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Traffic and Transport Assessment

Land West of The Energy Coast Business Park – Wind Turbine Repowering

Windlend (Cumbria) Ltd

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V1	*22/11/2023*	Completed draft for Client review
V2	*30/11/2023*	*Client Comments*

Summary

The Proposed Development consists of repowering an existing wind turbine to generate green renewable energy. This Traffic and Transport Assessment, accompanied by three Swept Path figures, ascertains that there will be no major traffic and transport access restrictions from delivery of the abnormal turbine components, upon proposed Routes A, from the Coast to Workington and onwards the A595, and Route B, by land from the M6, A66 and onto the A595.

It is recommended that the following conditions be put in place:

- A Road condition survey to be undertaken for The Energy Coast Business Park road, and the A595 before and immediately after construction with any identified damage due to construction works repaired in accordance with Highway Authority requirements.
- Prior to the start of construction, a Traffic Management Plan be submitted to the Council and once agreed it will be used to manage deliveries, and construction traffic associated with turbine erection and decommissioning.

Accordingly, it is shown that the proposal can satisfy the objectives of Policy DM22 of the Council's Core Strategy and Development Management Policies DPD 2013 and the relevant policies in the emerging Copeland Local Plan (2021-2038).

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1. Introduction

Locogen have been commissioned by Windlend (Cumbria) Limited ('The Client') to produce a Traffic and Transport Assessment to support a planning application for the repowering of a single Wind Turbine and associated infrastructure on farmland at Land West of Energy Coast Business Park, in Copeland Council ('The Proposed Development).

The Proposed Development is not considered to be an Environmental Impact Assessment (EIA) development as agreed through consultation with Cumberland Council.

The aim of the development of is to maximise the generation of renewably sourced electricity from the Site through re-powering the asset at the Site by installing a larger dimensioned replacement wind turbine.

The Proposed Development Site is located at National Grid Reference (NGR) NY 02329 08344 with the initial expectation being that any new turbine would be located within c.20m from the existing turbine to allow for construction to take place alongside operation of the existing turbine to minimise operational downtime. It is sited adjacent to a pre-existing industrial park associated with the West Cumbria Energy Coast.

The project will comprise the re-powering of an existing 46.5m high (blade to tip) wind turbine which has been in operation since 2015. This will involve replacing it with a taller 3 blade wind turbine measuring 77m high (base to tip) along with associated infrastructure.

For this scale of turbine proposal many of the components associated with construction would be delivered to site on standard road-use heavy goods vehicles (HGV), typical of most industrial/commercial deliveries. Some of the turbine components (e.g. blades, generator and tower sections) however constitute abnormal loads and require further assessment to ensure that the road network is suitable for delivery.

2. Delivery Requirements

Abnormal Indivisible Load (AIL) deliveries are based on the following activities:

- Steel Tower Anchor for fitting in a concrete base (1 x AIL movement)
- Support crane and main crane for the turbine installation
- EWT tool container (10ft) and equipment container (20ft) (1 x AIL movement)
- Generator (1 x AIL movement)
- Nacelle and the Hub and small parts (1 x AIL movement)
- Wind Blades (1 x AIL movement)
- Tower Sections (3 x AIL movement)

The abnormal load turbine component dimensions are set out in Table 1 below.

Table 1: Approximate Component dimensions

	Length (m)	**Width** (m)	**Height** (m)	**Weight (ton)**
Hub	2.95	2.53	2.35	10
Blades	29m	2.55	2.9	8.7
Generator	5.7 (diameter)		2.8	32.0
Nacelle	5.2	2.6	2.25	11.0
Tower (3 sections)	3.96 (max)	3.14(max)	23.0 (max)	26.4 (max)
Anchor	3.88 (diameter)		1.53	3.7

The installation of the Wind Turbine also requires the use of 2 cranes: a support or tail crane with a minimum capacity of 90 metric tons and a main crane with a capacity of up to 500 metric tons. The crane deliveries will result in approx. 10 to 12 AIL movements, including support vehicles for the cranes carrying counterweight & mats. No load would exceed weight or axle loading limits.

Configurations for large vehicle delivery of principal turbine components are illustrated in the below plates (Plates 1-3).

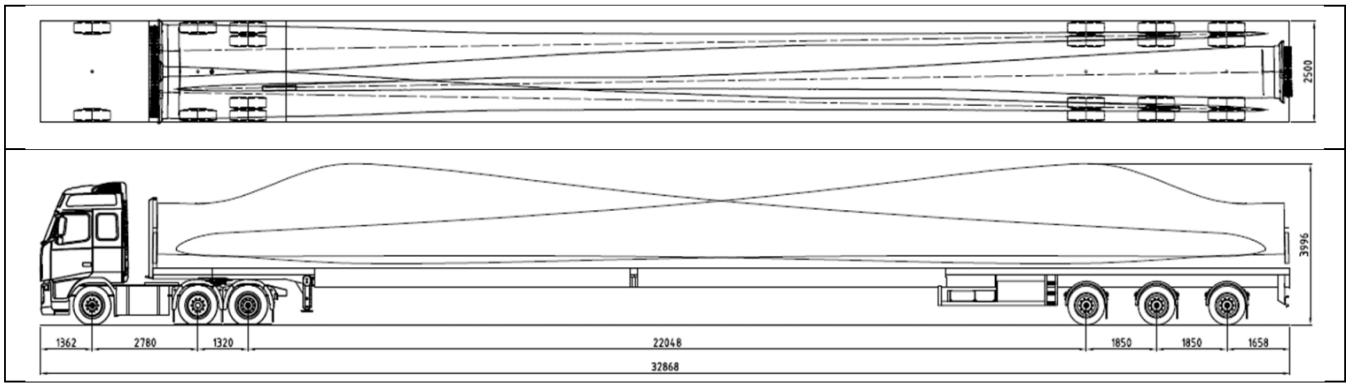

Plate 1: Blade transport arrangement

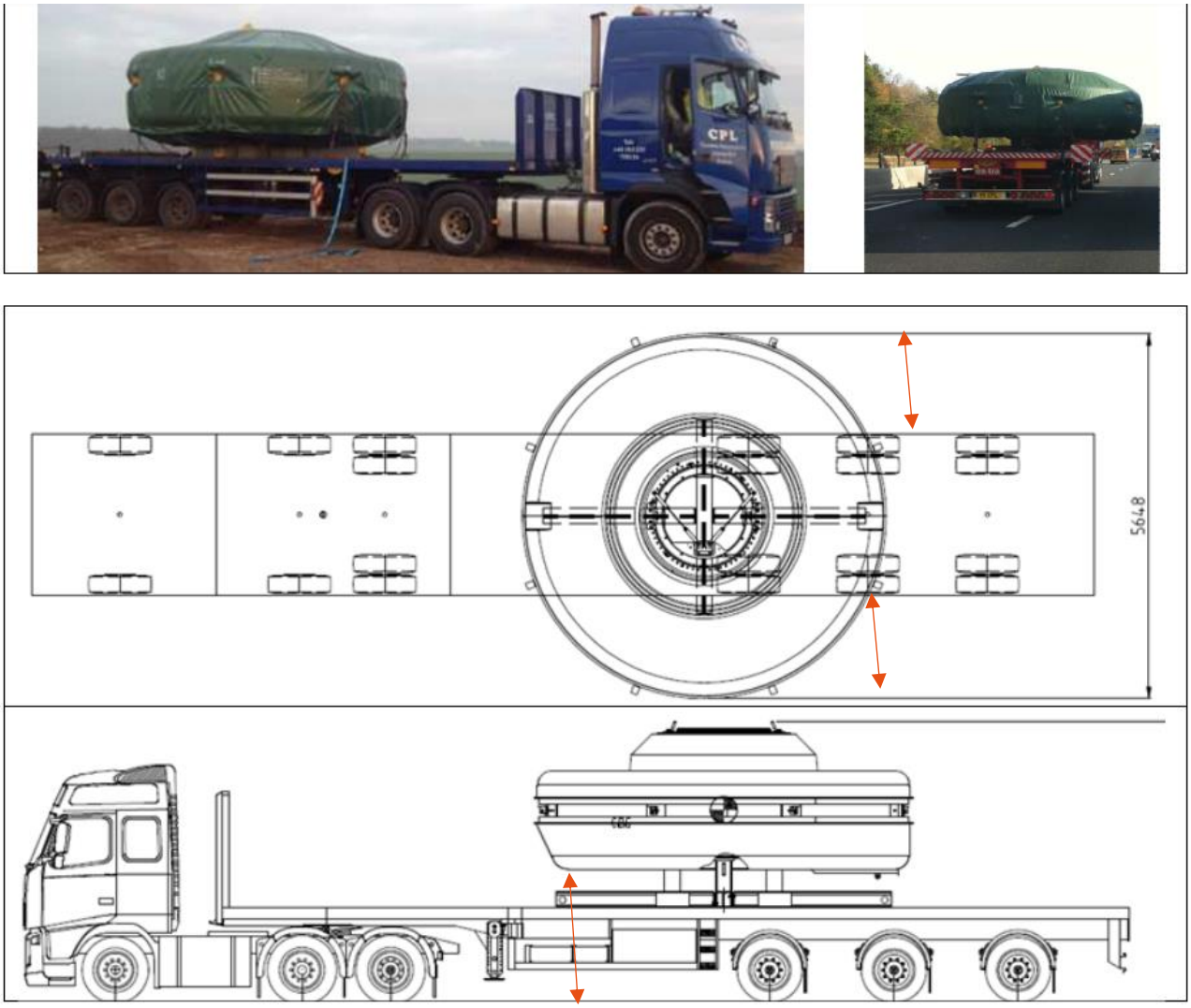

Plate 2: Standard horizontal generator arrangement

On the horizontal generator arrangement, the ground clearance from bottom of overhang of generator to ground approx. 1.7m - Overhang to each side of trailer approx. 1.6m.

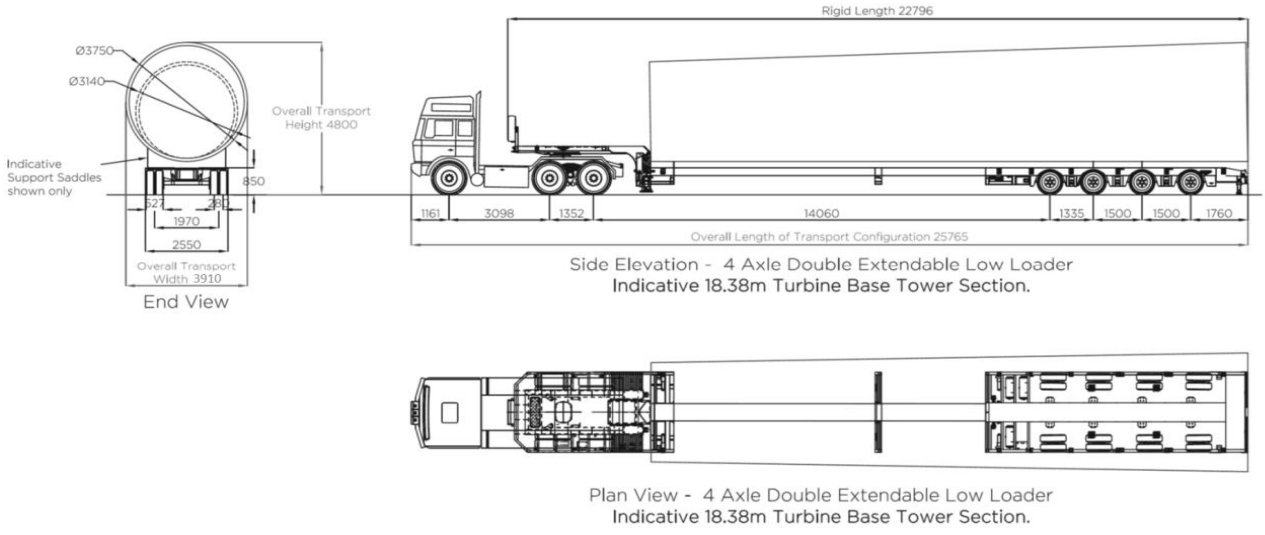

Plate 3: Bottom section Tower Transport

3. Turbine Delivery and Access

Construction and delivery vehicles to the site would be routed via one of two proposed transport routes.

3.1. Proposed Route A: Arrive by Sea

The first proposed transport route would involve the wind turbine and associated infrastructure arriving by sea into the port at Workington, before being transported to site by utilising the A596 which travels southeast from the town of Workington, before joining the A595 at the Lillyhall Industrial Estate; both A Roads are commonly used by HGVs. The construction and delivery vehicles will travel south along the A595, through the town of Thornhill, passing the Thornhill Cemetery and the collection of houses on Oaklands Road, before turning left to access the site via the existing minor public road; which is currently utilised by HGVs working on behalf of Mammoet UK Ltd and other companies at the Energy Coast Business Park.

3.2. Proposed Route B: Arrive by Road

The second proposed transport route will involve construction and delivery vehicles travelling along the M6 before accessing the A66 west via Junction 40 at Penrith. The construction and delivery vehicles would travel west along the A66 past Cockermouth before joining the A596 in Workington, before travelling along the A596 before joining the A595 at the Lillyhall Industrial Estate. As previously stated, both the A Roads in question are commonly utilised by HGVs. The construction and delivery vehicles will travel south along the A595, passing the Thornhill Cemetery and the collection of houses on Oaklands Road, before turning left to access the site via the existing minor public road. The aforementioned minor road is regularly utilised by HGVs working on behalf of Mammoet UK Ltd and other companies at the Energy Coast Business Park.

3.3. Pinch Points

The completed site investigation only identified two potential pinch-points along both Route A and Route B:

1. A595 to Egremont Bypass Roundabout connecting the A595 to the A5086 (left); and
2. A595 junction/minor public road (right) to the Energy Coast Business Park

The location of each identified pinch-point is shown on Plate 4 below.

Plate 4: A595 Egremont Roundabout (left) and A595 Entrance to Business Park (right)

There are several roundabouts between the Lillyhall Industrial Estate at Workington, from which both Routes merge, and the Proposed Development Site. The Egremont roundabout on the A595 connecting the A5086 to Egremont was identified on prior site visits as having multiple exits across both residential and commercial areas and was noted to be a busy point for HGV and vehicular movement. The route from the west is a single lane carriageway, whereas on the return journey to the east, the road is dual carriageway (Plate 5). The route from the west underwent Swept Path Analysis (Figure 1) which confirmed the suitability of the roundabout to allow transportation of the longest load (blades).

Plate 5: Western approach to Egremont A595 Roundabout

The turning point for the A595 to The Energy Coast Business Park has a tight turning point from the western access with potential for oversail (Plate 6). It is recommended that the loaded HGV approaches from the west (Figure 2), and the unloaded HGV exits towards the east (Figure 3) and utilises Blackbeck Roundabout for its return journey to Lillyhall Roundabout. The swept path analysis confirms the path for the longest load (blades) to take on this turning and this notes an expected requirement for oversail on the inner bend as identified on the below plate.

Plate 6: Photograph showing A595 junction/minor public road with identified oversail point

4. Traffic Management

From the minor road to the Energy Coast Business Park, the deliveries will on the same road which is currently used for HGV deliveries by the various businesses at the Energy Coast Business Park.

It is recommended that the following conditions be applied to the project:

A Road condition survey to be undertaken for The Energy Coast Business Park road, and the A595 before and immediately after construction with any identified damage due to construction works repaired in accordance with Highway Authority requirements.

Prior to the start of construction, a Traffic Management Plan be submitted to the Council and once agreed it will be used to manage deliveries, and construction traffic associated with turbine erection and decommissioning.

Accordingly, it is shown that the proposal can satisfy the objectives of Policy DM22 of the Council's Core Strategy and Development Management Policies DPD 2013 and the relevant policies in the emerging Copeland Local Plan (2021-2038).

4.1. Abnormal loads

The following points summarise the mitigation proposed to offset the impacts of abnormal loads. EWT are the provider for the turbine components and will be responsible for AIL movement relating to the wind turbine. The Principal Contractor (PC) will manage the contractors for the site and will be responsible for any AIL movements pertaining to their work activities. Both parties will plan all AIL movements in consultation with all relevant stakeholders.

A technical approval process is currently underway to agree the design of mitigation measures at identified pinch points. The following procedures will be followed in relation to the movement of abnormal loads:

- All abnormal load movements will be planned in consultation with National Highways who operate the A595 and the Cumbria roads authority, alongside Cumbria Police. Typically, movements will be restricted to off peak hours when existing traffic flows on the route will be at the lowest point;
- It is noted that the abnormal load deliveries are usually undertaken in convoys. The usual make-up of a convoy for turbine deliveries is three AIL vehicles accompanied by two escort vehicles;
- The escort vehicles are in place to provide manoeuvring assistance, warning of hazards and to report information on clearances etc to the drivers of the abnormal load vehicles;
- Advance temporary warning signs will be installed at various points along the AIL route to advise drivers that abnormal loads will be operating on the route with dates and times provided. The purpose of the signs is to provide driver information which would allow people to either avoid the area until the convoy has passed, take an alternative route or to proceed with caution;
- If a road closure is required, arrangements would be put in place to facilitate local access to properties on the closed route and to ensure safe passage of any emergency vehicles which may require access; and
- Cumbria Police will be contacted at least 30 minutes before departure, informing them that the journey is about to commence, quoting any reference or authorisation numbers that apply. Any Police guidance relating to traffic or weather conditions should be followed
- The escort driver will check routing details or hinderances on the route prior to leaving the starting destination.

4.2. Escort vehicles

A specialised vehicle escort company, and, or Cumbria Police, will assist during the transportation of AILs for the wind turbine components. Escort vehicles are standard practice in

wind turbine delivery, and the supplier of the turbine components will make the necessary arrangements.

The escort vehicle's function is to warn other road users, including pedestrians of the presence of an abnormal load, as well as to maintain ongoing contact with the driver(s) of the abnormal load.

On motorways and dual carriageways, the escort vehicle will be positioned to the rear of the abnormal load, at a distance to give adequate warning to other road users of the load.

On two-way roads and at traffic islands or intersections, the escort vehicle shall be positioned to the front of the abnormal load to give adequate warning to other road users of the load.

Escort Vehicles will be used when the vehicle / load is:

- Exceeds 3.5m in width, or
- If the overall length (including projections) exceeds 18.75m (discounting the length of the towing unit on an articulated vehicle), or
- If the total length of a motor vehicle and drawbar trailer (including projections) exceeds 25.9m, or
- When the load projects more than 2m to the front or 3.05m to the rear of the vehicle.

4.3. AIL incident or breakdown procedure

The nature of any incident / breakdown should be quickly established from the driver of the load, and whether they are able to continue, at least to a suitable stopping area without deviating from the agreed route. If not, any deviation from the route must be cleared with the relevant authorities (this includes, for example, passing over structures to get to Motorway Service Areas).

If the AIL convoy has stopped or broken down, the escort vehicle should be placed at an appropriate distance and in the most advantageous position to protect the load and its personnel, using the lights and markings to give the maximum warning to other traffic.

The Police and/or Department for Transport control room will be contacted without delay, especially if the broken-down vehicle is causing an obstruction. Both the escort vehicle(s) and the abnormal load vehicle(s) should be parked in, or moved to, a safe place. The escort driver will make arrangements for repairs or a replacement as soon as possible. The escort driver will keep the Police and Department for Transport regularly updated throughout the breakdown / recovery.

Cones will be placed to warn others of an obstruction if the driver of the load and the escort agree that it is safe to do so, having taken account of the circumstances of the breakdown and the risks posed to themselves and other road users.

Appendix A. Figures

Figure 1. D001 Swept Path Analysis A595/ A5086 Roundabout

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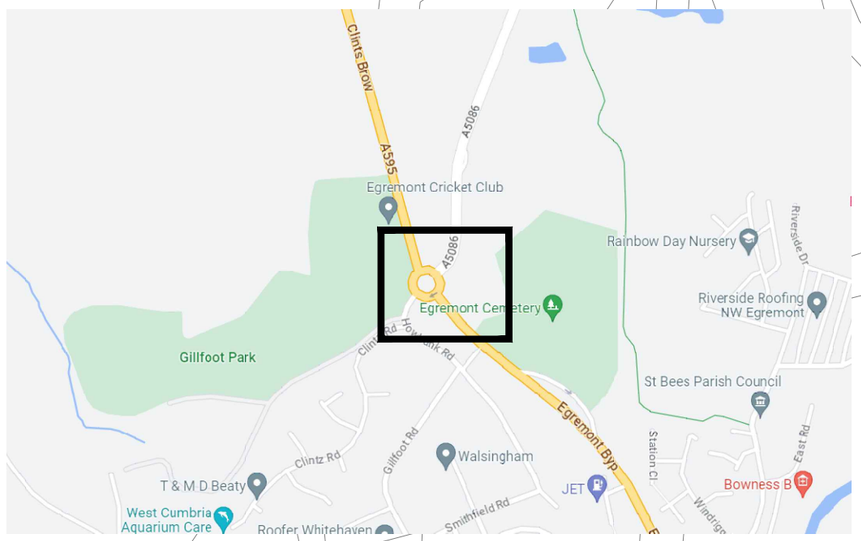
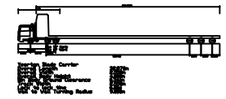
A 5086



NOTES:

DRAWING IS SUBJECT TO: HIGHWAY BOUNDARY CONFIRMATION, LAND OWNERSHIP CONFIRMATION, TOPOGRAPHICAL SURVEY, STAGE 1 ROAD SAFETY AUDIT AND DETAILED DESIGN

VEHICLE USED



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Project Title:

YEORTON

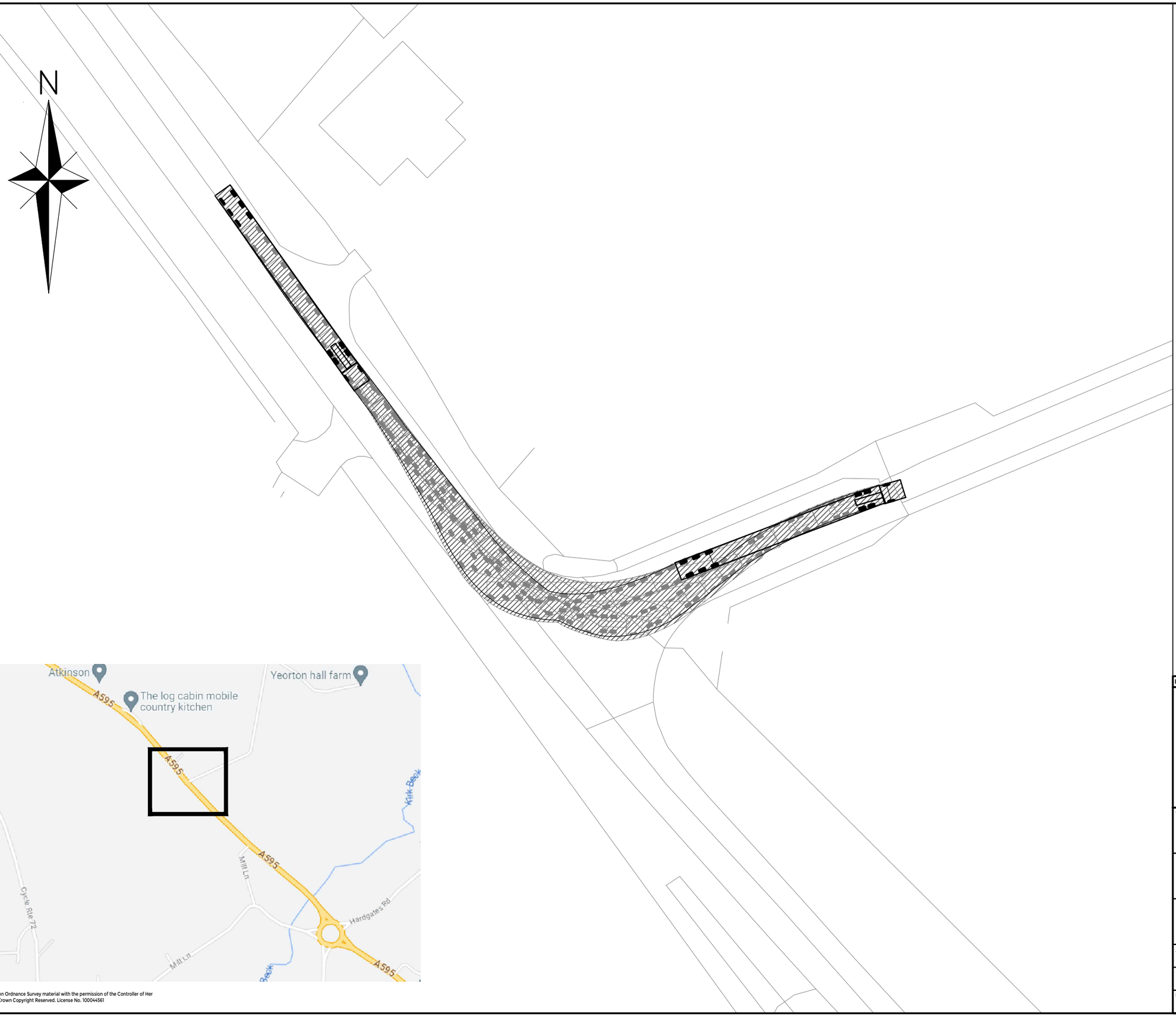
Drawing Title:

SWEPT PATH ANALYSIS
A595 / A5086 ROUNDABOUT

A3 Scale	Date	Designed by
1:500	09.11.23	BE-N
Drawn by	**Checked by**	**Approved by**
BE-N	RH	KK

Drawing Number: 2307600-001 Rev

Figure 2. D002 Swept Path Analysis Movement into Track Road



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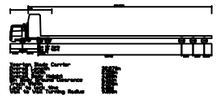

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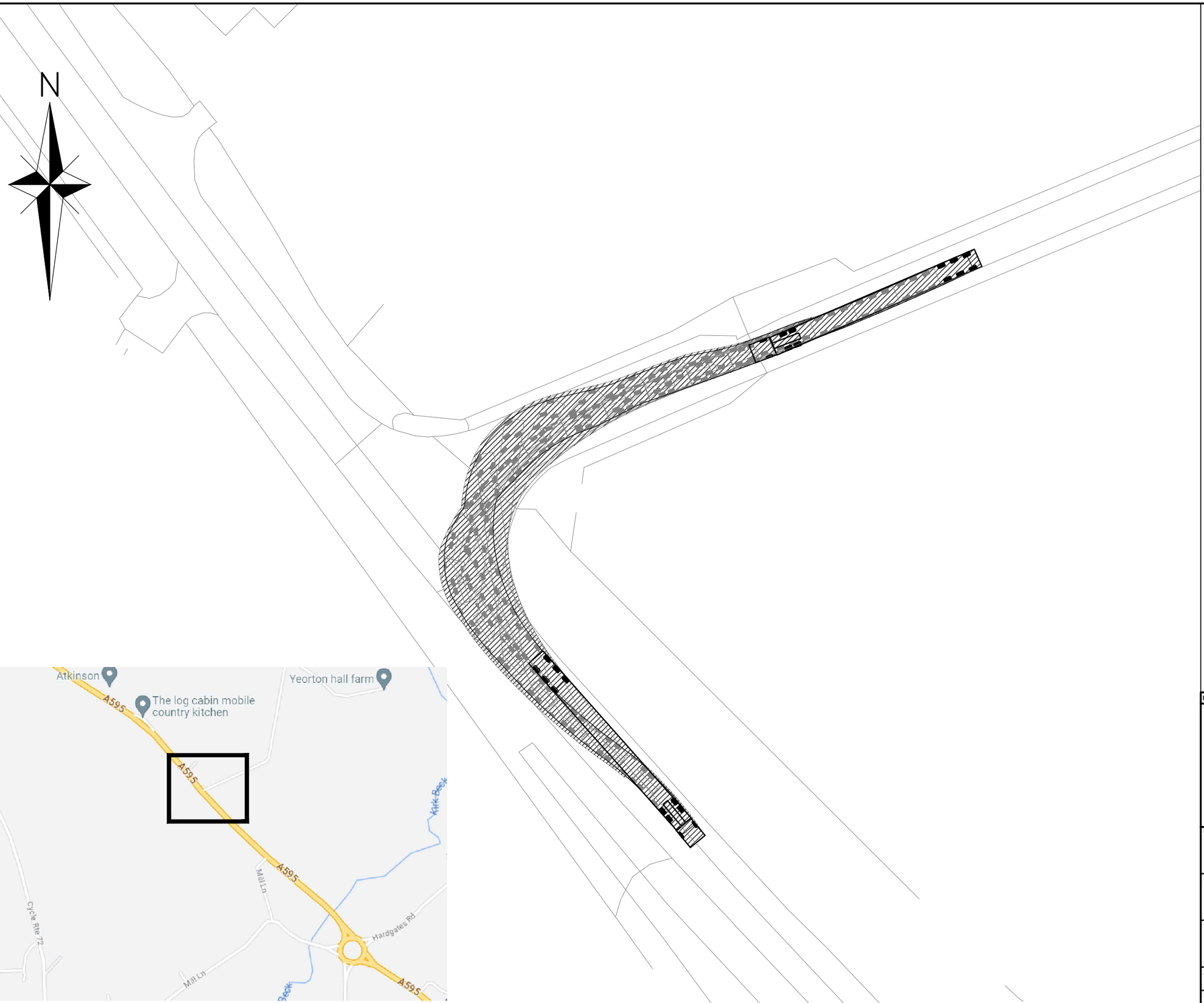
Drawing Title:

SWEPT PATH ANALYSIS
MOVEMENT INTO TRACK ROAD

A3 Scale	Date	Designed by
1:500	09.11.23	BE-N
Drawn by	**Checked by**	**Approved by**
BE-N	RH	KK

Drawing Number: 2307600-002 | Rev

Figure 3. D003 Swept Path Analysis Movement from Track Road



NOTES:

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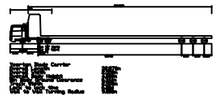

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Project Title:

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Drawing Title:

SWEPT PATH ANALYSIS
MOVEMENT FROM TRACK ROAD

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