Assessment Works Required:	**Assessment Work Grade:**
Negotiable	Complete

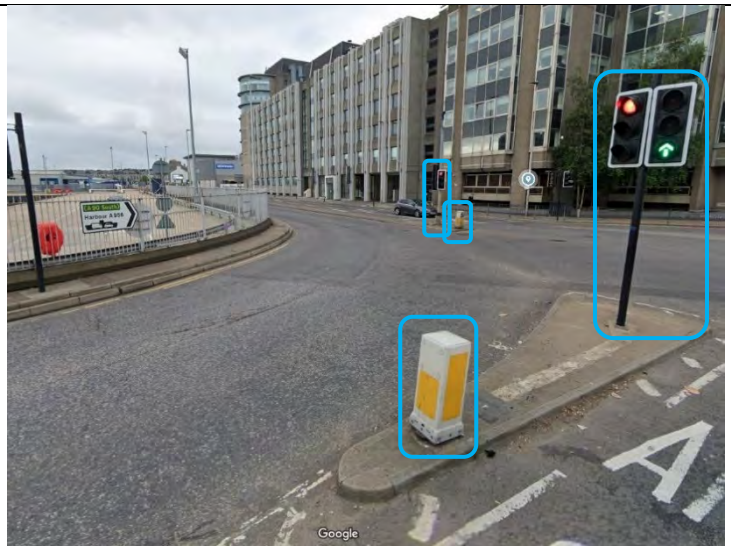
Ref. ALL-RS-A220899-02

Regent Quay/A956 Trinity Quay junction

Direction of Travel Location: LH turn from Regent Quay onto A956 Trinity Quay	**Coordinates:** 57.146107, -2.093996
Enabling Works Required: N/A	**Enabling Work Grade:** N/A
Assessment Works Required: Negotiable	**Assessment Work Grade:** Complete

Ref. ALL-RS-A220899-03

A956 Trinity Quay/A956 Market Street junction



Direction of Travel Location: LH turn from A956 Trinity Quay onto A956 Market Street	**Coordinates:** 57.145360, -2.095419
Enabling Works Required: TTRO for use northbound A956 Market Street carriageway Removal of 2 no. traffic signal and 2 no. illuminated bollard Temporary steel plating and kerb protection on 2 no. central splitter island, subject to SPA	**Enabling Work Grade:** **Medium** **Medium** **Medium**
Assessment Works Required: Negotiable with street furniture removals, SPA required	**Assessment Work Grade:** **Low**

Ref. ALL-RS-A220899-04

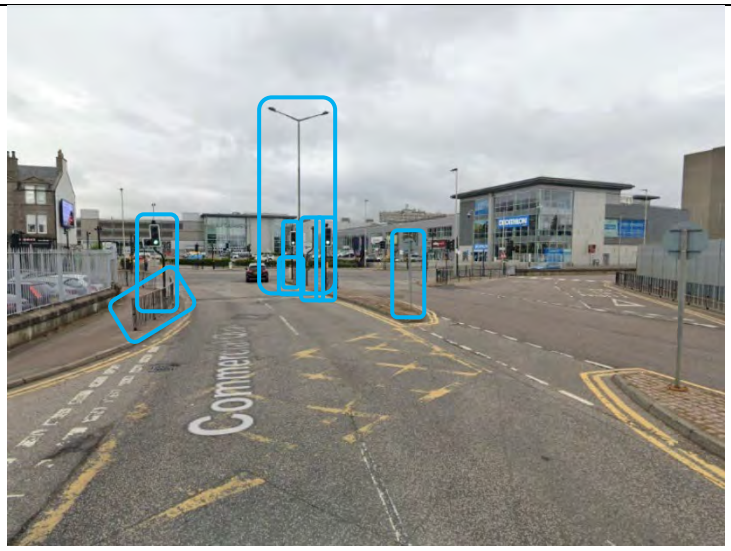
Port of Aberdeen Commercial Quay exit

Note- vehicle travels towards camera

Direction of Travel Location:	**Coordinates:**
Westbound out of Port of Aberdeen onto Commercial Quay	57.143649, -2.087603
Enabling Works Required:	**Enabling Work Grade:**
N/A	N/A
Assessment Works Required:	**Assessment Work Grade:**
Width of gate to be confirmed	**Low**

Ref. ALL-RS-A220899-05

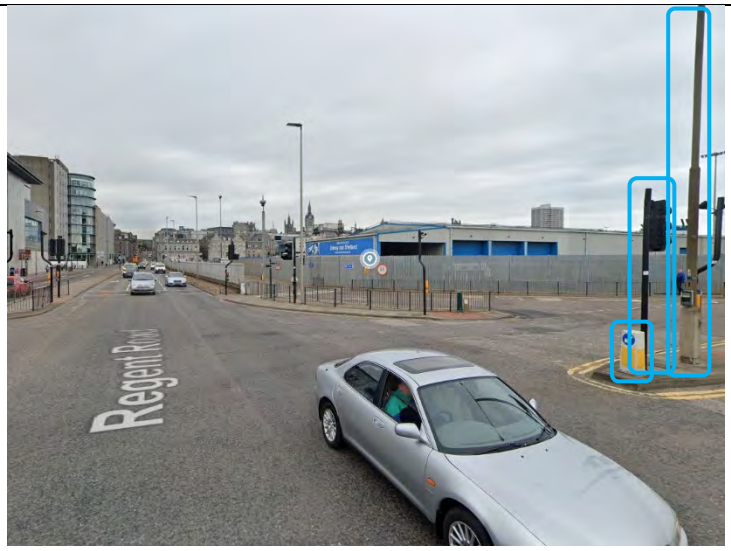
Commercial Quay/A956 junction



Direction of Travel Location: RH turn from Commercial Quay onto A956 Market Street in contraflow	**Coordinates:** 57.143490, -2.093141
Enabling Works Required: TTRO for shunt manoeuvre Removal of 5 no. traffic signal, 1 no. lamp post, 1 no. illuminated bollard, 2 no. railing sections and 1 no. non-illuminated road sign Temporary steel plating and kerb protection on 2 no. central splitter island, subject to SPA	**Enabling Work Grade:** **Medium** **Medium** **Medium**
Assessment Works Required: Negotiable with street furniture removals, SPA required	**Assessment Work Grade:** **Low**

Ref. ALL-RS-A220899-05 cont'd

Commercial Quay/A956 junction



Direction of Travel Location: RH turn from Commercial Quay onto A956 Market Street in contraflow	**Coordinates:** 57.143490, -2.093141
Enabling Works Required: TTRO for shunt manoeuvre Removal of 5 no. traffic signal, 1 no. lamp post, 1 no. illuminated bollard, 2 no. railing sections and 1 no. non-illuminated road sign Temporary steel plating and kerb protection on 2 no. central splitter island, subject to SPA	**Enabling Work Grade:** **Medium** **Medium** **Medium**
Assessment Works Required: Negotiable with street furniture removals, SPA required	**Assessment Work Grade:** **Low**

Ref. ALL-RS-A220899-05 cont'd

Commercial Quay/A956 junction

Direction of Travel Location:	**Coordinates:**
Southbound on A956 Market Street	57.143490, -2.093141
Enabling Works Required:	**Enabling Work Grade:**
TTRO for shunt manoeuvre	**Medium**
Assessment Works Required:	**Assessment Work Grade:**
Negotiable with street furniture removals, SPA required	**Low**

Ref. ALL-RS-A220899-06

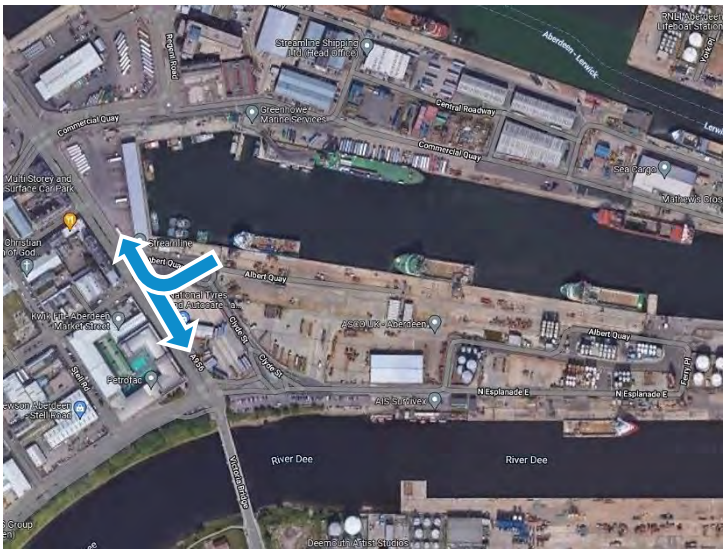
Port of Aberdeen Albert Quay exit

Note- vehicle travels towards camera

Direction of Travel Location:	**Coordinates:**
West bound onto Albert Quay	57.142085, -2.089850
Enabling Works Required:	**Enabling Work Grade:**
N/A	N/A
Assessment Works Required:	**Assessment Work Grade:**
Negotiable – gate width 7 m	Complete

Ref. ALL-RS-A220899-07

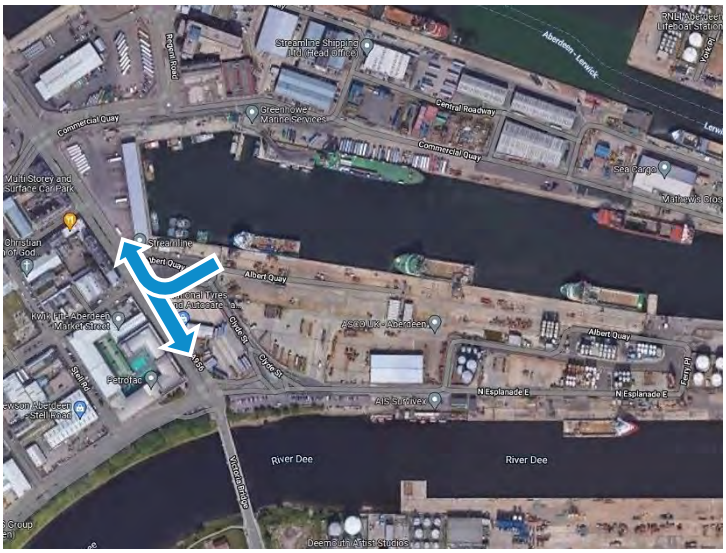
Albert Quay/A956 Market Street junction



Direction of Travel Location: RH turn from Albert Quay onto A956 Market Street in contraflow	**Coordinates:** 57.142164, -2.091501
Enabling Works Required: TTRO for shunt manoeuvre Removal of 3 no. traffic signal, 1 no. non-illuminated road sign, 1 no. illuminated bollard and 2 no. railing sections Temporary steel plating and kerb protection on 2 no. central splitter island, subject to SPA	**Enabling Work Grade:** **Medium** **Medium** **Medium**
Assessment Works Required: Negotiable with street furniture removals, SPA required	**Assessment Work Grade:** **Low**

Ref. ALL-RS-A220899-07 cont'd

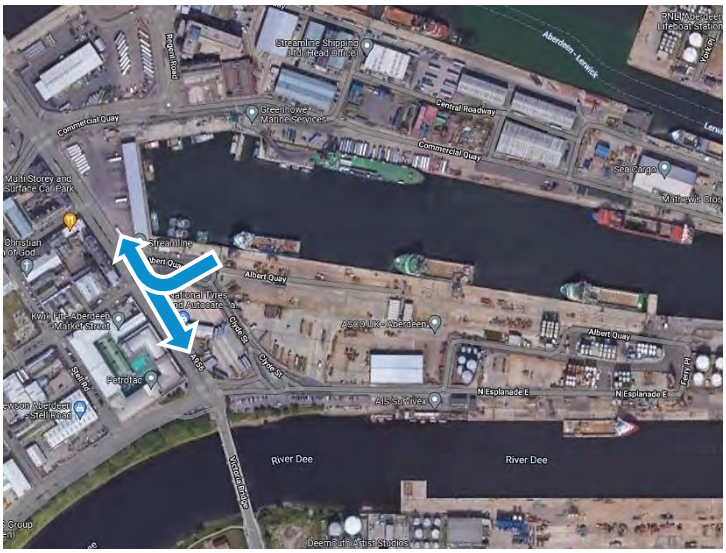
Albert Quay/A956 Market Street junction



Direction of Travel Location:	**Coordinates:**
Shunt manoeuvre on A956 Market Street in contraflow	57.142164, -2.091501
Enabling Works Required: TTRO for shunt manoeuvre Removal of 6 no. traffic signal, 1 no. illuminated bollard and 3 no. railing sections Temporary steel plating and kerb protection on 2 no. central splitter island, subject to SPA	**Enabling Work Grade:** **Medium** **Medium** **Medium**
Assessment Works Required: Negotiable with street furniture removals, SPA required	**Assessment Work Grade:** **Low**

Ref. ALL-RS-A220899-07 cont'd

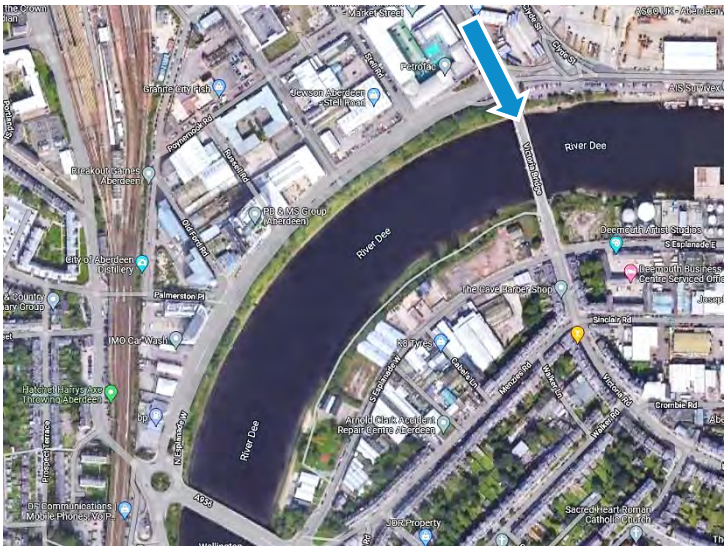
Albert Quay/A956 Market Street junction



Direction of Travel Location: Southbound on A956 Market Street	**Coordinates:** 57.142164, -2.091501
Enabling Works Required: Removal of 6 no. traffic signal, 1 no. illuminated bollard and 3 no. railing sections Temporary steel plating and kerb protection on 2 no. central splitter island, subject to SPA	**Enabling Work Grade:** **Medium** **Medium**
Assessment Works Required: Negotiable with street furniture removals, SPA required	**Assessment Work Grade:** **Low**

Ref. ALL-RS-A220899-08

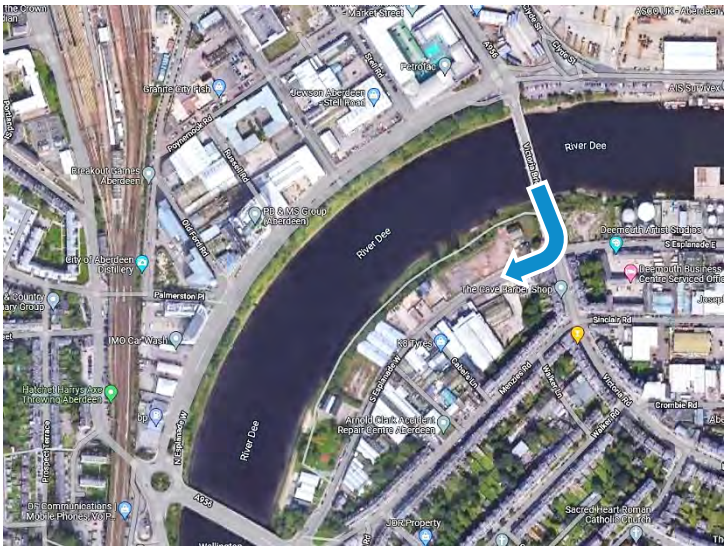
Victoria Bridge



Direction of Travel Location: Southbound on Victoria Road over Victoria Bridge	**Coordinates:** 57.140080, -2.0895877
Enabling Works Required: TBC	**Enabling Work Grade:** TBC
Assessment Works Required: Aberdeen City Council check required	**Assessment Work Grade:** **Low**

Ref. ALL-RS-A220899-09

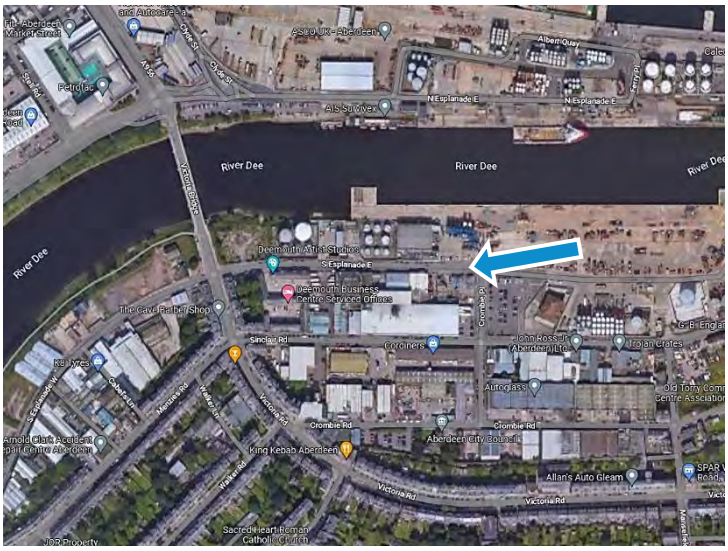
Victoria Bridge/S Esplanade West junction

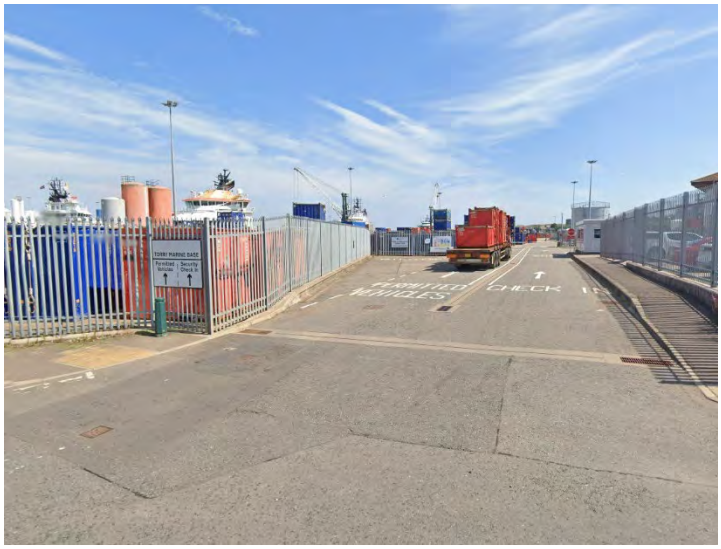


Direction of Travel Location: RH turn from Victoria Bridge onto S Esplanade West in contraflow	**Coordinates:** 57.138960, -2.089110
Enabling Works Required: TTRO for contraflow Removal of 4 no. traffic signals, 2 no. non-illuminated road sign and 1 no. steel bollard, subject to SPA	**Enabling Work Grade:** **Medium** **Medium**
Assessment Works Required: Negotiable with street furniture removals, SPA required	**Assessment Work Grade:** **Low**

Ref. ALL-RS-A220899-10

Port of Aberdeen Torry Quay exit



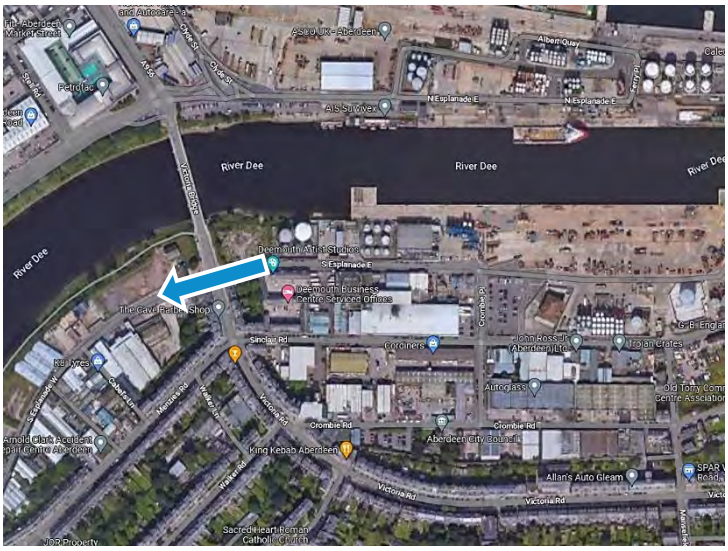


Note- vehicle travels towards camera

Direction of Travel Location:	**Coordinates:**
West bound onto S Esplanade E in contraflow	57.139087, -2.083277
Enabling Works Required:	**Enabling Work Grade:**
TTRO required for vehicle to travel in contraflow	**Medium**
Assessment Works Required:	**Assessment Work Grade:**
Negotiable	Complete

Ref. ALL-RS-A220899-11

S Esplanade E/S Esplanade W junction



Direction of Travel Location:	**Coordinates:**
Straight on from S Esplanade E onto S Esplanade W in contraflow	57.138960, -2.089110
Enabling Works Required: TTRO required for vehicle to travel in contraflow	**Enabling Work Grade:** Medium
Assessment Works Required: Negotiable	**Assessment Work Grade:** Complete

Ref. ALL-RS-A220899-12

South Esplanade West parking restrictions

Direction of Travel Location: Southbound on S Esplanade West	**Coordinates:** 57.137844, -2.092164
Enabling Works Required: Nearside parking restrictions required	**Enabling Work Grade:** **Low**
Assessment Works Required: Route survey carried out	**Assessment Work Grade:** Complete

Ref. ALL-RS-A220899-13

South Esplanade West/A956 Wellington Road roundabout

Direction of Travel Location:	**Coordinates:**
Straight on at S Esplanade West/A956 Wellington Road roundabout	57.135810, -2.093978
Enabling Works Required:	**Enabling Work Grade:**
Trailer to negotiate roundabout at slow speed	**Low**
Assessment Works Required:	**Assessment Work Grade:**
Negotiable	Complete

Ref. ALL-RS-A220899-14

A956 ECN5/B/391 Wellington Road

Direction of Travel Location:	**Coordinates:**
Southbound on A956 over ECN5/B/391 Wellington Road	57.128490, -2.0922686
Enabling Works Required:	**Enabling Work Grade:**
TBC	TBC
Assessment Works Required:	**Assessment Work Grade:**
Network Rail check required	**Low**

Ref. ALL-RS-A220899-15

A956 Wellington Road/W Tullos Road roundabout

Direction of Travel Location: RH turn at A956 Wellington Road/W Tullos Road roundabout	**Coordinates:** 57.117369, -2.088828
Enabling Works Required: Removal of 1 no. illuminated bollard and 3 no. non-illuminated road sign, subject to SPA	**Enabling Work Grade:** Medium
Assessment Works Required: Negotiable with street furniture removals, SPA required	**Assessment Work Grade:** Low

Ref. ALL-RS-A220899-16

W Tullos Road/Abbotswell Road roundabout

Direction of Travel Location:	**Coordinates:**
Straight on at W Tullos Road/Abbotswell Road roundabout	57.125033, -2.099995
Enabling Works Required:	**Enabling Work Grade:**
N/A	N/A
Assessment Works Required:	**Assessment Work Grade:**
Negotiable	Complete

Ref. ALL-RS-A220899-17

W Tullos Road/B9077 roundabout

Direction of Travel Location:	**Coordinates:**
Straight on at W Tullos Road/B9077 roundabout	57.126492, -2.109103
Enabling Works Required:	**Enabling Work Grade:**
N/A	N/A
Assessment Works Required:	**Assessment Work Grade:**
Negotiable	Complete

Ref. ALL-RS-A220899-18

Bridge of Dee Roundabout

Direction of Travel Location:	**Coordinates:**
Straight on at B9077/A92 roundabout	57.122251, -2.116884
Enabling Works Required:	**Enabling Work Grade:**
Subject to SPA	TBC
Assessment Works Required:	**Assessment Work Grade:**
Negotiable with street furniture removals, SPA required	**Low**

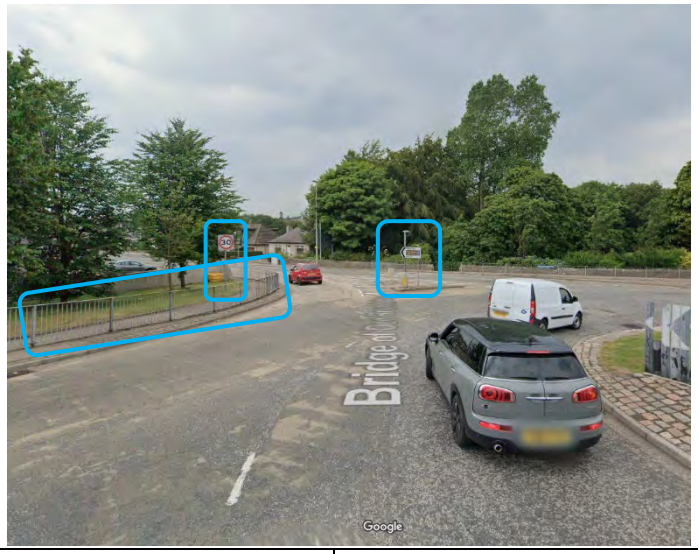
Ref. ALL-RS-A220899-18 cont'd

Bridge of Dee Roundabout

Direction of Travel Location: Straight on at B9077/A92 roundabout	**Coordinates:** 57.122251, -2.116884
Enabling Works Required: Removal of 1 no. chevron, subject to SPA	**Enabling Work Grade:** **Medium**
Assessment Works Required: Negotiable with street furniture removals, SPA required	**Assessment Work Grade:** **Low**

Ref. ALL-RS-A220899-18 cont'd

Bridge of Dee Roundabout



Direction of Travel Location: Straight on at B9077/A92 roundabout	**Coordinates:** 57.122251, -2.116884
Enabling Works Required: Removal of 2 no. illuminated bollard, 1 no. illuminated sign, 1 no. non-illuminated sign, 1 no. railings section, subject to SPA	**Enabling Work Grade:** **Medium**
Assessment Works Required: Negotiable with street furniture removals, SPA required	**Assessment Work Grade:** **Low**

Ref. ALL-RS-A220899-19

B9077/010 Hilldowntree Bridge

Direction of Travel Location:	**Coordinates:**
Westbound on B9077 over B9077/010 Hilldowntree Bridge	57.117548, -2.1244254
Enabling Works Required:	**Enabling Work Grade:**
TBC	TBC
Assessment Works Required:	**Assessment Work Grade:**
Aberdeen City Council/Aberdeenshire Council check required	**Low**

Ref. ALL-RS-A220899-20

B9077/020 Banchory Devenick Bridge

Direction of Travel Location:	**Coordinates:**
Westbound on B9077 over B9077/020 Banchory Devenick Bridge	57.113619, -2.1520522
Enabling Works Required:	**Enabling Work Grade:**
TBC	TBC
Assessment Works Required:	**Assessment Work Grade:**
Aberdeenshire Council check required	**Low**

Ref. ALL-RS-A220899-21

B9077/030 Ardoe

Direction of Travel Location:	**Coordinates:**
Westbound on B9077 over B9077/030 Ardoe	57.104878, -2.1791216
Enabling Works Required:	**Enabling Work Grade:**
TBC	TBC
Assessment Works Required:	**Assessment Work Grade:**
Aberdeenshire Council check required	**Low**

Ref. ALL-RS-A220899-22

B9077 A90 808 PS15 – River Dee Crossing overbridge

Direction of Travel Location:	**Coordinates:**
Westbound on A9077 underneath A90 808 PS15 – River Dee Crossing overbridge	57.093005, -2.2322510
Enabling Works Required:	**Enabling Work Grade:**
N/A	N/A
Assessment Works Required:	**Assessment Work Grade:**
Bridge height survey required	**Low**

Ref. ALL-RS-A220899-23

B9077/050 Mill Inn Bridge

Direction of Travel Location: Westbound on B9077 over B9077/050 Mill Inn Bridge	**Coordinates:** 57.091831, -2.2357915
Enabling Works Required: TBC	**Enabling Work Grade:** TBC
Assessment Works Required: Aberdeenshire Council check required	**Assessment Work Grade:** **Low**

Ref. ALL-RS-A220899-24

B9077/060 Tilbouries Bridge

Direction of Travel Location: Westbound on B9077 over B9077/060 Tilbouries Bridge	**Coordinates:** 57.076983, -2.2706339
Enabling Works Required: TBC	**Enabling Work Grade:** TBC
Assessment Works Required: Aberdeenshire Council check required	**Assessment Work Grade:** **Low**

Ref. ALL-RS-A220899-25

B9077/070 White Cottage

Direction of Travel Location: Westbound on B9077 over B9077/070 White Cottage	**Coordinates:** 57.067262, -2.3275224
Enabling Works Required: TBC	**Enabling Work Grade:** TBC
Assessment Works Required: Aberdeenshire Council check required	**Assessment Work Grade:** **Low**

Ref. ALL-RS-A220899-26

B9077/080 Durris Mains Bridge (B9077)

Direction of Travel Location: Westbound on B9077 over B9077/080 Durris Mains Bridge (B9077)	**Coordinates:** 57.066240, -2.3336973
Enabling Works Required: TBC	**Enabling Work Grade:** TBC
Assessment Works Required: Aberdeenshire Council check required	**Assessment Work Grade:** **Low**

Ref. ALL-RS-A220899-27

B9077/090 Kirkton of Durris

Direction of Travel Location: Westbound on B9077 over B9077/090 Kirkton of Durris	**Coordinates:** 57.055643, -2.3770091
Enabling Works Required: TBC	**Enabling Work Grade:** TBC
Assessment Works Required: Aberdeenshire Council check required	**Assessment Work Grade:** **Low**

Ref. ALL-RS-A220899-28

B9077/A957 junction

Direction of Travel Location: LH turn from B9077 onto A957	**Coordinates:** 57.051698, -2.409307
Enabling Works Required: N/A	**Enabling Work Grade:** N/A
Assessment Works Required: Negotiable	**Assessment Work Grade:** Complete

Ref. ALL-RS-A220899-29

A957/110 Blairydrine Bridge

Direction of Travel Location: Eastbound on A957 over A957/110 Blairydrine Bridge	**Coordinates:** 57.024910, -2.4141555
Enabling Works Required: Third party land owner(s) permission required for oversail to inside of bend beyond assumed highway limits Load to use offside layby in order to negotiate structure, parking restrictions required	**Enabling Work Grade:** **High** **Low**
Assessment Works Required: Swept path analysis carried out, drawing no. ALL-A220899-SPA-01 included in Appendix D Aberdeenshire Council check of structural capacity required	**Assessment Work Grade:** Complete **Low**

Ref. ALL-RS-A220899-30

A957 LH bend at Cryne Corse Road

Direction of Travel Location: Eastbound around LH bend on A957 at junction with Cryne Corse Road	**Coordinates:** 57.015193, -2.393563
Enabling Works Required: Third party land owner(s) permission required for oversail to inside of bend beyond assumed highway limits Assessment of retaining wall to inside of bend required due to minimal clearance between vehicle track and edge of road	**Enabling Work Grade:** **High** **Medium**
Assessment Works Required: Swept path analysis carried out, drawing no. ALL-A220899-SPA-02 included in Appendix D	**Assessment Work Grade:** Complete

Ref. ALL-RS-A220899-31

A957/forestry track junction

Direction of Travel Location: RH turn from A957 onto forestry track	**Coordinates:** 56.994585, -2.345297
Enabling Works Required: N/A	**Enabling Work Grade:** N/A
Assessment Works Required: Negotiable using car park, parking restrictions required	**Assessment Work Grade:** Complete

Ref. ALL-RS-A220899-32

Forestry track Black Burn structure

Direction of Travel Location: Westbound on forestry track over Black Burn structure	**Coordinates:** 56.994483, -2.348106
Enabling Works Required: Subject to structural assessment	**Enabling Work Grade:** TBC
Assessment Works Required: Full structural assessment	**Assessment Work Grade:** **Medium**

Ref. ALL-RS-A220899-33

Forestry track

Direction of Travel Location: Continue on forestry track for 2.8 miles	**Coordinates:** -
Enabling Works Required: Vehicle to negotiate road at slow speed with banksman No other traffic to use road	**Enabling Work Grade:** **Low** **Low**
Assessment Works Required: Route survey carried out	**Assessment Work Grade:** Complete

Ref. ALL-RS-A220899-34

Forestry track Cowie Water structure

Direction of Travel Location: Southbound over Cowie Water structure	**Coordinates:** 56.976844, -2.389077
Enabling Works Required: Bridge to be overbridged	**Enabling Work Grade:** **Medium**
Assessment Works Required: Route survey carried out	**Assessment Work Grade:** Complete

Ref. ALL-RS-A220899-35

Forestry track

Direction of Travel Location: Continue on forestry track for 1.5 miles	**Coordinates:** -
Enabling Works Required: Vegetation pruning required depending upon growth at time of delivery Vehicle to negotiate road at slow speed with banksman No other traffic to use road	**Enabling Work Grade:** **Medium** **Low** **Low**
Assessment Works Required: Route survey carried out	**Assessment Work Grade:** Complete

Ref. ALL-RS-A220899-36

Forestry track LH turn

Direction of Travel Location: LH turn on forestry track	**Coordinates:** 56.962483, -2.374805
Enabling Works Required: N/A	**Enabling Work Grade:** N/A
Assessment Works Required: Negotiable	**Assessment Work Grade:** Complete

Ref. ALL-RS-A220899-37

Forestry track RH bend

Direction of Travel Location: RH bend on forestry track	**Coordinates:** 56.967430, -2.3758869
Enabling Works Required: Road widening to inside of bend Vegetation clearance to inside of bend	**Enabling Work Grade:** **High** **Medium**
Assessment Works Required: Swept path analysis carried out, drawing no. ALL-A220899-SPA-03 included in Appendix D	**Assessment Work Grade:** Complete

Ref. ALL-RS-A220899-38

Forestry track Whiting Burn structure

Direction of Travel Location: Eastbound on forestry track	**Coordinates:** 56.965651, -2.3544727
Enabling Works Required: Subject to structural assessment	**Enabling Work Grade:** TBC
Assessment Works Required: Full structural assessment	**Assessment Work Grade:** **Medium**

Ref. ALL-RS-A220899-39

Forestry track RH turn

Direction of Travel Location: RH turn on forestry track	**Coordinates:** 56.967430, -2.3758869
Enabling Works Required: Vegetation clearance to inside of bend	**Enabling Work Grade:** **Medium**
Assessment Works Required: Swept path analysis carried out, drawing no. ALL-A220899-SPA-04 included in Appendix D	**Assessment Work Grade:** Complete

HSEQ

We put **health** and **safety** first.

Health, safety, environment and quality are paramount to Allelys and are at the heart of our business.

Allelys are committed to providing a safe and healthy working environment for our employees and every person that interacts with the organisation. We recognise that the services we provide and the sectors we work in present challenges in terms of managing risk, but we are committed to protecting our people, environment and assets on every project we undertake.

Our safety performance is critical to the success of our business and our projects and therefore it's essential that we continuously identify, assess and act upon any areas that can be improved. Any areas that are identified are reported, recorded, investigated, analysed and then lessons learnt published within safety bulletins and toolbox talks.

Quality is a key component of our management system and customer care is paramount to us. We strive for 100% satisfaction and encourage our customers to get in touch with any feedback they would like to provide. If there are any instances where it's believed that a good quality service has not been delivered, we have procedures in place to investigate and act upon any necessary changes.

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8. Conclusions

8.1. The 290 te transformer is to be delivered into Port of Aberdeen and offloaded by either crane or Ro-Ro operation.

8.2. There are several quays that would be suitable as receiving points for the cargo and access is possible from all quays, subject to street furniture removals.

8.3. Offload by crane would be possible from Albert Quay, Regent Quay and Torry Quay. Maximum ground bearing pressure at Regent Quay to be confirmed by the port authority.

8.4. Offload by Ro-Ro would be possible at Commercial Quay although detailed investigations have not been made into this offload method.

8.5. The route from Port of Aberdeen is considered negotiable with Police Escort, TTROs and street furniture removal(s). TTROs can take 12 weeks plus to process and should be planned accordingly.

8.6. The structural capacity of the route should be investigated further, details of all structures are included in Appendix C. However, it is known that the forestry track structure crossing Cowie Water is not suitable for AILs and will require overbridging. Further investigation will be required into the overbridging design and methods of build.

8.7. Oversail beyond the assumed highway boundary is required to the inside of two bends on A957 for which third party land owner(s) permission will be required.

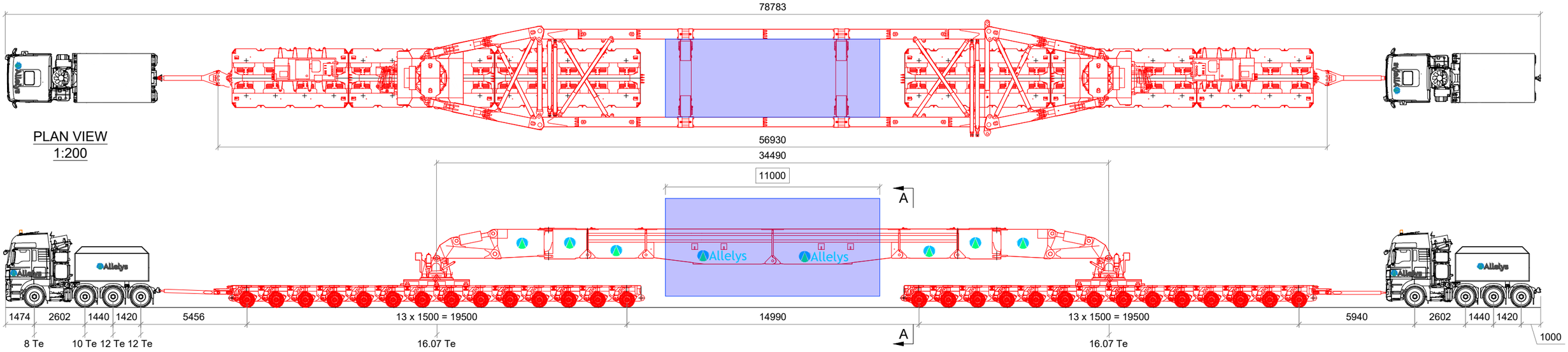
8.8. The ground bearing pressure of a retaining wall to the nearside edge of the A957 is to be assessed at the left-hand bend at the junction with Cryne Course Road due to minimal clearance between the vehicle track and the edge of the road.

8.9. Remedial works are required at three locations on the forestry track to permit access for the vehicle including minor road widening and vegetation clearance.

Appendix A

Cargo & Trailer Arrangement Drawings

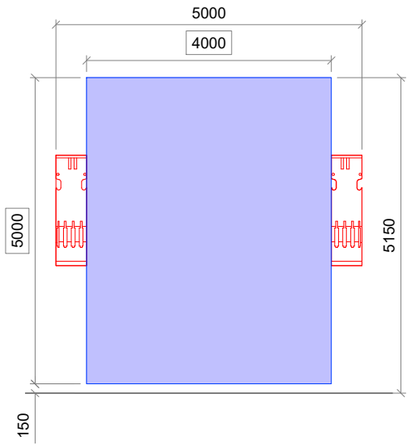
DO NOT SCALE | **IF IN DOUBT ASK**



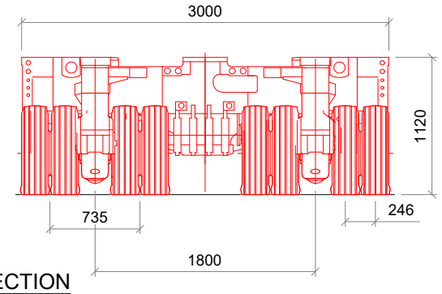
PLAN VIEW
1:200

SIDE ELEAVTION
1:200

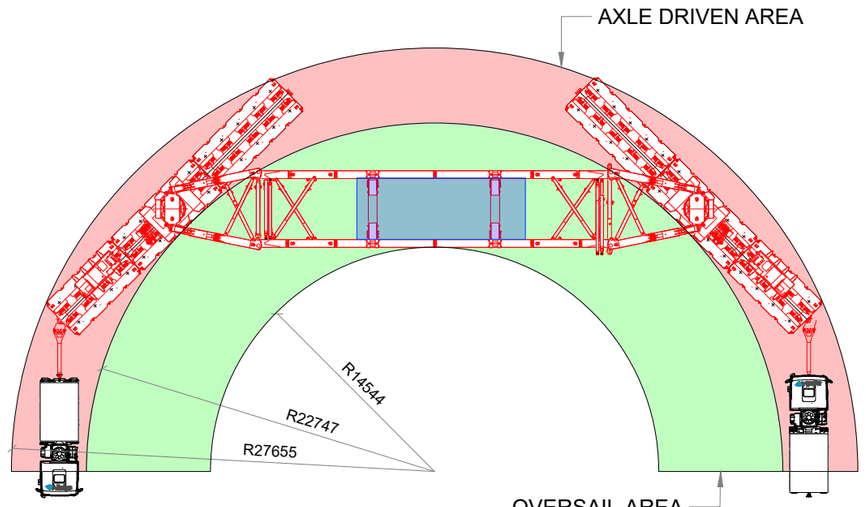
STABILITY CIRCUITS
1:200



END ELEVATION A-A
1:100



BOGIE SECTION
1:50



TURNING RADII
1:400

DRAWING NOTES:

- ALL DIMENSIONS IN mm UNLESS OTHERWISE STATED.
- ALL WEIGHTS ARE IN Te (METRIC TONNES) UNLESS OTHERWISE STATED.
- ALL DETAILS ARE PRELIMINARY AND ARE SUBJECT TO CONFIRMATION.

TECHNICAL NOTES:

LOAD TABLE	
Applied Load Weight (Te)	290.00
Trailer Tare Weight (Te)	160.02
Auxiliary Steel Work (Te)	000.00
Trailer Gross Weight (Te)	450.02
Load per Bogie (Te)	225.01
Load per Axle (Te)	16.07
Block Ground Loading (Te/m²)	3.57

CLIENT REFERENCE DOCUMENTS

REV	DATE	DOCUMENT REFERENCE No.

REVISION HISTORY

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
00	16/01/23	First issue Preliminary Only	AJR		
A					
B					
C					

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Project: Fetteresso

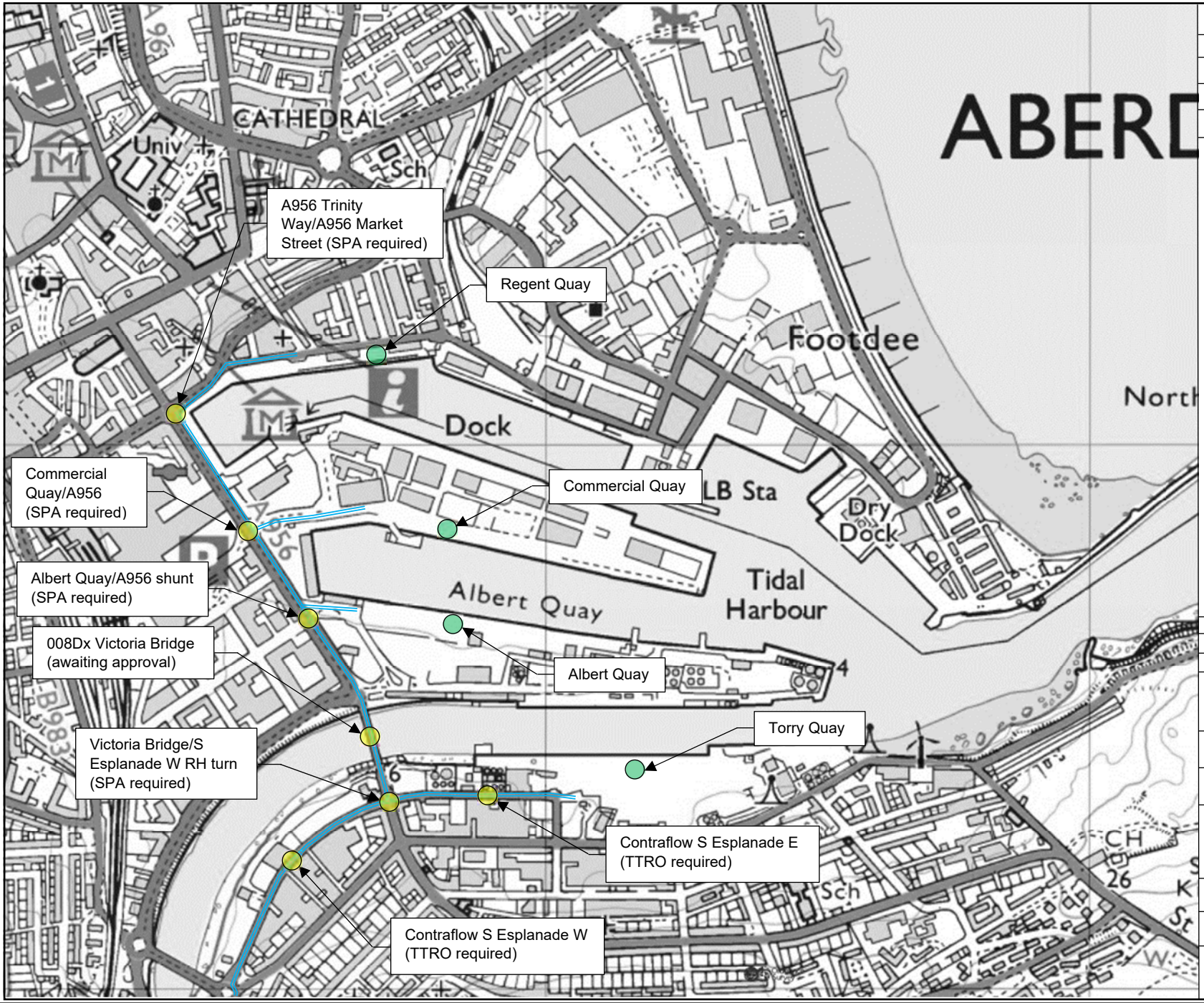
Title: 290 Te Tx
28 Ax F5.5 13m 3m Ex Transport Arrangement

Scale (A3): As Shown | Sheet No.: 1 | Total No.: 1

Dwg. No: ALL-A220899-TA-01

Appendix B

Maps



Key

	Route
	Collection point
	Point of interest
	Delivery point

Rev.	Date	Amendments
0	02/02/23	First issue

Revisions

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Studley,
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Client: SSE/Aecom

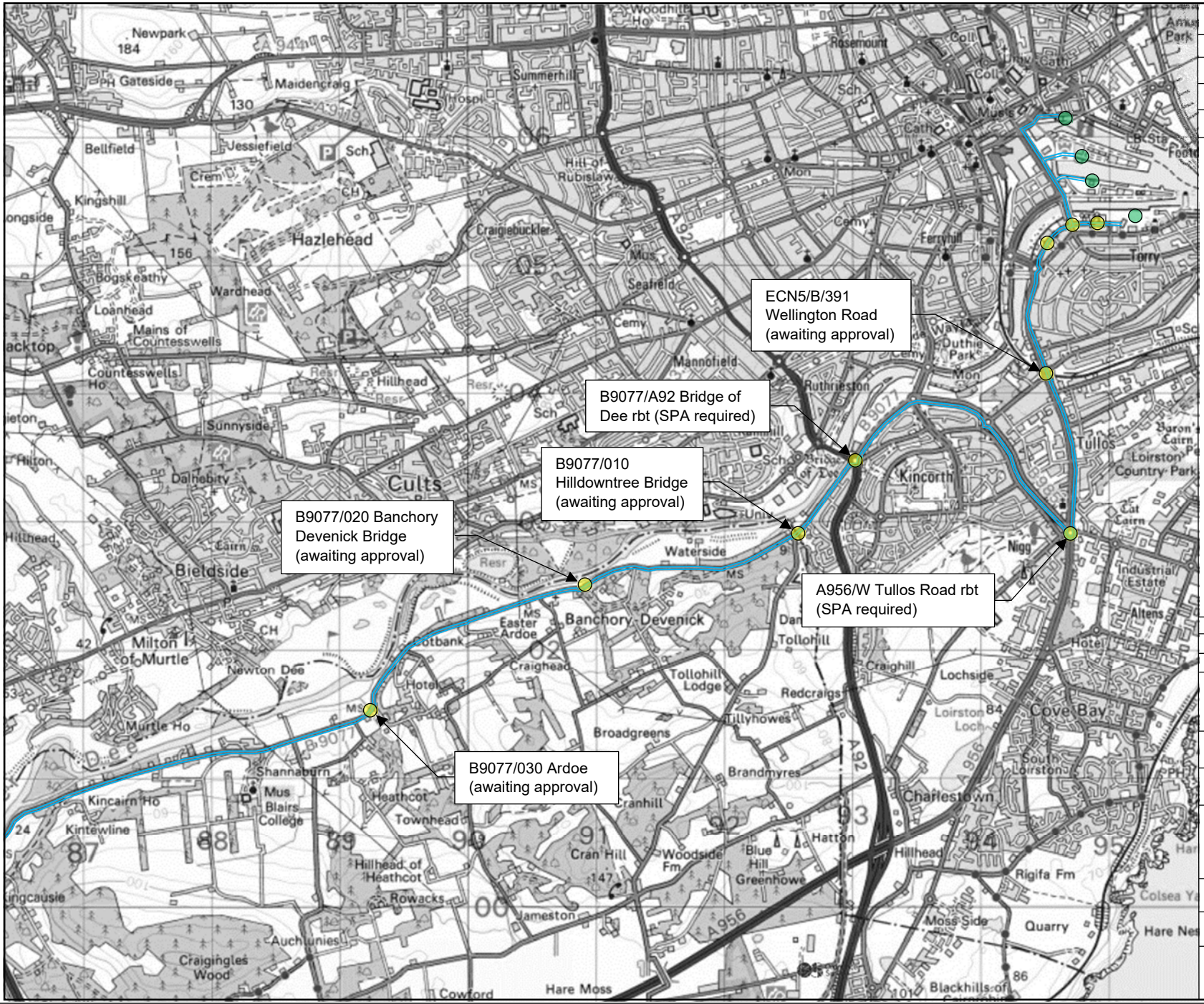
Project: Fetteresso

Title: 290 te Transformer Aberdeen to Fetteresso

Project no.: A220899

Sheet: 1 of 6

Rev.: 0



Key

Route	
Collection point	
Point of interest	
Delivery point	

Rev.	Date	Amendments
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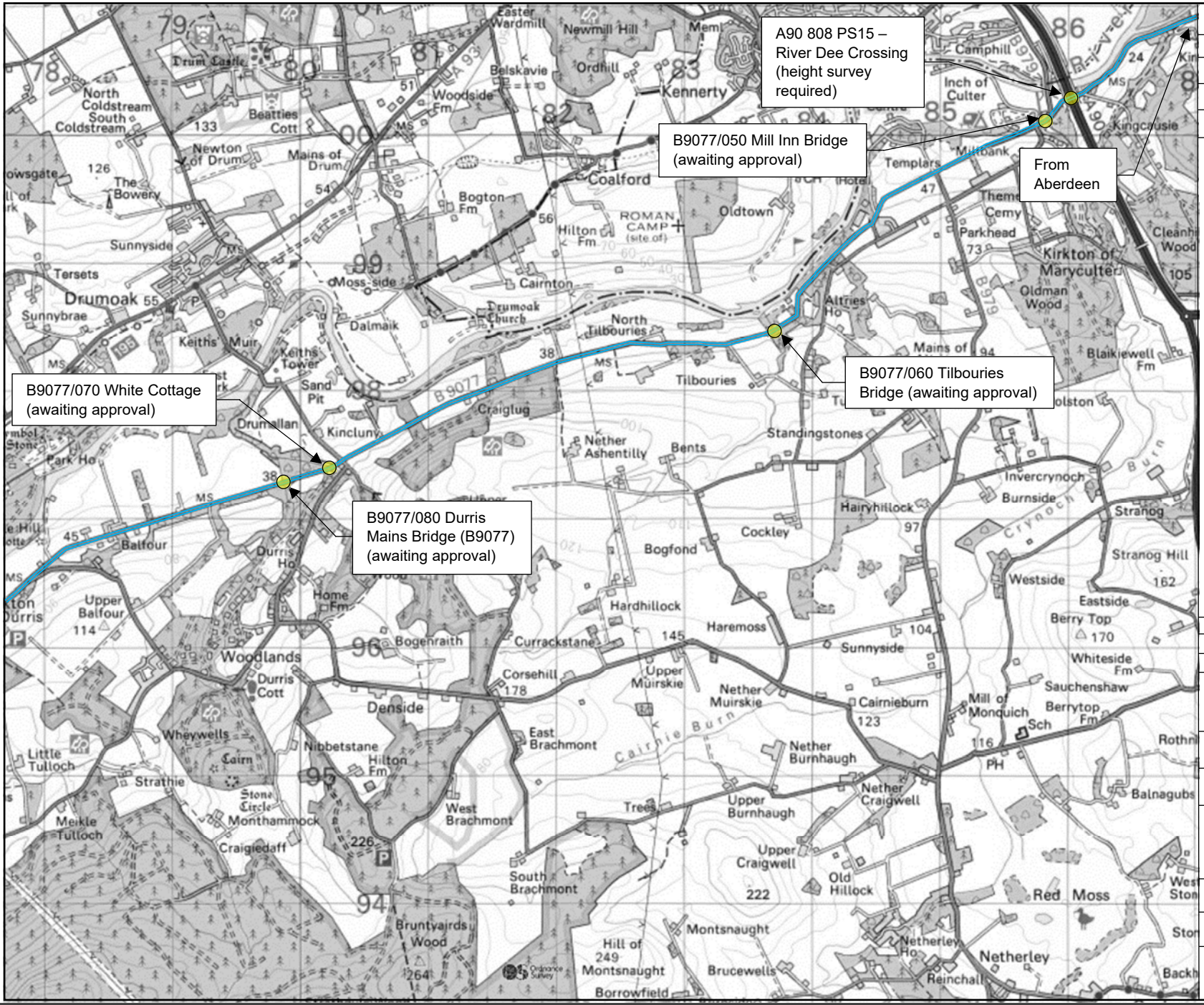
Title: 290 te Transformer
Aberdeen to Fetteresso

Project no.: A220899

Sheet: 2 of 6

Rev.: 0



Key

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	Collection point
	Point of interest
	Delivery point

Rev.	Date	Amendments
0	02/02/23	First issue

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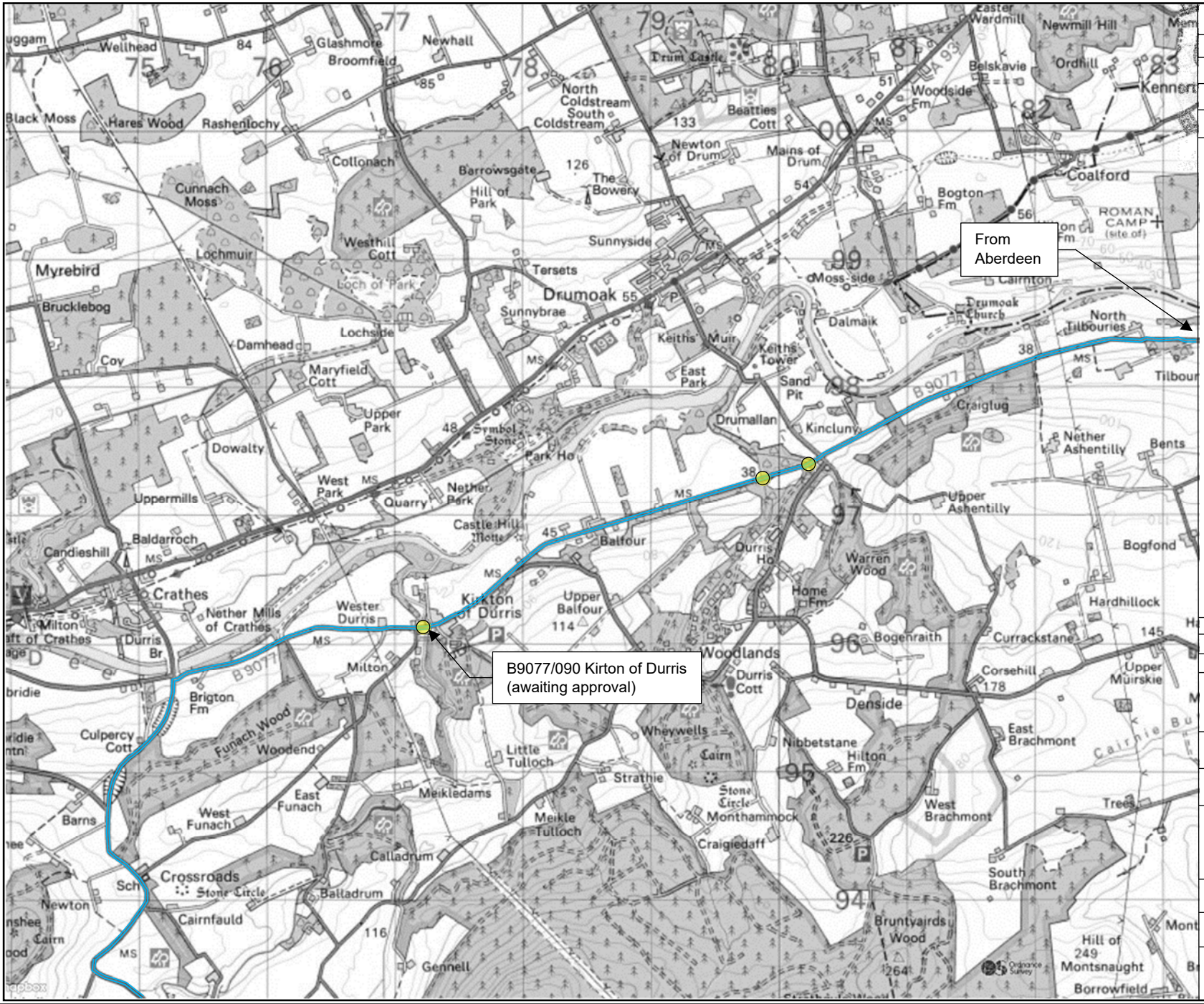
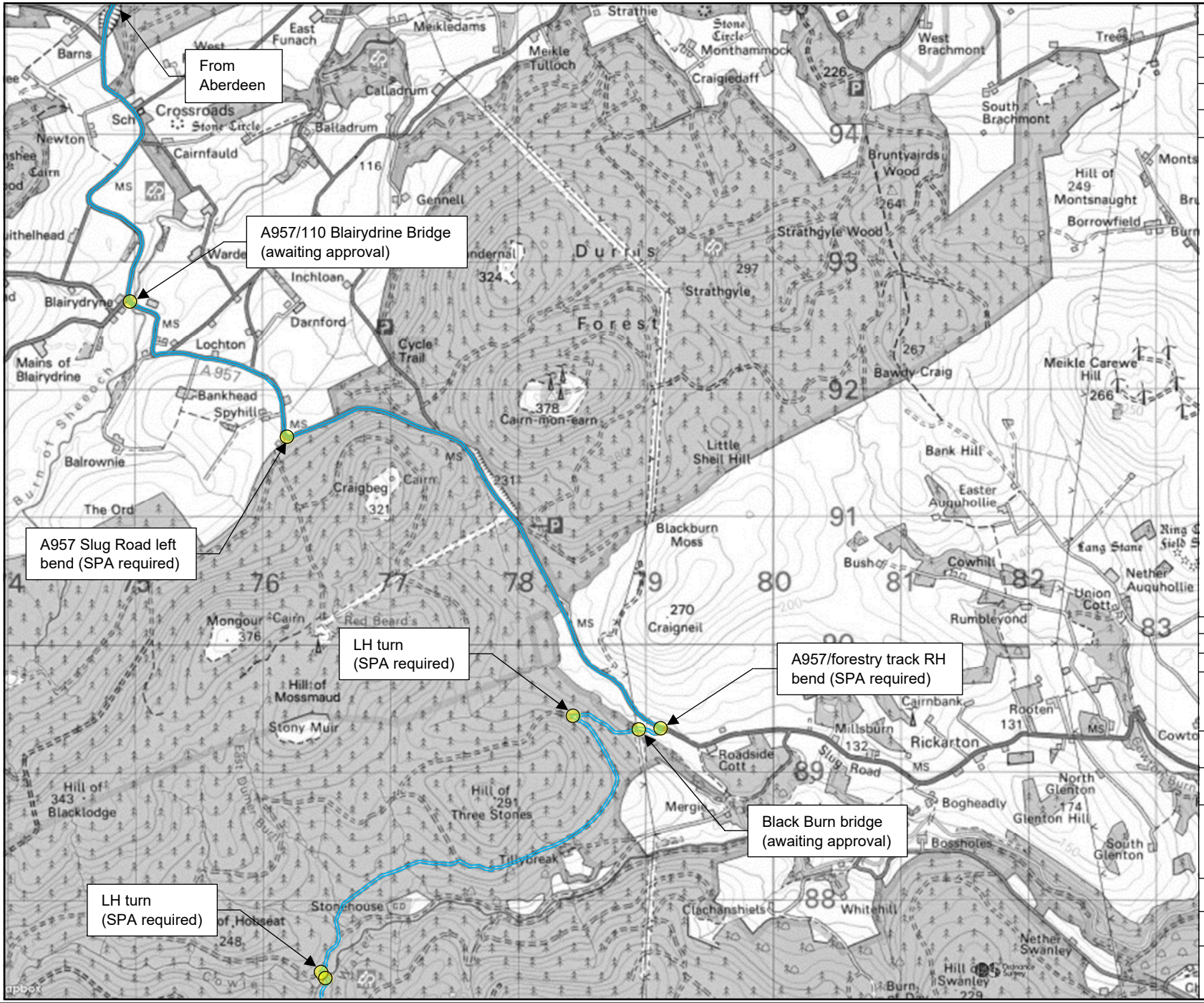
Title: 290 te Transformer
Aberdeen to Fetteresso

Project no.: A220899

Sheet: 3 of 6

Rev.: 0





Key

Route	
Collection point	
Point of interest	
Delivery point	

Rev.	Date	Amendments
0	02/02/23	First issue

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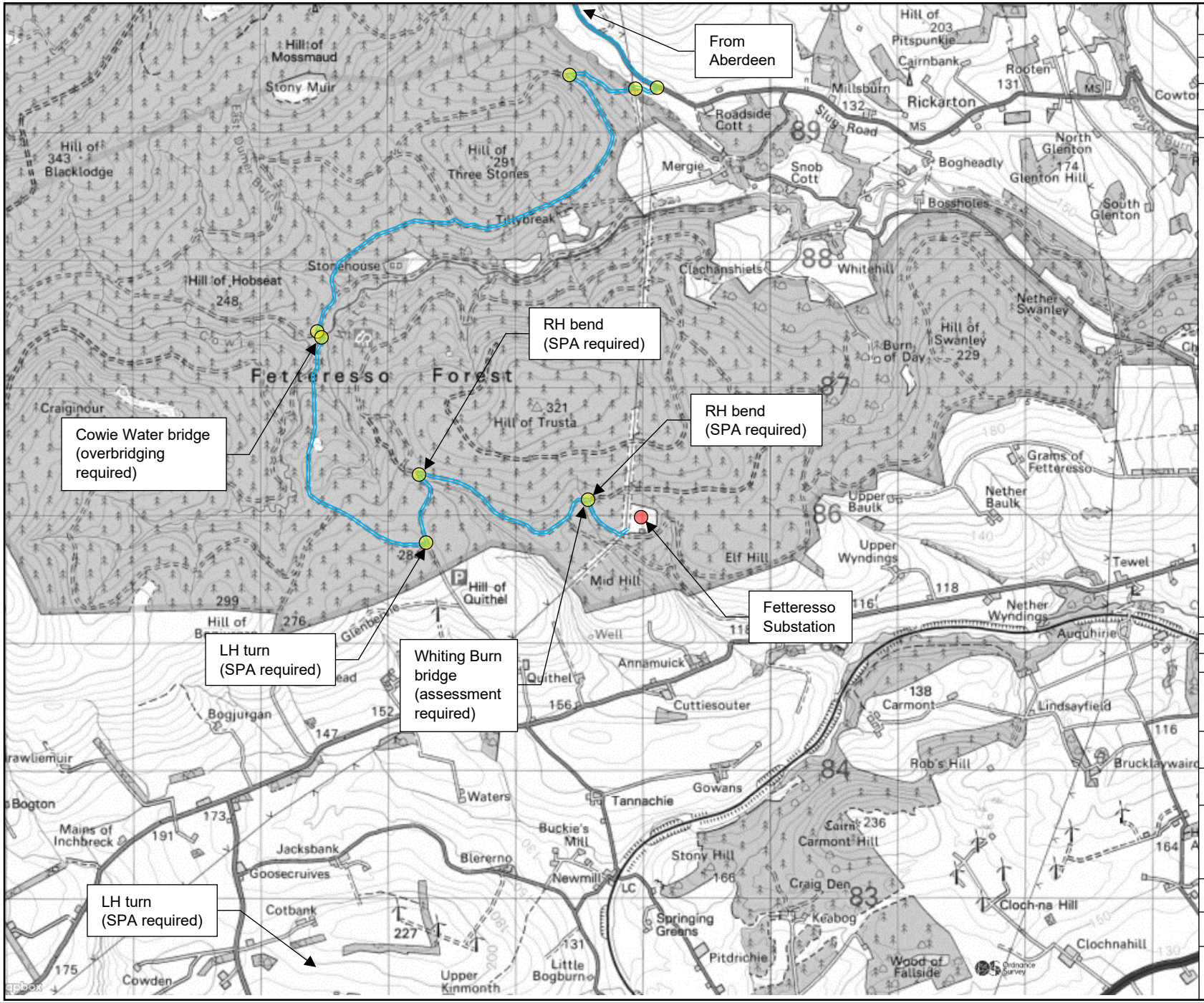
Project: Fetteresso

Title: 290 te Transformer Aberdeen to Fetteresso

Project no.: A220899

Sheet: 5 of 6

Rev.: 0



Key

Route	
Collection point	
Point of interest	
Delivery point	

Rev.	Date	Amendments
0	02/02/23	First issue

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Client: SSE/Aecom

Project: Fetteresso

Title: 290 te Transformer
Aberdeen to Fetteresso

Project no.: A220899

Sheet: 6 of 6

Rev.: 0

Appendix C

Structures

Structure no.	Structure name	Structural authority	Lat/long	Category	Type	Class	Length [m]
008Dx	Victoria Bridge	Aberdeen City Council	57.140080, -2.0895877	Road bridge	Masonry arch	Underbridge	95.71
ECN5/B/391	ECN5/B/391 Wellington Road	Network Rail	57.128490, -2.0922686	Road bridge	PC beams concrete infill	Underbridge	11.93
B9077/010	HILLDOWNTREE BRIDGE	Aberdeen City Council/Aberdeenshire Council	57.117548, -2.1244254	Road bridge	Masonry arch	Underbridge	2.87
B9077/020	BANCHORY DEVENICK BRIDGE	Aberdeenshire Council	57.113619, -2.1520522	Road bridge	Masonry arch	Underbridge	-
B9077/030	ARDOE	Aberdeenshire Council	57.104878, -2.1791216	Road bridge	Masonry arch	Underbridge	-
A90 808	PS15 - River Dee Crossing	Transport Scotland/Aberdeen Western Peripheral Route	57.093005, -2.2322510	Road bridge	Simply supported span	Under and over bridge	270.00
B9077/050	MILL INN BRIDGE	Aberdeenshire Council	57.091831, -2.2357915	Road bridge	Masonry arch	Underbridge	-
B9077/060	TILBOURIES BRIDGE	Aberdeenshire Council	57.076983, -2.2706339	Road bridge	RC arch	Underbridge	-
B9077/070	WHITE COTTAGE	Aberdeenshire Council	57.067262, -2.3275224	Road bridge	RC arch	Underbridge	-
B9077/080	DURRIS MAINS BRIDGE (B9077)	Aberdeenshire Council	57.066240, -2.3336973	Road bridge	RC arch	Underbridge	-
B9077/090	KIRKTON OF DURRIS	Aberdeenshire Council	57.055643, -2.3770091	Road bridge	RC arch	Underbridge	-
A957/110	BLAIRYDRINE BRIDGE	Aberdeenshire Council	57.024910, -2.4141555	Road bridge	RC arch	Underbridge	-
-	Black Burn	TBC	56.994483, -2.348106				
-	Cowie Water	TBC	56.976844, -2.389077				

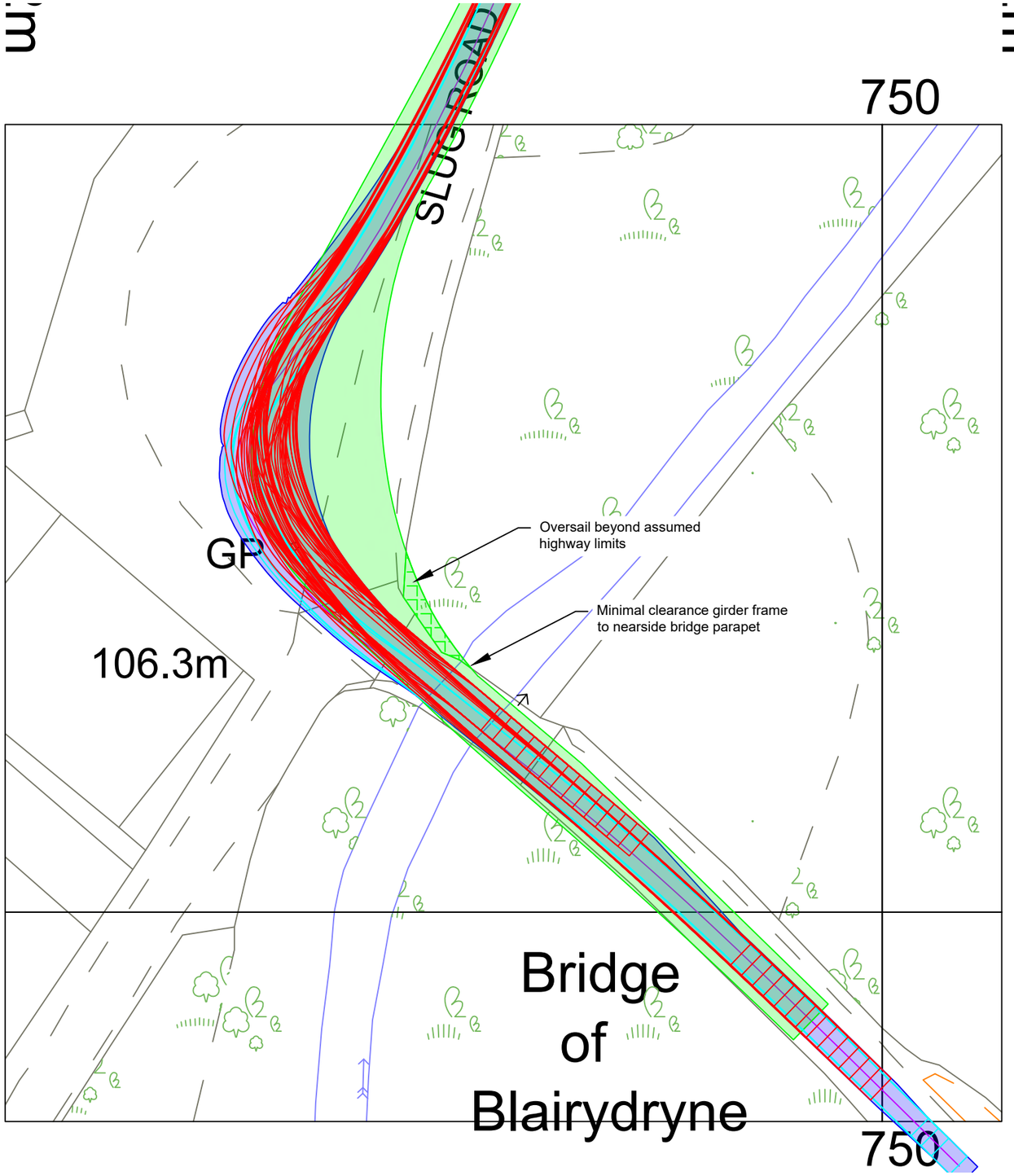
Appendix D

Swept Path Analysis

DO NOT SCALE | **IF IN DOUBT ASK**

TRACKING CONCLUSION

It is possible for the transport configuration to negotiate the left hand bend over the Bridge of Blairydryne by using the offside layby on approach to the bend. Part of the layby is unsurfaced, therefore, temporary plating will be required to accommodate the vehicle track. Subject to the shape of the transformer, there will be minimal clearance between the girder frame oversail and the nearside bridge parapet and so caution is advised whilst crossing the bridge. Oversail beyond the assumed highway boundary to the inside of the bend will be required for which third party land owner(s) permission will be needed. Full occupation of the carriageway and layby will be required with the necessary traffic control measures and parking restrictions in place during the manoeuvre.



KEY

- Trailer Wheel Trace
- Tractor Wheel Trace
- Tractor/Trailer Swept Area
- Load Swept Area
- Overrun and Oversail Area Beyond Kerb
- Oversail Area Beyond Kerb
- Overrun Area Beyond Kerb

DRAWING NOTES:

- ALL DIMENSIONS IN mm UNLESS OTHERWISE STATED.
- ALL WEIGHTS ARE IN Te (METRIC TONNES) UNLESS OTHERWISE STATED.
- ALL DETAILS ARE PRELIMINARY AND ARE SUBJECT TO CONFIRMATION.

TECHNICAL NOTES:

- APPROXIMATE OS GRID REFERENCE OF LOCATION NO749927
- BASED ON TRAILER ARRANGEMENT ALL-A220899-TA-01

CLIENT REFERENCE DOCUMENTS

REV	DATE	DOCUMENT REFERENCE No.
		OI1586734

REVISION HISTORY

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
00	28/02/23	First issue Preliminary Only	JLW	SJW	SJW
A					
B					
C					

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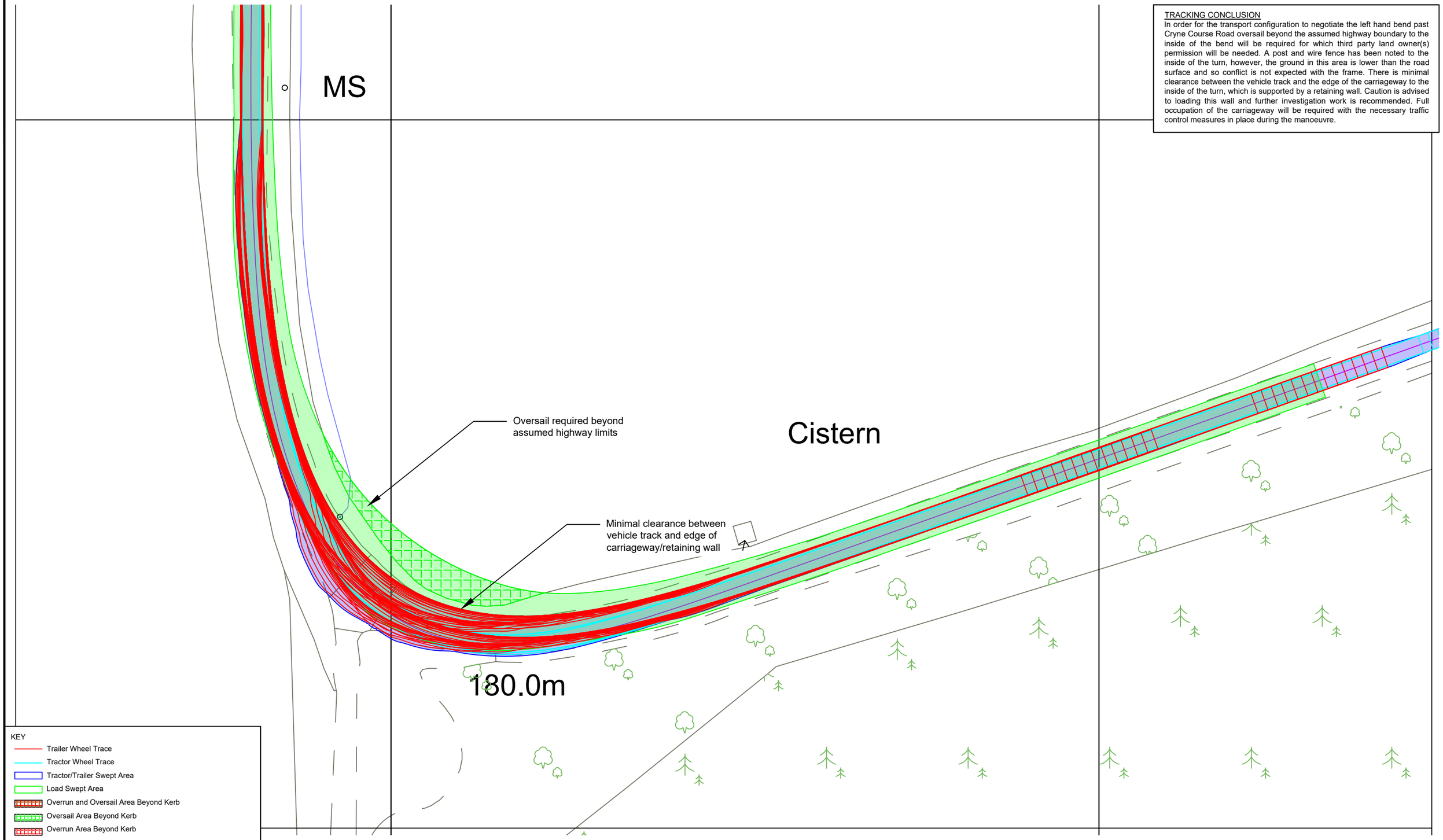
Client	AECOM
Project	Fetteresso Route Study
Title	Swept Path Analysis of 28 Axle F5.5 GF A957 Bridge of Blairydryne
Scale (A3)	1:500
Sheet No.	1
Total No.	1
Dwg. No	ALL-A220899-SPA-01

DO NOT SCALE | **IF IN DOUBT ASK**

TRACKING CONCLUSION

In order for the transport configuration to negotiate the left hand bend past Cryne Course Road oversail beyond the assumed highway boundary to the inside of the bend will be required for which third party land owner(s) permission will be needed. A post and wire fence has been noted to the inside of the turn, however, the ground in this area is lower than the road surface and so conflict is not expected with the frame. There is minimal clearance between the vehicle track and the edge of the carriageway to the inside of the turn, which is supported by a retaining wall. Caution is advised to loading this wall and further investigation work is recommended. Full occupation of the carriageway will be required with the necessary traffic control measures in place during the manoeuvre.



DRAWING NOTES:

- ALL DIMENSIONS IN mm UNLESS OTHERWISE STATED.
- ALL WEIGHTS ARE IN Te (METRIC TONNES) UNLESS OTHERWISE STATED.
- ALL DETAILS ARE PRELIMINARY AND ARE SUBJECT TO CONFIRMATION.

TECHNICAL NOTES:

- APPROXIMATE OS GRID REFERENCE OF LOCATION NO761916
- BASED ON TRAILER ARRANGEMENT ALL-A220899-TA-01

CLIENT REFERENCE DOCUMENTS

REV	DATE	DOCUMENT REFERENCE No.
		OI1586735

REVISION HISTORY

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
00	28/02/23	First issue Preliminary Only	JLW	SJW	SJW
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B					
C					

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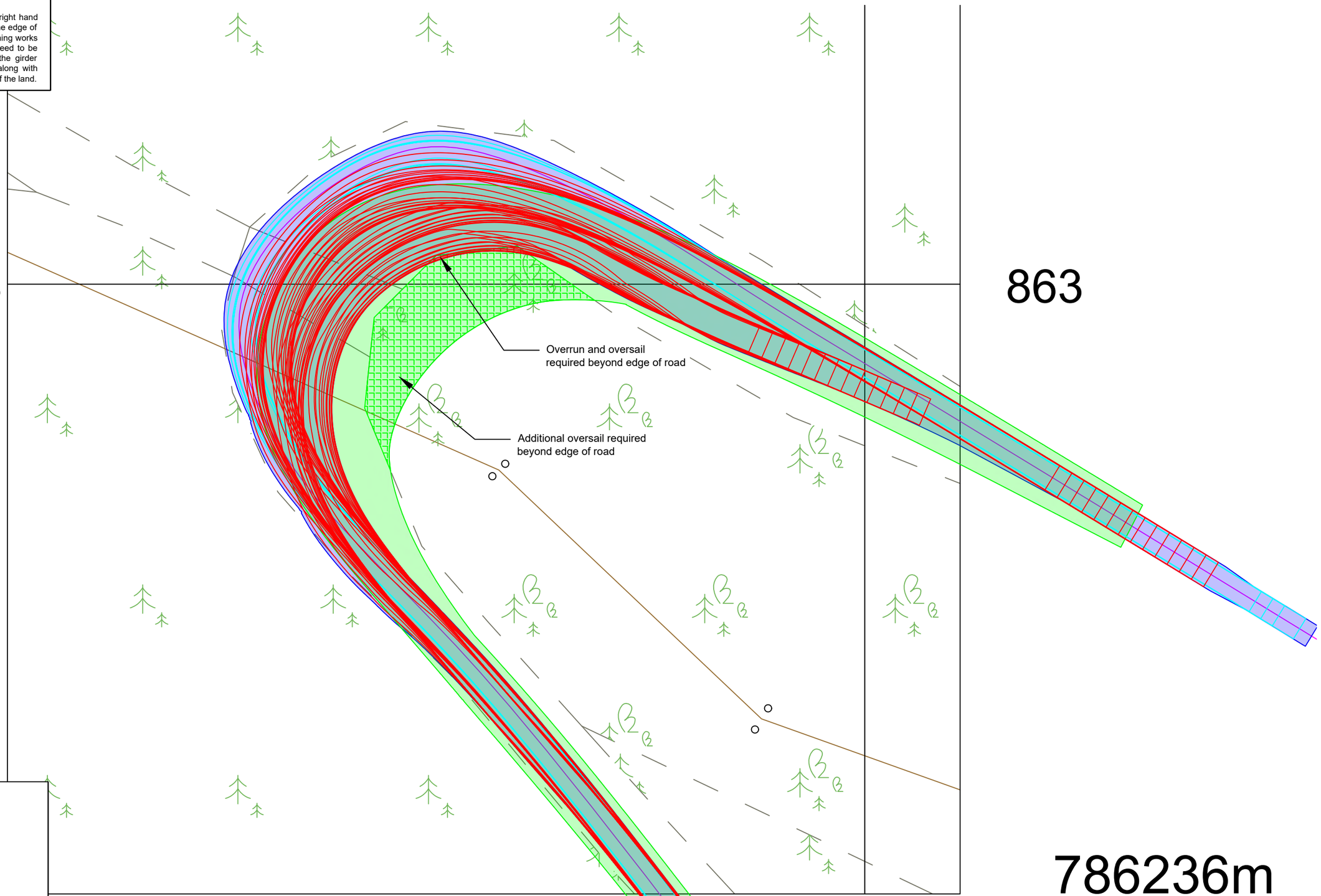
Client	AECOM
Project	Fetteresso Route Study
Title	Swept Path Analysis of 28 Axle F5.5 GF A957 left hand bend at Cryne Course Road
Scale (A3)	1:500
Sheet No.	1
Total No.	1
Dwg. No	ALL-A220978-SPA-02

DO NOT SCALE | **IF IN DOUBT ASK**

TRACKING CONCLUSION

In order for the transport configuration to negotiate the right hand bend on the forestry road overrun and oversail beyond the edge of the road will be required to the inside of the bend. Widening works are required to facilitate the vehicle track and studies need to be made into what remedial works are needed to allow the girder frame oversail. Vegetation clearance will be required along with potential ground works depending upon the topography of the land.



KEY

- Trailer Wheel Trace
- Tractor Wheel Trace
- Tractor/Trailer Swept Area
- Load Swept Area
- Overrun and Oversail Area Beyond Kerb
- Oversail Area Beyond Kerb
- Overrun Area Beyond Kerb

DRAWING NOTES:

- ALL DIMENSIONS IN mm UNLESS OTHERWISE STATED.
- ALL WEIGHTS ARE IN Te (METRIC TONNES) UNLESS OTHERWISE STATED.
- ALL DETAILS ARE PRELIMINARY AND ARE SUBJECT TO CONFIRMATION.

TECHNICAL NOTES:

- APPROXIMATE OS GRID REFERENCE OF LOCATION NO772863
- BASED ON TRAILER ARRANGEMENT ALL-A220899-TA-01

CLIENT REFERENCE DOCUMENTS

REV	DATE	DOCUMENT REFERENCE No.
		OI1586736

REVISION HISTORY

REV	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
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C					

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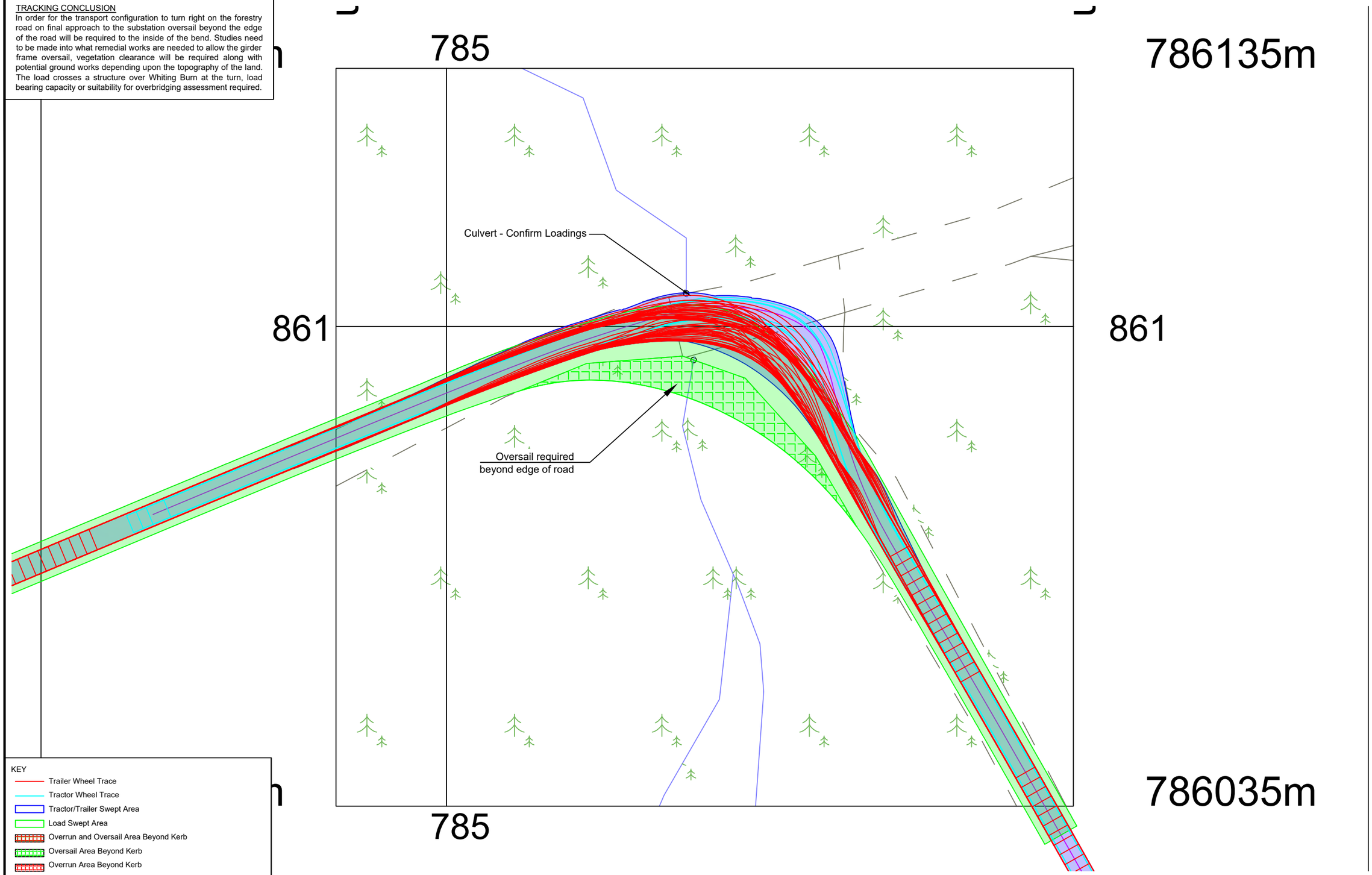
Client	AECOM
Project	Fetteresso Route Study
Title	Swept Path Analysis of 28 Axle F5.5 GF Right hand bend on forestry road
Scale (A3)	1:400
Sheet No.	1
Total No.	1
Dwg. No	ALL-A220978-SPA-03

DO NOT SCALE | **IF IN DOUBT ASK**

TRACKING CONCLUSION

In order for the transport configuration to turn right on the forestry road on final approach to the substation oversail beyond the edge of the road will be required to the inside of the bend. Studies need to be made into what remedial works are needed to allow the girder frame oversail, vegetation clearance will be required along with potential ground works depending upon the topography of the land. The load crosses a structure over Whiting Burn at the turn, load bearing capacity or suitability for overbridging assessment required.



KEY

- Trailer Wheel Trace
- Tractor Wheel Trace
- Tractor/Trailer Swept Area
- Load Swept Area
- Overrun and Oversail Area Beyond Kerb
- Oversail Area Beyond Kerb
- Overrun Area Beyond Kerb

DRAWING NOTES:

- ALL DIMENSIONS IN mm UNLESS OTHERWISE STATED.
- ALL WEIGHTS ARE IN Te (METRIC TONNES) UNLESS OTHERWISE STATED.
- ALL DETAILS ARE PRELIMINARY AND ARE SUBJECT TO CONFIRMATION.

TECHNICAL NOTES:

- APPROXIMATE OS GRID REFERENCE OF LOCATION NO785861
- BASED ON TRAILER ARRANGEMENT ALL-A220899-TA-01

CLIENT REFERENCE DOCUMENTS

REV	DATE	DOCUMENT REFERENCE No.
		OI1586737

REVISION HISTORY

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e-mail: enquiries@allelys.co.uk

Client	AECOM
Project	Fetteresso Route Study
Title	Swept Path Analysis of 28 Axle F5.5 GF Forestry road right hand turn
Scale (A3)	1:500
Sheet No.	1
Total No.	1
Dwg. No	ALL-A220978-SPA-04

Appendix E

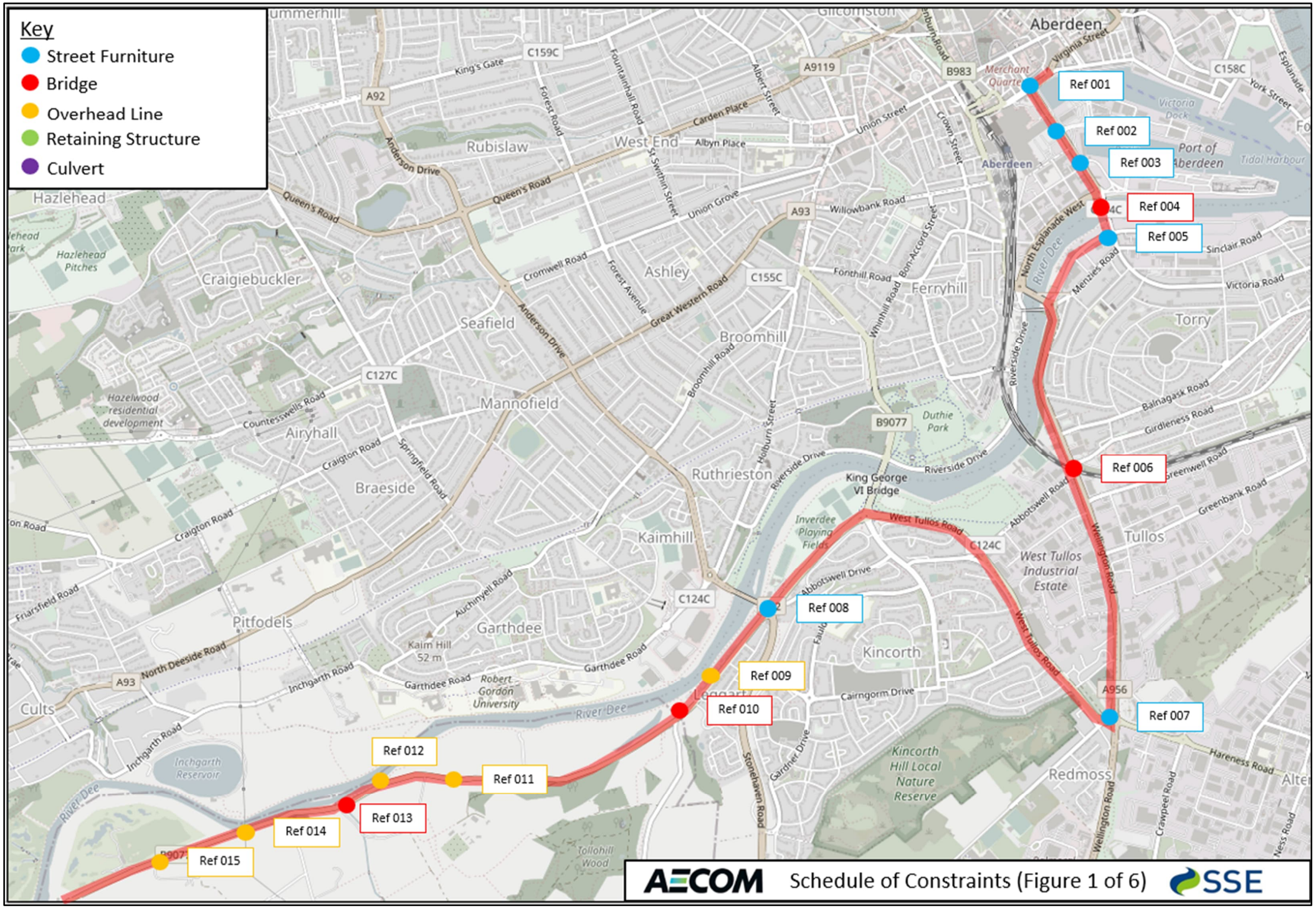
Schedule of Constraints

AECOM

Aberdeen to Fetteresso Substation - Access Route Constraints Spreadsheet

SSE

AECOM Ref	Type	Location	Culvert		Bridge		Retaining Wall		Notes	Design Check / Mitigation
			Approximate Diameter/Span	Approximate Cover (Below Road Level)	Approximate Span	Approximate Cover (Below Road Level)	Approximate Length	Approximate Height		
001	Street Furniture	A956	-	-	-	-	-	-	Poles, Bollards Guardrail etc.	Aberdeen City Council - Temporary Removal
002	Street Furniture	A956	-	-	-	-	-	-	Poles, Bollards Guardrail etc.	Aberdeen City Council - Temporary Removal
003	Street Furniture	A956	-	-	-	-	-	-	Poles, Bollards Guardrail etc.	Aberdeen City Council - Temporary Removal
004	Bridge	Victoria Bridge	-	-	96m	tbc	-	-	Road Bridge - Masonry Arch	Aberdeen City Council - Inspection Records
005	Street Furniture	A956	-	-	-	-	-	-	Poles, Bollards Guardrail etc.	Aberdeen City Council - Temporary Removal
006	Bridge	ECN5/B/391 Wellington Road	-	-	11.93	tbc	-	-	Railway Bridge - Precast Concrete	Network Rail - Inspection Records
007	Street Furniture	A956	-	-	-	-	-	-	Poles, Bollards Guardrail etc.	Aberdeen City Council - Temporary Removal
008	Street Furniture	B9077/A92	-	-	-	-	-	-	Poles, Bollards Guardrail etc.	Aberdeen City Council - Temporary Removal
009	Overhead	B9077	-	-	-	-	-	-	LV Pole / Telecom	AIL compatible with Standard Max Road Height
010	Bridge	B9077 Hilldowntree	-	-	3m	tbc	-	-	Road Bridge - Masonry Arch	Aberdeen City Council - Inspection Records
011	Overhead	B9077	-	-	-	-	-	-	LV Pole / Telecom	AIL compatible with Standard Max Road Height
012	Overhead	B9077	-	-	-	-	-	-	LV Pole / Telecom	AIL compatible with Standard Max Road Height
013	Bridge	B9077 Banchory Devenick	-	-	tbc	tbc	-	-	Road Bridge - Masonry Arch	Aberdeenshire Council - Inspection Records
014	Overhead	B9077 High Voltage Pylon Route	-	-	-	-	-	-	High Voltage Pylon	Ample Clearance above Standard Max Road Height
015	Overhead	B9077	-	-	-	-	-	-	LV Pole / Telecom	AIL compatible with Standard Max Road Height
016	Overhead	B9077	-	-	-	-	-	-	LV Pole / Telecom	AIL compatible with Standard Max Road Height
017	Bridge	B9077 Ardoe	-	-	-	-	-	-	Road Bridge - Masonry Arch	Aberdeenshire Council - Inspection Records
018	Overhead	B9077	-	-	-	-	-	-	LV Pole / Telecom	AIL compatible with Standard Max Road Height
019	Overhead	B9077 High Voltage Pylon Route	-	-	-	-	-	-	High Voltage Pylon	Ample Clearance above Standard Max Road Height
020	Overhead	B9077	-	-	-	-	-	-	LV Pole / Telecom	AIL compatible with Standard Max Road Height
021	Overhead	B9077	-	-	-	-	-	-	LV Pole / Telecom	AIL compatible with Standard Max Road Height
022	Overhead	B9077	-	-	-	-	-	-	LV Pole / Telecom	AIL compatible with Standard Max Road Height
023	Overhead	A90 Dee Viaduct	-	-	270m	tbc	-	-	Road Bridge over AIL Route. 5.8m clear	Transport Scotland - Inspection Records
024	Bridge	B9077 Mill Inn	-	-	tbc	tbc	-	-	Road Bridge - Masonry Arch	Aberdeenshire Council - Bridge Records
025	Overhead	B9077	-	-	-	-	-	-	LV Pole / Telecom	AIL compatible with Standard Max Road Height
026	Overhead	B9077	-	-	-	-	-	-	LV Pole / Telecom	AIL compatible with Standard Max Road Height
027	Overhead	B9077	-	-	-	-	-	-	LV Pole / Telecom	AIL compatible with Standard Max Road Height
028	Overhead	B9077	-	-	-	-	-	-	LV Pole / Telecom	AIL compatible with Standard Max Road Height
029	Overhead	B9077	-	-	-	-	-	-	LV Pole / Telecom	AIL compatible with Standard Max Road Height
030	Bridge	B9077 1937/Tilbouries	-	-	tbc	tbc	-	-	Road Bridge - Reinforced Concrete Arch	Aberdeenshire Council - Inspection Records
031	Overhead	B9077	-	-	-	-	-	-	LV Pole / Telecom	AIL compatible with Standard Max Road Height
032	Overhead	B9077 High Voltage Pylon Route	-	-	-	-	-	-	High Voltage Pylon	Ample Clearance above Standard Max Road Height
033	Overhead	B9077	-	-	-	-	-	-	LV Pole / Telecom	AIL compatible with Standard Max Road Height
034	Overhead	B9077	-	-	-	-	-	-	LV Pole / Telecom	AIL compatible with Standard Max Road Height
035	Bridge	B9077 White Cottage	-	-					Road Bridge - Reinforced Concrete Arch	Aberdeenshire Council - Inspection Records
036	Bridge	B9077 Durris Mains	-	-					Road Bridge - Reinforced Concrete Arch	Aberdeenshire Council - Inspection Records
037	Overhead	B9077	-	-	-	-	-	-	LV Pole / Telecom	AIL compatible with Standard Max Road Height
038	Overhead	B9077	-	-	-	-	-	-	LV Pole / Telecom	AIL compatible with Standard Max Road Height
039	Overhead	B9077	-	-	-	-	-	-	LV Pole / Telecom	AIL compatible with Standard Max Road Height
040	Overhead	B9077 (2x Lines)	-	-	-	-	-	-	LV Pole / Telecom	AIL compatible with Standard Max Road Height
041	Bridge	B9077 Kirkton of Durris	-	-	12.1m	tbc	-	-	Road Bridge - Masonry Arch	Aberdeenshire Council - Inspection Records
042	Overhead	B9077 High Voltage Pylon Route	-	-	-	-	-	-	High Voltage Pylon	Ample Clearance above Standard Max Road Height
043	Overhead	A9077	-	-	-	-	-	-	LV Pole / Telecom	AIL compatible with Standard Max Road Height
044	Overhead	A957	-	-	-	-	-	-	LV Pole / Telecom	AIL compatible with Standard Max Road Height
045	Overhead	A957	-	-	-	-	-	-	LV Pole / Telecom	AIL compatible with Standard Max Road Height
046	Overhead	A957	-	-	-	-	-	-	LV Pole / Telecom	AIL compatible with Standard Max Road Height
047	Overhead	A957	-	-	-	-	-	-	LV Pole / Telecom	AIL compatible with Standard Max Road Height
048	Overhead	A957	-	-	-	-	-	-	LV Pole / Telecom	AIL compatible with Standard Max Road Height
049	Bridge	A957 1796/ Blairydryne	-	-	6.18m	-	-	-	Road Bridge - Masonry Arch	Aberdeenshire Council - Inspection Records
050	Overhead	A957	-	-	-	-	-	-	LV Pole / Telecom	AIL compatible with Standard Max Road Height
051	Overhead	A957	-	-	-	-	-	-	LV Pole / Telecom	AIL compatible with Standard Max Road Height
052	Retaining Wall	A957 Cryne Corse Corner	-	-	-	-	10m	1m	Masonry Retaining Wall	Aberdeenshire Council - inspection in advance of AIL
053	Overhead	A957	-	-	-	-	-	-	LV Pole / Telecom	AIL compatible with Standard Max Road Height
054	Culvert	Spyhill	tbc	tbc	-	-	-	-	Culvert	Aberdeenshire Council - inspection in advance of AIL
055	Culvert	Black Burn	tbc	tbc	-	-	-	-	Culvert	Aberdeenshire Council - inspection in advance of AIL
056	Overhead	A957 High Voltage Pylon Route	-	-	-	-	-	-	High Voltage Pylon	Ample Clearance above Standard Max Road Height
057	Overhead	A957 High Voltage Pylon Route	-	-	-	-	-	-	High Voltage Pylon	Ample Clearance above Standard Max Road Height
058	Bridge	Black Burn	-	-	tbc	tbc	-	-	Forestry Track Bridge - Concrete Beam	Forestry Commission - Detailed Study / Overbridging
059	Bridge	Cowie Burn	-	-	7.29m	tbc	-	-	Forestry Track Bridge - Concrete Beam	Forestry Commission - Overbridging Solution
060	Culvert	Whiting Burn	tbc	tbc	-	-	-	-	Forestry Track Bridge - Concrete Beam	Forestry Commission - Overbridging Solution


Key
Street Furniture
Bridge
Overhead Line
Retaining Structure
Culvert
Ref 001
Ref 002
Ref 003
Ref 004
Ref 005
Ref 006
Ref 007
Ref 008
Ref 009
Ref 010
Ref 011
Ref 012
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Ref 014
Ref 015
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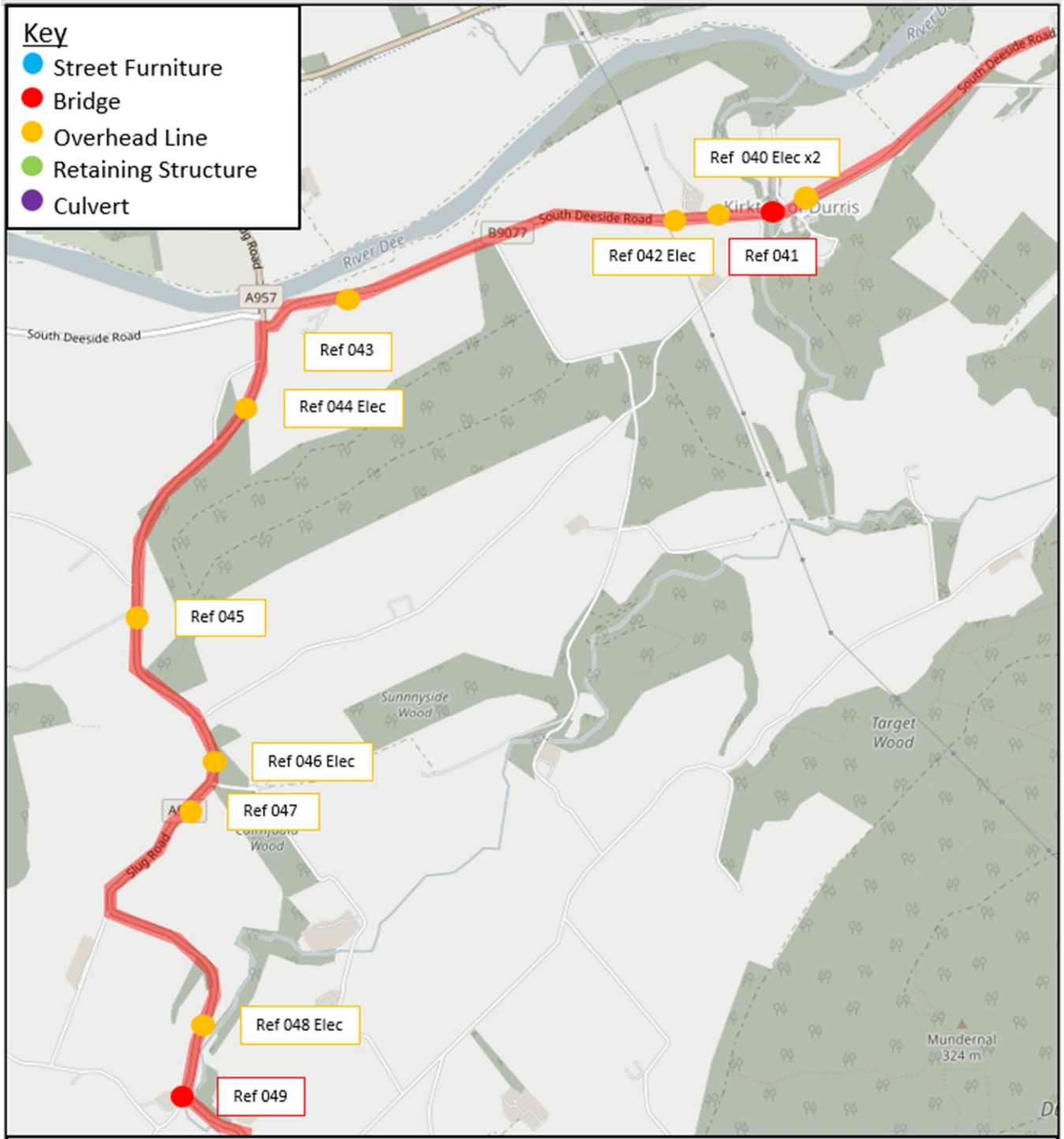
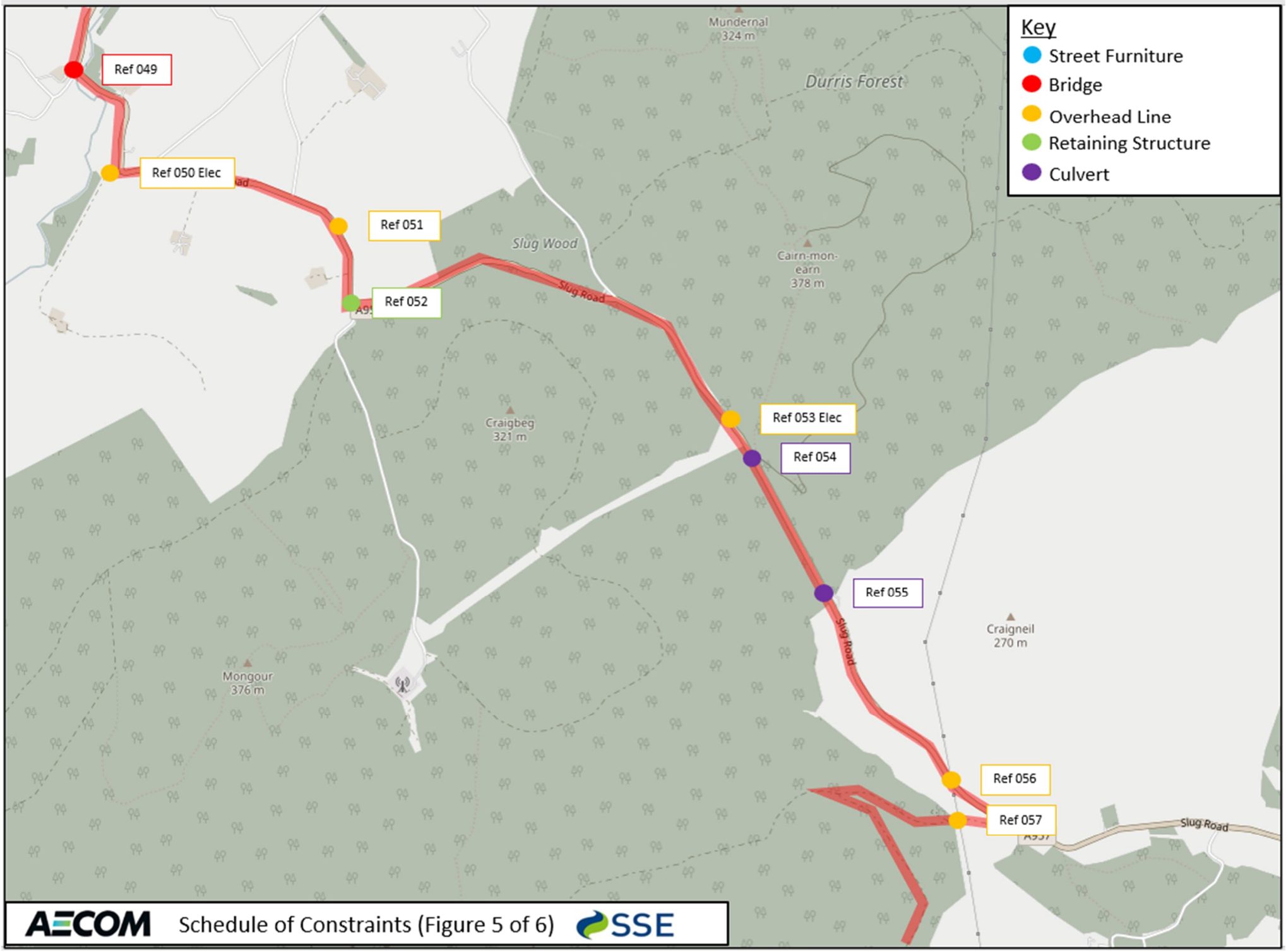
Rubislaw
West End
Hazlehead
Craigiebuckler
Seafield
Ashley
Broomhill
Ferryhill
Torry
Mannofield
Airyhall
Braeside
Ruthrieston
Kaimhill
Garthdee
Pitfodels
Cults
Kincorth
Tullos
Redmoss
Duthie Park
Victoria Dock
Port of Aberdeen
Tidal Harbour
King George VI Bridge
Inverdee Playing Fields
West Tullos Industrial Estate
Kincorth Hill Local Nature Reserve
Inchgarth Reservoir
Robert Gordon University
Kaim Hill 52 m
Tollohill Wood
Hazelwood residential development
Hazlehead Pitches
River Dee
A92
A93
A9119
A956
B983
B9077
C124C
C127C
C155C
C158C
C159C
Anderson Drive
Queen's Road
Great Western Road
Union Street
Riverside Drive
North Esplanade West
Abbotswell Road
West Tullos Road
Wellington Road
Garthdee Road
Inchgarth Road
North Deeside Road
Cairngorm Drive
Stonehaven Road
Hareness Road
AECOM
Schedule of Constraints (Figure 1 of 6)
SSE


Key
Street Furniture
Bridge
Overhead Line
Retaining Structure
Culvert
Bieldside
Milltimber
Deeside Junction
Aberdeen Western Peripheral Route
North Deeside Road
C132C
A93
A90
B9077
Contlaw Road
Newton Dee Camphill Community
Camphill Rudolf Steiner Schools
Camphill School Aberdeen
Mid Ardoe
Riverside of
River Dee
River Dee Crossing
Maryculter Home Farm
The Den & the Glen
Stony Hill
Kirkton of Maryculter
Cleanhill Wood
Ref 016
Ref 017
Ref 018
Ref 019
Ref 020
Ref 021
Ref 022
Ref 023
Ref 024
Ref 025
Ref 026
Ref 027
AECOM
Schedule of Constraints (Figure 2 of 6)
SSE


Key
Street Furniture
Bridge
Overhead Line
Retaining Structure
Culvert
Ref 028
Ref 029
Ref 030
Ref 031 Elec
Ref 032 Elec
Ref 033
Ref 034
Ref 035
Ref 036
Ref 037
Ref 038 Elec
Ref 039 Elec
Drumoak
North Deeside Road
River Dee
Park
Aberdeenshire
Stony Hill
C35K
B9077
Ashentilly Wood
Currackstone Wood
Muirksie Wood
Woodlands of Durris
Netherley Airstrip
AECOM
Schedule of Constraints (Figure 3 of 6)
SSE



AECOM Schedule of Constraints (Figure 4 of 6) SSE

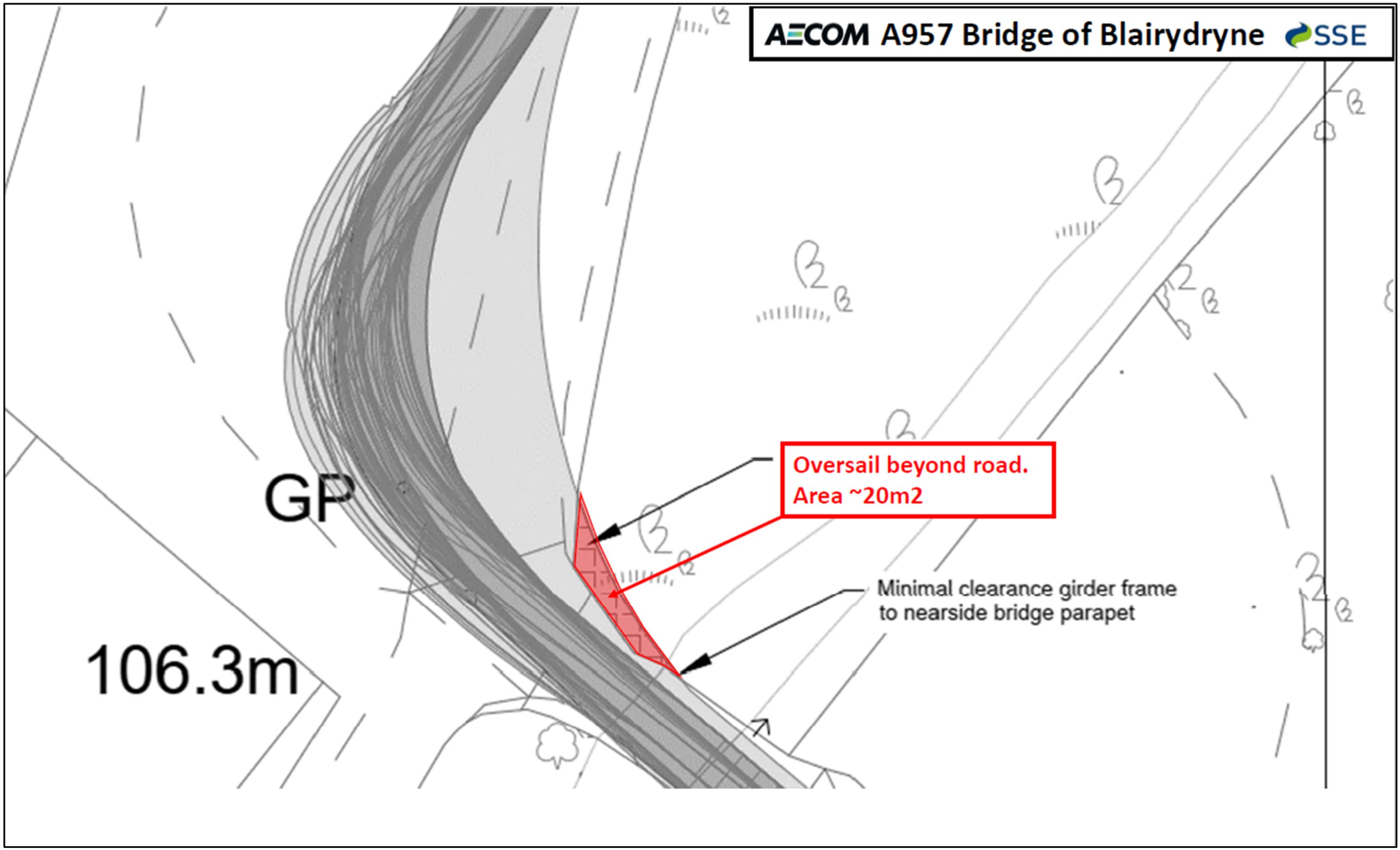


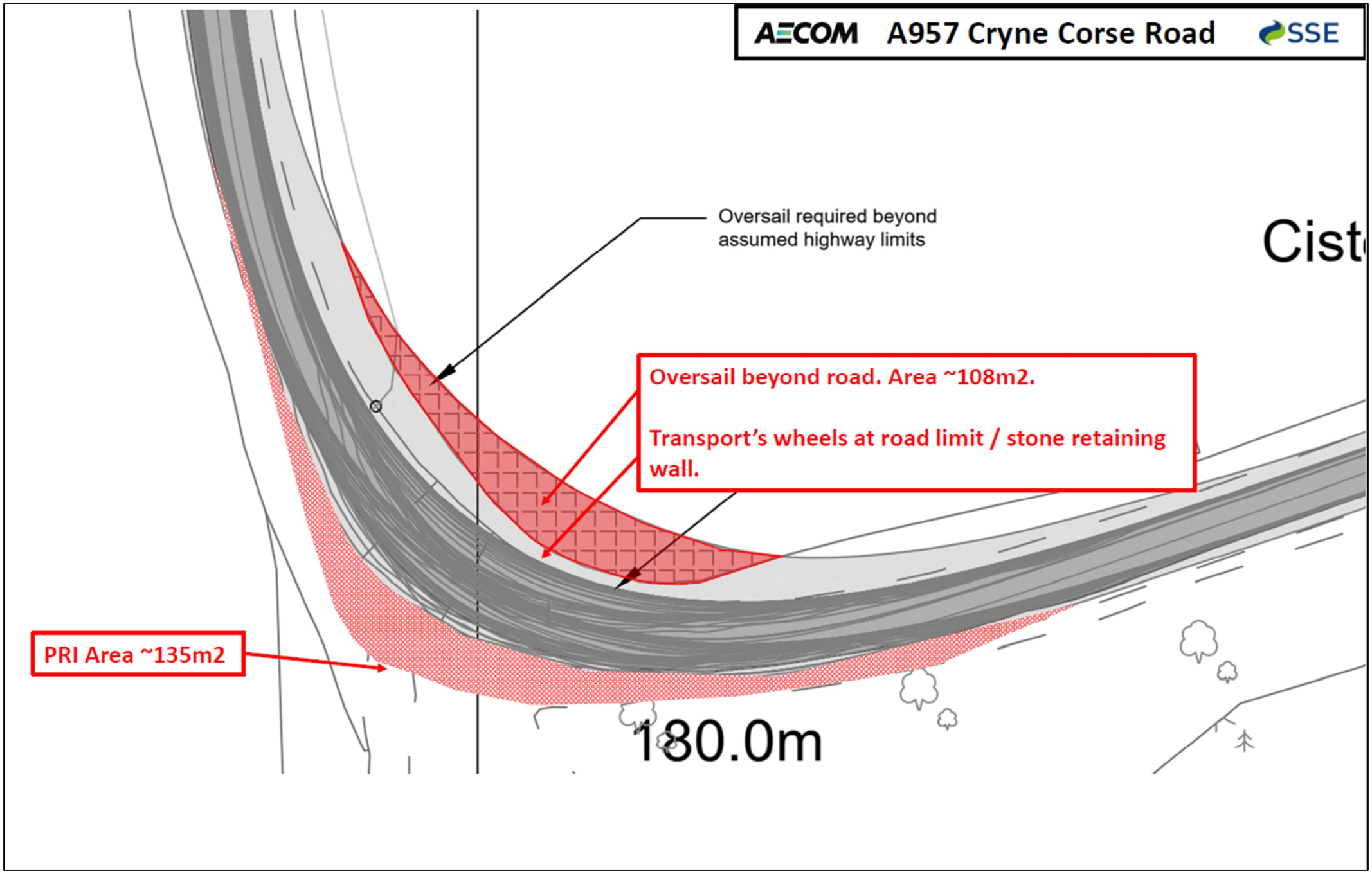
AECOM Schedule of Constraints (Figure 5 of 6) SSE

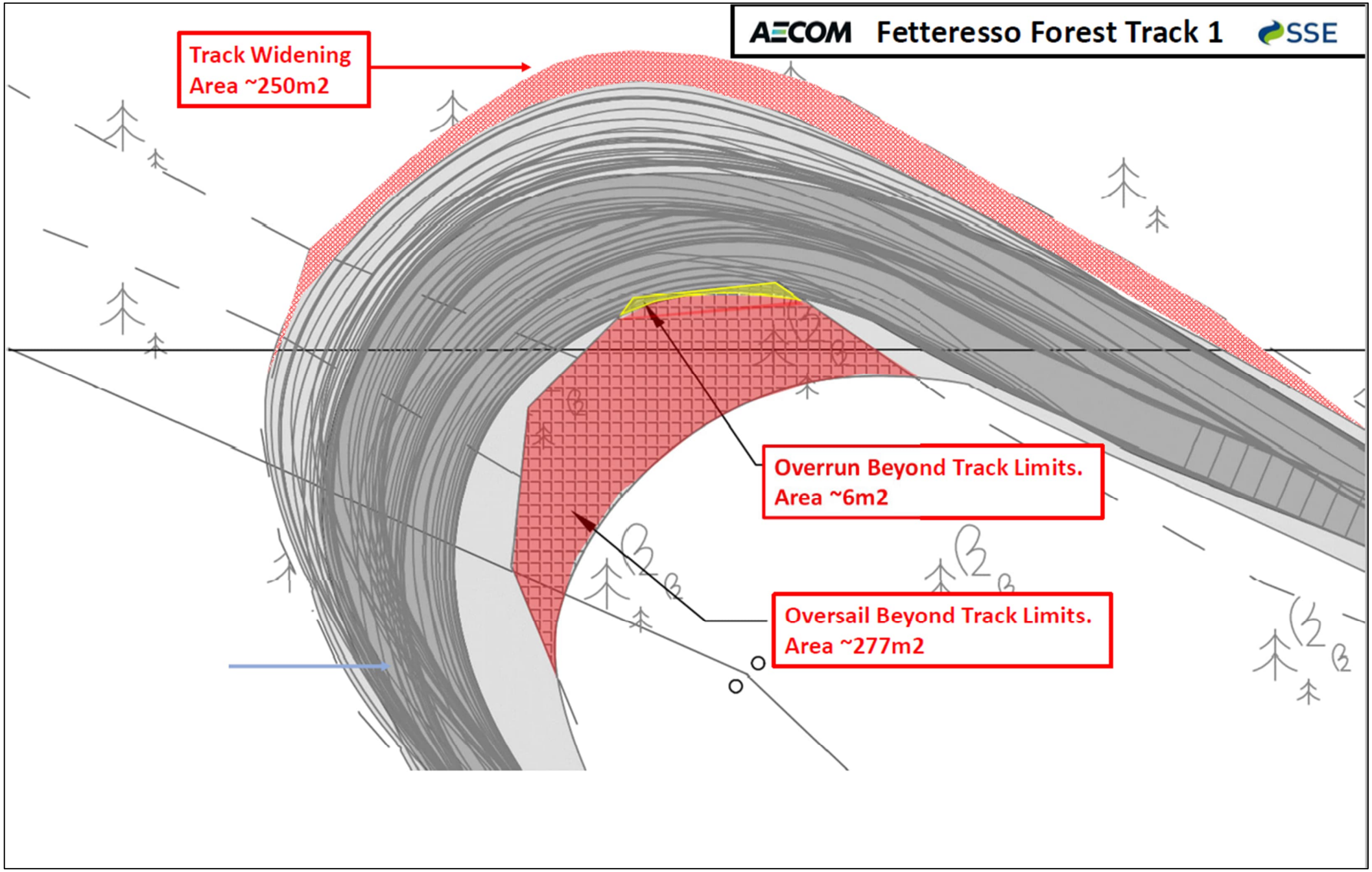

Key
Street Furniture
Bridge
Overhead Line
Retaining Structure
Culvert
Ref 058
Ref 059
Ref 060
Slug Road
Mergie
Cowie Water
Cowie Water
Hill of Three Stones 291 m
Hill of Hobseat 248 m
Hill of Trusta 320 m
AECOM
Schedule of Constraints (Figure 6 of 6)
SSE

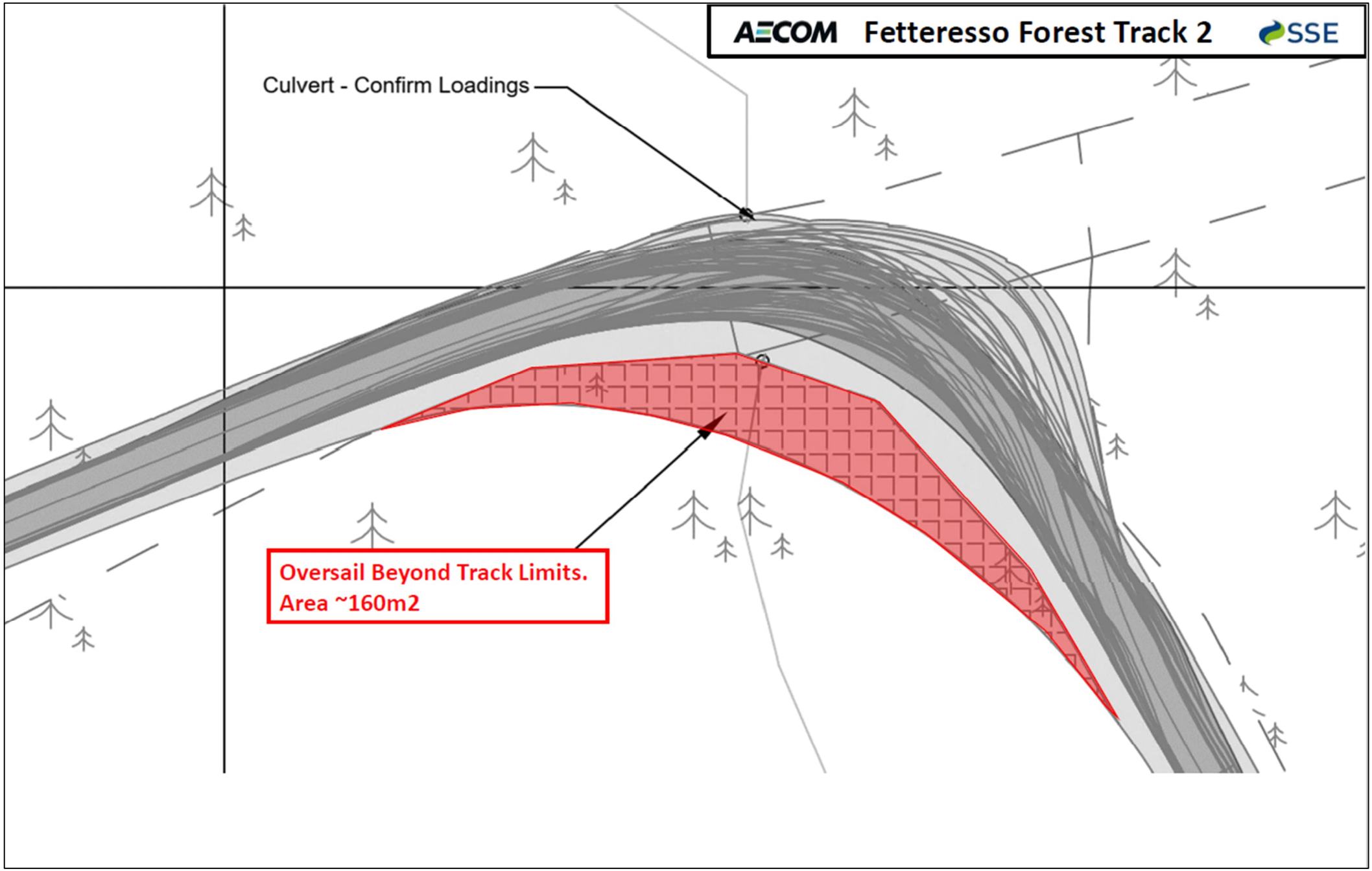
Appendix F

Public Road Improvements (PRI)


AECOM A957 Bridge of Blairydryne SSE
Oversail beyond road.
Area ~20m2
Minimal clearance girder frame
to nearside bridge parapet
GP
106.3m


AECOM
A957 Cryne Corse Road
SSE
Oversail required beyond assumed highway limits
Oversail beyond road. Area ~108m2.
Transport's wheels at road limit / stone retaining wall.
PRI Area ~135m2
180.0m


AECOM
Fetteresso Forest Track 1
SSE
Track Widening
Area ~250m2
Overrun Beyond Track Limits.
Area ~6m2
Oversail Beyond Track Limits.
Area ~277m2


AECOM
Fetteresso Forest Track 2
SSE
Culvert - Confirm Loadings
Oversail Beyond Track Limits.
Area ~160m2

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