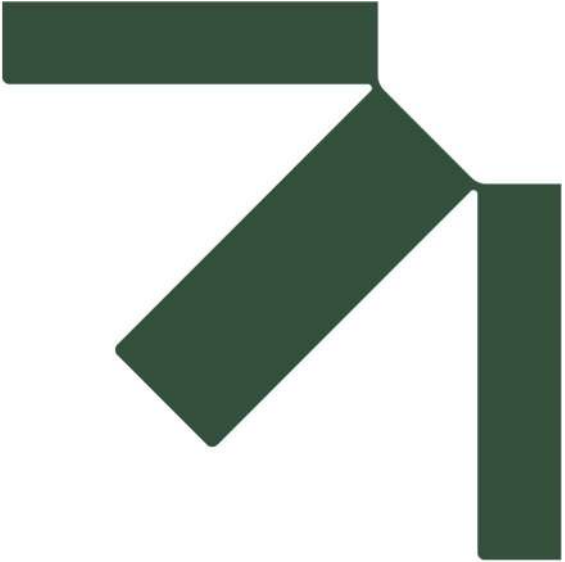




Appendix J Draft Galros Bog Rehabilitation Plan

Appropriate Assessment Screening Report and Natura Impact Statement

Cush Wind Farm Phase II

Cush Wind Limited

SLR Project No.: 501.065723.00001

23 October 2026





Galros Bog

**Draft Cutaway Bog Decommissioning
and Rehabilitation Plan
2026**

This document seeks to address the requirements of Condition 10.2 of Integrated Pollution Control (IPC) Licence Ref. P0500-01:

“The licensee shall prepare, to the satisfaction of the Agency, a fully detailed and costed plan for permanent rehabilitation of the cutaway boglands within the licensed area.”

This licence condition requires BnM agree with the EPA the measures that will provide for rehabilitation, i.e. stabilisation of Galros Bog upon cessation of peat production and complements the licence requirement to decommission the site.

Rehabilitation generally comprises site stabilisation with natural colonisation with or without targeted management.

Industrial peat production has now fully ceased at Galros Bog.

BnM have defined the key rehabilitation outcome at Galros Bog as environmental stabilisation.

The primary objective of the plan is environmental stabilisation, including the reduction and management of environmental risks to waters, air, land, neighbouring lands, ecological receptors and other relevant receptors arising from the former licensed activity. The plan has been prepared having regard to EPA guidance and will be subject to consultation, EPA agreement, implementation, monitoring, review and validation in accordance with the IPC licence. This rehabilitation plan for Galros Bog has been updated to take account, for rehabilitation planning purposes only, of a separate third-party renewable-energy proposal within part of Galros Bog and adjoining lands. The plan remains in draft format pending completion of the rehabilitation planning process and agreement with the EPA.

Known potential future land use constraints have been considered only insofar as they are relevant to ensuring that the proposed rehabilitation measures remain coherent, practicable, and capable of validation under IPC licence. Any future third party development or after use within or adjoining Galros Bog will require all necessary statutory consents and environmental assessments and must demonstrate compatibility with the rehabilitation objectives, drainage strategy, monitoring requirements and licence surrender pathway set out in this plan.

Any consideration of any other future after-uses for Galros Bog, including energy related infrastructure, will be conducted in adherence to the relevant planning guidelines and consultation with relevant authorities and will be considered within the framework of this rehabilitation plan.

Document Control Sheet						
Document Name:		Galros _Draft_Rehab_Plan_2026_V2				
Document File Path:		BnM Sharepoint Biodiversity\01) EPA Rehab Plans				
Document Status:		Draft				
This document comprises:		DCS	TOC	Text (Body)	References	Maps
		1	2	32	4	0
Rev.	0.1	Author(s):		Checked By:		Approved By:
	Name(s):	EOB		MMC		MMC
	Date:	11/12/2024		13/12/2024		
Rev.	1	Author(s):		Checked By:		Approved By:
	Name(s):			MMC		MMC
	Date:			10/07/2026		10/07/2026
Rev.	1.1	Author(s):		Checked By:		Approved By:
	Name(s):			MMC		MMC
	Date:			07/10/2026		07/10/2026

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Non-technical Summary

- BnM (formerly Bord na Móna) is updating the rehabilitation plan for Galros Bog, located south of Cloghan in west Co. Offaly, and part of the wider Boora Bog Group.
- Galros Bog was in industrial peat production from the 1950s and supplied peat to the Derrinlough Briquette Factory for many years. Industrial peat harvesting has now ceased across the whole of Galros Bog as of 2021.
- The majority of Galros Bog comprises cutaway bog habitat. The majority of the site is still bare peat with areas of establishing pioneer vegetation, fen and wetland.
- Galros Bog has gravity-based drainage.
- This rehabilitation plan has been prepared by BnM as part of obligations to carry out peatland rehabilitation via an IPC Licence issued by the Environmental Protection Agency.
- BnM is aware that a separate third-party renewable energy proposal is being considered on part of Galros Bog and adjoining lands. That proposal is not a BnM project and will be subject to its own planning and environmental assessment processes.
- For the purposes of this Rehabilitation Plan, potential future land use constraints have been considered only to ensure that the proposed rehabilitation measures are coherent, practicable and capable of being implemented, monitored and validated under the IPC licence.
- The key objective of peatland rehabilitation is environmental stabilisation. This means developing habitats and vegetation back onto the bare peat (putting a “skin” back onto the peat), and minimising effects to downstream waterbodies.
- In general, soggy ground conditions are preferred. This means the remaining peat is wet and that plants that prefer wetter conditions, like Bog Cotton will thrive.
- It will take some time for vegetation and habitats to fully develop at Galros, and a peatland ecosystem to be restored. However, it is expected that any bare peat will be developing pioneer habitats after 5-10 years.
- Rehab measures will include drain-blocking and other measures to raise water levels to the surface of the bog, thus encouraging the development of naturally functioning cutaway peatland habitats.
- It is a guiding principle of BnM rehabilitation planning that no actions or activities will be undertaken that would negatively impact on adjacent land. No boundary drains will be blocked. Water will still leave the bog via the existing outlets.
- Peatland rehabilitation of this bog will bring a range of benefits to the local community via improvements to the local landscape and is also important for supporting national policies and strategies in relation to reduction of carbon emissions from these peatlands, supporting biodiversity and improvements to water quality.
- Peatland rehabilitation at Galros will result in improved water quality, climate benefits with the reduction of carbon emissions and enhanced biodiversity when the residual peat is re-wetted.
- Many BnM bogs cannot be restored back to raised bog, as the majority of peat has been removed and the environmental conditions have been modified. However other natural habitats will develop, like poor or rich fen and regenerating wet deep peat vegetation (on deeper peat); wetlands with Reedbeds and Birch woodland on drier shallower peat and glacial mounds.
- The development of a range of habitats at Galros Bog will support biodiversity including plants, insects, birds and mammals. This includes some species that are rare and protected in the wider landscape.

- Galros Bog will be rehabilitated in accordance with this plan and the requirements of IPC Licence P0500-01. Where future authorised land uses interface with rehabilitation measures, they will be required to avoid compromising the objectives, drainage arrangements, monitoring requirements and environmental-stabilisation trajectory set out in this plan.

DRAFT

1 INTRODUCTION

BnM (formerly known as Bord na Móna) operates under an IPC Licence issued and administered by the EPA to extract peat within the Boora bog group (Ref. P0500-01). As part of Condition 10.2 of this licence, a rehabilitation plan must be prepared for permanent rehabilitation of the boglands within the licensed area.

Galros Bog is a part of the Boora bog group (see Appendix I for details of the bog areas within this Group), located within western County Offaly.

This plan is a specific rehabilitation plan for the bog and outlines:

- Description of site management and status.
- Main issues and approaches to rehabilitation.
- Consultation to date with interested parties.
- Interaction with other policy and legislative frameworks (Appendix V).
- The planned rehabilitation goals and outcomes.
- The scope of the rehabilitation plan.
- Criteria which define the successful rehabilitation and key targets to validate rehabilitation.
- Proposed rehabilitation actions.
- Proposed timeframe to implement these measures.
- Budget and Costings.
- Associated aftercare, maintenance, and monitoring.

Note: This plan should be read in conjunction with the accompanying Map book.

BnM announced the complete cessation of industrial peat production across its estate in January 2021. This document seeks to address the requirements of Condition 10.2 of IPC Licence Ref. P0500-01:

“The licensee shall prepare, to the satisfaction of the Agency, a fully detailed and costed plan for permanent rehabilitation of the cutaway boglands within the licensed area.”

It also seeks to outline measures to optimise climate action and other ecosystem services benefits, mainly through hydrological management.

This draft Rehabilitation Plan outlines the approach proposed by BnM for IPC compliance in respect of Galros Bog and describes how the former industrial peat production area will be rehabilitated following cessation of peat extraction. The plan has been prepared as a rehabilitation plan for Galros Bog. It may be reviewed and updated, subject to EPA agreement, where material changes arise in site conditions, rehabilitation design, stakeholder consultation, monitoring results or known land-use constraints. The plan remains in draft format pending stakeholder consultation, refinement of rehabilitation measures, environmental assessment where required, and EPA agreement.

BnM is fully committed to meeting its obligations relating to rehabilitation and decommissioning under the IPC Licence P0500-01.

It has been proposed by the Government that BnM carry out a Peatlands Enhanced Decommissioning, Rehabilitation and Restoration Scheme (EDRRS) on a number of its peatlands. This proposal is also known colloquially as the ‘Peatlands Climate Action Scheme’ (PCAS). The additional costs of the scheme are supported by the Government through the Climate Action Fund and Ireland’s National Recovery and Resilience Plan, administered by the Department of Environment, Climate and Communications (DECC), while the National Parks and Wildlife Service (NPWS) acts as the scheme regulator. The Peatlands Climate Action Scheme is expected to

operate between 2021-2026. Over 24,000 ha of cutaway peatlands have been rehabilitated as part of this scheme to date across multiple BnM peatlands. Only the costs associated with the additional, enhanced, and accelerated rehabilitation, i.e. those measures which go beyond the existing decommissioning and rehabilitation requirements arising from Condition 10, will be eligible for support under the Scheme.

Galros Bog has not currently been selected for inclusion in PCAS. Accordingly, this Rehabilitation Plan is prepared primarily to address BnM's obligations under IPC Licence P0500-01. Where PCAS methodologies or experience from other BnM peatland rehabilitation projects are referenced, they are used as technical guidance only and do not imply that Galros Bog is currently being delivered under PCAS.

1.1 Constraints and Limitations

This document covers the area of **Galros Bog** shown outlined by a black dashed line in the site location map (drawing number BNM-ECO-24-35-01).

This document covers the area of Galros Bog shown within the rehabilitation boundary on the accompanying map book. The plan has been prepared for the purposes of IPC Licence P0500-01 and addresses the decommissioning and rehabilitation obligations arising from the former licensed peat extraction activity.

Known potential future land use constraints within or adjoining Galros Bog have been considered for the purpose of rehabilitation planning. Such constraints may include retained drainage corridors, existing access routes, third-party infrastructure constraints, neighbouring lands, archaeological constraints, ecological sensitivities, silt ponds, outfalls and monitoring points.

The identification of any future land-use constraint in this plan does not authorise, imply or regularise any separate development or land use. Any future authorised development must demonstrate that it will not compromise the rehabilitation objectives, drainage design, water-level management, silt-control arrangements, ecological safeguards, archaeological safeguards, monitoring requirements or licence-surrender pathway set out in this plan.

2 METHODOLOGY

This rehabilitation plan was developed with a combination of desktop and field surveys, consultations with internal and external stakeholders. The development of this rehabilitation plan considered recently published guidance issued by the EPA– ‘*Guidance on the Process of Preparing and Implementing a Bog Rehabilitation Plan*’ (EPA, 2020).

The ecological information and general bog information collected during the BnM ecological baseline surveys, additional site visits (covering the period 2009 to 2024 inclusive) and monitoring and desktop analysis, forms the basis for the development of this rehabilitation plan for the bog along with:

- Experience of 40 years of research on the after-use development and rehabilitation of the Bord na Móna cutaway bogs (Clarke, 2010; Bord na Móna, 2016);
- Significant international engagement during this period with other counties in relation to best-practice regarding peatland rehabilitation and after-use through the International Peat Society and the Society for Ecological Restoration (Joosten & Clarke, 2002; Clarke & Rieley, 2010; Gann *et al.*, 2019);
- Consultation and engagement with internal and external stakeholders;
- GIS Mapping;
- BnM drainage surveys;
- Bog topography and peat depth data;
- Hydrological modelling;
- Supplementary ornithological baseline records for Galros Bog and adjoining lands, comprising recent bird survey data collected during the 2023/2024 non-breeding season and 2024 breeding season; and
- The development of a Methodology Paper outlining the Scheme (PCAS). This rehabilitation includes enhanced measures defined in the Methodology Paper which are designed to exceed the standard stabilisation requirements as defined by the IPC Licence and to enhance the ecosystem services of Galros Bog, in particular, optimising climate action benefits.

2.1 Desk Study

The desk study involved collecting all relevant environmental and ecological data for the study area. The development of the rehabilitation plan also takes account of research, experience and engagement with other peatland restoration and rehabilitation projects and peatland research including Irish, UK, European and International best practice guidance (full citations are in the references section):

- Anderson *et al.* (2017). An overview of the progress and challenges of peatland restoration in Western Europe.
- Barry, T.A. *et al.* (1973). A survey of cutover peats and underlying mineral soils. Soil Survey Bulletin No. 30. Dublin, Bord na Móna and An Foras Taluntais.
- Bonn *et al.* (2017). Peatland restoration and ecosystem services- science, policy and practice.
- Carroll *et al.* (2009). *Sphagnum* in the Peak District. Current Status and Potential for Restoration. Moors for the Future Report No 16.
- Clark & Rieley (2010). Strategy for responsible peatland management.
- Eades *et al.* (2003). The Wetland Restoration Manual.
- Farrell & Doyle (2003). Rehabilitation of Industrial Cutaway Atlantic Blanket Bog, NW Mayo, Ireland.

- Feehan, J. (2004). A long-lived wilderness. The future of the north midlands peatland network. Department of Environmental Resource Management, UCD.
- Foss, P.J., Crushell, P. & Gallagher, M.C. (2017) Title: Counties Longford & Roscommon Wetland Study. Report prepared for Longford and Roscommon County Councils.
- Gann *et al.* (2019). International Principles and Standards for the practice of Ecological Restoration.
- Hinde *et al.* (2010). *Sphagnum* re-introduction project: A report on research into the re-introduction of *Sphagnum* mosses to degraded moorland. Moors for the Future Research Report 18.
- Joosten & Clarke (2002). Wise Use of mires and peatlands – Background and Principles including a framework for Decision-making.
- Lindsay (2010). Peatbogs and Carbon: A Critical Synthesis to Inform Policy Development in Oceanic Peat Bog Conservation and Restoration in the Context of Climate Change.
- Mackin *et al.* (2017). Best practice in raised bog restoration in Ireland. Irish Wildlife Manuals, No. 99. National Parks and Wildlife Service,
- McBride *et al.* (2011). The Fen Management Handbook (2011), Scottish Natural Heritage.
- McDonagh (1996). Drain blocking by machines on Raised Bogs. Unpublished report for National Parks and Wildlife Service.
- NPWS (2017a). National Raised Bog Special Areas of Conservation management plan. Department of Arts, Heritage and the Gaeltacht.
- Pschenyckyj *et al.*, 2021, Optimising Water Quality Returns from Peatland Management while Delivering Co-Benefits for Climate and Biodiversity. An Fóram Uisce.
- Quinty & Rochefort (2003). Peatland Restoration Guide, second edition. Canadian *Sphagnum* Peat Moss Association and New Brunswick Department of Natural Resources and Energy.
- Regan, *et al.* (2020). Ecohydrology, Greenhouse Gas Dynamics and Restoration Guidelines for Degraded Raised Bogs. EPA Research Report. Prepared for the Environmental Protection Agency by Trinity College Dublin.
- Renou-Wilson *et al.* (2011). BOGLAND - Sustainable Management of Peatlands in Ireland. STRIVE Report No 75 prepared for the Environmental Protection Agency.
- Schouten (2002). Conservation and Restoration of Raised Bogs: Geological, Hydrological and Ecological Studies. Dúchas - The Heritage Service of the Department of the Environment and Local Government, Ireland;
- Thom, *et al.* (2019). Conserving Bogs – The Management Handbook, second edition.
- Wheeler & Shaw (1995). Restoration of Damaged Peatlands – with Particular Reference to Lowland Raised Bogs Affected by Peat Extraction.
- Wittram *et al.* (2015). A Practitioners Guide to *Sphagnum* Reintroduction. Moors for the Future Partnership.
- Supplementary third party ornithological survey records covering Galros Bog and adjoining lands.

Additional on-line resources were also incorporated into the desk study, including:

- Boora bog group Integrated Pollution Control Licence;
- Boora bog group Annual Environmental Reports;
- Review of the National Biodiversity Data Centre (NBDC) webmapper;
- Inland Fisheries Ireland (IFI) Reports;
- Environmental Protection Agency database (www.epa.ie);
- EPA Guidance on Requests for Alterations to a Licensed Industrial or Waste Activity;

- BirdWatch Ireland online data (including I-WeBS and CBS datasets; www.birdwatchireland.ie);
- Geological Survey of Ireland - National Draft Bedrock Aquifer map;
- Geological Survey of Ireland - Groundwater Database (www.gsi.ie);
- Historic Environment Viewer at <https://webgis.archaeology.ie/historicenvironment/>
- National Parks & Wildlife Services Public Map Viewer (www.npws.ie);
- Water Framework Directive catchments.ie/maps/ Map Viewer (www.catchments.ie);
- OPW Indicative Flood Maps (www.floodmaps.ie);
- CFRAM Preliminary Flood Risk Assessment (PFRA) maps (www.cfram.ie);
- River Basin Management Plan for Ireland 2022-2027
- BnM Annual Report 2025.
- Spatial data in respect of Article 17 reporting, available online at <https://www.npws.ie/maps-and-data/habitat-and-species-data/article-17>.

2.2 Consultation

A number of stakeholders have been identified during the course of BnM's rehabilitation and Biodiversity Action Plan activities and will be contacted during the rehabilitation planning process for their views. See Section 4.

2.3 Field Surveys

BnM carried out a baseline ecological survey of all of its properties in 2009-2012 and developed habitat maps. As part of this exercise, Galros Bog was surveyed in 2011. Habitat maps were updated in 2017. Additional ecological walkover surveys and visits have taken place in 2024, in advance of the preparation of this draft rehabilitation plan. Habitat maps have been updated. This draft rehabilitation plan is informed by the original baseline survey as well as subsequent confirmatory site walk-over surveys and visits, and updates to baseline data.

In addition to BnM habitat surveys and ecological walkovers, supplementary ornithological records for Galros Bog and adjoining lands have been reviewed. These records have been used to identify bird species of conservation interest that may be relevant to rehabilitation design, timing of works, environmental restriction zones, monitoring and ecological method statements.

Habitat mapping followed best practice guidance from Smith *et al.* (2011). Map outputs including all habitat maps and target notes were produced using GIS software application packages (ArcGIS). General marginal habitats and other habitats that had not been modified significantly by industrial peat extraction were classified using Fossitt *et al.* (2000). Plant nomenclature for vascular plants follows Stace (2019), while moss and liverwort nomenclature follow identification keys published by the British Bryological Society (2010). A more detailed BnM classification system was previously developed for classifying pioneer cutaway habitats as Fossitt categories were deemed not to be detailed enough for cutaway bog (much of cutaway bog could be classified as Cutover Bog - PB4).

A detailed ecological survey report for Galros Bog is contained in Appendix II.

3 SITE DESCRIPTION

Galros is a relatively small bog in the Boora group, located 5 km north of Birr in Co. Offaly. The site is bordered on its western side by the N62 road between Cloghan and Birr. Galros is situated in a small topographical basin surrounded by esker ridges along the northern and western and south-western sides. Conifer plantation has been developed on cutover bog adjacent to the south side of the site.

The surrounding landscape is dominated by a mosaic of farmland, largely consisting of improved grassland, small pockets of mixed woodland and other bogs, many owned and managed by BnM.

The West Galros stream (EPA Code: 25W44) flows in a northerly direction along the southern section of cutover bog before flowing in a westerly direction from the southern section of the western half of the bog joining to the Rapemills River (EPA Code: 25R01) (also known as the Boolinarig River). The Eglisk 25 (EPA Code: 25E18) rises along the eastern boundary of the southern section of cutover bog and flows away from the site in a south and south-westerly direction before it also merges with the Rapemills River (EPA Code: 25R01). The Rapemills River joins the River Shannon further west at Banagher. The West Galros is heavily modified for the purpose of bog drainage. The former industrial peat production bog is heavily drained with all drains flowing towards the Rapemills River or its tributary.

The majority of Galros is bare peat. An area in the southwest has developed pioneer open habitats and scrub, dominated by Purple Moor Grass, Gorse, wet grassland species and Birch. Exposed marl (sub-soil below the peat) is commonly occurring through this habitat. Areas of pioneer rich fen are developing along the southwest margin and in drains in damper areas. The pioneer rich fen is dominated by Black Bog Rush, Yellow Sedge, Common Cotton Grass and Yellow Starry Feather-moss (*Campylium stellatum*). In deeper depressions wetland is developed, dominated by Bottle Sedge, Common Cotton Grass, Bulrush and open water. At the north of the site areas of pioneer open vegetation are dominated by Marsh Arrow-grass, Common Cotton Grass, Yellow Sedge and Bottle Sedge. There are also several small ridges of glacial till that passed under the intact bog and have been exposed from former industrial peat extraction along the margin eastern margin.

See Drawing number BNM-ECO-24-35-01: *Site Location Map*, included in the accompanying Mapbook¹, which illustrates the location of Galros Bog in context to the surrounding area.

3.1 Status and Situation

3.1.1 Site history

The majority of Galros bog was in milled industrial peat production since the 1950s. Industrial peat extraction ceased in 2021.

There are several sections of marginal bog along the eastern boundary that were drained but were never put into peat production and were left as a buffer.

¹ Cutaway Bog Decommissioning and Rehabilitation Plan – Galros Bog Map Book

3.1.2 *Current land-use*

Galros Bog is a former industrial peat production site. Existing drains, silt ponds, access routes and outfalls remain present and are relevant to the design and implementation of rehabilitation measures. Galros bog is currently not being used for any particular land-use.

3.1.3 *Potential Future land-use*

BnM is aware of a separate third party proposal for renewable-energy infrastructure within part of Galros Bog and adjoining lands. The proposal is being advanced by Cush Wind Limited and is not a BnM development. This proposal includes 3 no. turbine extension to the consented Cush Wind Farm Phase I, together with associated access, hardstanding, internal cabling, drainage, temporary construction requirements and an underground electricity line to a proposed substation being advanced separately by another developer.

3.1.4 *Socio-Economic conditions*

BnM has historically been a vital employer for the rural community of the Midlands of Ireland. BnM compiled a report on the role of peat extraction in the midlands historically in which they report that in 1986, by the end of BnM's Third Development Programme, a total of twenty-three work locations had been established around the country. The company had an average employment of approximately 4,688 in the mid 1980's, with a peak employment of 6,100 during the production season, which placed it among the country's largest commercial employers. The importance of such levels of employment were largely due to its regional concentration in the Midlands and the lack of alternative employment opportunities at the time.

According to the Energy Crop Socio-Economic Study undertaken by Fitzpatrick Associates in 2011, there were an estimated 1,443 jobs supported by the peat-to-power industry in Ireland at the time, some 81% of which were located in the catchment areas of the three peat-fired generating stations (Lough Ree, West Offaly, and Edenderry Power Stations). These constituted jobs in the plants and in peat extraction, jobs indirectly supported in upstream supply industries and jobs induced through the trickle-down effects of the wages and salaries of those supported directly or indirectly.

In respect of Galros Bog, jobs included in the above study would have included those to facilitate peat extraction for the supply of peat for West Offaly Power and Derrinlough Briquette Factory, both of which have ceased operations. All BnM supply of peat ceased in December 2023.

As the primary employer in many Midland counties, BnM played a central role in building communities through several initiatives, including education bursaries, support of local sporting clubs, the provision of community gain funds, charity programmes and the provision and building of amenity areas. These job numbers have now declined with the cessation of peat extraction at this bog.

3.2 Geology and Peat Depths

3.2.1 Sub-soil geology

GSI² data indicates that Galros Bog is underlain entirely by Carboniferous limestones: Waulsortian Limestones and Visean Limestones.

The western section of Galros bog is underlain by Waulsortian Limestones, a Tournaisian limestone (Massive unbedded lime-mudstone). The eastern section is underlain by Visean Limestones (undifferentiated) & calcareous shale. The GSI do not map the presence of any bedrock outcrop within the rehabilitation area.

Based on the GSI aggregate potential the local bedrock underlying Galros has Low to Medium Importance.

Quaternary Sediment maps show Galros is underlain entirely by Cut over raised peat. Galros bog is surrounded by Eskers comprised of gravels of basic reaction immediately to the east, with Gravels derived from Limestones to the north and further to the east, as well as Till derived from limestones, which occur to the southwest and northwest of the bog.

3.2.2 Peat type and depths

Much of Galros Bog is now cutaway and the majority of the original raised bog now been removed. The western side of Galros bog has relatively shallow residual peat (<1m). This residual peat is fen peat found in the lower layers of raised bogs. Sections of deeper residual peat remain in the eastern area, with peat thickness of up to 4.5m recorded. This peat type is lighter and more acidic.

3.3 Key Biodiversity Features of Interest

3.3.1 Current habitats

The most common vegetation communities/ habitats³ include:

- Bare peat (0-50% cover) (BP),
- Pioneer open habitats with *Eriophorum angustifolium* community (pEang), pioneer *Juncus effusus* community (pJeff) and pioneer *Juncus bulbosus* community (pJbulb),
- Pioneer open habitats with *Eriophorum angustifolium* community (pEang), pioneer *Carex rostrata* community (pRos),
- Pioneer *Eriophorum angustifolium* community (pEang) in a mosaic with open *Betula*-dominated community (oBir) and *Ulex*-dominated community (eGor),
- Pioneer rich fen community with *Schoenus nigricans* (Pschon) (rudimentary rich fen), *Carex demissa* (pVir), pioneer *Eriophorum angustifolium* (pEang) and *Campyllum stellatum*,
- Pioneer *Molinia caerulea* dominated grassland community (gMol) (present also in mosaic with oBir and eGor scrub),
- Wetlands with pioneer *Eriophorum angustifolium* community (pEang), *Carex rostrata* community (pRos), *Schoenoplectus* community (pSch), *Typha* community (pTyp) and open water (OW),
- *Ulex* (eGor) and Dry *Calluna* dominated scrub community,

² <https://www.gsi.ie/en-ie/data-and-maps/Pages/Bedrock.aspx>

³ Codes refer BnM classification of pioneer habitats of production bog, or Heritage Council habitat classification, Fossitt 2000, where relevant.

- Birch scrub (oBir),
- Access routes (Acc).

The most common habitats found around the margins of the bog include:

- Improved grassland (GA1),
- Raised bog (PB1),
- Scrub (WS1),
- Bog woodland (WN7),
- Conifer plantation (WD4),
- Built land (N63) (BL3).

See Appendix II for more detail on site, habitats and local features.

See Drawing number BNM-ECO-24-35-17: *Habitat Map (2024)*, included in the accompanying Mapbook, which illustrates the habitats at Galros Bog.

Table 3-1: Photos of Habitats at Galros

Photos of Habitats at Galros (2024)	
	
<i>Bare peat (BP) the most commonly occurring habitat at Galros.</i>	<i>Pioneer Eriophorum angustifolium (pEang) or Carex rostrata community (pRos) in NW of Galros.</i>

Photos of Habitats at Galros (2024)



Aerial of pioneer *Eriophorum angustifolium* (pEang) and *Carex rostrata* community (pRos) in NW of Galros.



Aerial of pioneer *Eriophorum angustifolium* (pEang) and *Carex rostrata* community (pRos) and Pioneer open habitats and scrub in W of Galros.



Rich fen *Schoenus nigricans* (Pschon) (rudimentary rich fen), *Eriophorum angustifolium* (pEang) and *Carex demissa* (pVir) in SW of Galros.



Pioneer open habitats with *Eriophorum angustifolium* community (acidic) (pEang), pioneer *Juncus effusus* community (pJeff) and pioneer *Juncus bulbosus* community (pJbulb).



Wetlands with pioneer *Eriophorum angustifolium* (pEang), *Carex rostrata* community (pRos) and open water (OW) in S Galros.



Molina dominated grassland in S Galros.

Photos of Habitats at Galros (2024)



Area of pioneer *Dactylis-Arrhenatherum* grassland community (gDact-Arr) in N Galros.



Remnant high bog with heather dominated vegetation. Area drained but never industrially cut, in S Galros.



Sphagnum paoillosum hummock in remnant high bog with heather dominated vegetation in E Galros.



Sphagnum subnitens hummock in remnant high bog with heather dominated vegetation in E Galros.

3.3.2 Species of Conservation Interest

A number of species of conservation concern utilise the habitats available at Galros Bog. The following is a summary of the records of these species available within both BnM records and those of the National Biodiversity Data Centre, along with records from a previously compiled Cush Wind Farm Bird Survey Report Non-Breeding Season 2023/24 and Cush Wind Farm Bird Survey Report Breeding Season 2024.

- Multiple mammal species have been recorded on or in close proximity to the bog including Badger (*Meles meles*), Red Fox (*Vulpes vulpes*), Irish Hare (*Lepus timidus subsp. hibernicus*) and Fallow Deer (*Dama dama*).
- Marsh Fritillary (*Euphydryas aurinia*) habitat is recorded on Galros within grassland areas with calcareous influence where abundant Devils Bit Scabious (*Succisa pratensis*) (the food plant for Marsh Fritillary caterpillars) is recorded. Marsh Fritillary is recorded in several areas nearby, including Clongawny bog to the north and All Saints bog to the west. Marsh Fritillary has **not** been recorded at Galros Bog so far.

Supplementary Ornithological Records

A number of species of conservation interest utilise habitats within Galros Bog and adjoining lands. The following summary has been prepared from BnM ecological records, National Biodiversity Data Centre records, BirdWatch Ireland data, desktop review and supplementary third-party ornithological records, collated by Cush Wind Limited to support their forthcoming proposed 3 no. turbine planning application, and collected during the 2023/2024 non-breeding season and 2024 breeding season.

The supplementary ornithological records have been used to improve the ecological baseline for Galros Bog and to assist in identifying ecological constraints relevant to rehabilitation design and implementation, including timing of works, access management, drain-blocking locations, water-level management, environmental restriction zones and monitoring.

The supplementary ornithological records identified a range of bird species of conservation interest within Galros Bog and adjoining lands, including raptors, waders, wildfowl and passerines.

From the Breeding Season 2024 bird survey report, two species of raptor were recorded: Buzzard (*Buteo buteo*) and Kestrel (*Falco tinnunculus*). Evidence of possible breeding in the wider area for both Buzzard and Kestrel was observed. Aggressive behaviour of Black-headed Gulls (*Larus ridibundus*) was recorded during raptor surveys, suggesting possible breeding. Black-headed Gulls breed in a wetland at Clongawny Bog to the north of Galros Bog. Observations of Snipe (*Gallinago gallinago*) were made in suitable breeding habitat, providing evidence of possible breeding within the wider Galros bog area. Three Northern lapwings (*Vanellus vanellus*) were observed in suitable breeding habitat within the bog. Evidence of confirmed breeding Eurasian Woodcock (*Scolopax rusticola*) territories were observed. Evidence of breeding Mallard (*Anas platyrhynchos*) ducks was also observed.

Linnet (*Linaria cannabina*) also displayed evidence of probable breeding within the bog area.

A Non-Breeding Season 2023/2024 survey report returned flight lines for the following primary target species during flight activity surveys: Kestrel, Greylag goose (*Anser anser*), Hen Harrier (*Circus cyaneus*), Northern Lapwing and Peregrine Falcon (*Falco peregrinus*). The most frequent flight activity was by Kestrel, followed by Northern Lapwing and Hen Harrier.

Both Whooper Swan (*Cygnus cygnus*) and Mute Swan (*Cygnus olor*) were recorded during feeding distribution surveys. Incidental sighting of Black-tailed Godwit (*Limosa limosa*), Great Cormorant (*Phalacrocorax carbo*), Little Egret (*Egretta garzetta*), Mallard, Northern Lapwing and Wigeon (*Mareca penelope*) were also recorded during feeding distribution surveys.

Three Red Listed (BoCCI) species were recorded within the Galros bog rehabilitation footprint during dedicated bird surveys. These species include Kestrel, Snipe and Lapwing. Two Amber List species (BoCCI) were recorded within the Galros bog rehabilitation, including Black-Headed gull and Hen harrier.

Two other Red Listed (BoCCI) species were recorded outside the Galros bog rehabilitation footprint, but within the Cush Wind Farm Phase 2 Bird survey boundary. These include Woodcock and Black-tailed Godwit. Similarly, Amber Listed (BoCCI) species recorded outside of Galros bog rehabilitation footprint included Mallard, Cormorant, Willow Warbler (*Phylloscopus trochilus*), Linnet, Greylag Goose, Wigeon, Whooper Swan and Mute Swan.

A number of additional Green listed target species recorded included Grey Heron (*Ardea cinerea*), Peregrine Falcon, Buzzard (within the Galros bog rehabilitation footprint) and Little Egret (outside the Galros bog rehabilitation footprint). A Great White Egret (*Ardea alba*) (Green listed in BoCCI) was also recorded flying outside the Galros bog rehabilitation footprint.

Five of these species are also listed on Annex I of the EU Birds Directive, namely, Peregrine Falcon, Hen Harrier, Whooper Swan, Great White Egret and Little Egret.

BnM Ecology Survey Records

During the most recent ecological survey in December 2024 the following bird species of conservation interest were recorded at Galros; red listed species Snipe, amber listed Mallard and Whooper Swan (8 individuals) (Annex I species), green listed Jack Snipe (*Lyminocryptes minimus*) and Buzzard.

3.3.3 Invasive species

There are no BnM records for high impact invasive species recorded from the bog.

A broad range of common garden escapes are occasionally present around the margins of BnM bogs, and although spatial overlap with rehabilitation is expected to be limited, these are, where necessary, to be treated in line with best practice during rehabilitation activities.

3.4 Statutory Nature Conservation Designations

There are no European Sites i.e. Special Areas of Conservation (SAC) or Special Protection Areas (SPA), located within or adjacent to Galros Bog. The nearest EU Designated sites to Galros Bog are as follows:

- Dovegrove Callows SPA (Site code: 004137) - approx. 3.7km to the southwest
- Ridge Road, SW of Rapemills SAC (Site code: 000919) - approx. 4.2km to the west
- All Saints Bog and Esker SAC (Site code: 000566) – approx. 5.1km to the west
- All Saints Bog SPA (Site code: 004103) - approx. 5.4km to the west
- River Little Brosna Callows SPA (Site code: 004086) – approx. 6km to the west
- River Shannon Callows SAC (Site code: 000216) – approx. 7.7km to the northwest (at the closest point)
- River Shannon Callows SPA (Site code: 004096) – approx. 7.7km to the northwest (at the closest point)
- Island Fen SAC (Site code: 002236) – approx. 9.2km to the southeast
- Lisduff Fen SAC (Site code: 002147) - approx. 9.2km to the south
- Ballyduff/Clonfinane Bog SAC (Site code: 000641) - approx. 9.3km to the southwest
- Sharavogue Bog SAC (Site code: 000585) - approx. 10.6km to the south
- Moyclare Bog SAC (Site code: 000581) – approx. 11.3km to the north
- Redwood Bog SAC (Site code: 002353) - approx. 11.6km to the west
- Slieve Bloom Mountains SPA (Site code: 004160) – approx. 12.8km to the southeast (at the closest point)
- Arragh More (Derrybreen) Bog SAC (Site code: 002207) - approx. 13.1km to the southwest
- Ferbane Bog SAC (Site code: 000575) – approx. 13.6km to the north
- Kilcarren-Firville Bog SAC (Site code: 000647) - approx. 13.8km to the southwest
- Slieve Bloom Mountains SAC (Site code: 000412) – approx. 14.4km to the southeast (at the closest point)
- Clonaslee Eskers and Derry Bog SAC (Site code: 000859) – approx. 14.8km to the east

A number of NHAs (Natural Heritage Areas) and pNHA's (Proposed Natural Heritage Areas) also occur within 5km of Galros Bog including:

- Lough Coura pNHA (Site code: 000909) - lies directly adjacent to the northwestern boundary

- Woodville Woods pNHA (Site code: 000927) – approx. 2km south
- Ross And Glenns Eskers pNHA (Site code: 000920) – approx. 3km south-west
- Dovegrove Callows pNHA (Site code: 000010) – approx. 3.9km south-west, also designated as a SPA
- Ridge Road, SW Of Rapemills pNHA (Site code: 000919) – approx. 4.2km west, also designated as a SAC

The following designated sites which overlap with EU designated sites, also occur in the wider area around Galros bog:

- All Saints Bog and Esker pNHA (Site code: 000566) – approx. 5.1km west, also designated as a SAC and SPA
- River Little Brosna Callows NHA (Site code: 000564) – approx. 6km to the south-west, also designated as a SPA
- River Shannon Callows pNHA (Site code: 000216) - approx. 7.7km to the northwest (at the closest point), also designated as a SAC and SPA
- Ballyduff/Clonfinane Bog pNHA (Site code: 000641) - approx. 9.3km to the southwest, also designated as a SAC
- Sharavogue Bog pNHA (Site code: 000585) - approx. 10.6km to the south, also designated as a SAC
- Moyclare Bog pNHA (Site code: 000581) – approx. 11.3km to the north, also designated as a SAC
- Redwood Bog pNHA (Site code: 000654) - approx. 11.6km to the west, also designated as a SAC
- Arragh More Bog NHA (Site code: 000640) - approx. 12.6km to the southwest, also designated as part of a SAC
- Ferbane Bog pNHA (Site code: 000575) – approx. 13.6km to the north, also designated as a SAC
- Kilcarren-Firville Bog pNHA (Site code: 000647) - approx. 13.8km to the southwest, also designated as a SAC
- Camcor Wood pNHA (Site code: 000889) – approx. 14.4km to the southeast, also designated as part of a SAC and SPA
- Clonaslee Eskers and Derry Bog pNHA (Site code: 000859) – approx. 14.8km to the east, also designated as a SAC
- Slieve Bloom Mountains pNHA (Site code: 000412) – approx. 14.9km to the southeast (at the closest point), also designated as part of a SAC and SPA

3.4.1 Other Nature Conservation Designations

The Ramsar Convention entered into force in Ireland on 15th March 1985. Ireland currently has 45 sites/wetlands designated as Wetlands of International Importance (Ramsar Sites). These cover a surface area of 66,994ha.

There are no Ramsar sites within close proximity to Galros Bog. The nearest, Slieve Bloom Mountains (Site number: 335), is approx. 15.3km away and lies within the Slieve Bloom Mountains SPA, SAC and pNHA mentioned above.

See drawing BNM-ECO-24-35-23: *Proximity to Designated Sites* in the accompanying map book.

3.5 Hydrology and Hydrogeology

On a regional scale, Galros Bog is located within Hydrometric Area 25 (Lower Shannon Catchment 25B) in accordance with the Water Framework Directive. On a local scale Galros Bog is located in the Rapemills River surface water WFD sub-catchment (Shannon[lower]_SC_040) – Subcatchment ID 25B_1.

The West Galros stream (EPA Code: 25W44), a tributary of the Rapemills River flows in a northerly direction along the southern section of cutover bog. The stream then flows in a westerly direction, south of the industrial railway link, from the southern boundary of the western half of the bog. The Eglish 25 (EPA Code: 25E18) rises along the eastern boundary of the southern section of cutover bog and flows away from the site in a south and south-westerly direction. The West Galros stream and the Eglish 25 stream merge with the Rapemills River (EPA Code: 25R01). The Rapemills River joins the River Shannon further west at Banagher. The West Galros is heavily modified for the purpose of bog drainage. Galros bog, a former industrial peat production bog is heavily drained with all drains flowing towards the Rapemills River or its tributary.

Where any future authorised third party infrastructure interfaces with the rehabilitation drainage design, detailed drainage proposals will be required to demonstrate that they will not compromise drain blocking, water level management, silt control, outfall performance, monitoring access, neighbouring land protection or the trajectory towards environmental stabilisation.

3.6 Emissions to surface-water and watercourses

Drainage is an important feature of industrial peat production and there were extensive field drains maintained throughout bog areas to facilitate industrial peat production annually, each of which eventually drains into a terminal silt pond that allows for settlement of suspended solids before entering the main river systems. In accordance with the existing Integrated Pollution Control licence, all drainage water from boglands in a licensed area is discharged via an appropriately designed silt pond treatment arrangement as required in Condition 6.6. of the licence. Industrial peat production has now permanently ceased at Galros Bog.

Silt ponds are the key silt control infrastructure to control potential emissions from industrial peat production sites. As required under licence, BnM have a number of procedures for how it manages and maintains its silt pond network. The silt that builds up in silt ponds is excavated on a bi-annual basis by BnM to facilitate an efficient level of silt control. Silt ponds will continue to be maintained during the rehabilitation and decommissioning. Silt pond decommissioning will be considered when sites are deemed to be on a trajectory of environmental stability and peatland rehabilitation has been completed.

Galros Bog has one surface water outlet to the to the Lower Shannon (SC_040) catchment. Galros bog is heavily drained, and all drains flow towards the one surface water outlet. The silt ponds discharge to Rapemills River surface water catchment. The Rapemills River (Rapemills_010) flows in a westerly direction and discharges to the River Shannon south of Banagher. The Rapemills River waterbody (IE_SH_25R010300) is classified as At Risk in the third cycle of the River Basin Management Plan for Ireland and at Moderate Ecological Status. Agriculture pressures are mapped as a significant pressure affecting the waterbody.

This river was previously listed as ‘not at risk’ but was under pressure from peat extraction in the 2nd cycle of the River Basin Management Plan for Ireland.

Details of silt ponds, associated surface water emission points and monitoring and sampling locations are detailed in Drawing numbers BNM-ECO-24-35-02 titled: *Structures and Sampling*, along with Drawing number BNM-ECO-24-35-WQ01 titled: *Water Quality Map* and BNM-ECO-24-35-12 titled: *General Drainage Map* included in the

accompanying Mapbook, which illustrate the various drainage and water quality infrastructure present at Galros Bog.

There is a robust monitoring program to track and verify any changes in baseline water quality conditions pre and post decommissioning and rehabilitation so that the success or otherwise can be tracked and verified for the Environmental Protection Agency.

Rehabilitation of cutaway peatland is closely linked with control of emissions. One of the criteria for successful rehabilitation is stabilisation through re-vegetation, which will stabilise all substrates and in turn remove the need for further silt control measures. Re-wetted peat also aids the primary objective of stabilizing peat, as when peat is re-wetted it is not vulnerable to wind erosion. Re-wetted peat and the development of wet peatland habitats can also act as sinks for silt and mobile peat, and increases additional retention time for solids, and the peatland vegetation can quickly stabilise this material within blocked drains on site (by acting like constructed wetlands).

Water quality of water discharges from restored peatlands normally improves as a result of bog restoration measures and the restoration of natural peatland processes (Bonn *et al.*, 2017). Bog rehabilitation is also expected to improve water attenuation of the site as the drains are blocked, slowing water movement and water release from the site. Restored peatlands help slow the release of water and aid the natural regulation of floods downstream (Minayeva *et al.*, 2017). The River Basin Management Plan (NRBMP) for Ireland 2022-2027 (Department of Housing, Local Government and Heritage, 2022) is the key national plan for Ireland to achieve the objectives of the Water Framework Directive (WFD). The NRBMP outlines how key actions such as the BnM peatland rehabilitation is expected to have a positive impact on water quality and help the NRBMP deliver its objectives in relation to the WFD.

Water will still discharge from designated emission points when rehabilitation at Galros has been completed. This discharge will have improved water quality and there will be increased wetland attenuation, meaning slower release of water. This is expected to have a positive impact on status of the key watercourse receptors and the Shannon [Lower]_SC_040 sub catchment and will support the future status of the watercourses achieving Good Status.

Decommissioning and Rehabilitation Programme Water Quality Monitoring

Water quality monitoring will be established. There will be initial quarterly monitoring assessments of the site to determine the general status of the site, the condition of the silt-ponds, assess the condition of the rehabilitation work, assess the progress of natural colonisation, monitoring of any potential impacts on neighbouring land and general land security. The number of site visits will reduce after 2 years to bi-annually. These site visits will assess the need to additional rehabilitation.

Monitoring results will be maintained, trended and reported on each year as part of the requirement to report on Condition 10.1 of the IPC Licence on Bog Rehabilitation in the Annual Environmental Report, which will be available in April each year at www.epa.ie.

The parameters to be included (as per condition 6.2 of the IPC Licence) include monthly monitoring for pH, Suspended Solids, Total Solids, Total Phosphorus, Total Ammonia, Colour, and COD.

This sampling regime on a selected number of silt ponds will be carried out over a two-year cycle. The original (licence) requirement was for a quarterly sampling regime.

3.7 Fugitive Emissions to air

None - the bog is no longer in industrial peat production.

Rehabilitation of the drained peatland will seek to re-wet the dry peat where possible. Collectively re-wetting and re-vegetating will minimise any risk of emission to air from dust.

3.8 Carbon emissions

Irish peatlands are a huge carbon store, containing more than 75% of the national soil organic carbon (Renou-Wilson *et al.* 2012). Peatland drainage and extraction transforms a natural peatland which acts as a modest carbon sink (taking in 0.1 to 1.1 t of carbon as CO₂-C /ha/yr) into a cutaway ecosystem which is a large source of carbon dioxide (releasing 1.3 to 2.2 t of carbon as CO₂-C /ha/yr) based on Tier 1 Emission factors (Evans *et al.* 2017). Renou-Wilson *et al.* (2018) reported losses of between 0.81 – 1.51 CO₂-C /ha/yr from drained peatlands located in Ireland.

Re-wetting of dry peatlands will increase methane emissions (Gunther *et al.* 2020) as a consequence of the anoxic conditions within the peat body that provide a suitable environment for the microbial breakdown of plant litter and root exudates. Tanneberger *et al.* (2021) describes how peatland management has to choose between CO₂ emissions from drained peatlands or increased methane (CH₄) emissions from rewetted industrial peatlands. However, when radiative effects and atmospheric lifetimes of both GHG gases are considered and modelled, postponing rewetting increases the long-term warming effect of continued CO₂ emissions (Gunther *et al.* 2020). This means the increase in methane due to rewetting of dry peatlands is still negated by the CO₂ emissions reductions. Further, Wilson *et al.* (2022) confirmed the benefit of rapid rewetting to achieve strong carbon reductions and potentially altering the warming dynamics from warming to cooling depending upon the climate scenario.

It is expected that Galros Bog will become a reduced carbon source following rehabilitation. The potential of any cutaway site to develop as a carbon sink in the longer-term depends on the success of the rehabilitation measures, the extent of development of *Sphagnum*-rich or other peat-forming habitats, the balance of carbon fluxes from different cutaway habitats and future climatic conditions. Some parts of this bog are expected to develop as regenerating wet *Sphagnum*-rich vegetation on deep peat areas. The majority of the eastern area of the bog comprises deep peat and is expected to develop a mosaic of regenerating wet *Sphagnum*-rich vegetation along with patches of Heather and scrub on deeper peat. While the western area of Galros comprises shallower residual peat with greater alkaline influence, which it is expected will develop wetland habitats on shallow peat with open water, reed swamp and fen habitats with alkaline (nutrient-rich) peatland emission factors. Birch woodland and Heather are expected to further develop on the drier areas and along peripheral headlands.

3.9 Current ecological rating

(Following NRA (2009) Evaluation Criteria)

The majority of Galros Bog can be rated as **Local Importance (lower value) to Local Importance (higher value)**. Bare peat in the former production area of Galros Bog is assessed as **local importance (lower value)**.

The pioneer fen and developing wetlands, as well as marginal habitats including, woodland, scrub and raised bog remnants may act as a refuge and as ecological corridors for wildlife and are therefore deemed to be **locally important (higher value)**.

4 CONSULTATION

4.1 Consultation to date

Consultation seeks to engage an audience of relevant stakeholders at both a national and local level. National stakeholders have been identified from varied bog restoration and rehabilitation efforts undertaken by BnM over the past 40 years, with particular emphasis on engagement with stakeholders during their Biodiversity Action Plan programme, since 2010. National Stakeholders includes relevant government departments and agencies, relevant semi-state bodies, NGOs and other environmentally focused groups with a national remit.

There has been ongoing consultation about rehabilitation, biodiversity and other general issues over the years about the Boora bog group, including Galros Bog, with various stakeholders in relation to:

- General consultation with range of stakeholders at annual Bord na Móna Biodiversity Action Plan review days 2010-2018.
- Archaeological Liaison Committee (National Museum of Ireland & Dept of Culture Heritage and the Gaeltacht).
- Midlands & East Regional WFD Operational Committee (River Basin Management Plans).

To inform the current Plan, both national and local stakeholders, including neighbours whose land adjoins Galros Bog and local representatives of national bodies (such as Regional National Parks and Wildlife Service staff) and relevant offices in County Councils (such as the Heritage or Environmental Offices) will be contacted. Any identified local interest groups will be sought and informed of the opportunity to engage with this rehabilitation plan, and when identified, they were invited to submit their comments or observations in relation to the proposed rehabilitation at Galros Bog, when the rehabilitation plan is due to be finalised.

4.2 Issues raised by Consultees

Consultation has not yet concluded. Issues raised during consultation and BnM's response will be recorded in this section before the plan is finalised and submitted to the EPA for agreement.

5 REHABILITATION GOALS AND OUTCOMES

The rehabilitation goals and outcomes outline what BnM want to achieve by implementing the rehabilitation. These include:

- Meeting conditions of IPC Licence.
- Environmental stabilisation of the former peat production areas and mitigation of potential silt run-off.
- Stabilisation or reduction in water quality parameters of water discharging from Galros (e.g. suspended solids).
- Reducing pressure on receiving waterbodies that have been classified as At Risk from peatlands and from peat extraction, via stabilization or improving water-quality from this bog, and therefore, reducing pressures.
- Optimising hydrological conditions for environmental stabilisation, water-quality protection, biodiversity benefit and climate-action co-benefits, where practicable and consistent with the IPC licence.
- Carrying out rehabilitation measures such as drain-blocking to encourage ***compatible wet cutaway bog habitats to develop, where possible, across the site***, and eventually developing a mosaic of peatland habitats that merges with the wider landscape.
- Ensuring that rehabilitation measures are designed having regard to known site constraints and potential future land-use interfaces, without compromising the primary objective of environmental stabilisation under IPC Licence P0500-01.
- Optimising hydrological conditions for the protection of exposed archaeological structures, their retention in situ and preservation into the future.
- The main goal and outcome of this plan is the successful rehabilitation (environmental stabilisation) of peatlands used for industrial peat production at the bog in a manner that is acceptable to both external stakeholders and to BnM and which optimise climate action and other ecosystem service benefits.

The rehabilitation goals and outcomes take account of the following issues:

- It will take some time for stable naturally functioning habitats to fully develop at Galros Bog. This will happen over a longer timeframe than the implementation of this rehabilitation plan.
- Re-wetting residual peat will initially maintain and enhance the carbon storage capacity of the bog. There is scientific consensus that restoration of hydrology in damaged bog can improve carbon storage, water storage and attenuation and help support biodiversity both within Galros Bog and in the catchment (See Section 3.8). This will reduce carbon emissions from a larger carbon source to a smaller carbon source. In time, Galros has the capacity to develop in part as a carbon sink.
- It is not expected that Galros Bog has the potential to develop active raised bog (ARB) analogous to the priority EU Habitats Directive Annex I habitat within the foreseeable future (c.50 years). Furthermore, only a proportion of the bog has potential to develop *Sphagnum*-rich habitats in this timeframe. Nevertheless, re-wetting across the entire bog, as part of the scheme, will improve conditions of the whole bog. Other peatland habitats will develop in a wider mosaic that reflects underlying conditions.
- Rehabilitating former industrial peat production bog will also in the longer-term support other ecosystem services such as the development of new habitat to support biodiversity and local attenuation of water flows from the bog.
- WFD status in receiving water bodies can be affected by peatlands and peat extraction but is also affected by other sources such as agriculture. In addition, receiving water bodies that are assessed as 'At Risk'

from peatlands and from peat extraction are likely to have several contributory sources of impacts (private peat extraction and BnM). Reducing pressures due to former peat extraction activities at Galros Bog will contribute to stabilising or improving water quality status of receiving water bodies in general. Ultimately, improving the WFD status of the receiving water body will depend on reducing pressure from a range of different sources, including peatlands in general (private and BnM).

- BnM are also planning rehabilitation measures in the adjacent western area of Drinagh Bog and Clongawny Bog in 2024, with some rehabilitation works having been previously carried out in other parts of Drinagh in 2023. There are expected to be cumulative water quality and other ecosystem service benefits to receiving water bodies from rehabilitating more than one bog in the same catchment.
- Re-wetting in general will benefit the future preservation of most known and unknown archaeological features.

6 SCOPE OF REHABILITATION

The principal scope of this rehabilitation plan is to rehabilitate the bog. This is defined by:

- The area of Galros Bog.
- EPA IPC Licence - Ref. P0500-01. As part of Condition 10.2 of this licence, a rehabilitation plan must be prepared for permanent rehabilitation of the boglands within the licensed area. Galros bog is part of the Boora bog group.
- The local environmental conditions of Galros Bog mean that dry cutaway measures, wetland creation along with some deep peat measures are the most suitable rehabilitation approach for this site. Galros Bog has relatively shallow peat remaining in the west, with an area of residual deep peat to the east.
- BnM have defined the key goal and outcome of rehabilitation at Galros Bog as **environmental stabilisation** of the site via **optimising climate action benefits, where possible**, and integrating rehabilitation with the existing land-uses.
- Rehabilitation of Galros Bog will support multiple national strategies of climate action, biodiversity action and other key environmental strategies such as the Water Framework Directive.
- The time frame for the delivery of the planned rehabilitation will be undertaken according to available resources and appropriate constraints.
- It is not proposed to carry out rehabilitation on all marginal or peripheral cutover bog zones. Generally, these bog remnants are narrow, or are subject to turbary, and do not have positive bog restoration prospects.
- Known potential future land-use constraints have been considered only to the extent necessary to ensure that the rehabilitation design remains coherent, implementable and capable of validation under the IPC licence.

6.1 Key constraints

- **Bog conditions.** Rehabilitation outcomes of sites are constrained by the environmental characteristics of these particular areas. For example, there is potential for raised bog restoration at some sites where there has not been significant industrial peat extraction and the peat body is largely intact (deep peat sites that are drained). At other sites, most of the peat mass has been removed, the environmental characteristics of these areas have therefore changed radically (peat depths, hydrology, water chemistry, substrate type, nutrient status, etc.) and there will therefore be different habitat outcomes (wetlands, fen, heathland, grassland and Birch woodland).
- **Future land-use.** BnM is aware of a separate renewable-energy proposal that will interface with part of Galros Bog. This proposal is subject to separate planning and environmental assessment processes and is not authorised by this Rehabilitation Plan. For the purposes of this plan, the potential infrastructure has been mapped as a constraint only, so that rehabilitation measures can be designed in a coherent manner and so that future authorised works, if any, do not compromise drain blocking, water level management, silt control, monitoring, ecological safeguards, archaeological safeguards or environmental stabilisation.
- **Features of Biodiversity Value.** A number of areas within Galros have potential to be of value to Marsh Fritillary. Given the presence of known population in bogs in close proximity to Galros, dedicated Marsh Fritillary surveys are recommended prior to rehabilitation. Some sensitive ecological receptors if present may require protection through the provision of Environmental Restriction Zones (or ERZ's).

- **Surrounding landscape and neighbours.** Another key constraint is the interaction between the BnM sites and the surrounding landscape. Care must be taken that no active rehabilitation management is carried out that could negatively and knowingly impact on surrounding land. This includes any hydrological management on neighbouring farmland. It is anticipated that the work proposed here (blocking drains and re-wetting cutaway peatlands) will not have any flooding impacts on adjacent land. No marginal drains will be blocked any water flowing into the site will be allowed to continue to flow into the site.
- **Archaeology.** There are no Recorded Monuments within the rehabilitation area.

6.2 Key Assumptions

- It is assumed that BnM will have all resources required to deliver this project.
- It is expected that weather conditions will be within normal limits over the rehabilitation plan timeframe. Long periods of wet weather have the capacity to significantly affect ground conditions and constrain drain blocking and other ground activities.
- It is assumed that any future authorised third-party development within or adjoining Galros Bog will be designed, consented, constructed, operated and decommissioned separately from this Rehabilitation Plan and will include its own environmental protection measures. Such development will be required to avoid compromising the agreed rehabilitation measures and success criteria for Galros Bog.

6.3 Key Exclusions

The scope of this rehabilitation plan does not cover:

- The longer-term development of stable naturally functioning habitats to fully develop at Galros Bog. The plan covers the short-term rehabilitation actions and an additional monitoring and after-care programme to monitor the rehabilitation and to respond to any needs.
- Any separate third-party renewable-energy infrastructure, including turbine, access, cable, drainage, construction compound, electrical grid connection infrastructure, except insofar as such infrastructure is relevant as a mapped constraint or interface for rehabilitation planning.
- This plan is not intended to be an after-use or future land-use plan for Galros Bog.
- The longer-term management of this site, potentially as a nature conservation site, or for amenity, or for other uses in the future.

7 CRITERIA FOR SUCCESSFUL REHABILITATION

This section outlines what criteria will be used to indicate successful rehabilitation and what critical success factors are needed to achieve successful rehabilitation. All criteria used to indicate successful rehabilitation will be measured to validate the achievement of the rehabilitation goals and outcomes and validate the completion of the rehabilitation.

The key objective of this rehabilitation plan is **environmental stabilisation** and the stabilisation of any emissions from Galros Bog that related to the former industrial peat extraction activities.

Rehabilitation is generally defined by BnM as:

- Stabilisation of bare peat areas via targeted active management (e.g. drain-blocking/re-wetting) slowing movement of water across the bog and encouraging a naturally functioning raised bog ecosystem; and mitigation of key emissions (e.g. potential suspended solids run-off).

7.1 Criteria for successful rehabilitation to meet EPA IPC licence conditions:

- Rewetting of residual peat in the former area of industrial peat production to offset potential run off of suspended solids and to encourage and accelerate development of vegetation cover via natural colonisation, and increase in the area of potentially peat-forming habitats. See Table 7.1 for a summary of the criteria for successful rehabilitation and associated monitoring. The target will be the delivery of measures and this will be measured by an aerial survey after rehabilitation is completed.
- That there is a stabilizing/improving concentration of suspended solids and ammonia in discharges from BnM sites, associated with the measures undertaken to stabilize the peat surface by the blocking of the internal drainage system and the maximized rewetting of the peat surface. This will be demonstrated by developing a stable or downward trajectory of water quality indicators (suspended solids and ammonia) towards what would be typical of a re-wetted cutaway bog. This will be measured via water quality monitoring (suspended solids and ammonia) for at least 2 years after the rehabilitation has been completed.
- Receiving water bodies have been classified under the River Basin Management Plan and this classification includes waters that are At Risk from peatlands and peat extraction. The success criteria will be that the *At Risk* classification will see improvements in the associated pressures from this peatland or if remaining *At Risk*, that there is an improving trajectory in the pressure from this peatland.

With regard to predicting and estimating likely trends that might materialize or could be considered as a target, monitoring of surface water ammonia emissions from Longford Pass bog in Littleton over 3 years, post cessation of peat extraction with ongoing rehabilitation, were considered. These are indicating a downward trend in Ammonia concentrations (Figure 7.1).

Similarly monitoring of surface water ammonia emissions from a Corlea bog in Mountdillon over the past 3 years post cessation of peat extraction with ongoing rehabilitation, indicate downward trends.

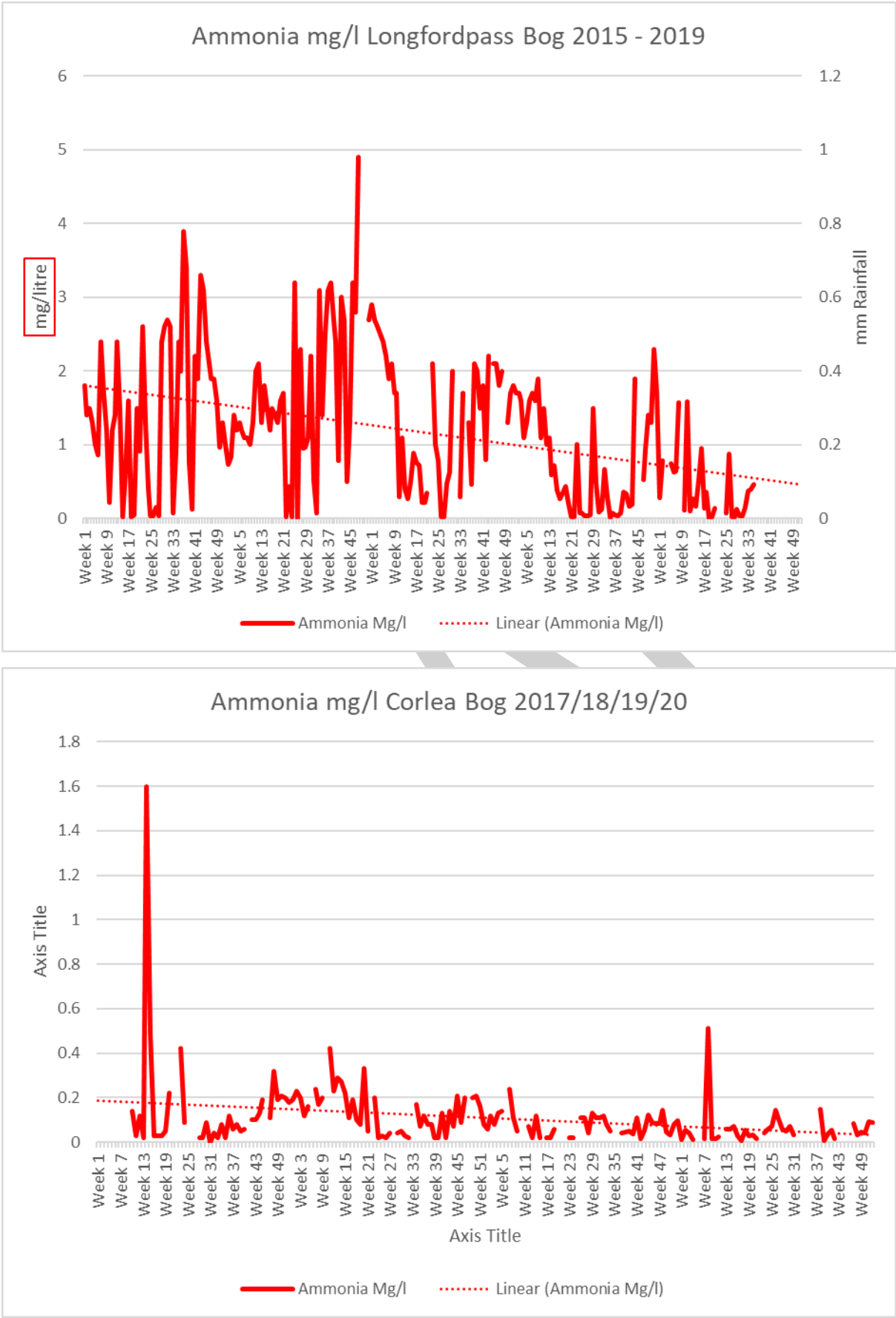


Figure 7-1: Ammonia levels over the period 2015-2019/2020 at Longford Pass and Corlea.

Table 7-1: Summary of Success criteria, targets, how various success criteria will be measured and expected time-frames.

Criteria type	Criteria	Target	Measured by	Expected Timeframe
IPC validation	Rewetting in the former area of industrial drainage.	Delivery of rehabilitation measures Restoration of hydrological regime.	Aerial photography after rehabilitation has been completed – to demonstrate measures (drain-blocking) Establishment of a baseline for future monitoring of bare peat, vegetation establishment and habitat condition.	2 years
IPC validation	Key water quality parameters Ammonia, Phosphorous, Suspended solids, pH and conductivity	Reduction or stabilisation of key water quality parameters associated with this bog	Water quality monitoring for a period after rehabilitation has been completed	2 years
IPC validation	Reducing pressure from drainage on the local water body catchment (WFD)	No decline in the WFD status of the local river catchment related to this bog	EPA WFD monitoring programme	WFD schedule

7.2 Critical success factors needed to achieve successful rehabilitation as outlined in the plan

The achievement of successful rehabilitation as outlined in the plan requires:

- **Funding to pay for resources required to deliver the planned rehabilitation (BnM).** BnM maintains a provision on its balance sheet to pay for these future costs. BnM is fully committed to meeting its obligations relating to rehabilitation and decommissioning under the Integrated Pollution Control Licence.
- **BnM to have sufficient resources (staff and training) to deliver the planned rehabilitation with required associated skills and competencies.**
- **BnM to have sufficient resources (suitable machinery) and staff to maintain this machinery.**
- **Weather conditions to be within normal limits over the rehabilitation plan timeframe.** Long periods of wet weather have the capacity to significantly affect ground conditions and constrain the delivery of rehabilitation. The potential impact of wet weather on ground conditions can be reduced by appropriate

planning and management. BnM have significant experience of managing these issues through 70 years of working in these peatland environments.

- **Rehabilitation measures to be effective.** The rehabilitation measures proposed in this plan are based on 40 years of BnM experience of peatland management and best practice applied internationally in peatland management. Measures proposed in this plan have already been shown to be effective at other sites. BnM will apply a flexible and adaptable approach to the more innovative rehabilitation measures proposed in this plan. If measures are not initially effective, BnM will review any requirement for additional practical rehabilitation.
- **Natural colonisation of vegetation to develop semi-natural habitats at a rate within the normal limits.** The development of naturally functioning semi-natural habitats on cutaway peatland takes time. Pioneer vegetation can develop relatively quickly (3-10 years) and wetland habitats can develop relatively quickly. Birch woodland may take 20-30 years to develop. However, it may take 50 years for active raised bog vegetation to re-develop on ground that was previously cutaway. Different environmental conditions will have a significant impact on the rate of natural colonisation, and as a result of the combination of different environmental conditions and the application of different rehabilitation measures, there will be a variety of habitat outcomes.
- Rehabilitation measures have been designed to accelerate and work with natural colonisation and other natural processes. BnM experience of rehabilitation and restoration has shown that re-wetting improves conditions for natural colonisation and that natural colonisation is accelerated where the environmental conditions are most suitable. Rehabilitation measures have been designed to modify the conditions of areas within sites where conditions are less suitable for natural colonisation (modifying hydrology, topography, nutrient status or availability of potential seed sources).
- **Monitoring to be robust and effective.** Rehabilitation Monitoring will be established to validate the success of rehabilitation as required by Condition 10 of the IPC Licence and to verify the benefits of the proposed enhanced measures to optimise climate action. This will focus on collecting a range of scientific data that can then quickly be adapted into metrics that can be used to measure changes in various ecosystem services.

8 REHABILITATION ACTIONS AND TIME FRAME

Peatland restoration and rehabilitation requires detailed planning and the use of data from desktop surveys and field surveys. This data in association with topographical and hydrological modelling will be important in planning the future peatland landscapes and planning the use of the most appropriate rehabilitation methodologies based on environmental characteristic. Hydrological modelling indicates those areas that are likely to re-wet when drains are blocked, based on the current topography. This planning is essential for matching the most sustainable rehabilitation methodology to the most suitable cutaway environment to maximise the benefits of the resource outlay (maximising cost/benefit).

Galros Bog is a gravity drained cutaway peatland. The rehabilitation strategy therefore depends on selective drain blocking, water level management, retention of necessary boundary and outfall drainage, and maintenance of silt control arrangements. No boundary drains will be blocked where doing so could adversely affect neighbouring lands. Existing outfalls and silt ponds will be retained as necessary during the rehabilitation, monitoring and validation phases.

A number of illustrative figures have been produced to inform rehabilitation planning and design, including aerial photography, peat depths and LiDAR surface maps, these are included in the accompanying Mapbook as the drawings referenced below:

BNM-ECO-24-35-04: *Peat Depths*

BNM-ECO-24-35-03: *LiDAR Map*

BNM-ECO-24-35-09: *Depression Analysis*

BNM-ECO-24-35-21: *Aerial Imagery 2000*

BNM-ECO-24-35-22: *Aerial Imagery 2020*

The restoration and rehabilitation measures are provisionally outlined in the drawings titled BNM-ECO-24-35-20: *Standard Rehab Measures* and in the accompanying Mapbook.

These rehabilitation measures for Galros Bog will include the following (see Table 8.1):

- A widespread drain-blocking programme will be implemented across the cutaway, where possible. The drain blocking programme will be planned having regard to peat depth, topography, hydrology, retained drainage requirements, silt-control infrastructure, neighbouring land protection and mapped site constraints. In general, field drains will be blocked, where possible, to re-wet cutaway and re-wet to the optimum water-level. More intensive measures will be targeted towards the bare peat and deep peat.
- Less intensive measures (targeted drain-blocking) will be used in areas where habitats have already established.
- Some drains may be retained or adapted where required for boundary drainage, outfall management, silt control, monitoring access, neighbouring land protection or compatibility with future authorised land use constraints.
- The existing silt ponds will be retained and maintained during the rehabilitation phase. During the monitoring and verification phase the silt ponds will be continually inspected and maintained, where appropriate. When it is deemed that the silt ponds are not required, as the bog has been successfully stabilised and there is no silt run-off, the condition of the silt ponds will be reviewed. The silt ponds will either be de-watered (water levels lowered to a level where the silt pond will naturally develop as a small wetland feature), left in situ, or infilled (where discharges do not require silt control).

Table 8-1: Types of and areas for rehabilitation measures at Galros Bog. Note that the types of rehab and areas of rehab may change in response to stakeholder consultation and refinement of the rehabilitation measures.

Type	Description	Area (Ha)
Dry cutaway	Targeted drain-blocking, where appropriate, and encouragement of natural colonisation. Fertiliser treatment, where needed.	24.7
Wetland cutaway	Targeted drain-blocking and encouragement of natural colonisation. Modifying outfalls and managing water levels with overflow pipes.	55.1
Deep peat cutaway	Regular drain-blocking Modifying outfalls and managing water levels with overflow pipes.	71.3
Marginal land	No measures required	30.7
Silt Pond	Silt Pond	0.5
Constraint	Constraint areas comprise existing or potential future land-use, access, drainage, ecological, archaeological, infrastructure or neighbouring-land constraints where standard rehabilitation measures may require modification.	15.7
Total Area (Ha)		198.0

An interface drainage and water-management plan will be prepared by the developer in consultation with BnM, prior to any future authorised third-party works within Galros Bog.

8.1 Completed and ongoing

- Part of Galros Bog has already re-vegetated, with pioneer vegetation maturing and developing a mosaic of typical cutaway peatland habitats with poor/rich fen dominating. Bare peat areas within the older cutaway areas are reducing. Natural re-colonisation of the cutaway so far has been quite effective. Other parts of the bog (younger cutaway) are beginning to revegetate and develop pioneering cutaway habitats.

8.2 Short-term planning actions (0-1 years)

- Update and finalise the Rehabilitation Plan following stakeholder consultation, completion of any required environmental assessment, refinement of rehabilitation measures, confirmation of mapping / costings and agreement with the EPA.
- Seek formal approval of the rehabilitation plan from the EPA.
- Develop a detailed site plan outlining how the various rehabilitation methods will be applied to Galros Bog. This will take account of peat depths, topography, drainage and hydrological modelling (see rehabilitation map for an indicative view of the application of different rehabilitation methodologies).
- A drainage management assessment of the proposed rehabilitation measures will be carried out and any issues identified resolved and the rehabilitation plan adapted.

- A review of known archaeology and an archaeological impact appraisal of the proposed rehabilitation will be carried out. The results of this assessment will be incorporated into the rehabilitation plan to minimise known archaeological disturbance, where possible.
- An ecological appraisal of the potential impacts of the planned rehabilitation on the presence of sensitive ground-nesting bird breeding species (e.g. breeding waders) and potential Marsh Fritillary presence will be carried out. The scheduling of rehabilitation operations will be adapted, where required.
- Ensure all activities comply with the environmental protection requirements of the IPC Licence.
- Appropriate Assessment (AA) of the Rehabilitation Plan will be carried out. Any required mitigation measures from the AA (if needed) will be incorporated into the plan for the delivery of rehabilitation and decommissioning across Galros.
- Track implementation and enforcement of the relevant IPC Licence conditions, the mitigation measures (AA) and other environmental control measures during the implementation of the rehabilitation plan.

8.3 Short-term practical actions (0-2 years)

- There will be ongoing monitoring at Galros during the rehabilitation implementation phase and during the aftercare period. Monitoring will inform any adaptive management required to ensure that the rehabilitation measures remain effective.
- Carry out proposed measures as per the detailed site plan. This will include drain blocking and targeted hydrological management prescriptions in the cutaway. All rehabilitation will be carried out with regard to best practice environmental control measures (Appendix III).
- Monitor the success of rehabilitation measures in relation to developing suitable hydrological conditions.
- Carry out the proposed monitoring, as outlined in Section 9.
- Silt ponds will be monitored during this period and there will be continued maintenance and cleaning to prevent potential suspended solids run-off during the rehabilitation phase.

8.4 Long-term (>3 years)

- Evaluate success of short-term rehabilitation measures outlined above and remediate where necessary.
- Delivery of a monitoring, aftercare and maintenance programme (See section 9 below).
- Decommissioning of silt-ponds will be assessed and carried out, where required.
- Reporting to the EPA will continue until the IPC Licence is surrendered.

8.5 Long-term review and future land-use interface

- At this stage it is expected that Galros Bog would have no bare peat cover and that the entire site will be developing a suite of maturing cutaway habitats that reflect the mosaic of environmental conditions.
- In the long term, Galros Bog is expected to develop a mosaic of cutaway peatland habitats reflecting local peat depth, hydrology, topography and substrate conditions. BnM will continue to review rehabilitation performance through monitoring, aftercare and reporting under the IPC licence.

8.6 Timeframe (to be adjusted when finalised)

- **Year 1:** Short-term planning actions
- **Year 1-3:** Short-term practical actions

- **Year 1-3:** Long term practical actions. Evaluate success of short-term rehabilitation measures outlined above and remediate where necessary.
- **>Year 3:** Decommission silt-ponds, if necessary

8.7 Budget and costing

BnM maintains a provision on its balance sheet to pay for the future costs of standard rehabilitation and decommissioning. This is updated every year - for more information see the BnM Annual Report (BnM, 2025). BnM is fully committed to meeting its obligations relating to rehabilitation and decommissioning under the Integrated Pollution Control Licence.

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9 AFTERCARE AND MAINTENANCE

9.1 Programme for monitoring, aftercare and maintenance

This programme for monitoring, aftercare and maintenance has been designed to meet the conditions of the IPC Licence. This is defined as:

- **Water quality monitoring** at the bog will be established. The main objective of this water quality monitoring will be to establish a baseline and then monitor the impact of peatland rehabilitation on water quality from the bog.
- There will be **initial quarterly monitoring assessments** undertaken for Galros Bog to determine the general status of the site, the condition of the silt ponds (if added), assess the condition of the rehabilitation work, monitoring of any potential impacts on neighbours land, general land security, boundary management, dumping and littering.
- The number of these site visits will reduce after 2 years to bi-annually and then after 5 years to annual visits.
- These monitoring visits will also consider any requirements for further practical rehabilitation measures.
- The **baseline condition of Galros will be established** post-rehabilitation, by using an aerial survey to take an up-to-date aerial photo, when rehabilitation is completed. This will be used to verify completion of rehabilitation measures. The extent of bare peat will be assessed using this baseline data, and habitat maps will be updated, if needed. It is proposed that sites can be monitored against this baseline in the future.
- Monitoring results will be maintained, trended and reported on each year as part of the requirement to report on Condition 10.1 of the IPC Licence on Bog Rehabilitation in the Annual Environmental Report, which will be available in April each year at www.epa.ie.
- The parameters to be included (as per condition 6.2 of the IPC Licence) include quarterly monitoring for pH, Suspended Solids, Total Solids, Total Phosphorus, Total Ammonia, Colour, and COD and DOC.
- If, after two years, key criteria for successful rehabilitation are being achieved and key targets are being met, then the water quality monitoring will be reviewed, with consideration of potential ongoing research on site. The water quality data, the aerial surveys and the habitat mapping will be collated and will be submitted to the EPA as part of the final validation report.
- If, after two years, key criteria for successful rehabilitation have **not** been achieved and key targets have **not** been met, then the rehabilitation measures and status of Galros will be evaluated and enhanced, where required. This evaluation may indicate no requirement for additional enhancement of rehabilitation measures but may demonstrate that more time is required before key criteria for rehabilitation has been achieved. Monitoring of water quality will then also continue for another period to be defined.
- Where other uses are proposed for Galros that are compatible the provision of biodiversity and ecosystem services, these will be assessed by BnM in consultation with interested parties. Other after-uses can be proposed for licensed areas and must go through the required assessment process and planning procedures.

9.2 Rehabilitation plan validation and licence surrender – report as required under condition 10.4

IPC Licence Condition 10.4. *“A final validation report to include a certificate of completion for the Rehabilitation Plan, for all or part of the site as necessary, shall be submitted to the Agency within six months of execution of the*

plan. The licensee shall carry out such tests, investigations or submit certification, as requested by the Agency, to confirm that there is no continuing risk to the environment."

Reporting to the EPA will continue until the IPC Licence is surrendered. The bog will be included in the full licence surrender process as per the *Guidance to Licensees on Surrender, Cessation and Closure of Licensed Sites EPA, 2012*, when:

- The planned rehabilitation has been completed;
- The key criteria for successful rehabilitation has been achieved and key targets have been met;
- Water quality monitoring demonstrates that water quality of discharge is stabilising or improving; and
- The site has been environmentally stabilised.

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APPENDIX I. BOG GROUP CONTEXT

The Boora group of bogs are sited between Killeigh (Offaly) in the East to Banagher (Offaly) in the West and between Kinnitty (Offaly) in the south and Clara (Offaly) in the North. The River Shannon is the major river catchment for the area with a smaller area lying within the Barrow catchment.

The Boora Group is one of the oldest bog groups in Ireland. BnM was set up in 1946 and it commenced the development of the Boora Bogs in 1946 with milled peat production commencing in 1955. Milled peat was produced in the Boora Bogs for the supply of fuel peat to the power station in Ferbane which commenced power generation in 1957 and closed in 2001. The Boora bogs were also developed for the supply of milled peat to the Derrinlough Briquette factory, which commenced production in 1957.

Much of the Boora Bog complex became cutaway as it was in peat production at an early stage. A number of rehabilitation measures comprising naturalisation and development of alternative after-uses have been already explored at the Boora Bog Group, including coniferous forestry, biomass, agricultural grassland, amenity use, rare species conservation management (specifically Grey Partridge) and wetland creation. Some of this was carried out in the 1980s. While agricultural fields and coniferous forestry have been developed successfully on the cutaway bogs at Boora, it was found that these require financial investment that at this time exceeds any potential commercial output value. The Lough Boora Discovery Park encompasses all areas relating to amenity and biodiversity (www.loughboora.com).

The bogs in The Boora Bog Group have been used in the past to supply milled peat for the horticultural market, local power stations (Ferbane, Shannonbridge and West Offaly Power) and Derrinlough Briquette factory. Industrial peat extraction has now ceased in the Boora Bog Group. Remaining peat stocks are being transported to Derrinlough Briquette Factory and other customers.

A breakdown of the component bog areas for the Boora Bog Group IPC Licence Ref. P0500-01, and current, indicative Peat Production Status, is outlined in Table Ap-1.

Table Ap-1: Boora Bog Group names, area and indicative status

Bog	Area (Ha)	Stage of development	Land-Use and History	Peat Production Cessation	Rehab Plan Status
Killaun	359.5	Cutover Bog Industrial peat production commenced at Killaun Bog in 1996 and ceased in 2020. Only the upper most layers of peat have been harvested. Deep peat reserves remain on site. Killaun is considered a deep peat cutover bog.	Killaun Bog formerly supplied a range of commercial customers including horticultural peat and fuel peat. Most of the former production area is bare peat.	2020	Draft 2017
Boora	1,842.4	Cutaway Harvested since the 1950's resulting in the exhaustion of the commercially viable peat resource at the bog. The majority of Boora	The majority of Boora bog has already been rehabilitated. A significant area of cutaway bog has been re-wetted, developed	2020	Finalised 2021.

Bog	Area (Ha)	Stage of development	Land-Use and History	Peat Production Cessation	Rehab Plan Status
		Bog is considered a shallow peat cutaway bog. Some areas of deep peat persist at this site.	as conifer forestry (Coillte) and developed as farmland (1980s). This site now forms the core of Lough Boora Discovery Park.		Rehab completed 2022.
Pollagh/ Cornalaur	280.8	Cutaway At Pollagh Bog, industrial peat production began in 2004 and ceased in 2020. Peat reserves of variable depth remain on site. Some deep peat areas remain. Pollagh is considered a cutover bog with variable peat depths.	Pioneer emergent peatland vegetation communities are developing throughout the bog. The adjacent Cornalaur Bog was never developed for peat production.	2020	Finalised 2021 Rehab complete 2022.
Noggusboy	917.4	Cutaway Bog Industrial peat production commenced at Noggusboy during the 1950's and ceased in 2020. Long-term peat extraction has exhausted commercially viable peat reserves on this bog. Noggusboy is considered a shallow peat cutaway bog.	Part of the site was developed for conifer forestry by Coillte. Part of the site was developed as Cloghan Lake, as part of Lough Boora Discovery Park, in 1999. There is some emerging naturally colonising cutaway.	2020	Finalised in 2022 Rehab of Noggusboy West complete 2023.
Drinagh	1,339.1	Cutaway Bog Industrial peat production commenced at Drinagh during the 1950's and ceased in 2020. Some small pockets of deep peat reserves remain in parts of Drinagh Bog but most of the commercially viable peat reserves have been exhausted. Drinagh is considered a shallow peat, cutaway bog.	Drinagh East is cutaway and has been extensively rehabilitated as wetland. This part of the site has extensive development of naturally functioning peatland habitats. Some Coillte conifer forestry is also present. There is some emerging naturally colonising cutaway in Drinagh West.	2020	Rehab plan finalised 2024. Rehab completed in 2025
Killaranny	242.8	Cutover Bog Industrial peat production commenced at Killaranny during the 1980's. Deep peat reserves remain on much of the bog. Killaranny is considered a deep peat cutover bog.	Killaranny Bog formerly supplied a range of commercial functions including horticultural peat and fuel peat. A portion of the site is leased by NPWS since 2011 as a re-location area for turf cutters from nearby Clara Bog SAC.	2020	Finalised 2022 Rehab complete 2023
Oughter	352.9	Cutaway	The site has naturally been re-wetting and there is	2012	Finalised 2021

Bog	Area (Ha)	Stage of development	Land-Use and History	Peat Production Cessation	Rehab Plan Status
		Development of Oughter Bog commenced in the 1960's. Industrial peat production ceased in 2012. Shallow peat depths remain over much of the former production bog area. Oughter is considered a shallow peat cutaway bog.	already significant natural colonisation. Part of the site has been developed as the Midlands National Shooting Centre of Ireland.		Rehab complete 2022
Galros	193	Cutover Bog Industrial peat production commenced at Galros during the 1950's and ceased by 2021. Some areas of deep peat remain on the former production area. Galros is considered a cutover bog of variable peat depth.	Galros Bog formerly supplied a range of commercial customers including; horticultural peat and fuel peat. Some naturally emerging cutaway habitats are developing in part of the site.	2021	Updated Draft 2026
Clongawny	987.2	Industrial peat production commenced at Clongawny More during the 1950s and ceased in 2019. Some pockets of deep peat persist, particularly in the south-western portion of the former production area. Clongawny More is considered a cutover bog with variable peat depths throughout the site.	Part of the site rehabilitated, as part of Lough Boora Discovery Park, in 1999. Some Coillte conifer forestry is also present. The site has naturally been re-wetting and there is already significant natural colonisation. BnM currently have submitted an application for renewable energy development on this bog.	2019	Finalised 2024. Rehab completed
Derrinboy	305.7	Cutover Bog Derrinboy was first developed by BnM in the 1980's. Peat production ceased at Derrinboy in 2020. This bog was used to supply horticultural peat. Only the upper layers of peat have been harvested. Derrinboy is considered a deep peat cutover bog.	Derrinboy Bog formerly supplied a range of commercial customers including; horticultural peat and fuel peat.	2020	Finalised in 2022 Rehab complete 2023
Moneitta	707.5	Cutover Bog Moneitta was first developed by BnM in the 1970's. Peat production ceased at Monietta in 2020. This bog was used to supply horticultural peat. Only the upper layers of peat were harvested. Moneitta is considered a deep peat cutover bog.	Moneitta Bog formerly supplied a range of commercial customers including; horticultural peat and fuel peat.	2020	Draft 2017

Bog	Area (Ha)	Stage of development	Land-Use and History	Peat Production Cessation	Rehab Plan Status
Boora Lemanaghan Rail Link	6.9	N/A	Not applicable	N/A	N/A
Derries	368.2	<p>Cutaway Bog</p> <p>Development of The Derries Bog commenced in the 1960's. Industrial peat production ceased in 2005. Shallow peat depths remain over much of the former production bog area.</p> <p>The Derries Bog is considered a shallow peat cutaway bog.</p>	<p>Wetland rehabilitation carried out over part of site in 1999.</p> <p>Amenity trackway development in 2015. Part of the Lough Boora Discovery Park.</p> <p>The site has now been extensively naturally colonised and is a mosaic of wetland and Birch woodland habitats.</p>	2005	<p>Finalised 2021</p> <p>Rehab complete 2022</p>
Turraun	534.5	<p>Cutaway Bog</p> <p>Development of Turraun Bog commenced in the 1950's. Industrial peat production ceased in 2018. Turraun is considered a shallow peat cutaway bog.</p>	<p>Wetland rehabilitation carried out over part of area in 1999 as part of the Lough Boora Discovery Park. This section of the site has now been extensively naturally colonised and is a mosaic of wetland and Birch woodland habitats.</p>	2018	<p>Finalised 2021</p> <p>Rehab complete 2022</p>
Derryclure	327.6	<p>Cutover Bog</p> <p>Derryclure was first developed by BnM in the 1980's. Peat production ceased at Derryclure in 2020. This bog was used to supply horticultural peat. Only the upper layers of peat were harvested. Derryclure is considered a deep peat cutover bog.</p>	<p>Derryclure Bog formerly supplied a range of commercial functions including horticultural peat and fuel peat.</p>	2020	Draft 2021
Lemanaghan	1,253.7	<p>Cutover Bog</p> <p>Industrial peat production commenced at Lemanaghan during the 1950's and ceased in 2019.</p> <p>Varied peat depths across the site. Deep peat reserves remain on much of the former production area of Lemanaghan Bog. It is considered a cutover bog.</p>	<p>Lemanaghan Bog formerly supplied a range of commercial functions including horticultural peat and fuel peat.</p> <p>There are some naturally emerging cutaway habitats.</p> <p>BnM are proposing a wind farm for Lemanaghan. This project is in the planning process with ACP (decision due March 2027)</p>	2019	<p>Draft rehab plan 2024.</p> <p>Lemanaghan East rehab completed 2025</p>
Belair North	565.7	<p>Cutover Bog</p> <p>Belair North was first developed by BnM in the 1960's. Peat production ceased at Belair North</p>	<p>Belair North Bog formerly supplied a range of commercial functions</p>	2020	Draft 2017

Bog	Area (Ha)	Stage of development	Land-Use and History	Peat Production Cessation	Rehab Plan Status
		in 2020. This bog was used to supply horticultural peat. Only the upper layers of peat were harvested. Belair North is considered a deep peat cutover bog.	including horticultural peat and fuel peat.		
Derrybrat	171.6	Cutaway Bog Industrial peat production commenced at Derrybrat during the 1950's and ceased in 2016. Derrybrat has shallow peat depths across the site. It is considered a shallow peat cutaway bog.	The site has been partially rehabilitated and there is already significant natural colonisation. Some conifer forestry has been developed by Coillte on the site.	2016	Finalised 2022 Rehab complete 2023
Belair South	228.8	Cutover Bog Belair South was first developed by BnM in the 1970's. Peat production ceased at Belair South in 2020. This bog was used to supply horticultural peat. As a result, only the upper layers of peat were harvested. Belair South is considered a deep peat cutover bog.	Belair South Bog formerly supplied a range of commercial functions including horticultural peat and fuel peat.	2020	Draft 2017
Boora Bog Group Total	10,983.7				

See Drawing number BNM-ECO-24-35-24: *Bog Group Map*, included in the accompanying Mapbook which illustrates the location of Galros Bog and the Boora Bog Group in context to the surrounding area.

APPENDIX II. ECOLOGICAL SURVEY REPORT

Ecological Survey Report

Note: This report outlines an ecological survey of the bog. This report should not be taken as a management plan for the site as other land-uses may still be considered. Information within this report may inform the development of other land-uses and identify areas with particular biodiversity value.

Bog Name:	<u>Galros</u>	Area (ha):	193.6 ha (478.4 acres)
Works Name:	Boora	County:	Offaly
Recorder(s):	MMC	Survey Date(s):	16/08/2011

Habitats present (in order of dominance)

The most common habitats present at this site include:

- Bare peat (BP) (Codes refer BnM classification of pioneer habitats of production bog. See Appendix II).
- Purple Moorgrass-dominated grassland (gMol) (in mosaic with Gorse scrub and dry heath)
- Pioneer Gorse scrub (eGor)
- Pioneer dry Heath (dHeath)
- Pioneer Marsh Arrowgrass-dominated (pTrig)
- Pioneer Bootle sedge and Yellow Sedges (pVir/pRos)
- Pioneer Reedbeds (pPhrag)
- Emergent Birch scrub (in mosaic with pioneer open habitats or dry heath)
- Rudimentary rich fen vegetation with Black Bog-rush (pSch)
- Riparian zones (Rip)

Habitats found around the margins of Galros include

- Birch woodland (WN7) (Codes refer to Heritage Council habitat classification, ((Fossitt 2000), See Appendix II.)
- Cutover bog (PB4)
- Scrub (WS1)
- Remnant raised bog (PB1)
- Improved grassland (GA1)
- Wet grassland (GS4).
- Conifer plantation (WD4)

Description of site

Galros is a relatively small bog in the Boora group, located 5 km north of Birr in Co. Offaly. The site is bordered on its western side by the N62 road between Cloghan and Birr. Galros is situated in a small basin surrounded by esker ridges along the northern and western and south-western sides. There is relatively little peatland not within

BnM ownership along these boundaries. Conifer plantation has been developed on cutover bog adjacent to the south side of the site. Further south, part of the same peatland complex is in private commercial peat production.

Some pioneer poor fen dominated by Marsh Arrow-grass is developing along some drains in damper areas and at the ends of some fields. There are also several small ridges of glacial till that pass under the bog and are being exposed around the margins or at the ends of some fields. Some of these are being vegetated by small patches of dry grassland, Purple Moorgrass-dominated grassland and/or patches of dry heath.

There is a small area of production-related cutaway located in the south-west part of the site. This area occupies some of the lowest ground in Galros. Thick Marl is exposed in the filed drains though this area. It is mainly vegetated by wet poor fen vegetation dominated by Yellow Sedge and Bottle Sedge (pVir/pRos). Several small patches of Black Bog-rush are present within this area and some *Scorpidium scorpioides* (rich fen indicator) was also found. Other species present include Purple Moorgrass (along edges of drains where it is drier), Marsh Pennywort, Ragged Robin, Marsh Bedstraw, Reedmace, Bog Thistle, Devil's-Bit, Angelica, Purple loosestrife, Lousewort, Butterwort, Knapweed, Common Century, Meadowsweet, Sweet vernal-grass, Yorkshire Fog and Lesser Spearwort. The moss layer is dominated by *Calliergonella cuspidata* and *Fissidens* sp. are also frequent. Birch and Eared Willow are scattered through this area and have colonised along drains. Soft Rush was present but was rare in occurrence. This wetland vegetation is not unlike the small area of potential rich fen found in Clongawny.

The drier more established sections tended to be colonised by mosaics of pioneer dry heath and Purple Moorgrass-dominated grassland, or with Gorse scrub. Younger more disturbed sections along the northern margin of the production-related cutaway had more Marsh Arrow grass-dominated poor fen. Further east the vegetation is younger and patchier with pioneer Heather, Gorse and Purple Moorgrass all appearing amongst Marsh Arrow grass. Some Common Reed is developing adjacent to the silt ponds at the east side of the production-related cutaway. Bottle Sedge and young Birch dominate the youngest fields out of production along the eastern side.

There is a small patch of rudimentary rich fen vegetation with Black Bog-rush along the western boundary at the south-west corner of the site (on former access fields). This vegetation community also contains Purple Moorgrass, Bottle Sedge, Carnation Sedge, Yellow Sedge, Jointed Rush, Mint, Butterwort, Bog Thistle, Quaking Grass and Common Spotted Orchid. The moss layer is dominated by *Calliergonella cuspidata*.

There is a small area of cutaway located along the southern side of the site, south of the former railway. This small block of bog has been ditched but production was quite limited or it was never in production. It has regenerated with dry heath dominated by Heather in mosaic with Birch scrub and or Gorse scrub. There are also some Purple Moorgrass patches in mosaic with the other vegetation. There has been no activity in this area for some time. The peat in this section is likely to be quite deep and this has influenced the regeneration of more acidic communities. Some *Sphagnum* was noted in the drains but this was rare and overall this section was quite dry.

There are several fields along the eastern boundary that were ditched but were never put into production and there left as a buffer. The remnant high bog has dried out on these fields and is now dominated by Heather (dHeath). There are still some remnants of the former high bog vegetation with Bog Asphodel and Hare's-tail Bog Cotton still present. Some small hummocks of *S. subnitens* were present but overall the *Sphagnum* cover was low/rare. This high bog is also being invaded by Pine, spreading from adjacent mature Pine (Scot's) in bog woodland developed on old cutover bog. There are several patches of Birch scrub and woodland developed on the margin along the edge of the production bog. One feature of interest is the presence of some rich fen/flush vegetation on the margin of the production bog that has developed on a underlying ridge of glacial till. Black Bog-rush and Bog Myrtle are both present. An old pile of spoil along the margin from a drain has now been colonised by dry calcareous grassland species such as Carlina Thistle. Some Golden Rod was also present. The ridge extends into the production bog and there is some vegetation developing on it with patches of dry heath and dry grassland (gCal, gAn).

The only area of remnant high bog (PB1) found around the margins is in the south-east corner of the site. This Small area is now degraded and dried out and was probably also used to cut turf in the past. This area is also fenced off. The northern boundary also has some remnant marginal high bog but these areas have also been

fenced off and are grazed. The peatland sections are generally dominated by Purple Moorgrass with some sections having Bog Myrtle. There is also some Birch scrub and woodland developing, although the extent of these habitats is small.

There is a narrow strip of property extending north along the main road. This acts as a travel path and connection between Clongawny to the north and Galros. This access zone crosses over the esker ridge and the travel path is developing pioneer calcareous grassland in places. A cut has been made in the ridge for the railway. Calcareous-rich ground water from the esker ridge is seeping into this cut and there is some tufa deposition. Some of these is being colonised by Stonewort.

Designated areas on site (cSAC, NHA, pNHA, SPA other)

None

Lough Coura pNHA (NPWS site code 000909) is located within 1 km of the north of Galros. This former lake is now developing rich fen habitats and the close proximity of this site is likely to influence habitat development within the Galros cutaway. The development of potential rich fen habitats more likely to occur at Galros at a faster rate due to the proximity of Lough Coura rich fen, which will act as a source for colonising plants and species.

Adjacent habitats and land-use

Galros is located in a basin adjacent to an esker ridge. The majority of the peatland is within BnM ownership and there is much less cutover bog (PB4) or remnant bog (PB1) habitats found around this site compared to other sites. Birch woodland (WN7) and scrub (WS1) has developed on some old cutover bog around the margins. Improved grassland is found on the esker ridge with some wet grassland close to the margin where the drainage is impeded. Conifer plantation is found at the south-west corner on adjacent old cutover bog.

Watercourses (major water features on/off site)

- A tributary of the Rapemills/Boolinarig River flows along the southern margin of the site. This is the main drainage off the site. The river has been channelized. Silt ponds found at the south-west corner of the site flow into this drainage system.
- Galros is found in the Lower Shannon catchment.

Peat type and sub-soils

The bog is underlain with thick shell marl in the south-west corner. This is exposed in places and there is a significant calcareous influence on the vegetation (from the shell marl) with indicators of potential rich fen present. Marsh Arrowgrass, which prefers shell-marl as a substrate, is found on the cutaway bog and along the margins of drains between production fields.

The peat over the eastern half of the bog is quite deep.

There are also several ridges through the bog some of which are being exposed. These are likely to consist of glacial till.

Fauna biodiversity

Birds

Several common bird species were noted on the site during the survey.

- Reed Bunting, House Martin, Swallow, Wren, Blue Tit, Hooded Crow.
- Part of the site may develop as wetlands and attract Whooper Swans in the winter. (Whooper Swans recorded during 2024 survey).

Mammals

Signs of several mammals were noted on the site during the survey.

- Hare
- Fox
- Fallow Deer

Other species

Several other species were noted on the site during the survey including some butterflies.

- Green-veined White
- Ringlet
- Meadow Brown
- Painted Lady
- Common Frog
- Stickleback in drains

References

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BnM habitat classification scheme

	General	Habitat ¹	BnM habitat code	Equivalent Heritage Council codes ²
Pioneer habitats of industrial cutaway	Peatland	Bare peat (0-50% cover)	BP	ED2
		Embryonic bog community (containing <i>Sphagnum</i> and Bog Cotton)	PBa	PB
		Embryonic bog community (Calluno-Sphagnion)	PBb	PB
	Flush and Fen	Pioneer <i>Campylopus</i> -dominated community	pCamp	PF2
		Pioneer <i>Juncus effusus</i> -dominated community (Soft Rush)	pJeff	PF2
		Pioneer <i>Eriophorum angustifolium</i> -dominated community (Bog Cotton)	pEang	PF2
		Pioneer <i>Juncus bulbosus</i> -dominated community (Bulbous Rush)	pJbulb	PF2
		Pioneer <i>Triglochin palustris</i> -dominated community (Marsh Arrowgrass)	pTrig	PF2
		Pioneer Caricion davallianae-Community with <i>Cladium</i> (rich fen)	pCladium	PF1
	Emergent communities	Pioneer <i>Carex rostrata</i> -dominated community (Bottle Sedge)	pRos	FS1
		Pioneer <i>Phragmites australis</i> -dominated community (Common Reed)	pPhrag	FS1
		Pioneer <i>Typha latifolia</i> -dominated community (Reedmace)	pTyp	FS1
		Pioneer <i>Schoenoplectus lacustris</i> -dominated community (Bulrush)	pSch	FS1
	Open water	Charaphyte-dominated community	pChar	FL2
		Permanent pools and lakes	OW	FL2
		Temporary open water	tOW	
	Woodland and scrub	Emergent <i>Betula/Salix</i> -dominated community (A) (Birch/Willow)	eBir	WS1
		Open <i>Betula/Salix</i> -dominated community (B) (Birch/Willow)	oBir	WS1
		Closed <i>Betula/Salix</i> scrub community (C) (Birch/Willow)	cBir	WS1
		<i>Ulex europaeus</i> -dominated community (Gorse)	eGor	WS1
		<i>Betula/Salix</i> -dominated woodland (Birch/Willow)	BirWD	WN7
	Heathland	Pioneer dry <i>Calluna vulgaris</i> -dominated community (Heather)	dHeath	HH1
		Dense <i>Pteridium aquilinum</i> (Bracken)	dPter	HD1
	Grassland	Pioneer dry calcareous and neutral grassland (Centaureo-Cynosuretum)	gCal	GS1
		<i>Dactylis-Anthoxanthum</i> -dominated community (Cocksfoot-Sweet Vernalgrass)	gCo-An	GS2
		<i>Anthoxanthum-Holcus-Equisetum</i> community (Sweet Vernalgrass-Yorkshire Fog-Horsetail)	gAn-H-Eq	GS
		<i>Molinia caerulea</i> -dominated community (dry) (Purple Moorgrass)	gMol	GS4

		Marsh (Meadowsweet and other tall herbs) (<i>Filipendulion ulmariae</i>)	Mar	GM1
	Disturbed	<i>Tussilago farfara</i> -dominated community (vegetation > 50%) (Colt's Foot)	DisCF	ED3
		<i>Epilobium</i> -dominated community (vegetation > 50%) (Willowherb spp.)	DisWil	ED3
	General	Riparian areas (streams or drain with associated edge habitats (e.g. FW2/4 + WS1, GS2 etc)	Rip	FW2 +
		Silt Ponds (artificial ponds with associated bank habitats (e.g. FL8 + WS1, GS2, ED2, ED3)	Silt	FL8 +
		Access (tracks or railways with associated edge habitats (e.g. BL3 + gCal, gMol, eGor etc)	Acc	BL3 +
		Works areas (predominately built land but can include landscaped and brownfield habitats (e.g. GA2, WS3, WD4, ED2, ED3)	Works	BL3 +

¹ These are generally pioneer habitats of bare peat and the communities can contain a significant proportion of bare peat. Some habitats are more developed than others. They frequently occur in mosaic with each other.

² Not all these communities are equivalent to habitat classes used by The Heritage Council habitat classification scheme (Fossitt 2000) as some are quite rudimentary and undeveloped.

Heritage Council habitat classification scheme (Fossitt 2000)

	General	Habitat	Heritage Council code
Semi-natural and modified habitats	Peatlands	Raised Bog	PB1
		Lowland Blanket bog	PB3
		Cutover Bog	PB4
		Rich fen and flush	PF1
		Poor fen and flush	PF2
		Transition mire and quaking bog	PF3
	Woodland and scrub	Oak-Birch-Holly woodland	WN1
		Oak-Ash-Hazel woodland	WN2
		Wet Pendunculate Oak-Ash woodland	WN4
		Riparian Woodland	WN5
		Wet Willow-Alder-Ash woodland	WN6
		Bog woodland	WN7
		Mixed broad-leaved woodland	WD1
		Mixed broad-leaved/conifer woodland	WD2
		Conifer plantation	WD4
		Scrub (Gorse)	WS1
		Emergent Betula-dominated community	WS1
		Closed Betula scrub community	WS1
		Recently-planted woodland	WS2
		Ornamental scrub	WS3
		Short-rotation coppice	WS4
		Recently-felled woodland	WS5
	Linear woodland	Hedgerow	WL1
		Treeline	WL2
	Grasslands and Marsh	Improved grassland	GA1
		Amenity grassland	GA2
		Dry calcareous and neutral grsld	GS1
		Dry meadows and grassy verges	GS2
		Dry-humid acid grassland	GS3
		Wet grassland	GS4
		Freshwater Marsh	GM1
	Heath and Bracken	Dry Heath	HH1
		Dry calcareous Heath	HH2
		Wet Heath	HH3
		Dense Bracken	HD1
		Exposed sand,gravel or till	ED1

	Disturbed ground	Spoil and bare ground	ED2
		Recolonising bare ground	ED3
		Active quarry	ED4
	Freshwater	Acid Oligotrophic lakes	FL2
		Mesotrophic lakes	FW4
		Artificial ponds (slit ponds)	FL8
		Depositing rivers	FW2
		Canals	FW3
		Drains	FW4
	Cultivated and Built land	Stonewalls and other stonework	BL1
		Earth Banks	BL2
		Buildings and artificial surfaces	BL3
		Arable crops	BC1
		Horticulture	BC2
		Tilled land	BC3

APPENDIX III. ENVIRONMENTAL CONTROL MEASURES TO BE APPLIED TO BOG REHABILITATION

- Bog restoration/rehabilitation measures will be restricted to within the footprint of the proposed rehabilitation area.
- The proposed rehabilitation will have due regard to noise limits and hours of operation (i.e. dusk and dawn) to minimise any potential disturbance on resident and local fauna that utilise the site and immediate environs.
- All plant and equipment for use will comply with the Construction Plant and Equipment Permissible Noise Levels Regulations (SI 359/1996).
- The proposed activities will be restricted to daylight hours and there will be no requirement for artificial lighting.
- Silt ponds will be inspected and maintained as per the IPC Licence.
- During periods of heavy precipitation and run-off, activities will be halted.
- Measures will be carried out using a suitably sized machine and, in all circumstances, excavation depths and volumes will be minimised where possible.
- All machines will be regularly checked and maintained prior to arrival at the site to prevent hydrocarbon leakage.
- Hoses and valves will be checked regularly for signs of wear and will be closed and securely locked when not in use.
- Fuelling and lubrication of equipment shall only be carried out in designated areas away from surface water drainage features and ecologically sensitive areas.
- Waste oils and hydraulic fluids will be collected in leak-proof containers and removed from the site for disposal or re-cycling.
- Vehicles will never be left unattended during refuelling.
- No direct discharges to waters will be made. No washings from vehicles, plant or equipment will be carried out on site.
- All plant refuelling will take place using mobile fuel bowzers. Only dedicated trained and competent personnel will carry out refuelling operations.
- Mobile storage such as fuel bowzers will be banded to 110% capacity to prevent spills. Tanks for bowzers and generators shall be double skinned. When not in use, all valves and fuel trigger guns from fuel storage containers will be locked. All pumps using fuel or containing oil will be locally and securely banded where there is the possibility of discharge to waters.
- Potential impacts caused by spillages etc. during rehabilitation will be reduced by keeping spill kits and other appropriate equipment on-site.
- Site activities will be carried out in accordance with 'best practice'. In order to ensure compliance and implementation of 'best practice', these measures will be communicated to relevant BnM staff and updated as required.

APPENDIX IV. BIOSECURITY

The potential for importation or introduction of non-native plant species (such as Japanese Knotweed, Himalayan Balsam, etc.) during future rehabilitation management, such as drain-blocking using excavators, has the potential to result in the spread and establishment of invasive species within the site. Section 49 of the European Communities (Birds and Natural Habitats) Regulations 2011 prohibits the introduction and dispersal of invasive alien species (particularly plant species) listed on Part 1 (third column) of the 'Third Schedule'.

This section aims to reduce the risk from, and impacts of, invasive species and protecting biodiversity on lands under BnM ownership. Rehabilitation and decommissioning in the bog will have due regard to the relevant biosecurity measures outlined below:

- Records of problematic invasive species within the various bog units will be marked out with signs to highlight areas of infestation to personnel.
- All plant machinery will be restricted from disturbing known colonies of invasive species.
- All plant machinery will avoid unnecessary crossings to adjoining lands.
- Good site hygiene will be employed to prevent the introduction and spread of problematic invasive alien plant species (i.e. Japanese Knotweed (*Fallopia japonica*), Himalayan Balsam (*Impatiens glandulifera*), Himalayan Knotweed (*Persicaria wallichii*), etc.) by thoroughly washing vehicles prior to entering the area.

The biosecurity measures outlined above are in line with best practice guidelines issued by the National Roads Authority (NRA, 2010) – The Management of Noxious Weeds and Non-native Invasive Plant Species on National Roads and broadly based on the Environment Agency's (2013) – The Knotweed Code of Practice: Managing Japanese Knotweed on Development Sites (Version 3, amended in 2013, accessed on the Environment Agency's website on the 11th of July 2016).

In addition to the above, Best Practice measures around the prevention and spread of Crayfish plague⁴ will be adhered with throughout all rehabilitation measures and activities.

⁴ <https://www.biodiversityireland.ie/projects/invasive-species/crayfish-plague/>

APPENDIX V. POLICY AND REGULATORY FRAMEWORK

BnM (formerly Bord na Móna Plc) is a publicly owned company, originally established in 1934 to develop some of Ireland's extensive peat resources for the purposes of economic development and to support energy security. In the decades since its establishment the company has employed tens of thousands of people in its fuel, energy, and horticultural growing media businesses. For much of its history the company's support of important national policy aims has been enabled and encouraged in a variety of ways by Government.

Today, BnM is undertaking a number of highly significant actions in support of climate policy. These actions involve a radical transformation and decarbonisation of nearly the entire BnM business. This transformation will be driven by unlocking the full potential of our land and creating significant value for Ireland and the Midlands in particular.

BnM is an integral part of the economic, social, and environmental fabric of Ireland and Irish life. As a key employer in the Midlands, the company is conscious that its obligations go beyond purely commercial and environmental – there is also a social responsibility to employees and the communities served by BnM. It is the company's role and absolute priority to ensure that its long-term strategy delivers on all of these important areas in a robust and balanced way.

There are a wide range of policies, plans, legislation and land designations that inform the development of this BnM peatland rehabilitation plan. BnM have also developed and operate various policies and strategies that also inform the development of this rehabilitation plan.

1 EPA IPC Licence

BnM operates under an IPC Licence issued and administered by the EPA to extract peat within the Boora Bog group (Ref. PO-500-01). As part of Condition 10.2 of this licence, a rehabilitation plan must be prepared for permanent rehabilitation of the boglands within the licensed area. The bog is part of the Boora bog group. This regulatory requirement is the main driver of the development of this rehabilitation plan.

2 The Peatlands Climate Action Scheme (PCAS)

Bord na Móna (BnM) understand that it is the Minister's (DECC) intention to impose an obligation on BnM to develop a programme of measures, 'the Scheme', for the enhanced decommissioning, rehabilitation and restoration of boglands previously used to supply peat for electricity generation within the State. The enhanced decommissioning, rehabilitation and restoration of the peatlands funded by the Scheme (PCAS) will deliver benefits across climate action (GHG mitigation through reduced carbon emissions and acceleration towards carbon sequestration), enrich the State's natural capital, increase eco-system services, strengthen biodiversity, improve water quality and storage attenuation as well as developing the amenity potential of the peatlands.

It is envisaged that BnM carry out an enhanced decommissioning, rehabilitation and restoration, under the Scheme (PCAS), and supported by the Climate Action Fund and Ireland's National Recovery and Resilience Plan across a footprint of 33,000 ha. This scheme will significantly go beyond what is required to meet rehabilitation and decommissioning obligations under existing EPA IPC licence conditions. Interventions and measures supported by the Scheme will ensure that environmental stabilisation is achieved (meaning IPC obligations are met), and importantly, significant additional benefits, particularly relating to climate action and other ecosystem services, will also be delivered. However, only the additional costs associated with the additional and enhanced

rehabilitation, i.e., those activities which go beyond the existing decommissioning and rehabilitation requirements arising from Condition 10 will be eligible for support under the Scheme.

The proposed enhanced rehabilitation detailed in this document, are predicated on the understanding that the element of the activities, over and above the 'standard' rehabilitation necessary to comply with pre-existing Condition 10 IPC Licence requirements, will be deemed eligible costs by the Scheme regulator and funded by the Climate Action Fund and Ireland's National Recovery and Resilience Plan.

Galros has not been selected yet for inclusion within PCAS.

3 National Climate Policy

The National Policy Position establishes the fundamental national objective of achieving a transition to a competitive, low carbon, climate-resilient and environmentally sustainable economy by 2050. It sets out:

- the context for the objective;
- clarifies the level of GHG mitigation ambition envisaged; and
- establishes the process to pursue and achieve the overall objective.

The evolution of climate policy in Ireland will be an iterative process based on the adoption by government of a series of national plans over the period to 2050. GHG mitigation and adaptation to the impacts of climate change are to be addressed in parallel national plans – respectively through the National Climate Action Plan. The plans will be continually updated, as well as being reviewed on a structured basis at appropriate intervals and, at a minimum, every five years. This will include early identification and ongoing updating of possible transition pathways to 2050 to inform sectoral strategic choices.

BnM is following a decarbonisation programme aimed at reducing the carbon emissions from its activities. Industrial peat production has now ceased, and several other decarbonisation measures are being implemented. The company aims to further develop renewable energy and resource recovery markets with a key objective of reducing the carbon intensity of all products. In addition, the carbon emission mitigation benefits associated with the post-peat extraction rehabilitated peatland following re-wetting, revegetation and colonisation of significant areas with native woodland will make a significant contribution to achieving the State's carbon emission reduction targets.

4 National Peatlands Strategy

The National Peatlands Strategy (2015) contains a comprehensive list of actions, necessary to ensure that Ireland's peatlands are preserved, nurtured and become living assets within the communities that live beside them. It sets out a cross-governmental approach to managing issues that relate to peatlands, including compliance with EU environmental law, climate change, forestry, flood control, energy, nature conservation, planning, and agriculture. The Strategy has been developed in partnership between relevant Government Departments/State bodies and key stakeholders through the Peatlands Council.

The strategy recognises that Ireland's peatlands will continue to contribute to a wide variety of human needs and to be put to many uses. It aims to ensure that Ireland's peatlands are sustainably managed so that their benefits can be enjoyed responsibly. It aims to inform appropriate regulatory systems to facilitate good decision making in support of responsible use. It also aims to inform the provision of appropriate incentives, financial supports

and disincentives where required. The strategy attempts to strike an appropriate balance between different needs, including local stakeholders like turf-cutters and semi-state bodies such as BnM.

In line with a National Peatlands Strategy recommendation, a Peatlands Strategy Implementation Group (PSIG), was established, assisted in the finalisation of the Strategy, is overseeing subsequent implementation and will report to Government on an annual basis on the implementation of the actions and principles contained within the Strategy.

BnM is a key stakeholder in the National Peatlands Strategy and the Peatlands Strategy Implementation Group. The strategy recognises the potential for some BnM sites to be restored and to contribute to the national SAC and NHA network of protected raised bog sites. The strategy (agreed in 2015) also recognises the various different values of cutaway bog and developed six key principles (with BnM) for the after-use of cutaway bog.

- BnM will continue to assess and evaluate the potential of the company's land bank, using a land use review system. The assessment will help prepare a set of evidence-based management plans for the various areas of peatland. These plans will also inform its cutaway bog rehabilitation.
- The policy of BnM is not to open up any undrained new bogs for peat production.
- Lands identified by BnM as having high biodiversity value and/or priority habitats will be reserved for these purposes as the principal future land use.
- Generally, BnM cutaway bogs that flood naturally will be permitted to flood unless there is a clear environmental and/or economic case to maintain pumped drainage.
- In deciding on the most appropriate after use of cutaway peatlands, consideration shall be given to encouraging, where possible, the return to a natural functioning peatland ecosystem.
- This will require re-wetting of the cutaway peatlands which may lead in time to the restoration of the peatland ecosystem.
- Environmentally, socially and economically viable options should be analysed to plan the future use of industrial cutaway peatlands, in conjunction with limiting factors as outlined in BnM's Strategic Framework for the Future Use of Peatlands.

The National Peatlands Strategy highlights the importance and value of developing peatland rehabilitation plans for BnM cutaway sites and implementing this peatland rehabilitation. Some of these principles have now been superseded by the company's decision to cease industrial peat extraction. The National Peatlands Strategy is currently being reviewed by Government.

5 National River Basin Management Plan 2022-2027 (Water Framework Directive)

The Water Action Plan 2024, River Basin Management Plan for Ireland 2022-2027 (Department of Housing, Local Government and Heritage, 2022) is the key national plan for Ireland to achieve the objectives of the Water Framework Directive (WFD). In broad terms, the objectives of the WFD are (1) to prevent the deterioration of water bodies and to protect, enhance and restore them with the aim of achieving at least good status and (2) to achieve compliance with the requirements for designated protected areas.

The NRBMP 2022-2027 outlined how peat extraction can be a potentially significant pressure on various water quality parameters. Peatland rehabilitation of BnM cutaway (in addition to other measures) was part of the WFD (2022-2027) programme of measures. The NRBMP 2022-2027 takes account of the fact that BnM was in the process of phasing out the extraction of peat for energy production, that it set a target to rehabilitate 9,000 ha of cutaway bogs (covering 25 peatlands) by 2021 (in 2018) and will look to implement best-available mitigation

measures to further reduce water quality impacts caused by peat extraction while the phasing-out process is taking place. This NRBMP 2022-2027 rehabilitation target was superseded by the acceleration of the BnM decarbonisation programme and the Scheme (PCAS).

The development of site rehabilitation plans and the delivery of peatland rehabilitation by BnM was expected to have a positive impact on water quality and will help the NRBMP 2022-2027 deliver its objectives in relation to the Water Framework Directive and is one of the five key principal actions.

The NRBMP 2022-2027 describes how the number of waterbodies impacted by peat, industry and forestry have decreased by 10, 10 and 5 waterbodies, respectively since the second cycle. Impacts on water quality and river habitat arising from peat and peat extraction and associated drainage include the release of ammonium and fine-grained suspended sediments, and physical alteration of aquatic habitats. Drainage of peatlands also results in changes to the hydromorphological condition of rivers.

The NRBMP 2022-2027 outlines how maintaining and restoring Irish bogs will lead to a decrease in waterborne carbon leaching to levels comparable with intact bogs as well as reducing losses of peat silt and ammonia. Vegetation on the surface of the peat can also slow the flow of water over the land surface. Based on the EPA's most recent reports, peat extraction and drainage is impacting on 106 water bodies across the country, with peat the single pressure on 28 of these water bodies. However, compared to the data in the second-cycle plan, the number of water bodies impacted by peat has decreased.

The cessation of industrial peat extraction by BnM in 2021 was expected to have a significant positive impact on water quality of receiving water courses by reducing the impact of peat extraction as a key pressure on particular water courses. This is now being supported by the results and conclusions of the draft NRBMP 2022-2027.

6 4th National Biodiversity Action Plan 2023-2030

Ireland's 4th National Biodiversity Action Plan (NBAP) sets the national biodiversity agenda for the period 2023-2030 and aims to deliver the transformative changes required to the ways in which we value and protect nature. The 4th NBAP has been developed with the support, advice and input of the interdepartmental Biodiversity Working Group and the independent Biodiversity Forum. Ireland's 2nd National Biodiversity Conference was held to gather insights and recommendations for the development of the NBAP and a public consultation process was held to provide further opportunities to engage with the Plan.

The 4th NBAP strives for a "whole of government, whole of society" approach to the governance and conservation of biodiversity. The aim is to ensure that every citizen, community, business, local authority, semi-state and state agency has an awareness of biodiversity and its importance, and of the implications of its loss, while also understanding how they can act to address the biodiversity emergency as part of a renewed national effort to "act for nature".

The delivery of rehabilitation via PCAS is expected to significantly contribute in the future to actions and targets of the 4th National Biodiversity Action Plan 2023-2030, particularly in relation to peatland restoration, nature restoration and creation of new habitats such as wetlands and woodlands.

7 EU Nature Restoration Law

The EU Nature Restoration Law is a key element of the EU Biodiversity Strategy, which sets binding targets to restore degraded ecosystems, in particular those with the most potential to capture and store carbon and to

prevent and reduce the impact of natural disasters. The regulation combines an overarching restoration objective for the long-term recovery of nature in the EU's land and sea areas with binding restoration targets for specific habitats and species. These measures should cover at least 20% of the EU's land and sea areas by 2030, and ultimately all ecosystems in need of restoration by 2050.

This regulation has now been adapted and it is expected that all Member States will be required to produce a National Restoration Plan within two years of adoption. This will be led by the National Parks and Wildlife Service and will comprise a broad and deep public participation process, informed by robust ecological and socio-economic impact assessments. BnM are working with NPWS to identify bog restoration and other re-wetted cutaway sites that can contribute towards Ireland's targets for the Nature Restoration Law.

8 National conservation designations

BnM operates in a wider landscape that also includes a network of European and National nature conservation sites (Special Areas of Conservation (SACs), Special Protection Areas (SPAs), National Heritage Areas (NHAs, pNHAs) and National Nature Reserves). BnM will take account of this network of conservation objectives and their conservation objectives when developing these rehabilitation plans. It is expected that peatland rehabilitation will, in general, benefit the conservation objectives of this network of nature conservation sites.

9 National Raised Bog Special Area of Conservation Management Plan 2017-2022.

The National Raised Bog Special Area of Conservation Management Plan 2017-2022 sets out a roadmap for the long-term management, restoration and conservation of protected raised bogs in Ireland. The Plan strikes an appropriate balance between the need to conserve and restore Ireland's raised bog network as part of Ireland's commitments towards the EU Habitats Directive, and the needs of stakeholders and gives recognition to the important role that communities have to play in the conservation and restoration of raised bogs. The National Raised Bog Special Areas of Conservation (SACs) Management Plan 2017-2022 is part of the measures being implemented in response to the on-going infringement action against Ireland in relation to the implementation of the EU Habitats Directive, with regard to the regulation of turf cutting on the Special Areas of Conservation (SACs). The then Minister for Arts, Heritage and the Gaeltacht, also published a **Review of Raised Bog Natural Heritage Area Network** in 2014.

BnM has played a key role in the development of the National Raised Bog Special Area of Conservation Management Plan 2017-2022 and the Review of the Raised Bog Natural Heritage Area Network. Several BnM sites were assessed by the National Parks and Wildlife Service as part of the above Plan and Review and there is an expectation that several BnM sites will be designated as SACs and NHAs in the future. This will reinforce the network of protected raised bog sites and replace in part sites that will be de-designated as they have been deemed to be significantly damaged and are deemed to have no raised bog restoration prospects. PCAS is expected to restore several sites that will contribute to The National Raised Bog Special Areas of Conservation (SACs) Management Plan 2017-2022 targets in relation to the restoration of raised bog habitat.

BnM has also responded to the needs of the NRBMP and provided several sites to the government for the relocation of turf-cutters from SACs. This is part of a suite of ongoing bog conservation measures in the NRBMP to manage turf-cutting in protected sites. BnM and the National Parks and Wildlife Service continues to engage regarding the ongoing relocation of turf-cutters from protected raised bog sites.

10 All-Ireland Pollinator Plan 2021-2025

The All-Ireland Pollinator Plan 2021-2025 outlines key objectives and actions to protect and support pollinating insects and the habitats they rely on. A BnM specific action in this plan includes the adoption of pollinator-friendly management within the BnM network of sites. One action to help achieve this objective is habitat rehabilitation and restoration, where possible, of pollinator-friendly habitats, including peatland habitats.

11 Land-use planning policies

As BnM operates in many counties across Ireland, it is important to note the respective development plans in these counties. Many of the existing development plans recognise the potential that exists in the after-use of cutover/cutaway peatlands. BnM seeks to work with all of the relevant local authorities to ensure that the most appropriate after-uses are reflected in local planning policy. The following areas of consistent importance are of both direct and indirect relevance to BnM: heritage, tourism, biodiversity/conservation, landscape, renewable energy, and economy/enterprise.

12 National Archaeology Code of Practice

BnM operates under an agreed Code of Practice regarding archaeology with the Department of Arts, Heritage and the Gaeltacht and the National Museum of Ireland which provides a framework to enable the Company to progress peat extraction whilst carrying out archaeological mitigation. (<https://www.archaeology.ie/sites/default/files/media/publications/cop-bord-na-mona-en.pdf>)

The Code replaced a set of Principles agreed with the Department of Arts, Heritage and the Gaeltacht in the 1990s. Under the Code BnM, the Minister and Director work together to ensure that appropriate archaeological mitigation is carried out in advance of peat extraction.

- BnM must ensure that any monuments or archaeological objects discovered during peat extraction are protected in an appropriate manner by following the Archaeological Protection Procedures.
- BnM must ensure that any newly discovered monuments on BnM lands are reported in a timely manner to the National Monuments Service of the Department of Arts, Heritage and the Gaeltacht.
- BnM must ensure that any archaeological objects discovered on BnM lands are reported immediately to the Duty Officer of the National Museum of Ireland.
- BnM will adhere to the Archaeology Code of Practice relating to management of any archaeological finds that may arise during cutaway peatland rehabilitation and decommissioning.

13 Bord na Móna Biodiversity Action Plan 2016-2021

Rehabilitation of industrial peatlands is a key objective of the Bord na Móna Biodiversity Action Plan 2016-2021. This action plan outlines the main objectives and actions around biodiversity on BnM lands. The Bord na Móna Biodiversity Action Plan also outlines key International and European policy in relation to biodiversity. This includes the **United Nations Convention on Biodiversity 2011-2020 (CBD)** and **European Biodiversity Strategy to 2020**. Further details of these policies and BnM's responses can be found in the Bord na Móna Biodiversity Action

Plan (Bord na Móna, 2016). Both policy documents highlight targets such as reducing pressure on biodiversity, promoting sustainability, habitat restoration and benefits of ecosystem services.

One example of a key CBD target is:

- *“Restore at least 15% of degraded areas through conservation and restoration activities.”*

The EUs headline target for progress by 2020 is to:

- *“halt the loss of biodiversity and the degradation of ecosystems in the EU by 2020, restore them as far as feasible, while stepping up the EU contribution to averting global biodiversity loss.”*

This rehabilitation plan is aligned to the CBD target and the EU Biodiversity Strategy target and will help Ireland meet its commitment to these international Biodiversity policies.

14 BnM commitments

BnM made the commitment in 2009 not to develop any new peatland sites for industrial peat production. The company has continued to work with different stakeholders.

In line with BnM’s accelerated decarbonisation programme, the company made a further commitment to a significantly larger rehabilitation target. This was reflected in our plans to rehabilitate a further 20,000 hectares of cutaway and cutover bog to wetland and woodland mosaics by 2025. In addition, we planned to restore a further 1,000 hectares of raised bog habitat by 2025. These initial targets have been achieved.

The company announced the cessation of industrial peat production in 2021 and that it would rehabilitate a target of 33,000 ha between 2021-2026. Rehabilitation measures will continue to be carried out with the focus on re-wetting and rehabilitation of cutover and cutaway areas in line with national policies (such as the National Peatland Strategy, the National Biodiversity Action Plan, The Nature Restoration Law, the Climate Action Plan, the Water Framework Directive, etc.) and rehabilitation guidelines set down by the Environmental Protection Agency. BnM has now transitioned to a Climate Solutions company with a key commercial and development focus being the delivery of renewable energy to support Ireland’s Climate Action Plan. In general, BnM will seek to balance and optimise commercial, social, and environmental value of its bogs, and develop integrated land-uses, while taking account of the need for sustainability and their biodiversity value.

These commitments outline the importance of peatland rehabilitation to BnM. The company will continue to demonstrate environmental responsibility and continue to deliver on these commitments in relation to peatland rehabilitation and in relation to the future management of these lands to maximise their benefits, particularly their ecosystem service benefits, along with the sustainable development of a portion of the land bank for other uses, such as renewable energy.

APPENDIX VI. DECOMMISSIONING

1. Condition 10 Decommissioning

This is a requirement of the applicable Integrated Pollution Control Licence issued by the Environmental Protection Agency. This condition 10.1 requires the following:

10.1 Following termination of use or involvement of all or part of the site in the licensed activity, the licensee shall:

10.1.1 Decommission, render safe or remove for disposal/recovery, any soil, subsoils, buildings, plant or equipment, or any waste, materials or substances or other matter contained therein or thereon, that may result in environmental pollution.

The main success criteria pertaining to successfully complying with this condition is ensuring that no environmental liability remains from this infrastructure and material and that the bog can be deemed suitable for surrender of the licence under section 95 of the EPA Acts. This is achieved by BnM identifying and quantifying any mechanical and infrastructural resources that were installed in the bog to enable the development and production operation at the site. This list is then refined to identify any items that would be deemed as possibly resulting in environmental pollution, should they not be removed.

Typically, these items/infrastructures would be any remaining, unconsolidated plant, equipment and attachments, waste materials, unused raw materials such as land drainage pipes, remaining peat stockpiles, stockpile covering, pumps, septic tanks and fuel tanks.

In relation to this bog, the list and tasks would be as follows:

Item	Description	Galros Decommissioning Plan
1	Clean-up of remaining or unconsolidated waste or materials located in Bogs, Yards, Buildings and Offices	Where relevant
2	Cleaning Silt Ponds	Cleaning Silt Ponds
3	Decommissioning Peat Stockpiles	Where relevant
4	Decommissioning or Removal of Buildings and Compounds	Where relevant
5	Decommissioning Fuel Tanks and associated facilities	Where relevant
6	Decommissioning and Removal of Bog Pump Sites	Not relevant
7	Decommissioning or Removal of Septic Tanks	Where required

In addition, condition 7 of the licence requires these now defined waste items to be disposed of or recovered as follows:

7.1 Disposal or recovery of waste shall take place only as specified in *Schedule 2(i) Hazardous Wastes for Disposal/Recovery* and *Schedule 2(ii) Other Wastes for Disposal/Recovery* of this licence and in accordance with the appropriate National and European legislation and protocols. No other waste shall be disposed of/recovered either on-site or off-site without prior notice to, and prior written agreement of, the Agency.

7.2 Waste sent off-site for recovery or disposal shall only be conveyed to a waste contractor, as agreed by the Agency, and only transported from the site of the activity to the site of recovery/disposal in a manner which will not adversely affect the environment.

7.3 A full record, which shall be open to inspection by authorized persons of the Agency at all times, shall be kept by the licensee on matters relating to the waste management operations and practices at this site. This record shall as a minimum contain details of the following:

7.3.1 The names of the agent and transporter of the waste.

7.3.2 The name of the persons responsible for the ultimate disposal/recovery of the waste.

7.3.3 The ultimate destination of the waste.

7.3.4 Written confirmation of the acceptance and disposal/recovery of any hazardous waste consignments sent off-site.

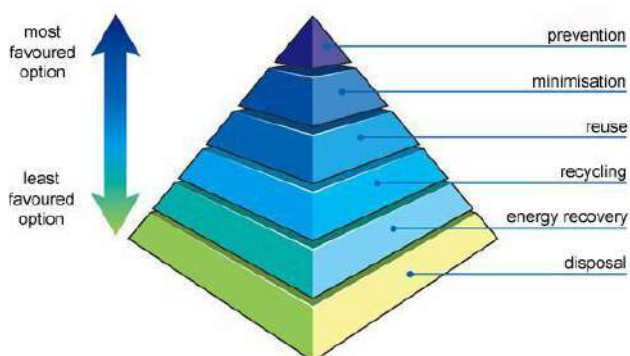
7.3.5 The tonnages and EWC Code for the waste materials listed in *Schedule 2(i) Hazardous Wastes for Disposal/Recovery* and *Schedule 2(ii) Other Wastes for Disposal/Recovery* sent off-site for disposal/recovery.

7.3.6 Details of any rejected consignments.

A copy of this Waste Management record shall be submitted to the Agency as part of the AER for the site.

As required by the licence, these waste items will be removed for recycling or disposal, using external contractors with the required waste collection permits, approved under 7.2, with waste records maintained as required under 7.3.

Where possible, BnM will utilize the appropriate waste hierarchy to identify waste that can reused or recycled ahead of disposal.



The validation of the success of condition 10.1 is carried out through an Independent Closure Audit (ICA), followed by an EPA Exit Audit (EA) and the eventual partial or full surrender of the licence.

APPENDIX VII. GLOSSARY

Cutaway Bog: A BnM site generally becomes cutaway when it is economically unviable to continue industrial peat extraction or when the majority of peat has been removed.

Deep peat cutover bog. Deep peat cutover bog is defined as former raised bogs that have been in industrial peat production, where production has ceased but the residual peat depth is typically in excess of 2m. *Sphagnum* mosses are key species of raised bogs and the majority of the peat mass is formed from these mosses. *Sphagnum* species and other raised bog species are a key part of raised bog habitat function and prefer more acidic, nutrient poor, water-logged conditions. Typical raised bog *Sphagnum* mosses and other bog species do not thrive with the more typical alkaline water chemistry of cutaway bog but do grow well in these more acidic conditions where peat has been re-wetted. There is potential to re-develop embryonic *Sphagnum*-rich plant communities in these conditions if the peat can be re-wetted. This brings the opportunity of re-developing embryonic *Sphagnum*-rich vegetation communities that are considered Carbon sinks or peat-forming habitats and restoring the carbon sequestration function of these sites.

Dry cutaway bog: Cutaway bog is categorised as dry cutaway where it is not practical or feasible to re-wet these areas completely. It is inevitable that some areas of cutaway will remain relatively dry due to the heterogenous topography of the cutaway, as well as requirements for continued drainage on site for identified after-uses, or off site in relation to neighbouring lands or other infrastructure. Ridges and mounds of glacial deposits can become exposed during peat extraction and form a heterogenous topographical mosaic separated by basins. Dry cutaway may have very thin or no residual peat where ridges and mounds have been exposed. The exposed sub-soils are a mix of glacial gravels, muds and tills that can be quite free-draining. Dry cutaway may also have deeper residual peat but in a location (i.e. at the margin) where the peat cannot be re-wetted due to boundary constraints. Dry cutaway may also develop in situations where there is a relatively steep slope that inhibits re-wetting. The majority of dry cutaway will develop towards grassland, heath, scrub and dry woodland habitats.

Environmental stabilisation: The key objective of peatland rehabilitation is environmental stabilisation. This means developing habitats and vegetation back onto the bare peat, slowing water movement across the bog, minimising effects to downstream waterbodies and meeting the conditions of the IPC Licence. This is achieved by a combination of re-wetting, where possible, and natural colonisation of the former cutaway, with or without intervention. Habitats will develop that reflect the underlying environmental conditions. Other after-use development may also serve to act as environmental stabilisation.

Marginal land. Marginal land is defined as land around the margin of the industrial peat production area. This margin generally contains a range of habitats including scrub, Birch woodland, cutover bog and raised bog remnants. It has a variety of land-uses including turf-cutting (private turbary).

Rehabilitation: Rehabilitation is defined in general by BnM as environmental stabilisation of the former cutaway. This is generally achieved via re-wetting, where possible, and natural colonisation of the former cutaway, with or without intervention. It is not possible to restore raised bog habitats on BnM cutaway in general in the short-term. In general, most of the peat mass has been removed from many BnM cutaway sites and the environmental characteristics of these areas have therefore changed radically (peat depths, hydrology, water chemistry, substrate type, nutrient status. This means there will therefore be different habitat outcomes (wetlands, fen, heathland, grassland and Birch woodland). Other after-use development may also serve to act as rehabilitation.

Restoration: Ecological restoration is defined as the process of re-establishing to the extent possible the structure, function and integrity of indigenous ecosystems and the sustaining habitats they provide" (SER 2004). Defined in this way, restoration encompasses the repair of ecosystems (Whisenant 1999) and the **improvement**

of ecological conditions in damaged wildlands through the **reinstatement of ecological processes**. In general, BnM cutaway peatlands cannot be restored back to raised bog in a reasonable timeframe as their environmental conditions has changed so radically (with the removal of the acrotelm – the living layer and much of the peat mass). However, they can be returned to a **trajectory** towards a naturally functioning peatland system (Renou-Wilson 2012). **Raised bog restoration** is an objective of some BnM sites where there is residual natural raised bog vegetation and where the majority of the peat is still intact.

Standard rehabilitation: This is defined as rehabilitation that is designed to meet the conditions of the EPA IPC Licence. The key objective of rehabilitation is environmental stabilisation. This is achieved by a combination of re-wetting, where possible, and natural colonisation of the former cutaway, with or without intervention. Other after-use development may also serve to act as rehabilitation.

Standard decommissioning: This is defined as decommissioning that is designed to meet the conditions of the EPA IPC Licence. This is defined as to render safe or remove for disposal/recovery, any soil, subsoils, buildings, plant or equipment, or any waste, materials or substances or other matter contained therein or thereon, that may result in environmental pollution.

Wetland cutaway bog. Wetland cutaway bog is defined as former raised bogs that have been in industrial peat production, where production has ceased and the majority of peat has been cutaway, and where this cutaway has the potential to be re-wetted. A significant number of BnM sites have pumped drainage and these sites are likely to develop a mosaic of wetland habitats when pumping is reduced or stopped. The water chemistry of wetland cutaway frequently is strongly influenced by the more alkaline sub-soils that have been exposed during peat production. This means that pioneer vegetation is more typical of fen and wetland, rather than raised bog. Wetland cutaway will have a broad range of hydrological conditions depending on the local topography. In some cases, these wetlands may form deep water (> 0.5 m) whilst other areas may have the water table at or just below the surface of the ground.

APPENDIX VIII. EXTRACTIVE WASTE MANAGEMENT PLAN

Objective:

The objective of this generic plan is to comply with the requirements of regulation 5 of the Waste Management (Management of Waste from Extractive Industries) Regulations, and to prevent or reduce waste production and its harmfulness.

Scope:

This plan covers IPPC Licence's Ref. P0500-01, Boora bog group.

1.0 Extractive Waste:

Waste classified as extractive waste from peat extraction operations arise from three operations associated with this activity.

1.1 Silt Pond excavations and maintenance.

All peat extraction activities in Boora bog group are serviced by silt lagoons/ponds. During the excavation of these silt ponds, pre-IPPC Licensing in 1999 and since licensing, the excavated material is stored adjacent to the silt pond, where it either remains in situ or is levelled out. As required by condition 6.6, these silt lagoons are cleaned twice per annum or more often if inspections dictate. These silt cleanings are also deposited on the same location, adjacent to the silt pond, where they may be levelled periodically to allow room for subsequent cleanings. These mounds of silt pond excavation material and cleanings are generally no higher than 2-3 metres.

1.2 Power Station screenings:

Peat from the bogs is screened prior to processing. This screening removes oversized peat, stones and bogs timbers. Schedule 3 (ii) of the IPPC licence permits disposal of these peat screenings back to the bog, where it is levelled and graded into the surrounding peat landscape. These locations have been agreed with the Agency as per condition 7.4 of the IPPC Licence, and as per the attached locations.

1.3 Bog Timbers:

During peat extraction operations, bog timbers often arise in the bog surface and are required to be cleared. These timbers consist of bog pine, oak and some yew. Some of these timbers, such as the oak and yew are removed for use in the wood craft industry, with the remaining bog pine stockpiled in locations at the opposite end of each bog, where it generally becomes a habitat for flora and fauna. These piles of timber are generally no higher than 1-2 metres.

2.0 P0500-01 IPPC Licence Extractive Waste Conditions

2.1 Condition 7.5 Extractive Waste Management

The licensee shall draw up a Waste Management Plan (to be known as an Extractive Waste Management Plan) for the minimisation, treatment, recovery and disposal of extractive waste. This Plan shall meet the requirements of regulation 5 of the Waste Management (Management of Waste from the Extractive Industries) Regulations, 2009. The Plan shall be submitted for agreement by the Agency by the 31st December 2012. The Plan shall be reviewed at least once every five years thereafter in a manner agreeable to the Agency and amended in the event of substantial changes to the operation of a waste facility or to the waste deposited. Any amendments shall be notified to the Agency.

All extractive waste shall be managed in accordance with the Extractive Waste Management Plan. A report on the implementation of the Extractive Waste Management Plan shall be provided in the AER.

2.2 Condition 7.6 Waste Facility

- (i) No new waste facility may be developed or an existing waste facility modified unless agreed by the Agency.
- (ii) The licensee shall ensure that all existing waste facilities are managed and maintained to ensure their physical stability and to prevent pollution or contamination of soil, air, surface water or groundwater.
- (iii) The licensee shall ensure that all new waste facilities are constructed, managed and maintained to ensure their physical stability and to prevent pollution or contamination of soil, air, surface water or groundwater.
- (iv) Operational measures shall be continuously employed to prevent damage to waste facilities from personnel, plant or equipment.
- (v) The licensee shall establish and maintain a system for regular monitoring and inspection of waste facilities.
- (vi) All records of monitoring and inspection of waste facilities, as required under the licence, shall be maintained on-site in order to ensure the appropriate handover of information in the event of a change of operator or relevant personnel.

2.3 Condition 7.7 Excavation Voids

7.7.1 Unless otherwise agreed by the Agency, only extractive waste shall be placed in excavation voids.

7.7.2 When placing extractive waste into excavation voids for rehabilitation and construction purposes, the licensee shall, in accordance with regulation 10 of the Waste Management (Management of Waste from the Extractive Industries) Regulations, 2009, and the Extractive Waste Management Plan:

- Secure the stability of the waste
- Put in place measures to prevent pollution of soil, surface water and ground water.
- Carry out monitoring of the extractive waste and excavation void.

Condition 7.5. Extractive Waste Management Plan. 5 (1)

3.0 Minimisation.

3.1 Silt pond excavation material and cleanings.

IPPC Licence conditions require all production areas to be serviced by an appropriately designed silt pond based on storage volume and retention time. Condition 6.6 requires all ponds to be cleaned bi-annually and more often if inspections dictate, so the only opportunity for minimisation of same is through Standard Operating Procedures. These are required under condition 2.2.2 (i) regarding minimisation of suspended solids, and are in-place to minimise the generation of silt, which in-turn will minimise the generation of silt pond waste.

3.2 Power Station Screenings.

These screenings cannot be minimised as they are a consequence of peat production, stones, timbers and oversize peat materials are naturally occurring on the bog, and are required to be removed prior to processing.

3.3 Bog Timbers.

Bog timbers are also naturally occurring materials within a bog and are required to be removed prior for production. The volume of these bog timbers varies from bog to bog and as such their minimisation is not controllable or quantifiable.

4.0 Treatment

4.1 Silt pond excavation material and cleanings.

The silt pond excavation material and silt cleanings do not require any treatment for its end use which will be either backfilling these silt pond voids as per condition 7.7.1 above as part of the Bog Rehabilitation Plan, or reincorporated into the surrounding peatlands.

4.2 Power Station Screenings.

The factory screenings are permitted to be returned to the bog as they were naturally occurring materials from the bog, and as such do not require any treatment to serve this purpose.

4.3 Bog Timbers

As per 1.3 above, these timbers are stockpiled at two locations in each bog, as per the attached list of sites and become habitats for various flora and fauna.

5.0 Recovery

5.1 Silt pond excavation material and cleanings.

Condition 2.2.2 (vi) requires the reuse of silt pond waste to be examined. This was undertaken in 2006, the outcome of which was that this waste peat silt material, as a fuel, was contaminated with sub-soils, rendering it unsuitable for combustion. In addition, volumes are small compared to overall peat production volumes.

5.2 Power Station Screenings.

Given the nature of these screenings as outlined in 1.2 above, there is no further use identified and they are permitted to be disposed of back to the bog.

5.3 Bog Timbers

Investigations into processing these materials into smaller fractions for potential heating purposes did not yield any viable results. In addition, these older stockpiles are now classified as habitats and as such would not be considered for reuse as a fuel.

6.0 Disposal

6.1 Silt pond excavation material and cleanings.

Schedule 3 (ii) permits the disposal of silt pond cleanings (Lagoon Sediments) to the bog and these locations, adjacent to the silt pond site, are presented in the attached spreadsheet, with associated grid coordinates.

6.2 Power Station Screenings.

Schedule 3 (ii) permits the disposal of screenings (Peat Screenings) to the bog at designated locations agreed under Condition 7.4, and these locations, are presented in the attached spreadsheet, with associated grid coordinates.

6.3 Bog Timbers

These naturally occurring bog timbers are stockpiled at locations in each bog, grid coordinates attached.

7.0 Extractive Waste Management Plan

5 (2a)(i)

The vast majority of peat extraction bogs were all designed and drained for production prior to the 1960's and as such the production fields layout cannot be altered. Under our Cleaner Reduction Procedures, various design changes have been implemented to the production machines and process to reduce lost peat which eventually is captured in the silt ponds and requires removal as waste peat silt. This along with training and ongoing research and development will continuously reduce waste peat and subsequently waste silt pond cleanings. Bog timbers are present naturally in various volumes and quantities in different bogs and as peat production involves stripping peat in layers, the exposure, generation and removal of these timbers is unavoidable. Work has been undertaken recently into project looking at grinding of these bog timbers in situ using a timber miller, and if this project becomes viable it will contribute to the reduction of bog timbers.

5 (2a)(ii)

Given the nature and expanse of peat bogs, the stockpiling and storage of these waste materials do not present a visual, storage or stability problem. As required under Condition 10 of the IPPC Licence, the silt pond excavations and screenings will be utilised to backfill the silt pond voids once the bogs have finished and stabilised in accordance with our Bog Rehabilitation Plan. Storage of these wastes in the interim, open to the elements does not present a change on the nature of these wastes that will threaten the environment or prevent their reuse during the bog rehabilitation process.

5 (2a)(iii)

Under Condition 10 of the IPPC Licence, all silt ponds will be decommissioned once the bog surface has stabilised, in agreement with the Agency. This will involve the removal of weirs and flow controls, returning the silt pond back to its original drain or removing the silt pond from the drainage system. Both of these activities will involve placing the silt pond extraction and cleaning material back into the excavation void.

5 (2a)(iv)

The peat bogs do not contain any topsoil, so this is not required.

5 (2a)(v)

Peat mineral resources do not undergo any treatment.

5 (2b)

These three extractive waste are all being reused and recovered back to their original extraction points and have not undergone any physical, chemical, or biological change.

5 (2c)(i, ii & iii)

These three extractive wastes, stored on the bog for reuse or recovery during the bog rehabilitation phase, do not require any management or monitoring during the operation of these bogs. Silt pond excavations and cleanings are stored adjacent to the silt pond and quickly revegetated and stabilise, the screenings are graded back into the bog at the agreed locations upon disposal and the bog timbers do not prevent any water or airborne danger to the environment.

5 (3)

The three extractive wastes arising from peat extraction operations at this site are classified wastes from mineral non-metalliferous excavation, with an EWC code of 0101 02. The materials are not classified as hazardous under Directive 91/689/EEC20, and do not contain substances or preparations classified as dangerous under Directives 67/548/EEC5 or 1999/45/EC6 above a certain threshold.

The peat excavations and cleanings are stored in locations and in a manner that they could not collapse, and are remote in their nature. The stockpiles are located adjacent to silt ponds that are cleaned regularly and as such these stockpiles are managed and levelled to facilitate further cleanings. Therefore the material stored at these waste facilities would not be considered to be a Category A waste facility.

Classification in accordance Annex II.

Waste Material	Description	Classification	Chemical Process treatment	Deposition description	Transport System
Silt Pond Excavations and cleanings	Peat and mineral soils associated with peatlands. Stored for reuse during bog rehabilitation, with no displacement of overburden	01 01 02	None	Excavated from silt ponds by excavator and deposited adjacent to the silt pond.	Excavator
Peat Screenings	Stones, timbers and oversized peat particles, reincorporated into low areas, agreed with the Agency, and stabilized under normal natural bog conditions	01 01 02	None	Removed by screen at the factory and transported by tractor and trailer to the designated and agreed locations	Tractor and trailer.
Bog Timbers	Pine, Oak and Yew species, stored at locations in each bog. Not subject to any stability issues due to exposure to atmospheric/meteorological conditions.	01 01 02	None	Removed from the bog surface by excavator and transported by tractor and trailer to the agreed locations	Tractor and Trailer

Description of operations.

Silt pond excavations arise from the requirement to have silt ponds treating all peat extraction sites. Silt pond cleanings arise from the removal of peat silt from silt ponds as required under IPPC Licence. Bog timbers arise from preparation of the bogs surface for peat production. Estimated quantities of materials are below:

Closure plan. (Bog Rehabilitation Plan).

Condition 10.1 – 10.3 of the IPPC Licence requires the following:

- 10.1 Following termination of use or involvement of all or part of the site in the licensed activity, the licensee shall:
- 10.1.1 Decommission, render safe or remove for disposal/recovery, any soil, subsoils, buildings, plant or equipment, or any waste, materials or substances or other matter contained therein or thereon, that may result in environmental pollution.
- 10.1.2 Implement the agreed cutaway bog rehabilitation plan (refer Condition 10.2).

10.2 Cutaway Bog Rehabilitation Plan:

- 10.2.1 The licensee shall prepare, to the satisfaction of the Agency, a fully detailed and costed plan for permanent rehabilitation of the cutaway boglands within the licensed area. This plan shall be submitted to the Agency for agreement within eighteen months of the date of grant of this licence.
- 10.2.2 The plan shall be reviewed every two years and proposed amendments thereto notified to the Agency for agreement as part of the AER. No amendments may be implemented without the written agreement of the Agency.

10.3 The Rehabilitation Plan shall include as a minimum, the following:

- 10.3.1 A scope statement for the plan; to include outcome of consultations with relevant Agencies, Authorities and affected parties (to be identified by the licensee).
- 10.3.2 The criteria which define the successful rehabilitation of the activity or part thereof, which ensures minimum impact to the environment.
- 10.3.3 A programme to achieve the stated criteria.
- 10.3.4 Where relevant, a test programme to demonstrate the successful implementation of the rehabilitation plan.
- 10.3.5 A programme for aftercare and maintenance.

10.4 A final validation report to include a certificate of completion for the Rehabilitation Plan, for all or part of the site as necessary, shall be submitted to the Agency within six months of execution of the plan. The licensee shall carry out such tests, investigations or submit certification, as requested by the Agency, to confirm that there is no continuing risk to the environment. This plan including maps and ecological classifications are available on file at the Boora IPPC Licence Coordinators office.

The location in relation to the silt pond excavations and cleanings are adjacent to the silt ponds, which are considered under the National River Basin Management Plan in accordance with the requirements of Directive 2000/60/EC.

Screenings and bog timbers are all naturally occurring elements of peatland and there placement back to the bog in smaller concentrated designated waste facilities does not constitute a risk to the prevention of water compliance.

The lands under where these materials are deposited are peatlands and are un-effected by the placing of this material.

Review.

This plan will be reviewed every five years, the first review to take place in September 2017. This review will entail an inspection of these waste facilities to ensure their placing, management, maintenance and stability comply with the requirements of the Extractive Waste Management requirements and condition 7.5, 7.6 and 7.7 of the IPPC Licence Ref. P0500-01.

APPENDIX IX. MITIGATION MEASURES FOR THE APPLICATION OF FERTILISER

- Any fertiliser used will be Rock Phosphate and will not be applied in the following conditions:
 1. The land is waterlogged;
 2. The land is flooded, or it is likely to flood;
 3. The land is frozen, or covered with snow;
 4. Heavy rain is forecast within 48 hours (forecasts will be checked from Met Éireann).
 5. The ground slopes steeply and there is a risk of water pollution, when factors such as surface run-off pathways, the presence of land drains, the absence of hedgerows to mitigate surface flow, soil condition and ground cover are taken into account.
- No fertiliser will be spread on land within 2 metres of a surface watercourse.
- Buffer zones in respect of waterbodies, in line with advice on the implementation of the European Union (Good Agricultural Practice for Protected of Waters) (Amendment) Regulations 2022, latest statutory instrument below at link: <https://www.irishstatutebook.ie/eli/2022/si/113/made/en/pdf> will be adhered to at all times with regard to fertiliser application. Reproduced as follows:

Water body / Feature	Buffer zone
Any water supply source providing 100m ³ or more of water per day, or serving 500 or more people	200 metres (or as little as 30 metres where a local authority allows)
Any water supply source providing 10m ³ or more of water per day, or serving 50 or more people	100 metres (or as little as 30 metres where a local authority allows)
Any other water supply for human consumption	25 metres (or as little as 30 metres where a local authority allows)
Lake shoreline	20 metres
Exposed cavernous or karstified limestone features (such as swallow holes or collapse features)	15 metres
Any surface watercourse where the slope towards the watercourse exceeds 10%	10 metres
Any other surface waters	5 metres*

APPENDIX X. ARCHAEOLOGY

Role of the Archaeological Liaison Officer

1. To communicate this Code of Practice and the *Archaeological Protection Procedures* (Appendix IV) to all personnel operating on the bog.
2. To ensure that all notices relating to the *Archaeological Protection Procedures* are posted and maintained at appropriate locations on the bog.
3. To report any stray finds, presented to the Liaison Officer from his/her group of bogs, to the Duty Officer of the National Museum of Ireland.
4. To provide for the appropriate protection of the stray find, whether in-situ or removed from the bog, as directed by the Duty Officer of the National Museum of Ireland.



Code of Practice

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Code of Practice

5. To arrange for the delivery or collection of the stray find, as directed by the Duty Officer of the National Museum of Ireland.
6. To complete the Report of Discovery of Archaeological Object(s) in Bogs (Appendix V), as directed by the Duty Officer of the National Museum of Ireland.
7. To maintain a file of all stray finds and associated documentation and provide copies to the Project Archaeologist.
8. To provide assistance, where required, to the Department during archaeological surveys.
9. To provide assistance, where required, to Bord na Móna's Consultant Archaeologists, during investigation and mitigation of monuments.
10. To report to the Bord na Móna members on the Archaeology Management Liaison Committee any planned developments or new activities on cutaway peatland areas within his/her group of bogs.



QMS Document	Document Title	Document Number	Revision / Effective Date	Page
QMS	Management of Archaeological Finds and Protected Features	PROC-ENV-009-R2	Rev: 2 / Eff: 26/03/26	Page(s) 2

1. Purpose

The purpose of this procedure is to describe the arrangements within Bord na Móna (BnM) for the identification, protection and reporting of archaeological material, including stray finds and known archaeological features.

All objects, sites or monuments, no matter how fragmentary, are important elements of our national heritage. The protection of archaeological resources is a legal requirement and forms part of BnM's environmental and cultural heritage responsibilities.

This procedure also sets out operational controls to ensure that archaeological features and their associated buffer zones are protected during rehabilitation activities.

2. Procedure

2.1 Archaeological Awareness

1. Verify whether any known archaeological monuments or constraints exist within the proposed work area prior to commencing works. These can be identified using the BnM GIS system, including the relevant PCAS layers and associated field maps.
2. All archaeological locations and their associated buffer zones shall be clearly marked on the bog in advance of any rehabilitation activities, irrespective of whether works are planned within those areas. The Survey Team will endeavour to mark all zones prior to commencement of rehabilitation works on a given bog; however, this is subject to the availability of survey resources. Where features are located in areas that are unsafe to access (e.g. water-covered areas), physical marking is not required.
3. These markings must be installed prior to machinery entering the field where all rehabilitation measures are taking place.
4. Archaeological features located within fields will be marked by the Survey Team using a visible red "X" to clearly alert operators to the presence of an archaeological constraint. These features are typically accompanied by a 20 m buffer zone, which may restrict access to up to three adjacent fields.
5. Operators must not drive over or across these markers, including when moving between work areas. Operators must navigate around the marked locations and their associated buffer zones.
6. If operators are observed driving over archaeological markers in order to move to the next work area, this must be reported to the Site Supervisor or **Archaeological Liaison Officer** immediately so corrective action can be taken.
7. Archaeological areas and their associated buffer zones must not be used for machine travel, idle travel, turning, or equipment positioning.

2.2 Stray Finds Procedure

1. Be vigilant at all times. Objects or traces of structures may be found:
 - on field surfaces
 - in drain faces
 - on bog margins
 - caught within the mechanics of machinery.
2. If an object is discovered:
 - Leave it in place if it is safe to do so.

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- Note its position.
 - Immediately contact the **Archaeological Liaison Officer**, who will assess the situation and contact the Duty Officer of the National Museum of Ireland where required.
- 3 Resist the temptation to investigate the find spot further, as this may disturb fragile archaeological deposits.
- 4 If the object has already been dislodged or is in imminent danger:
- Remove it carefully.
 - Mark the find location.
 - Report it immediately to the **Archaeological Liaison Officer**.
- 5 Objects made of **wood, leather or textile**, particularly those removed from peat, must be kept in conditions similar to those in which they were found. This may include:
- packing the object in peat, or
 - placing waterlogged items in a clean basin of water and sealing the container.
- 6 Do not attempt to clean or remove peat from the object.
- 7 If **timbers, gravel, stones or other materials that may form part of a man-made structure** are discovered:
- mark the location
 - report immediately to the **Archaeological Liaison Officer**
 - do not expose the structure further.
- 8 Report anything that appears **unnatural or unusual in the bog**. The **Archaeological Liaison Officer** will determine whether the find requires referral to the relevant authorities.

3. Important Note

Our archaeological heritage is a finite and non-renewable resource. Once a site is destroyed, its information is lost forever. Protecting archaeological remains allows us to better understand our past, our landscape and the people who lived here before us.

All Bord na Móna staff and contractors must therefore ensure that archaeological features, buffer zones and potential stray finds are treated with care and protected at all times during operations.

Your Archaeological Liaison Officer is Enda McDonagh

Revision Index			
Revision	Date	Description of change	Approved
1	13/19/2020	First release	EMcD
1	24/11/2025	Change to logo and header	SG
2	10/03/2026	Addition of Archaeological Awareness and change of SOP Title	EMcD



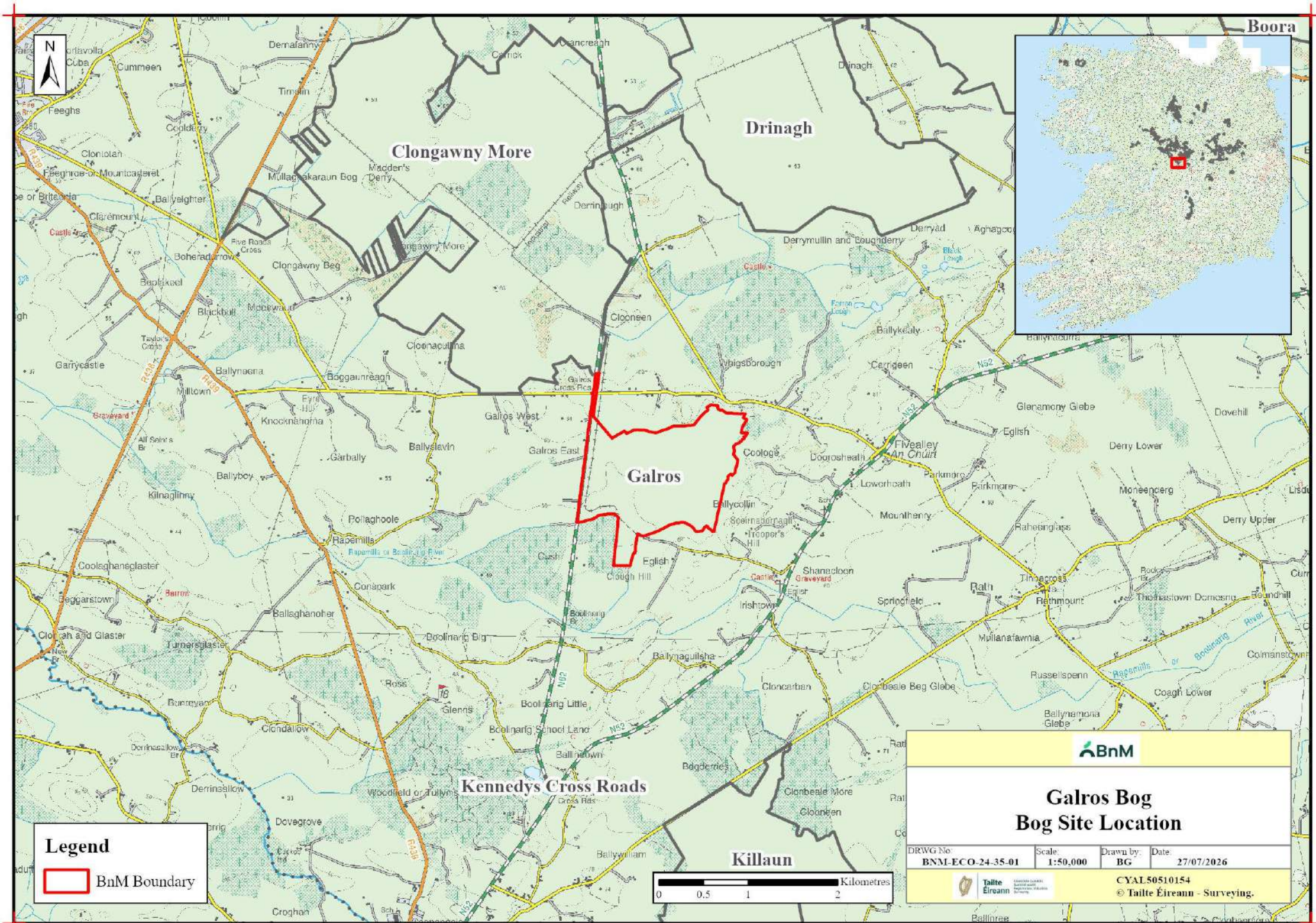
**Galros Bog
Rehab Plan
GIS Map Book
2026**

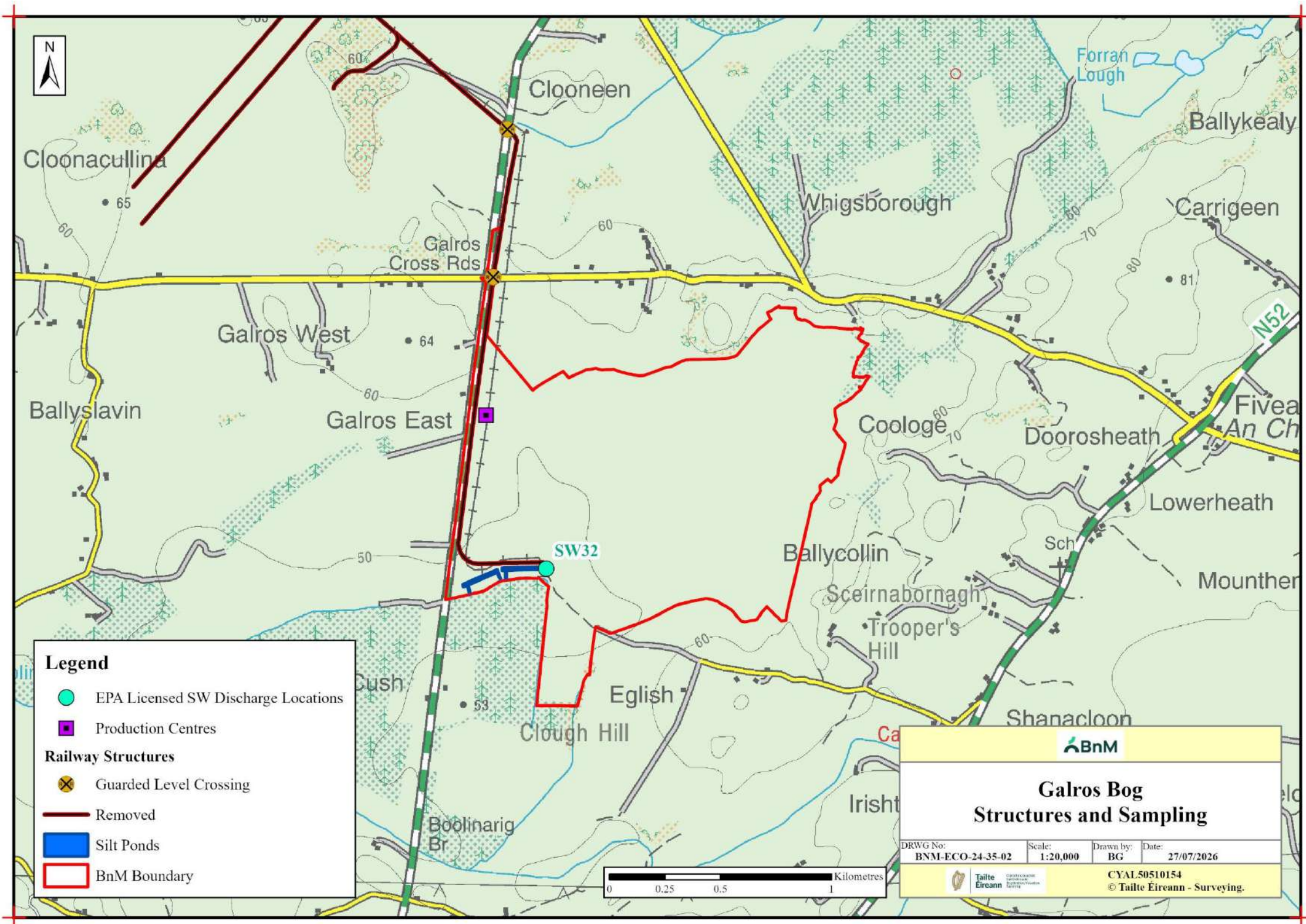
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Document File Path:						
Document Status:		Draft v0.1				
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Rev.	0.1	Author(s):		Checked By:		Approved By:
Name(s):		BG		CS		MMcC
Date:		27/07/2026		27/07/2026		27/07/2026
Rev.	1.0	Author(s):		Checked By:		Approved By:
Name(s):						
Date:						

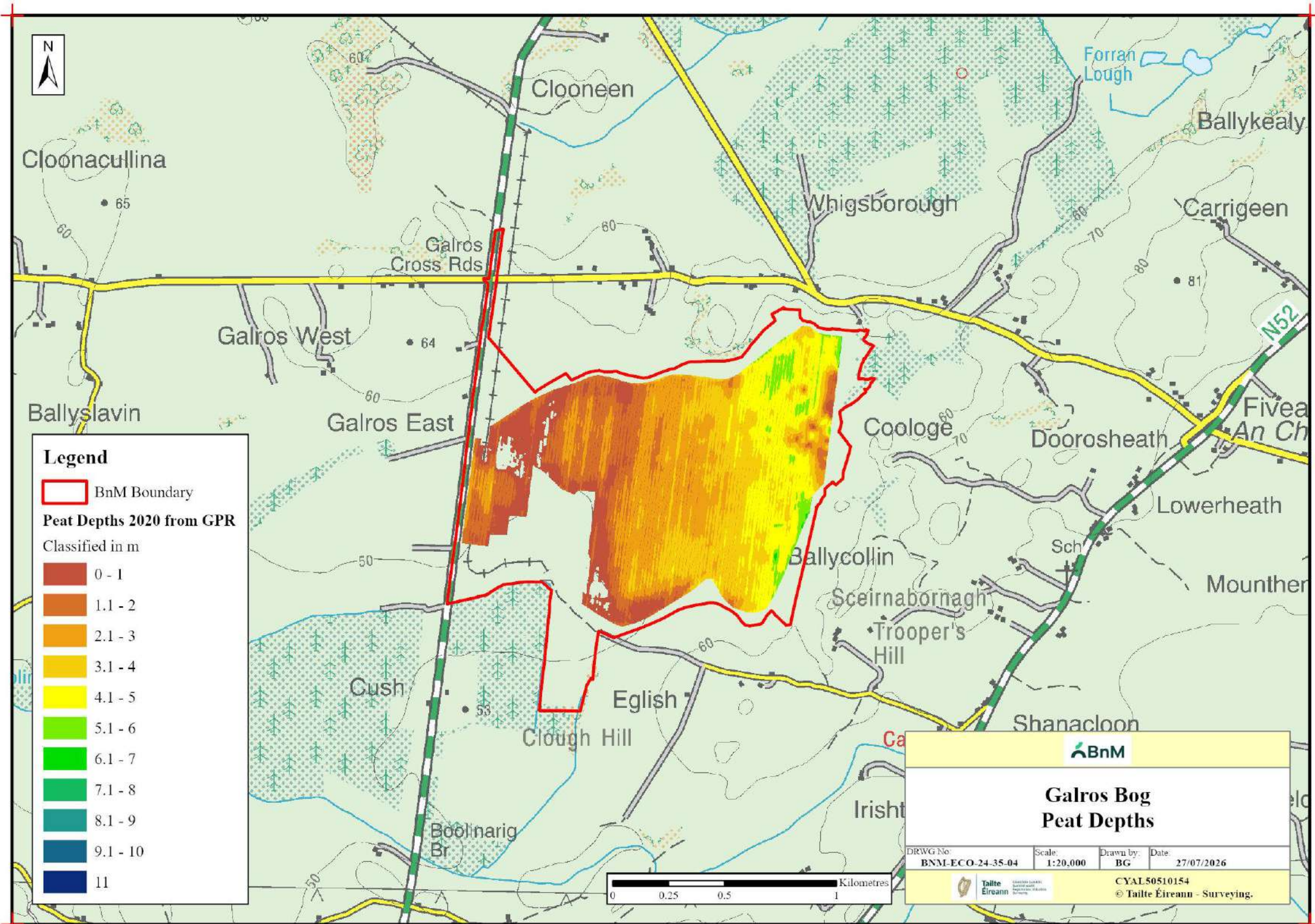
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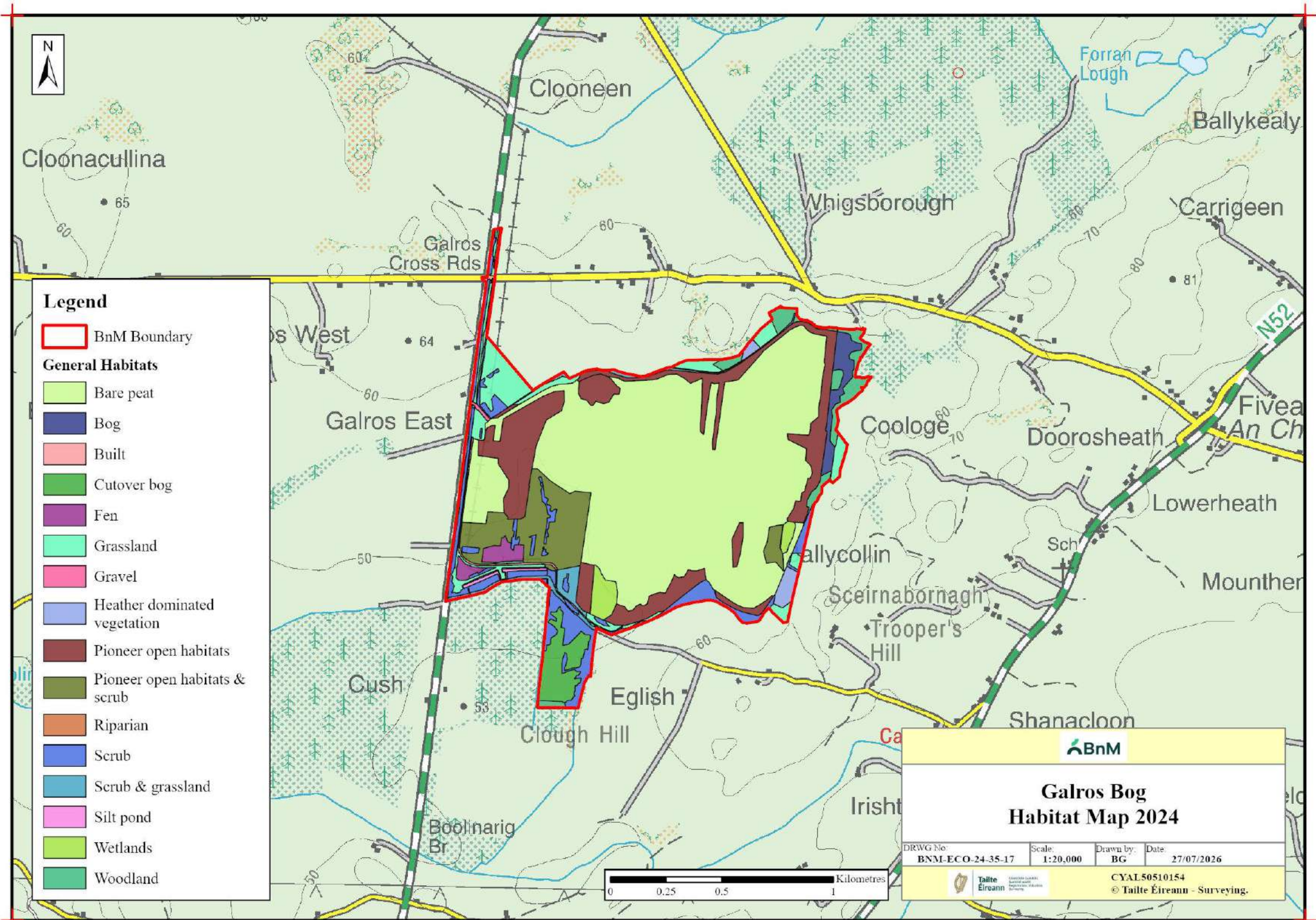
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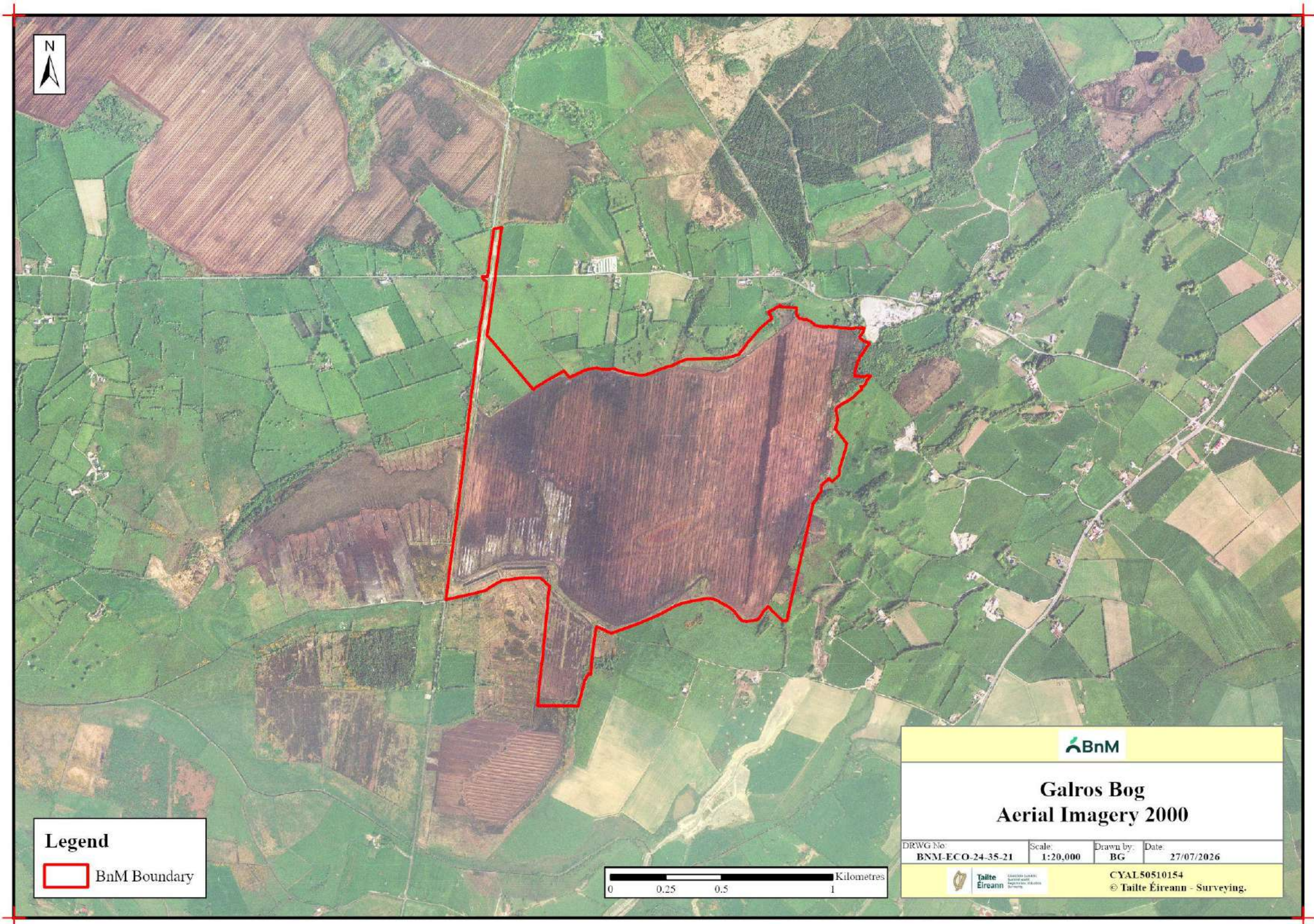
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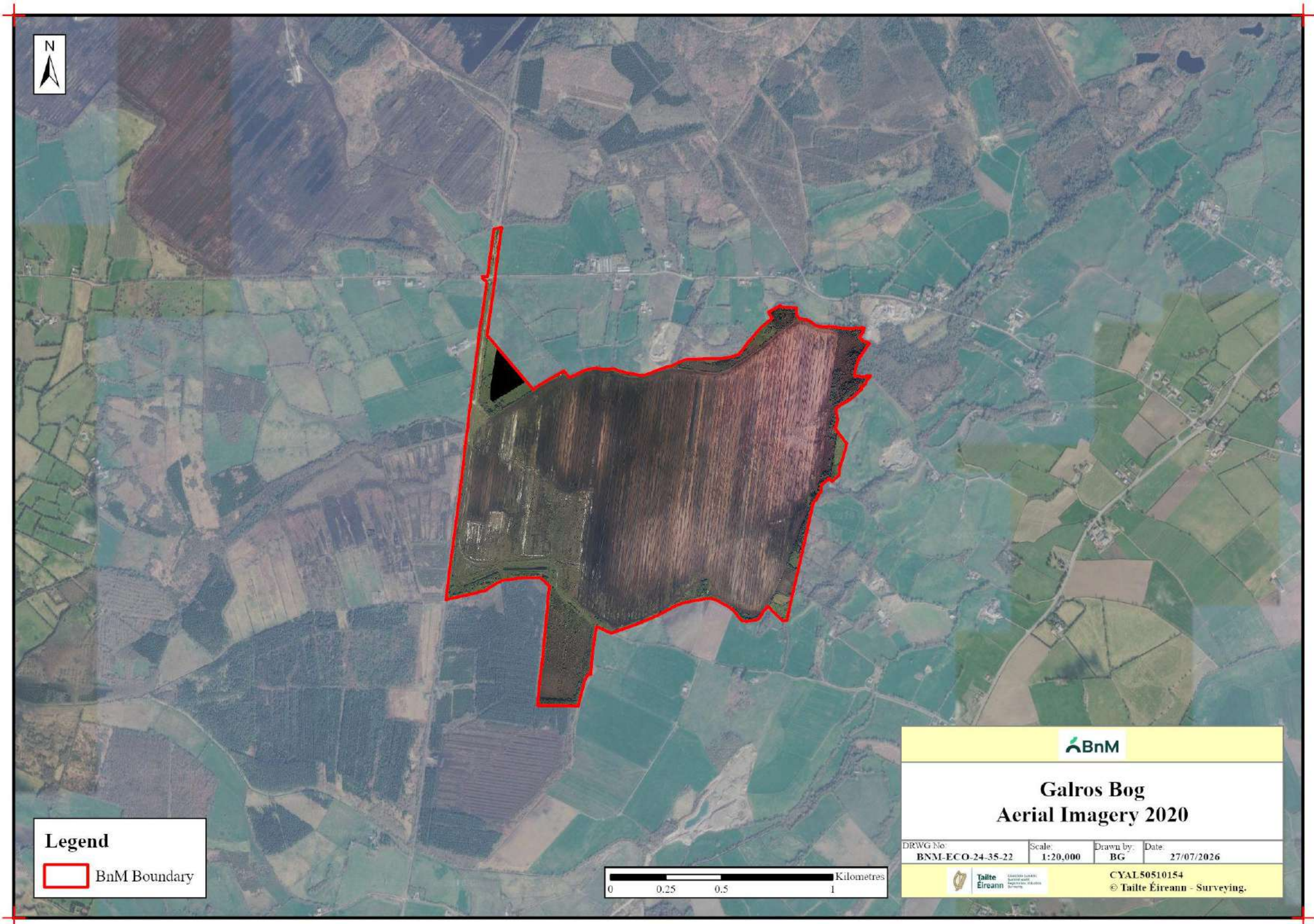


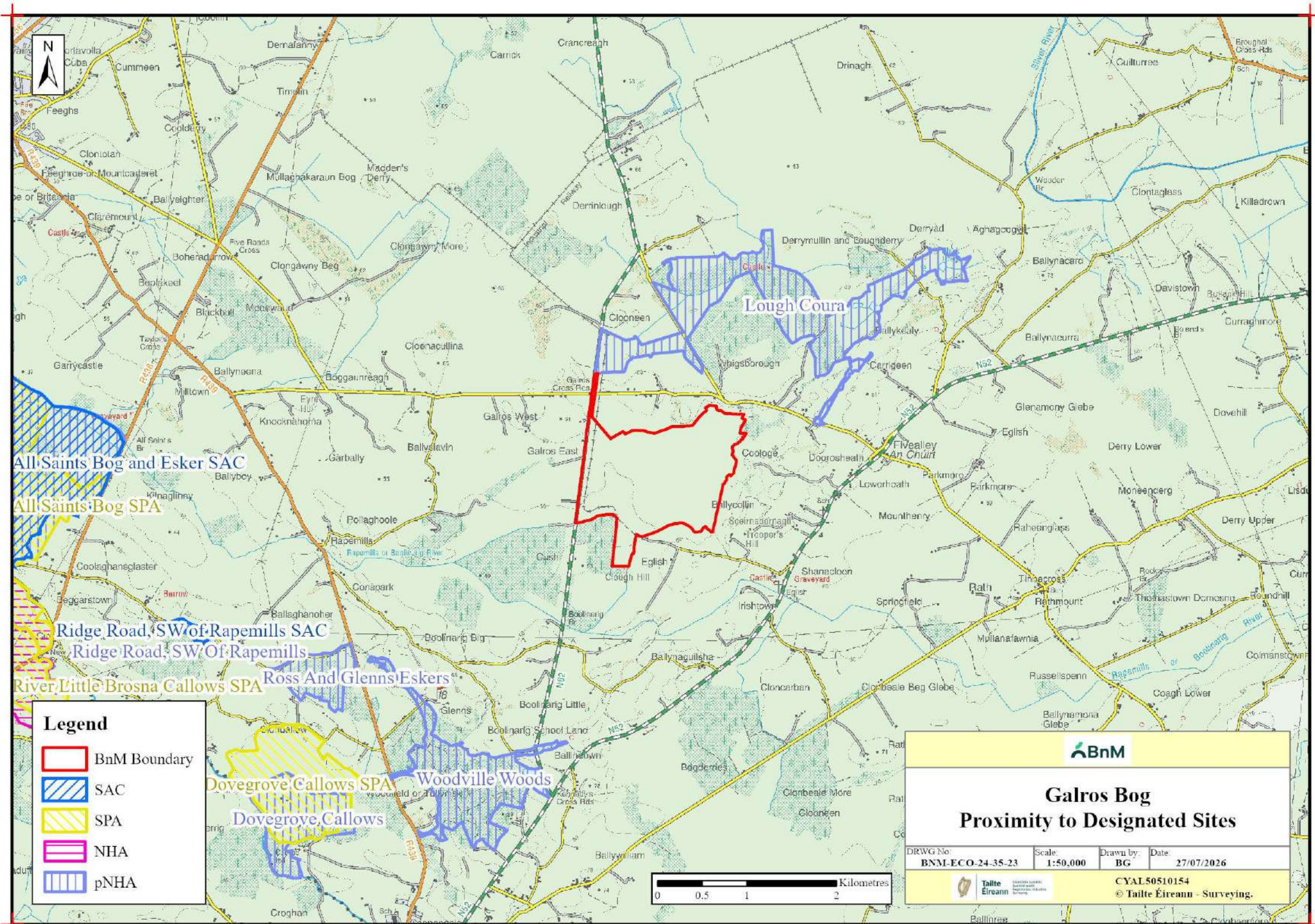


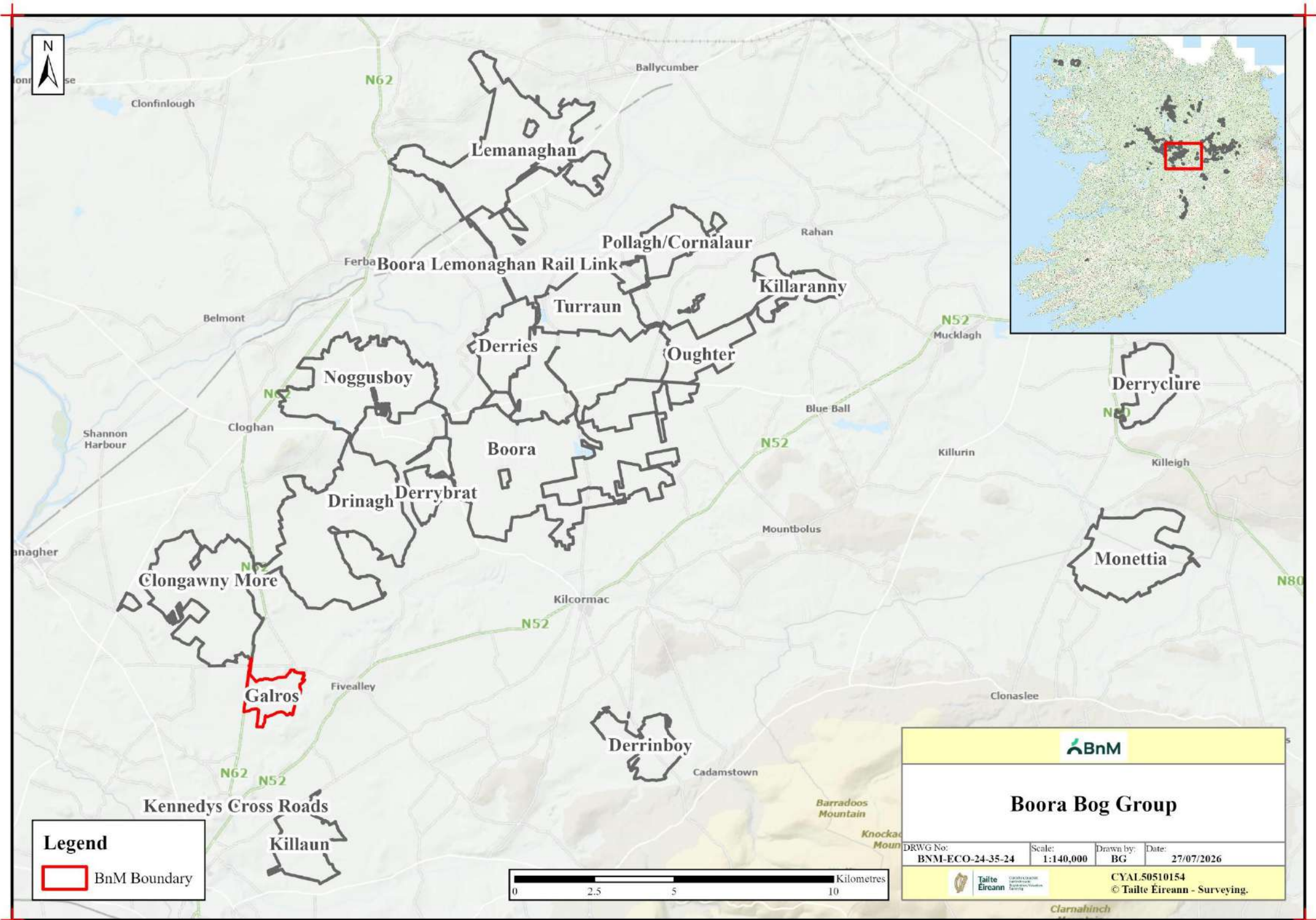




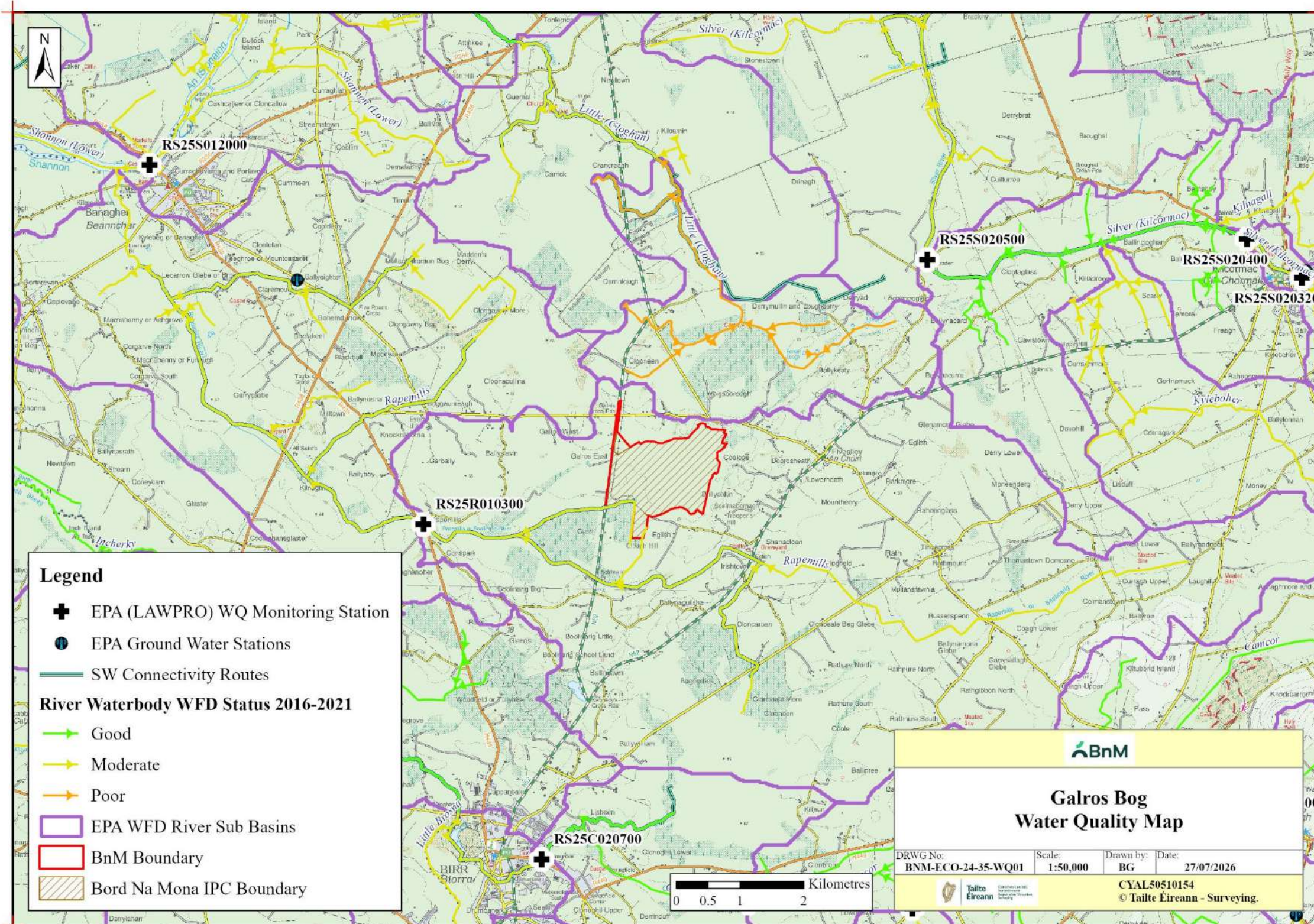


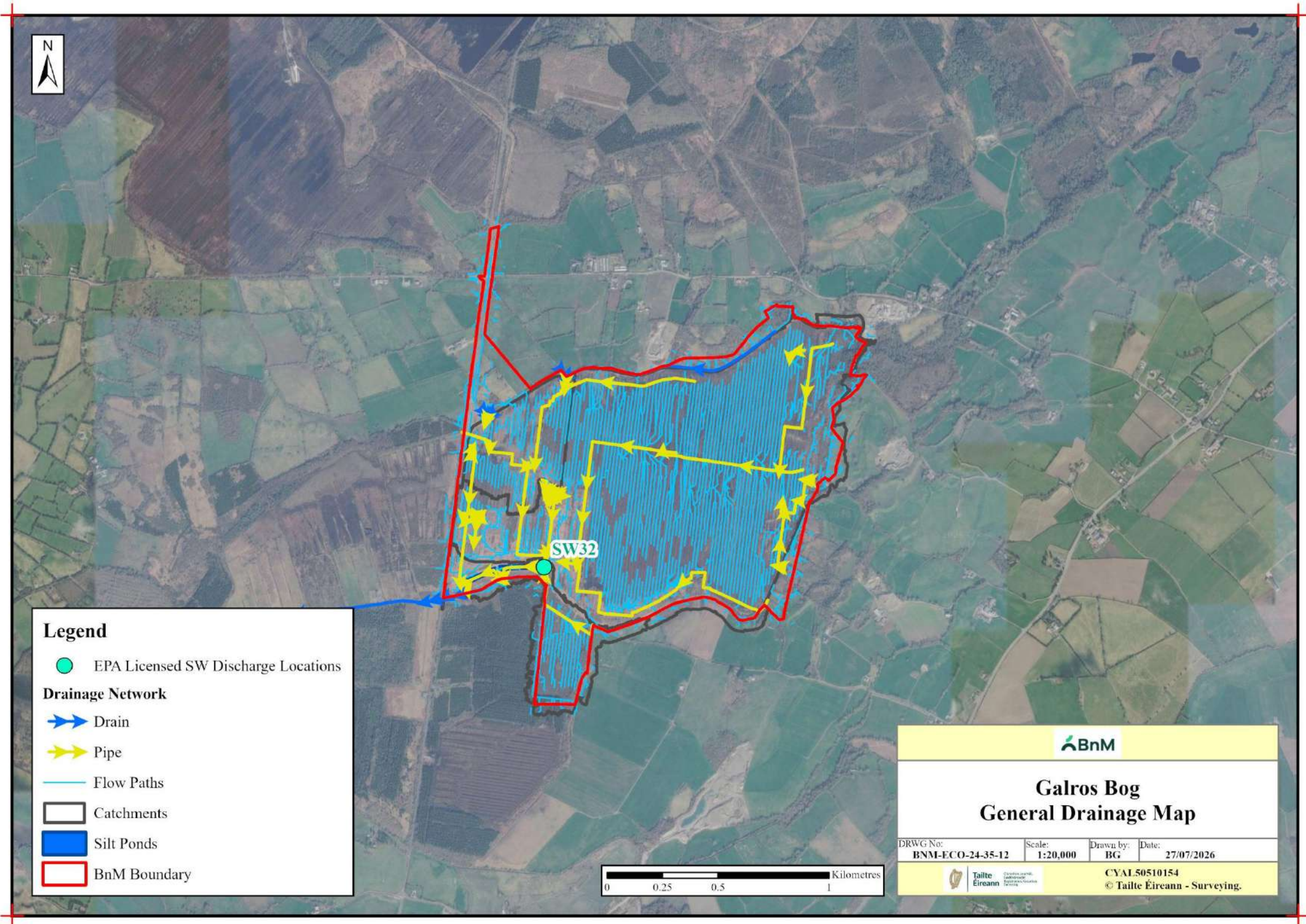


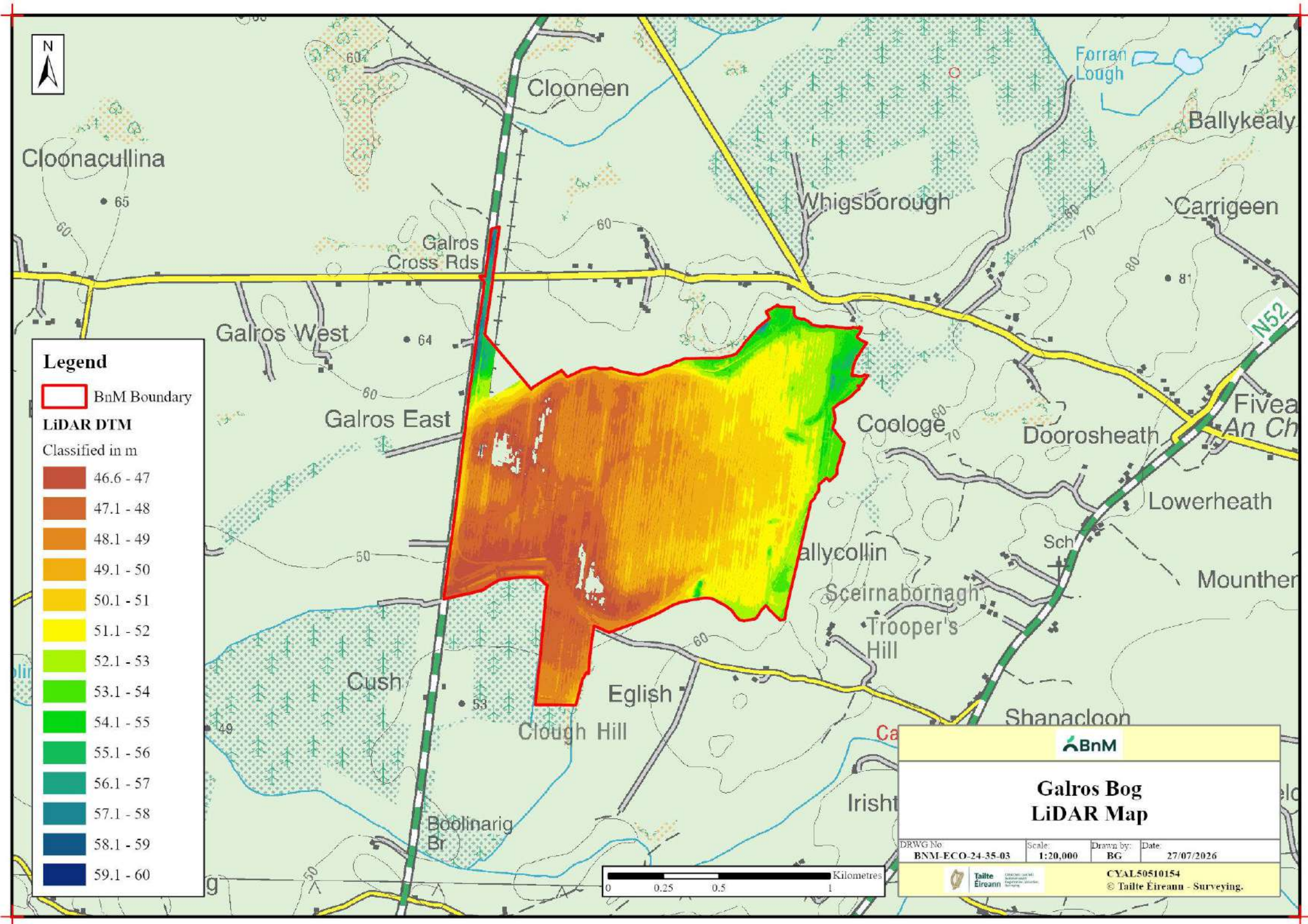


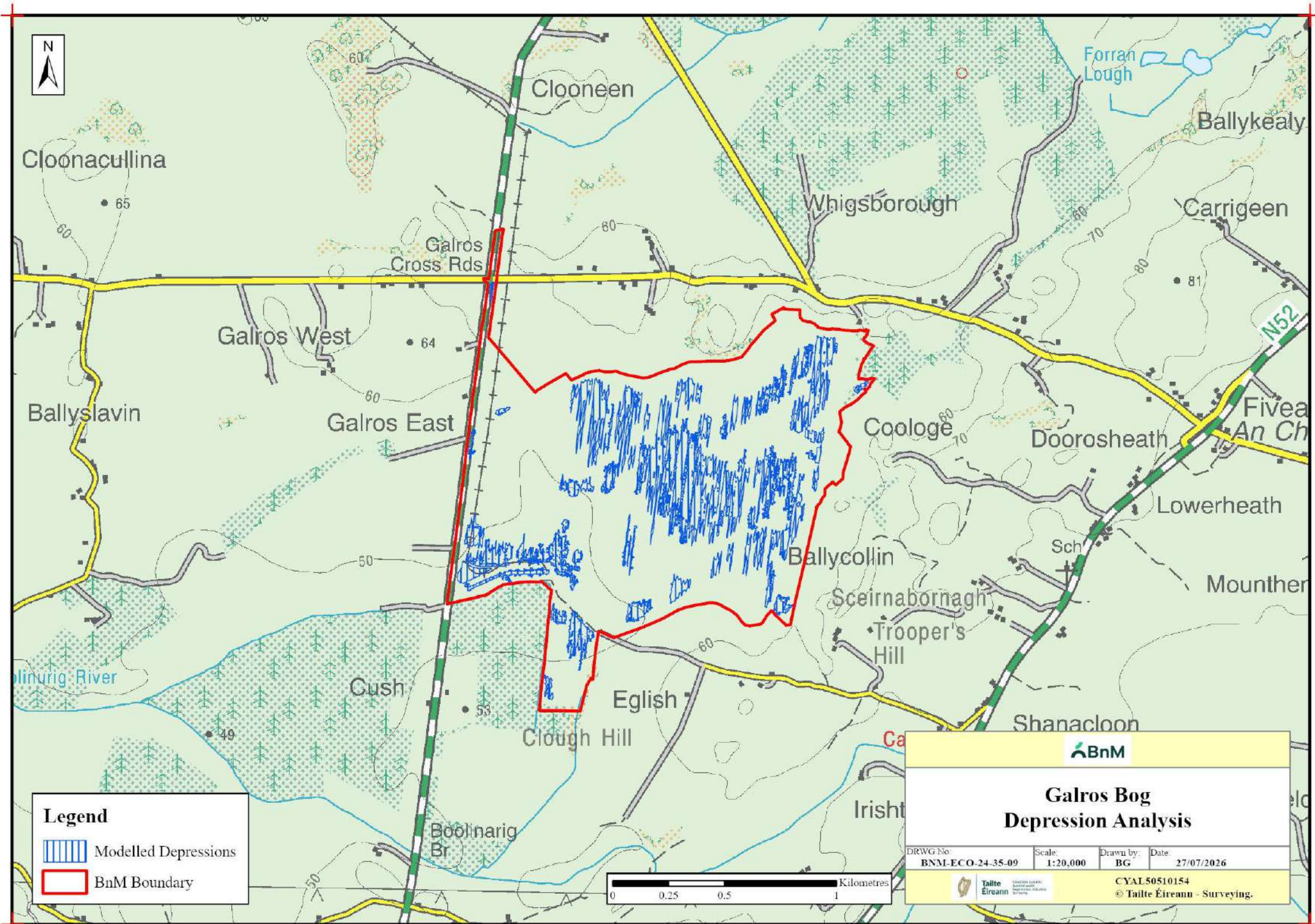


Hydrology / Topography Maps

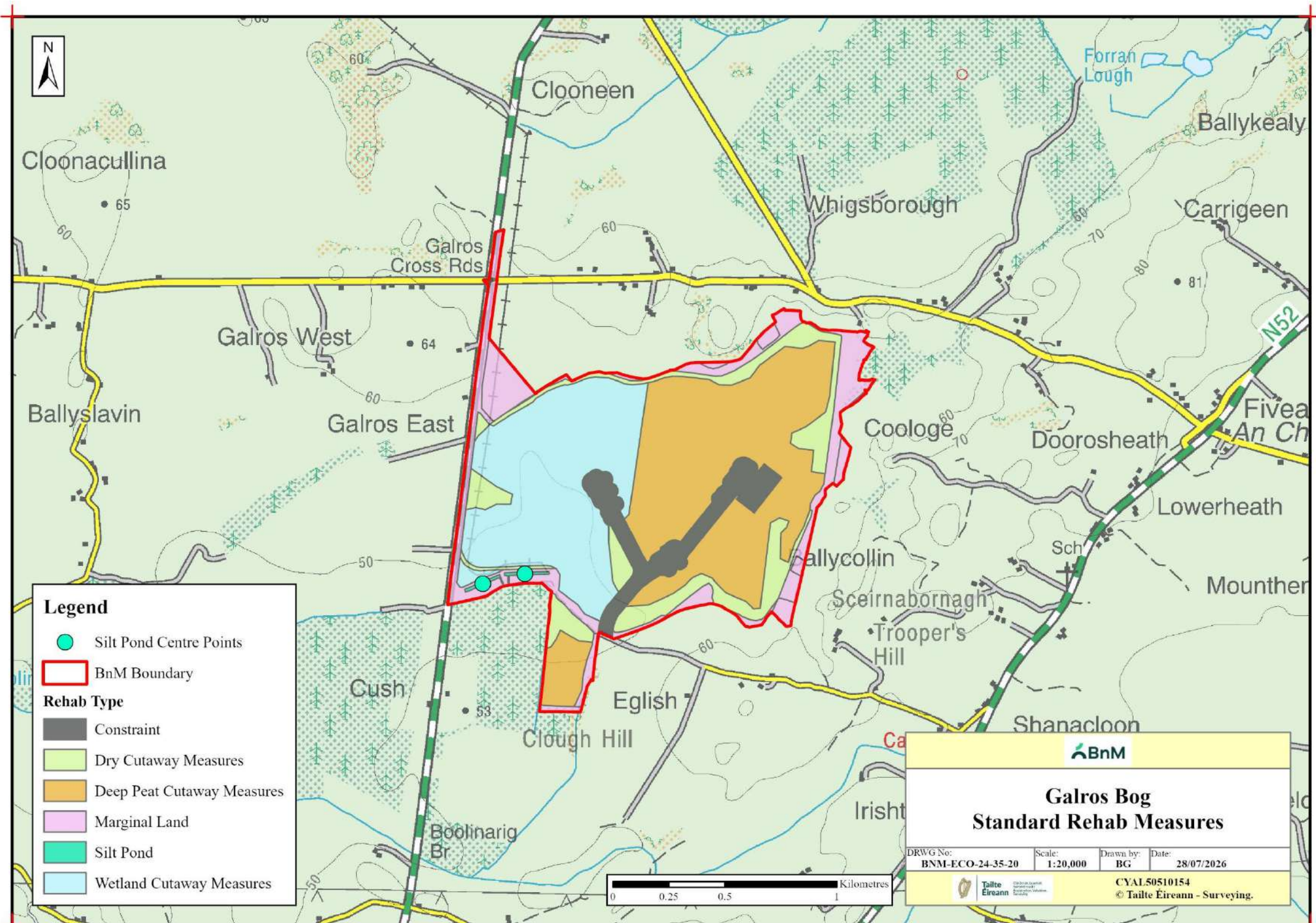


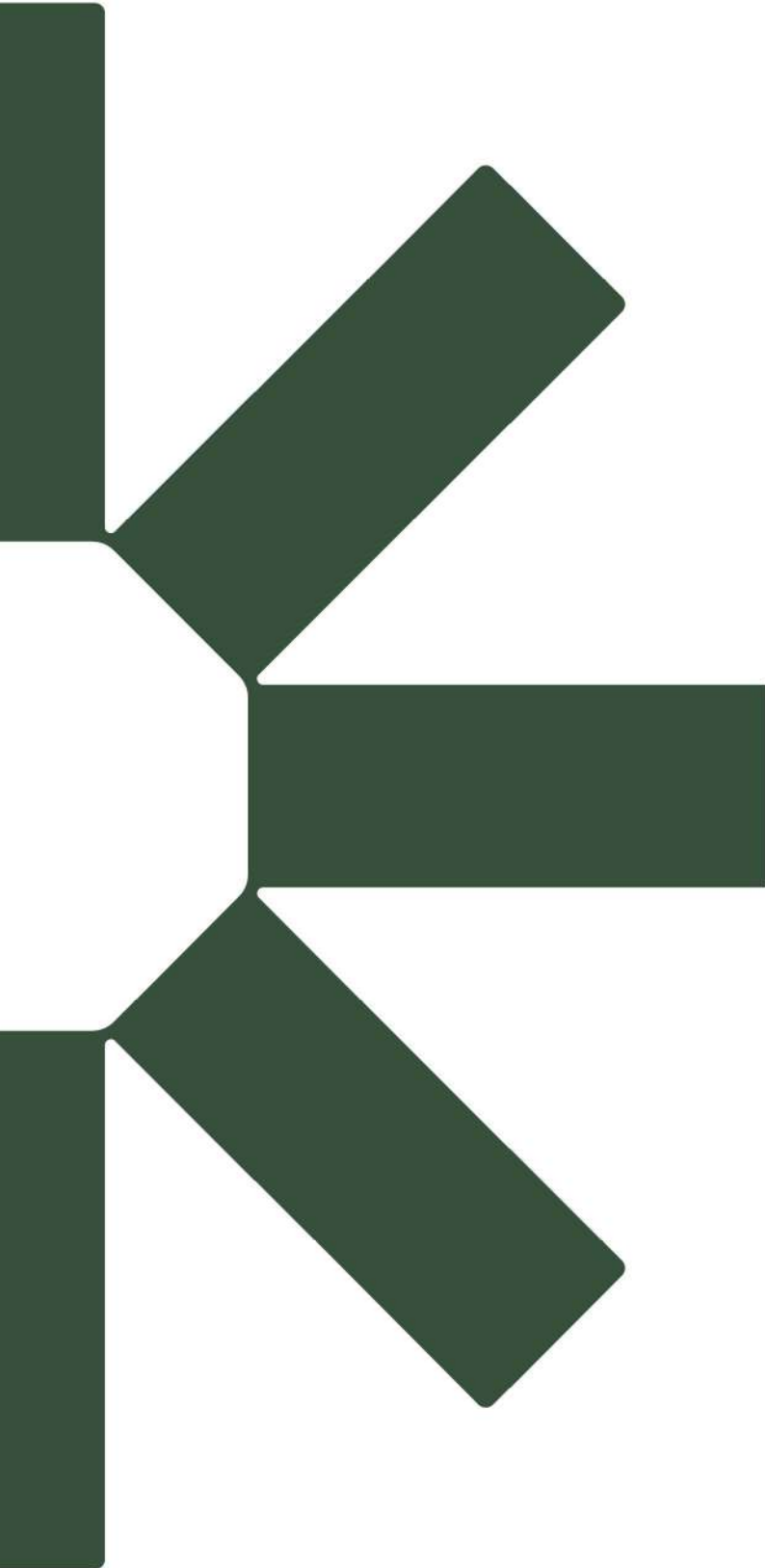




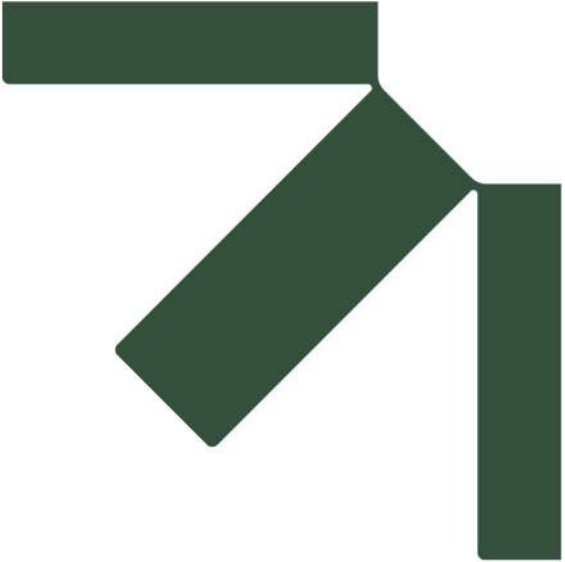


Rehabilitation Maps





Making Sustainability Happen



Appendix K Peat and Spoil Management Plan

Appropriate Assessment Screening Report and Natura Impact Statement

Cush Wind Farm Phase II

Cush Wind Limited

SLR Project No.: 501.065723.00001

23 October 2026





Cush Wind Farm
Phase II

Planning-Stage Construction Environmental Management Plan

Annex 3: Peat & Spoil Management Plan

Cush Wind Limited

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DOCUMENT CONTROL

Stage	Date	Name
Content	19/10/2026	Declan Owens
Approval	19/10/2026	Gavin Daly

RECORD OF CHANGES

Revision	Issue Date	Summary of Changes	Approved
00	19/10/2026	Content	Declan Owens
01			
02			

DISTRIBUTION LIST

#	Purpose	Company	Name (Optional)
1	Review	Cush Wind Limited	James Carville
2			
3			
Notes:			

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1.0 INTRODUCTION

Galetech Energy Services (GES), on behalf of Cush Wind Limited, has prepared this Peat & Spoil Management Plan (PSMP) to detail the appropriate management of excavated material arising from the construction of the proposed Cush Wind Farm Phase II.

1.1 PURPOSE OF THIS REPORT

This PSMP provides the framework for the management of peat and spoil at the site of the Cush Wind Farm Phase II for contractors and incorporates the measures set out in the various environmental assessment documents associated with the proposed development/project. The purpose of this report is to ensure that peat and spoil is managed safely and re-used without resulting in any adverse environmental effects, and to ensure that all spoil handling/management activities are carried out in accordance with best practice methods.

This is a live document and will be updated by the appointed contractor prior to the commencement of development. Prior to the commencement of construction, the updated PSMP will be reviewed by the Environmental Manager (EM) to confirm the appropriateness of the measures set out therein.

1.2 AIMS OF THIS PSMP

The overall objective of this PSMP is to provide for the appropriate management of excavated material arising from the construction of Cush Wind Farm Phase II. In doing so, the re-use of excavated material, locally to its excavation, will be maximised through reinstatement and landscaping proposals.

The reinstatement of excavated materials will occur as close to the site of excavation as possible. Excavated material horizons (topsoil, peat, subsoil, etc.) will be stored separately to ensure appropriate re-use; and will be replaced in sequence and to depths similar to those recorded prior to excavation.

Excavated material may also be used in the landscaping of the site; for example, the creation of berms around crane hardstandings or along access tracks to reduce the visual effects of the infrastructure. Again, material will be placed close to its source and will be placed in a fashion which allows for vegetative re-growth thus allowing for spoil to be assimilated into the local environment.

Notwithstanding the fact that the project site area is generally flat, with little in the way of discernible variation in elevation throughout, this PSMP also includes a series of control measures specifically related to peat, including monitoring measures, which will be implemented during the construction phase of the wind farm and a contingency plan should peat instability/failure occur at the site. As work is carried out on site the contents of the PSMP and its peat stability monitoring programme will be updated, as appropriate.

A detailed engineering construction design must be carried out by the appointed construction stage designer prior to any construction work commencing on site. This must take account of the consented project details and any conditions imposed by that consent. This must include a detailed peat stability assessment to account for any changes in the environment which may have occurred in the time leading up to the commencement of construction and a peat and spoil management plan to allow for the most appropriate geotechnical and environmental led solutions to be developed for the management of peat and spoil.

1.3 REFERENCE DOCUMENTS

The production of this PSMP has been supported by best practice manuals and will be accounted for in the further development of the appointed contractor's detailed CEMP.

Other documents have been used to develop this PSMP; including a Planning-Stage CEMP, Surface Water Management Plan, Environmental & Emergency Response Plan, and a Geotechnical Peat Stability Report.

1.4 PEAT INSTABILITY DEFINITION

Peat instability in this PSMP is defined as a mass movement of a body of peat that would have a significant adverse impact on the surrounding environment. Peat instability excludes localised movement of peat that would occur below a floating access track, creep movement or localised erosion type events. Adherence to the control measures included in this PSMP should reasonably minimise the potential for all such peat movements.

2.0 DESCRIPTION OF THE PROJECT

Cush Wind Limited intends to construct Cush Wind Farm Phase II, comprising a 3 no. wind turbine extension to the permitted Cush Wind Farm Phase I. The proposed project, as defined and assessed in the EIAR, will consist of:-

- 3 no. wind turbines with overall tip heights within the range of 199.1 m to 200 m, rotor diameters within the range of 158 m to 175 m and hub heights within the range of 111.6 m to 120.9 m;
- all associated turbine foundations and crane hardstanding areas;
- construction of approximately 1.7km of new internal site access tracks and upgrading of existing and permitted access tracks and access arrangements;
- use of the construction compounds permitted as part of Cush Wind Farm Phase I;
- 1 no. electrical switch room building and associated compound, including a new site entrance from the L300321 local road;
- underground electrical and communications cabling within the wind farm site;
- storage of excavated peat and spoil within designated peat and spoil deposition areas;
- site drainage, surface water management and environmental protection measures;
- reinstatement, environmental stabilisation and drainage management works, having regard to the wider rehabilitation objectives for Galros Bog;
- a c.5 km underground electricity line extending from the proposed electrical switch room to facilitate connection of the proposed wind farm to the national electricity network;
- temporary and permanent accommodation works along the turbine component haul route to facilitate the delivery of turbine components; and
- all associated and ancillary site development, excavation, construction, landscaping, reinstatement and environmental mitigation works.

The wind farm site is located in rural County Offaly, approximately 4 km north of Birr and c.28 km south-west of Tullamore. It extends across the townlands of Galros East, Whigsborough, Ballycollin, and Eglis, County Offaly.

The c.5 km underground electricity line will extend from the proposed electrical switch room, located on the southern side of the wind farm site, to the connection point at the proposed Mullanafawnia 110 kV substation. The Mullanafawnia 110 kV substation is third-party infrastructure that is subject to a separate consenting process and does not form part of the project.

The turbine component haul route and associated accommodation works extend through Counties Galway, Roscommon, Westmeath and Offaly. Turbine components will be transported from the Port of Galway through Counties Galway, Roscommon and Westmeath to the wind farm site in County Offaly.

Various environmental reports have been prepared in respect of the project and have been utilised in the preparation of this PSMP, including:-

- Environmental Impact Assessment Report (Galetech Energy Services);
- Biodiversity Chapter (SLR Consulting);
- Land & Soil Chapter (Hydro Environmental Services);
- Water Chapter (Hydro Environmental Services); and
- Natura Impact Statement (SLR Consulting).

3.0 DESCRIPTION OF BASELINE ENVIRONMENT

3.1 SITE LOCATION

The project site is located in rural County Offaly, approximately 4km north of Birr and c.28km south-west of Tullamore. The surrounding landscape is generally flat to gently undulating and is typical of the Midlands region.

Corine (2018) mapping identifies peat bogs and agricultural pastures as the principal land-cover categories across the project site. The three proposed turbines are located within Galros Bog, which comprises predominantly cutaway bog. The proposed electrical switch room is located within agricultural grassland, while the majority of the c.5km underground electricity line ('UGL') route passes through private lands comprising mainly grassland.

The Rapemills River flows in a westerly direction approximately 0.6km south of the wind farm site. The UGL route runs adjacent to the river for approximately 2.5km. The river channel is typically approximately 2m deep, with steep banks, and up to 5m wide.

The West Galros Stream, a tributary of the Rapemills River, flows along the southwestern boundary of Galros Bog and emerges from forestry southwest of the wind farm site. It crosses the N62 before joining the Rapemills River approximately 1km downstream of the wind farm site.

The UGL will cross beneath the N52 national road, the L7006 local road at Clonbeale Beg Glebe, and the Rapemills River at two locations using horizontal directional drilling ('HDD'). Four HDD crossings are therefore proposed. The remainder of the UGL route will be situated within private lands, outside the public road corridor.

3.2 TOPOGRAPHY

The proposed development site and surrounding topography are typical of the Midlands Region and comprise a generally flat landscape with occasional gentle undulations.

Ground elevations range from between approximately 45m and 65m OD (Ordnance Datum) across the project site. The most elevated section of the project site is found at its most eastern point where agricultural grassland rises up to 65m OD (at the point where the proposed underground electricity line connects to the national electricity network).

3.3 GEOLOGICAL ENVIRONMENT

Based on the GSI/Teagasc soils mapping (www.gsi.ie) the proposed wind farm is mapped largely as cutaway peat, with basic shallow well-drained mineral soil (BminSW) mapped on the south of the wind farm where there are some agricultural lands.

Soils along the western half of the underground electricity line route are mapped mainly as BminSW along with Alluvium where the proposed route intercepts the Rapemills River.

Soils mapped along the eastern half of the underground electricity line are more variable and comprise cut peat, shallow peaty poorly drained mineral soils (BminSPPT) and peaty poorly drained mineral soil (BminPDPT). The lands along the underground electricity line have been improved and drained for agriculture.

GSI subsoils mapping (www.gsi.ie) show that the proposed wind farm is underlain predominantly by cutover raised peat (Cut) along with Gravels derived from Limestones (GLs) mapped on the southeast of the proposed wind farm where agricultural lands are present.

Subsoils along the western half of the underground electricity line route are mapped mainly as Gravels derived from Limestones along with two gravel Esker ridges mapped along the proposed route.

Subsoils mapped along the eastern half of the underground electricity line are more variable and comprise cutover raised peat, Gravels and Limestone Tills (glacial tills). Alluvium is also mapped along sections of the Rapemills River. However, due to land improvements, any peat present is limited to shallow peat topsoil.

3.4 HYDROLOGICAL ENVIRONMENT

Galros Bog is drained by an extensive network of artificial drains. The West Galros Stream, a tributary of the Rapemills River, flows along the southwestern boundary of the bog. The underground electricity line runs adjacent to the Rapemills River for approximately 2.5km and crosses beneath it at two locations using horizontal directional drilling. Peat and spoil handling, storage and placement will implement the water-protection measures specified in **Chapter 7** of the EIAR and the Surface Water Management Plan (**Annex 4**), having regard to the Draft Galros Bog Rehabilitation Plan at **Annex 6.2** of the EIAR.

4.0 GENERAL PEAT & SPOIL MANAGEMENT PROPOSALS

The following are a suite of general measures which will be adhered to in the management of excavated material: -

- All excavated peat and spoil will be either temporarily stockpiled locally at turbine hardstands, or transported immediately on excavation to the spoil deposition area(s);
- Excavated material will be re-used on-site for reinstatement and landscaping insofar as possible (Some of the peat, in particular the acrotelm, i.e. the upper layer of the peat, excavated during construction will be used for landscaping purposes);
- Excavated rock, should any arise, shall be utilised in the construction of access tracks and crane hardstandings;
- Excavated sub-soil shall be prioritised for the reinstatement of infrastructure (e.g. turbine foundations);
- Excavated topsoil shall be prioritised for final landscaping measures (e.g. ground profiling/grading, etc.);
- Material requiring off-site management will be classified and transferred by appropriately permitted waste collectors to facilities authorised for the relevant material and proposed management operation. Suitable recovery routes will be prioritised over disposal in accordance with the Waste Management Plan at CEMP **Annex 2**;
- Where excavated material is to be re-used (for reinstatement or landscaping), it shall be side-cast and stored temporarily in an appropriate manner. Where excess material arises which will not be re-used at the excavation location, it shall be transported to the spoil deposition areas for permanent storage;
- Temporary storage locations shall be appropriately sited to avoid any smothering of important habitats or risk of sediment discharge to watercourses;
- Temporary storage locations will be carefully selected to avoid any ground instability risks;
- The temporary storage locations will be regularly inspected by the EM;
- Water pumped or drained from excavations will be conveyed through the sediment-control and treatment measures specified in the Surface Water Management Plan before discharge at an approved location. Untreated sediment-laden water will not be discharged directly to drains or watercourses;
- No excavations (e.g. drainage, peat cuttings) shall be carried out within 5m distance of a completed floating access track edge, or at a distance determined following inspection. The presence of excavations can destabilise the access track. Temporary excavations shall be excavated in short lengths and backfilled as soon as practicable;
- No stockpiling of materials shall take place on or adjacent to floating access tracks so as to avoid bearing failure of the underlying peat;
- End-tipping of stone onto proposed access tracks during the construction/upgrading of the track shall be carefully monitored to ensure that excessive impact loading, which may adversely affect the underlying peat, is limited;
- Due to the nature of floating access track construction it will be necessary to monitor the settlement/movement of the access track. Survey points will be

located along the track at 10m intervals in areas of deep peat (greater than 2m). See further measures included at Section 8.0 below;

- Excavated peat not required for backfill, reinstatement or landscaping will be transported immediately on excavation to the designated spoil deposition areas. Material will be placed in controlled shallow layers to maintain stability, with placement depths and finished profiles determined by the Project Geotechnical Engineer in accordance with the approved design, ground conditions and peat-stability requirements; and
- Reinstatement/landscaping works will commence as soon as practicable following the completion of individual work streams thus allowing for the timely management of material and early commencement of re-vegetation thus reducing the likelihood of soil erosion or release of silt/sediment.

5.0 ESTIMATED EXCAVATION QUANTITIES

On the basis of site investigations undertaken at the project site and the completion of the preliminary project (civil/electrical) design process; estimated volumes of material likely to be excavated during construction have been identified. The project will, should planning permission be granted, be subject to a further detailed design process where the volume of material to be excavated will be further refined. Accordingly, it is important to highlight that the volumes set out below are estimates based on the design process completed to date, the findings of the site investigations, and past experience of similar wind energy developments.

5.1 WIND FARM SITE

Infrastructure ID	Total Excavated Material (m ³)	Peat for Spoil Deposition Areas (m ³)	Peat for use in Reinstatement/Landscaping (m ³)	Topsoil & Subsoil for Spoil Deposition Areas (m ³)	Topsoil & Subsoil for Reinstatement/Landscaping (m ³)	Tar (m ³)
T9 Access Track, Hardstand, & Foundation	18,525	15,050	3,475	0	0	0
T10 Access Track, Hardstand, & Foundation	14,675	11,200	3,475	0	0	0
T11 Access Track, Hardstand, & Foundation	19,225	15,750	3,475	0	0	0
Wind Farm Access Track	4,360	0	0	3,052	1,308	0
Drainage Infill Areas	2,215	2,093	0	0	123	0
Ducting-back to switch room	3,509	0	2,924	0	585	0
Haul Route	10	0	0	0	0	10

Table 1: Estimated Spoil Volumes at Wind Farm Site

5.2 SWITCH ROOM & UNDERGROUND ELECTRICITY LINE

Infrastructure ID	Total Excavated Material (m³)	Peat for Spoil Deposition Areas (m³)	Peat for use in Reinstatement/Landscaping (m³)	Topsoil & Subsoil for Spoil Deposition Areas (m³)	Topsoil & Subsoil for Reinstatement/Landscaping (m³)	Tar (m³)
Switch Room	60	0	0	0	60	0
Underground Electricity Line	5,946	0	0	0	5,946	0

Table 2: Estimated Spoil Volumes at Switch Room & Underground Electricity Line

6.0 USE OF EXCAVATED MATERIAL

As outlined above, there are a number of possible uses for excavated material which has no further purpose in the construction process. In accordance with the aims of this PSMP, all usable excavated material will be utilised, in the first instance, for site reinstatement and landscaping purposes.

6.1 REINSTATEMENT OF INFRASTRUCTURE

Excavated subsoil and topsoil will, in the first instance, be utilised for the reinstatement of infrastructure including access track edges, crane hardstanding edges, and to provide turbine foundation ballast. Excavated peat from turbine foundation excavations will also be utilised for backfill at turbine foundation locations, where possible. Once again, this will ensure that material is, insofar as is practicable, reinstated at or close to its source location. For site reinstatement works and following the placement of subsoil, a layer of topsoil will be spread across the affected area, graded to match the surrounding ground profile, and re-seeded.

6.2 LANDSCAPING & PERMANENT STORAGE

Where material is not to be used for reinstatement at its source location, a number of permanent storage options are available, as follows: -

- The creation of track-side and hardstanding-side berms. Berms, constructed predominately of subsoil and topped with topsoil, with an approximate height of 1m could be constructed to permanently store material at appropriate access track and hardstand locations (noting, in line with the general measures included at **Section 4.0**, above, no stockpiling of materials shall take place on or adjacent to floating access tracks). The creation of berms, at appropriate locations, aids in the visual assimilation of infrastructure into the landscape and can assist in screening access tracks and hardstandings from view; and
- Permanent storage of material in the spoil deposition areas. While it is estimated that the above reinstatement and landscaping processes will account for substantial volumes of surplus excavated materials; 1 no. dedicated spoil deposition area, along with other smaller areas around turbines bases and hardstands, will be developed where excess material which cannot be utilised for reinstatement or is unsuitable for landscaping purposes. The estimated volume of peat and spoil requiring permanent deposition is 47,145m³¹, as identified in **Tables 1** and **2**. The designated

¹ The reference to approximately 48,000 m³ in **Chapter 6** of the EIAR represents the same estimated volume of 47,145 m³, rounded up.

deposition areas have been identified and sized by the project engineers alongside the assessment of excavation volumes, imported construction materials and the reuse of suitable excavated material for backfilling, reinstatement and landscaping. These estimates reflect the planning-stage civil design. Material allocated to permanent deposition will be placed within the designated areas in controlled shallow layers. Placement depths and finished profiles will be determined by the Project Geotechnical Engineer having regard to the approved design, encountered ground conditions and peat-stability requirements.

The location of the deposition area has been chosen as it comprises localised flat/level ground, and exhibits a general absence of any particular environmental constraints. Deposition areas include one main deposition area and smaller deposition areas located at the base of proposed turbines T9, T10 and T11. Spoil and Peat will be transported to these locations where it will be placed in a thin layer in accordance with best-practice methods. Appropriate drainage management measures will be implemented to prevent uncontrolled ponding, erosion, instability or sediment release from the deposited material. Following completion, the deposition areas will be graded to match the surrounding ground profile. Works at the deposition areas will be monitored, on a weekly basis during the construction phase and monthly for a six-month period thereafter, by an appropriately qualified geotechnical engineer.

6.3 PERMANENT STORAGE OF PEAT

As set out above, the project site includes designated spoil deposition areas. The following recommendations/best practice guidelines for the placement of peat within the deposition areas will be considered and taken into account during construction.

- The placement of excavated peat and spoil is to be avoided without first establishing the adequacy of the ground to support the load;
- Peat placement within the main deposition area southeast of T11 will not exceed 1.0 m in height, in accordance with Section 9.3 of the Peat Stability Assessment (Fehily Timoney, 2026). Placement depths and finished profiles will be determined by the Project Geotechnical Engineer within this assessed maximum.
- The height of any surrounding buttress(es) constructed will be greater than the height of the stored peat and spoil to prevent any surface run-off or saturated peat to flow out;
- An interceptor drain will also be installed upslope of the deposition areas. The drain will divert any surface water away from the deposition area and hence prevent water from ponding in the area;
- Where practical, it should be ensured that the surface of the placed peat and spoil is shaped to allow efficient run-off of surface water. Where possible, shaping of the surface of the peat and spoil should be carried out as placement of peat and spoil within the placement area progresses. This will reduce the likelihood of debris run-off and ensure stability of the placed peat and spoil;
- Where possible, the acrotelm shall be placed with the vegetation part of the

sod facing the right way up to encourage growth of vegetation at the surface of the placed peat and spoil within the deposition areas;

- Movement monitoring instrumentation may be required adjacent to the access track where peat has been placed. The locations where monitoring is required will be identified by the designer on site;
- Supervision by a geotechnical engineer or appropriately competent person is recommended for the works; and,
- All the above mentioned general guidelines and requirements should be confirmed by the designer prior to construction.

6.4 DISPOSAL OFF-SITE

Material requiring off-site management will be classified and transferred by appropriately permitted waste collectors to facilities authorised for the relevant material and proposed management operation. Suitable recovery routes will be prioritised over disposal in accordance with the Waste Management Plan at CEMP **Annex 2**.

7.0 GENERAL RECOMMENDATIONS FOR GOOD CONSTRUCTION PRACTICE

To minimise the risk of construction activity causing potential peat instability it is recommended that the Construction Method Statements (CMS) for the project will also take into account, but not be limited, to the general recommendations below together with the specific recommendations above:-

- Avoidance of uncontrolled concentrated water discharge onto peat slopes identified as being unsuitable for such discharge. All water discharged from excavations during work shall be piped over areas specifically assessed as being unsuitable and hence directly into suitable drainage lines;
- Avoidance of unstable excavations. All excavations shall be suitably supported to prevent collapse and development of tension cracks;
- Installation and regular monitoring of geotechnical instrumentation, as appropriate, during construction in areas of possible poor ground, such as deeper peat deposits;
- Site reporting procedures to ensure that working practices are suitable for the encountered ground conditions. Ground conditions to be assessed by suitably experienced geotechnical engineer;
- Regular briefing of all site staff (e.g. toolbox talks) to provide feedback on construction and ground performance and to promote reporting of any observed change in ground conditions; and,
- Routine inspection of wind farm site by Contractor to include an assessment of ground stability conditions (e.g. cracking, excessive floating access track settlement, disrupted surface, closed-up drains) and drainage conditions (e.g. blocked drains, absence of water in previously flowing drains, springs, etc).

8.0 CONTINGENCY MEASURES

8.1 EXCESSIVE MOVEMENT/MONITORING RESPONSE

Where there is excessive movement or continuing peat movement recorded at a monitoring location or identified at any location within the site but no apparent signs

of distress to the peat (e.g. cracking, surface rippling) then the following shall be carried out:-

- All activities (if any) shall cease within the affected area;
- Increased monitoring at the location shall be carried out. The area will be monitored, as appropriate, until such time as movements have ceased; and,
- Works will recommence only following assessment by the Project Geotechnical Engineer, implementation of any required stabilisation measures, and written authorisation from the Project Manager in consultation with the Environmental Manager. The assessment and authorisation will be recorded.

8.2 ONSET OF PEAT SLIDE

In the unlikely event where there is the onset or actual detachment of peat (e.g. cracking, surface rippling) then the following shall be carried out:-

- On alert of a peat slide incident, all activities (if any) in the area should cease and all available resources will be diverted to assist in the required mitigation procedures;
- Action will be taken to prevent a peat slide reaching any watercourse. This will take the form of the construction of check barrages on land. Due to the terrain and the inability to predict locations it may not be possible to implement any on-land prevention measures, in this case a watercourse check barrage will be implemented;
- The Environmental & Emergency Response Plan at CEMP **Annex 1** will be activated immediately. Internal escalation and external notifications will follow the responsibilities, notification sequence and contact arrangements specified in that plan; and,
- For localised peat slides that do not represent a risk to a watercourse and have essentially come to rest the area will be stabilised initially by rock infill, if required. The failed area and surrounding area will then be assessed by the engineering staff and stabilisation procedures implemented. The area will be monitored, as appropriate, until such time as movements have ceased.

8.3 CHECK BARRAGES

Whilst it is not anticipated from the analysis undertaken that a peat slide will occur on site, as a contingency a check barrage procedure is included below.

The check barrage procedure deals with preventing a peat slide from moving downstream within a watercourse. The most effective method of preventing excessive peat slide debris from travelling downstream in a watercourse is the use of a check barrage. A check barrage comprises the placement of rock fill across a watercourse. The check barrage is a highly permeable construction that will allow the passage of water but will prevent peat debris from passing through. Rock fill should comprise well-graded coarse rock pieces from about 300mm up to typically 1000mm.

The size of the barrage will vary depending on the scale of the peat debris to be contained and the geometry of the watercourse at the barrage location. In general, due to the low speed of a peat slide there is generally little impact force and most of the lateral load is due to fluid pressure on the upslope face of the barrage. Typically, the check barrage should fill the entire channel width of the watercourse up to a height of 3 to 4m with a crest width of typically 2m and side slopes of about 45 degrees

depending on the geometry of the barrage location.

The check barrage procedure is as follows:-

- Access to the check barrage location shall be along the existing access tracks on the wind farm site and/or along public roads, where possible. When it is necessary to form the barrage then rock fill will be placed across the watercourse to effectively block the passage of peat debris;
- Operatives employed to carry out the construction of the check barrage would need to be inducted by means of a briefing by on-site supervisors as to the proposed location of the check barrage;
- The check barrage provides containment for peat debris in the highly unlikely event of a major peat slide. Further remedial measures, should they be required, will be assessed by the Contractor and the Project Geotechnical Engineer and carried out as soon as physically possible when the location and extent of the failure is established; and,
- Where a barrage was constructed as a precaution and no peat debris reached the watercourse then the barrage should be removed as soon as any measures to prevent further peat sliding is agreed with all parties.

Any in-channel check barrage would be implemented only where necessary as an emergency response to prevent peat debris entering or travelling downstream within a watercourse. Relevant statutory authorities shall be notified as soon as practicable, and any subsequent removal, retention or remedial works shall be agreed with the relevant authorities where required.

The location, dimensions, materials and construction method for any emergency containment measure will be determined by the Project Geotechnical Engineer, with hydrological and ecological input as required, having regard to the actual ground conditions, debris volume, watercourse geometry, flow conditions and safe access.

9.0 CONCLUSION

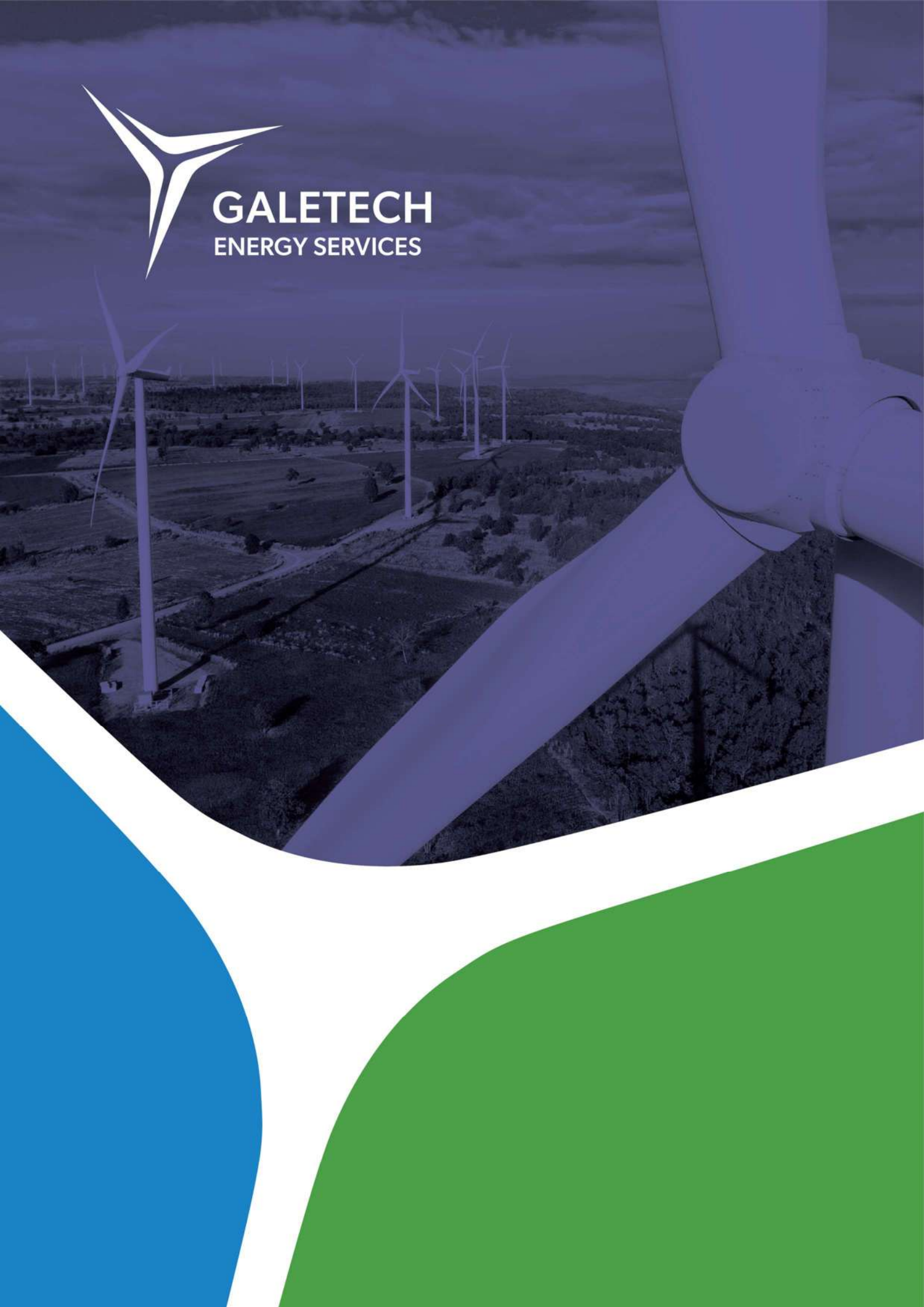
This PSMP sets out the proposed management of material excavated during construction of Cush Wind Farm Phase II. Suitable excavated material will be used for reinstatement and landscaping, with surplus material placed within the designated peat and spoil deposition areas. The excavation and destination quantities in Tables 1 and 2 will be reconciled with a capacity schedule identifying the usable area, placement depth and available capacity of each deposition area. Materials unsuitable for the identified on-site arrangements, including asphalt arising from haul-route works, will be managed off-site in accordance with the Waste Management Plan at CEMP **Annex 2**.

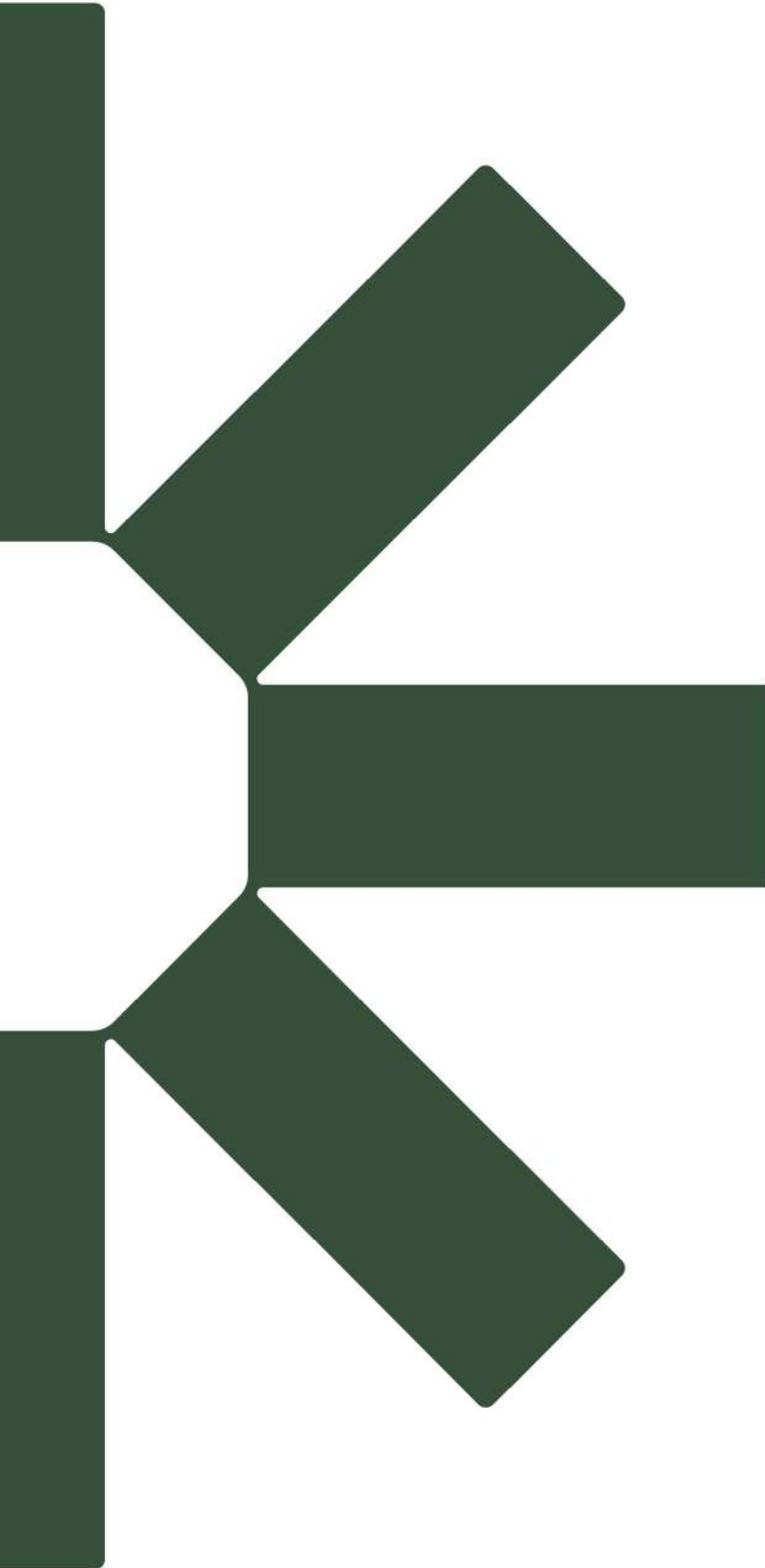
The range of good practice construction measures, including measures relative to working with peat, will be implemented in full. The peat management measures contained within this PSMP include some drainage guidelines for construction works and for management of peat on site. It should be noted that the control of water quality and drainage measures for site is outlined in detail in the relevant chapter of Environmental Impact Assessment Report (EIAR).

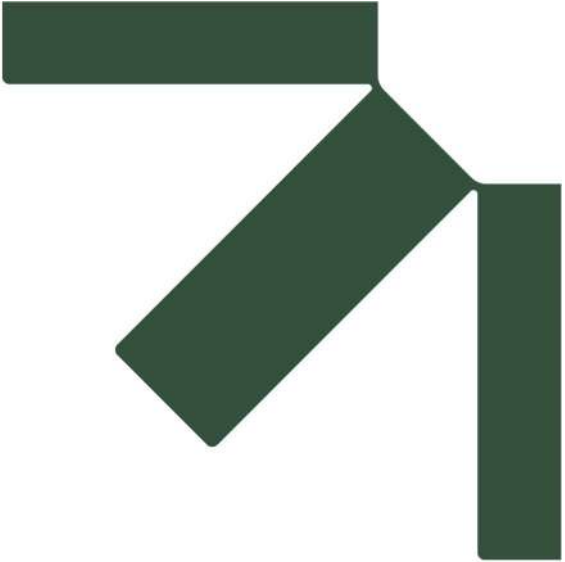
This is a live document and will be updated by the appointed contractor prior to the commencement of development. Prior to the commencement of construction, the updated PSMP will be reviewed by the EM to confirm the appropriateness of the measures set out therein.



GALETECH
ENERGY SERVICES







Appendix L Route Access Survey

Appropriate Assessment Screening Report and Natura Impact Statement

Cush Wind Farm Phase II

Cush Wind Limited

SLR Project No.: 501.065723.00001

23 October 2026



COLLETT

EXPERTS IN MOTION



Route Access Survey
425548 – Rev 2

Cush Windfarm, County Offaly, Ireland

Cush Wind Ltd

March 2026

COLLETT
EXPERTS IN MOTION

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Report Details**Report for**

Cormac McPhillips
Galetech Energy
Clondargan
Stradone
Co. Cavan
Ireland

Attendees of Survey

Steven Mangham

Time / Date of Survey: March 2026

General weather conditions: Mixed

Issued by

Steven Mangham

Approved by

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Document Revisions

No	Date	Details
1	07/05/2026	Updated to comments
2	03/07/2026	Item 7.2.5 updated

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Our Company owns a modern fleet of over 60 vehicles and over 100 trailers, operating from 3 depots located in Halifax, Goole and Grangemouth.

The depots situated in Goole and Grangemouth offer strategically located sites suitable to provide central hubs for distribution throughout the UK. Each facility is complete with up to 110 tonnes lifting capacity in order to be able to handle all various abnormal load types. As logistical partners, the company is able to offer the complete transport solution from point of manufacture through to job site.

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- Marine
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- Heavy Lift Storage
- Heavy Transport
- Project Management
- Freight Forwarding
- Heavy Lift
- General Haulage
- Warehousing
- Test Station (DVSA-authorized)
- SHEQ Training



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1. Executive Summary

- 1.1. This report comprises of a study of the road routes as detailed here in for the road transport of a Enercon E175 Turbine to the proposed entrance to Cush Windfarm, County Offaly.
- 1.2. Collett have been requested to base the tower on the EP5 E2 112m Hybrid Steel Tower. Sections 1 and 2 of this tower are conventional tower sections and will be transported in the tower transporter vehicles. Other sections are modular tower and will be transported in segments and erected on site. The tower and WEC dimensions can be found below:

no official measurements - ESTIMATED PACKING - FINAL PACKING LIST TO FOLLOW

Pos.	Quantity	Description	Stackable	Deck option	Truck info per WEC	Max. length m	Max. width m	Max. height m	Single gross weight ton	Storage m ²	Volume m ³	Total gross weight ton
4	1	steel tower section 1 (net length 31.30m; flanges 4.04 m/4.02 m) unpacked on saddles	tbo	yes		32.12	4.04	4.19	71.03	129.76	543.71	71.03
5	1	TRANSITION steel tower section 2 (net length 28.34m; flanges 4.02 m/4.35 m) unpacked on saddles	tbo	yes		28.49	4.35	4.50	82.96	123.93	557.69	82.96
6	1	DU-S3/1-1E175-132/EC-F3/25	yes, if on 40' FR	yes		11.83	1.90	1.72	25.22	22.43	38.56	25.22
7	1	DU-S3/1-2E175-132/EC-F3/25	yes, if on 40' FR	yes		11.83	1.90	1.72	25.22	22.43	38.56	25.22
8	1	DU-S4/1-2E175-132/EC-F3/25	yes, if on 40' FR	yes		11.83	2.02	1.28	21.80	23.85	30.55	21.80
9	1	DU-S4/2-2E175-132/EC-F3/25	yes, if on 40' FR	yes		11.86	1.90	1.72	26.03	22.49	38.66	26.03
10	1	DU-S5/1-2E175-132/EC-F3/25	yes, if on 40' FR	yes		11.88	2.17	1.40	23.41	25.72	36.06	23.41
11	1	DU-S5/2-2E175-132/EC-F3/25	yes, if on 40' FR	yes		11.88	2.17	1.40	23.41	25.71	36.04	23.41
12	1	DU-S6/1-3E175-132/EC-F3/25	yes, if on 40' FR	yes		11.88	2.31	1.40	25.62	27.50	38.55	25.62
13	1	DU-S6/2-3E175-132/EC-F3/25	yes, if on 40' FR	yes		11.86	2.31	1.40	24.62	27.44	38.47	24.62
14	1	DU-S6/3-3E175-132/EC-F3/Door/25	yes, if on 40' FR	yes		11.86	2.31	1.40	24.62	27.44	38.47	24.62

Quantity	Description	Stackable	Deck option	Truck info per WEC	Max. length m	Max. width m	Max. height m	Single gross weight ton
1	Generator Half Section: P2 (6 h) E-175 EP5 E2-GE-01-01 E-175 EP5 E2-GE-01-02 E-175 EP5 E2-GE-01-03	no	no		10.34	4.99	2.56	62.00
	Generator Half Section (Upright for Shipping) P1 (12 h) E-175 EP5 E2-GE-01-01 E-175 EP5 E2-GE-01-02 E-175 EP5 E2-GE-01-03	no	no		10.34	2.56	4.99	64.50
	Generator Half Section (Upright for Shipping) P2 (6 h) E-175 EP5 E2-GE-01-01 E-175 EP5 E2-GE-01-02 E-175 EP5 E2-GE-01-03	no	no		10.34	2.56	4.99	63.50
1	Main bearing unit for generator E-175 EP5 E2-RBU-01	no	no		4.04	3.66	3.01	31.00
	Main bearing unit for generator with telescopic arms for craneless loading E-175 EP5 E2-RBU-01	no	no		4.04	3.90	3.01	31.40
1	E-Nacelle incl. transformer - standard setup - contains dangerous goods UN3481 & UN3538 E-175 EP5-MH09 E-175 EP5-MH13 E-175 EP5-MH14	no	no		14.29	4.99	3.48	80.30
	E-Nacelle excl. transformer - alternative setup - contains dangerous goods UN3481 & UN3538 E-175 EP5-MH09 E-175 EP5-MH13 E-175 EP5-MH14	no	no		14.29	4.99	3.48	68.30

- 1.3. One route has been assessed to the site entrance from the Port of Galway.

Third party land

- 1.1. Third party land will be required at a number of locations along the route. Areas where third party land will be required are:
- Item 7.2.5 – R339/Connelly Avenue Junction
 - Item 7.5.3 – N52/N62 Junction

Road widening

1.2. In addition to areas where third party land include widening, additional road widening within highways owned land will be required at the following locations:

- Item 7.2.6 - Connolly Avenue/R336 Junction
- Item 7.3.1 – M6/N52 Roundabout
- Item 7.3.2 – N52/M6 Roundabout
- Item 7.4.1 – N52/R420 Arden Roundabout
- Item 7.4.2 – N52/L2025 Cappancur Roundabout
- Item 7.4.3 – N52/R420 Cloncollog Roundabout
- Item 7.4.4 – N52/R443 Clonminch Roundabout
- Item 7.4.5 – N52 Distillery Roundabout
- Item 7.4.6 – N52/R421 Ballard Roundabout
- Item 7.4.7 – N52/R421 Charleville Roundabout
- Item 7.4.8 – N53/L6009 Mucklagh Roundabout
- Item 7.5.1 – Right bend on N52 in Kilcormac

Modifications to street furniture

1.3. Street furniture removal will be required at a number of locations and have been detailed within the report body.

Manual Steering

1.4. Manual steering will be required at numerous locations along the route to assist navigation.

Vertical Alignment

1.5. The vertical alignment under the Lough Atalia Bridge in Galway has been assessed and no issues have been identified.

Structural Consultation

1.6. No structural consultation has been undertaken as part of this route assessment.

Other areas of note

- 1.7. A parking restriction is required on both bends in Kilcormac to allow the tractor unit to utilise the parking area.
- 1.8. A suitable site entrance is to be constructed to accommodate all of the loaded turbine components.
- 1.9. Trees to be removed at the N52/N62 Junction.

2. Introduction

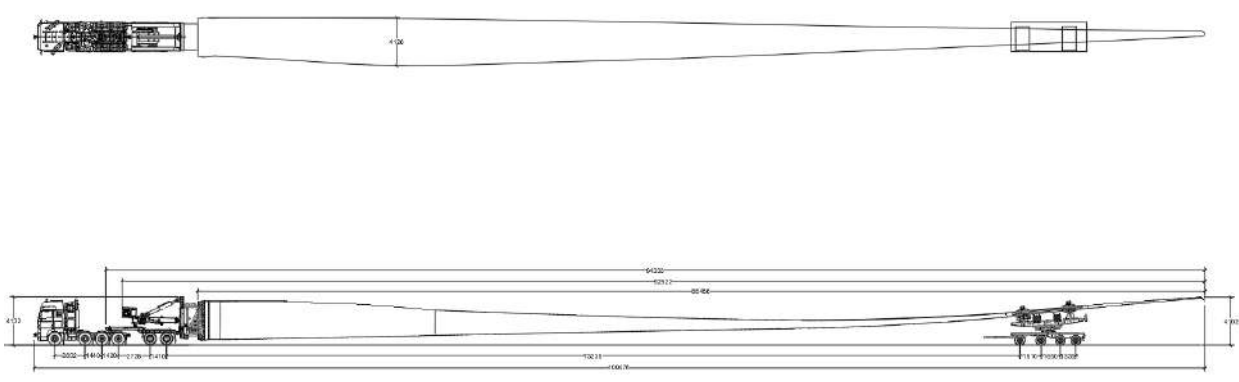
- 2.1** Collett & Sons Ltd. were commissioned by Cush Wind Ltd to undertake an abnormal loads route access study to assess the transportation of a wind turbine components to Cush Windfarm, County Offaly.
- 2.2** The road route as detailed here are for the road transport of the Enercon E175 Turbine with a EP5 E2 112m Hybrid Steel Tower
- 2.3** The purpose of this report is to detail access from the Port of Galway to the proposed site entrances on the N62.

3. Candidate Abnormal Loads

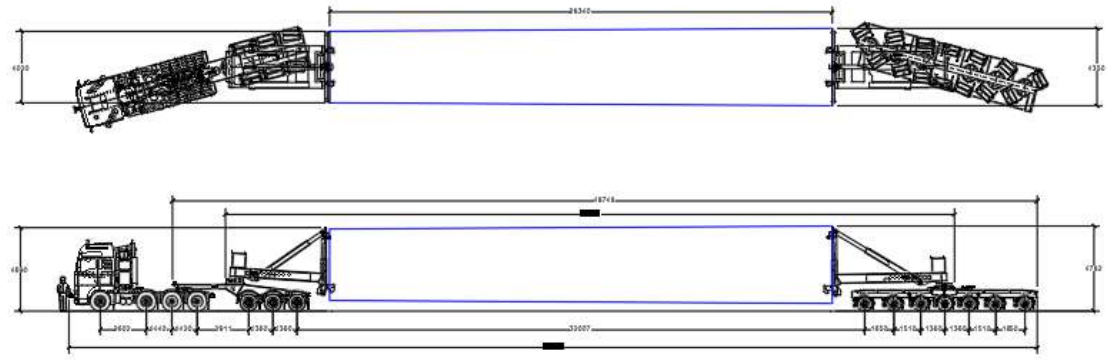
- 3.1.** Cush Wind Ltd has requested that the assessment on which this report is compiled be based on the delivery of the Enercon E175 Turbine with a EP5 E2 112m Hybrid Steel Tower. Sections 1 and 2 of this tower are conventional tower sections and will be transported in the tower transporter vehicles. Sections 3 to 8 are modular tower and will be transported in segments and erected on site. The loaded configuration information for the Blade and Sections 1 and 2 can be found in Section 4 below.

4. Abnormal Indivisible Load Profiles

- 4.1.** The abnormal load components are assessed based on weight, length, width and height and loaded to the most appropriate vehicle the weights and dimensions of these are detailed below. The loading diagrams are detailed in Appendix 1. Please note that only the loaded diagram for the blade component has been detailed at present, due to apparent incorrect component information received.

4.2.	425548-A
E175 Blade	
	
	Loaded vehicle dimensions
Overall vehicle Length	100.48m
Rigid Length	92.92m
Width	4.13m
Height	4.2m
GVW	69.00Te
Max Axle Weight	8.00Te

4.3.	425548-B
EP5 E2 112M HYBRID TOWER SECTION 1	
	
Loaded vehicle dimensions	
Overall vehicle Length	58.22m
Rigid Length	44.68m
Width	4.04m
Height	4.73m
GVW	124.00Te
Max Axle Weight	11.50Te

4.4.	425548-C
EP5 E2 112M HYBRID TOWER SECTION 2	
	
Loaded vehicle dimensions	
Overall vehicle Length	54.58m
Rigid Length	41.10m
Width	4.35m
Height	4.78m
GVW	136Te
Max Axle Weight	12.00Te

5. Abnormal Load Movements in Ireland

In the Republic of Ireland, any haulier who wishes to move a load or vehicle that exceeds the limits identified within the Road Traffic (Construction Equipment & Use of Vehicles) Regulations 2003, S.I.5 of 2003 must apply and obtain a permit for the movement.

There are two permit schemes in operation depending on the size, weight and location of the proposed movements.

5.1. Permit Scheme administered by An Garda Síochána

A Garda Síochána run a scheme for the movement of vehicles and loads that do not exceed 27.4 metres in length and 4.3 metres in width on designated roads.

Note: Vehicles and loads exceeding the 4.65 metre national height limit are not covered under this scheme and require a Local Authority Permit instead.

The designated road list is often updated with additional routes. An up-to-date list will always be available on RSA.ie and the [Garda website](#).

This scheme is outlined under the:

- [Road Traffic \(Specialised Vehicle Permits\) Regulations, 2009, S.I. No. 147 of 2009 and](#)
- [Road Traffic \(Specialised Vehicle Permits\) \(Amendment\) Regulations, 2010](#)

This scheme is free of charge.

5.2. Permit Scheme administered by Local Authorities

Local Authorities operate a permit system for all roads, vehicles and loads not covered under the Garda permit scheme.

You must apply for a permit through the relevant local authorities if:

- All or part of your journey is not on the routes the Garda scheme covers.
- The weight of the vehicle or load exceeds the limits outlined in [SI 5 of 2003](#).
- The height of the vehicle or load exceeds the limits outlined in the Road Traffic (Construction and Use of Vehicles) Regulations, [SI 366 of 2008](#).
- The dimensions of the vehicle or load exceed those allowed under the Garda scheme: 27.4 metres in length or 4.3 metres in width.

Charges for this scheme apply and may vary from one local authority to another.

This scheme is outlined under the:

- [Road Traffic Specialised Permits for Particular Vehicles\) Regulations 2007, SI 283 of 2007.](#)

6. Route Assessment Overview

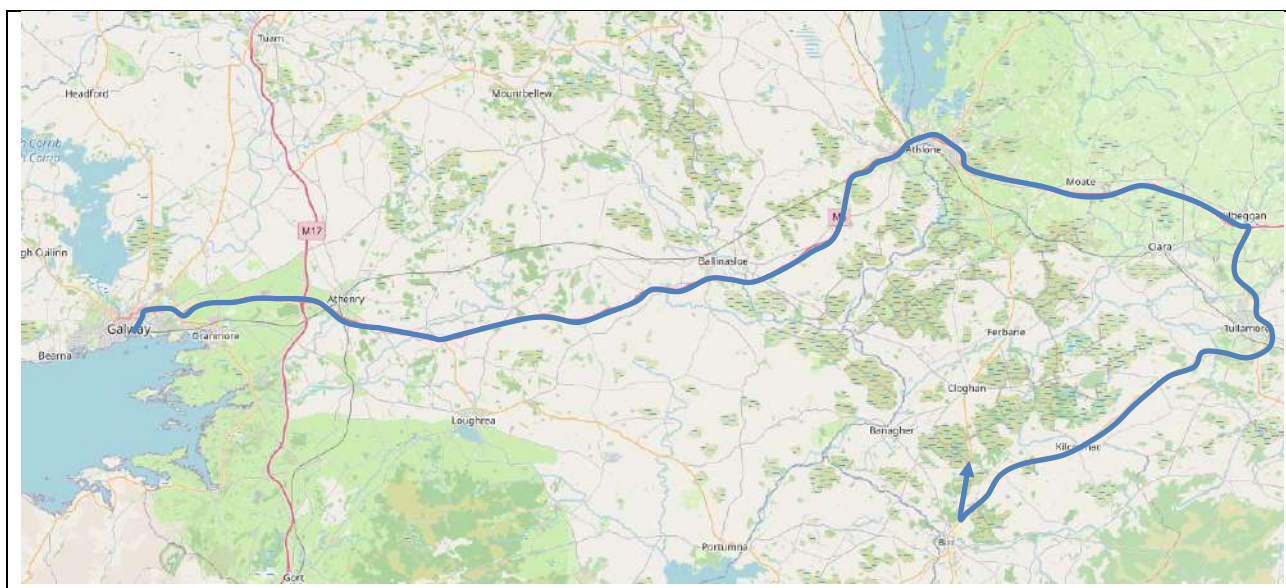
- 6.1. This section of the report illustrates the route assessed for the delivery of the loaded Enercon E175 wind turbine from the Ports of Galway to the proposed Cush Windfarm.
- 6.2. For the purpose of this report, one route to the site were surveyed. The routes surveyed in this report have been identified by the client.

6.3.

Route A

Start Location	Port of Galway	Distance of Route	Km	Miles
Via:	M6/N52/N62		167	104
<ul style="list-style-type: none">Exit Port of Galway onto Lough Atalia RoadMerge right onto R339Turn left onto unnamed road at Connelly Avenue junctionTurn right onto R336At N83 crossroads, turn right onto N6At roundabout, take 1st exit onto N6/M6Continue on M6 to junction 5 at junction with N52,At roundabout, turn right onto N52 southbound,Continue on N52 through 9 roundabouts to junction with N62,At junction turn right onto N62,Continue on N62 to site entrance at OSi Irish Grid ref: N 07615 10048.				

6.4. Map Overview



6.5. Amendment Categorisation

For the purposes of this report, the route amendments have been identified into 3 categories.

Major Amendments – Third Party Land, Road Widening

Minor Amendments – Modifications to Street Furniture, Pruning, Contraflow Manoeuvre, Manual Steering

No Amendments - Location is suitable as assessed during this survey

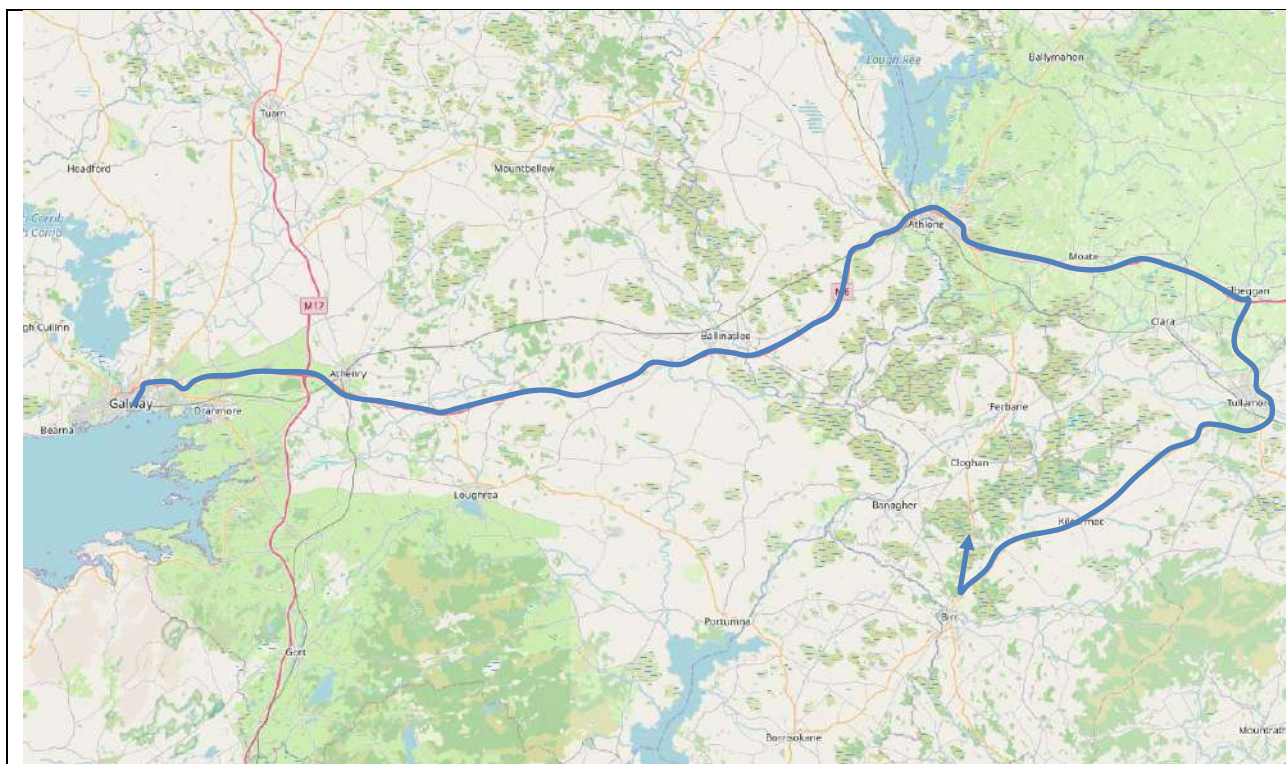
The categories have been colour coded for each report item as per the below key.

KEY				
	Major Amendments		Minor Amendments	No Amendments

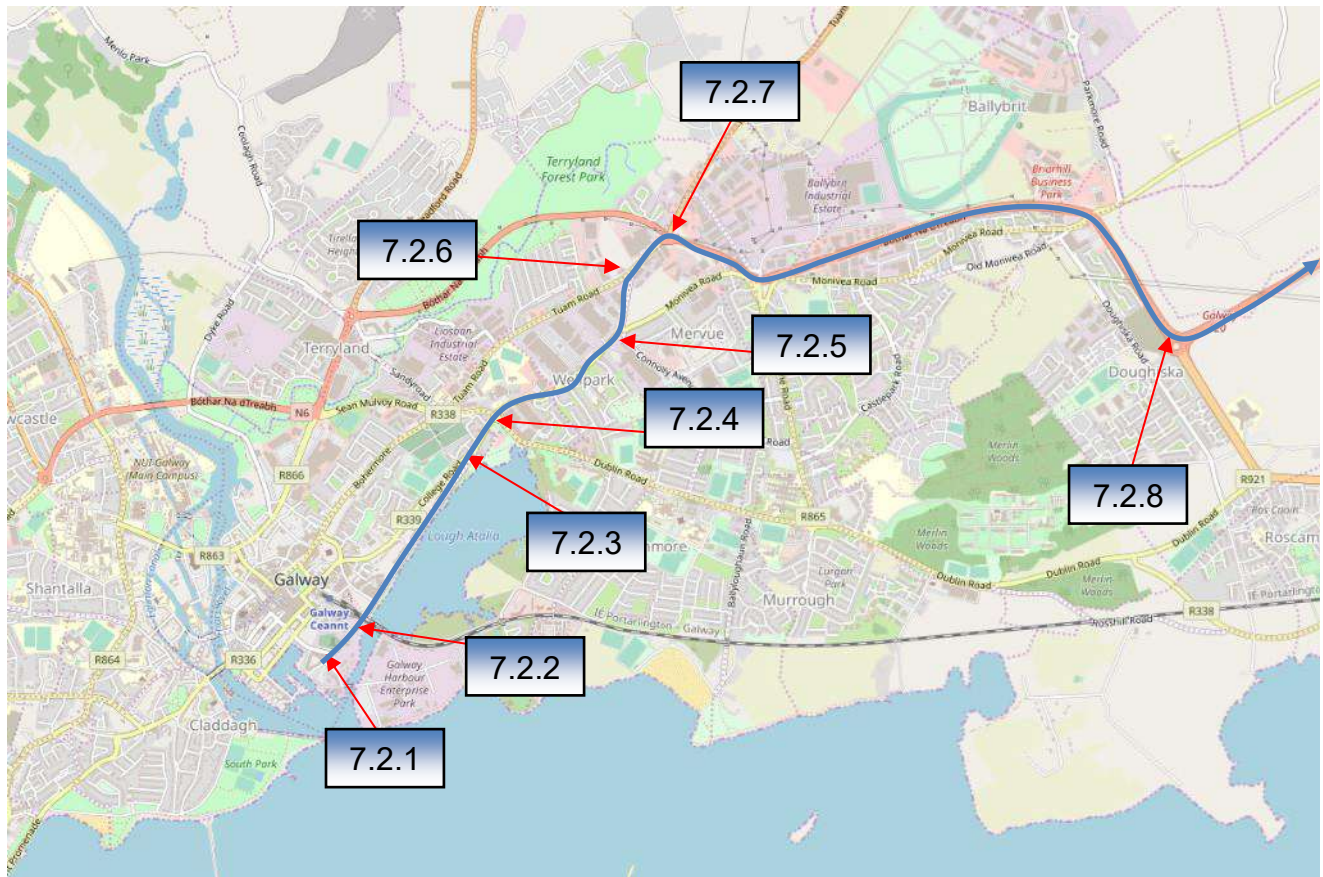
7. Route Assessment

Start Location	Port of Galway	Distance of Route	Km	Miles
Via:	M6/N52/N62		167	104
<ul style="list-style-type: none">• Exit Port of Galway onto Lough Atalia Road• Merge right onto R339• Turn left onto unnamed road at Connelly Avenue junction• Turn right onto R336• At N83 crossroads, turn right onto N6• At roundabout, take 1st exit onto N6/M6• Continue on M6 to junction 5 at junction with N52,• At roundabout, turn right onto N52 southbound,• Continue on N52 through 9 roundabouts to junction with N62,• At junction turn right onto N62,• Continue on N62 to site entrance at OSi Irish Grid ref: N 07615 10048.				

7.1. Map Overview



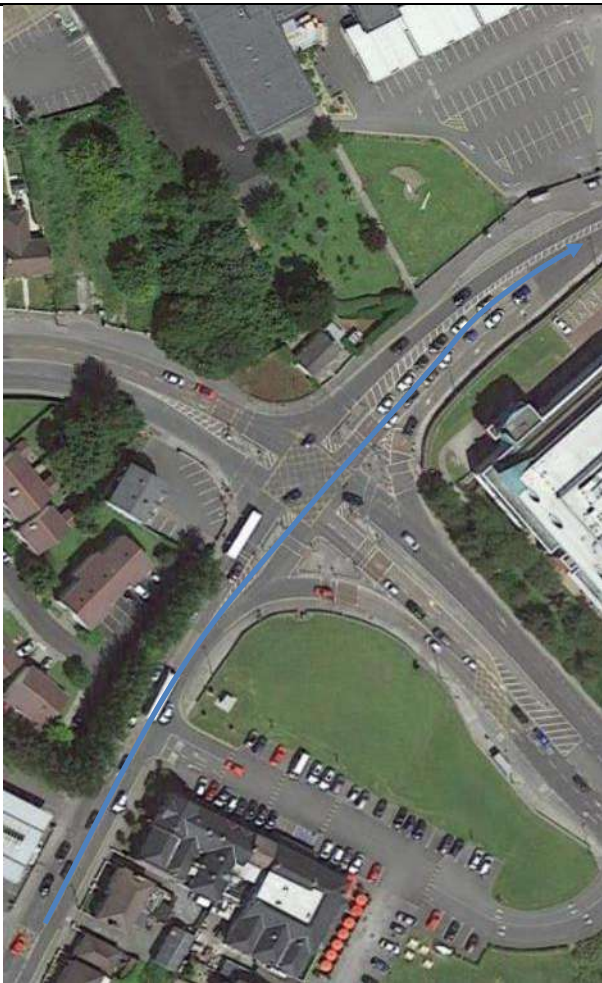
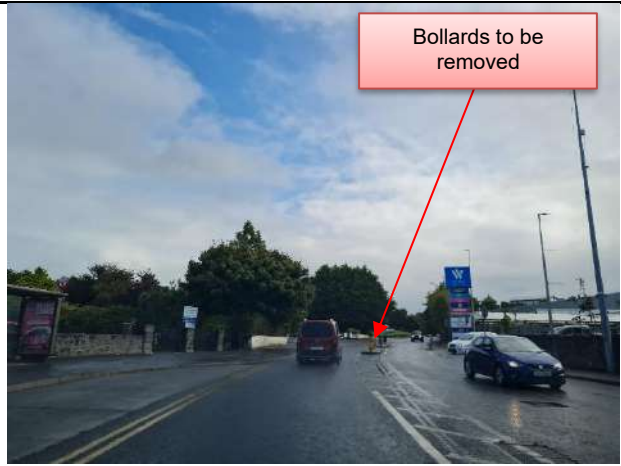
7.2. Map extract of survey locations

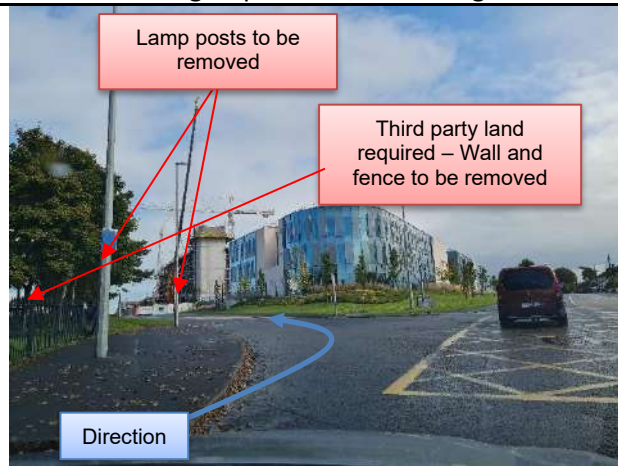
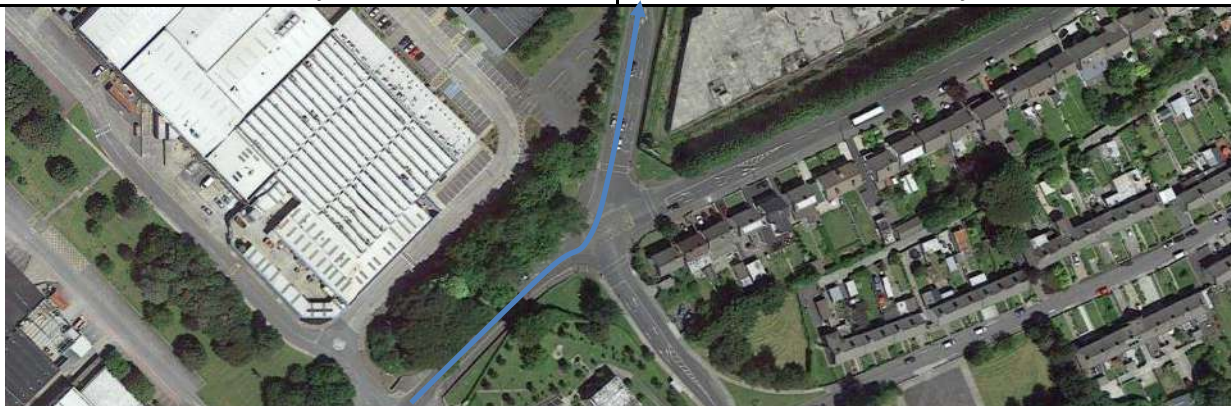


ITEM NUMBER	7.2.1	LOCATION	GALWAY PORT/LOUGH ATALIA ROAD	
DIRECTION	Exit the Port onto Lough Atalia Road			
GRID REFERENCE	M 30175 24820			
MODIFICATION AND DESCRIPTION		PHOTOGRAPH OF LOCATION		
Visual inspection indicates that the loaded vehicles will navigate out of the port onto Lough Atalia Road without any issues.				
		Exit from the port		
				
		Lough Atalia Road junction		
				
Aerial View of Location				
FURTHER INVESTIGATION UNDERTAKEN?		NO	TYPE	N/A
RELATED DOCUMENT NUMBERS		N/A		

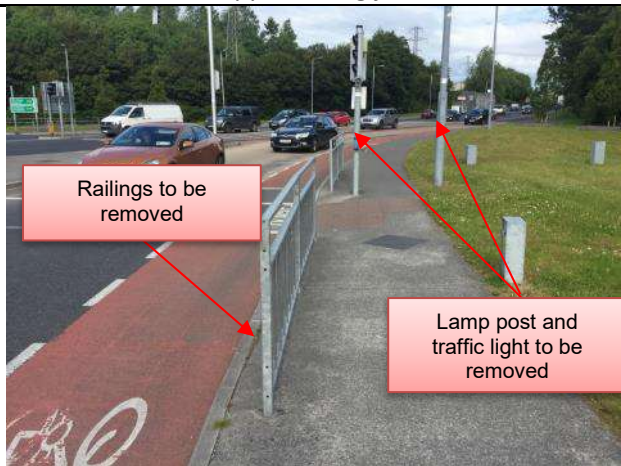
ITEM NUMBER	7.2.2	LOCATION	LOUGH ATALIA BRIDGE
DIRECTION	Continue straight at this location		
GRID REFERENCE	M 30398 25167		
MODIFICATION AND DESCRIPTION		PHOTOGRAPH OF LOCATION	
Vertical analysis indicates that the loaded vehicles will navigate under this structure without any issues.			
		Lough Atalia Bridge	
			
Aerial View of Location			
FURTHER INVESTIGATION UNDERTAKEN?	YES	TYPE	Vertical Analysis
RELATED DOCUMENT NUMBERS	425548-10AV		

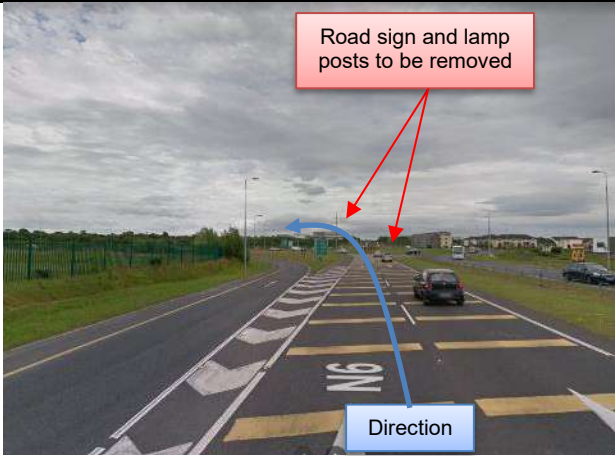
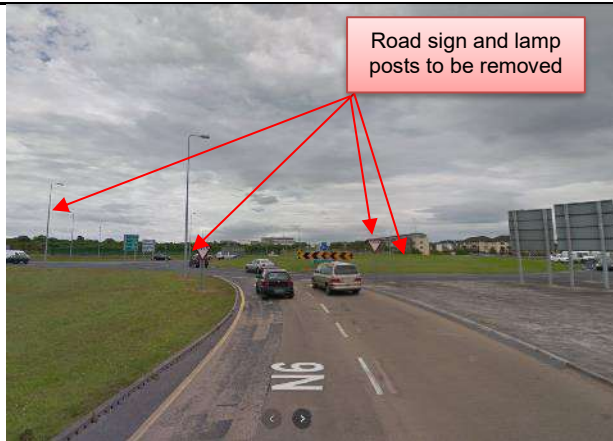
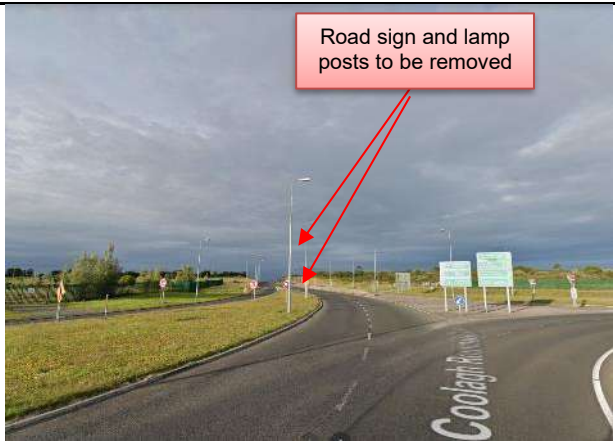
ITEM NUMBER	7.2.3	LOCATION	LOUGH ATALIA ROAD/R339 JUNCTION	
DIRECTION	Turn right at this junction			
GRID REFERENCE	M 31010 26058			
MODIFICATION AND DESCRIPTION		PHOTOGRAPH OF LOCATION		
Visual inspection indicates that there are the loaded vehicle will navigate this junction utilising a contraflow manoeuvre.				
		View towards the junction		
				
		View of the junction		
				
Aerial View of Location		View of the junction		
FURTHER INVESTIGATION UNDERTAKEN?		NO	TYPE	N/A
RELATED DOCUMENT NUMBERS		N/A		

ITEM NUMBER	7.2.4	LOCATION	R339/R338 JUNCTION
DIRECTION	Continue straight at this junction		
GRID REFERENCE	M 31119 26239		
MODIFICATION AND DESCRIPTION		PHOTOGRAPH OF LOCATION	
<p>Visual inspection indicates that a contraflow manoeuvre will be required at this junction.</p> <p>Flexi bollards on the splitter islands after the junction to be removed.</p>		 <p>Direction</p>	
		View of the approach to the junction	
			
		View of the junction	
		 <p>Bollards to be removed</p>	
Aerial View of Location		View of the splitter islands	
FURTHER INVESTIGATION UNDERTAKEN?	NO	TYPE	N/A
RELATED DOCUMENT NUMBERS	N/A		

ITEM NUMBER	7.2.5	LOCATION	R339/CONNOLLY AVENUE JUNCTION	
DIRECTION	Turn left at this junction			
GRID REFERENCE	M 31786 26676			
MODIFICATION AND DESCRIPTION		PHOTOGRAPH OF LOCATION		
<p>Swept Path Analysis indicates that third party land is required on the nearside due to oversail. Wall and fence to be removed.</p> <p>Road widening is required on the offside pavement after the junction.</p> <p>Lamp posts and traffic light on the nearside of the junction to be removed.</p> <p>Electric pole on the offside of the R339 to be removed.</p> <p>Tree pruning required on the nearside.</p> <p>Manual steering required to assist navigation.</p>				
		View of the approach to the junction		
				
View of the junction		View of the junction		
				
Aerial View of Location				
FURTHER INVESTIGATION UNDERTAKEN?		YES	TYPE	Swept Path Analysis
RELATED DOCUMENT NUMBERS		425548-20		

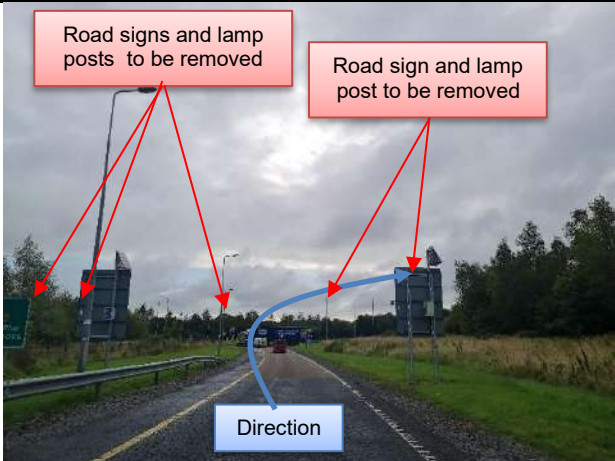
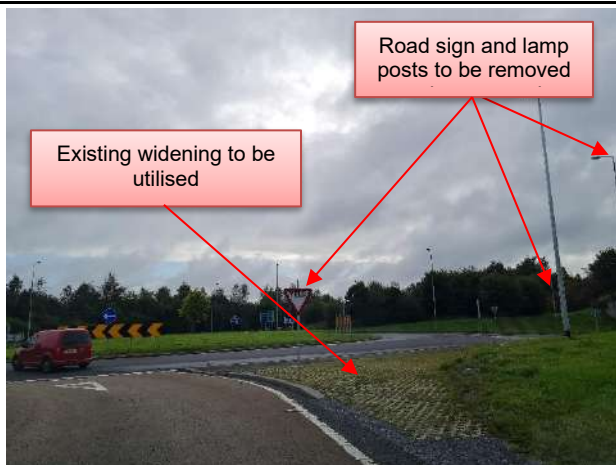
ITEM NUMBER	7.2.6	LOCATION	CONNOLLY AVENUE/R336 JUNCTION	
DIRECTION	Turn right at this junction			
GRID REFERENCE	M 31840 26985			
MODIFICATION AND DESCRIPTION		PHOTOGRAPH OF LOCATION		
<p>Swept Path Analysis indicates that road widening is required on the offside of the junction and on the nearside R336 pavement.</p> <p>Lamp post on the offside of the junction to be removed.</p> <p>Manual steering required to assist navigation.</p>				
		View approaching junction		
				
View of the junction		Reverse view of the junction		
				
Aerial View of Location				
FURTHER INVESTIGATION UNDERTAKEN?		YES	TYPE	Swept Path Analysis
RELATED DOCUMENT NUMBERS		425548-30		

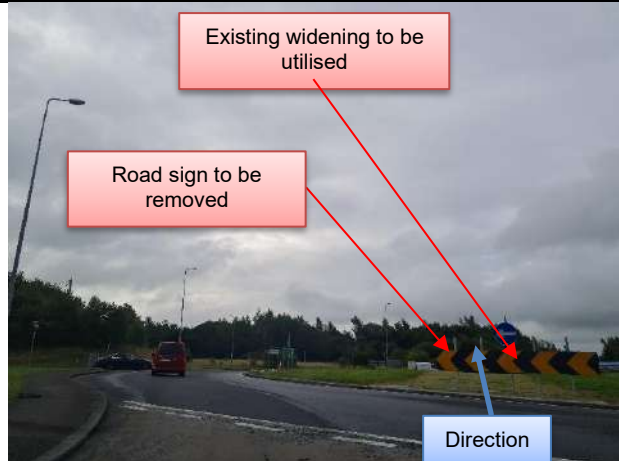
ITEM NUMBER	7.2.7	LOCATION	R336 / N6 JUNCTION
DIRECTION	Turn right at this junction		
GRID REFERENCE	M 32049 27159		
MODIFICATION AND DESCRIPTION		PHOTOGRAPH OF LOCATION	
<p>Swept Path Analysis indicates that the road signs and lamp post on the nearside of the R336 are to be removed due to the rear projection of the blade component.</p> <p>Railings, lamp post and traffic lights on the offside of contra flowed slip road to be removed.</p> <p>Tree on the offside to be removed.</p> <p>Loaded component to contraflow slip road in order to navigate this junction.</p>		 <p>View approaching junction</p>	
 <p>View of slip road</p>		 <p>View of street furniture on offside of slip road</p>	
 <p>Aerial View of Location</p>			
FURTHER INVESTIGATION UNDERTAKEN?		YES	TYPE
RELATED DOCUMENT NUMBERS		Swept Path Analysis	
		425548-40	

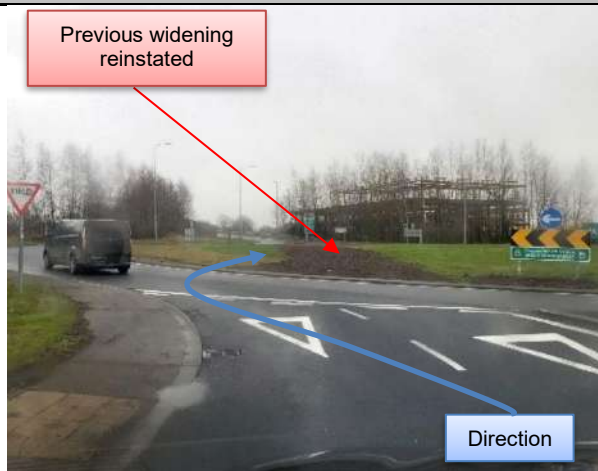
ITEM NUMBER	7.2.8	LOCATION	N6 COOLAGH ROUNDABOUT	
DIRECTION	Take 1st Exit at the roundabout			
GRID REFERENCE	M 34736 26588			
MODIFICATION AND DESCRIPTION		PHOTOGRAPH OF LOCATION		
<p>Swept Path Analysis indicates lamp posts and road signs on the nearside of roundabout entry to be removed due to the oversail of the trailer body.</p> <p>Road signs on the offside splitter island to be removed due to the rear projection of the blade component.</p> <p>Manual steering required to assist navigation.</p>		 <p>Road sign and lamp posts to be removed</p> <p>Direction</p>		
		View approaching roundabout		
 <p>Road sign and lamp posts to be removed</p>		 <p>Road sign and lamp posts to be removed</p>		
View of the roundabout		View of roundabout exit		
				
Aerial View of Location				
FURTHER INVESTIGATION UNDERTAKEN?		YES	TYPE	Swept Path Analysis
RELATED DOCUMENT NUMBERS		425548-50		

7.3. Map extract of survey locations



ITEM NUMBER	7.3.1		LOCATION	M6/N52 ROUNDABOUT	
DIRECTION	Take 3 rd exit at roundabout				
GRID REFERENCE	N 33641 34410				
MODIFICATION AND DESCRIPTION			PHOTOGRAPH OF LOCATION		
<p>Swept Path Analysis indicates the loaded vehicle will be required to utilise the existing widening on the offside of the entry slip road. Extents of existing widening to be determined. Additional widening may be required.</p> <p>Road signs and lamp posts on both sides of the slip road to be removed.</p> <p>Manual steering required to assist navigation.</p> <p>Loaded vehicles to contraflow this roundabout.</p>					
			View of approach to roundabout		
					
View of the offside of the roundabout			View of the roundabout exit		
					
Aerial View of Location					
FURTHER INVESTIGATION UNDERTAKEN?			YES	TYPE	Swept Path Analysis
RELATED DOCUMENT NUMBERS			425548-60		

ITEM NUMBER	7.3.2		LOCATION	N52/M6 ROUNDABOUT	
DIRECTION	Take 2 nd exit at roundabout				
GRID REFERENCE	N 33674 34228				
MODIFICATION AND DESCRIPTION			PHOTOGRAPH OF LOCATION		
<p>Swept path analysis indicates that the existing widening on the roundabout to be utilised. Extents of the widening unknown and should be established to determine whether further widening would be required.</p> <p>Road sign on the central island to be removed.</p> <p>Manual steering required to assist navigation.</p>					
			View of the roundabout		
					
			View of the roundabout exit		
			Aerial View of Location		
			FURTHER INVESTIGATION UNDERTAKEN?		
RELATED DOCUMENT NUMBERS			425548-70		

ITEM NUMBER	7.4.1		LOCATION	N52/R420 ARDAN ROUNDABOUT	
DIRECTION	Take 2nd Exit at the roundabout				
GRID REFERENCE	N 34491 26539				
MODIFICATION AND DESCRIPTION			PHOTOGRAPH OF LOCATION		
<p>Swept path analysis indicates that road widening is required on the central island of the roundabout.</p> <p>Manual steering required to assist navigation.</p> <p>Roundabout has been previously widened for 162m rotor turbine deliveries although these works have been reinstated.</p>					
			View of roundabout entry		
					
			View of exit from roundabout		
					
Aerial View of Location					
FURTHER INVESTIGATION UNDERTAKEN?			YES	TYPE	Swept Path Analysis
RELATED DOCUMENT NUMBERS			425548-80		

ITEM NUMBER	7.4.2	LOCATION	N52/L2025 CAPPANCUR ROUNDABOUT	
DIRECTION	Take 1 st exit onto L2025			
GRID REFERENCE	N 35593 25285			
MODIFICATION AND DESCRIPTION		PHOTOGRAPH OF LOCATION		
<p>Swept Path Analysis indicates that road widening is required on the central island of the roundabout.</p> <p>Loaded blade will require to contraflow this roundabout in order to reduce the amount of modifications required.</p> <p>Road sign on central island to be removed.</p> <p>Manual steering required to assist navigation.</p>		 <p>Direction</p>		
		Approach to Roundabout		
 <p>Road widening required</p>		 <p>Road sign to be removed</p>		
View of the roundabout		Reverse view of the roundabout exit		
				
Aerial View of Location				
FURTHER INVESTIGATION UNDERTAKEN?		YES	TYPE	Swept Path Analysis
RELATED DOCUMENT NUMBERS		425548-90		

ITEM NUMBER	7.4.3	LOCATION	N52/R420 CLONCOLLOG ROUNDABOUT	
DIRECTION	Take the 2 nd exit at the roundabout			
GRID REFERENCE	N 35887 24132			
MODIFICATION AND DESCRIPTION		PHOTOGRAPH OF LOCATION		
<p>Swept Path Analysis indicates that road widening will be required on the central island.</p> <p>Loaded blade will require to contraflow this roundabout in order to reduce the amount of modifications required.</p> <p>Two road signs on central island to be removed.</p>				
		View of roundabout entry		
				
View on roundabout		Reverse view of roundabout exit		
				
Aerial View of Location				
FURTHER INVESTIGATION UNDERTAKEN?		YES	TYPE	Swept path analysis
RELATED DOCUMENT NUMBERS		425548-100		

ITEM NUMBER	7.4.4	LOCATION	N52/R443 CLONMINCH ROUNDABOUT	
DIRECTION	Take the 2 nd exit at the roundabout			
GRID REFERENCE	N 34865 22745			
MODIFICATION AND DESCRIPTION		PHOTOGRAPH OF LOCATION		
<p>Swept Path Analysis indicates that road widening will be required on the central island.</p> <p>Road signs on central island and on exit splitter island to be removed.</p>				
		View of roundabout entry		
				
View on roundabout		Reverse view on roundabout exit		
				
Aerial View of Location				
FURTHER INVESTIGATION UNDERTAKEN?	YES	TYPE	Swept path analysis	
RELATED DOCUMENT NUMBERS	425548-110			

ITEM NUMBER	7.4.5	LOCATION	N52 DISTILLERY ROUNDABOUT	
DIRECTION	Take the 2 nd exit at the roundabout			
GRID REFERENCE	N 33273 22502			
MODIFICATION AND DESCRIPTION		PHOTOGRAPH OF LOCATION		
<p>Swept Path Analysis indicates that road widening will be required on the central island.</p> <p>One road sign on central island to be removed.</p>		 <p>Road signs to be removed</p> <p>Direction</p>		
		View of roundabout entry		
 <p>Road widening required</p>				
View on roundabout		View on roundabout exit		
				
Aerial View of Location				
FURTHER INVESTIGATION UNDERTAKEN?		YES	TYPE	Swept path analysis
RELATED DOCUMENT NUMBERS		425548-120		

ITEM NUMBER	7.4.6	LOCATION	N52/R421 BALLARD ROUNDABOUT	
DIRECTION	Take the 2 nd exit at the roundabout			
GRID REFERENCE	N 32386 22433			
MODIFICATION AND DESCRIPTION		PHOTOGRAPH OF LOCATION		
<p>Swept Path Analysis indicates that road widening will be required on the central island.</p> <p>Loaded blade will require to contraflow this roundabout in order to reduce the amount of modifications required.</p> <p>Road sign on central island of the roundabout to be removed.</p>				
		View of roundabout entry		
				
Reverse view on roundabout		Reverse view on roundabout exit		
				
Aerial View of Location				
FURTHER INVESTIGATION UNDERTAKEN?		YES	TYPE	Swept path analysis
RELATED DOCUMENT NUMBERS		425548-130		

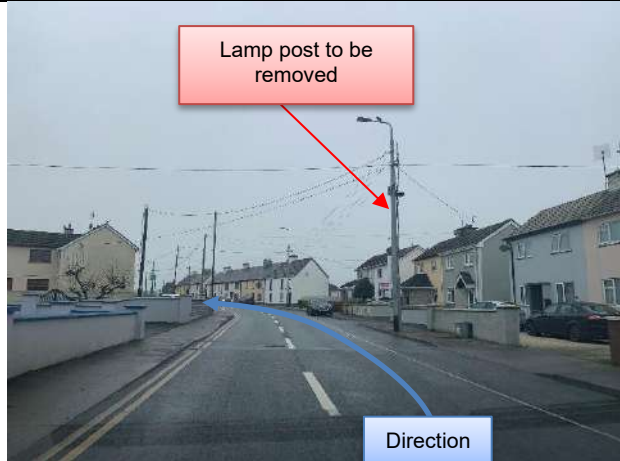
ITEM NUMBER	7.4.7	LOCATION	N52/R421 CHARLEVILLE ROUNDABOUT		
DIRECTION	Take the 1 st exit at the roundabout				
GRID REFERENCE	N 32039 22690				
MODIFICATION AND DESCRIPTION		PHOTOGRAPH OF LOCATION			
<p>Swept Path Analysis indicates that road widening will be required on the central island.</p> <p>Road sign on the nearside to be removed.</p> <p>Manual steering required to assist navigation.</p>					
		View of roundabout entry			
					
View on roundabout		View on roundabout exit			
					
Aerial View of Location					
FURTHER INVESTIGATION UNDERTAKEN?		YES	TYPE	Swept path analysis	
RELATED DOCUMENT NUMBERS		425548-140			

ITEM NUMBER	7.4.8	LOCATION	N52/L6009 MUCKLAGH ROUNDABOUT	
DIRECTION	Take the 2 nd exit at the roundabout			
GRID REFERENCE	N 30975 22828			
MODIFICATION AND DESCRIPTION		PHOTOGRAPH OF LOCATION		
<p>Swept Path Analysis indicates that road widening will be required on the central island.</p> <p>Loaded blade will require to contraflow this roundabout in order to reduce the amount of modifications required.</p> <p>Road sign on central island to be removed.</p>		<p>Road widening required</p> <p>Direction</p>		
		View of roundabout entry		
		<p>Road signs to be removed</p>		
View on roundabout		View on roundabout exit		
Aerial View of Location				
FURTHER INVESTIGATION UNDERTAKEN?		YES	TYPE	Swept path analysis
RELATED DOCUMENT NUMBERS		425548-150		

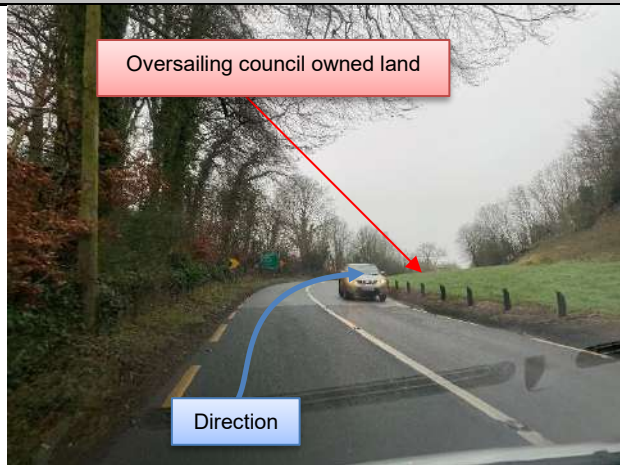
7.5. Map extract of survey locations

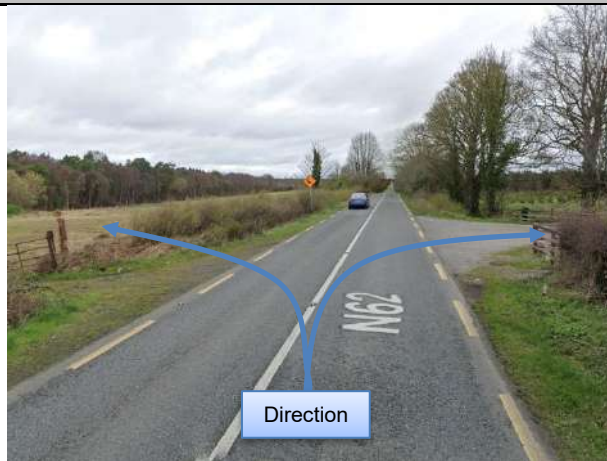


ITEM NUMBER	7.5.1	LOCATION	RIGHT BEND ON N52 IN KILCORMAC	
DIRECTION	Continue straight			
GRID REFERENCE	N 18463 14008			
MODIFICATION AND DESCRIPTION		PHOTOGRAPH OF LOCATION		
<p>Swept Path Analysis indicates that road widening will be required on the nearside footpath.</p> <p>Parking restrictions will be required on both sides of the road.</p> <p>Trees and road sign on the nearside to be removed.</p> <p>Manual steering required to assist navigation.</p>				
		View of prior to bend		
				
		View on bend		
				
Aerial View of Location				
FURTHER INVESTIGATION UNDERTAKEN?	YES	TYPE	Swept Path Analysis	
RELATED DOCUMENT NUMBERS	425548-160			

ITEM NUMBER	7.5.2	LOCATION	LEFT BEND ON N52 IN KILCORMAC	
DIRECTION	Continue straight			
GRID REFERENCE	N 18077 13975			
MODIFICATION AND DESCRIPTION		PHOTOGRAPH OF LOCATION		
<p>Swept Path Analysis indicates that a lamp post on the offside of the road will require removal.</p> <p>Parking restriction will be required on the offside to allow the tractor unit to utilise the area.</p> <p>Manual steering required to assist navigation.</p>				
		View of prior to bend		
				
		View on bend		
				
Aerial View of Location				
FURTHER INVESTIGATION UNDERTAKEN?		YES	TYPE	Swept Path Analysis
RELATED DOCUMENT NUMBERS		425548-170		

ITEM NUMBER	7.5.3	LOCATION	N52/N62 JUNCTION	
DIRECTION	Turn right onto N62			
GRID REFERENCE	N 07398 07436			
MODIFICATION AND DESCRIPTION		PHOTOGRAPH OF LOCATION		
<p>Swept Path Analysis indicates that a reverse manoeuvre will be required at this junction.</p> <p>Third party land required on the nearside of the N52 to allow the loaded vehicle into the land in order to drive forward onto the N62.</p> <p>Trees, road signs and lamp post on nearside of N52 required to be removed.</p> <p>Manual steering required to assist navigation.</p>				
		View of junction		
				
View on junction		Reverse View of the junction		
				
Aerial View of Location				
FURTHER INVESTIGATION UNDERTAKEN?		YES	TYPE	Swept path analysis
RELATED DOCUMENT NUMBERS		425548-180		

ITEM NUMBER	7.5.4	LOCATION	RIGHT BEND ON N62	
DIRECTION	Continue on N62			
GRID REFERENCE	N 07225 07932			
MODIFICATION AND DESCRIPTION		PHOTOGRAPH OF LOCATION		
<p>Swept Path Analysis indicates the loaded blade will oversail council owned land on the offside of the bend.</p> <p>The client has indicated that this land is in control of the County Council.</p>				
		View prior to bend		
				
View on bend		View after bend		
				
Aerial View of Location				
FURTHER INVESTIGATION UNDERTAKEN?		YES	TYPE	Swept Path Analysis
RELATED DOCUMENT NUMBERS		425548-190		

ITEM NUMBER	7.5.5	LOCATION	SITE ENTRANCE
DIRECTION	Turn left/right into site		
GRID REFERENCE	N 07615 10048		
MODIFICATION AND DESCRIPTION		PHOTOGRAPH OF LOCATION	
Visual inspection indicates a suitable site entrance is to be constructed to the manufacturers specification to accommodate all loaded components.			
		Reverse view of entrance	
			
Aerial View of Location			
FURTHER INVESTIGATION UNDERTAKEN?	NO	TYPE	N/A
RELATED DOCUMENT NUMBERS	N/A		

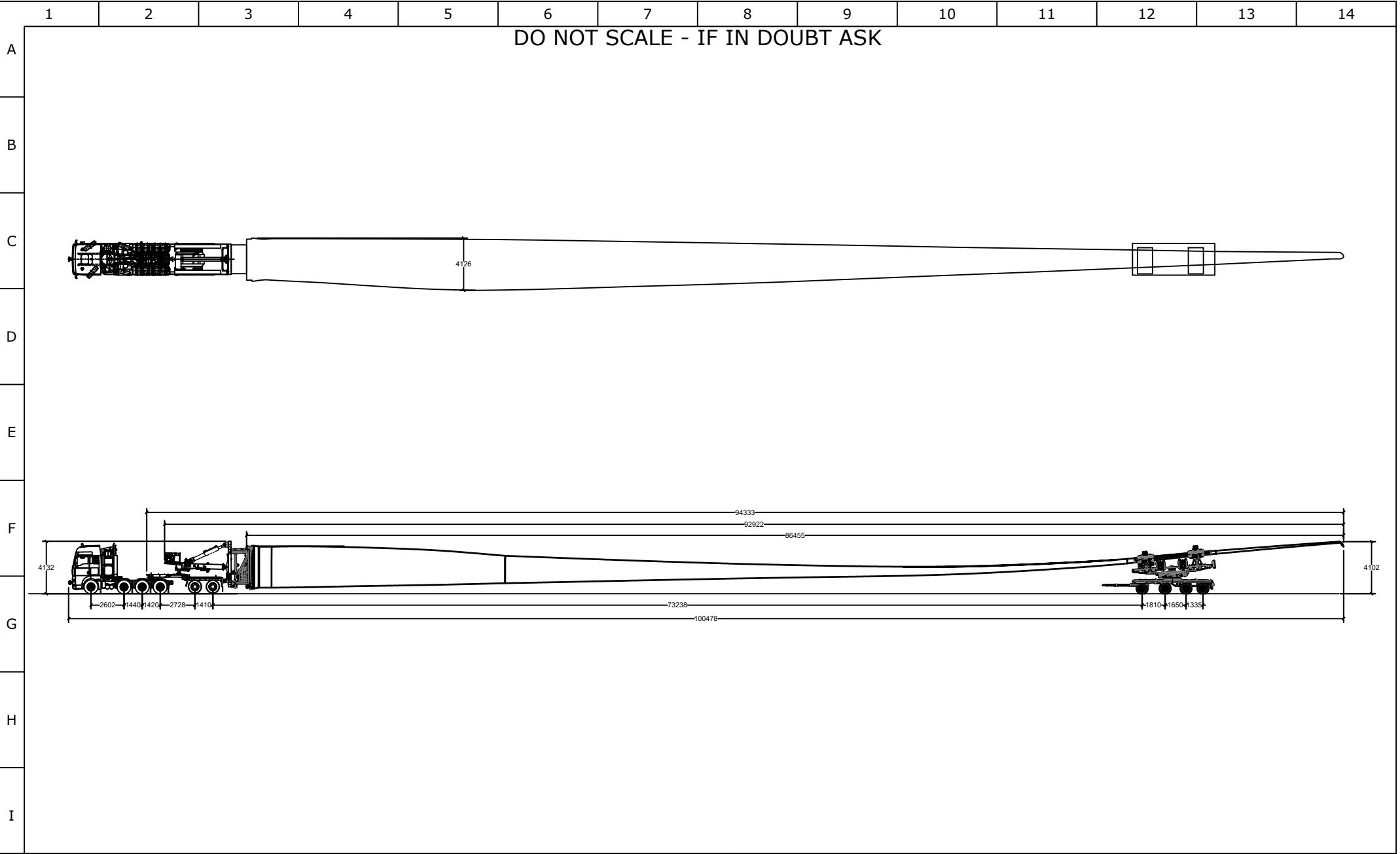
8. Important Notes

- 8.1. The recommendations in this report are made from a purely transport orientated view, and do not consider any political issues in terms of land ownership, or any other precincts raised that may otherwise be restrictive.
- 8.2. The information contained in this report is privileged and confidential and is for the exclusive use of the client nominated herein.
- 8.3. A Police escort or pilot car will be required in order to assist with traffic control for the entire route surveyed.
- 8.4. Permits will be required for the movement of all loads. These permits are at the discretion of the Local Authorities (L.A). Therefore, approval of these permits by the L.A is a major consideration before any movements can be undertaken.
- 8.5. It is recommended to have adequate warning signs implemented to warn other road users at critical points.
- 8.6. All hedges, shrubs, bushes, trees and overhanging branches along the nominated routes must be trimmed to allow a suitable minimum envelope.
- 8.7. All street furniture, signage etc. along the nominated route must be removed to allow a suitable minimum envelope on the road. Other specific street furniture has been nominated in this report to facilitate over-sailed and swept areas.
- 8.8. The turbine manufactures transport guidance notes will state the minimum road width required for the transport of components. Any roads below this stated width will require widening to reflect this.
- 8.9. In areas where land take or road widening is required, the road construction must be formed to the minimum specification suitable for the transfer of axle loadings up to 16Te, the road construction must be formed to the minimum specification contained in the selected manufacturers transport and erection guidance notes.
- 8.10. Overhead utility cables have not been measured as part of this survey and correspondence with the utility companies regarding cable heights and possible remedial solutions should be undertaken prior to any delivery.
- 8.11. It should be noted that all assessments and inspections have been done so with the intention of producing information to highlight anticipated problems. This includes highlighting of potential land take requirements, possible street furniture implications, and highway alignment issues.
- 8.12. Land take is usually referred to when land is required from private land owners; road widening is usually referred to when land is required within highways boundaries. However, the details of the nominated land take and road widening contained in this report are highlighting the expected areas of concern, and can only be confirmed by swept path analysis. The boundaries between private land and highways property are assumed by using obvious demarcation such as fence lines/hedges etc. It should be noted that actual boundaries between highways and private land are not substantiated in this report and can only be authenticated by carrying out land searches.
- 8.13. All inspections and assessments are made for the road movement of loaded trailer equipment carrying wind turbine components. These dimensions are based on the turning circles and specification of Collett & Sons trailer equipment.
- 8.14. All route inspections and assessments, and subsequent conclusions and recommendations are deemed accurate by Collett & Sons Limited at the date that this report is created. We cannot be held responsible for the development of future road schemes or alterations to the routes surveyed that may leave this report inaccurate.
- 8.15. This report is based solely on a preliminary visual inspection. Nothing in this report shall be construed in any way as committing Collett & Sons Limited to being able to deliver to site using this route before further

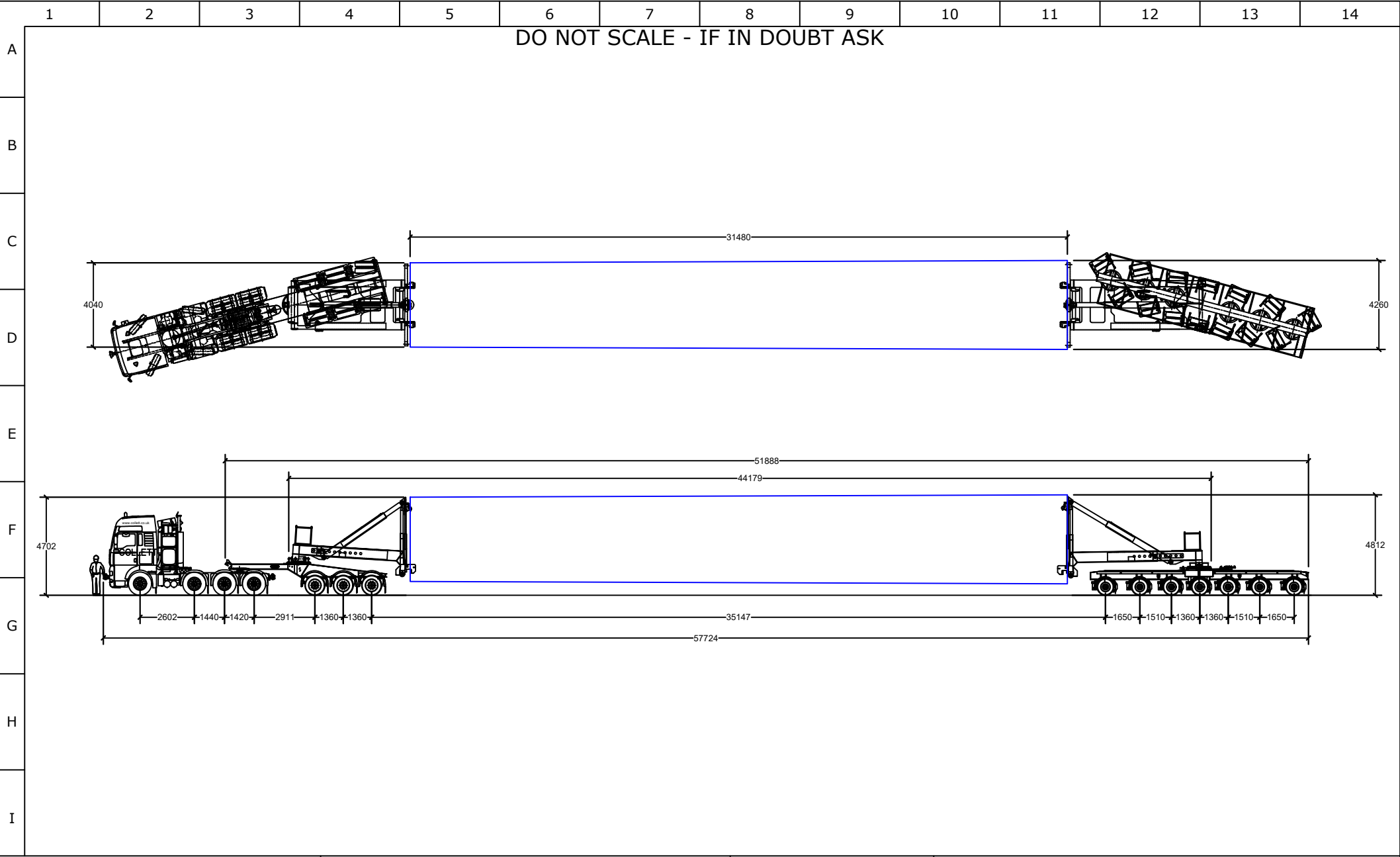
structural analysis has been undertaken, and any accommodation/remedial works undertaken which are to Collett & Sons satisfaction.

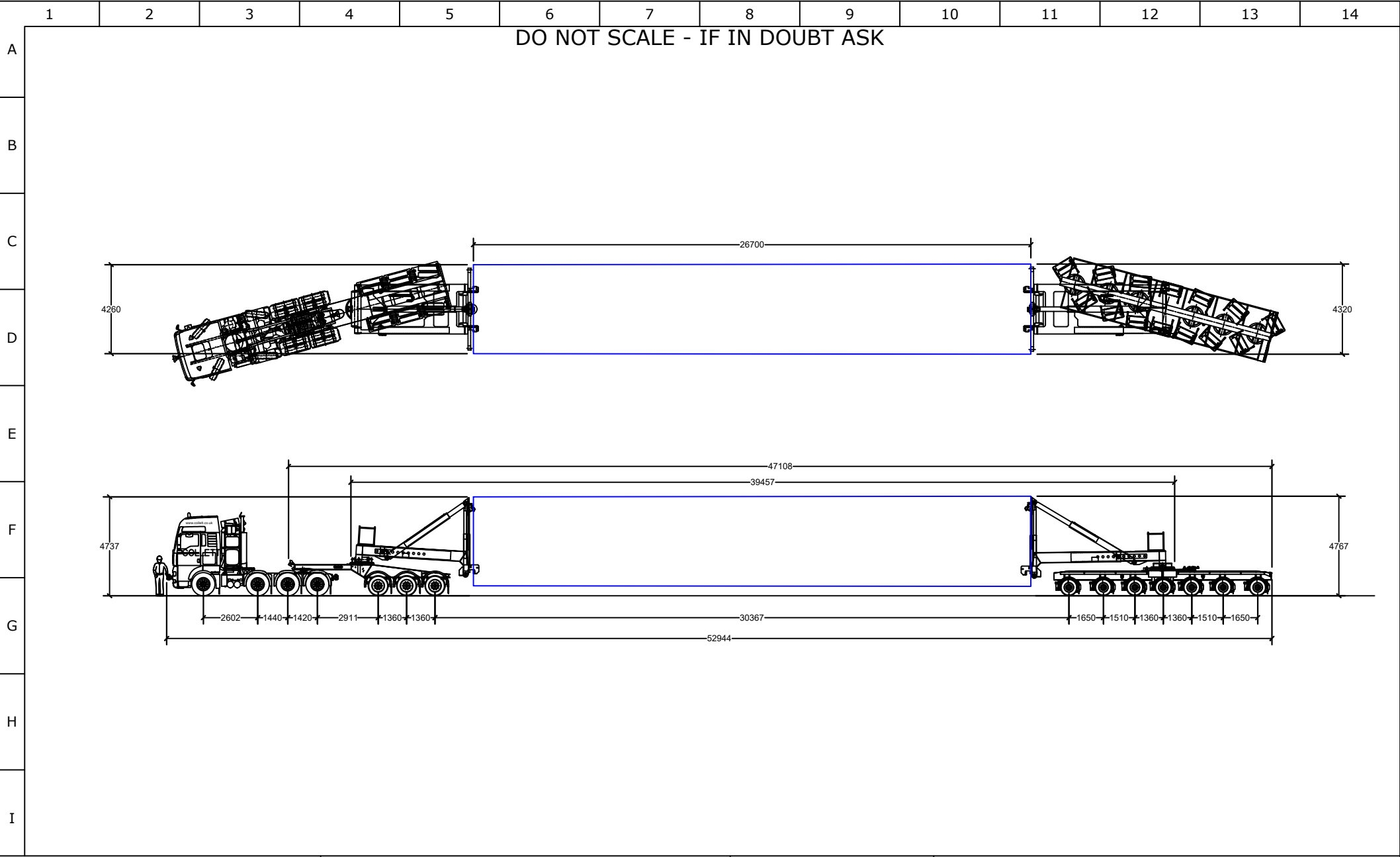
APPENDIX 1

LOADED CONFIGURATION DRAWINGS



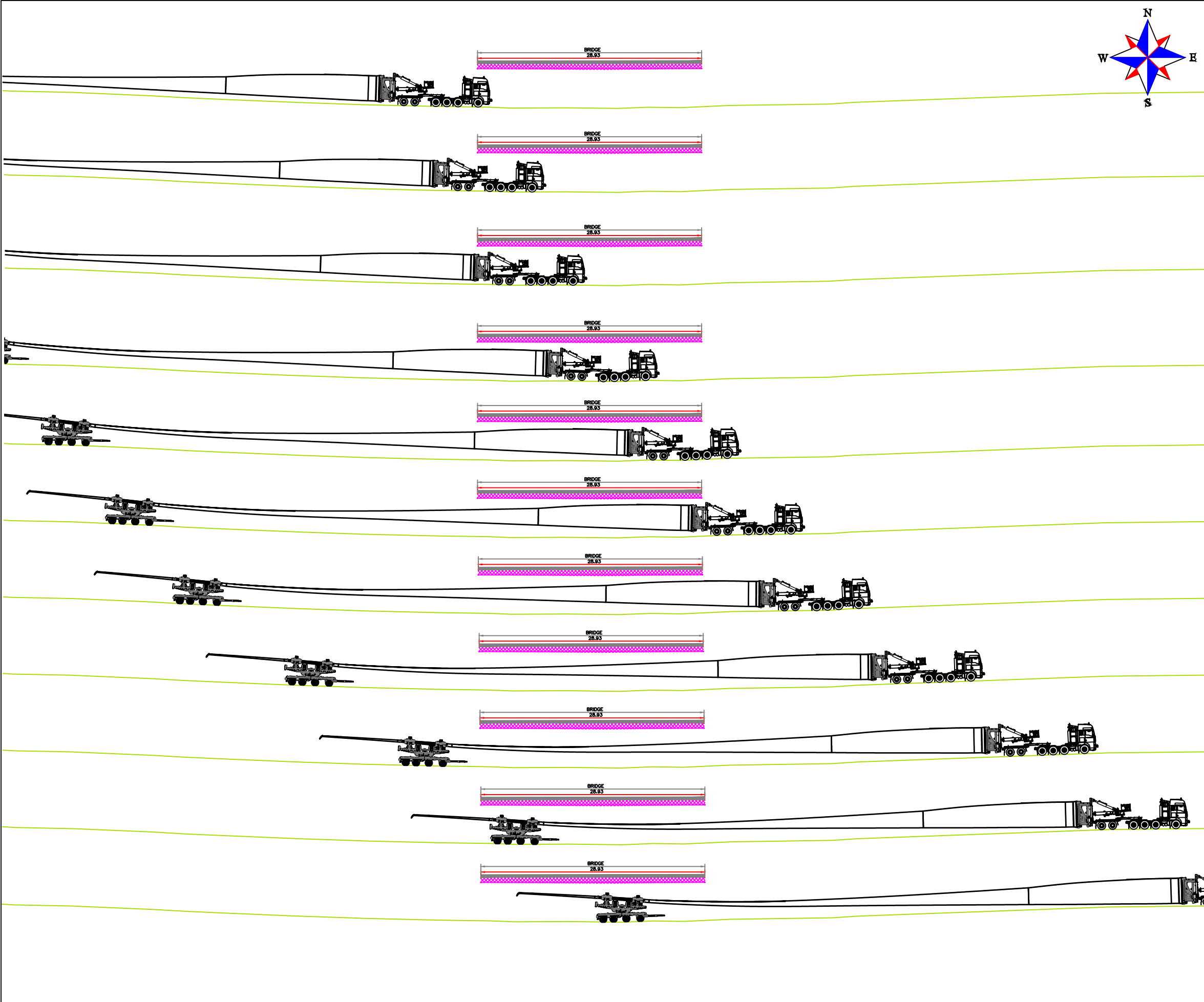
<div>COLLETT</div> <div>EXPERTS IN MOTION</div>	COLLETT & SONS LIMITED		DRAWN		TITLE	
	Victoria TerminalTEL: +44(0)8456 255288		S.MANGHAM		ENERCON E175 BLADE	
	Albert Road FAX: +44(0)8456 255244		DATE		SITE	
	Halifax, HX2 0DF WEB: www.collett.co.uk		08/04/2026		CUSH	
			SCALE	SIZE	CUSTOMER	DRG No.
		NTS	A4	CUSH WIND LTD		425548-A





APPENDIX 2

SWEPT PATH ANALYSIS DRAWINGS

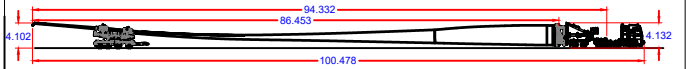


Continue on Lough Atalia Road underneath bridge.

****Caution****

- Loaded vehicle will navigate under this structure without any issues.

- The swept path analysis provided is produced from a purely transport orientated view, and does not consider any political issues in terms of land ownership, or any other precincts raised, that may otherwise be restrictive.
- The drawing has been produced from data provided by the client.
- All swept path diagrams and assessments are made and calculated for the road movement of loaded trailer equipment carrying Turbine components. These dimensions are based on the turning circles and specification of Collett & Sons Ltd trailer equipment.
- This SPA is a means of providing evidence of minimum requirements of any one vehicle as a footprint and there is no safety factor or margin included.
- Turbine delivery vehicles can be both left and right hand drive vehicles, therefore due to drivers perception it must be assumed that every vehicle will not follow the exact same line and so a margin of additional space should be allowed for.
- Land take is usually referred to when land is required from Private Land Owners; road widening is usually referred to when land is required within highways boundaries. The boundaries between private land and highways property are assumed by using obvious demarcation such as fence lines/hedges etc. It should be noted that actual boundaries between highways and private land are not substantiated in this report and can only be authenticated by carrying out land searches.
- In critical areas, where modifications are required, the road construction must be formed to the minimum specification contained in the Turbine Manufactures Transport Guidance Notes.
- The Turbine Manufactures Transport Guidance Notes will state the minimum road width required for the transport of components. Any roads below this stated width will require widening to reflect this regardless of any swept path analysis not indicating modifications.
- The information is privileged and confidential and is for the exclusive use of the nominated client.
- All dimensions in meters

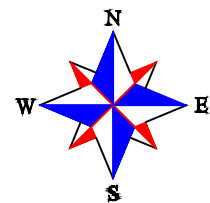
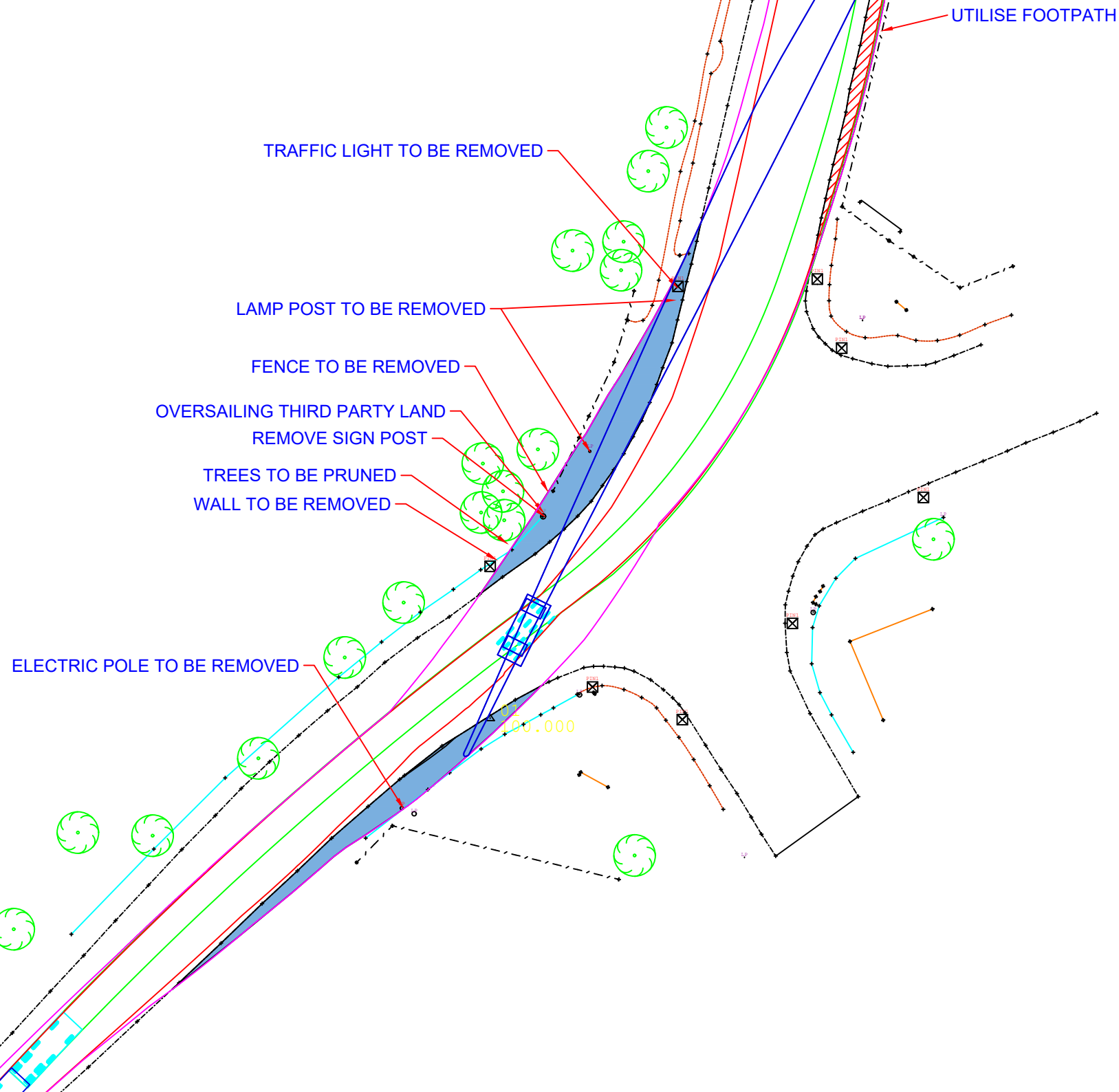


Swept Path indicates trailer utilising MANUAL steering

Enercon
E175 Blade Component
Clamp and Bogie

- Area within red outline will be swept by tractor and trailer axles
- ▨ Hatched area within red outline to be levelled and prepared to accept axle loadings
- Area within magenta outline will be oversailed by load and projections
- Area within green outline will be oversailed by trailer body

	COLLETT & SONS LIMITED		DRAWN	S.MANGHAM	TITLE				LOUGH ATALIA ROAD BRIDGE												
	Victoria Terminal TEL: +44(0)8456 255288		DATE		08/04/2026		MAPPING TOPOGRAPHICAL SURVEY		CUSTOMER		CUSH WIND LTD										
	Albert Road FAX: +44(0)8456 255244		SCALE		1:500		SIZE		A3		PINCH POINT IDENTIFIED BY		CLIENT		SITE		CUSH		DWG. NO. 425548-10AV.1		
	Halifax, HX2 0DF WEB: www.collett.co.uk																				



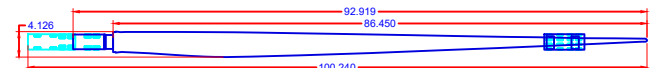
Continue on R339 to junction with Connolly Avenue.

At junction, turn left onto Connolly Avenue.

****Caution****

- Widening required to provide a useable road surface as indicated by the red hatching.
- Loaded blade oversailing third party land on the offside of the junction.
- Wall and fence on offside to be removed.
- Indicated street furniture to be removed.
- Pruning required.
- Ground to be prepared to accept suitable axle loadings.

- The swept path analysis provided is produced from a purely transport orientated view, and does not consider any political issues in terms of land ownership, or any other precincts raised, that may otherwise be restrictive.
- The drawing has been produced from data provided by the client.
- All swept path diagrams and assessments are made and calculated for the road movement of loaded trailer equipment carrying Turbine components. These dimensions are based on the turning circles and specification of Collett & Sons Ltd trailer equipment.
- This SPA is a means of providing evidence of minimum requirements of any one vehicle as a footprint and there is no safety factor or margin included.
- Turbine delivery vehicles can be both left and right hand drive vehicles, therefore due to drivers perception it must be assumed that every vehicle will not follow the exact same line and so a margin of additional space should be allowed for.
- Land take is usually referred to when land is required from Private Land Owners; road widening is usually referred to when land is required within highways boundaries. The boundaries between private land and highways property are assumed by using obvious demarcation such as fence lines/hedges etc. It should be noted that actual boundaries between highways and private land are not substantiated in this report and can only be authenticated by carrying out land searches.
- In critical areas, where modifications are required, the road construction must be formed to the minimum specification contained in the Turbine Manufactures Transport Guidance Notes.
- The Turbine Manufactures Transport Guidance Notes will state the minimum road width required for the transport of components. Any roads below this stated width will require widening to reflect this regardless of any swept path analysis not indicating modifications.
- The information is privileged and confidential and is for the exclusive use of the nominated client.
- All dimensions in meters



Swept Path indicates trailer utilising MANUAL steering

Enercon
E175 Blade Component
Clamp and Bogie

- Area within red outline will be swept by tractor and trailer axles
- ▨ Hatched area within red outline to be levelled and prepared to accept axle loadings
- ▒ Blue hatched area indicates oversail and should be cleared of any obstructions
- Area within magenta outline will be oversailed by load and projections
- Area within green outline will be oversailed by trailer body

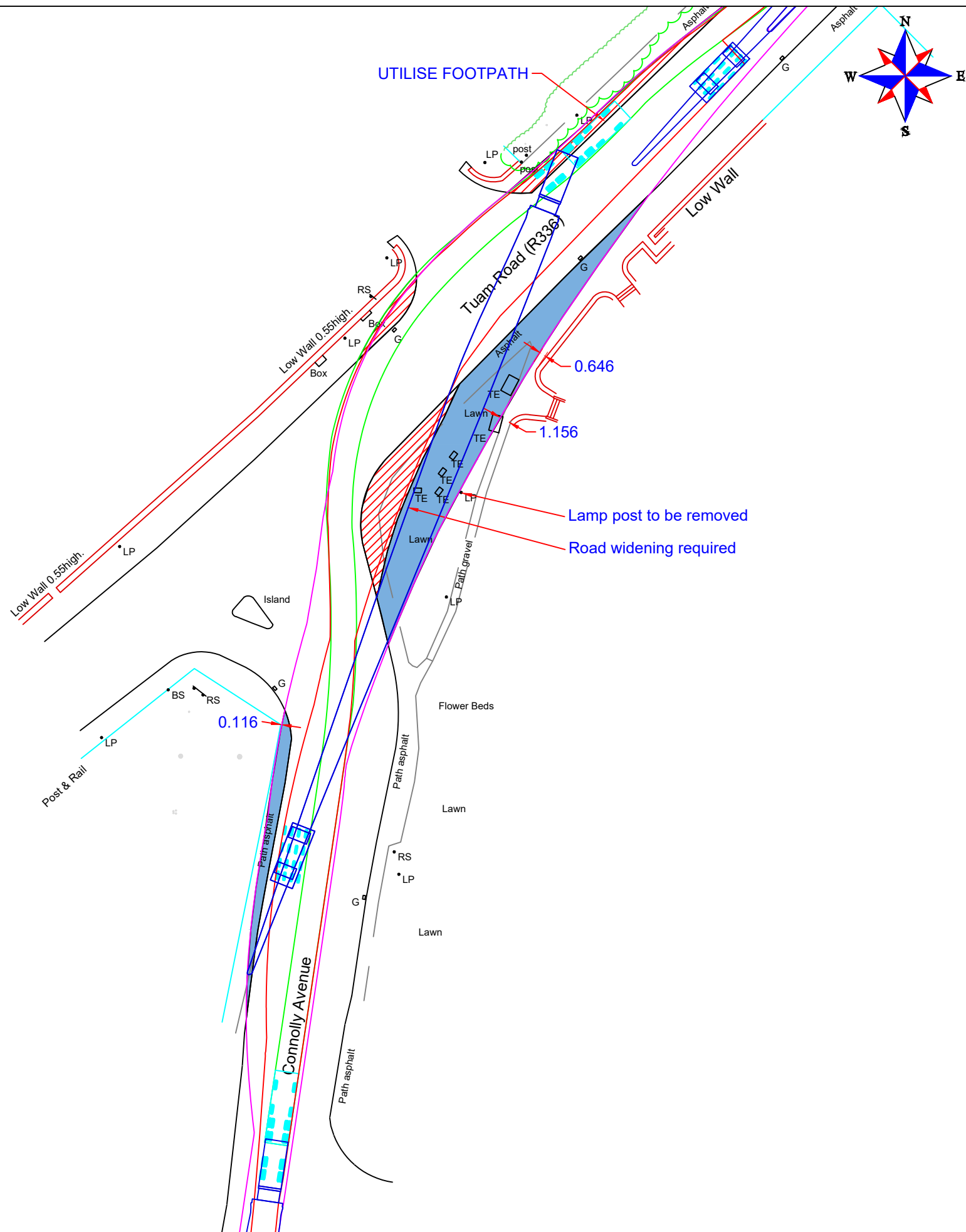
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Albert Road FAX: +44(0)8456 255244
Halifax, HX2 0DF WEB: www.collett.co.uk

DRAWN S.MANGHAM
DATE 08/04/2026
SCALE 1:500 SIZE A3

TITLE
MAPPING TOPOGRAPHICAL SURVEY
PINCH POINT IDENTIFIED BY COLLETT

R339/CONNOLLY AVENUE JUNCTION
CUSTOMER CUSH WIND LTD
SITE CUSH DWG. 425548-20A1.1

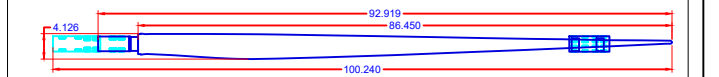


Continue on Connolly Avenue to junction with R336.
At junction, turn right onto R336.

****Caution****

- Widening required to provide a useable road surface as indicated by the red hatching.
- Indicated street furniture to be removed.
- Ground to be prepared to accept suitable axle loadings.

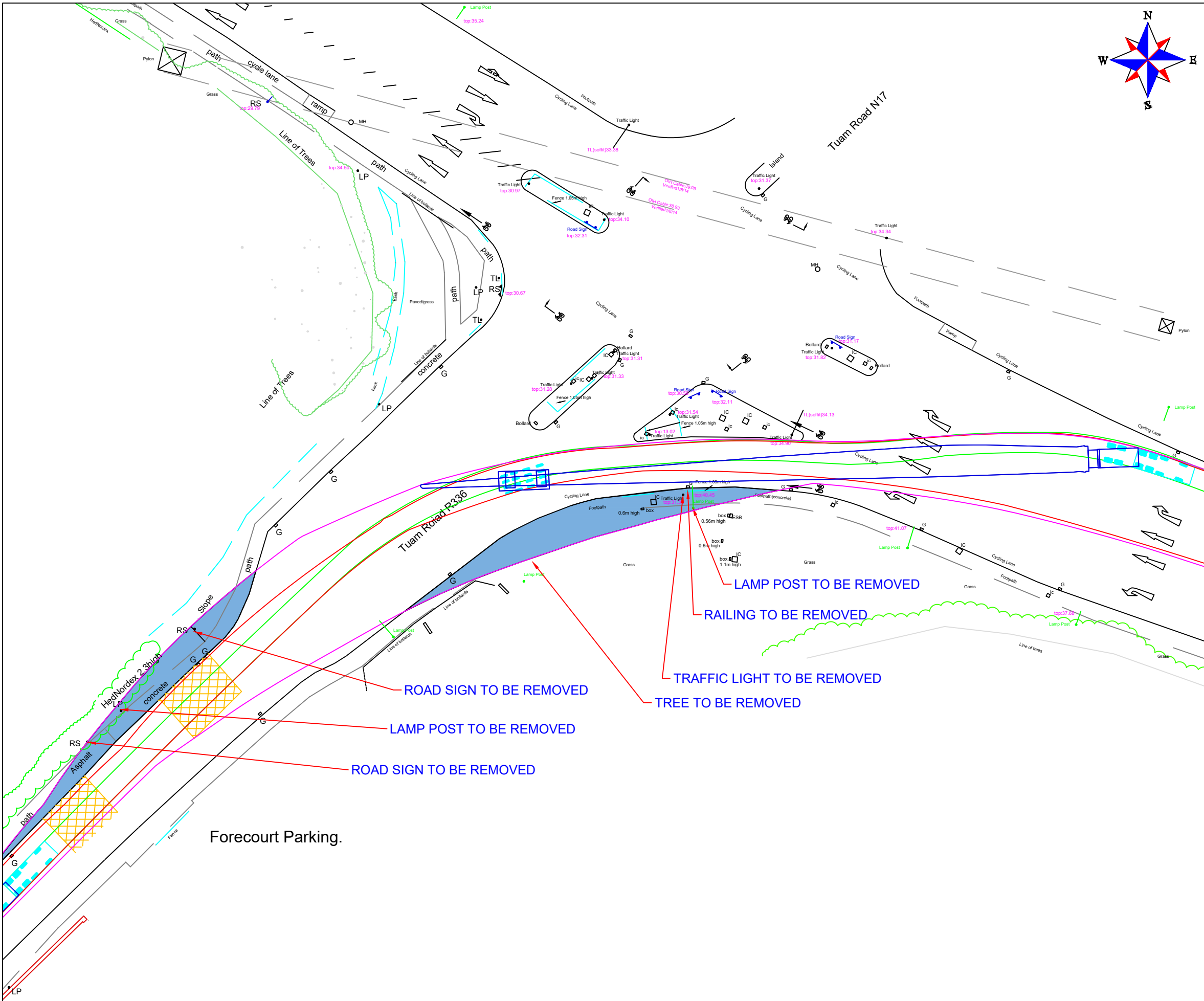
- The swept path analysis provided is produced from a purely transport orientated view, and does not consider any political issues in terms of land ownership, or any other precincts raised, that may otherwise be restrictive.
- The drawing has been produced from data provided by the client.
- All swept path diagrams and assessments are made and calculated for the road movement of loaded trailer equipment carrying Turbine components. These dimensions are based on the turning circles and specification of Collett & Sons Ltd trailer equipment.
- This SPA is a means of providing evidence of minimum requirements of any one vehicle as a footprint and there is no safety factor or margin included.
- Turbine delivery vehicles can be both left and right hand drive vehicles, therefore due to drivers perception it must be assumed that every vehicle will not follow the exact same line and so a margin of additional space should be allowed for.
- Land take is usually referred to when land is required from Private Land Owners; road widening is usually referred to when land is required within highways boundaries. The boundaries between private land and highways property are assumed by using obvious demarcation such as fence lines/hedges etc. It should be noted that actual boundaries between highways and private land are not substantiated in this report and can only be authenticated by carrying out land searches.
- In critical areas, where modifications are required, the road construction must be formed to the minimum specification contained in the Turbine Manufactures Transport Guidance Notes.
- The Turbine Manufactures Transport Guidance Notes will state the minimum road width required for the transport of components. Any roads below this stated width will require widening to reflect this regardless of any swept path analysis not indicating modifications.
- The information is privileged and confidential and is for the exclusive use of the nominated client.
- All dimensions in meters



Swept Path indicates trailer utilising MANUAL steering

Enercon
E175 Blade Component
Clamp and Bogie

- Area within red outline will be swept by tractor and trailer axles
- ▨ Hatched area within red outline to be levelled and prepared to accept axle loadings
- ▨ Blue hatched area indicates oversail and should be cleared of any obstructions
- Area within magenta outline will be oversailed by load and projections
- Area within green outline will be oversailed by trailer body

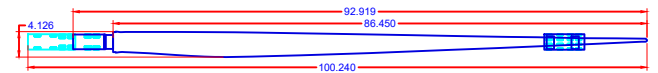


Continue on R336 to junction with N6.
At junction, turn right onto N6.

****Caution****

- Loaded vehicle to contraflow this junction.
- Indicated street furniture to be removed.
- Tree on offside to be removed.
- Manual steering required to assist navigation.

- The swept path analysis provided is produced from a purely transport orientated view, and does not consider any political issues in terms of land ownership, or any other precincts raised, that may otherwise be restrictive.
- The drawing has been produced from data provided by the client.
- All swept path diagrams and assessments are made and calculated for the road movement of loaded trailer equipment carrying Turbine components. These dimensions are based on the turning circles and specification of Collett & Sons Ltd trailer equipment.
- This SPA is a means of providing evidence of minimum requirements of any one vehicle as a footprint and there is no safety factor or margin included.
- Turbine delivery vehicles can be both left and right hand drive vehicles, therefore due to drivers perception it must be assumed that every vehicle will not follow the exact same line and so a margin of additional space should be allowed for.
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- The Turbine Manufactures Transport Guidance Notes will state the minimum road width required for the transport of components. Any roads below this stated width will require widening to reflect this regardless of any swept path analysis not indicating modifications.
- The information is privileged and confidential and is for the exclusive use of the nominated client.
- All dimensions in meters



Swept Path indicates trailer utilising MANUAL steering

Enercon
E175 Blade Component
Clamp and Bogie

- Area within red outline will be swept by tractor and trailer axles
- ▨ Hatched area within red outline to be levelled and prepared to accept axle loadings
- ▨ Blue hatched area indicates oversail and should be cleared of any obstructions
- Area within magenta outline will be oversailed by load and projections
- Area within green outline will be oversailed by trailer body

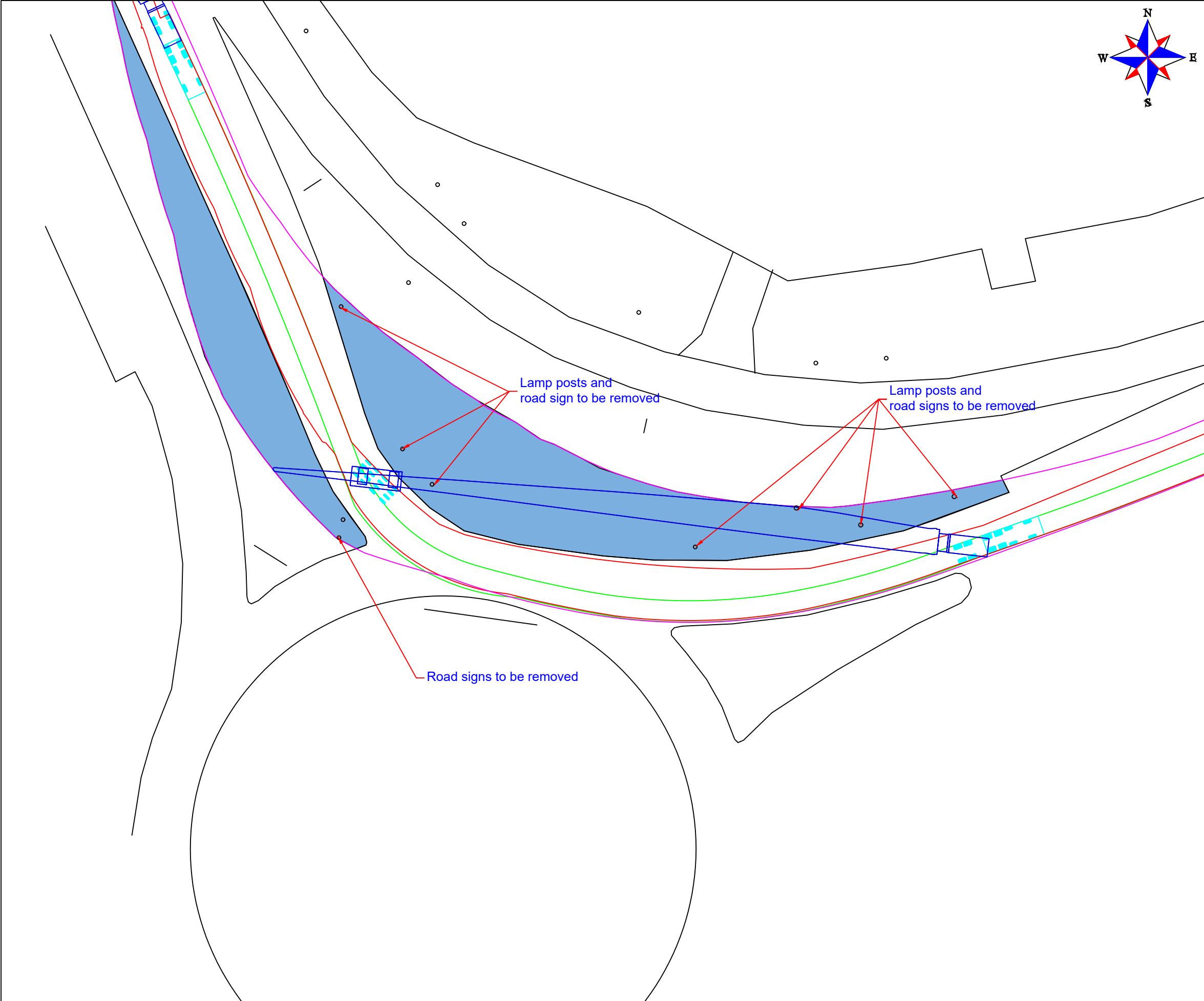
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DRAWN S.MANGHAM
DATE 08/04/2026
SCALE 1:500 SIZE A3

TITLE
MAPPING TOPOGRAPHICAL SURVEY
PINCH POINT IDENTIFIED BY COLLETT

R336/N6 JUNCTION
CUSTOMER CUSH WIND LTD
SITE CUSH DWG. 425548-40A1.1

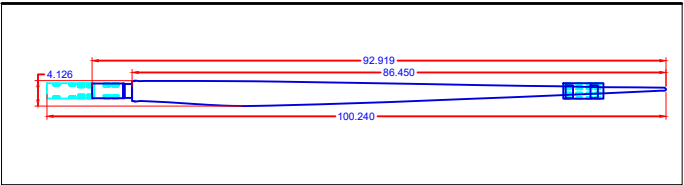


Continue on N6 to Coolagh Roundabout.
At roundabout, take 1st exit onto N6/M6.

****Caution****

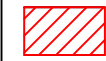
- Indicated street furniture to be removed.
- Manual steering required to assist navigation.

- The swept path analysis provided is produced from a purely transport orientated view, and does not consider any political issues in terms of land ownership, or any other precincts raised, that may otherwise be restrictive.
- The drawing has been produced from data provided by the client.
- All swept path diagrams and assessments are made and calculated for the road movement of loaded trailer equipment carrying Turbine components. These dimensions are based on the turning circles and specification of Collett & Sons Ltd trailer equipment.
- This SPA is a means of providing evidence of minimum requirements of any one vehicle as a footprint and there is no safety factor or margin included.
- Turbine delivery vehicles can be both left and right hand drive vehicles, therefore due to drivers perception it must be assumed that every vehicle will not follow the exact same line and so a margin of additional space should be allowed for.
- Land take is usually referred to when land is required from Private Land Owners; road widening is usually referred to when land is required within highways boundaries. The boundaries between private land and highways property are assumed by using obvious demarcation such as fence lines/hedges etc. It should be noted that actual boundaries between highways and private land are not substantiated in this report and can only be authenticated by carrying out land searches.
- In critical areas, where modifications are required, the road construction must be formed to the minimum specification contained in the Turbine Manufactures Transport Guidance Notes.
- The Turbine Manufactures Transport Guidance Notes will state the minimum road width required for the transport of components. Any roads below this stated width will require widening to reflect this regardless of any swept path analysis not indicating modifications.
- The information is privileged and confidential and is for the exclusive use of the nominated client.
- All dimensions in meters

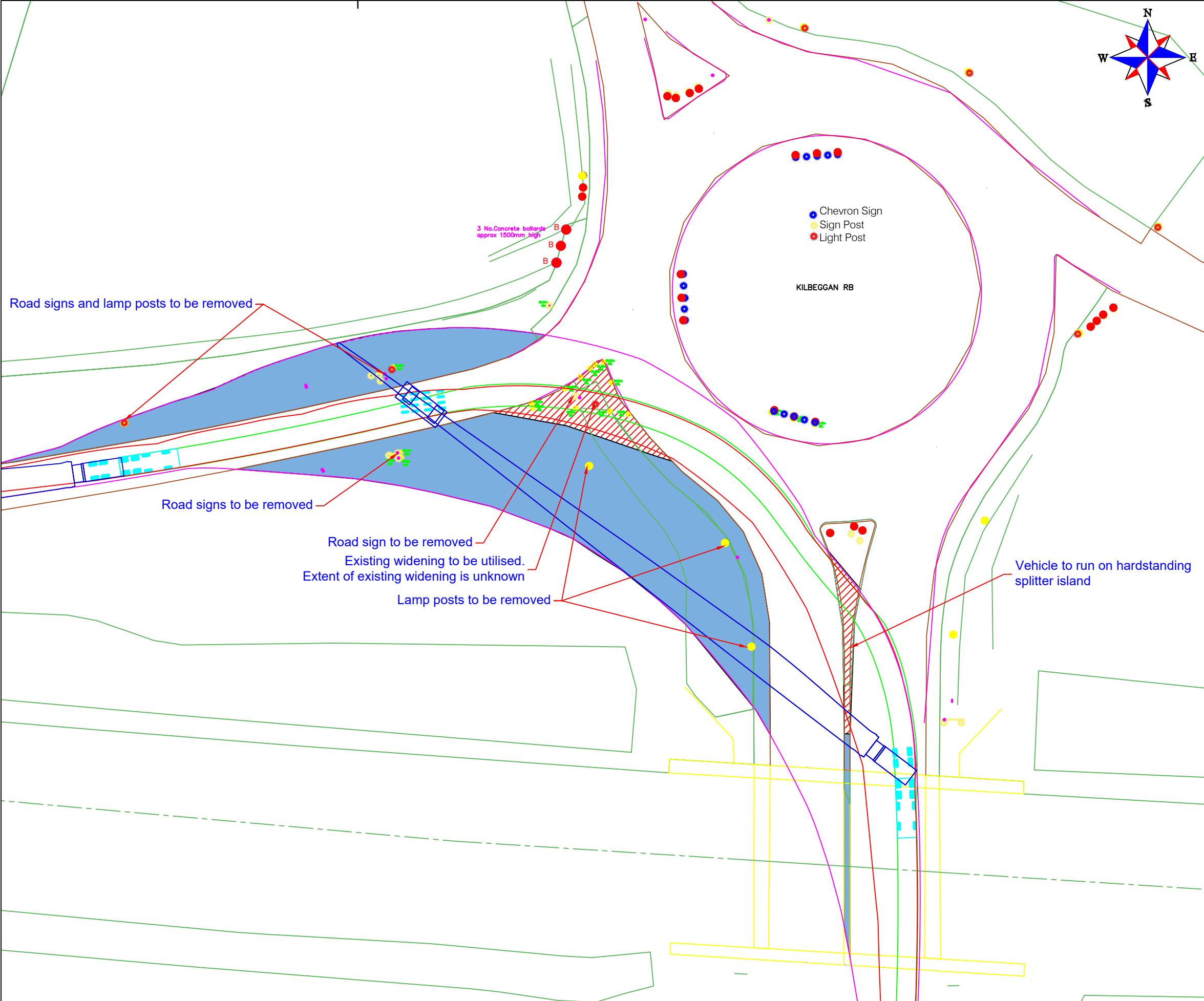


Swept Path indicates trailer utilising **MANUAL** steering

Enercon
E175 Blade Component
Clamp and Bogie

- Area within red outline will be swept by tractor and trailer axles
-  Hatched area within red outline to be levelled and prepared to accept axle loadings
-  Blue hatched area indicates oversail and should be cleared of any obstructions
- Area within magenta outline will be oversailed by load and projections
- Area within green outline will be oversailed by trailer body

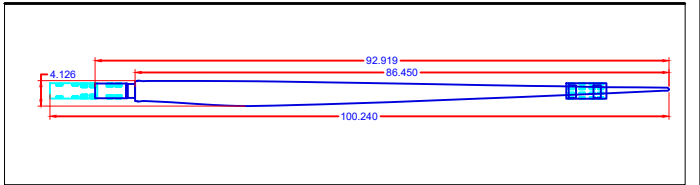
	COLLETT & SONS LIMITED		DRAWN	S.MANGHAM	TITLE				N6 COOLAGH ROUNDABOUT														
	Victoria Terminal TEL: +44(0)8456 255288		DATE		08/04/2026		MAPPING		AERIAL IMAGE CREATION		CUSTOMER		CUSH WIND LTD										
	Albert Road FAX: +44(0)8456 255244		SCALE		1:500		SIZE		A3		PINCH POINT IDENTIFIED BY		COLLETT		SITE		CUSH		DWG.		425548-50A1.1		
Halifax, HX2 0DF WEB: www.collett.co.uk																							



Continue on Slip Road to roundabout with the N52.
At roundabout, turn right onto N52.
****Caution****

- Widening required to provide a useable road surface as indicated by the red hatching.
- Existing widening to be utilised. Extents are unknown.
- Boundary features alongside third party land to be removed.
- Indicated street furniture to be removed.
- Contraflow manoeuvre required.
- Ground to be prepared to accept suitable axle loadings.

- The swept path analysis provided is produced from a purely transport orientated view, and does not consider any political issues in terms of land ownership, or any other precincts raised, that may otherwise be restrictive.
- The drawing has been produced from data provided by the client.
- All swept path diagrams and assessments are made and calculated for the road movement of loaded trailer equipment carrying Turbine components. These dimensions are based on the turning circles and specification of Collett & Sons Ltd trailer equipment.
- This SPA is a means of providing evidence of minimum requirements of any one vehicle as a footprint and there is no safety factor or margin included.
- Turbine delivery vehicles can be both left and right hand drive vehicles, therefore due to drivers perception it must be assumed that every vehicle will not follow the exact same line and so a margin of additional space should be allowed for.
- Land take is usually referred to when land is required from Private Land Owners; road widening is usually referred to when land is required within highways boundaries. The boundaries between private land and highways property are assumed by using obvious demarcation such as fence lines/hedges etc. It should be noted that actual boundaries between highways and private land are not substantiated in this report and can only be authenticated by carrying out land searches.
- In critical areas, where modifications are required, the road construction must be formed to the minimum specification contained in the Turbine Manufactures Transport Guidance Notes.
- The Turbine Manufactures Transport Guidance Notes will state the minimum road width required for the transport of components. Any roads below this stated width will require widening to reflect this regardless of any swept path analysis not indicating modifications.
- The information is privileged and confidential and is for the exclusive use of the nominated client.
- All dimensions in meters

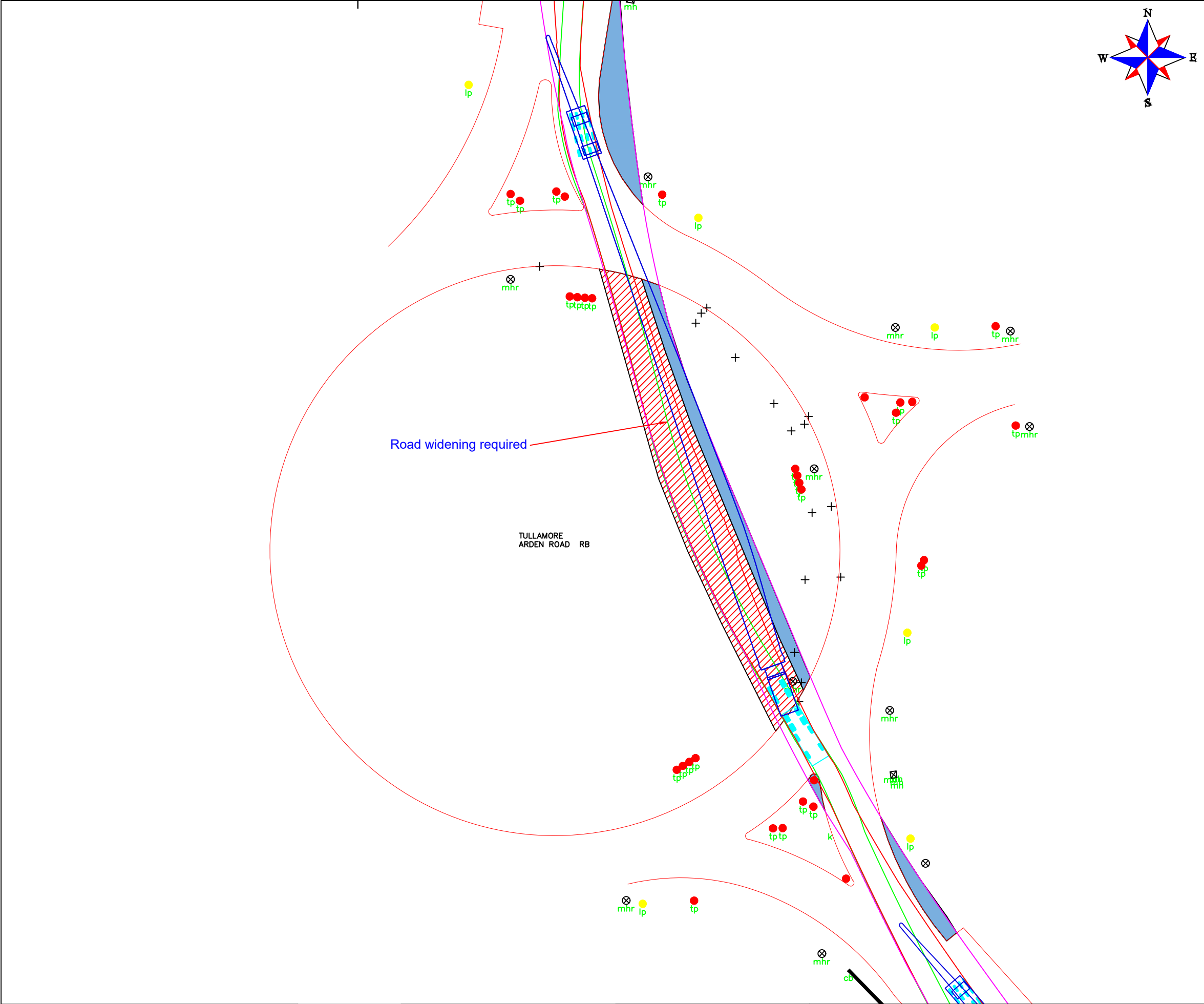


Swept Path indicates trailer utilising MANUAL steering

Enercon
E175 Blade Component
Clamp and Bogie

- Area within red outline will be swept by tractor and trailer axles
- ▨ Hatched area within red outline to be levelled and prepared to accept axle loadings
- ▒ Blue hatched area indicates oversail and should be cleared of any obstructions
- Area within magenta outline will be oversailed by load and projections
- Area within green outline will be oversailed by trailer body

	COLLETT & SONS LIMITED		DRAWN	S.MANGHAM	TITLE				M6 EAST/N52 ROUNDABOUT													
	Victoria Terminal TEL: +44(0)8456 255288		DATE		08/04/2026		MAPPING		TOPOGRAPHICAL SURVEY		CUSTOMER		CUSH WIND LTD									
	Albert Road FAX: +44(0)8456 255244		SCALE		1:500		SIZE		A3		PINCH POINT IDENTIFIED BY		COLLETT		SITE		CUSH		DWG.		425548-60A1.1	
	Halifax, HX2 0DF WEB: www.collett.co.uk																					

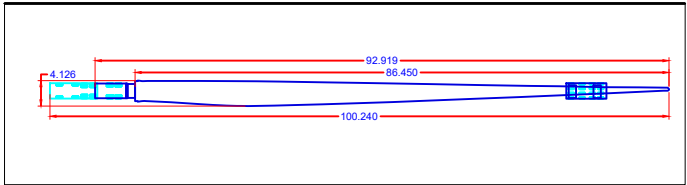


Continue on N52 to Arden Roundabout.
At roundabout, continue on N52.

****Caution****

- Widening required to provide a useable road surface as indicated by the red hatching.
- Ground to be prepared to accept suitable axle loadings.

- The swept path analysis provided is produced from a purely transport orientated view, and does not consider any political issues in terms of land ownership, or any other precincts raised, that may otherwise be restrictive.
- The drawing has been produced from data provided by the client.
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- All dimensions in meters

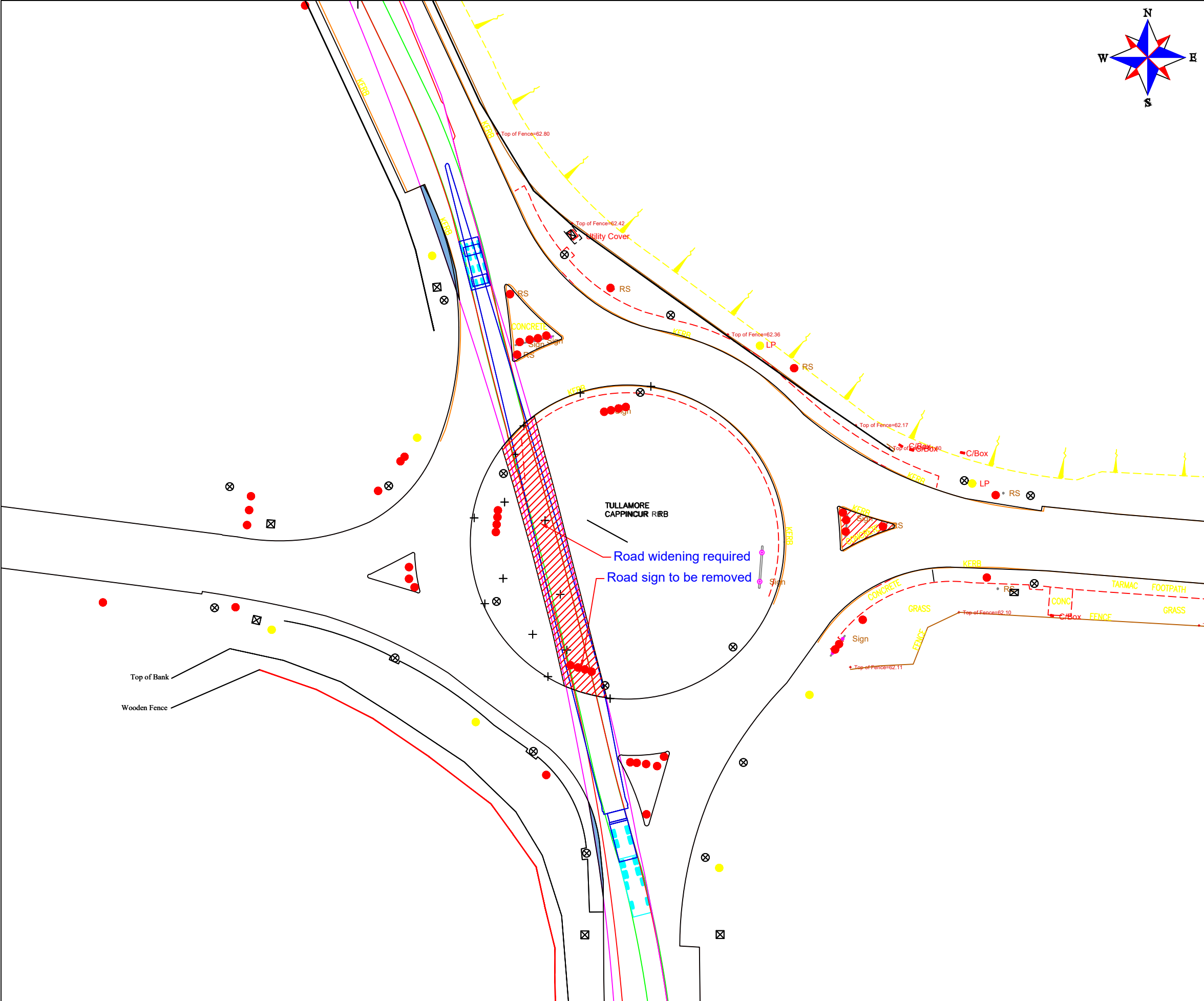


Swept Path indicates trailer utilising MANUAL steering

Enercon
E175 Blade Component
Clamp and Bogie

- Area within red outline will be swept by tractor and trailer axles
- ▨ Hatched area within red outline to be levelled and prepared to accept axle loadings
- ▭ Blue hatched area indicates oversail and should be cleared of any obstructions
- Area within magenta outline will be oversailed by load and projections
- Area within green outline will be oversailed by trailer body

	COLLETT & SONS LIMITED		DRAWN S.MANGHAM		TITLE N52 ARDEN ROUNDABOUT			
	Victoria Terminal TEL: +44(0)8456 255288		DATE 08/04/2026		MAPPING TOPOGRAPHICAL SURVEY		CUSTOMER CUSH WIND LTD	
	Albert Road FAX: +44(0)8456 255244		SCALE 1:500 SIZE A3		PINCH POINT IDENTIFIED BY COLLETT		SITE CUSH DWG. 425548-80A1.1	
Halifax, HX2 0DF WEB: www.collett.co.uk								

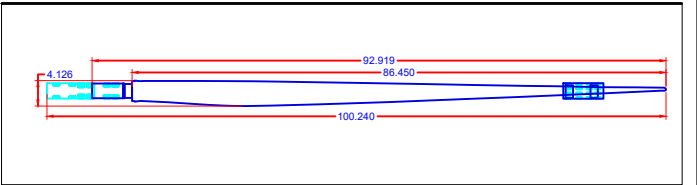


Continue on N52 to Cappancur Roundabout.
At roundabout, take 2nd exit onto N52.

****Caution****

- Widening required to provide a useable road surface as indicated by the red hatching.
- Loaded vehicle to contraflow this roundabout.
- Indicated street furniture to be removed.
- Ground to be prepared to accept suitable axle loadings.

- The swept path analysis provided is produced from a purely transport orientated view, and does not consider any political issues in terms of land ownership, or any other precincts raised, that may otherwise be restrictive.
- The drawing has been produced from data provided by the client.
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- All dimensions in meters

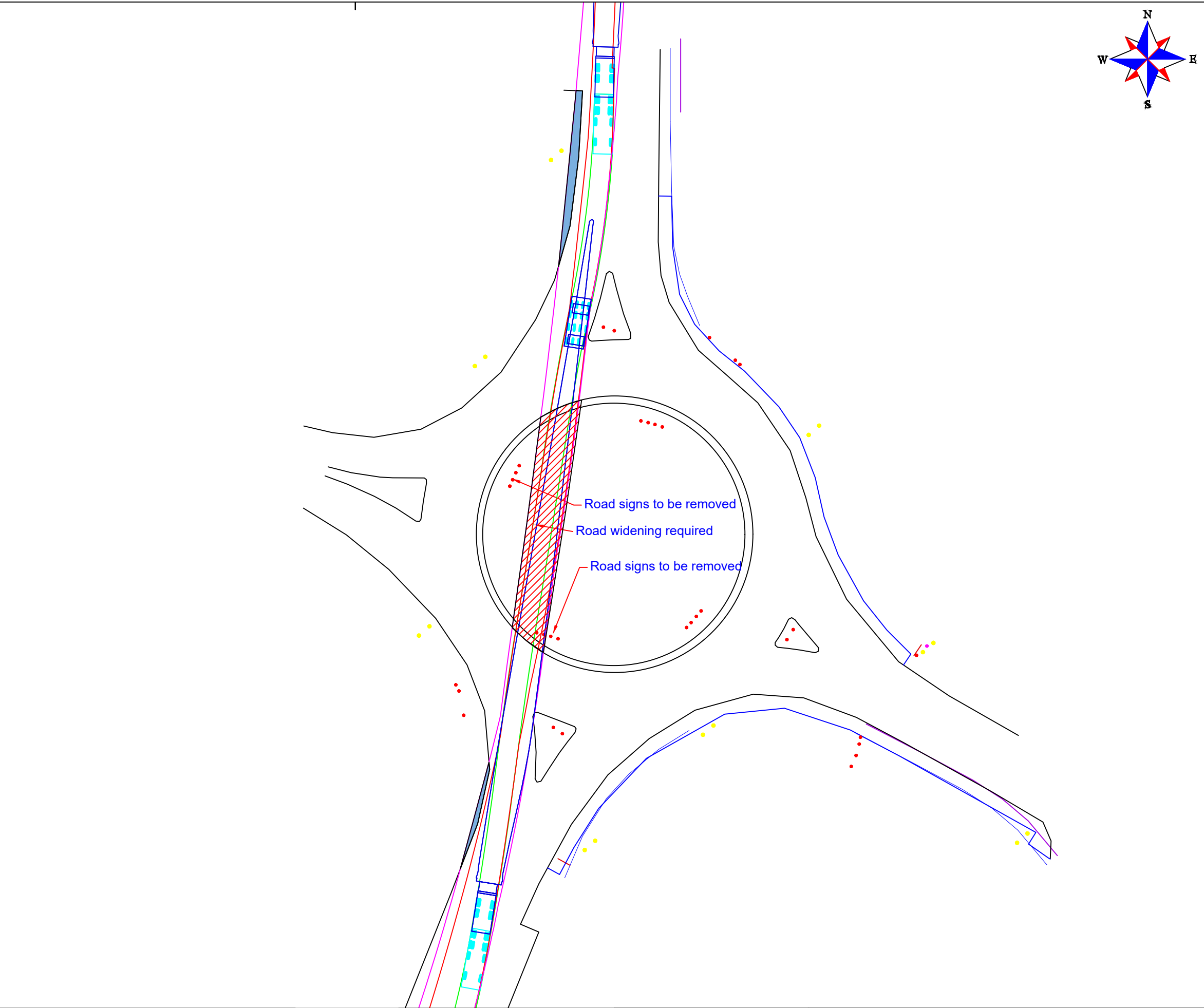


Swept Path indicates trailer utilising MANUAL steering

Enercon
E175 Blade Component
Clamp and Bogie

- Area within red outline will be swept by tractor and trailer axles
- ▨ Hatched area within red outline to be levelled and prepared to accept axle loadings
- ▨ Blue hatched area indicates oversail and should be cleared of any obstructions
- Area within magenta outline will be oversailed by load and projections
- Area within green outline will be oversailed by trailer body

COLLETT EXPERTS IN MOTION	COLLETT & SONS LIMITED Victoria Terminal TEL: +44(0)8456 255288 Albert Road FAX: +44(0)8456 255244 Halifax, HX2 0DF WEB: www.collett.co.uk	DRAWN S.MANGHAM		TITLE N52/L2025 CAPPANCUR ROUNDABOUT		
		DATE 08/04/2026		MAPPING TOPOGRAPHICAL SURVEY	CUSTOMER CUSH WIND LTD	
		SCALE 1:500	SIZE A3	PINCH POINT IDENTIFIED BY COLLETT	SITE CUSH	DWG. 425548-90A1.1

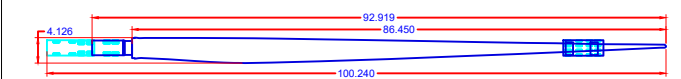


Continue on N52 to Cloncollog Roundabout.
At roundabout, take 2nd exit onto N52.

****Caution****

- Widening required to provide a useable road surface as indicated by the red hatching.
- Loaded vehicle to contraflow this roundabout.
- Indicated street furniture to be removed.
- Ground to be prepared to accept suitable axle loadings.

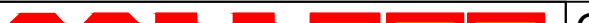
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- The drawing has been produced from data provided by the client.
- All swept path diagrams and assessments are made and calculated for the road movement of loaded trailer equipment carrying Turbine components. These dimensions are based on the turning circles and specification of Collett & Sons Ltd trailer equipment.
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- All dimensions in meters

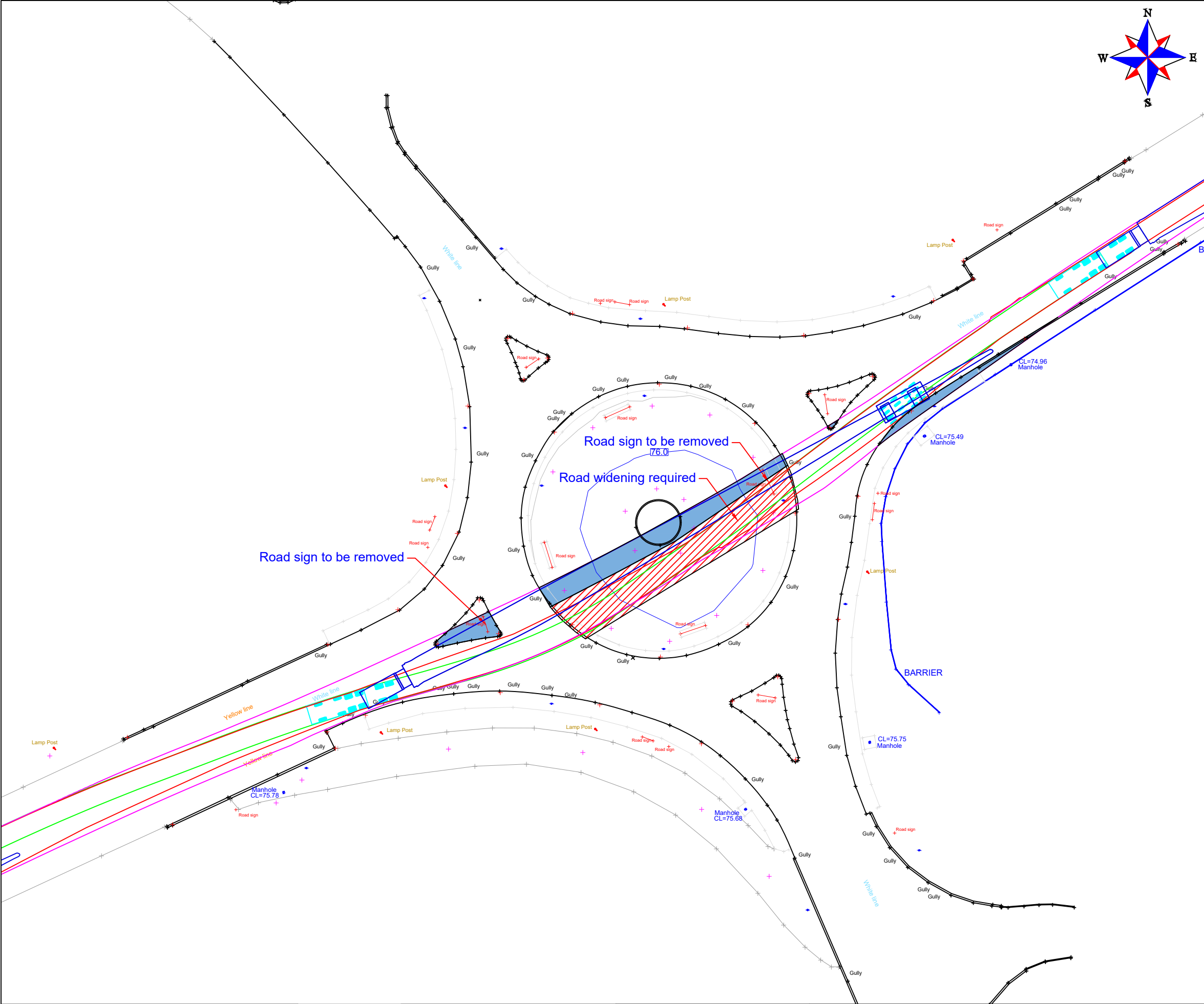


Swept Path indicates trailer utilising MANUAL steering

Enercon
E175 Blade Component
Clamp and Bogie

- Area within red outline will be swept by tractor and trailer axles
- ▨ Hatched area within red outline to be levelled and prepared to accept axle loadings
- ▨ Blue hatched area indicates oversail and should be cleared of any obstructions
- Area within magenta outline will be oversailed by load and projections
- Area within green outline will be oversailed by trailer body

	COLLETT & SONS LIMITED		DRAWN S.MANGHAM		TITLE N52/R420 CLONCOLLOG ROUNDABOUT				
	Victoria Terminal TEL: +44(0)8456 255288		DATE 08/04/2026		MAPPING TOPOGRAPHICAL SURVEY		CUSTOMER CUSH WIND LTD		
	Albert Road FAX: +44(0)8456 255244		SCALE 1:500 SIZE A3		PINCH POINT IDENTIFIED BY COLLETT		SITE CUSH DWG. 425548-100A1.1		
Halifax, HX2 0DF WEB: www.collett.co.uk									

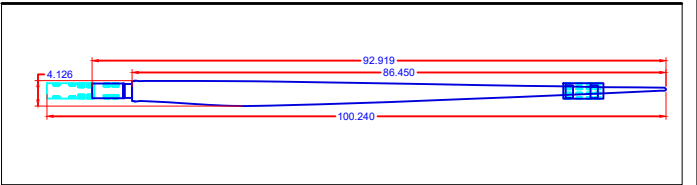


Continue on N52 to Clonminch Roundabout.
At roundabout, take 2nd exit onto N52.

****Caution****

- Widening required to provide a useable road surface as indicated by the red hatching.
- Indicated street furniture to be removed.
- Ground to be prepared to accept suitable axle loadings.

- The swept path analysis provided is produced from a purely transport orientated view, and does not consider any political issues in terms of land ownership, or any other precincts raised, that may otherwise be restrictive.
- The drawing has been produced from data provided by the client.
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- All dimensions in meters

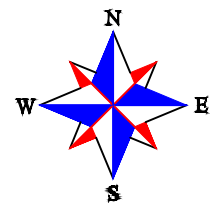


Swept Path indicates trailer utilising **MANUAL** steering

Enercon
E175 Blade Component
Clamp and Bogie

- Area within red outline will be swept by tractor and trailer axles
- ▨ Hatched area within red outline to be levelled and prepared to accept axle loadings
- Blue hatched area indicates oversail and should be cleared of any obstructions
- Area within magenta outline will be oversailed by load and projections
- Area within green outline will be oversailed by trailer body

	COLLETT & SONS LIMITED Victoria Terminal TEL: +44(0)8456 255288 Albert Road FAX: +44(0)8456 255244 Halifax, HX2 0DF WEB: www.collett.co.uk	DRAWN S.MANGHAM		TITLE N52/R443 CLONMINCH ROUNDABOUT		
		DATE 08/04/2026		MAPPING TOPOGRAPHICAL SURVEY	CUSTOMER CUSH WIND LTD	
		SCALE 1:500	SIZE A3	PINCH POINT IDENTIFIED BY COLLETT	SITE CUSH	DWG. 425548-110A1.1

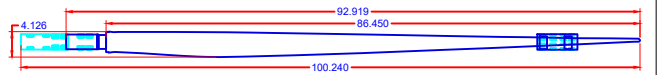


Continue on N52 to Distillery Roundabout.
At roundabout, take 2nd exit onto N52.

****Caution****

- Widening required to provide a useable road surface as indicated by the red hatching.
- Indicated street furniture to be removed.
- Ground to be prepared to accept suitable axle loadings.

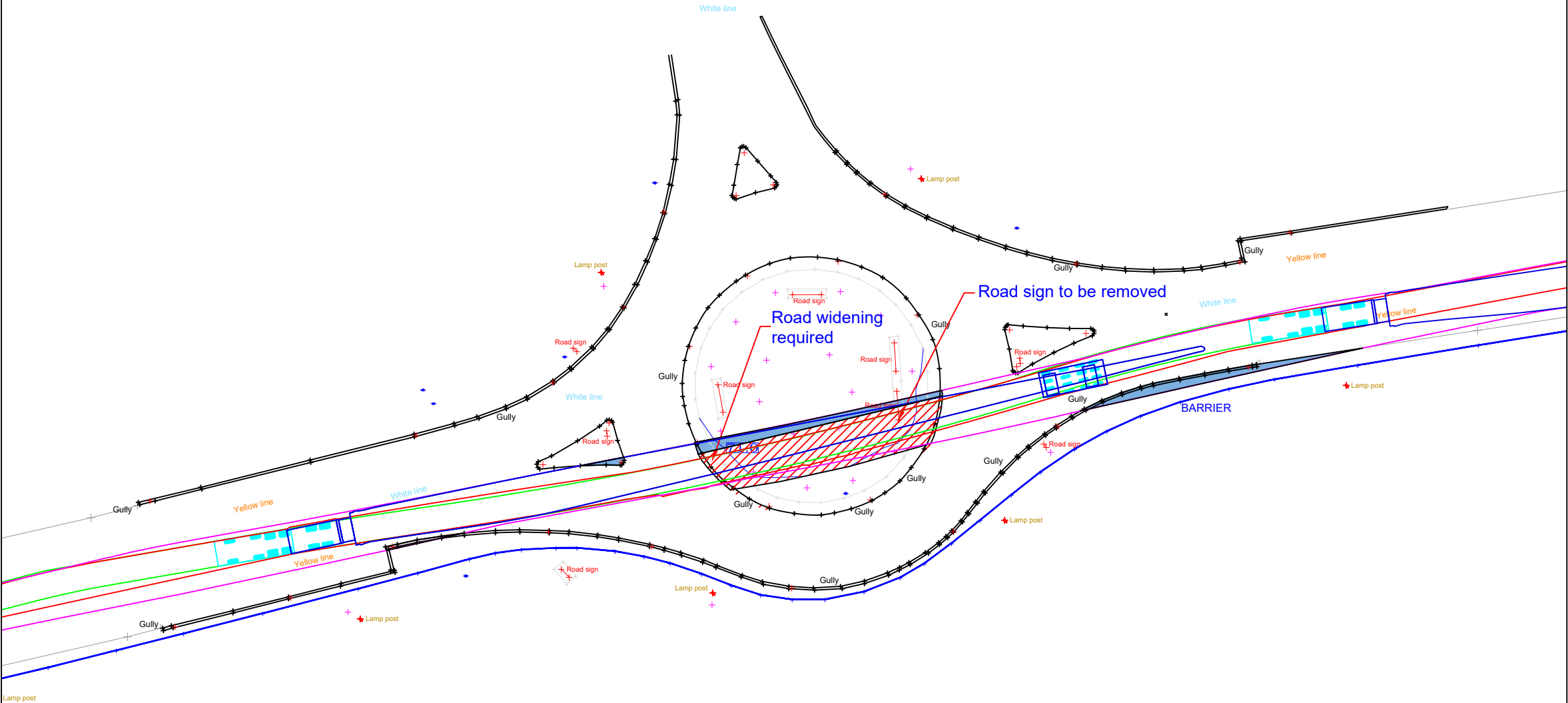
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- All dimensions in meters

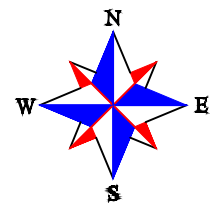


Swept Path indicates trailer utilising **MANUAL** steering

Enercon
E175 Blade Component
Clamp and Bogie

- Area within red outline will be swept by tractor and trailer axles
-  Hatched area within red outline to be levelled and prepared to accept axle loadings
-  Blue hatched area indicates oversail and should be cleared of any obstructions
- Area within magenta outline will be oversailed by load and projections
- Area within green outline will be oversailed by trailer body



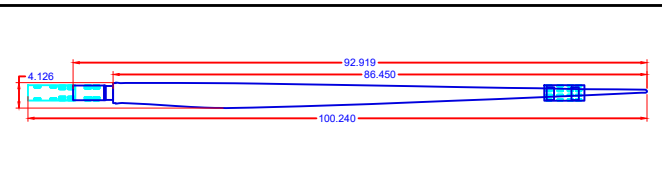


Continue on N52 to Ballard Roundabout.
At the roundabout, take the 2nd exit onto the N52.

****Caution****

- Widening required to provide a useable road surface as indicated by the red hatching.
- Loaded vehicle to contraflow this roundabout.
- Indicated street furniture to be removed.
- Ground to be prepared to accept suitable axle loadings.

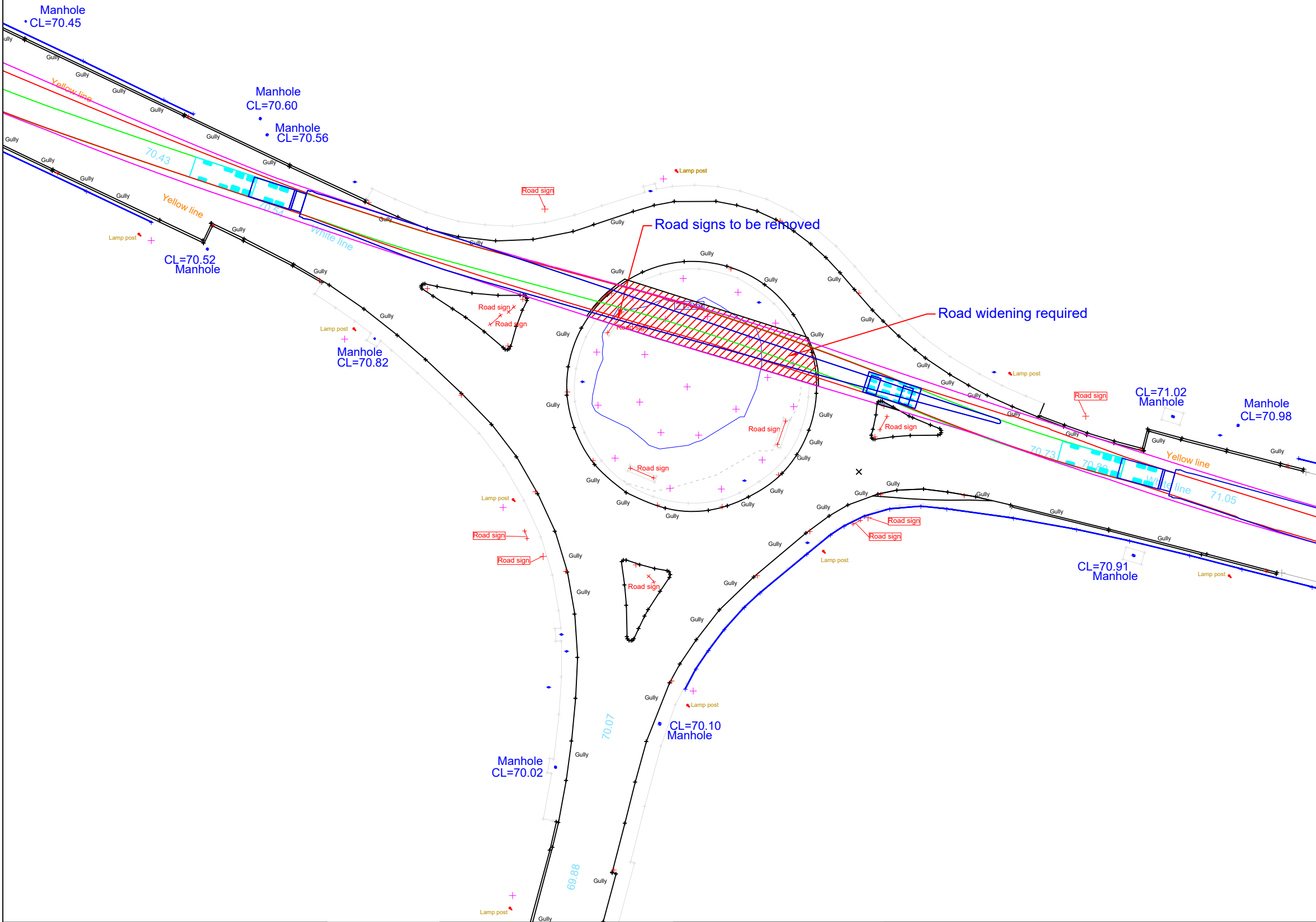
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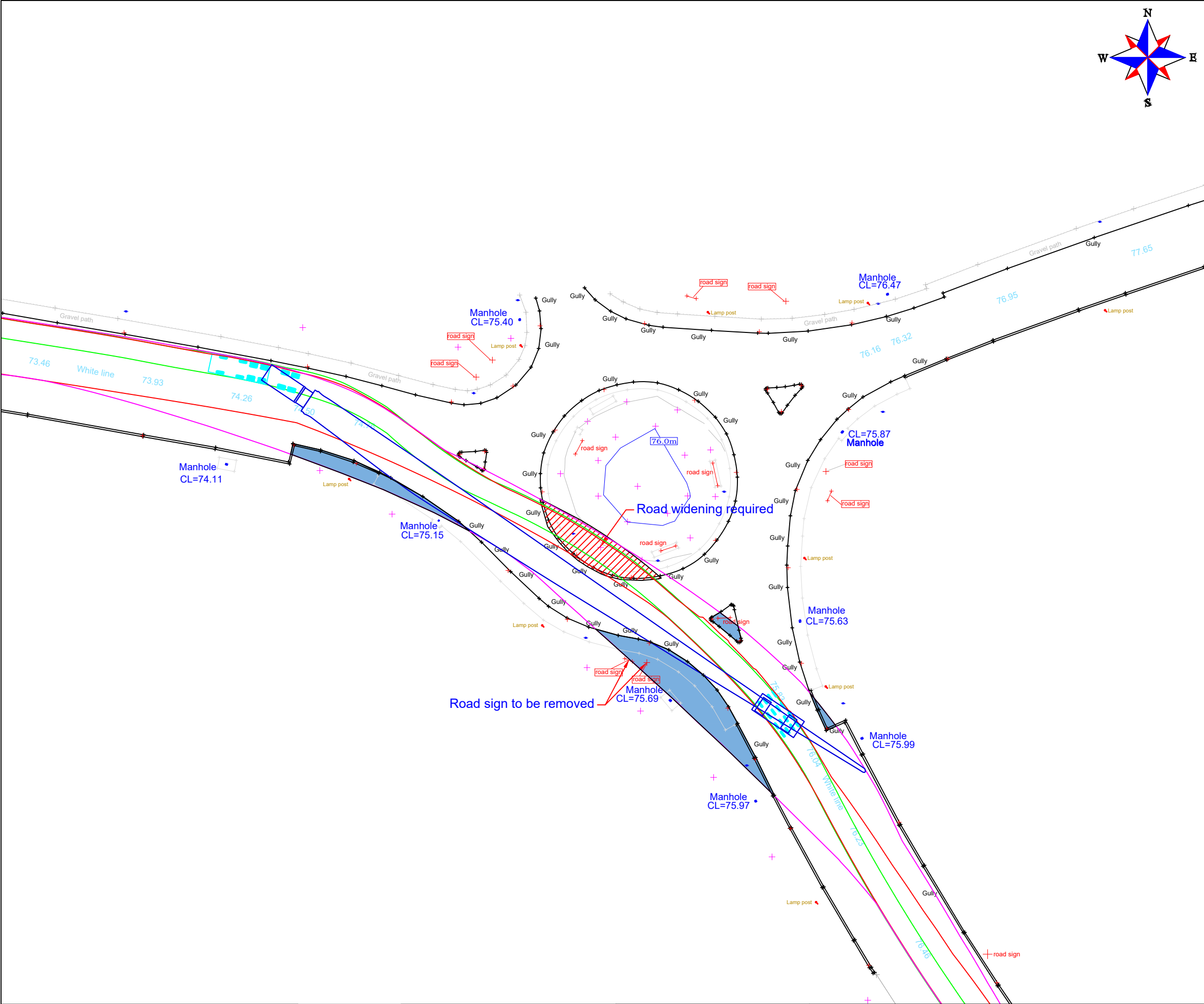


Swept Path indicates trailer utilising MANUAL steering

Enercon
E175 Blade Component
Clamp and Bogie

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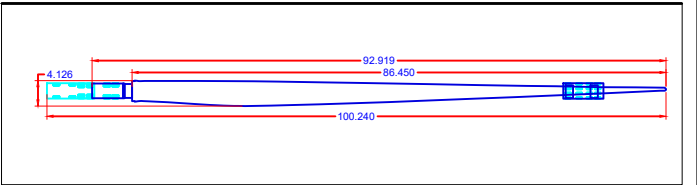


Continue on N52 to Charleville Roundabout.
At the roundabout, take the 1st exit onto N52.

****Caution****

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- Indicated street furniture to be removed.
- Ground to be prepared to accept suitable axle loadings.

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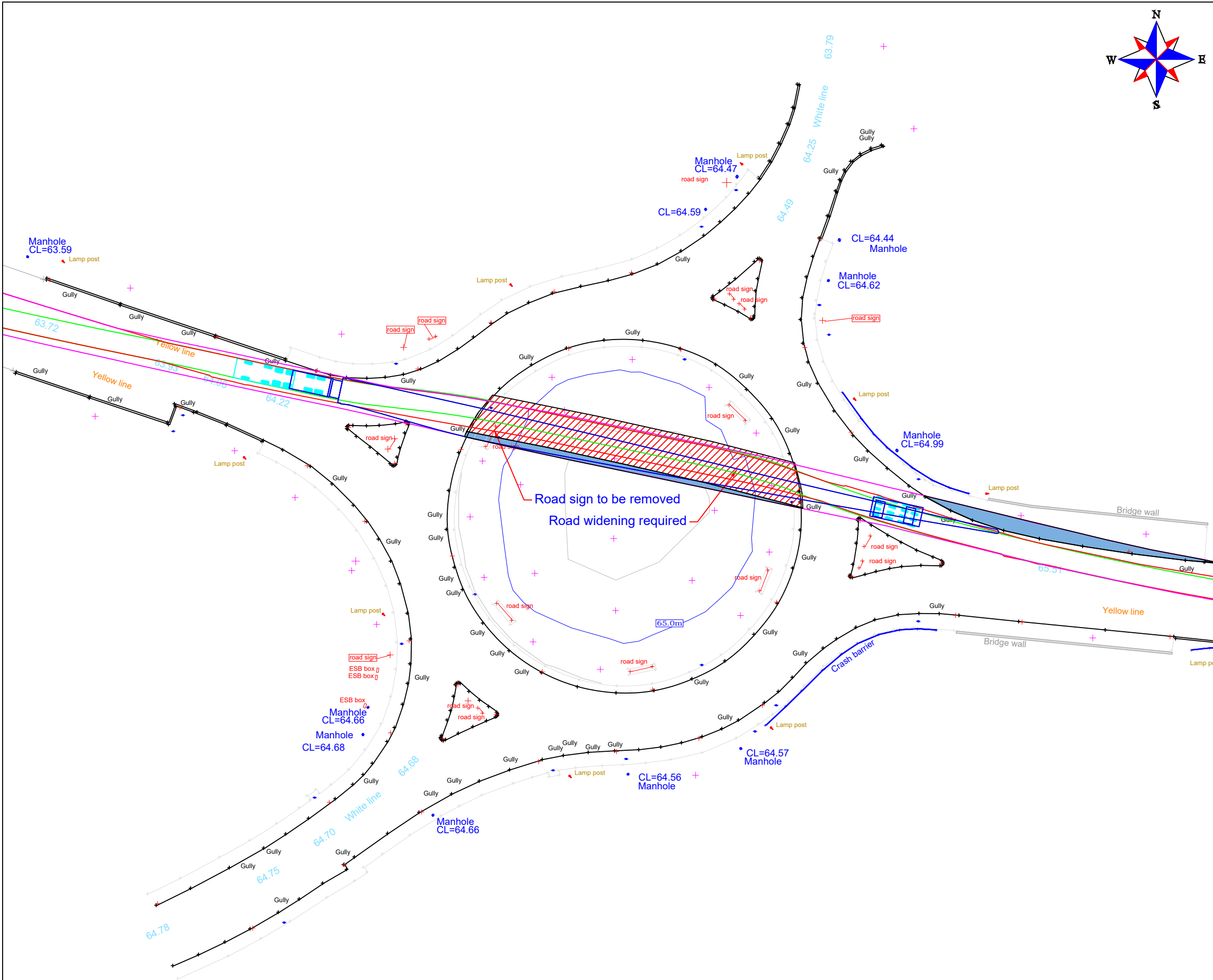


Swept Path indicates trailer utilising MANUAL steering

Enercon
E175 Blade Component
Clamp and Bogie

- Area within red outline will be swept by tractor and trailer axles
- ▨ Hatched area within red outline to be levelled and prepared to accept axle loadings
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- Area within magenta outline will be oversailed by load and projections
- Area within green outline will be oversailed by trailer body

COLLETT EXPERTS IN MOTION	COLLETT & SONS LIMITED Victoria Terminal TEL: +44(0)8456 255288 Albert Road FAX: +44(0)8456 255244 Halifax, HX2 0DF WEB: www.collett.co.uk	DRAWN S.MANGHAM		TITLE N52/R421 CHARLEVILLE ROUNDABOUT		
		DATE 08/04/2026		MAPPING TOPOGRAPHICAL SURVEY	CUSTOMER CUSH WIND LTD	
		SCALE 1:500	SIZE A3	PINCH POINT IDENTIFIED BY COLLETT	SITE CUSH	DWG. 425548-140A1.1



Continue on N52 to Mucklagh Roundabout.
At the roundabout, take the 2nd exit onto the N52.

****Caution****

- Widening required to provide a useable road surface as indicated by the red hatching.
- Loaded vehicle to contraflow this roundabout.
- Indicated street furniture to be removed.
- Ground to be prepared to accept suitable axle loadings.

• The swept path analysis provided is produced from a purely transport orientated view, and does not consider any political issues in terms of land ownership, or any other precincts raised, that may otherwise be restrictive.

• The drawing has been produced from data provided by the client.

• All swept path diagrams and assessments are made and calculated for the road movement of loaded trailer equipment carrying Turbine components. These dimensions are based on the turning circles and specification of Collett & Sons Ltd trailer equipment.

• This SPA is a means of providing evidence of minimum requirements of any one vehicle as a footprint and there is no safety factor or margin included.

• Turbine delivery vehicles can be both left and right hand drive vehicles, therefore due to drivers perception it must be assumed that every vehicle will not follow the exact same line and so a margin of additional space should be allowed for.

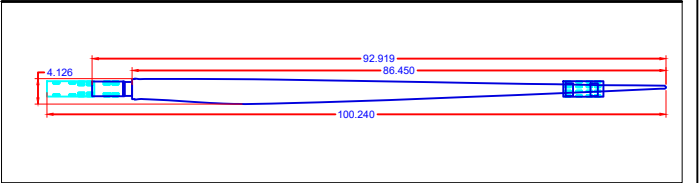
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• In critical areas, where modifications are required, the road construction must be formed to the minimum specification contained in the Turbine Manufactures Transport Guidance Notes.

• The Turbine Manufactures Transport Guidance Notes will state the minimum road width required for the transport of components. Any roads below this stated width will require widening to reflect this regardless of any swept path analysis not indicating modifications.

• The information is privileged and confidential and is for the exclusive use of the nominated client.

• All dimensions in meters

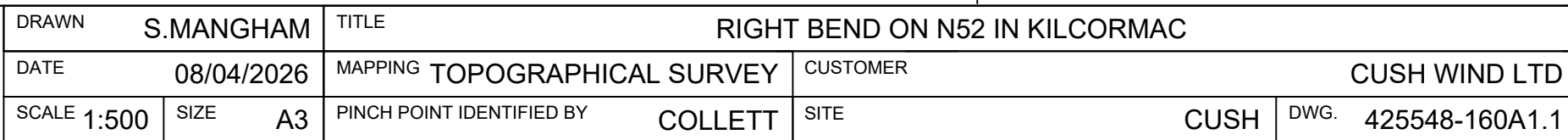


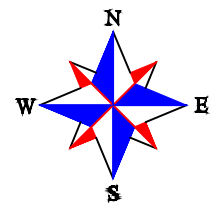
Swept Path indicates trailer utilising MANUAL steering

Enercon
E175 Blade Component
Clamp and Bogie

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	COLLETT & SONS LIMITED Victoria Terminal TEL: +44(0)8456 255288 Albert Road FAX: +44(0)8456 255244 Halifax, HX2 0DF WEB: www.collett.co.uk	DRAWN S.MANGHAM		TITLE N52/L6009 MUCKLAGH ROUNDABOUT		
		DATE 08/04/2026		MAPPING TOPOGRAPHICAL SURVEY	CUSTOMER CUSH WIND LTD	
		SCALE 1:500	SIZE A3	PINCH POINT IDENTIFIED BY COLLETT	SITE CUSH	DWG. 425548-150A1.1



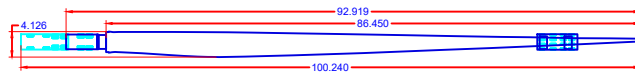


Continue on N52 to left bend in Kilcormac.

****Caution****

- Indicated street furniture to be removed.
- Parking to be restricted during deliveries.

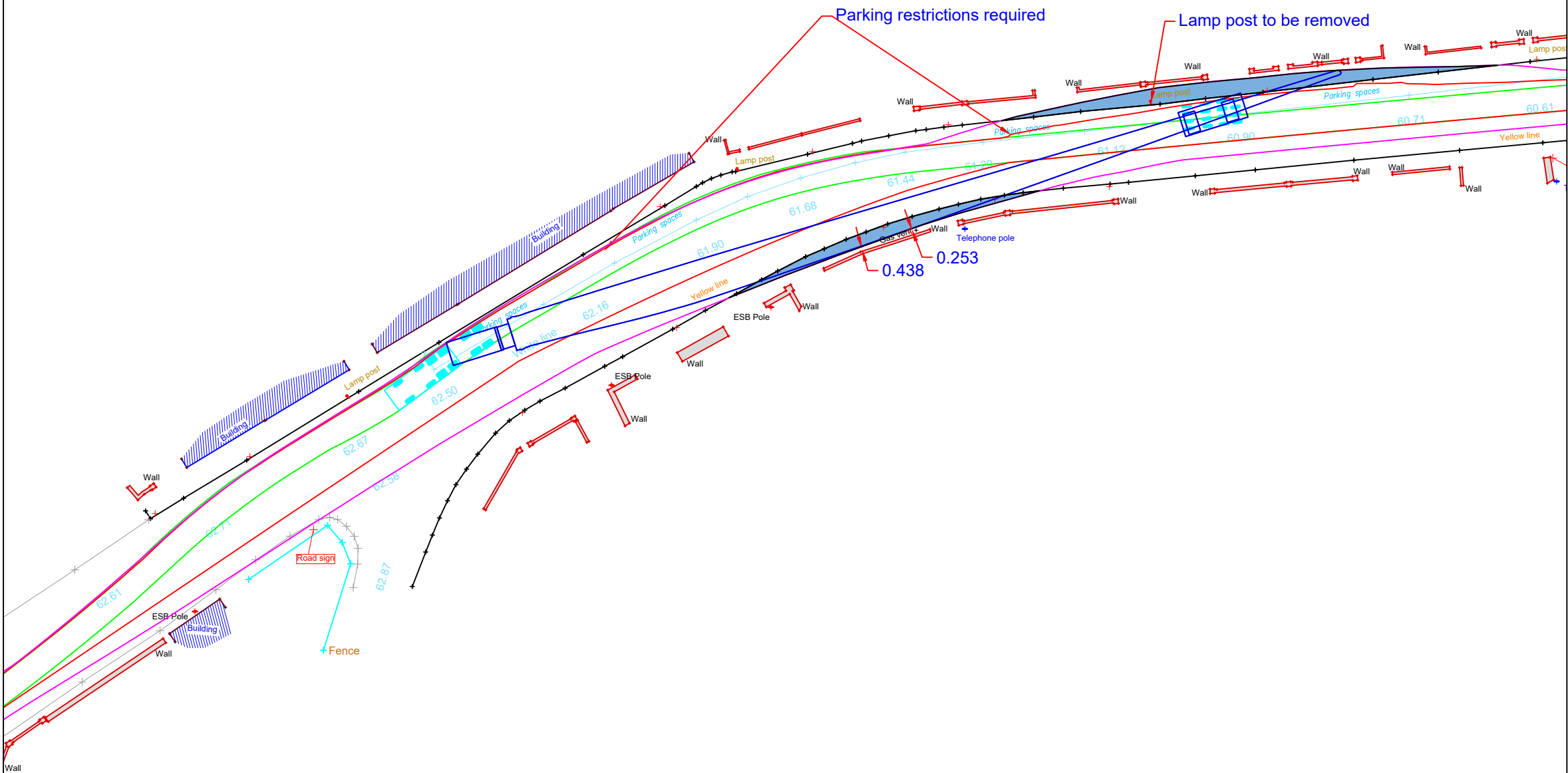
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- All dimensions in meters



Swept Path indicates trailer utilising **MANUAL** steering

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E175 Blade Component
Clamp and Bogie

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COLLETT
EXPERTS IN MOTION

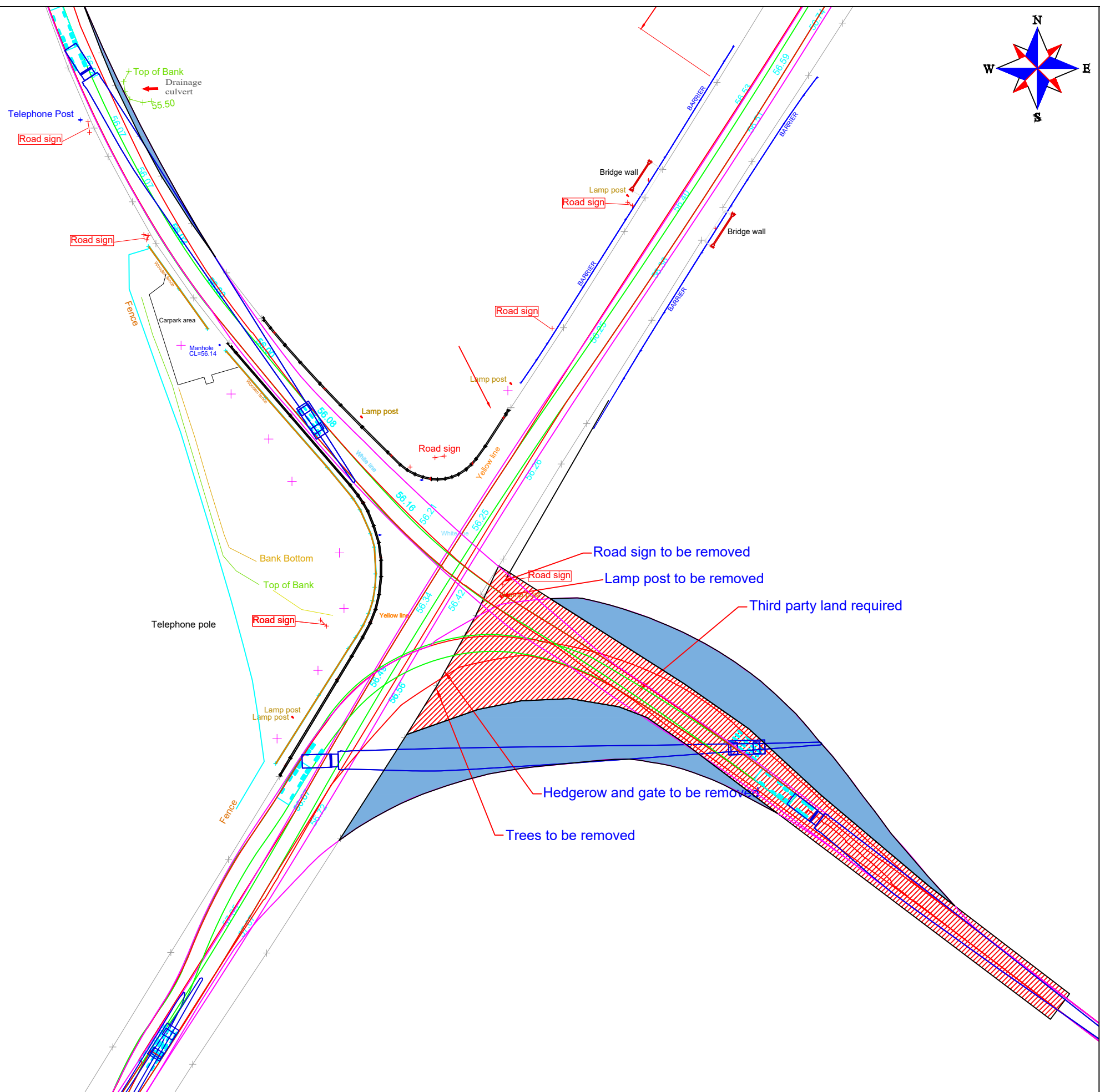
COLLETT & SONS LIMITED
Victoria Terminal TEL: +44(0)8456 255288
Albert Road FAX: +44(0)8456 255244
Halifax, HX2 0DF WEB: www.collett.co.uk

DRAWN S.MANGHAM
DATE 07/05/2026
SCALE 1:500 SIZE A3

TITLE
MAPPING TOPOGRAPHICAL SURVEY
PINCH POINT IDENTIFIED BY COLLETT

LEFT BEND ON N52 IN KILCORMAC

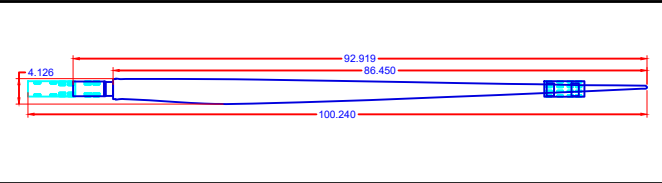
CUSTOMER CUSH WIND LTD
SITE CUSH DWG. 425548-170A1.2



Continue on N52 to junction with N62.
At junction, vehicle is to reverse in land on the
nearside then drive forward onto the N62.

- **Caution****
- Widening required to provide a useable road surface as indicated by the red hatching.
 - Third party land required on the nearside.
 - Boundary features alongside third party land to be removed.
 - Indicated street furniture to be removed.
 - Ground to be prepared to accept suitable axle loadings.

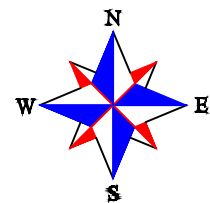
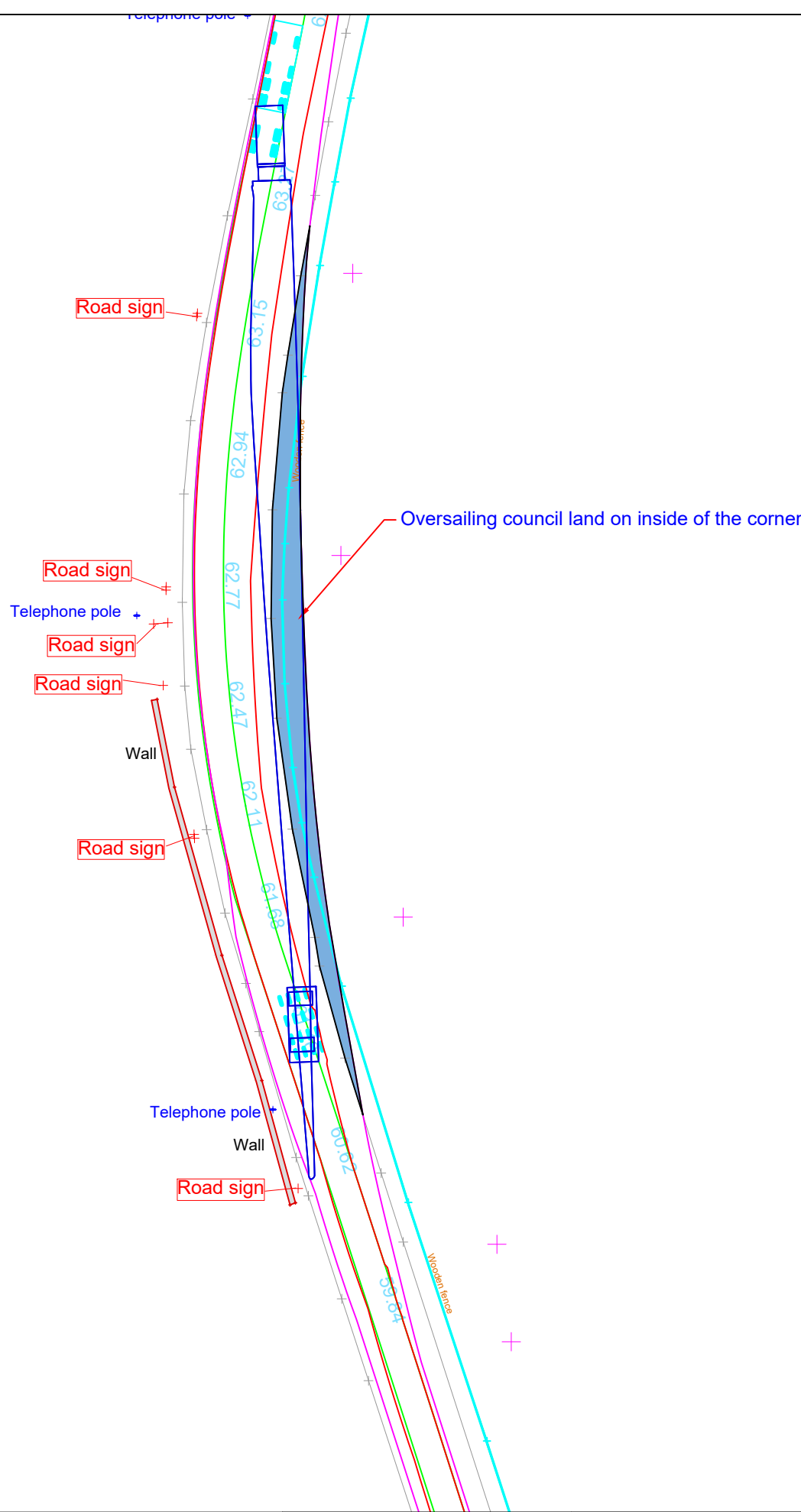
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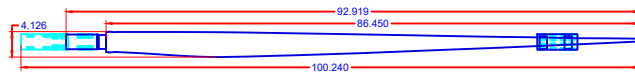


Continue on N62 to right bend.

****Caution****

- Loaded vehicle will oversail council land on the offside of the bend.

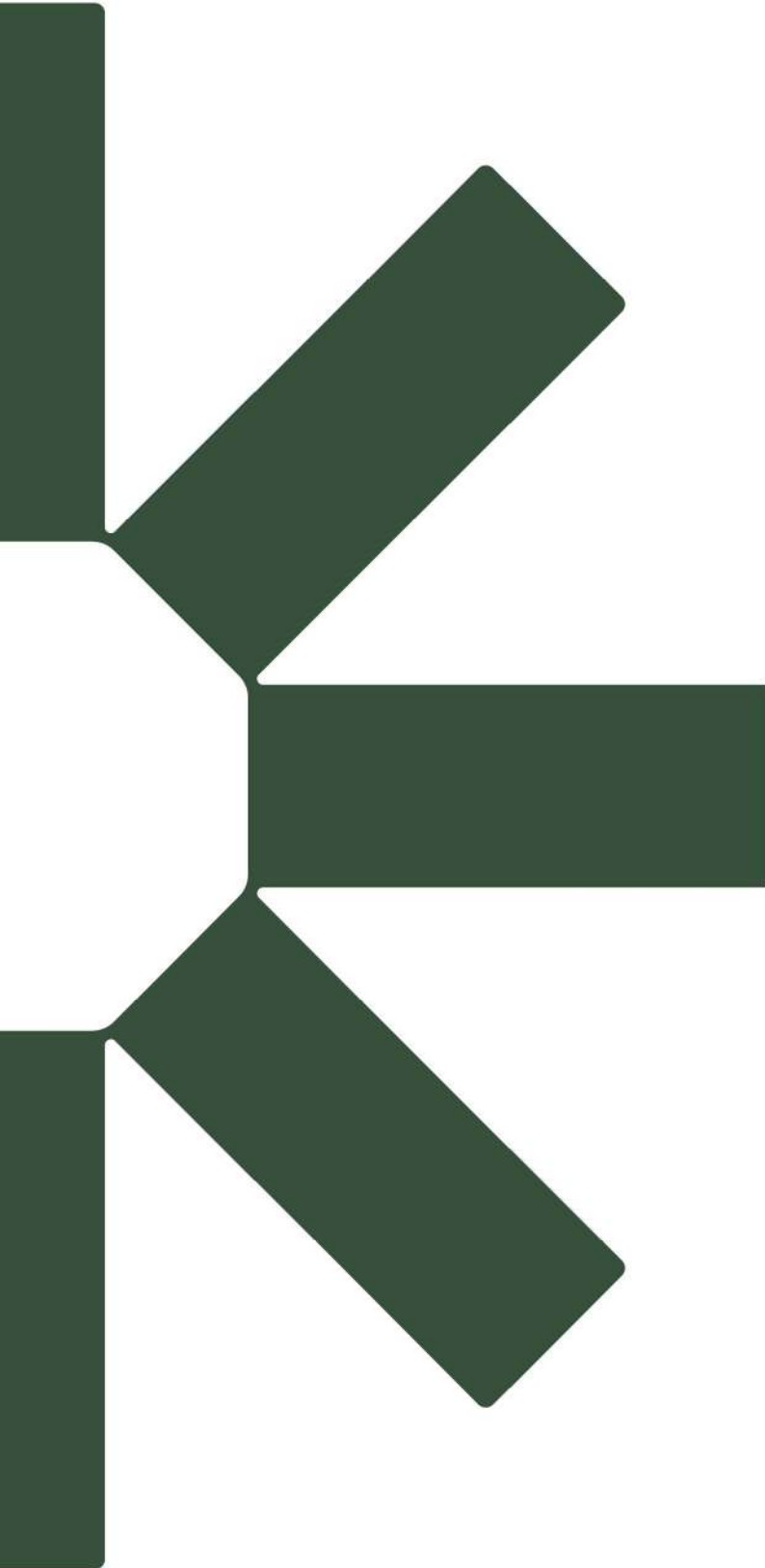
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Making Sustainability Happen