

Appendix A: Automatic Traffic Count Outputs

Monday 11 March 2024

Table with columns: Time, Hourly Totals, 15 Minute Bin Drops (00-15, 15-30, 30-45, 45-00), Cycles, Motor Cycles, Car, Car Van Towing, Number Vehicle Classes ARX Scheme (2 Axle Van Lorry, 3 Axle Rigid, 4 Axle Rigid, 3 Axle Artic, 4 Axle Artic, 5 Axle Artic, 6 Axle Artic), Double Road Train, Triple Road Train, Vehicle Speed (MPH bins <10mph to <140mph), P-Tile 85%, Average Speed, Standard Deviation.

Tuesday 12 March 2024

Table with columns: Time, Hourly Totals, 15 Minute Bin Drops (00-15, 15-30, 30-45, 45-00), Cycles, Motor Cycles, Car, Car Van Towing, Number Vehicle Classes ARX Scheme (2 Axle Van Lorry, 3 Axle Rigid, 4 Axle Rigid, 3 Axle Artic, 4 Axle Artic, 5 Axle Artic, 6 Axle Artic), Double Road Train, Triple Road Train, Vehicle Speed (MPH bins <10mph to <140mph), P-Tile 85%, Average Speed, Standard Deviation.

Wednesday 13 March 2024

Table with columns: Time, Hourly Totals, 15 Minute Bin Drops (00-15, 15-30, 30-45, 45-00), Cycles, Motor Cycles, Car, Car Van Towing, Number Vehicle Classes ARX Scheme (2 Axle Van Lorry, 3 Axle Rigid, 4 Axle Rigid, 3 Axle Artic, 4 Axle Artic, 5 Axle Artic, 6 Axle Artic), Double Road Train, Triple Road Train, Vehicle Speed (MPH bins <10mph to <140mph), P-Tile 85%, Average Speed, Standard Deviation.

Thursday 14 March 2024

Table with columns: Time, Hourly Totals, 15 Minute Bin Drops (00-15, 15-30, 30-45, 45-00), Cycles, Motor Cycles, Car, Car Van Towing, Number Vehicle Classes ARX Scheme (2 Axle Van Lorry, 3 Axle Rigid, 4 Axle Rigid, 3 Axle Artic, 4 Axle Artic, 5 Axle Artic, 6 Axle Artic), Double Road Train, Triple Road Train, Vehicle Speed (MPH bins <10mph to <140mph), P-Tile 85%, Average Speed, Standard Deviation.

Monday 11 March 2024

Table with 33 columns: Time, Hourly Totals, 15 Minute Bin Drops (00-15, 15-30, 30-45), Cycles, Motor Cycles, Car Van, Car Van Towing, 2 Axle Van Lorry, and 18 vehicle speed categories (3 Axle Road, 4 Axle Road, 5 Axle Artic, 6 Axle Artic, Double Road Train, Triple Road Train, MPH 0-10, 10-15, 15-20, 20-25, 25-30, 30-35, 35-40, 40-45, 45-50, 50-55, 55-60, 60-65, 65-70, P-Traffic, Average Speed, Standard Deviation).

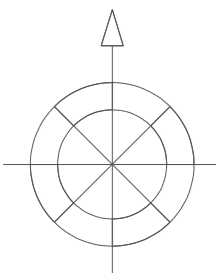
Tuesday 12 March 2024

Table with 33 columns: Time, Hourly Totals, 15 Minute Bin Drops (00-15, 15-30, 30-45), Cycles, Motor Cycles, Car Van, Car Van Towing, 2 Axle Van Lorry, and 18 vehicle speed categories (3 Axle Road, 4 Axle Road, 5 Axle Artic, 6 Axle Artic, Double Road Train, Triple Road Train, MPH 0-10, 10-15, 15-20, 20-25, 25-30, 30-35, 35-40, 40-45, 45-50, 50-55, 55-60, 60-65, 65-70, P-Traffic, Average Speed, Standard Deviation).

Wednesday 13 March 2024

Table with 33 columns: Time, Hourly Totals, 15 Minute Bin Drops (00-15, 15-30, 30-45), Cycles, Motor Cycles, Car Van, Car Van Towing, 2 Axle Van Lorry, and 18 vehicle speed categories (3 Axle Road, 4 Axle Road, 5 Axle Artic, 6 Axle Artic, Double Road Train, Triple Road Train, MPH 0-10, 10-15, 15-20, 20-25, 25-30, 30-35, 35-40, 40-45, 45-50, 50-55, 55-60, 60-65, 65-70, P-Traffic, Average Speed, Standard Deviation).

Appendix B: Site Layout Plan




- Notes**
- All dimensions are shown in metres unless noted otherwise.
 - Do not scale from this drawing.
 - This drawing is indicative only and the site layout is likely to change as more information becomes available.

- Legend**
- Planning Boundary
 - Access Track - Unbound Finish
 - Access Track - Asphalt Finish
 - Attenuation Basin
 - Palisade Fence
 - 4m Acoustic Fence
 - 3m Acoustic Fence
 - Stock Proof Fence
 - Indicative Underground Cable Route
 - Site Landscaping and Planting
 - Existing Trees to Remain

1:10	0	100mm	200mm	300mm	400mm	500mm	600mm	700mm	800mm	900mm	1m
1:20		0.5m	1m	1.5m	2m	2.5m	3m	3.5m	4m	4.5m	5m
1:50		1m	2m	3m	4m	5m	6m	7m	8m	9m	10m
1:100		1m	2m	3m	4m	5m	6m	7m	8m	9m	10m
1:200		5m	10m	15m	20m	25m	30m	35m	40m	45m	50m
1:500		5m	10m	15m	20m	25m	30m	35m	40m	45m	50m
1:1000		10m	20m	30m	40m	50m	60m	70m	80m	90m	100m

REV	DATE	DESCRIPTION	BY	CHKD
3	27.08.2024	Landscaping and planting area amended	JH	AP
2	20.06.2024	Change and landscaping amended. Annotations added	JH	AP
1	30.05.2024	Site layout amended	JH	JW
0	28.03.2024	Site Layout Plan - Original	JH	AP



Field
 Fora Montacute Yards,
 186 Shoreditch High Street,
 London, E1 6HU

PROJECT: Knocknagael

TITLE: Indicative Site Layout Plan

DISCIPLINE: PLANNING

DRAWING STATUS: FOR PLANNING

SCALE	DATE	DRAWN BY	CHECKED BY	APPROVED BY
1:1000 @ A0	28.03.2024	JH	AP	JM
PROJECT NO.	DRAWING NO.	REV.		
BTGBKN001	001.1	03		



Appendix C: AIL Report



Abnormal Indivisible Load Access Report for 88.4te Transformer to the Proposed Knocknagael BESS Substation Site

Prepared for Field





NAME		SIGNATURE	DATE
Prepared by:	Brad Dyke	[REDACTED]	17.06.24
Checked by:	Andy Pearce		19.06.24
Approved by:	Andy Pearce		19.06.24

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DOCUMENT REVISIONS

Issue	Date	Details
0	19.06.2024	Final Report
1	26.06.2024	Client Revisions
2	28.06.2024	Client Updated Site Layout Map



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Executive Summary

The contents of this report include land transport feasibility investigations into achieving heavy load access to the new Knocknagael Battery Energy Storage Substation (BESS) site proposed by Field located south-west of the existing Scottish & Southern Electricity Networks (SSEN) Knocknagael Substation. The weight considered in these investigations is 88.4te nett (inclusive of a 2% contingency) which is advised by Field to be the weight of the transformer required at the proposed BESS Site.

It is expected that the transformer will be delivered within Special Types General Order regulations (STGO) Category 3, as the gross load of the loaded trailer arrangement will be below 150te gross. Therefore, the move will not require a Special Order from National Highways. STGO Category 3 loads are expected to be delivered by road from the UK port of delivery or manufacturing facility and this report therefore focuses on the potential route via the A8082 from the A9.

The route considered and submitted via ESDAL (WYNL/138) within this report from the A9 onto the A8082 and then travelling south on Essich Road to the proposed site has not received any rejections regarding structures and is therefore believed to be structurally acceptable to the relevant authorities.

The route is considered to be negotiable for the proposed load with minor remedial works on the final approach to site and two Swept Path Assessments (SPA) have been carried out at the left turn from A8082 Culduthel Avenue onto Essich Road and bearing right along the unclassified road at approximate OS grid reference: NH 64935 39318 where overrun would require plating and packing to any present kerbs/pavements/verges to facilitate the manoeuvre, or alternatively, temporary laying of hardcore or permanent road widening to be completed.

No consideration of site access requirements is included within this report.



1. Introduction

- 1.1. The contents of this report include land transport feasibility investigations into achieving access to a proposed Battery Energy Storage System (BESS) substation which is proposed to be located adjacent to the existing Scottish & Southern Electricity Networks (SSEN) Knocknagael Substation, in Essich, south of Inverness.
- 1.2. The weight of the transformer considered in these investigations is 88.4te nett which is advised by Field and as such will be transport at Special Types General Order (STGO) Category 3. This is because the gross weight of the transformer when loaded on an appropriate carrying arrangement will be less than 150te and therefore will not require Special Order permissions from the National Highways Abnormal Loads Team/Transport Scotland.
- 1.3. This report is a summary of the status of the current AIL access investigations to a proposed new BESS Substation location and seeks to present the situation as it currently stands. The issues highlighted in this report as risks to achieving AIL access in the future, will need to be revisited and progressed as the scheme develops.
- 1.4. This investigation considers the possible land transport routes from the A9 heavy load route which is an established access route into northern Scotland. Formal movement applications will be necessary upon appointment of a haulage contractor by the transformer manufacturer.
- 1.5. As the load will be within STGO Category 3 it is assumed that access via the Motorway and Trunk Road network to the A9 from the port of delivery will be suitable. Wynns have therefore focused upon the final section of the route from the exit of the A9 via A8082 to the proposed site location.
- 1.6. The report is intended to be a summary of the AIL route access at the current time and is not a guarantee that the route will be cleared in the future. Specific movements will need to be assessed at the time on an individual basis. If any further information is required, it is available on request.
- 1.7. The report considers access to the proposed Knocknagael BESS Substation in terms of AIL transportation only.

2. National Highways Agreement in Principle and Legislative Requirements

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

- 2.1.1. The Department for Transport, of which National Highways (NH), formally the Highways Agency (HA), is a government-owned company with responsibility for managing the core road network in England, and Transport Scotland (TS) within Scotland, 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 and which, owing to its dimensions or weight, cannot be carried on a vehicle which complies in all respects 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. NH and TS will only accept that further dismantling is not required where it cannot be economically achieved due to the requirement for its construction within specific 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 abnormal indivisible loads (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. National Highways have issued an aide memoir that explains notification requirements in more detail. This document has been attached as Appendix 2.

2.2.2. Where dimensions exceed 6.1m in width, 30m in rigid length or 150 tonnes gross weight, Special Order from National Highways (NH) is required.

2.2.3. Special Order category AIL movements are authorised by the NH Abnormal Loads team, based in Birmingham. This is further discussed in section 3.3.

2.2.4. STGO loads orders grant consent for loads that satisfy the following criteria:

<u>Category 1 weight</u>	44 – 50 tonnes and 11.5te axle weights
<u>Category 2 weight</u>	50 – 80 tonnes and 12.5te axle weights
<u>Category 3 weight</u>	80 – 150 tonnes and 16.5te axle weights
<u>Width Restriction</u>	3.0m (C&U) –5m (VR1 Required)– 6.1m (SO required)
<u>Length Restriction</u>	18.65m (C&U) – 30.0m (SO required)

2.2.5. The 88.4te transformer considered within these investigations is expected to be transported at STGO Category 3. Such loads are required to provide two clear working weekdays notice to be given to the Police forces on the proposed route and are required to provide 5 clear working weekdays notice together with an indemnity to the highway and bridge authorities on the route.

2.3. *Temporary Traffic Orders and Section 96 of the Roads (Scotland) Act 1984*

2.3.1. Temporary Traffic Orders are used where the local highway authority considers that works on the highway, or some large deliveries, require a road to be closed temporarily to general through traffic. Such closures require a temporary traffic regulation order issued by the Highway Authority under the Road Traffic Regulation Act 1984. It is possible that the council will require such an order for the travel of the loads to site from the more major roads as the whole road width will be taken up by the loads for much of the final approaches to site.

2.3.2. In addition to any Temporary Traffic Orders the County Council may wish to ensure that a bond has been entered into to comply with Section 96 of the Roads (Scotland) Act 1984 in order to enable AIL access to be agreed. Such agreements are not always, in our experience, asked for as the matter of damage to the carriageway is usually covered by the appointed haulage contractors' indemnity. Section 96 of the Roads (Scotland) Act 1984 allows for the recovery of extraordinary expenses in repairing roads damaged by



heavy vehicles, having regard to the average expense of maintaining the road. It allows the Council to pursue costs, through the sheriff court, from the person or body that has caused the damage. Section 96 also allows the Council to reach agreement with the person or body beforehand on a contribution towards the costs of maintaining the road. Section 48 of the Act allows for the Roads Authority to enter into an agreement with any person willing to contribute to the construction or improvement of a road.

- 2.3.3. The planning consent issued for a development of the nature proposed will often include conditions that commits the developer to a pre and post condition survey of the road along the haul route and that any damage caused by the developer, shall be reinstated by the developer to the satisfaction of the highway authority. It is reasonable to expect that there will be damage to the highway due to the density of movements of permitted vehicles let alone any out of gauge transport configurations. It is therefore important to understand the legal powers of the Local Authority:
- 2.3.4. Under Section 96(1) of the Roads (Scotland) Act 1984, the Roads Authority can recover extraordinary expenses, having regard for the average expenses of maintaining the road, which have been incurred by them in repairing damage caused to it by excessively heavy, or other extraordinary, vehicles or traffic. These expenses can be recovered from any person by or in consequence of whose orders the vehicles have, or traffic has, been on the road.
- 2.3.5. Section 96(3) of the Act allows for liability to be accepted in advance of operations which may cause damage and for compensatory payment arrangements to be agreed with the Council.
- 2.3.6. Section 48 of the Act allows the Roads Authority to enter into agreement with any person willing to contribute to the construction or improvement of a road.

2.4. *The Removal and Replacement of Street Furniture*

- 2.4.1. Where the removal and replacement of street furniture is required for the mobilisation of out of gauge vehicles into existing sites then these are generally managed under Temporary Traffic Regulation Order (TTRO) and Street Works Legislation. These are normally, but not necessarily, organised by the haulage contractor. These requirements are generally to ensure that the supervisors and operatives are competent and that the works will be carried out to a prescribe standard with the appropriate traffic management in place. In some circumstance the Highway Authority or LA will insist that their preferred contractors will carry out such work.

3. **Historical Information**

- 3.1. Two 194te transformers were delivered on 24 axle girder frame trailers to Tomatin Substation from the Port of Inverness in 2018 approximately 5 miles to the south east of the proposed Knocknagael BESS site location. Wynns are not aware of the maximum size of the transformers in the existing SSEN substation.

4. **Transport Configurations**

- 4.1. Based on the information available to date the transformer considered within this report is assumed to be 88.4te nett weight as detailed in the drawing attached in appendix 2 of this report.



- 4.2. At these dimensions it is possible to transport the transformer within the Special Types General Order (STGO) regulations as a Category 3 load (80-150te gross) as the gross load will be less than 150te. It will therefore not be necessary to comply with legislation regarding Special Order movements. As the load is not in need of Special Order permission there is no requirement by NH to be delivered via the nearest port of delivery.
- 4.3. Based on information available at this moment in time it is assumed that the road transport configuration would be a ballast tractor pulling an 8 Axle Goose Neck Trailer for which the trailer element would weigh in the region of 137.4te gross with axle loads around 12.34te per axle. This has an expected reducible height of 4.733m based on the anticipated axle strokes for the trailer, though confirmation should be given by the appointed haulier as manufacturers can vary in equipment performance.
- 4.4. There are numerous haulage contractors with equipment able to carry the transformer in the UK. An indicative transport configuration is attached in Appendix 2 as Drawing Reference 24-1238.TC01 which shows the anticipated minimum turning radii and axle, wheel and overall ground loadings during transportation of the transformer.
- 4.5. It is expected that competitive heavy haulage procurement will be feasible for the transport of the transformer.

5. Structural Route Information

5.1. *Route to Proposed Knocknagael BESS Substation for STGO Load*

- 5.1.1. The proposed route was submitted to all relevant authorities on the route from the A8082 to the site. The route is shown below:

Assume access via A9 towards Inverness

Turn left A8082 Sir Walter Scott Drive

Continue A8082 Culduthel Avenue

Turn left Essich Road

Turn left on to Unclassified Road NH 64832 39352

Continue to the proposed site location approximate OS Grid Reference NH 65020 39064

- 5.2. A notification was submitted via ESDAL of the route to all relevant authorities affected on the route for comment and to be checked structurally, the affected authorities being:

- Police Scotland
- Highland Council

- 5.3. The Highland Council have not identified any specific area of concern and the route is considered acceptable in terms of structural clearance.

- 5.4. A separate notification has been submitted for the A9 into the Scottish Highlands from the Perth area for overall review and this has also confirmed the A9 remains acceptable to BEAR Scotland North West.

- 5.5. No specific issues have been identified by the police although a police escort would be required for movement with private escort arrangements also in place and it is recommended that further discussions are undertaken with respect to confirming escort requirements prior to deliveries with the relevant police forces. Very careful consideration on escort requirements will be needed and where traffic must be halted, consultation with

the police is necessary as only police escorts can manage the movement. Private escorts are not allowed to direct traffic.

6. Route Negotiability Information

6.1. General Information

- 6.1.1. It has been assumed that the road route via the Motorway and Trunk Road network to the general area, from a port, will be accessible as it is regularly used for STGO movements. Wynns have therefore focused highway access upon the final section of the routes from the A9 exiting onto the A8082, as detailed in Section 6.
- 6.1.2. The route survey was undertaken on 08.05.2024. The route inspected is shown on Map 1 appended to this report.
- 6.1.3. Confirmatory Swept Path Assessments have been carried out on the left turn off the roundabout from A8082 Culduthel Avenue onto Essich Road and the final right bend before approaching the proposed BESS site location, confirming negotiability with only minor oversail and overrun and minimal remedials being required.
- 6.1.4. A summary of the main negotiability issues are provided in the notes and photographs below in relation to the route.



Photograph 1

Vehicle travels towards the camera exiting the A9 onto A8082 Sir Walter Scott Drive, negotiable.



Photograph 2

Vehicle travels towards the camera along A8082 Sir Walter Scott Drive.



Photograph 3

Vehicle travels away from the camera approaching Inshes Roundabout, negotiable.



Photograph 4

Vehicle travels away from the camera exiting Inshes Roundabout, negotiable.



Photograph 5

Vehicle travels away from the camera on A8082, approaching roundabout negotiable.



Photograph 6

Vehicle travels away from the camera exiting roundabout continuing A8082, negotiable.



Photograph 7

Vehicle travels away from the camera on A8082, roundabout negotiable.



Photograph 8

Vehicle travels away from the camera exiting roundabout continuing A8082, negotiable.



Photograph 9

Vehicle travels away from the camera approaching Slackbuie Roundabout, negotiable.



Photograph 10

Vehicle travels away from the camera exiting Slackbuie Roundabout continuing A8082, negotiable.



Photograph 11

Vehicle travels away from the camera approaching Asda Roundabout, negotiable.



Photograph 12

Vehicle travels away from the camera exiting Asda Roundabout continuing A8082, negotiable.



Photograph 13

Vehicle travels away from the camera approaching roundabout continuing A8082, negotiable.



Photograph 14

Vehicle travels away from the camera approaching roundabout, negotiable.



Photograph 15

Vehicle travels away from the camera exiting roundabout onto A8082 Culduthel Avenue, negotiable.



Photograph 16

Vehicle travels away from the camera towards roundabout turning left onto Essich Road. SPA Drawing Number 24-1238.SPA01 refers. Negotiable without removing street furniture. Minor remedial works at the left turn will be needed where overrun would require plating and packing to kerbs/pavements/verges to facilitate the manoeuvre, or alternatively, temporary laying of hardcore or permanent road widening to be completed.



Photograph 17

Vehicle travels away from the camera exiting roundabout onto Essich Road, negotiable without the removal of street furniture. Appendix 2 drawing no. 24-1238.SPA01. Plating and packing to kerbs/pavements/verges to facilitate the manoeuvre required.



Photograph 18

Vehicle travels towards the camera following left turn onto Essich Road from Culduthel Avenue. Negotiable.



Photograph 19

Vehicle travels away from the camera on Essich Road, road narrows but remains negotiable, full occupation of carriageway to the proposed site from this point. Traffic management will need to be considered in consultation with Police Scotland.



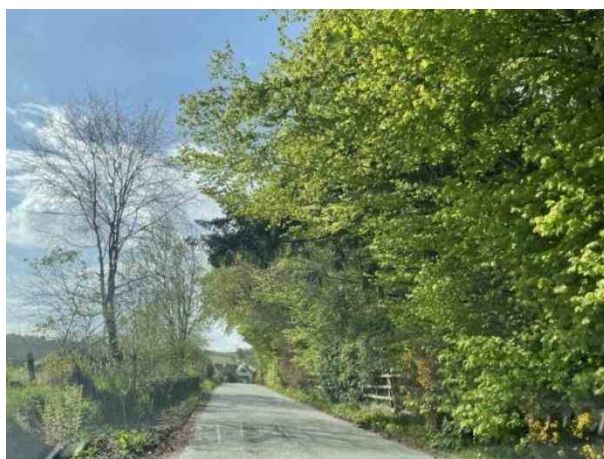
Photograph 20

Vehicle travels away from the camera on Essich Road, tree pruning may be required depending on time of movement.



Photograph 21

Vehicle travels away from the camera on Essich Road, tree pruning may be required depending on time of movement.



Photograph 22

Vehicle travels away from the camera on Essich Road, tree pruning may be required depending on time of movement.



Photograph 23

Vehicle travels away from the camera on Essich Road over Drumdevan Road Bridge. This structure is the responsibility of the Highland Council and although no formal response has been received, it is expected to be acceptable as they do not have to respond to ESDAL notifications if there are no restrictions.



Photograph 24

Vehicle travels away from the camera on Essich Road, tree pruning may be required depending on time of movement.



Photograph 25

Vehicle travels away from the camera on Essich Road, tree pruning may be required depending on time of movement.



Photograph 26

Vehicle travels away from the camera on Essich Road, tree pruning may be required depending on time of movement.



Photograph 27

Vehicle travels towards the camera following right bend on Essich Road, , negotiable.



Photograph 28

Vehicle travels away from the camera approaching left bend on Essich Road, negotiable.



Photograph 29

Vehicle travels away from the camera on Essich Road, tree pruning may be required depending on time of movement.



Photograph 30

Vehicle travels away from the camera on Essich Road, tree pruning may be required depending on time of movement.



Photograph 31

Vehicle travels away from the camera approaching right bend on Essich Road, tree pruning may be required depending on time of movement.



Photograph 32

Vehicle travels away from the camera approaching left bend on Essich Road, road widens on the inside of the bend for a passing place, negotiable.



Photograph 33

Vehicle travels away from the camera on Essich Road approaching left turn on to unclassified road at approx. OS Grid Reference NH 64832 39352.



Photograph 34

Left turn at OS Reference NH 64832 39352, negotiable. Consideration of satellite imaging indicates that this junction has been upgraded in the past, possibly to accommodate delivery to the existing SSEN substation.



Photograph 35

Reverse view of left turn. Vehicle travels towards the camera and turns left, existing to the right of photograph.



Photograph 36

Vehicle travels away from the camera on Unclassified Road, tree pruning may be required depending on time of movement.



Photograph 37

Vehicle travels away from the camera towards right bend on Unclassified Road, SPA confirms minor oversail and overrun on the inside of the turn is required, plating and packing would be required to facilitate the turn or potentially more permanent road widening to be carried out. Tree pruning may be required depending on time of movement. Appendix 2 drawing no. 24-1238.SPA02.



Photograph 38

Reverse view of above, vehicle travels towards the camera following right bend, negotiable with minor oversail and enabling works to allow for overrun on the inside of the turn, tree pruning may be required depending on time of movement. Appendix 2 drawing no. 24-1238.SPA02.



Photograph 39

Vehicle travels away from the camera approaching existing SSE Knocknagael Substation on the left and proposed Field BESS site to the right.



Photograph 40

View from SSE Knocknagael Substation entrance of approximate Field site location. Site access roads will need to be designed and constructed in consideration of AIL delivery vehicles.



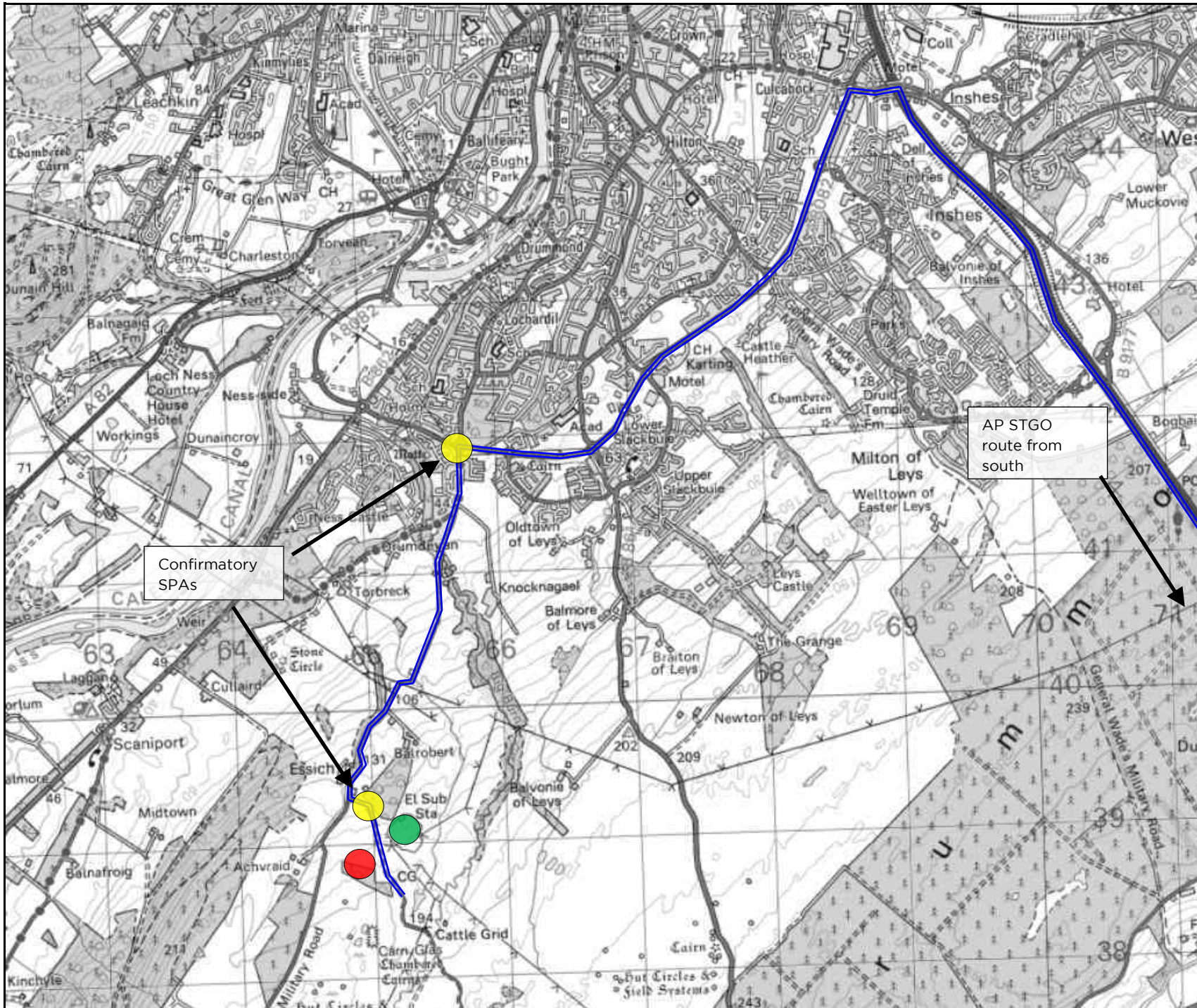
7. Summary and Conclusions

- 7.1. The proposed transformer will be delivered within Special Types General Order regulations (STGO) Category 3, where the gross load of the loaded trailer arrangement will be below 150te gross, the move will not require a Special Order from National Highways. STGO Category 3 loads are expected to be delivered by road from the UK port of delivery or manufacturing facility.
- 7.2. No issues are expected with the proposed load weight in terms of structural clearance following the submission of an ESDAL notification to the structural authorities.
- 7.3. No specific access within the new substation site access roads has been considered and all site roads including the gradients on the internal access roads will need to be constructed considerate of AIL vehicles.
 - 7.3.1. Confirmatory Swept Path Assessments were carried out on the left turn off the roundabout from A8082 Culduthel Avenue onto Essich Road and the final right bend before approaching the proposed BESS site location, confirming that minor oversail and overrun is required which will necessitate temporary plating and packing to protect the verges. Alternatively, more permanent road widening could be considered.
- 7.4. In summary it is expected that a route will be available to the proposed BESS site for the proposed heavy load required for the site and the route submitted to the relevant authorities, with the requirements for tree pruning depending on the time of movement etc in Essich as detailed in Section 7.



Appendix 1

Maps

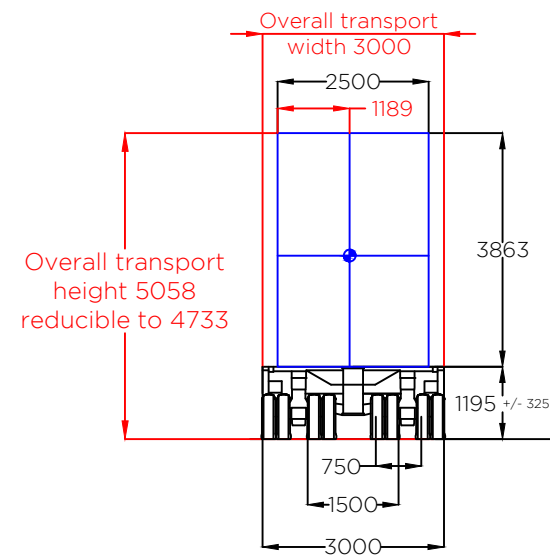


Key		
	Proposed Route from the A9	
	Point of Interest	
	Proposed Knocknagael Substation	
	SSE Existing Knocknagael Substation	
B		
A		
O	20.05.24	Final Report
Rev	Date	Amendments
Revisions		
Wynns Ltd. Independent Transportation Engineers Shaftesbury House, 2 High Street, Eccleshall, Stafford, ST21 6BZ. Tel: (01785) 850411		
Client:	Virmati Energy Ltd Fora Montacute Yards Shoreditch High Street London - E1 6HU United Kingdom	
Project:	Field Proposed Substation AIL Access	
Title:	Map 1 - Routes to proposed Knocknagael Substation	
Drawing Status:	Final Report	
Scale (A4):	Drawn by:	Checked by:
NTS	BD	ARP
Ref No.:	Sheet:	Rev.:
24-1238-Map1	1	0
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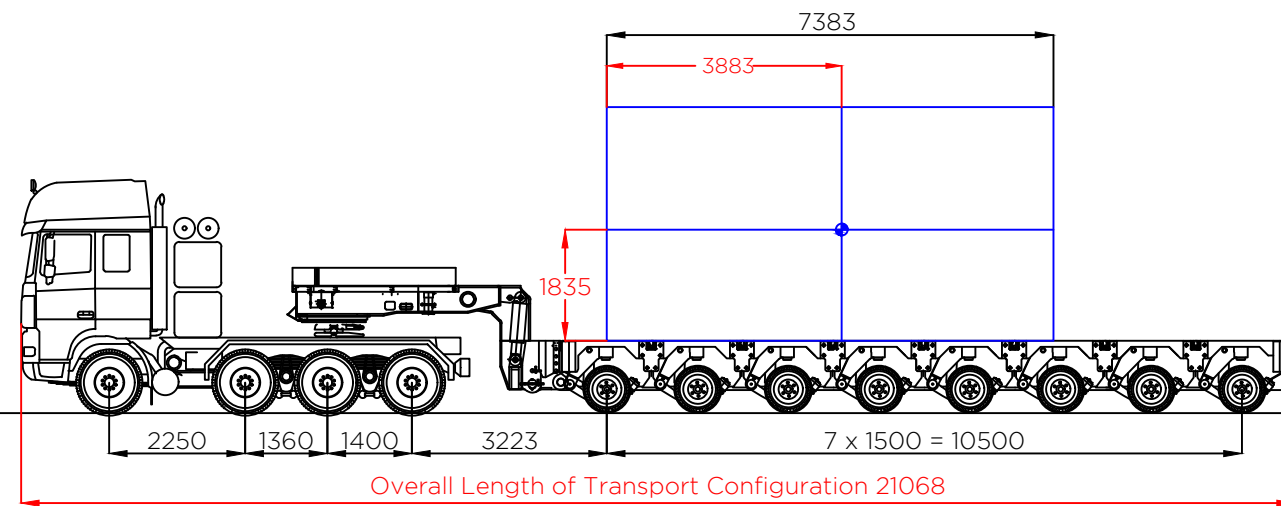


Appendix 2

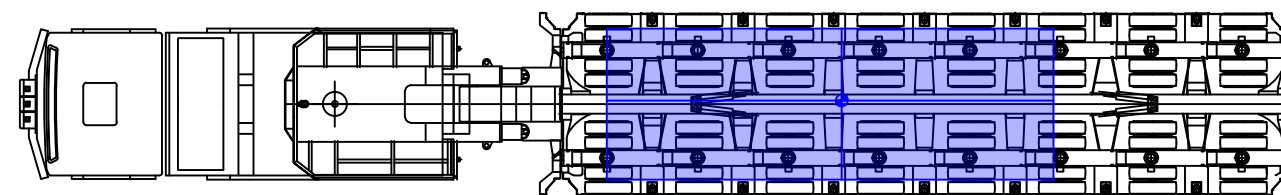
Drawings



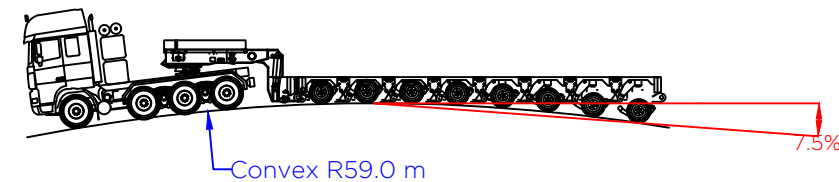
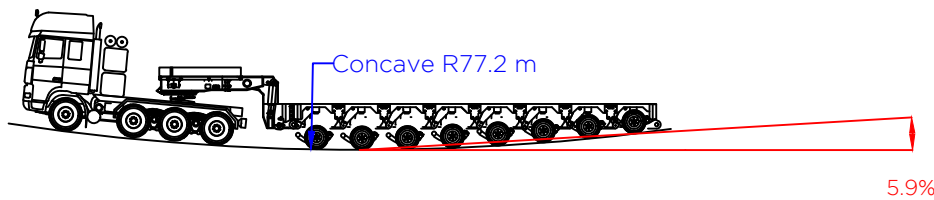
Profile View
Scale 1:125



Elevation View - 8 axle goose neck trailer - concept model only
Indicative 88.4 te Transformer
Scale 1:125

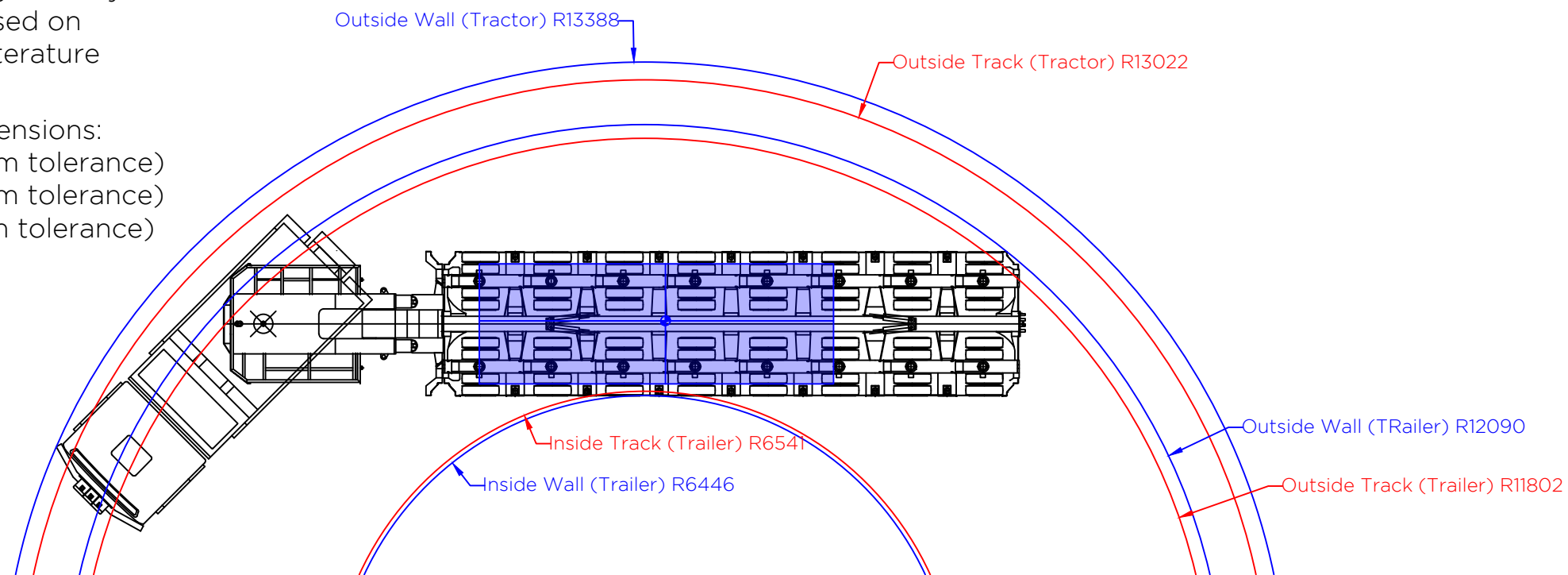


Plan View - 8 axle goose neck trailer - concept model only
Indicative 88.4 te Transformer
Scale 1:125



Vertical Curve Negotiability
Information based on
manufacturers literature

Transformer Dimensions:
7.383m (L) (incl. 50mm tolerance)
2.50m (W) (incl. 50mm tolerance)
3.863 (H) (incl. 50mm tolerance)



Minimum Turning Radii -
8 axle goose neck trailer - concept model only
Indicative 88.4 te Transformer
Scale 1:125

Load Table

8 Axle Goose Neck Trailer

Self weight of Electrolyser Cell Stack	88.4 te
Self weight of trailer	Say 35.0 te
Self weight of tractor	14.0 te
Total combined weight	137.4 te
Load per axle line	12.34 te
Load per axle (2 per axle line)	6.17 te
Load per wheel (4 per axle)	1.55 te
Max. ground bearing pressure (trailer)	2.99 te/m ²

Tractor (14 te)

Front axle	6.0 te
Second steer	8.0 te
Rear axle	11.5 te
Rear axle	11.5 te

Notes:-

[1] The figures shown above are representative of the transport configuration portrayed. However, as tractor and trailer arrangements can vary then the loads and dimensions indicated should be treated as probable values.

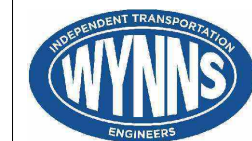
[2] All linear measures in millimetres unless stated otherwise.

[3] Drawing of transformer indicative only. Weight specified includes a +2% tolerance as per manufacturer drawing

1		
0	26.04.24	Issued for comment
Rev.	Date	Amendments

Revisions

Prepared by:



2 High Street, Eccleshall, Stafford,
ST21 6BZ
Tel: (01785) 850411

Independent Transportation Engineers

Client:



Project:

Knocknagael

Title:

Indicative Transport Configuration
88.4 te Transformer carried upon
typical 8 axle goose neck trailer
showing minimum turning radii

Drawing status:

Final report

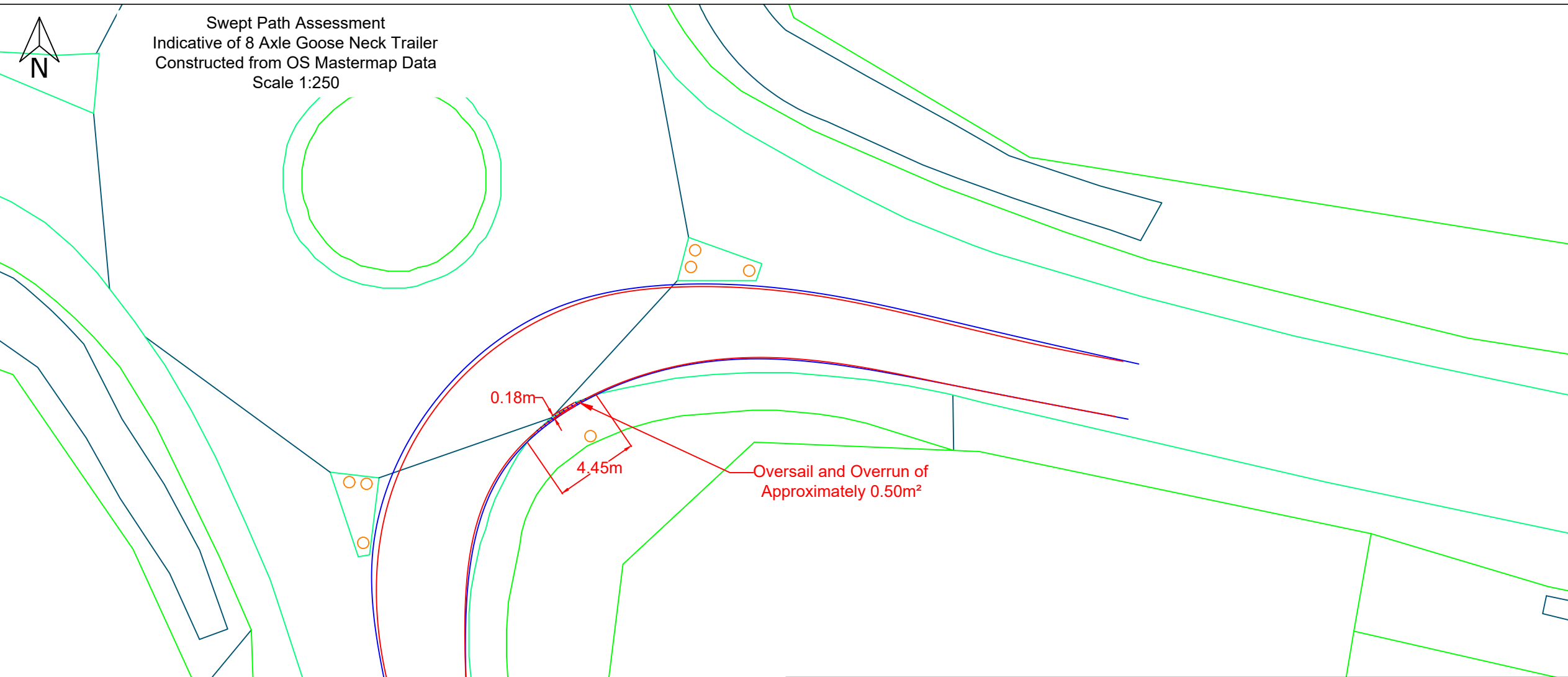
Scale (A3): 1:125	Drawn by: JMB	Checked by: MTO
DWG. no: 24-1238.TC01	Sheet: 1 of 1	Rev: 0

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P:\Clients\Existing Clients\Field Energy\24-1238 Knocknagael\Transport Configuration\24-1238.TC01 Knocknagael 88.4 te 8 axle goose neck.R0.dwg

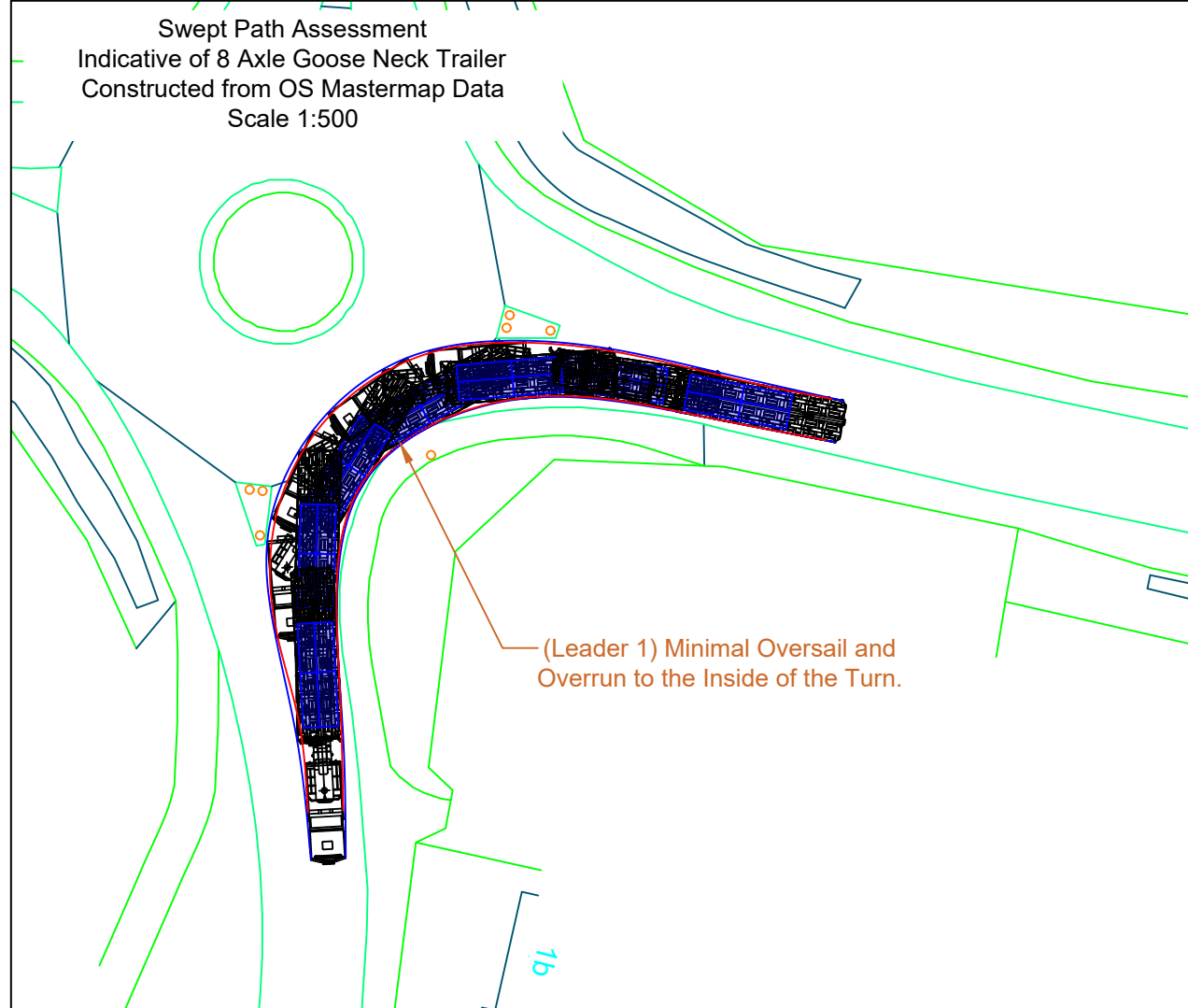


Swept Path Assessment
 Indicative of 8 Axle Goose Neck Trailer
 Constructed from OS Mastermap Data
 Scale 1:250

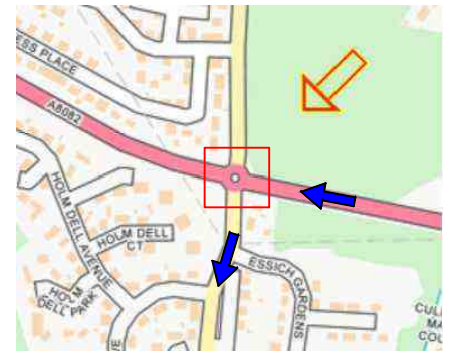


The delivery vehicle can be seen turning left from A8082 Culdthel Avenue onto Essich Road, at approximate OS grid reference: NH 65753 41934.

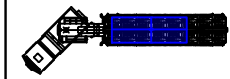


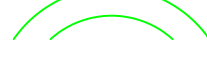

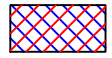


The vehicle anticipates minimal oversail and overrun on the inside of the turn (Leader 1). Overrun would require plating and packing to any present kerbs/pavements/verges to facilitate the manoeuvre. Oversail does not anticipate any conflicts to occur with surrounding street furniture, turn is considered to be negotiable.



Location Plan



Legend:

-  8-axle goose neck trailer
minimum turning arrangements
Drawing ref. 24-1238.TC01
-  Extent of vehicle track
-  Extent of oversail
-  Extent of road boundary
-  Extent of property boundary
-  Overrun and oversail beyond kerb
-  Overrun beyond kerb
-  Oversail beyond kerb

1		
0	10.06.24	Issued for comment
Rev.	Date	Amendments

Revisions

Prepared by:



Shaftesbury House, 2 High Street,
 Eccleshall, Stafford, ST21 6BZ
 Tel: (01785) 850411

Independent Transportation Engineers

Client:



Project: Knocknagael

Title: Swept Path Assessment
 Negotiability of left turn from A8082 Culdthel Ave onto
 Essich Rd, at approximate OS grid reference: NH 65753
 41934, considerate of indicative 88.4 te transformer
 transported on 8 axle goose neck trailer.

Drawing status: Final Report

Scale (A3): As shown	Drawn by: MTO	Checked by: ARP
Dwg. no: 24-1238.SPA01	Sheet: 1 of 2	Rev: 0

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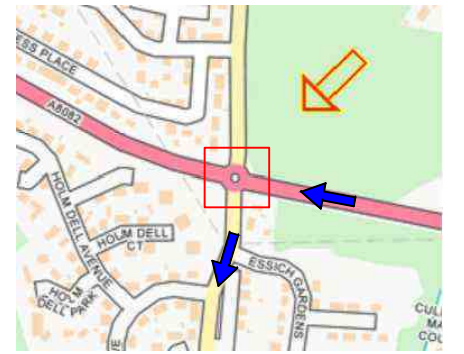
P:\Clients\Existing Clients\Field Energy\24-1238 Knocknagael\Swept Path Assessments



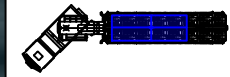


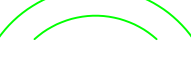
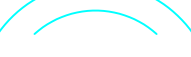


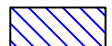
Swept Path Assessment
 Indicative of 8 Axle Goose Neck Trailer
 Constructed from OS Mastermap Data
 Scale 1:250

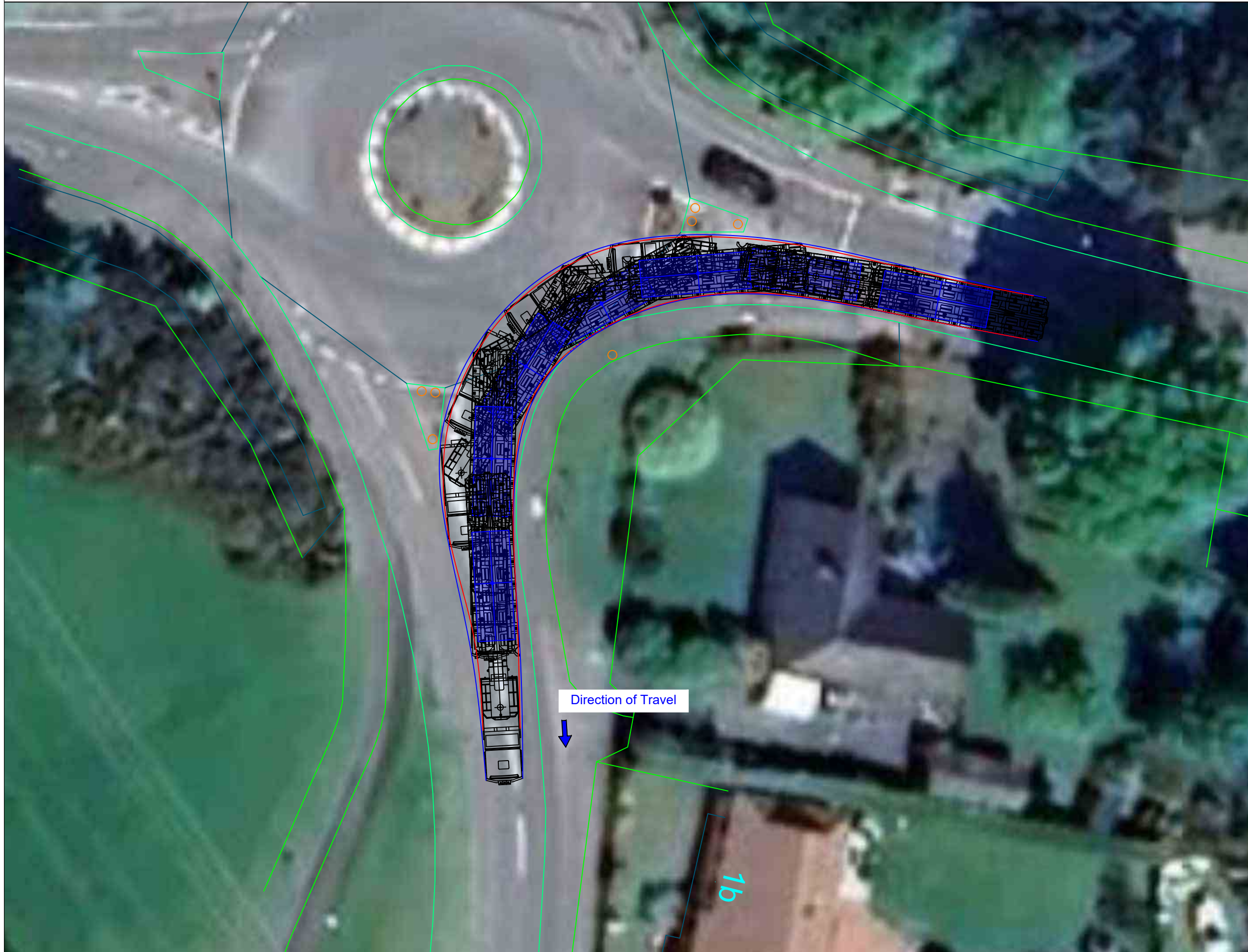
NOTE: Overlay onto aerial image is not representative of the configuration relative to the environment. This is for illustrative purposes only, and should only be taken as such.

Location Plan



Legend:

-  8-axle goose neck trailer
minimum turning arrangements
Drawing ref. 24-1238.TC01
-  Extent of vehicle track
-  Extent of oversail
-  Extent of road boundary
-  Extent of property boundary
-  Overrun and oversail beyond kerb
-  Overrun beyond kerb
-  Oversail beyond kerb



1		
0	10.06.24	Issued for comment
Rev.	Date	Amendments

Revisions

Prepared by:



Shaftesbury House, 2 High Street,
 Eccleshall, Stafford, ST21 6BZ
 Tel: (01785) 850411

Independent Transportation Engineers

Client:



Project: Knocknagael

Title: Swept Path Assessment
 Negotiability of left turn from A8082 Culduthel Ave onto
 Essich Rd, considerate of indicative 88.4 te transformer
 transported on 8 axle goose neck trailer.

Drawing status: Final Report

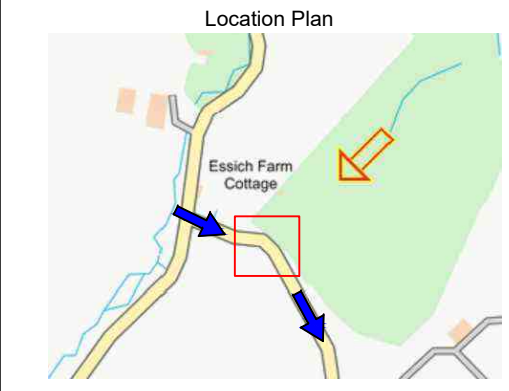
Scale (A3): As shown	Drawn by: MTO	Checked by: ARP
Dwg. no: 24-1238.SPA01	Sheet: 2 of 2	Rev: 0

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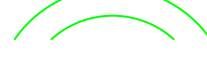

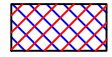


P:\Clients\Existing Clients\Field Energy\24-1238 Knocknagael\Swept Path Assessments

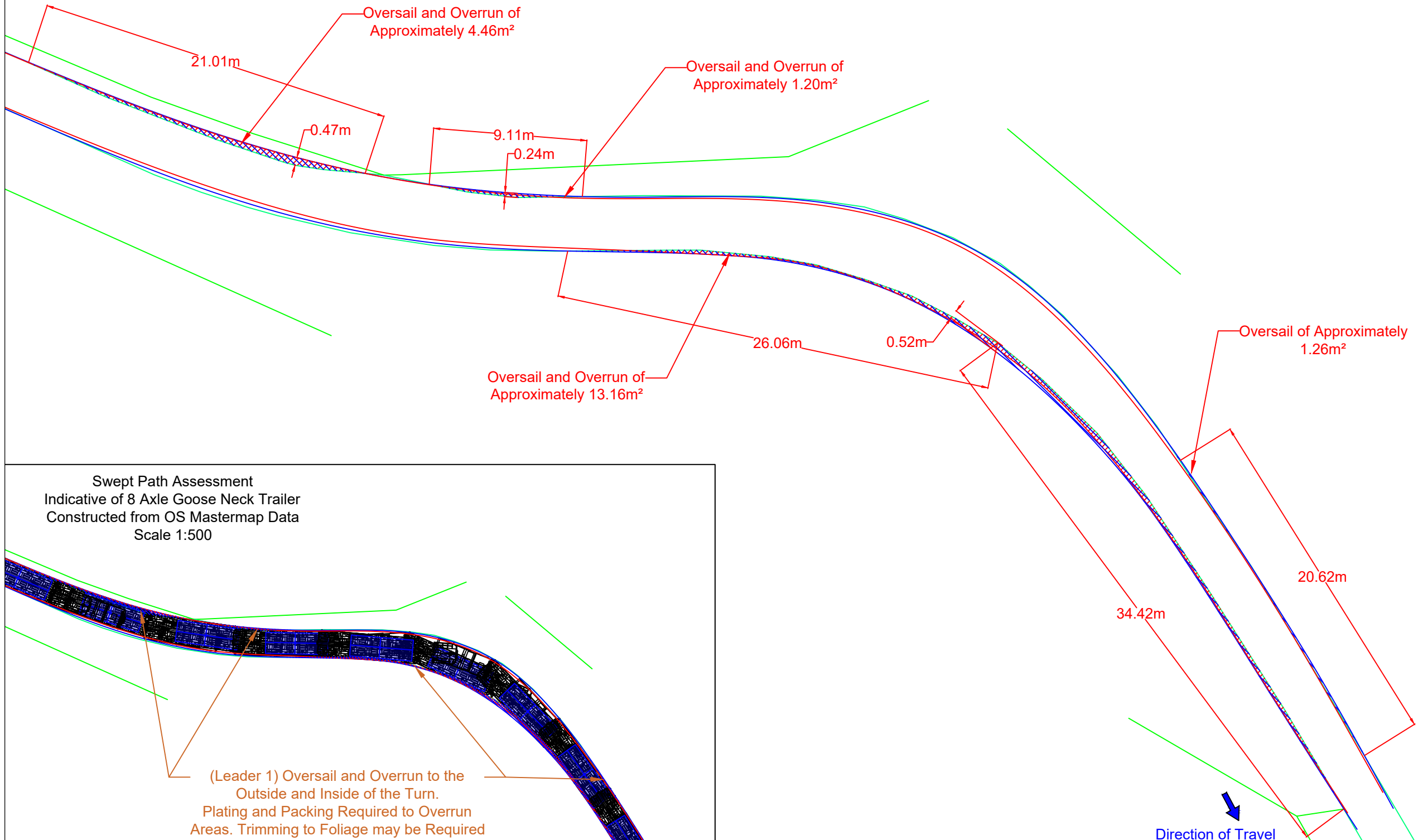


Swept Path Assessment
 Indicative of 8 Axle Goose Neck Trailer
 Constructed from OS Mastermap Data
 Scale 1:250

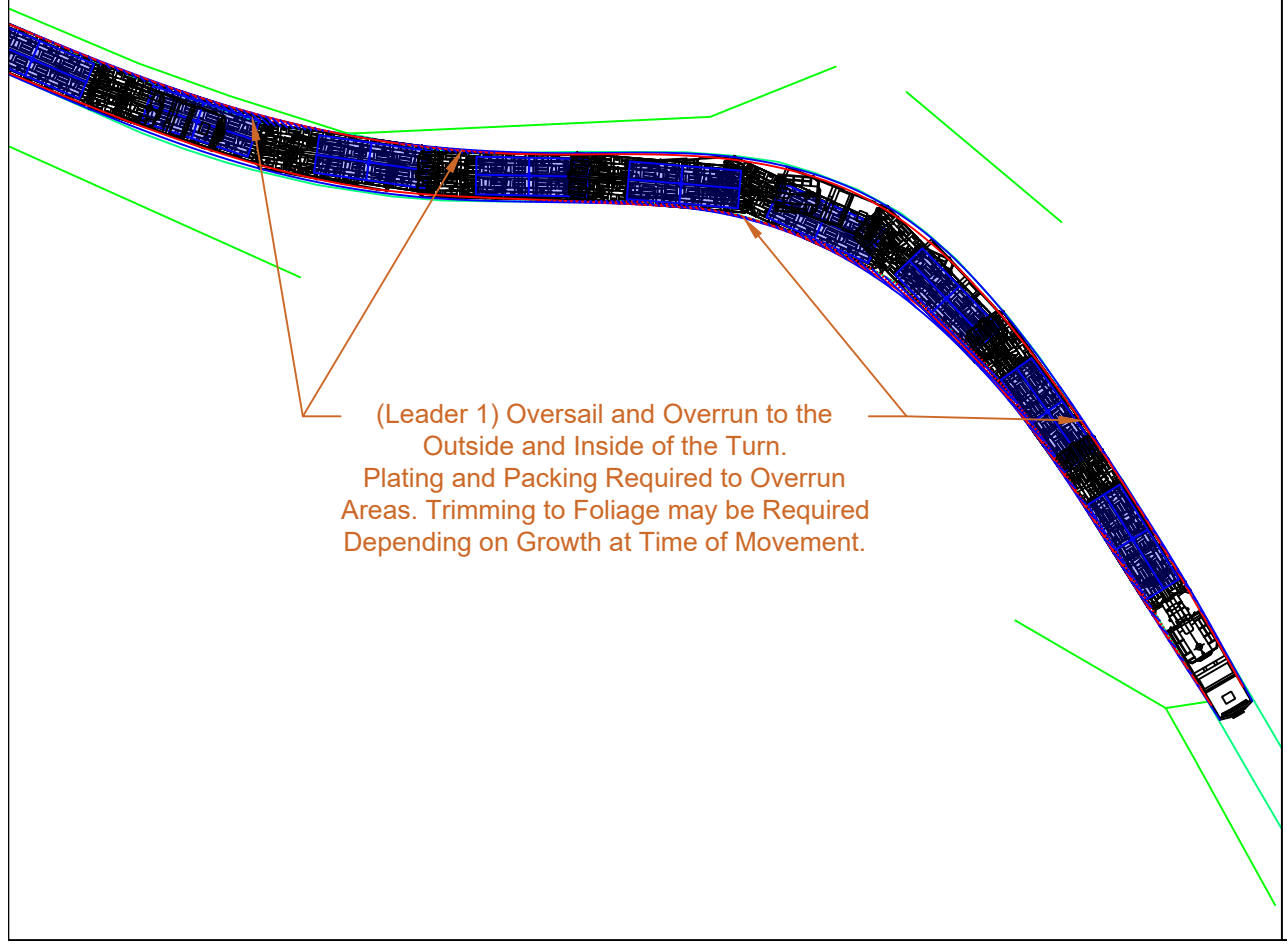


Legend:

-  8-axle goose neck trailer minimum turning arrangements Drawing ref. 24-1238.TC01
-  Extent of vehicle track
-  Extent of oversail
-  Extent of road boundary
-  Extent of property boundary
-  Overrun and oversail beyond kerb
-  Overrun beyond kerb
-  Oversail beyond kerb



Swept Path Assessment
 Indicative of 8 Axle Goose Neck Trailer
 Constructed from OS Mastermap Data
 Scale 1:500

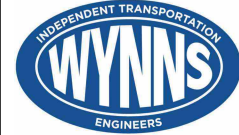


The delivery vehicle can be seen bearing right along unclassified road, at approximate OS grid reference: NH 64935 39318.

The vehicle anticipates oversail and overrun on the inside and outside of the turn (Leader 1). Overrun would require plating and packing to any present kerbs/pavements/verges to facilitate the manoeuvre, or alternatively, temporary laying of hardcore or permanent road widening to be completed. Depending on growth at the time of movement, trimming to surrounding foliage may be required to prevent any protrusion into the swept area. Oversail does not anticipate any conflicts to occur with surrounding street furniture, turn is considered to be negotiable.

1		
0	11.06.24	Issued for comment
Rev.	Date	Amendments

Revisions

Prepared by:
 Shaftesbury House, 2 High Street, Eccleshall, Stafford, ST21 6BZ Tel: (01785) 850411
 Independent Transportation Engineers

Client:


Project: Knocknagael

Title: Swept Path Assessment
 Negotiability of bearing right along unclassified road, approximate OS grid reference: NH 64935 39318, considerate of indicative 88.4 te transformer transported on 8 axle goose neck trailer.

Drawing status: Final Report

Scale (A3): As shown	Drawn by: MTO	Checked by: ARP
Dwg. no: 24-1238.SPA02	Sheet: 1 of 2	Rev: 0

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P:\Clients\Existing Clients\Field Energy\24-1238 Knocknagael\Swept Path Assessments



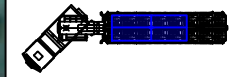


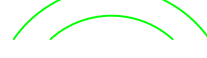

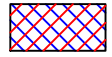


Swept Path Assessment
 Indicative of 8 Axle Goose Neck Trailer
 Constructed from OS Mastermap Data
 Scale 1:250

NOTE: Overlay onto aerial image is not representative of the configuration relative to the environment. This is for illustrative purposes only, and should only be taken as such.

Location Plan



Legend:

-  8-axle goose neck trailer
minimum turning arrangements
Drawing ref. 24-1238.TC01
-  Extent of vehicle track
-  Extent of oversail
-  Extent of road boundary
-  Extent of property boundary
-  Overrun and oversail beyond kerb
-  Overrun beyond kerb
-  Oversail beyond kerb



Direction of Travel

1		
0	11.06.24	Issued for comment
Rev.	Date	Amendments
Revisions		
Prepared by:		
		Shaftesbury House, 2 High Street, Eccleshall, Stafford, ST21 6BZ Tel: (01785) 850411
Independent Transportation Engineers		
Client:		
		
Project:		
Knocknagael		
Title:		
Swept Path Assessment Negotiability of bearing right along unclassified road, approximate OS grid reference: NH 64935 39318, considerate of indicative 88.4 te transformer transported on 8 axle goose neck trailer.		
Drawing status:		
Final Report		
Scale (A3):	Drawn by:	Checked by:
As shown	MTO	ARP
Dwg. no:	Sheet:	Rev:
24-1238.SPA02	2 of 2	0
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P:\Clients\Existing Clients\Field Energy\24-1238 Knocknagael\Swept Path Assessments		



Appendix 3

ESDAL Notification

Brad Dyke

From: system@esdal2.com
Sent: 16 May 2024 15:26
To: Brad Dyke
Subject: Movement notification alert (WYNL/138/1#1)



Mail

ESDAL² reference: WYNL/138/1#1
Notification of movement: A9/A8082 Inverness to Essich/Knocknagael
Date sent: 16 May 2024 15:25:49
NH reference:
Classification: STGO AIL cat 3

Form of notice to Road and Bridge Authorities
The Road Vehicles (Authorisation of Special Types)
(General) Order, 2003 Schedule 9 Part 1

Operator:	Wynns Ltd	Telephone no:	01785850411
Contact name:	Brad Dyke	Fax no:	
Address:	Shaftesbury House Highstreet Eccleshall Staffordshire	E-mail address:	
Postcode:	ST21 6BZ	Operator licence no:	Wynns
		Operator reference no:	A8082 to Essich/Knocknagael

In pursuance of Part 2 or Part 4 of the above Order, I being the user of the under mentioned vehicle(s) to which the Order applies, hereby give notice that it is my intention to use the said vehicle(s) on the roads specified below.

Details of the journey

From	Date and time	To	Date and time
A8082, IV2 3BW	04 November 2024 15:19	Essich, 265218,838399, IV2 6DJ	11 November 2024 15:19

Route:

Leg 1 :

A8082, IV2 3BW to Essich, 265218,838399, IV2 6DJ : Start A8082 (), A8082 (4.9 km), ESSICH ROAD (2.9 km), ESSICH (600 m), arrive at destination.

Notes On Escort:

Feasibility Study - Exact escort requirements to be confirmed but assume police required.

Notes supplied by haulier at time of notification:

MOVEMENT PROGRAMME: Feasibility study for movement of transformer to a proposed new site in Essich/Knocknagael. Route status needs to be confirmed.

Details of the load

Description of load	Transformer Length - 7333mm Width - 2450mm Height - 3813mm Weight - 88.4te
No. of movements	1
No. of pieces moved at one time	1

Details of the vehicle

Registration No. of vehicle or substitute	Type of vehicle
TBC	Semi Vehicle

Overall length of vehicle	Projection - front	Projection - rear	Projection - left	Projection - right	Rigid length	Overall width of vehicle	Maximum height	Reducible height	Gross weight
21.068 m	-	-	-	-	15.123 m	3 m	5.058 m	4.733 m	137400 kg

8 Axle Goose Neck Trailer (137.4te)

Gross weight (kg)	137400 kg
No. of Wheels (Wheels OR wheels x no of axles)	2 x 2 , 4 x 2 , 8 x 8
Axle weight (kg)	6000 kg x 1 , 8000 kg x 1 , 12340 kg x 2 , 12340 kg x 8
Axle spacing (m)	2.25 m x 1 , 1.36 m x 1 , 1.40 m x 1 , 3.2230 m x 1 , 1.50 m x 7
Axle Spacing To Following (m)	3.223 m

AFFECTED STRUCTURE (A8082 to Knocknagael Site)

List of Police Forces, Road Authorities and Bridge Authorities to which this form is sent

Senior Technician Grzegorz Otreba, Highland Council

Abnormal Loads Scotland, Police Scotland

Brad Dyke, Wynns Ltd

Form of Indemnity

THE INDEMNITY

1. We Wynns Ltd (on behalf of Field Energy) agree to indemnify you Wynns Ltd, in respect of any damage that is caused in the course of a journey of which you have been notified under the Road Vehicles (Authorisation of Special Types)(General) Order 2003 (which is referred to below as "the 2003 Order").
2. This indemnity relates to the journey scheduled to take place between 04 November 2024 and 11 November 2024 starting with the date on which the indemnity was signed.

The damage covered:

3. Except as stated in paragraph 4, the damage in respect of which this indemnity is given is limited to any damage caused to any road or bridge for the maintenance of which you are responsible.
4. This indemnity also extends to any damage caused to any other road or bridge that is used in the course of any journey to which the indemnity relates, in any case where a separate indemnity required by the 2003 Order has not been given to, or received by, the authority, body or person ("third party") which is responsible for the maintenance of that other road or bridge.

The cause of damage:

5. The damage covered in this indemnity is limited to damage caused by - (a) the construction of any vehicle used; (b) the weight transmitted to the road surface by any vehicle used; (c) the dimensions, distribution or adjustment of the load carried on any vehicle used in the carriage of an abnormal indivisible load; (d) any vehicle other than the vehicle used in any case where that damage results from the vehicle used (but excluding any damage caused, or contributed to, by the negligence of the driver of the other vehicle).

Enforcement of indemnity:

6. This indemnity is enforceable by you, to the extent of the damage specified in paragraph 3.
7. This indemnity is enforceable by any third party referred to in paragraph 4, in its own right, to the extent of any damage caused to any road or bridge for the maintenance of which it is responsible (but only if it has not already recovered payment in respect of that damage by virtue of a claim made by it under the equivalent provision in another indemnity given under the 2003 Order).
8. A claim in respect of damage covered by this indemnity will only be entertained if the claim - (a) states the occasion and place of the damage; and (b) is made before the end of the period of 12 months starting with the date on which the vehicle was last used in the course of the journey during which the damage occurred.

Date: 16 May 2024 15:25:49

Signed: Brad Dyke

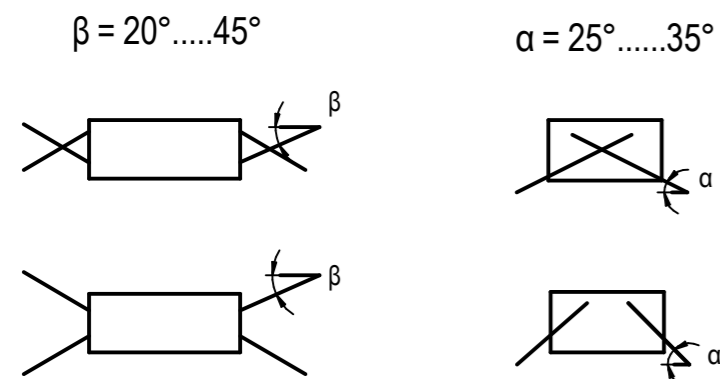


Appendix 4

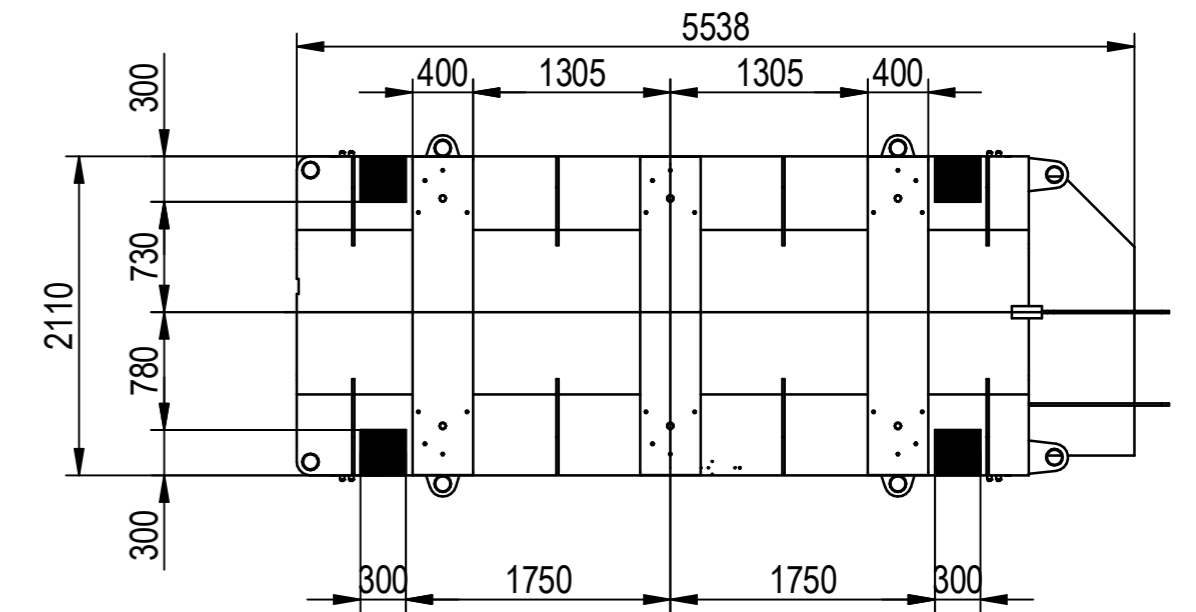
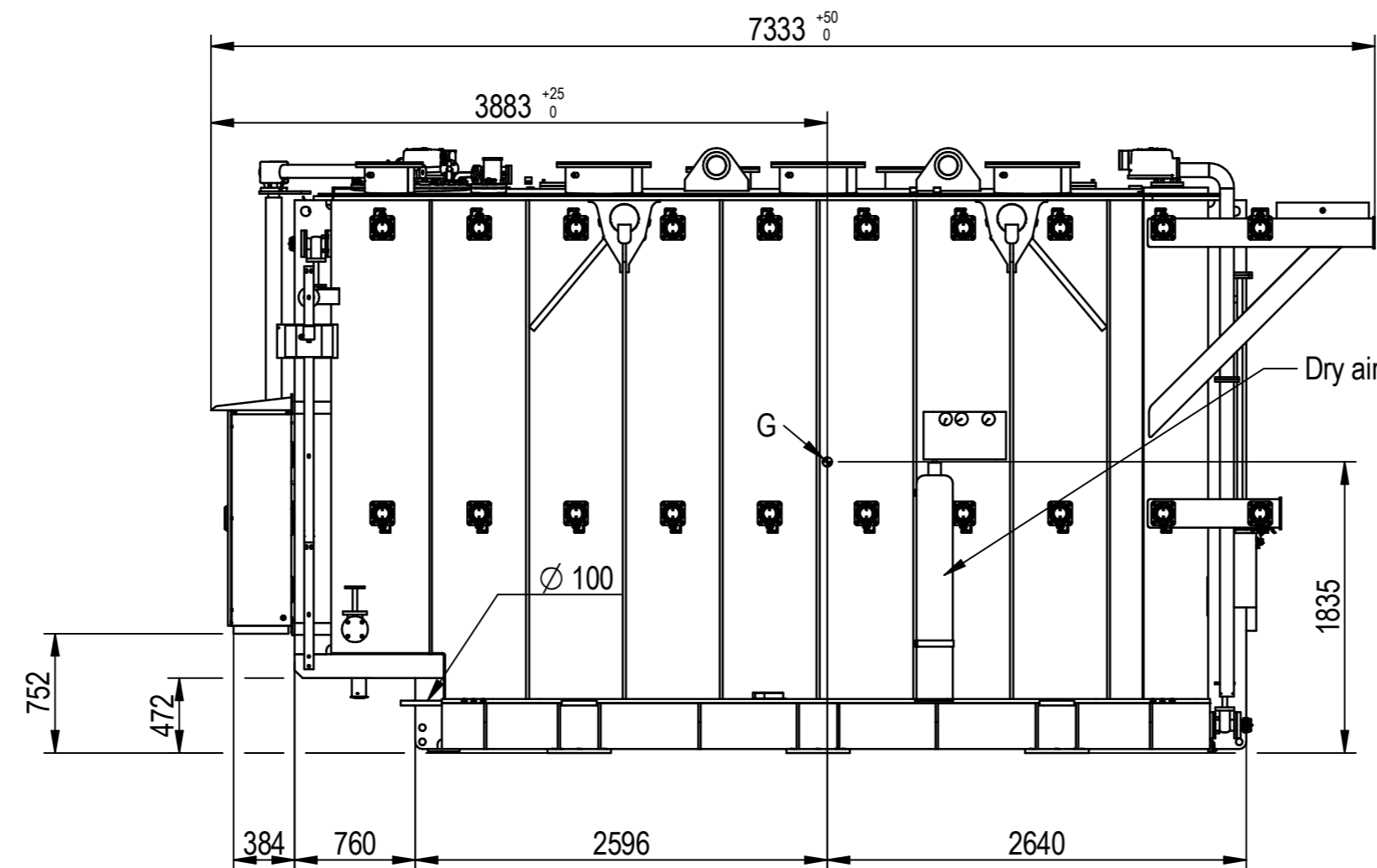
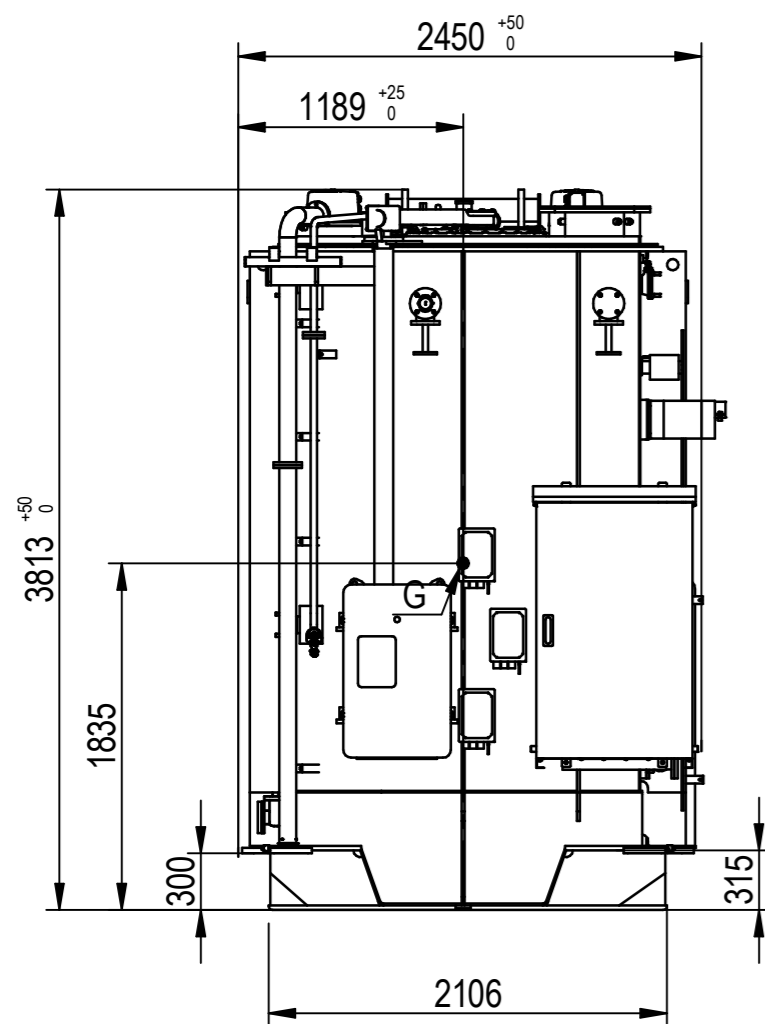
Information provided by Field

Transport dimension

Allowed transport angles on all fastening lugs $\varnothing 60/\varnothing 100$ according to EN 12195 - 1



securing with 10 tons max. load restraint chains



Location of jacking lugs and skidbase

Transportation by lowbed trailer

Transport weight with oil (incl. 2% tolerance) appr. 88 400 kg
 Weight of insulating oil (incl. 2% tolerance) appr. 21 700 kg

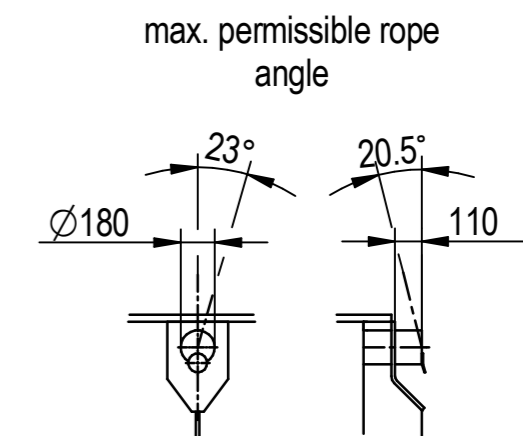
Quantity of oil to be removed for transportation appr. 23 620 l
 Transformer tank appr. 19 820 l
 Conservator appr. 955 l
 Radiators appr. 2 820 l
 Tap changer appr. 25 l

For transportation the transformer is filled with dry air under positive pressure.

To be removed for transportation:
 Conservator tank, connecting pipes, bushings for winding HV, HV-YN
 bushings for winding LV, antivibration pads, radiators, latchway and fans

Provide with a transportation protection:
 Silica gel breather

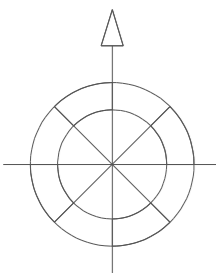
To be shut off:
 Bottom throttle valves, all open flanges and see general plan of supervision



SGB-Order-No.		SGB-Serial-No.		Purchaser	
General tolerances acc. to ISO 2768-mS EN ISO 13920-B		Quality level group DIN EN ISO 5817-C		Surface acc. to DIN ISO 1302	
Scale: 1:40		Weight(kg)		Designation:	
Date		Name		Transport drawing	
Drawn		Checked		Stand.	
01		as		Draw-No.:	
No		Modification		Date	
Name		Deriv.f.:		53024	
Order-No.:		/		Subst. for:	
Sheet 1		A		2	
1		S.		2	

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Computer (CAD) -generated drawings bear no signatures but printed abbreviations for drawn and checked




- Notes**
- All dimensions are shown in metres unless noted otherwise.
 - Do not scale from this drawing.
 - This drawing is indicative only and the site layout is likely to change as more information becomes available.

- Legend**
- Planning Boundary
 - Access Track - Unbound Finish
 - Access Track - Asphalt Finish
 - Attenuation Basin
 - Palisade Fence
 - 4m Acoustic Fence
 - 3m Acoustic Fence
 - Stock Proof Fence
 - Indicative Underground Cable Route
 - Site Landscaping and Planting
 - Existing Trees to Remain

1:10	0	100mm	200mm	300mm	400mm	500mm	600mm	700mm	800mm	900mm	1m
1:20		0.5m	1m	1.5m	2m	2.5m	3m	3.5m	4m	4.5m	5m
1:50		1m	2m	3m	4m	5m	6m	7m	8m	9m	10m
1:100		1m	2m	3m	4m	5m	6m	7m	8m	9m	10m
1:200		5m	10m	15m	20m	25m	30m	35m	40m	45m	50m
1:500		5m	10m	15m	20m	25m	30m	35m	40m	45m	50m
1:1000		10m	20m	30m	40m	50m	60m	70m	80m	90m	100m

REV	DATE	DESCRIPTION	BY	CHKD
3	27.08.2024	Landscaping and planting area amended	JH	AP
2	20.06.2024	Change and landscaping amended. Annotations added	JH	AP
1	30.05.2024	Site layout amended	JH	JW
0	28.03.2024	Site Layout Plan - Original	JH	AP



Field
 Field
 Fora Montacute Yards,
 186 Shoreditch High Street,
 London,
 E1 6HU

PROJECT: Knocknagael

TITLE: Indicative Site Layout Plan

DISCIPLINE: PLANNING

DRAWING STATUS: FOR PLANNING

SCALE	DATE	DRAWN BY	CHECKED BY	APPROVED BY
1:1000 @ A0	28.03.2024	JH	AP	JM
PROJECT NO.	DRAWING NO.	REV.		
BTGBKN001	001.1	03		

Essich Road

Biorraid Road

Substation Compound - refer to drawing 005.8.1 for details

High Voltage Transformer

Parking Spaces

Substation Building

Standby Generator

Transmission Operator Substation

Knocknagael Electricity Substation

MV Skid

Battery String

Western BESS Compound

Auxiliary Transformer

LV Cabinet

Southern BESS Compound

Lighting and CCTV Column