EARBA STORAGE

A GILKES ENERGY COMPANY

Earba Pumped Storage Hydro Scheme
EIA Report

Appendix 17.2: AIL Route Survey

February 2024

Pell Frischmann

Earba Pumped Storage Hydro Scheme

Abnormal Indivisible Load Route Survey

December 2023

107333

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1 Introduction

1.1 Purpose of the Report

Pell Frischmann (PF) has been commissioned by Gilkes Energy (Gilkes) to undertake a route survey review of a potential delivery route for an electrical transformer and other Abnormal Indivisible Loads (AIL) associated with the construction and development of a new energy storage facility located to the southwest of Kintore, Aberdeenshire.

The Route Survey Report (RSR) has been prepared to help inform Gilkes on the likely issues associated with the development of the site with regards to off-site transport and access for AIL traffic from the proposed Port of Entry (PoE) to site. The report identifies the key issues associated with AIL deliveries and notes that remedial works, either in the form of physical works or as traffic management interventions will be required to accommodate the predicted loads.

The detailed assessment and subsequent designs of any remedial works are beyond the agreed scope of works between Pell Frischmann and Gilkes at this point in time.

It is the responsibility of the developer to ensure that the entirety of the proposed access route is suitable and meets with their satisfaction. The developer will be responsible for ensuring that the finalised proposals meet with the appropriate levels of health and safety provision for all road users and is in accordance with the relevant legislation at the time of delivery.

2 Site Background

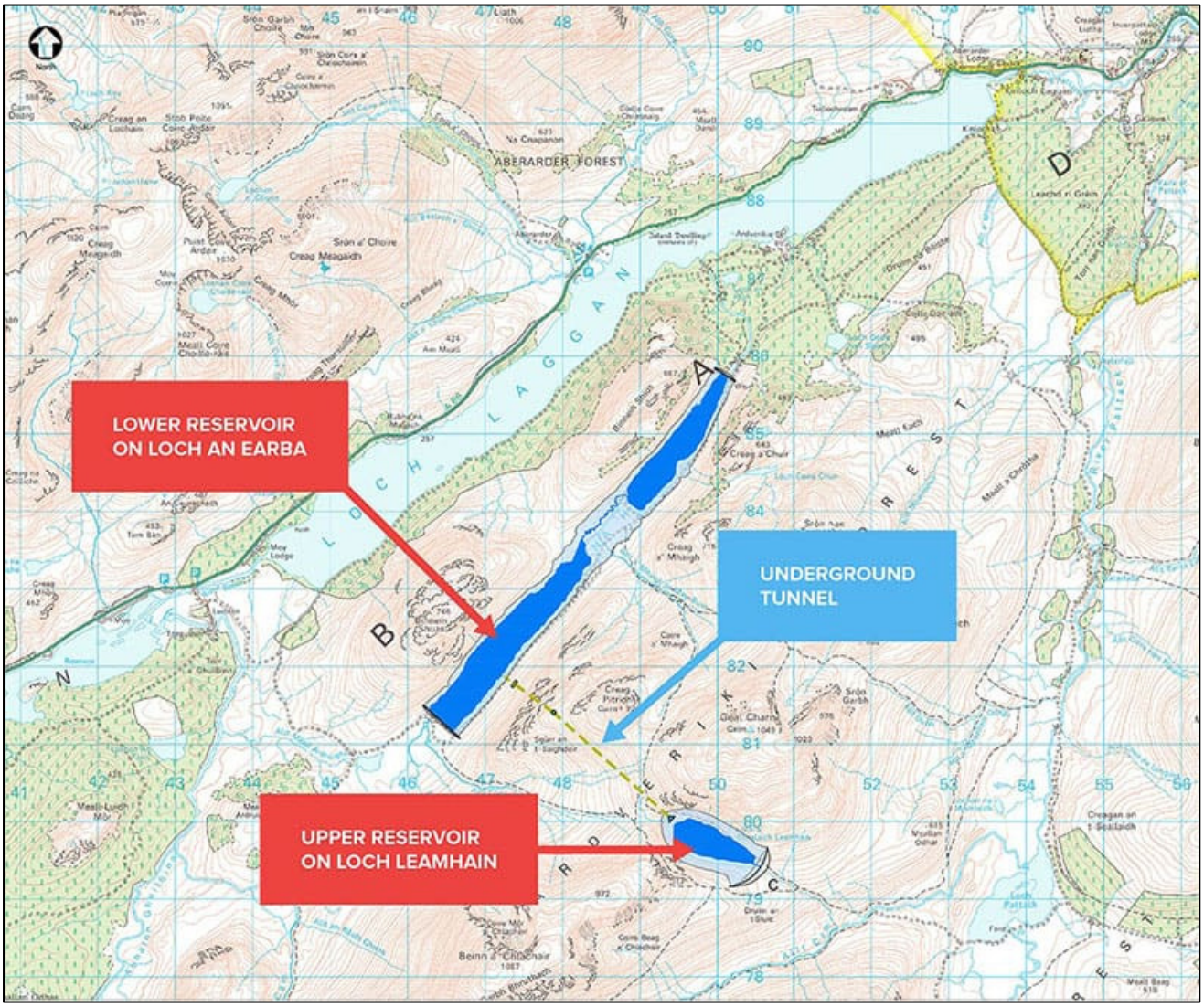
2.1 Site Location

The Proposed Development is located to the south of the A86 Loach Earba. The location of the route for the Proposed Development is shown in Figure 1.

The project will store up to 40,000MWh of energy which will make it the largest such scheme in the UK in terms of energy stored. The scheme will use Loch Leamhain as the upper reservoir and Loch Earba as the lower reservoir. A tunnel approximately 3 kilometres (km) long will connect the two water bodies.

A powerhouse will be constructed on the shore of Loch Earba which will extend deep underground. The turbines will be located at the bottom of the powerhouse shaft and will generate electricity in times of national demand or pump water for energy storage in times when there is surplus electricity on the national grid.

Figure 1 Site Location



2.2 Candidate Loads

Gilkes have indicated that they wish to consider access for a 340MVA transformer. Indicative transformer details and a similar transport solution were provided by Gilkes and Pell Frischmann has developed the assessment on these details. The indicative transformer details are provided in Table 2-1.

In addition to the transformer, tunnel lining sections will need to be transported to the site. These would arrive in sections that would be assembled on site due to their external dimensions and for reasons of ease of placement on the site.

The tunnel liner sections sizes are also summarised in Table 2-1.

Table 2-1: Transformer Component and Tunnel Lining Summary

Component	Length (m)	Width (m)	Height / Min Diameter (m)	Weight (t)
Transformer (excluding oil and in transport configuration)	10.000	3.400	4.500	150.000
Tunnel Lining Section	5.500	5.500	3.500	14.000

2.3 Proposed Delivery Equipment

To provide a robust assessment scenario based upon the known issues along the access route, it has been assumed that the transformer would be carried in a girder trailer supported by two nine axle bolsters at either end. A heavy load tractor unit would pull the trailer and a drogue unit may be required in areas with significant gradients.

Trailer details are provided in Appendix A for the transformer loads. The tunnel lining will be transported on a standard HGV trailer, with loads carried end down to ensure they can be transported under overhead structures and utility lines.

Figure 2-2: Example Transformer Transport

3 Access Route Review

3.1 Port of Entry

Two Ports of Entry (POE) are proposed. The transformer loads would be transported from Corpach Harbour in Lochaber to site. This is the closest heavy lift port to the proposed development site and it has been used by heavy load and abnormal load deliveries in the past. The port has sufficient quay and storage space and is well located for the strategic trunk road network.

The tunnel lining could be transported from either the Port of Inverness or from a manufacturing facility located in the central belt. This would be confirmed post planning determination, with an AIL planning condition suggested once all points of origin are confirmed and once all of the external dimensions have been clarified.

3.2 Proposed Access Route

The proposed access route from Corpach harbour to site would be as follows:

- Depart the port at the access gate and enter the A830 eastbound;
- Turn left onto the A82 northbound and proceed towards Spean Bridge;
- Turn right onto the A86 at Spean Bridge;
- Loads will continue eastbound on the A86. At the site access junction, they will turn right and will then proceed to site using private access tracks.

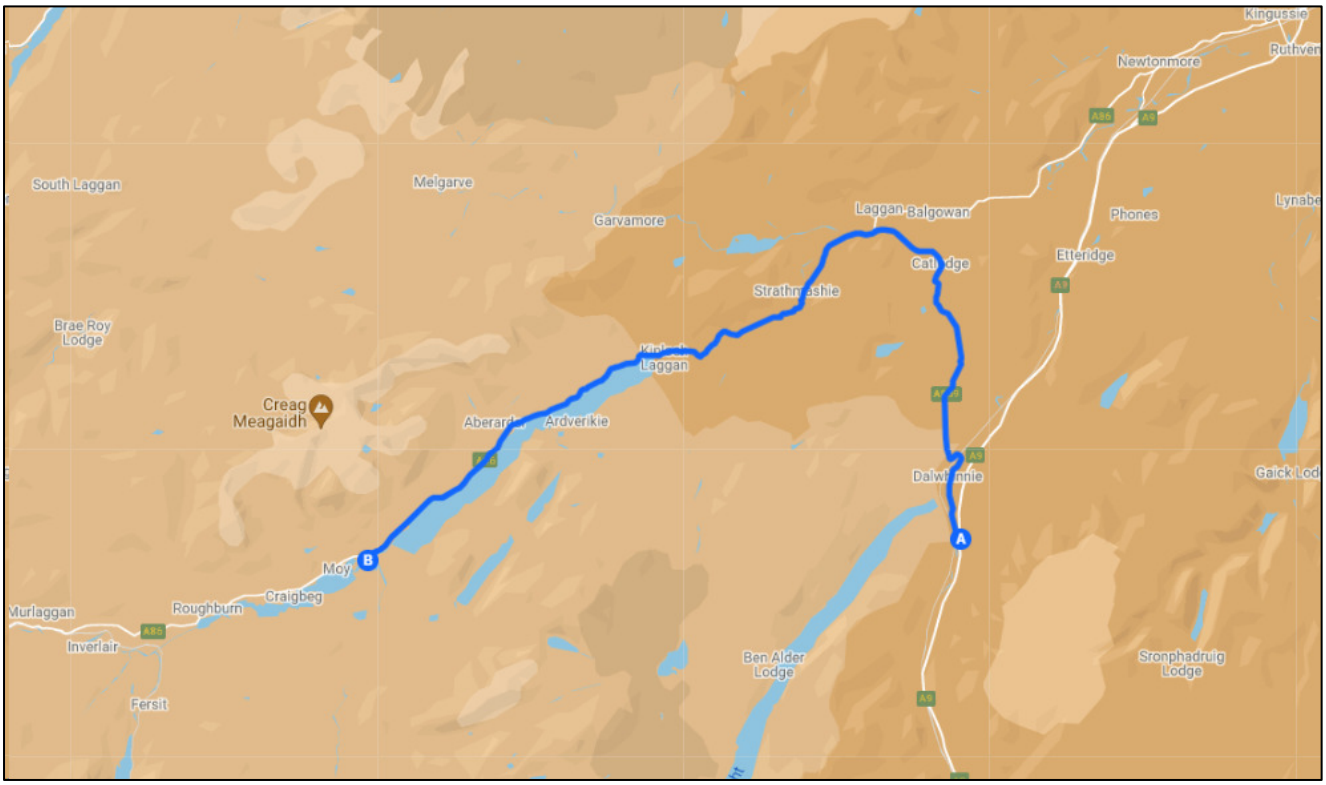
The proposed access route is illustrated in Figure 3-1.

The route has been reviewed during a site visit and constraints were noted.

Figure 3-1: Transformer Access Route

The route for the lining sections has been considered from the junction of the A9 and A889. The route to site for these loads in illustrated in Figure 3-2.

Figure 3-2: Tunnel Lining Access Route



3.3 Route Constraints

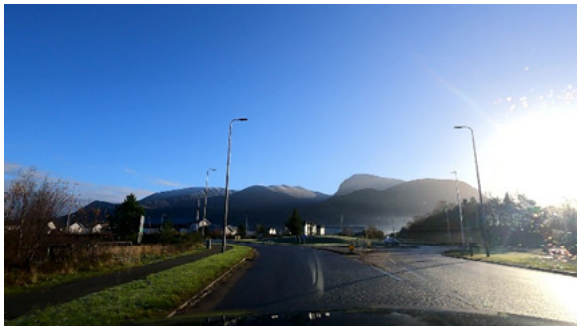
The constraints noted on the site visit are detailed in the table below. These cover all constraints noted on the access routes described previously. All operational traffic management measures during deliveries will be managed by the Police, in accordance with AIL legislation and the Movement Order for the delivery convoy.

Plans illustrating the location of the constraints are provided in Appendix B.

Table 3-1: Constraint Points and Details

POI	Key Constraint	Details
Transformer Loads		
1	**Port Access** 	Loads will exit the port using the BSW access gate onto the A830. An agreement with BSW will be required. Loads will turn right onto the A830 and will proceed eastbound. A swept path assessment has been undertaken and indicates that loads will over-run the northern footway of the A830 where a load bearing surface will be required. Protection of the kerbs will be required. Loads will oversail the inside of the turn where a wooden fence should be removed and the crossing sign head turned. Discussions with Network Rail will be required once the final component size has been confirmed. Loads will inform Network Rail when they intend to depart to ensure that crossings are made outwith rail service and engineering works intervals.

POI	Key Constraint	Details
2	**A830 Pedestrian Crossing**	The bollards on the crossing island at this location should be removed to allow loads to oversail.
3	**A830 Pedestrian Crossing**	The bollards on the crossing island at this location should be removed to allow loads to oversail.
4	**A830 Pedestrian Crossing**	The bollards on two crossing islands at this location should be removed to allow loads to oversail.
5	**A830 Pedestrian Crossing**	The bollards on the crossing island at this location should be removed to allow loads to oversail.
6	**Caledonian Canal Swing Bridge at Banavie**	Loads will cross the swing bridge. A structural assessment of the bridge will be undertaken prior to loads moving once the component dimensions and weights have been confirmed. Loads will cross the bridge at caution and will advise the swing bridge control room that loads will be passing prior to them leaving Corpach.

POI	Key Constraint	Details
7	**Blar Mhor Roundabout** 	Loads will take the second exit at the roundabout to continue on the A830 via a **contraflow** manoeuvre. A swept path assessment has been undertaken and indicates that loads will require a small area of load bearing surfacing and kerb protection on the island of the entry splitter island. Loads will oversail the edge of the roundabout central island, however no physical works will be required.
8	**A830 / A82 Roundabout** 	Loads will proceed ahead and will cross the River Lochy Bridge. A structural assessment of the bridge will be undertaken prior to loads moving once the component dimensions and weights have been confirmed. At the roundabout, loads will take the first exit onto the A82 northbound. A swept path assessment has been undertaken and indicates that loads will require access to all lanes on the entry and exit lanes to the junction. Loads will oversail the footway in the norther verge. They will also over-run the entry lane splitter island loads where they will require a small area of load bearing surfacing and kerb protection on the island. On the exit of the junction, loads will over-run the island and a load bearing surface and fill kerb protection will be required. All street furniture should be removed from the island.
9	**A82 Tree Canopy** 	The tree canopy on the A82 should be trimmed to ensure a 5m clear height throughout the route. Trimming works can be subject to ecological and seasonal restrictions and early engagement with Transport Scotland is recommended.

POI	Key Constraint	Details
10	**A82 / A86 Junction, Spean Bridge** 	Loads will proceed ahead and will cross the River Spean Bridge. A structural assessment of the bridge will be undertaken prior to loads moving once the component dimensions and weights have been confirmed. At the junction with the A86, loads will turn right and join the A86 eastbound. A swept path assessment has been undertaken and indicates that loads will require a load bearing surface on the western footway of the A82. Kerbs should be protected in this area. On the A86 northern footway, loads will over-run the footway and one lighting column will need to be removed. Loads will also over-run the southern footway where two road signs should be temporarily removed. Load bearing surfaces and kerb protection is required.
11	**A86 Low Overhead Utilities** 	A review of overhead utility lines should be undertaken once the final component and vehicle details have been confirmed. Engagement with the utility providers should be undertaken to identify any low utility lines that will require modification to allow loads to pass under them. The tree canopy on the A82 should be trimmed to ensure a 5m clear height throughout the route. Trimming works can be subject to ecological and seasonal restrictions and early engagement with Transport Scotland is recommended.
12	**A86 Bend** 	Loads will continue eastbound on the A86 and will proceed around the bend. A swept path assessment has been undertaken and indicates that loads will require access to both lanes. No physical mitigation works are required. Oncoming traffic will need to be held back from this section and an AIL Transport Management Plan for the route is suggested to set out the AIL movement strategy once the component details have been confirmed. It is suggested that this is secured via a suitably worded planning condition.
13	**A86 Bend** 	Loads will continue eastbound on the A86 and will proceed around the bend. A swept path assessment has been undertaken and indicates that loads will require access to both lanes. No physical mitigation works are required. Oncoming traffic will need to be held back from this section and an AIL Transport Management Plan for the route is suggested to set out the AIL movement strategy once the component details have been confirmed. It is suggested that this is secured via a suitably worded planning condition.

POI	Key Constraint	Details
14	**A86 Site Access Junction** 	Loads will turn right into the new site access junction. A swept path assessment has been undertaken and indicates that loads will require an oversail area on the inside of the turn into the junction. All obstructions in the area should be removed.
Tunnel Lining Route		
15	**A9 / A889 Junction** 	Loads will turn from the A9 onto the A889 at this junction. A swept path assessment has been undertaken for loads arriving from both the north and south of the A9. The assessment indicates that no physical mitigation works are required.
16	**Highland Mainline Railway Bridge** 	Loads will proceed ahead on the A889 and will cross the Highland Mainline Railway Bridge. A swept path assessment has been undertaken and indicates that loads will oversail both verges on the approach and over the bridge. It is suggested that the traffic signal poles are hinged to improve clearances during deliveries. The loads will oversail the safety railings.
17	**A889 / A86 Junction** 	Loads will turn left onto the A86 at its junction with the A889. A swept path assessment has been undertaken and indicates that loads will oversail the inside of the junction where one road sign and one bollard should be relocated.

POI	Key Constraint	Details
18	**A86 Bend** 	Loads will continue westbound on the A86 and will proceed around the bend. No physical mitigation works are required. It is however suggested that prior to works commencing that verge vegetation is trimmed back to ease access along the A86. Oncoming traffic will need to be held back from this section and other sinuous sections. An AIL Transport Management Plan for the route is suggested to set out the AIL movement strategy once the component details have been confirmed. It is suggested that this is secured via a suitably worded planning condition.
14	**A86 Site Access Junction** 	Loads will turn left into the new site access junction. A swept path assessment has been undertaken and indicates that no additional mitigation works are required.

3.4 Swept Path Assessment Results and Summary

The detailed swept path drawings for the locations assessed are provided in Appendix C for review. The drawings in Appendix C illustrate tracking undertaken for the worst-case loads at each location.

The colours illustrated on the swept paths are:

- Grey / Black – OS / Topographical Base Mapping;
- Green – Vehicle body outline (body swept path);
- Red – Tracked pathway of the wheels (wheel swept path); and
- Purple – The over-sail tracked path of the load where it encroaches outwith the trailer (load swept path).

Where mitigation works are required, the extents of over-run and over-sail areas are illustrated on the swept path drawings.

Please note that where assessments have been undertaken using Ordnance Survey (OS) base mapping, there can be errors in this data source.

Where provided by the client, topographical data has been utilised. Please note that Pell Frischmann cannot accept liability for errors on the data source, be that OS base mapping or client supplied data.

3.5 Weight Review

A weight review has been undertaken via the ESDAL (Electronic Service Delivery for Abnormal Loads) contacts database using the Highways Agency website www.esdal.com. Two original access options for the transformer loads were originally considered, however only one access from Corpach is now proposed.

All of the relevant ESDAL contacts are noted in Table 3-2 and all have been contacted to ascertain if there are any relevant constraints that should be noted. The feedback from the consultees is provided in Appendix D.

Table 3-2: ESDAL Contacts

Organisation	Email Address
The Highland Council	abnormal.loads@highland.gov.uk
Scottish Canals	scabnormal.loads@scottishcanals.co.uk
Police Scotland	OSDAbnormalLoadsScotland@scotland.pnn.police.uk
Network Rail	AbLoadsESDAL@networkrail.co.uk
Historic Rail Estate	rsgbrb@jacobs.com
Transport Scotland	AbnormalLoads@transport.gov.scot

3.6 Land Ownership

The limits of road adoption can vary depending upon the location of the site and the history of the road agencies involved. The adopted area is generally defined as land contained within a defined boundary where the road agency holds the maintenance rights for the land. In urban areas, this usually defined as the area from the edge of the footway across the road to the opposing footway back edge. In rural areas the area of adoption can be open to greater interpretation as defined boundaries may not be readily visible. In these locations, the general rule is that the area of adoption is between established fence / hedge lines or a maximum 2m from the road edge. This can vary between areas and location.

3.7 Summary Issues

It is strongly suggested that following a review of the RSR, Gilkes should undertake the following prior to the delivery of the first abnormal loads, to ensure load and road user safety:

- That any necessary topographical surveys are undertaken, and the swept path results completed;
- A review of axle loading on structures along the entire access route with the various road agencies is undertaken once the load details are confirmed;
- A review of clear heights with utility providers and the transport agencies along the route to ensure that there is sufficient space to allow for loads plus sufficient flashover protection (to electrical installations);
- That any verge vegetation and tree canopies which may foul loads is trimmed prior to loads moving;
- That a review of potential roadworks and or closures is undertaken once the delivery schedule is established in draft form;
- That a test run is completed to confirm the route and review any vertical clearance issues; and
- That a condition survey is undertaken to ascertain the extents of road defects prior to loads commencing to protect the developer from spurious damage claims.

4 Summary

4.1 Summary of Access Review

PF has been commissioned by Gilkes to prepare a Route Survey Report to examine the issues associated with the transformer and tunnel lining components for a pumped storage hydro scheme at Loch Earba.

This report identifies the key points and issues associated with the proposed route and outlines the issues that will need to be considered for successful delivery of components.

The report is presented for consideration to Gilkes. Various road modifications, structural reviews, and interventions are required to successfully access the site. If these are undertaken, access to the site is considered feasible for the assessed loads.

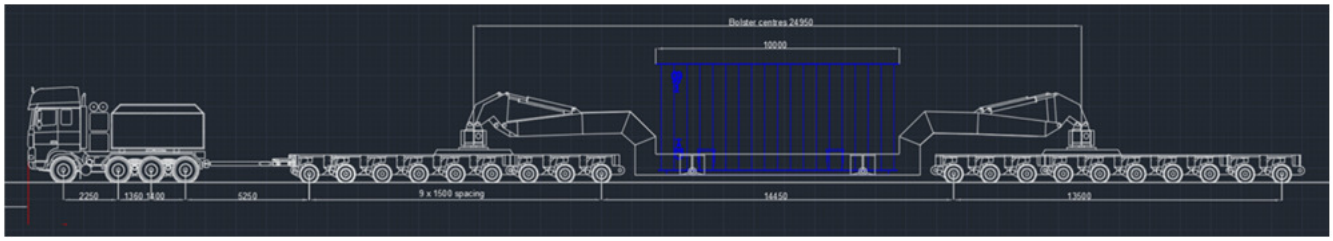
4.2 Further Actions

The following actions are recommended to pursue the transport and access issues further:

- Prepare detailed mitigation design proposals to help inform the land option / consultee discussions;
- Undertake the necessary structural reviews and assessments;
- Undertake discussion with the affected utility providers and roads agencies;
- Obtain the necessary statutory licences to enable the mitigation measures; and
- Develop a detailed operational Transport Management Plan to assist in transporting the proposed loads.

Appendix A Load Details

Indicative Load Details



Trailer weight (t)

Weight of transformer	230.00
Trailer weight	114.75
Combined weight	344.75
Load per trailer	172.38
Load per axle line	17.24
Load per axle	8.62
Load per wheel	2.15
Overall ground bearing pressure	9.98

Tractor weights (t)

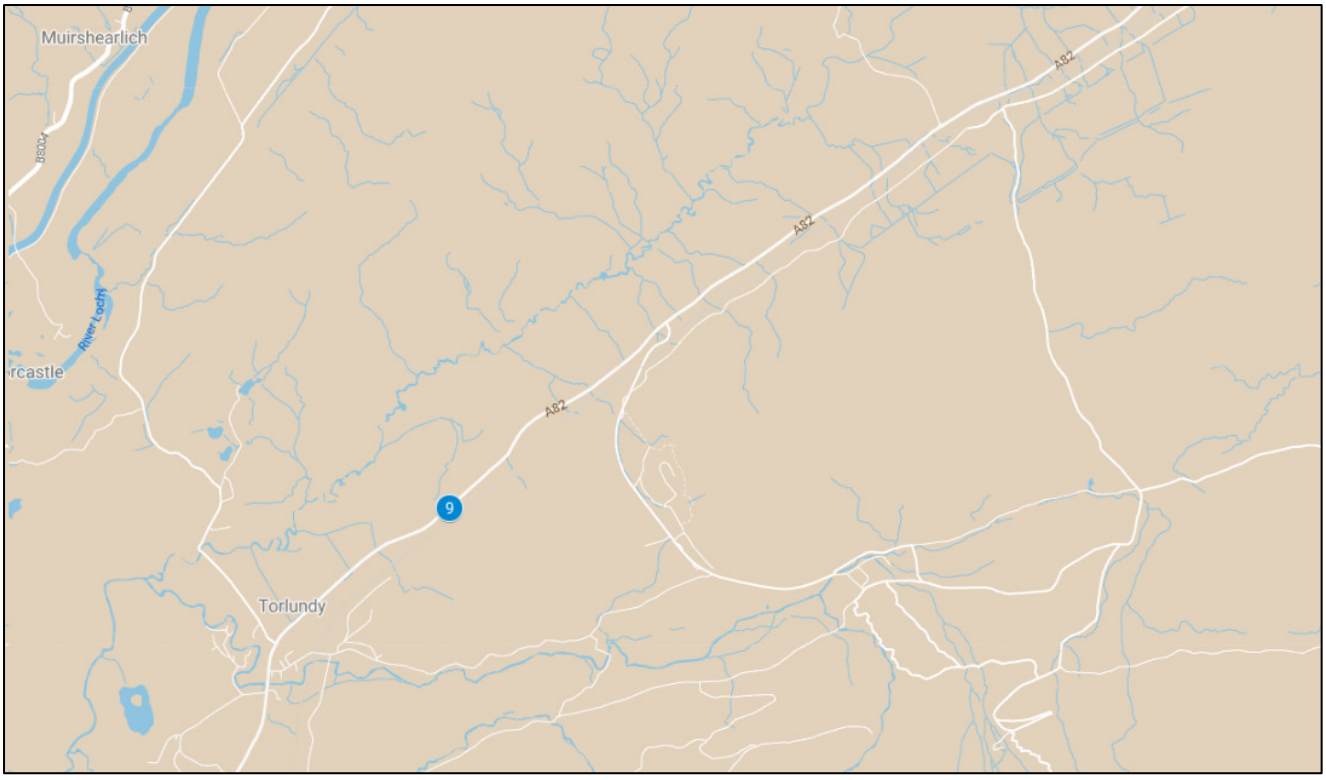
Total weight	42
Axle 1 (front)	8
Axle 2	10
Axle 3	12
Axle 4	12

Delivery train dimensions

Maximum length (m)	54.050
Maximum Width (m)	6.000
Maximum Height (m)	5.200

Appendix B Points of Interest

The following plans can be viewed electronically here:
https://www.google.com/maps/d/edit?mid=1x5C39n9ZPqxH3l6K7t_xTZ7N7cTPiOs&usp=sharing



Spean Bridge
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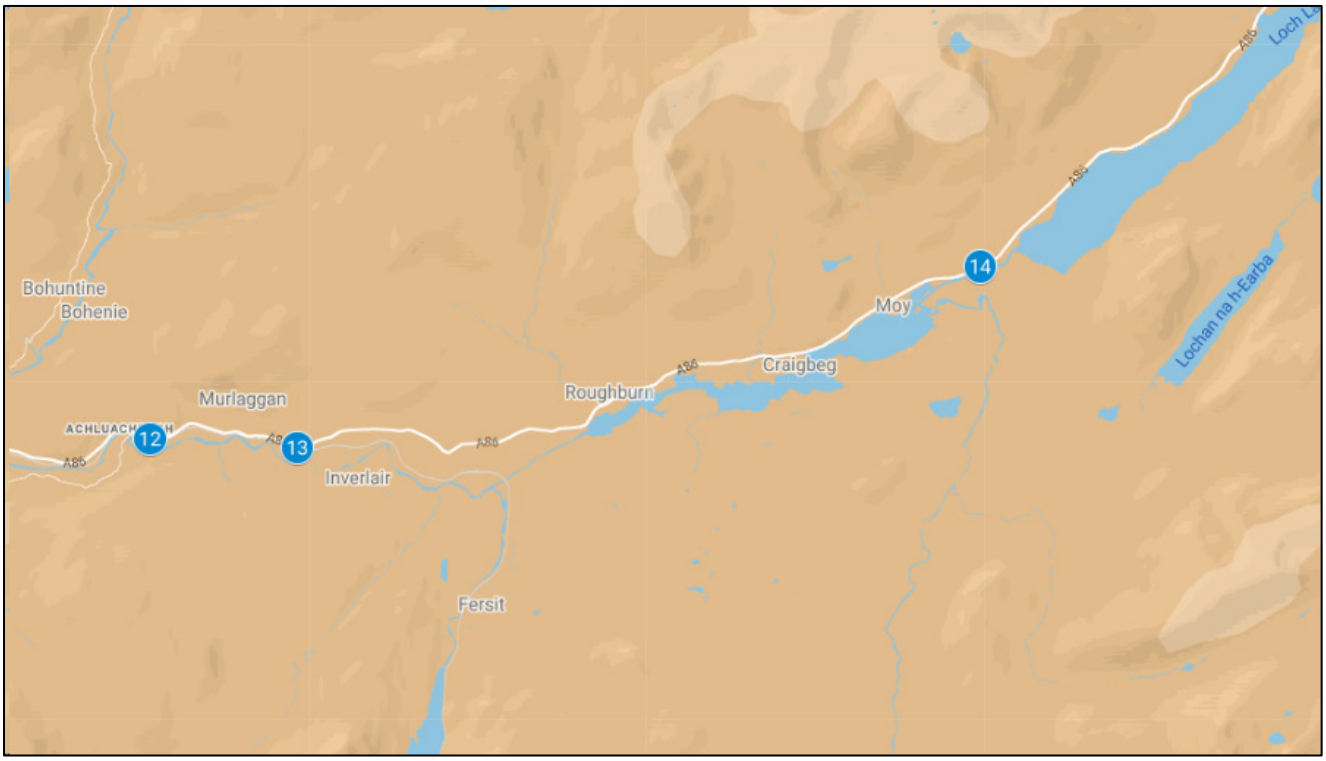
A86
A82
River Spean
Spean Bridge
Allt Garbh
Killiechonate
10
11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Bohenie
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Inverlair
Roughburn
Craigbeg
Moy
Fersit
Lochan na h-Earba
A86
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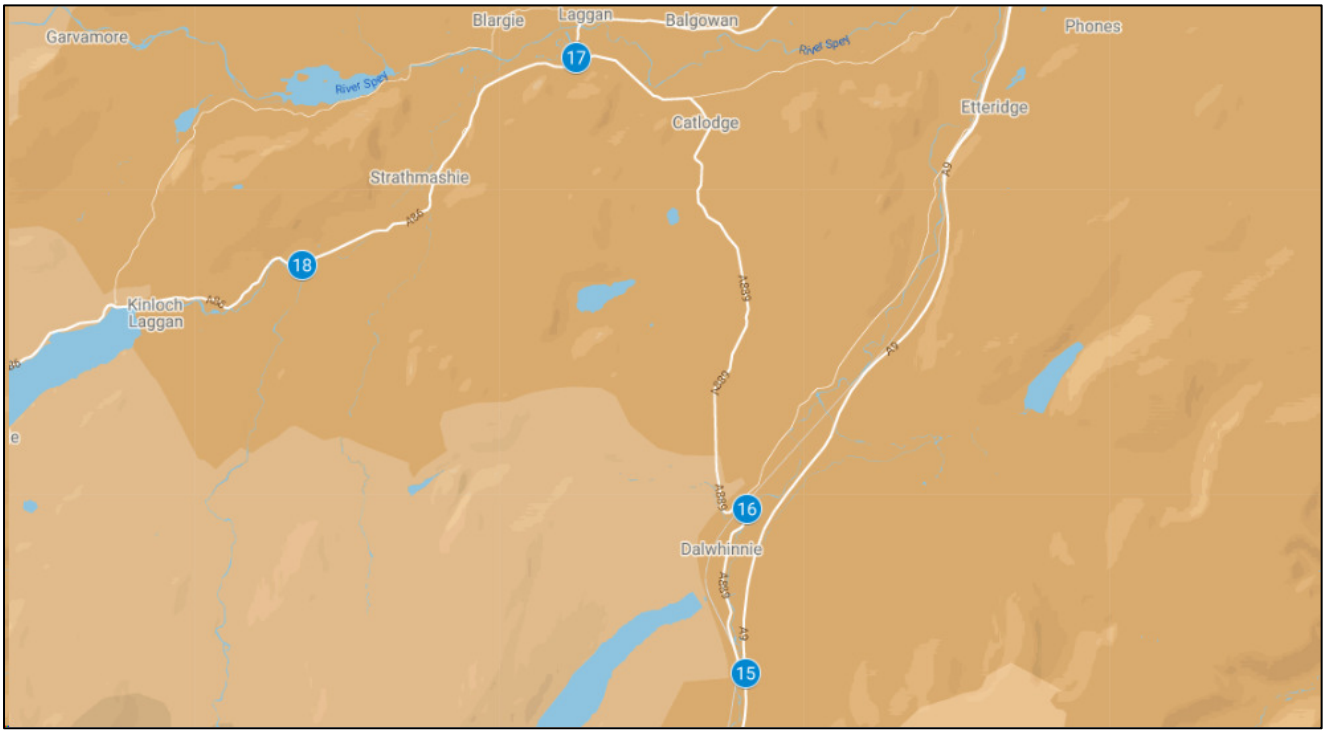
13
14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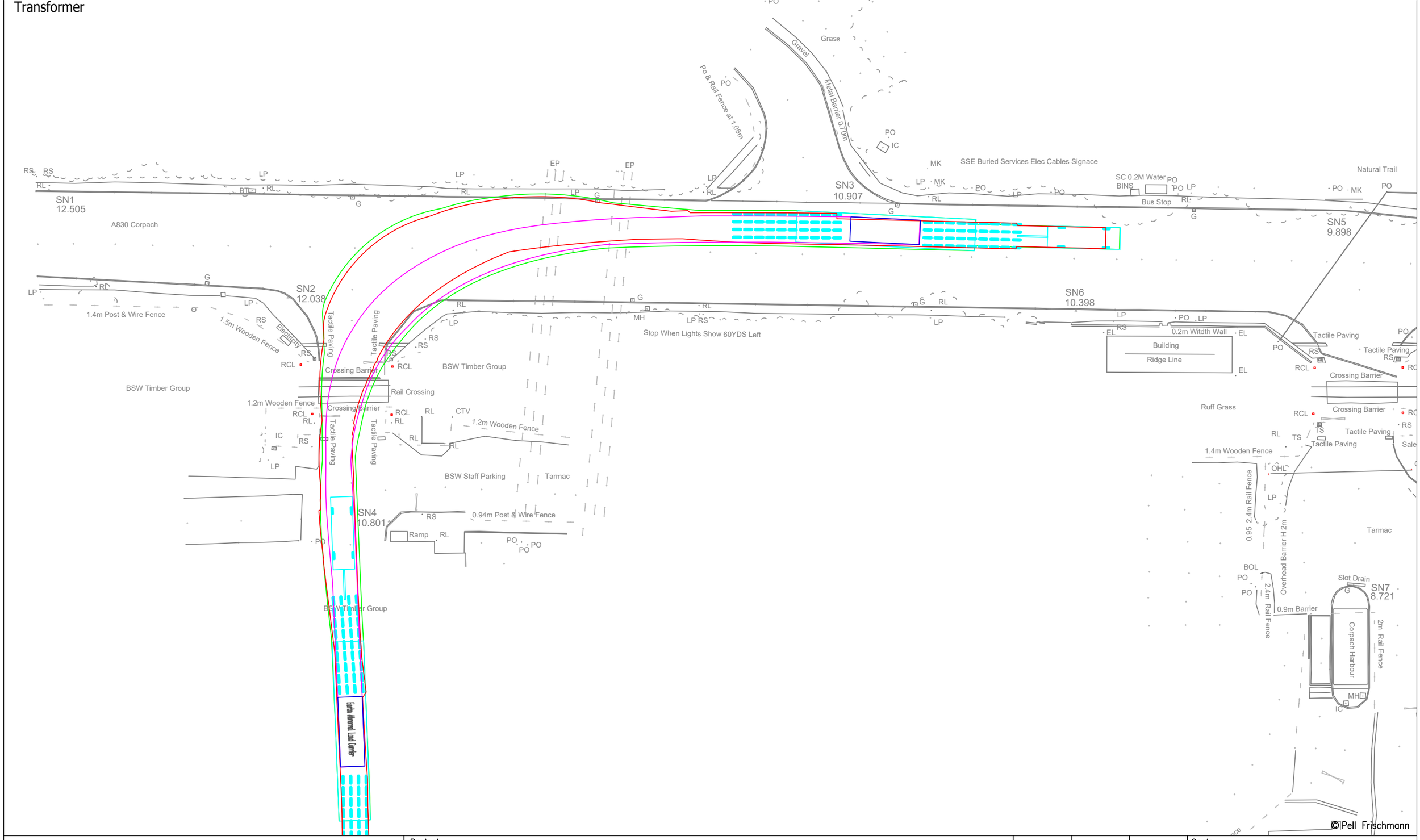
Blargie
Laggan
Balgowan
Phones
River Spey
17
Catlodge
Etteridge
Strathmashie
18
Kinloch
Laggan
16
Dalwhinnie
15

Appendix C Swept Path Assessments

Transformer



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Client: GILKES ENERGY

Key: Wheel SPA | Body SPA | Load SPA | Indicative | Over-run | Over-sail

Project: EARBA PUMPED STORAGE HYDRO SCHEME

Drawing Title: TRANSFORMER & TUNNEL LINING SECTIONS

SPA Location: BSW Access Junction, Corpach Harbour

	Name	Date
Drawn	GB	04/12/2023
Designed	GB	03/12/2023
Checked	TL	04/12/2023
Point of Interest		1

Scale: 1:500 @ A3

File No.: 231202 Tracking.dwg

Drawing Status: Draft

Drawing No.: SK01

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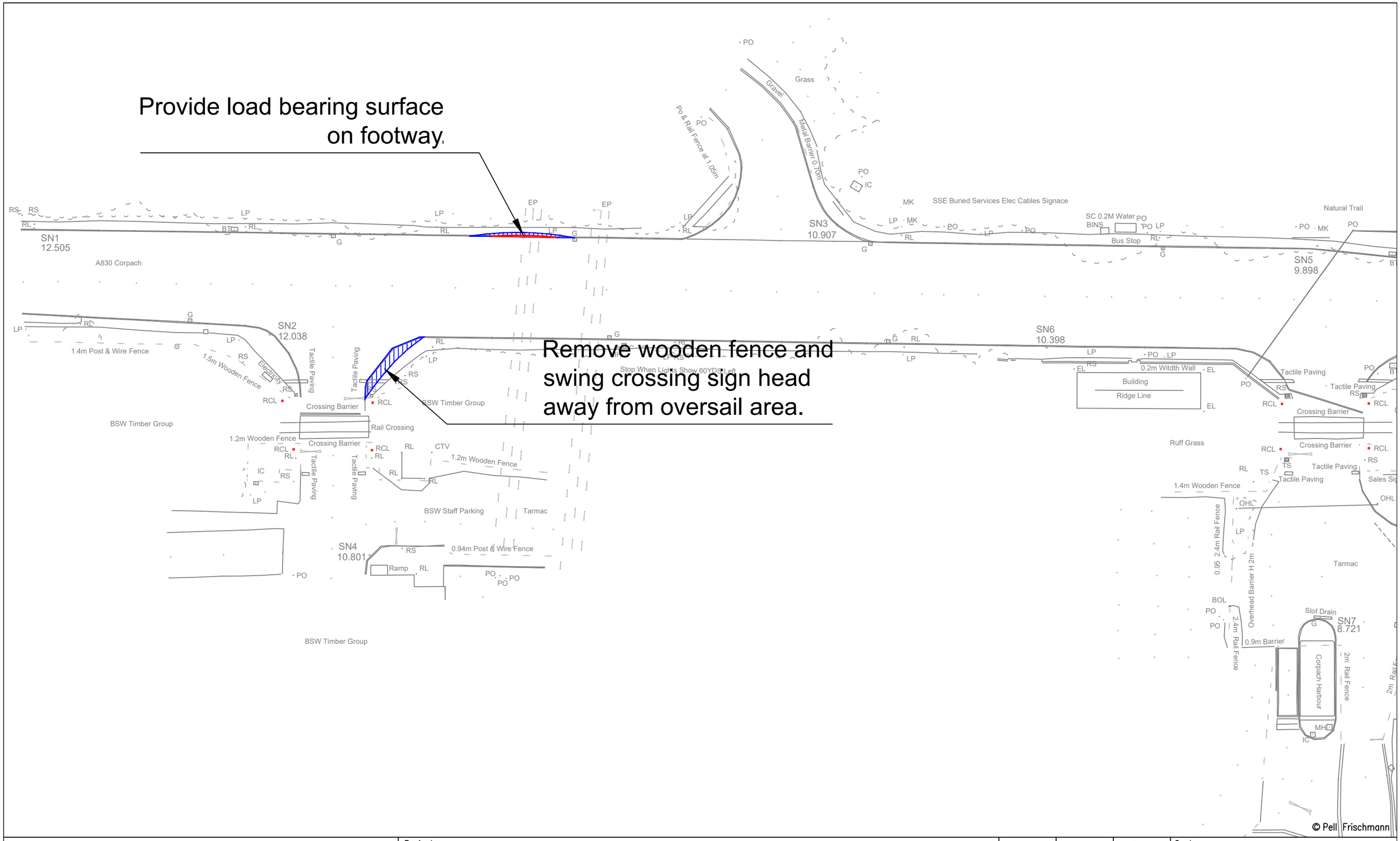

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Client: GILKES ENERGY

Key: Wheel SPA | Body SPA | Load SPA | Indicative | Over–run | Over–sail

Project: EARBA PUMPED STORAGE HYDRO SCHEME

Drawing Title: TRANSFORMER & TUNNEL LINING SECTIONS

SPA Location: BSW Access Junction, Corpach Harbour

	Name	Date
Drawn	GB	04/12/2023
Designed	GB	03/12/2023
Checked	TL	04/12/2023
Point of Interest		1

Scale: 1:500 @ A3

File No.: 231202 Tracking.dwg

Drawing Status: Draft

Drawing No.: SK01A

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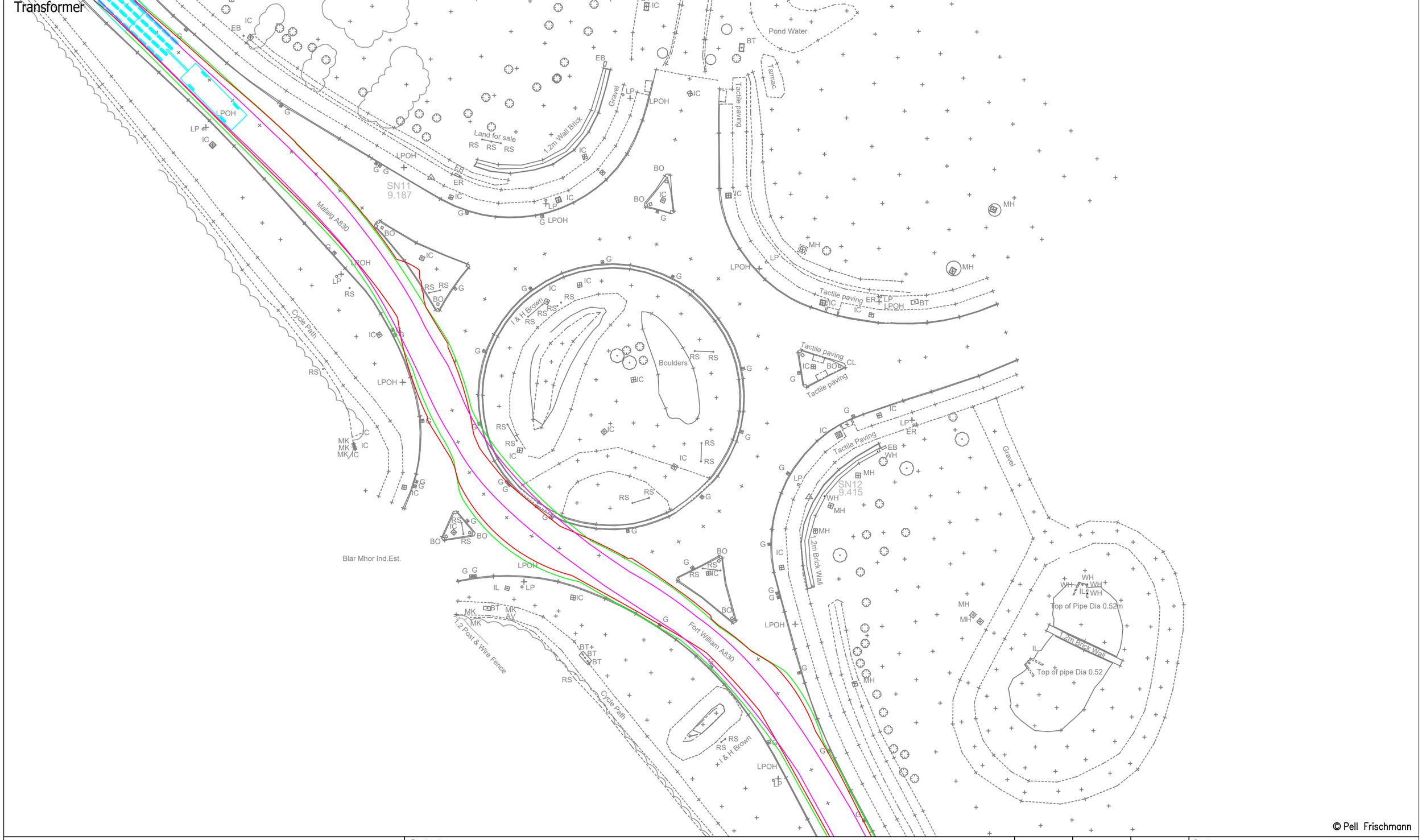

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Client: GILKES ENERGY

Key: Wheel SPA | Body SPA | Load SPA | Indicative | Over–run | Over–sail

Project: EARBA PUMPED STORAGE HYDRO SCHEME

Drawing Title: TRANSFORMER & TUNNEL LINING SECTIONS

SPA Location: Blar Mhor Roundabout

	Name	Date
Drawn	GB	04/12/2023
Designed	GB	03/12/2023
Checked	TL	04/12/2023
Point of Interest		7

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Drawing Status: Draft

Drawing No.: SK02

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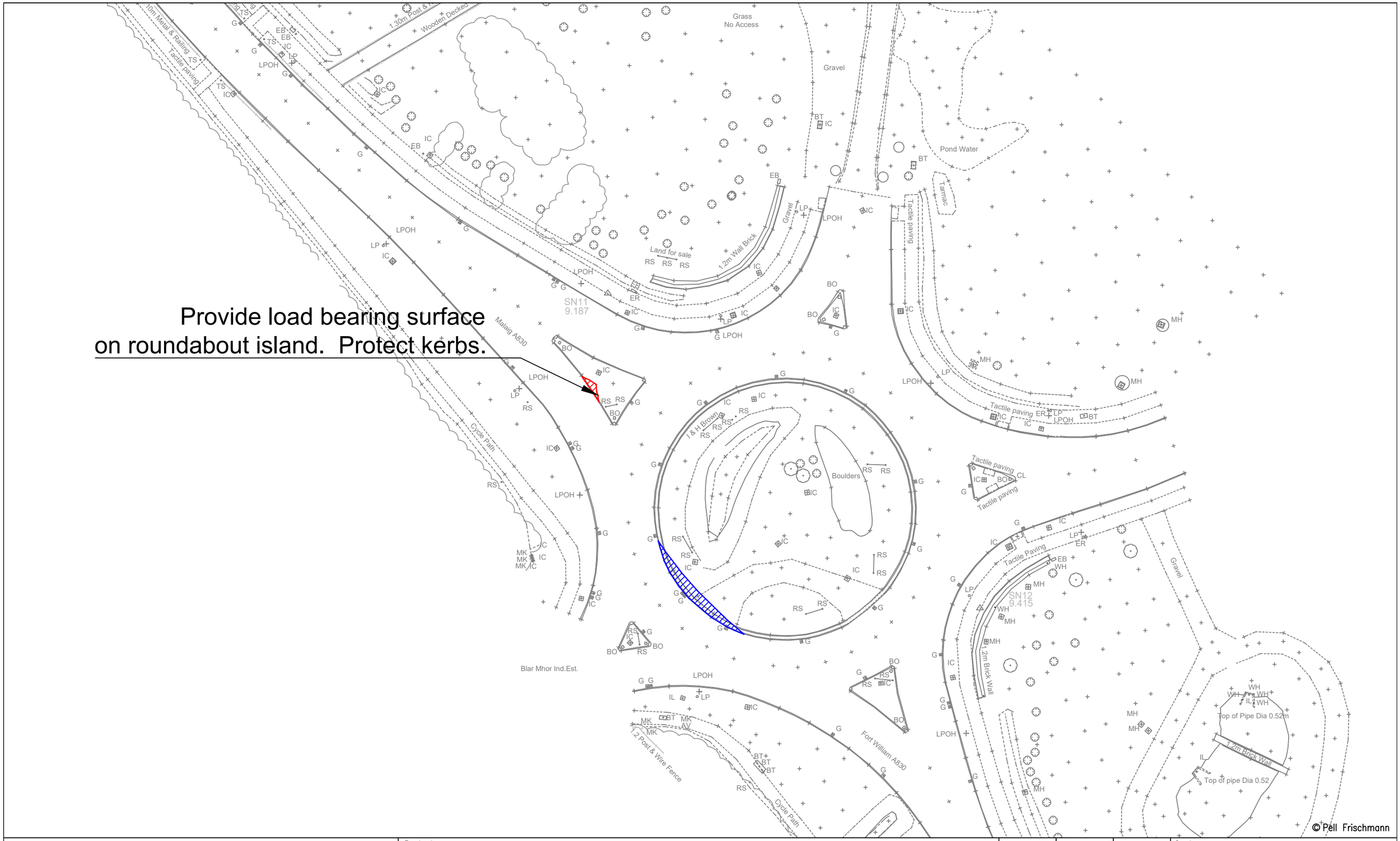
Revision: 0



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Client: GILKES ENERGY

Key: Wheel SPA | Body SPA | Load SPA | Indicative | Over-run | Over-sail

Project: EARBA PUMPED STORAGE HYDRO SCHEME

Drawing Title: TRANSFORMER & TUNNEL LINING SECTIONS

SPA Location: Blarr Mhor Roundabout

	Name	Date
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Designed	GB	03/12/2023
Checked	TL	04/12/2023
Point of Interest		7

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File No.: 231202 Tracking.dwg

Drawing Status: Draft

Drawing No.: SK02A

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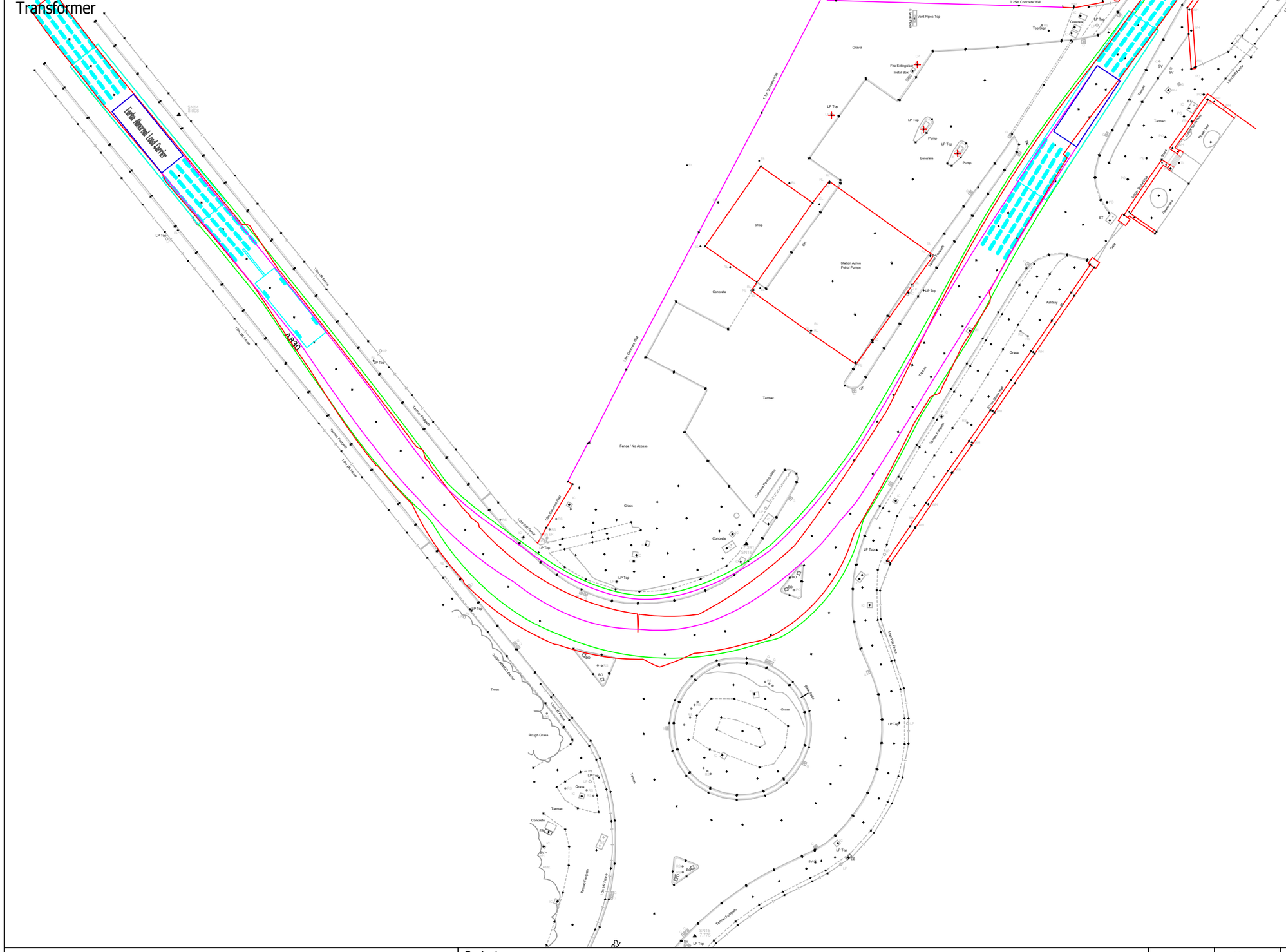

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www.pellfrischmann.com

Client: GILKES ENERGY

Key: Wheel SPA | Body SPA | Load SPA | Indicative | Over-run | Over-sail

Project: EARBA PUMPED STORAGE HYDRO SCHEME

Drawing Title: TRANSFORMER & TUNNEL LINING SECTIONS

SPA Location: A830 / A82 Roundabout

	Name	Date
Drawn	GB	04/12/2023
Designed	GB	03/12/2023
Checked	TL	04/12/2023
Point of Interest		8

Scale: 1:500 @ A3

File No.: 231202 Tracking.dwg

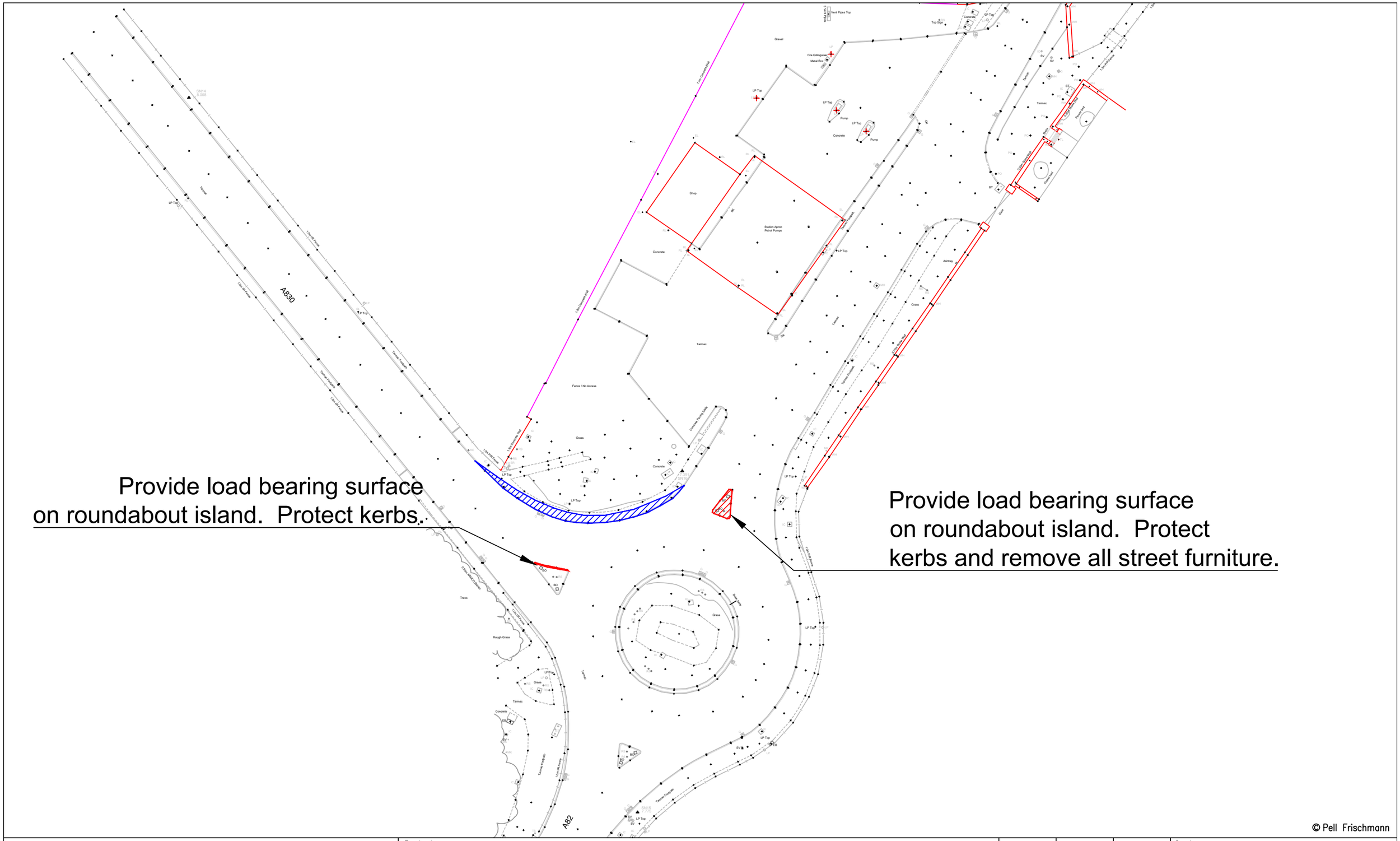
Drawing Status: Draft

Drawing No.: SK03

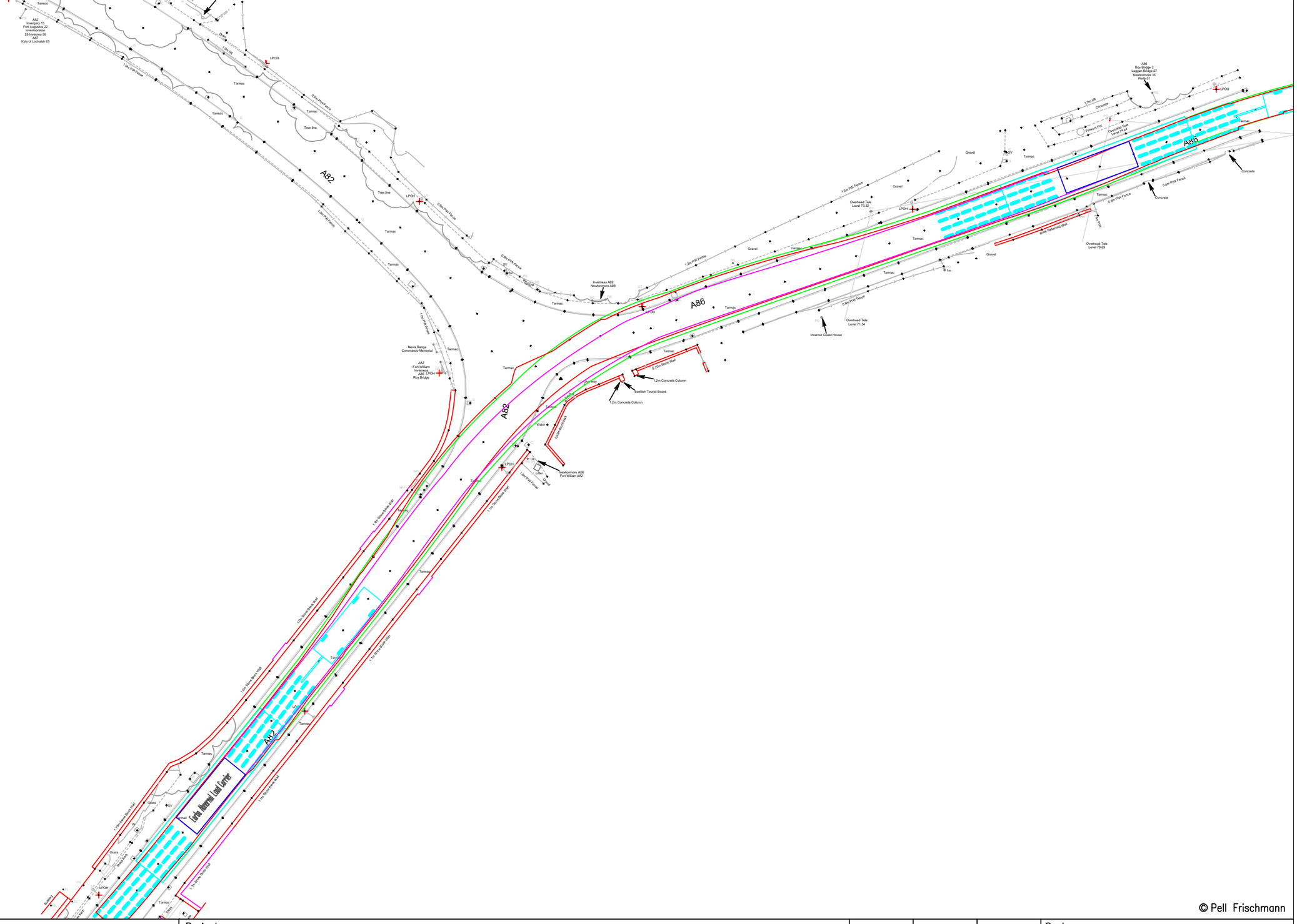
Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.
3. Do not scale from this drawing.

Revision: 0

NO MITIGATION REQUIRED


Provide load bearing surface on roundabout island. Protect kerbs.
Provide load bearing surface on roundabout island. Protect kerbs and remove all street furniture.
A830
A82
Shop
Station Apron Petrol Pumps
Tarmac
Concrete
Gravel
Grass
Fence / No Access
Trees
Rough Grass
Ashway
Vent Pipes Top
Fire Extinguisher
Metal Box
LP Top
Pump
Top Sign
Office Block
Sheet Roof
Tunnel Portals
Tunnel Footpath
Tunnel Outlets
Cross Road Bridge
Bridge
Cross Road Bridge
1.1m Concrete Wall
1.0m Wire Fence
1.0m Wire Fence
1.0m Wire Fence

Transformer



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Client: GILKES ENERGY

Key: Wheel SPA | Body SPA | Load SPA | Indicative | Over-run | Over-sail

Project: EARBA PUMPED STORAGE HYDRO SCHEME

Drawing Title: TRANSFORMER & TUNNEL LINING SECTIONS

SPA Location: A82 / A86 Junction

	Name	Date
Drawn	GB	04/12/2023
Designed	GB	03/12/2023
Checked	TL	04/12/2023
Point of Interest		10

Scale: 1:500 @ A3

File No.: 231202 Tracking.dwg

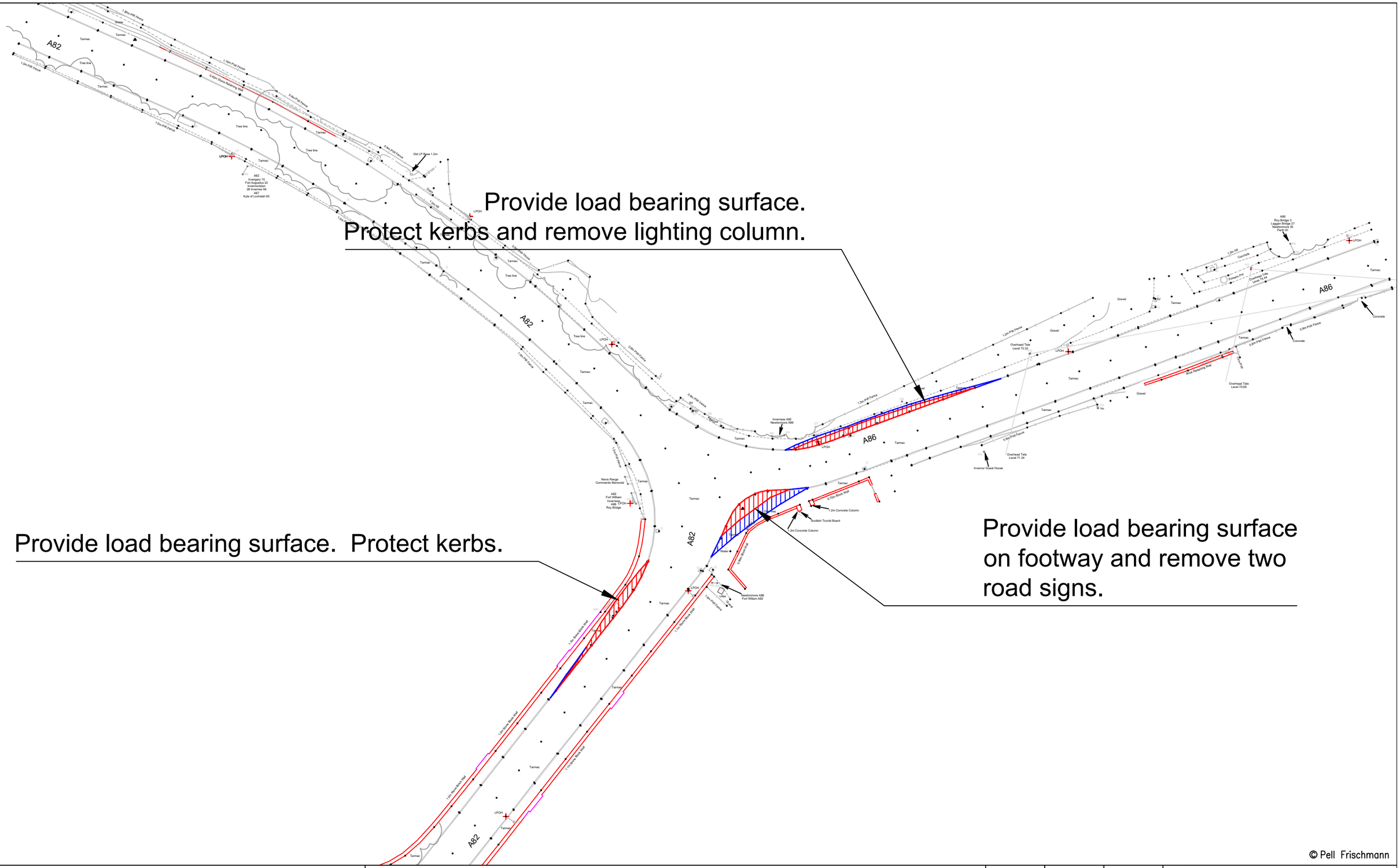
Drawing Status: Draft

Drawing No.: SK04

Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.
3. Do not scale from this drawing.

Revision: 0

NO MITIGATION REQUIRED



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Client: GILKES ENERGY

Key: Wheel SPA | Body SPA | Load SPA | Indicative | Over-run | Over-sail

Project: EARBA PUMPED STORAGE HYDRO SCHEME

Drawing Title: TRANSFORMER & TUNNEL LINING SECTIONS

SPA Location: A82/ A86 Junction

	Name	Date
Drawn	GB	04/12/2023
Designed	GB	03/12/2023
Checked	TL	04/12/2023
Point of Interest		10

Scale: 1:500 @ A3

File No.: 231202 Tracking.dwg

Drawing Status: Draft

Drawing No.: SK04A

Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.
3. Do not scale from this drawing.

Revision: 0

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Client: GILKES ENERGY

Key: Wheel SPA | Body SPA | Load SPA | Indicative | Over-run | Over-sail

Project: EARBA PUMPED STORAGE HYDRO SCHEME

Drawing Title: TRANSFORMER & TUNNEL LINING SECTIONS

SPA Location: A86 Bend West of Roy Bridge

NO MITIGATION REQUIRED

	Name	Date
Drawn	GB	04/12/2023
Designed	GB	03/12/2023
Checked	TL	04/12/2023
Point of Interest		12

Scale: Custom @ A3

File No.: 231202 Tracking.dwg

Drawing Status: Draft

Drawing No.: SK05

Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.
3. Do not scale from this drawing.

Revision: 0

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Key: Wheel SPA | Body SPA | Load SPA | Indicative | Over–run | Over–sail

Project: EARBA PUMPED STORAGE HYDRO SCHEME

Drawing Title: TRANSFORMER & TUNNEL LINING SECTIONS

SPA Location: A86 Bend

NO MITIGATION REQUIRED

	Name	Date
Drawn	GB	04/12/2023
Designed	GB	03/12/2023
Checked	TL	04/12/2023
Point of Interest		13

Scale: 1:500 @ A3

File No.: 231202 Tracking.dwg

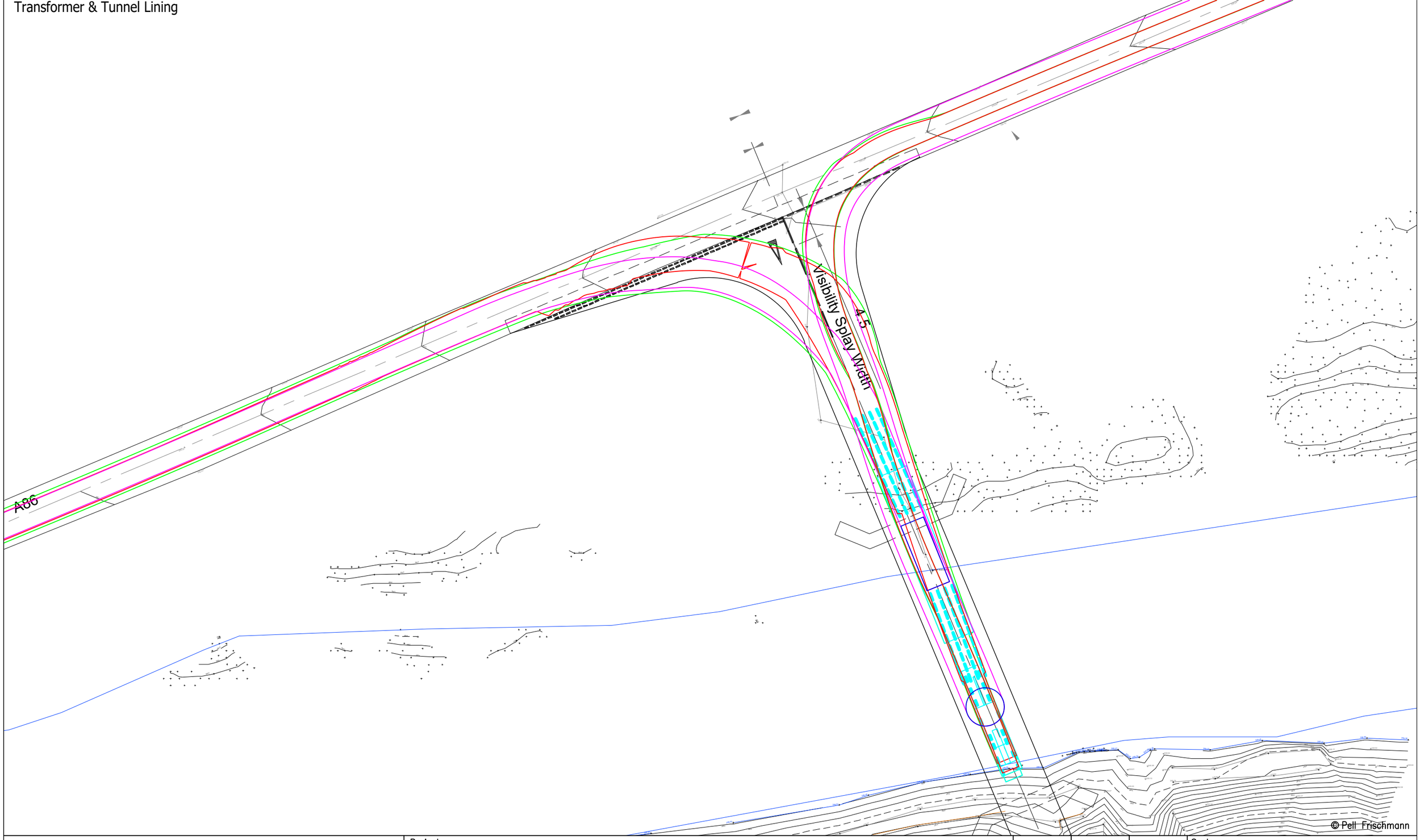
Drawing Status: Draft

Drawing No.: SK06

Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.
3. Do not scale from this drawing.

Revision: 0

Transformer & Tunnel Lining



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Client: GILKES ENERGY

Key: Wheel SPA | Body SPA | Load SPA | Indicative | Over-run | Over-sail

Project: EARBA PUMPED STORAGE HYDRO SCHEME

Drawing Title: TRANSFORMER & TUNNEL LINING SECTIONS

SPA Location: Site Access Junction

	Name	Date
Drawn	GB	04/12/2023
Designed	GB	03/12/2023
Checked	TL	04/12/2023
Point of Interest		14

Scale: 1:500 @ A3

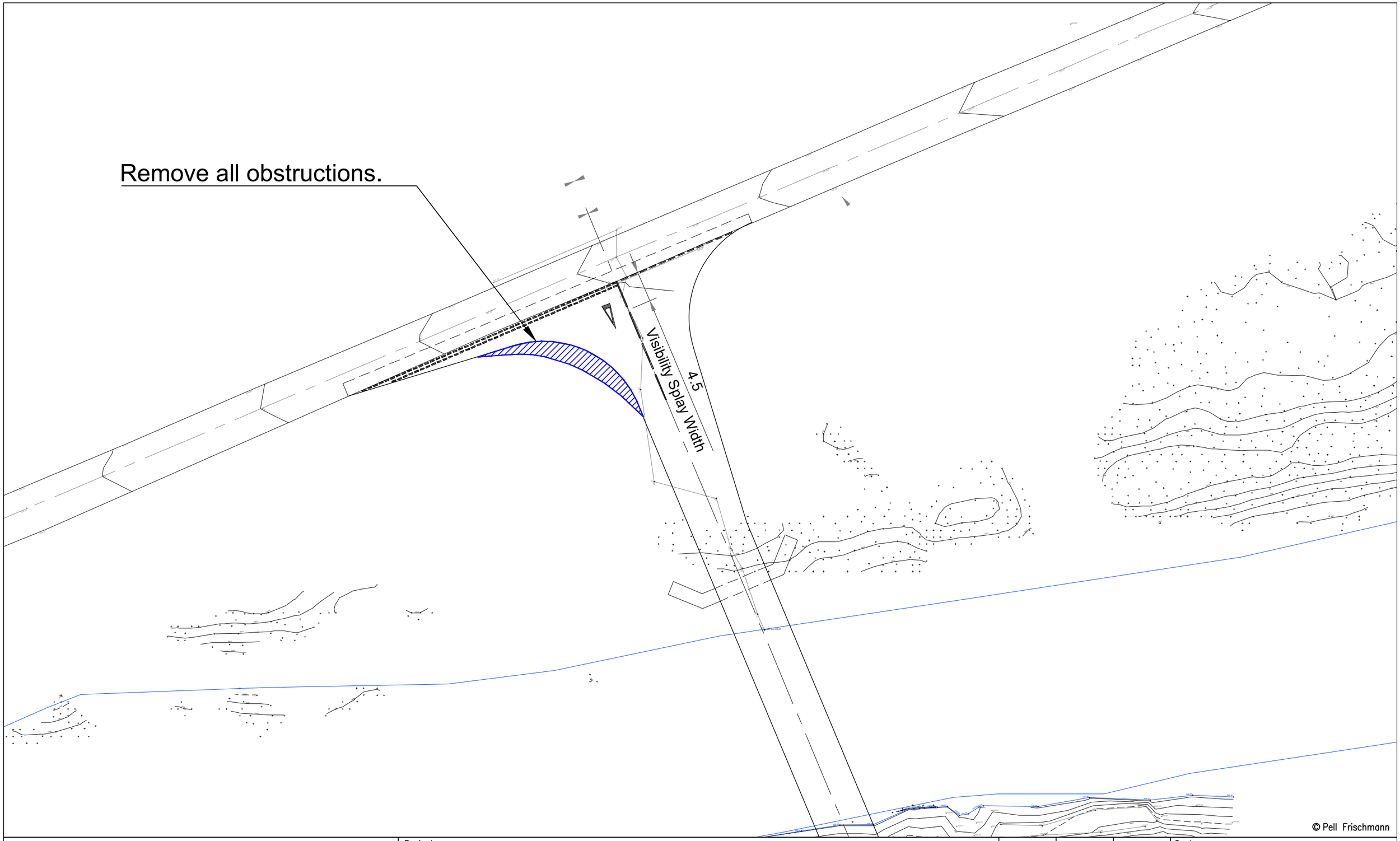
File No.: 231202 Tracking.dwg

Drawing Status: Draft

Drawing No.: SK07

Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.
3. Do not scale from this drawing.

Revision: 0



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Client: GILKES ENERGY

Key: Wheel SPA | Body SPA | Load SPA | Indicative | Over-run | Over-sail

Project: EARBA PUMPED STORAGE HYDRO SCHEME

Drawing Title: TRANSFORMER & TUNNEL LINING SECTIONS

SPA Location: Site Access Junction

	Name	Date
Drawn	GB	04/12/2023
Designed	GB	03/12/2023
Checked	TL	04/12/2023
Point of Interest		14

Scale: 1:500 @ A3

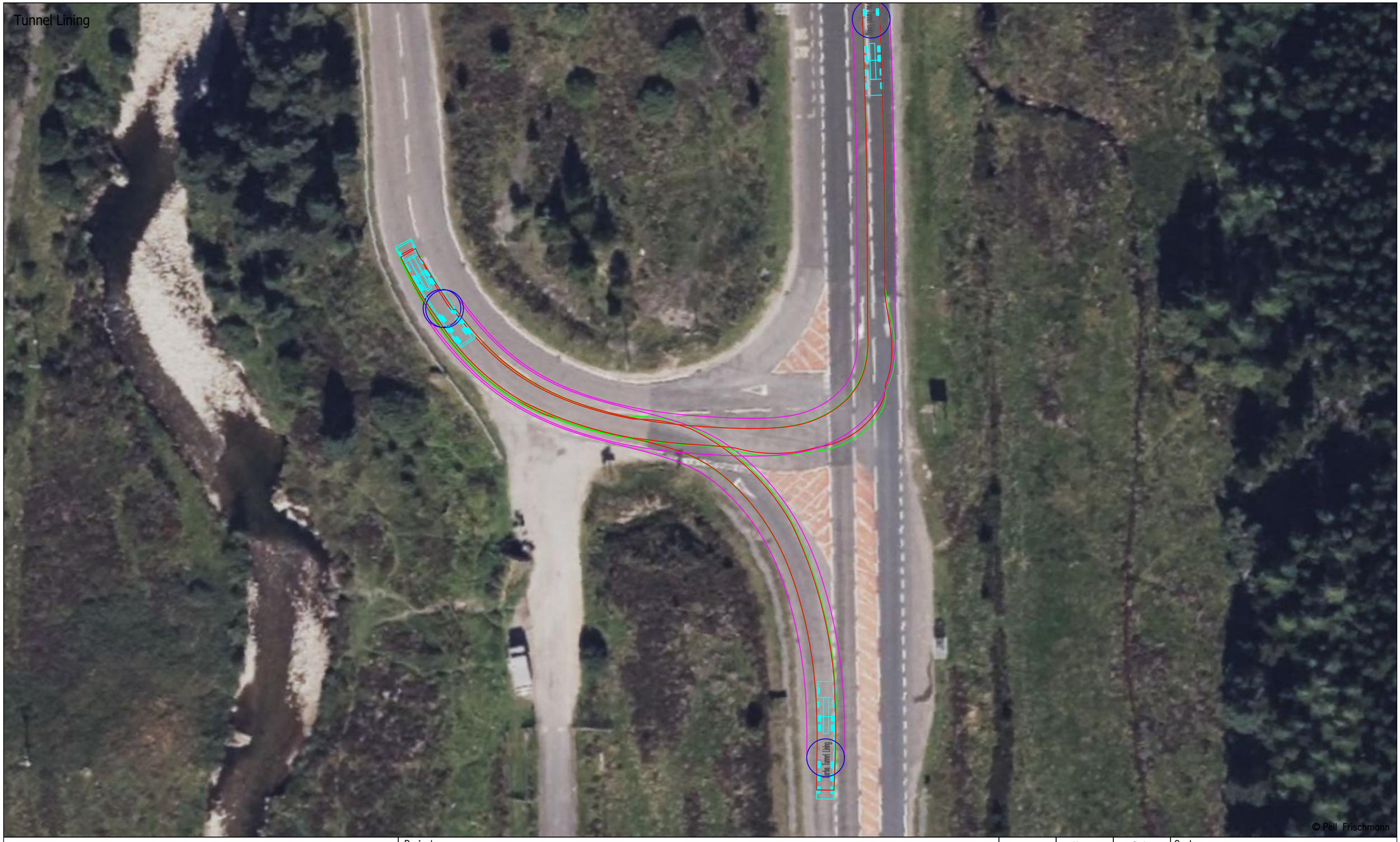
File No.: 231202 Tracking.dwg

Drawing Status: Draft

Drawing No.: SK07A

Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.
3. Do not scale from this drawing.

Revision: 0



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Client: GILKES ENERGY

Key: Wheel SPA | Body SPA | Load SPA | Indicative | Over-run | Over-sail

Project: EARBA PUMPED STORAGE HYDRO SCHEME

Drawing Title: TRANSFORMER & TUNNEL LINING SECTIONS

SPA Location: A9 / A889 Junction

NO MITIGATION REQUIRED

	Name	Date
Drawn	GB	04/12/2023
Designed	GB	03/12/2023
Checked	TL	04/12/2023
Point of Interest		15

Scale: 1:500 @ A3

File No.: 231202 Tracking.dwg

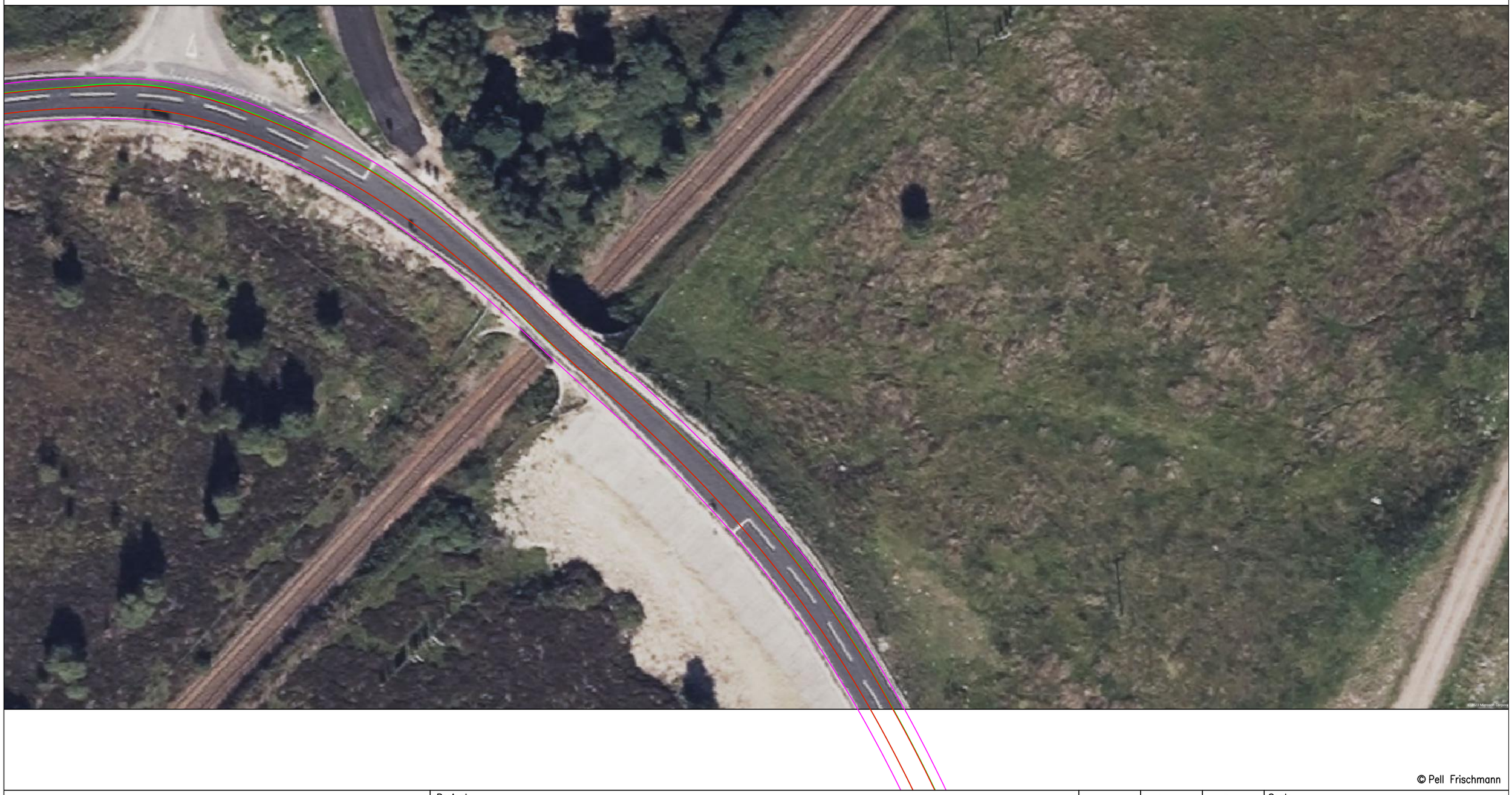
Drawing Status: Draft

Drawing No.: SK08

Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.
3. Do not scale from this drawing.

Revision: 0

Tunnel Lining



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Client: GILKES ENERGY

Key: Wheel SPA | Body SPA | Load SPA | Indicative | Over–run | Over–sail

Project: EARBA PUMPED STORAGE HYDRO SCHEME

Drawing Title: TRANSFORMER & TUNNEL LINING SECTIONS

SPA Location: Highland Mainline Railway Bridge

	Name	Date
Drawn	GB	04/12/2023
Designed	GB	03/12/2023
Checked	TL	04/12/2023
Point of Interest		16

Scale: 1:500 @ A3

File No.: 231202 Tracking.dwg

Drawing Status: Draft

Drawing No.: SK09

Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.
3. Do not scale from this drawing.

Revision: 0

NO MITIGATION REQUIRED

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Client: GILKES ENERGY

Key: Wheel SPA | Body SPA | Load SPA | Indicative | Over–run | Over–sail

Project: EARBA PUMPED STORAGE HYDRO SCHEME

Drawing Title: TRANSFORMER & TUNNEL LINING SECTIONS

SPA Location: Highland Mainline Railway Bridge

	Name	Date
Drawn	GB	04/12/2023
Designed	GB	03/12/2023
Checked	TL	04/12/2023
Point of Interest		16

Scale: 1:500 @ A3

File No.: 231202 Tracking.dwg

Drawing Status: Draft

Drawing No.: SK09A

Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.
3. Do not scale from this drawing.

Revision: 0

Tunnel Lining

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Client: GILKES ENERGY

Key: Wheel SPA | Body SPA | Load SPA | Indicative | Over–run | Over–sail

Project: EARBA PUMPED STORAGE HYDRO SCHEME

Drawing Title: TRANSFORMER & TUNNEL LINING SECTIONS

SPA Location: A889 / A86 Junction

	Name	Date
Drawn	GB	04/12/2023
Designed	GB	03/12/2023
Checked	TL	04/12/2023
Point of Interest		17

Scale: 1:500 @ A3

File No.: 231202 Tracking.dwg

Drawing Status: Draft

Drawing No.: SK10

Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.
3. Do not scale from this drawing.

Revision: 0

NO MITIGATION REQUIRED

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Client: GILKES ENERGY

Key: Wheel SPA | Body SPA | Load SPA | Indicative | Over-run | Over-sail

Project: EARBA PUMPED STORAGE HYDRO SCHEME

Drawing Title: TRANSFORMER & TUNNEL LINING SECTIONS

SPA Location: A889 / A86 Junction

	Name	Date
Drawn	GB	04/12/2023
Designed	GB	03/12/2023
Checked	TL	04/12/2023
Point of Interest		17

Scale: 1:500 @ A3

File No.: 231202 Tracking.dwg

Drawing Status: Draft

Drawing No.: SK10A

Notes:
1. All mitigation is subject to confirmation through a test run.
2. This is not a construction drawing and is intended for illustration purposes only.
3. Do not scale from this drawing.

Revision: 0

Appendix D ESDAL Correspondence

From: Stephen Oakley
Sent: 31 October 2023 11:35
To: Gordon Buchan
Cc: NW AbnormalLoad
Subject: RE: Eraba Hydro

Good morning,

I have checked the structures on the two routes with the ALR software available to BEAR. This software is not capable of assessing the more complex structures on the routes.

On the route from Corpach the two structure that would require further assessment is Banavie Swing bridge on the A830. Cailich is a short span bridge that should be OK at 45 HB. We are content that the results exceeding 0.85 are satisfactory as the ALR tool does not include load factors for the axle weights in the check.

On the route from Inverness the structures that would require further assessment are Findhorn, Slochd Beag and Dulnain on the A9 and Laggan on the A86. Findhorn has also been assessed for SV vehicles with vehicles between SV100 and SV196 needing to cross the bridge with no other traffic on the same carriageway. The other structures that cannot be assessed by ALR are shorter single span structures that at 45HB should not be a problem. We are content that the results exceeding 0.85 are satisfactory.

I have included the structures on the A9 and A889 that would be used if the vehicle was travelling via Dalwhinnie. The bridge where the A889 crosses the railway line has only 4.75 m between the verge safety barriers and there are other bridges on the route with approximately 6.5 m between the parapets. On this route Spey bridge would require further assessment.

Regards

Stephen Oakley

Bridge Engineer | BEAR Scotland | North West Unit

From: SC Abnormal Loads

Sent: 25 August 2023 10:23

To: Gordon Buchan

Subject: RE: Eraba Hydro

Good morning,

No Scottish Canals structures affected.

Thanks,

Brian.

From: Sunil Maniraj On Behalf Of Abnormal Loads Enquiries

Sent: 29 August 2023 09:49

To: Gordon Buchan

Subject: RE: AB-44123/SM Eraba Hydro

OFFICIAL

Dear Gordon

We have no objections to this particular movement. Please note this only applies to this route enquiry.

We check the load carrying capacity of Network Rail owned road over rail bridges affected. We do not check anything else, including:

* Load carrying capacity of level crossings

* Clearance to bridge parapets

* Clearance under a rail bridge

* Clearance to overhead wires at level crossings

Many Thanks

Sunil Maniraj

Abnormal Loads Clerk

From: Irene Young

Sent: 25 August 2023 08:56

To: Gordon Buchan

Subject: RE: Eraba Hydro

Morning Gordon,

Thank you for both of your emails which Transport Scotland received this morning.

We have passed your emails onto Bear (North West) Scotland as this is the operating company that will be able to give you more information.

Bear (North West) Scotland can be contacted at the email below.

Thank you.

Kind Regards

Irene Young

Network Administrator

Administration Team Roads Directorate