

Pell Frischmann

Gortnalug 110 kV Substation

Abnormal Indivisible Load Route Survey

March 2026

10110915

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## Executive Summary

Pell Frischmann Consultants Limited (PF) have been commissioned by Renewable Energy Systems Ltd (RES) to undertake a Route Survey Review (RSR) to examine the issues associated with the transport of transformer Abnormal Indivisible Loads (AIL) associated with the development of Gortnalug 110 kV Substation, located south of Ballinasloe, County Galway.

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

The access review has been based upon a 120 MVA transformer and has been undertaken on the basis of neck 3-axle bed 6-axle (neck 3bed6) and neck 3-axle bed 5-axle (neck 3bed5) trailers.

RES requested PF consider two route options (routes 1 and 2) as the basis of this report, however, route 1 was ruled out an early stage due to the proximity of existing residential properties to the east of the L8408 in Kiltormer, which would prevent the loads from turning left onto the L4301 eastbound. Conflict with the residential properties would be avoided by utilising a residential garden to the west of the junction, however, it was deemed that third-party land uptake would not be approved at this location. Therefore, route 2 has been selected and assessed further within this report.

Route 2 travels south from M6 Junction to Killimor on N65, northbound on the L4322 to Attykee; and then eastbound on the L4301 en route to the site access junction via Kiltormer.

A review of the current structural capacity of the route has been carried out considerate of the transformer loaded onto both neck 3bed5 and neck 3bed6 trailers; Galway County Council (GCC) have advised that 11 structures will require further structural assessment before being approved for use by the neck 3bed5. A full response had not been received from Transport Infrastructure Ireland (TII) at the time of writing this report, however, limited correspondence advised that there are some structures on the N65 section of the route that would require further structural assessment before being approved for use by the proposed trailers.

The route from M6 Junction 16 to site is considered negotiable for the neck 3bed6 with areas of temporary load bearing surface, street furniture removals, special manoeuvres and full Garda escort.

No consideration has been given to the on-site transport and offloading of the transformer from the delivery vehicle following arrival on site as part of this report.

The report is presented to RES for consideration. Various road modifications and interventions are required to successfully access the site. If these are assessed, approved and undertaken; access to the site is considered feasible.

## Further Actions

The following actions are recommended to pursue the transport and access issues further. This work can be undertaken post consent and prior to construction, once the delivery port for the transformer has been identified and the haulier commissioned.

- Obtain responses from TII on current structural capability of the route to accommodate the proposed AILs;
- Undertake structural assessment of 11 structures identified by GCC;
- Undertake discussion with the affected utility providers and roads agencies;
- Prepare detailed mitigation design proposals to help inform the land option / consultee discussions;
- Obtain the necessary statutory licences to enable the mitigation measures; and
- Develop a detailed operational Transport Management Plan to assist in transporting the proposed loads.

## 1 Introduction

Pell Frischmann Consultants Limited (PF) have been commissioned by Renewable Energy Systems Ltd (RES) to undertake a Route Survey Review (RSR) to examine the issues involved in transporting transformer Abnormal Indivisible Loads (AIL) associated with the development of Gortnalug 110 kV Substation, located south of Ballinasloe, County Galway.

The RSR has been prepared to help inform RES of the likely issues associated with the development of the site with regards to off-site transport and access for AIL traffic and examines the issues associated with transport along the whole of the access route from the port to the site access junction.

The access review identifies the key issues associated with AIL deliveries and notes what remedial works, either in the form of physical works or as traffic management interventions will be required to accommodate the predicted loads.

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

It is the responsibility of the transformer supplier to ensure that the entirety of the proposed access route is suitable and meets with their satisfaction (subject to contractual arrangements). The transformer supplier will be responsible for ensuring that the finalised proposals meet with the appropriate levels of health and safety consideration for all road users and are in line with the relevant legislation at the time of delivery.

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## 2 Definitions & Terminology

### 2.1 Definition of Abnormal Indivisible Load

An AIL is defined as a load that exceeds the legal limits for weight, height, width, or length as set out in the Road Traffic (Construction, Equipment and Use of Vehicles) Regulations 2003 (S.I. No. 5 of 2003) and subsequent amendments. An AIL is one that cannot be divided into two or more loads for transport without undue expense or risk of damage.

All equipment should be stripped of removable ancillaries before transport. Further dismantling is only considered unnecessary where it is not economically viable or where the load must remain intact due to manufacturing tolerances or structural integrity.

### 2.2 Legislation

Vehicles operating under standard regulations are subject to maximum weight and dimension limits as defined in the Road Traffic (Construction and Use of Vehicles) Regulations 2003–2018. Loads that exceed these limits require a Special Permit under the Road Traffic (Special Permits for Particular Vehicles) Regulations 2007 (S.I. No. 283 of 2007).

There are two main permit types:

- Garda Permit: For designated inter-urban routes, applicable to loads not exceeding length 27.4 m, width 4.3 m width and height 4.65 m;
- Local Authority Permit: Required for all other roads or where the load exceeds the Garda Permit thresholds.

Permits must be obtained in advance from An Garda Síochána or the relevant Local Authority, depending on the route and load characteristics. There is currently no unified national permitting system; coordination between authorities is required for multi-jurisdictional movements.

### 2.3 Transport Considerations

Route selection for AILs must consider the impact on infrastructure, traffic congestion, and public safety. Authorities may assess whether alternative transport modes offer a more suitable solution depending on the nature of the load and the availability of infrastructure.

Permit applications must include justification for the chosen route and transport method. The use of the nearest suitable port is encouraged where maritime access is feasible, particularly for large-scale components.

A national framework for abnormal load management is under development to improve coordination and infrastructure protection, led by Transport Infrastructure Ireland (TII) in collaboration with local stakeholders.

### 2.4 Third-Party Land & Land Ownership

A review of third-party land should be undertaken by the client to ensure that no additional land rights are required to enable deliveries or mitigation works. PF accept no responsibility for the accuracy of land ownership assumptions, all of which should be confirmed across the entire access route by a qualified land agent.

The limits of road adoption can vary depending on the location of the site and the history of the road agencies involved. The adopted area is generally defined as land contained within a clear boundary where the road agency holds the maintenance rights for the land. In urban areas, this is usually defined as the area from the edge of the footway across the road to the opposing footway back edge.

In rural areas, the area of adoption can be open to greater interpretation as defined boundaries may not be clearly identifiable. In these locations, the general rule is that the area of adoption is between established field boundary lines or a maximum 2 m from the road edge. This can vary between area and location.

## 2.5 Abbreviations

|            |                                     |
|------------|-------------------------------------|
| AIL        | Abnormal Indivisible Load           |
| GCC        | Galway County Council               |
| LHA        | Local Highway Authorities           |
| OHL        | Overhead Line                       |
| OSI        | Ordnance Survey Ireland             |
| Neck 3bed5 | Neck 3-axle bed 5-axle trailer      |
| Neck 3bed6 | Neck 3-axle bed 6-axle trailer      |
| PF         | Pell Frischmann Consultants Limited |
| POE        | Port Of Entry                       |
| POI        | Point Of Interest                   |
| RES        | Renewable Energy Systems Ltd        |
| RSR        | Route Survey Review                 |
| SPA        | Swept Path Assessment               |
| TII        | Transport Infrastructure Ireland    |

## 3 Candidate Transformer

RES has indicated that they wish to consider a 120 MVA transformer for the route assessment. The details of the transformer have been provided by RES and are detailed in **Table 3-1**.

**Table 3-1: Component Summary**

| Component           | Length [m] | Width [m] | Height [m] | Weight [te] |
|---------------------|------------|-----------|------------|-------------|
| 120 MVA transformer | 7.914      | 3.05      | 3.827      | 91.0        |

## 4 Site Location

The proposed development site is located south of Ballinasloe, County Galway. **Figure 4-1** below illustrates the general site location.

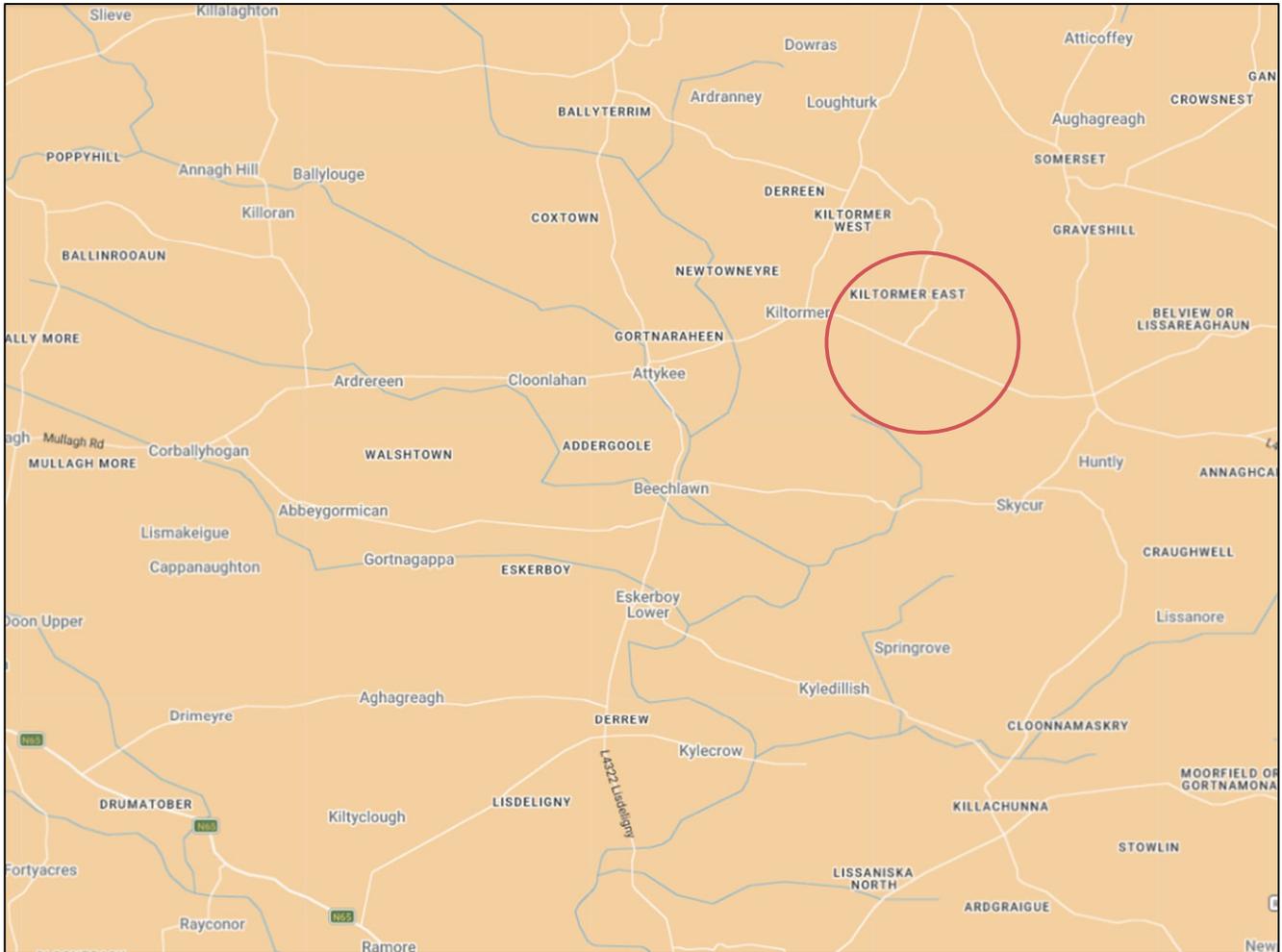


Figure 4-1: Site Location Plan

## 5 Weight Review

A weight review has been undertaken with the relevant Local Highway Authorities (LHA), which are noted in **Table 5-1**. All have been contacted to ascertain if there are any relevant constraints that should be noted. Where comments are received, these are included within **Table 8-1** and **Appendix D**. Where no comments have been received, this does not confirm the suitability or otherwise of the structures and a full review will be required with the LHAs.

Table 5-1: LHA Contacts

| Organisation                     | Email Address  |
|----------------------------------|--|
| Galway County Council            | <a href="mailto:abnormalloadpermit@galwaycoco.ie">abnormalloadpermit@galwaycoco.ie</a> |
| Transport Infrastructure Ireland | <a href="mailto:abnormalload@mtcc.ie">abnormalload@mtcc.ie</a>                         |

## 6 Access Routes

RES requested PF consider two route options (routes 1 and 2) as the basis of this report, however, route 1 was ruled out an early stage due to the proximity of existing residential properties to the east of the L8408 in Kiltormer, which would prevent the loads from turning left onto the L4301 eastbound. Conflict with the residential properties could be avoided by utilising a residential garden to the west of the junction, however, it was deemed that third-party land uptake would not be approved at this location. Therefore, route 2 has been selected and assessed further within this report.

### 6.1 Route 2

The proposed route from M6 Junction 16 to site is as follows:

- Loads will exit the M6 at Junction 16 and join the N65 heading east to Killimor;
- At Killimor, loads will join the L4322 northbound to Attykee;
- At Attykee, loads will join the L4301 and travel east via Kiltormer to the site access junction.

The proposed access route is illustrated in **Figure 6-1**.

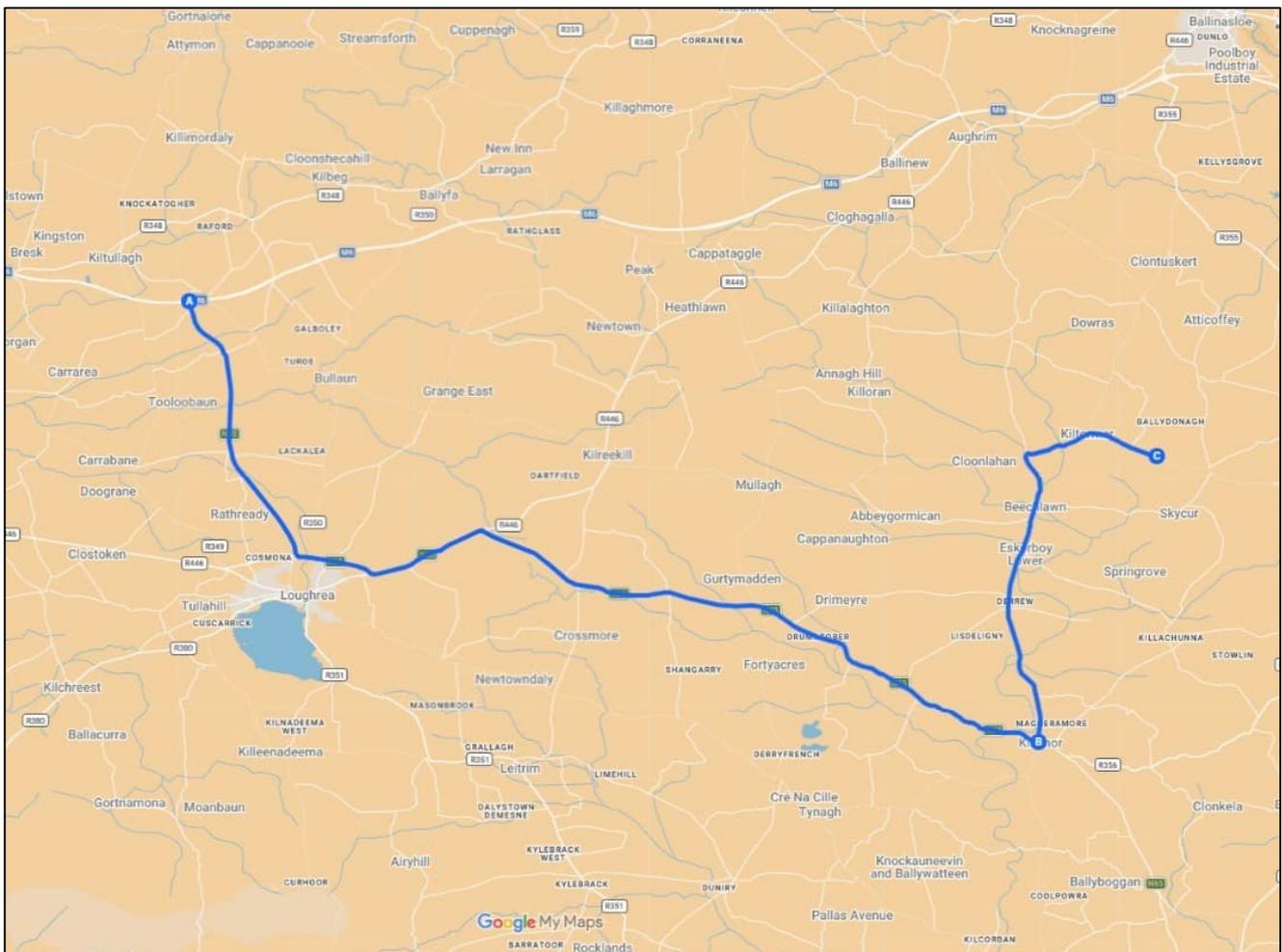


Figure 6-1: Proposed Access Route

## 7 Delivery Equipment

To provide a robust assessment scenario based upon the known issues along the access route, it has been proposed that the 91 te transformer would be loaded onto a neck 3bed6 trailer, a similar transport configuration is shown in **Figure 7-1**.



**Figure 7-1: Vessel Bed Trailer**

This configuration is subject to confirmation by the chosen haulier at the time of their commissioning. Due to a gross vehicle weight in excess of 150 te, a full Garda Escort would be required along the full length of the route.

## 8 Route Constraints

### 8.1 Route Constraint Assessment

The constraints noted during the review are provided in **Table 8-1** below. These cover all constraints from the M6 Junction 16 through to the site access junction along the proposed route and are classified in terms of risk to delivery as follows (N.B. the below list is not exhaustive):

#### High Risk

- Building / overbridge conflict
- Third-party land owner(s) access permission
- Permanent road works
- Reprofiling / ground works
- Bridge upgrades
- Overhead line removal / relocation
- Tree clearance

#### Medium Risk

- Land searches to confirm extent of available adopted land
- Topographical survey
- Detailed junction / access track design
- Structural assessment / overbridging
- Overhead line survey
- Vertical elevation check
- Bridge parapet removals
- Street furniture removals
- Tree / vegetation pruning
- Vegetation clearance
- Shunt / contraflow manoeuvre
- Trailer interchange

#### Low Risk

- Temporary load bearing surface to be laid
- Existing load bearing surface to be utilised
- Parking restrictions
- Loads to be raised above obstruction using trailer hydraulics

Risk has been assessed in terms of enabling works time, potential cost and complexity.

Full details of the mitigation measures are shown on the SPA drawings included in **Appendix C**.

## 8.2 Route Constraint Tables

**Table 8-1** detail the constraints along the route. These cover all constraints from the M6 Junction 16 to the site access junction. No consideration of the transport issues within the port or within the development site have been undertaken and this includes the design of the site access junction.

**Table 8-1: Route Constraint Points and Details**

| POI | Key Constraint   | Details  |                   |
|-----|--|--|-------------------|
| 1   | <b>M6 eastbound Jct 16 exit slip</b><br>                      | <u>Direction of travel</u>   |                   |
|     |  | Loads will exit the M6 eastbound at Jct 16.                            |                   |
|     |  | <u>Document reference</u>  | <u>Doc. No.</u>   |
|     |  | Swept path assessment  | SPA-01            |
|     |  | <u>Mitigation measures</u>   | <u>Risk level</u> |
|     |  | No mitigation measures required  | N/A               |
| 2   | <b>M6 Jct 16 / N65 Interchange (northern roundabout)</b><br> | <u>Direction of travel</u>   |                   |
|     |  | Loads will take the fourth exit at the roundabout onto N65 southbound. |                   |
|     |  | <u>Document reference</u>  | <u>Doc. No.</u>   |
|     |  | Swept path assessment  | SPA-01            |
|     |  | <u>Mitigation measures</u>   | <u>Risk level</u> |
|     |  | No mitigation measures required  | N/A               |
| 3   | <b>M6 westbound Jct 16 exit slip</b><br>                    | <u>Direction of travel</u>   |                   |
|     |  | Loads will exit the M6 westbound at Jct 16.                            |                   |
|     |  | <u>Document reference</u>  | <u>Doc. No.</u>   |
|     |  | Swept path assessment  | SPA-01            |
|     |  | <u>Mitigation measures</u>   | <u>Risk level</u> |
|     |  | No mitigation measures required  | N/A               |

| POI                                       | Key Constraint  | Details   |  |                           |                 |                       |        |                            |                   |                                 |        |                          |        |   |     |
|---|---|---|--|---------------------------|-----------------|-----------------------|--------|----------------------------|-------------------|---------------------------------|--------|--------------------------|--------|---|-----|
| 4   | <p><b>M6 Jct 16 / N65 Interchange (southern roundabout)</b></p>  | <p><u>Direction of travel</u></p> <p>Loads from M6 eastbound will take the second exit at the roundabout; or loads from M6 westbound will take the first exit at the roundabout onto N65 southbound.</p> <table border="1" data-bbox="791 387 1473 954"> <thead> <tr> <th data-bbox="791 387 1315 427"><u>Document reference</u></th> <th data-bbox="1315 387 1473 427"><u>Doc. No.</u></th> </tr> </thead> <tbody> <tr> <td data-bbox="791 427 1315 470">Swept path assessment</td> <td data-bbox="1315 427 1473 470">SPA-01</td> </tr> <tr> <th data-bbox="791 470 1315 510"><u>Mitigation measures</u></th> <th data-bbox="1315 470 1473 510"><u>Risk level</u></th> </tr> <tr> <td data-bbox="791 510 1315 954">No mitigation measures required</td> <td data-bbox="1315 510 1473 954">N/A</td> </tr> </tbody> </table>   |  | <u>Document reference</u> | <u>Doc. No.</u> | Swept path assessment | SPA-01 | <u>Mitigation measures</u> | <u>Risk level</u> | No mitigation measures required | N/A    |                          |        |   |     |
| <u>Document reference</u>                 | <u>Doc. No.</u>   |   |  |                           |                 |                       |        |                            |                   |                                 |        |                          |        |   |     |
| Swept path assessment                     | SPA-01  |   |  |                           |                 |                       |        |                            |                   |                                 |        |                          |        |   |     |
| <u>Mitigation measures</u>                | <u>Risk level</u>   |   |  |                           |                 |                       |        |                            |                   |                                 |        |                          |        |   |     |
| No mitigation measures required           | N/A   |   |  |                           |                 |                       |        |                            |                   |                                 |        |                          |        |   |     |
| 5   | <p><b>N65 Monearmore Roundabout</b></p>                         | <p><u>Direction of travel</u></p> <p>Loads will take the second exit at Monearmore Roundabout to continue on N65 eastbound.</p> <table border="1" data-bbox="791 1077 1473 1330"> <thead> <tr> <th data-bbox="791 1077 1315 1117"><u>Document reference</u></th> <th data-bbox="1315 1077 1473 1117"><u>Doc. No.</u></th> </tr> </thead> <tbody> <tr> <td data-bbox="791 1117 1315 1160">Swept path assessment</td> <td data-bbox="1315 1117 1473 1160">SPA-02</td> </tr> <tr> <th data-bbox="791 1160 1315 1200"><u>Mitigation measures</u></th> <th data-bbox="1315 1160 1473 1200"><u>Risk level</u></th> </tr> <tr> <td data-bbox="791 1200 1315 1243">Contraflow manoeuvre</td> <td data-bbox="1315 1200 1473 1243">Medium</td> </tr> <tr> <td data-bbox="791 1243 1315 1330">Traffic control measures</td> <td data-bbox="1315 1243 1473 1330">Medium</td> </tr> </tbody> </table>  |  | <u>Document reference</u> | <u>Doc. No.</u> | Swept path assessment | SPA-02 | <u>Mitigation measures</u> | <u>Risk level</u> | Contraflow manoeuvre            | Medium | Traffic control measures | Medium |   |     |
| <u>Document reference</u>                 | <u>Doc. No.</u>   |   |  |                           |                 |                       |        |                            |                   |                                 |        |                          |        |   |     |
| Swept path assessment                     | SPA-02  |   |  |                           |                 |                       |        |                            |                   |                                 |        |                          |        |   |     |
| <u>Mitigation measures</u>                | <u>Risk level</u>   |   |  |                           |                 |                       |        |                            |                   |                                 |        |                          |        |   |     |
| Contraflow manoeuvre                      | Medium  |   |  |                           |                 |                       |        |                            |                   |                                 |        |                          |        |   |     |
| Traffic control measures                  | Medium  |   |  |                           |                 |                       |        |                            |                   |                                 |        |                          |        |   |     |
| 6   | <p><b>N65 Fairfield Roundabout</b></p>                         | <p><u>Direction of travel</u></p> <p>Loads will take the first exit at Fairfield Roundabout to continue on N65 eastbound.</p> <table border="1" data-bbox="791 1440 1473 1729"> <thead> <tr> <th data-bbox="791 1440 1315 1480"><u>Document reference</u></th> <th data-bbox="1315 1440 1473 1480"><u>Doc. No.</u></th> </tr> </thead> <tbody> <tr> <td data-bbox="791 1480 1315 1523">Swept path assessment</td> <td data-bbox="1315 1480 1473 1523">SPA-03</td> </tr> <tr> <th data-bbox="791 1523 1315 1563"><u>Mitigation measures</u></th> <th data-bbox="1315 1523 1473 1563"><u>Risk level</u></th> </tr> <tr> <td data-bbox="791 1563 1315 1606">Contraflow manoeuvre</td> <td data-bbox="1315 1563 1473 1606">Medium</td> </tr> <tr> <td data-bbox="791 1606 1315 1729">Traffic control measures</td> <td data-bbox="1315 1606 1473 1729">Medium</td> </tr> </tbody> </table>  |  | <u>Document reference</u> | <u>Doc. No.</u> | Swept path assessment | SPA-03 | <u>Mitigation measures</u> | <u>Risk level</u> | Contraflow manoeuvre            | Medium | Traffic control measures | Medium |   |     |
| <u>Document reference</u>                 | <u>Doc. No.</u>   |   |  |                           |                 |                       |        |                            |                   |                                 |        |                          |        |   |     |
| Swept path assessment                     | SPA-03  |   |  |                           |                 |                       |        |                            |                   |                                 |        |                          |        |   |     |
| <u>Mitigation measures</u>                | <u>Risk level</u>   |   |  |                           |                 |                       |        |                            |                   |                                 |        |                          |        |   |     |
| Contraflow manoeuvre                      | Medium  |   |  |                           |                 |                       |        |                            |                   |                                 |        |                          |        |   |     |
| Traffic control measures                  | Medium  |   |  |                           |                 |                       |        |                            |                   |                                 |        |                          |        |   |     |
| 7   | <p><b>N65 / R446 junction</b></p>                              | <p><u>Direction of travel</u></p> <p>Loads will turn right to continue on N65 southbound.</p> <table border="1" data-bbox="791 1816 1473 2089"> <thead> <tr> <th data-bbox="791 1816 1315 1856"><u>Document reference</u></th> <th data-bbox="1315 1816 1473 1856"><u>Doc. No.</u></th> </tr> </thead> <tbody> <tr> <td data-bbox="791 1856 1315 1899">Swept path assessment</td> <td data-bbox="1315 1856 1473 1899">SPA-04</td> </tr> <tr> <th data-bbox="791 1899 1315 1939"><u>Mitigation measures</u></th> <th data-bbox="1315 1899 1473 1939"><u>Risk level</u></th> </tr> <tr> <td data-bbox="791 1939 1315 1982">Street furniture removals</td> <td data-bbox="1315 1939 1473 1982">Medium</td> </tr> <tr> <td data-bbox="791 1982 1315 2024">Contraflow manoeuvre</td> <td data-bbox="1315 1982 1473 2024">Medium</td> </tr> <tr> <td data-bbox="791 2024 1315 2089">Temporary load bearing surface to be laid</td> <td data-bbox="1315 2024 1473 2089">Low</td> </tr> </tbody> </table> |  | <u>Document reference</u> | <u>Doc. No.</u> | Swept path assessment | SPA-04 | <u>Mitigation measures</u> | <u>Risk level</u> | Street furniture removals       | Medium | Contraflow manoeuvre     | Medium | Temporary load bearing surface to be laid | Low |
| <u>Document reference</u>                 | <u>Doc. No.</u>   |   |  |                           |                 |                       |        |                            |                   |                                 |        |                          |        |   |     |
| Swept path assessment                     | SPA-04  |   |  |                           |                 |                       |        |                            |                   |                                 |        |                          |        |   |     |
| <u>Mitigation measures</u>                | <u>Risk level</u>   |   |  |                           |                 |                       |        |                            |                   |                                 |        |                          |        |   |     |
| Street furniture removals                 | Medium  |   |  |                           |                 |                       |        |                            |                   |                                 |        |                          |        |   |     |
| Contraflow manoeuvre                      | Medium  |   |  |                           |                 |                       |        |                            |                   |                                 |        |                          |        |   |     |
| Temporary load bearing surface to be laid | Low   |   |  |                           |                 |                       |        |                            |                   |                                 |        |                          |        |   |     |

| POI  | Key Constraint   | Details   |  |                           |                 |                       |        |                            |                   |  |                             |
|--|--|---|--|---------------------------|-----------------|-----------------------|--------|----------------------------|-------------------|--|-----------------------------|
| 8  | <b>N65 / L4322 junction</b><br> | <p align="center"><u>Direction of travel</u></p> <p>Loads will turn left onto L4322 northbound.</p> <table border="1" data-bbox="791 309 1463 927"> <tr> <td data-bbox="791 309 1315 389"><u>Document reference</u></td> <td data-bbox="1315 309 1463 389"><u>Doc. No.</u></td> </tr> <tr> <td data-bbox="791 389 1315 448">Swept path assessment</td> <td data-bbox="1315 389 1463 448">SPA-05</td> </tr> <tr> <td data-bbox="791 448 1315 506"><u>Mitigation measures</u></td> <td data-bbox="1315 448 1463 506"><u>Risk level</u></td> </tr> <tr> <td data-bbox="791 506 1315 927">Street furniture removals<br/>Temporary load bearing surface to be laid</td> <td data-bbox="1315 506 1463 927"><b>Medium</b><br/><b>Low</b></td> </tr> </table> |  | <u>Document reference</u> | <u>Doc. No.</u> | Swept path assessment | SPA-05 | <u>Mitigation measures</u> | <u>Risk level</u> | Street furniture removals<br>Temporary load bearing surface to be laid | <b>Medium</b><br><b>Low</b> |
| <u>Document reference</u>  | <u>Doc. No.</u>  |   |  |                           |                 |                       |        |                            |                   |  |                             |
| Swept path assessment  | SPA-05   |   |  |                           |                 |                       |        |                            |                   |  |                             |
| <u>Mitigation measures</u>   | <u>Risk level</u>  |   |  |                           |                 |                       |        |                            |                   |  |                             |
| Street furniture removals<br>Temporary load bearing surface to be laid | <b>Medium</b><br><b>Low</b>  |   |  |                           |                 |                       |        |                            |                   |  |                             |
| 9  | <b>Oxgrove 2</b><br>           | <p align="center"><u>Direction of travel</u></p> <p>Loads will continue on L4322 northbound over Oxgrove 2.</p> <table border="1" data-bbox="791 1025 1463 1308"> <tr> <td data-bbox="791 1025 1315 1106"><u>Document reference</u></td> <td data-bbox="1315 1025 1463 1106"><u>Doc. No.</u></td> </tr> <tr> <td data-bbox="791 1106 1315 1164">N/A</td> <td data-bbox="1315 1106 1463 1164">N/A</td> </tr> <tr> <td data-bbox="791 1164 1315 1308"><u>Mitigation measures</u></td> <td data-bbox="1315 1164 1463 1308"><u>Risk level</u></td> </tr> <tr> <td data-bbox="791 1308 1315 1308">Structural assessment</td> <td data-bbox="1315 1308 1463 1308"><b>Medium</b></td> </tr> </table>   |  | <u>Document reference</u> | <u>Doc. No.</u> | N/A                   | N/A    | <u>Mitigation measures</u> | <u>Risk level</u> | Structural assessment  | <b>Medium</b>               |
| <u>Document reference</u>  | <u>Doc. No.</u>  |   |  |                           |                 |                       |        |                            |                   |  |                             |
| N/A  | N/A  |   |  |                           |                 |                       |        |                            |                   |  |                             |
| <u>Mitigation measures</u>   | <u>Risk level</u>  |   |  |                           |                 |                       |        |                            |                   |  |                             |
| Structural assessment  | <b>Medium</b>  |   |  |                           |                 |                       |        |                            |                   |  |                             |
| 10   | <b>Oxgrove</b><br>            | <p align="center"><u>Direction of travel</u></p> <p>Loads will continue on L4322 northbound over Oxgrove.</p> <table border="1" data-bbox="791 1406 1463 1688"> <tr> <td data-bbox="791 1406 1315 1487"><u>Document reference</u></td> <td data-bbox="1315 1406 1463 1487"><u>Doc. No.</u></td> </tr> <tr> <td data-bbox="791 1487 1315 1545">N/A</td> <td data-bbox="1315 1487 1463 1545">N/A</td> </tr> <tr> <td data-bbox="791 1545 1315 1688"><u>Mitigation measures</u></td> <td data-bbox="1315 1545 1463 1688"><u>Risk level</u></td> </tr> <tr> <td data-bbox="791 1688 1315 1688">Structural assessment</td> <td data-bbox="1315 1688 1463 1688"><b>Medium</b></td> </tr> </table>   |  | <u>Document reference</u> | <u>Doc. No.</u> | N/A                   | N/A    | <u>Mitigation measures</u> | <u>Risk level</u> | Structural assessment  | <b>Medium</b>               |
| <u>Document reference</u>  | <u>Doc. No.</u>  |   |  |                           |                 |                       |        |                            |                   |  |                             |
| N/A  | N/A  |   |  |                           |                 |                       |        |                            |                   |  |                             |
| <u>Mitigation measures</u>   | <u>Risk level</u>  |   |  |                           |                 |                       |        |                            |                   |  |                             |
| Structural assessment  | <b>Medium</b>  |   |  |                           |                 |                       |        |                            |                   |  |                             |
| 11   | <b>Derrew 2</b><br>           | <p align="center"><u>Direction of travel</u></p> <p>Loads will continue on L4322 northbound over Derrew 2.</p> <table border="1" data-bbox="791 1787 1463 2069"> <tr> <td data-bbox="791 1787 1315 1868"><u>Document reference</u></td> <td data-bbox="1315 1787 1463 1868"><u>Doc. No.</u></td> </tr> <tr> <td data-bbox="791 1868 1315 1926">N/A</td> <td data-bbox="1315 1868 1463 1926">N/A</td> </tr> <tr> <td data-bbox="791 1926 1315 2069"><u>Mitigation measures</u></td> <td data-bbox="1315 1926 1463 2069"><u>Risk level</u></td> </tr> <tr> <td data-bbox="791 2069 1315 2069">Structural assessment</td> <td data-bbox="1315 2069 1463 2069"><b>Medium</b></td> </tr> </table>  |  | <u>Document reference</u> | <u>Doc. No.</u> | N/A                   | N/A    | <u>Mitigation measures</u> | <u>Risk level</u> | Structural assessment  | <b>Medium</b>               |
| <u>Document reference</u>  | <u>Doc. No.</u>  |   |  |                           |                 |                       |        |                            |                   |  |                             |
| N/A  | N/A  |   |  |                           |                 |                       |        |                            |                   |  |                             |
| <u>Mitigation measures</u>   | <u>Risk level</u>  |   |  |                           |                 |                       |        |                            |                   |  |                             |
| Structural assessment  | <b>Medium</b>  |   |  |                           |                 |                       |        |                            |                   |  |                             |

| POI | Key Constraint   | Details   |                                    |
|-----|--|---|------------------------------------|
| 12  | <b>Derrew</b><br>                   | <u>Direction of travel</u><br>Loads will continue on L4322 northbound over Derrew.        |                                    |
|     |  | <u>Document reference</u><br>N/A  | <u>Doc. No.</u><br>N/A             |
|     |  | <u>Mitigation measures</u><br>Structural assessment                                       | <u>Risk level</u><br><b>Medium</b> |
| 13  | <b>Claremadden 2</b><br>            | <u>Direction of travel</u><br>Loads will continue on L4322 northbound over Claremadden 2. |                                    |
|     |  | <u>Document reference</u><br>N/A  | <u>Doc. No.</u><br>N/A             |
|     |  | <u>Mitigation measures</u><br>Structural assessment                                       | <u>Risk level</u><br><b>Medium</b> |
| 14  | <b>Claremadden</b><br>            | <u>Direction of travel</u><br>Loads will continue on L4322 northbound over Claremadden.   |                                    |
|     |  | <u>Document reference</u><br>N/A  | <u>Doc. No.</u><br>N/A             |
|     |  | <u>Mitigation measures</u><br>Structural assessment                                       | <u>Risk level</u><br><b>Medium</b> |
| 15  | <b>Attikee 3</b><br>              | <u>Direction of travel</u><br>Loads will continue on L4322 northbound over Attikee 3.     |                                    |
|     |  | <u>Document reference</u><br>N/A  | <u>Doc. No.</u><br>N/A             |
|     |  | <u>Mitigation measures</u><br>Structural assessment                                       | <u>Risk level</u><br><b>Medium</b> |
| 16  | <b>L4322 / L4301 junction</b><br> | <u>Direction of travel</u><br>Loads will turn right onto L4301 eastbound.                 |                                    |
|     |  | <u>Document reference</u><br>Swept path assessment  | <u>Doc. No.</u><br>SPA-06          |
|     |  | <u>Mitigation measures</u><br>No mitigation measures required                             | <u>Risk level</u><br>N/A           |

| POI                             | Key Constraint  | Details   |  |                           |                 |                       |        |                            |                   |                                 |               |
|---------------------------------|---|---|--|---------------------------|-----------------|-----------------------|--------|----------------------------|-------------------|---------------------------------|---------------|
| 17                              | <b>Attikee 2</b><br>                         | <p align="center"><u>Direction of travel</u></p> <p>Loads will continue on L4301 eastbound over Attikee 2.</p> <table border="1" data-bbox="791 309 1471 600"> <tr> <td data-bbox="791 309 1315 389"><u>Document reference</u></td> <td data-bbox="1315 309 1471 389"><u>Doc. No.</u></td> </tr> <tr> <td data-bbox="791 389 1315 448">N/A</td> <td data-bbox="1315 389 1471 448">N/A</td> </tr> <tr> <td data-bbox="791 448 1315 600"><u>Mitigation measures</u></td> <td data-bbox="1315 448 1471 600"><u>Risk level</u></td> </tr> <tr> <td data-bbox="791 448 1315 600">Structural assessment</td> <td data-bbox="1315 448 1471 600"><b>Medium</b></td> </tr> </table>  |  | <u>Document reference</u> | <u>Doc. No.</u> | N/A                   | N/A    | <u>Mitigation measures</u> | <u>Risk level</u> | Structural assessment           | <b>Medium</b> |
| <u>Document reference</u>       | <u>Doc. No.</u>   |   |  |                           |                 |                       |        |                            |                   |                                 |               |
| N/A                             | N/A   |   |  |                           |                 |                       |        |                            |                   |                                 |               |
| <u>Mitigation measures</u>      | <u>Risk level</u>   |   |  |                           |                 |                       |        |                            |                   |                                 |               |
| Structural assessment           | <b>Medium</b>   |   |  |                           |                 |                       |        |                            |                   |                                 |               |
| 18                              | <b>Attikee</b><br>                           | <p align="center"><u>Direction of travel</u></p> <p>Loads will continue on L4301 eastbound over Attikee.</p> <table border="1" data-bbox="791 694 1471 985"> <tr> <td data-bbox="791 694 1315 775"><u>Document reference</u></td> <td data-bbox="1315 694 1471 775"><u>Doc. No.</u></td> </tr> <tr> <td data-bbox="791 775 1315 833">N/A</td> <td data-bbox="1315 775 1471 833">N/A</td> </tr> <tr> <td data-bbox="791 833 1315 985"><u>Mitigation measures</u></td> <td data-bbox="1315 833 1471 985"><u>Risk level</u></td> </tr> <tr> <td data-bbox="791 833 1315 985">Structural assessment</td> <td data-bbox="1315 833 1471 985"><b>Medium</b></td> </tr> </table>  |  | <u>Document reference</u> | <u>Doc. No.</u> | N/A                   | N/A    | <u>Mitigation measures</u> | <u>Risk level</u> | Structural assessment           | <b>Medium</b> |
| <u>Document reference</u>       | <u>Doc. No.</u>   |   |  |                           |                 |                       |        |                            |                   |                                 |               |
| N/A                             | N/A   |   |  |                           |                 |                       |        |                            |                   |                                 |               |
| <u>Mitigation measures</u>      | <u>Risk level</u>   |   |  |                           |                 |                       |        |                            |                   |                                 |               |
| Structural assessment           | <b>Medium</b>   |   |  |                           |                 |                       |        |                            |                   |                                 |               |
| 19                              | <b>Moaty</b><br>                           | <p align="center"><u>Direction of travel</u></p> <p>Loads will continue on L4301 eastbound over Moaty.</p> <table border="1" data-bbox="791 1079 1471 1370"> <tr> <td data-bbox="791 1079 1315 1160"><u>Document reference</u></td> <td data-bbox="1315 1079 1471 1160"><u>Doc. No.</u></td> </tr> <tr> <td data-bbox="791 1160 1315 1218">N/A</td> <td data-bbox="1315 1160 1471 1218">N/A</td> </tr> <tr> <td data-bbox="791 1218 1315 1370"><u>Mitigation measures</u></td> <td data-bbox="1315 1218 1471 1370"><u>Risk level</u></td> </tr> <tr> <td data-bbox="791 1218 1315 1370">Structural assessment</td> <td data-bbox="1315 1218 1471 1370"><b>Medium</b></td> </tr> </table>                                    |  | <u>Document reference</u> | <u>Doc. No.</u> | N/A                   | N/A    | <u>Mitigation measures</u> | <u>Risk level</u> | Structural assessment           | <b>Medium</b> |
| <u>Document reference</u>       | <u>Doc. No.</u>   |   |  |                           |                 |                       |        |                            |                   |                                 |               |
| N/A                             | N/A   |   |  |                           |                 |                       |        |                            |                   |                                 |               |
| <u>Mitigation measures</u>      | <u>Risk level</u>   |   |  |                           |                 |                       |        |                            |                   |                                 |               |
| Structural assessment           | <b>Medium</b>   |   |  |                           |                 |                       |        |                            |                   |                                 |               |
| 20                              | <b>L4301 / L8408 Kiltormer RH bend</b><br> | <p align="center"><u>Direction of travel</u></p> <p>Loads will continue on L4301 eastbound around a right-hand bend.</p> <table border="1" data-bbox="791 1464 1471 1778"> <tr> <td data-bbox="791 1464 1315 1545"><u>Document reference</u></td> <td data-bbox="1315 1464 1471 1545"><u>Doc. No.</u></td> </tr> <tr> <td data-bbox="791 1545 1315 1603">Swept path assessment</td> <td data-bbox="1315 1545 1471 1603">SPA-07</td> </tr> <tr> <td data-bbox="791 1603 1315 1778"><u>Mitigation measures</u></td> <td data-bbox="1315 1603 1471 1778"><u>Risk level</u></td> </tr> <tr> <td data-bbox="791 1603 1315 1778">No mitigation measures required</td> <td data-bbox="1315 1603 1471 1778">N/A</td> </tr> </table> |  | <u>Document reference</u> | <u>Doc. No.</u> | Swept path assessment | SPA-07 | <u>Mitigation measures</u> | <u>Risk level</u> | No mitigation measures required | N/A           |
| <u>Document reference</u>       | <u>Doc. No.</u>   |   |  |                           |                 |                       |        |                            |                   |                                 |               |
| Swept path assessment           | SPA-07  |   |  |                           |                 |                       |        |                            |                   |                                 |               |
| <u>Mitigation measures</u>      | <u>Risk level</u>   |   |  |                           |                 |                       |        |                            |                   |                                 |               |
| No mitigation measures required | N/A   |   |  |                           |                 |                       |        |                            |                   |                                 |               |

| POI                             | Key Constraint   | Details  |  |                           |                 |     |     |                            |                   |                                 |               |
|---------------------------------|--|--|--|---------------------------|-----------------|-----|-----|----------------------------|-------------------|---------------------------------|---------------|
| 21                              | <b>Cloonineen</b><br>                   | <p align="center"><u>Direction of travel</u></p> <p>Loads will continue on L4301 eastbound over Cloonineen.</p> <table border="1" data-bbox="791 309 1465 600"> <thead> <tr> <th data-bbox="791 309 1315 347"><u>Document reference</u></th> <th data-bbox="1315 309 1465 347"><u>Doc. No.</u></th> </tr> </thead> <tbody> <tr> <td data-bbox="791 347 1315 392">N/A</td> <td data-bbox="1315 347 1465 392">N/A</td> </tr> <tr> <th data-bbox="791 392 1315 430"><u>Mitigation measures</u></th> <th data-bbox="1315 392 1465 430"><u>Risk level</u></th> </tr> <tr> <td data-bbox="791 430 1315 600">Structural assessment</td> <td data-bbox="1315 430 1465 600"><b>Medium</b></td> </tr> </tbody> </table>    |  | <u>Document reference</u> | <u>Doc. No.</u> | N/A | N/A | <u>Mitigation measures</u> | <u>Risk level</u> | Structural assessment           | <b>Medium</b> |
| <u>Document reference</u>       | <u>Doc. No.</u>  |  |  |                           |                 |     |     |                            |                   |                                 |               |
| N/A                             | N/A  |  |  |                           |                 |     |     |                            |                   |                                 |               |
| <u>Mitigation measures</u>      | <u>Risk level</u>  |  |  |                           |                 |     |     |                            |                   |                                 |               |
| Structural assessment           | <b>Medium</b>  |  |  |                           |                 |     |     |                            |                   |                                 |               |
| 22                              | <b>L4301 / site access junction</b><br> | <p align="center"><u>Direction of travel</u></p> <p>Loads will turn left at the proposed site access junction.</p> <table border="1" data-bbox="791 689 1465 974"> <thead> <tr> <th data-bbox="791 689 1315 728"><u>Document reference</u></th> <th data-bbox="1315 689 1465 728"><u>Doc. No.</u></th> </tr> </thead> <tbody> <tr> <td data-bbox="791 728 1315 772">N/A</td> <td data-bbox="1315 728 1465 772">N/A</td> </tr> <tr> <th data-bbox="791 772 1315 810"><u>Mitigation measures</u></th> <th data-bbox="1315 772 1465 810"><u>Risk level</u></th> </tr> <tr> <td data-bbox="791 810 1315 974">No mitigation measures required</td> <td data-bbox="1315 810 1465 974">N/A</td> </tr> </tbody> </table> |  | <u>Document reference</u> | <u>Doc. No.</u> | N/A | N/A | <u>Mitigation measures</u> | <u>Risk level</u> | No mitigation measures required | N/A           |
| <u>Document reference</u>       | <u>Doc. No.</u>  |  |  |                           |                 |     |     |                            |                   |                                 |               |
| N/A                             | N/A  |  |  |                           |                 |     |     |                            |                   |                                 |               |
| <u>Mitigation measures</u>      | <u>Risk level</u>  |  |  |                           |                 |     |     |                            |                   |                                 |               |
| No mitigation measures required | N/A  |  |  |                           |                 |     |     |                            |                   |                                 |               |

## 9 Swept Path Assessment Terminology

The detailed Swept Path Assessment (SPA) drawings for the locations assessed are provided in **Appendix C** for review. The drawings illustrate tracking undertaken for the worst-case loads at each location.

The colours illustrated on the swept paths are:

- Grey / Black – Ordnance Survey (OS) / topographical base mapping;
- Cyan – Indicative road edge;
- Green – Vehicle body swept path envelope;
- Red – Wheel swept path envelope;
- Magenta – Load swept path envelope.

Where mitigation works are required, the extents of the overrun and oversail areas are illustrated and fully detailed on the SPA drawings.

Please note that where SPA have been undertaken using OSI base mapping, AutoCAD based aerial mapping and historic topographical data, there can be errors in these data sources.

Where provided by the client, topographical data has been utilised. Please note that PF cannot accept liability for errors on the data source, be that OSI base mapping, aerial mapping, historic topographical surveys or client supplied data. Where applicable, mapping has been augmented with aerial imagery for illustration only. The accuracy of this mapping cannot be confirmed by PF.

Please note that transformer supplier guidance suggests that the minimum road width for the safe transport of AIL components is 4.5 m. All public roads and onsite access tracks should comply with this standard unless a relaxation has been agreed with suppliers.

The need to widen public roads will require engagement with the relevant road authority and may constitute permanent or temporary surfacing.

## 10 Summary

### 10.1 Summary of Route Survey Review

Pell Frischmann Consultants Limited (PF) have been commissioned by Renewable Energy Systems Ltd (RES) to undertake a Route Survey Review (RSR) to examine the issues associated with the transport of transformer Abnormal Indivisible Loads (AIL) associated with the development of Gortnalug 110 kV Substation, located south of Ballinasloe, County Galway.

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

The access review has been based upon a 120 MVA transformer and has been undertaken on the basis of neck 3-axle bed 6-axle (neck 3bed6) and neck 3-axle bed 5-axle (neck 3bed5) trailers.

RES requested PF consider two route options (routes 1 and 2) as the basis of this report, however, route 1 was ruled out an early stage due to the proximity of existing residential properties to the east of the L8408 in Kiltormer, which would prevent the loads from turning left onto the L4301 eastbound. Conflict with the residential properties would be avoided by utilising a residential garden to the west of the junction, however, it was deemed that third-party land uptake would not be approved at this location. Therefore, route 2 has been selected and assessed further within this report.

Route 2 travels south from M6 Junction to Killimor on N65, northbound on the L4322 to Attykee; and then eastbound on the L4301 en route to the site access junction via Kiltormer.

A review of the current structural capacity of the route has been carried out considerate of the transformer loaded onto both neck 3bed5 and neck 3bed6 trailers; Galway County Council (GCC) have advised that 11 structures will require further structural assessment before being approved for use by the neck 3bed5. A full response had not been received from Transport Infrastructure Ireland (TII) at the time of writing this report, however, limited correspondence advised that there are some structures on the N65 section of the route that would require further structural assessment before being approved for use by the proposed trailers.

The route from M6 Junction 16 to site is considered negotiable for the neck 3bed6 with areas of temporary load bearing surface, street furniture removals, special manoeuvres and full Garda escort.

No consideration has been given to the on-site transport and offloading of the transformer from the delivery vehicle following arrival on site as part of this report.

The report is presented to RES for consideration. Various road modifications and interventions are required to successfully access the site. If these are assessed, approved and undertaken; access to the site is considered feasible.

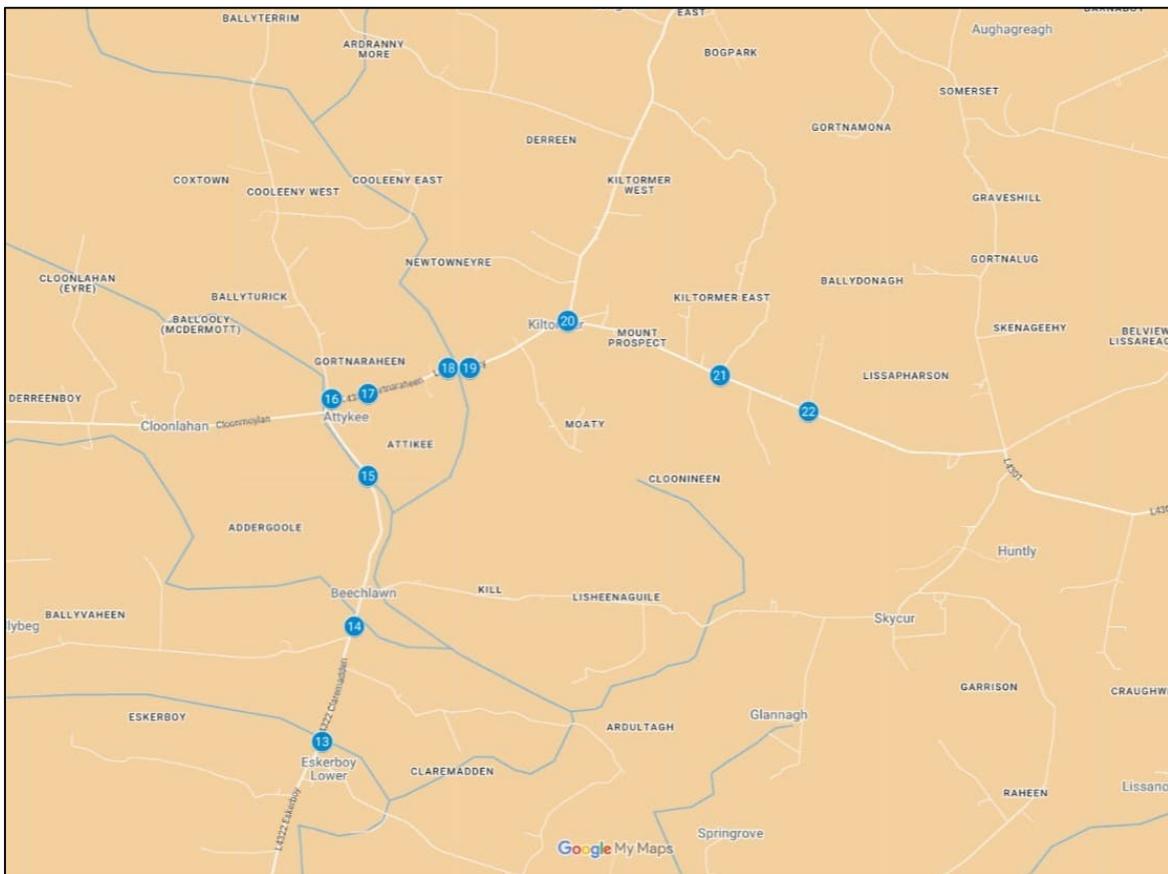
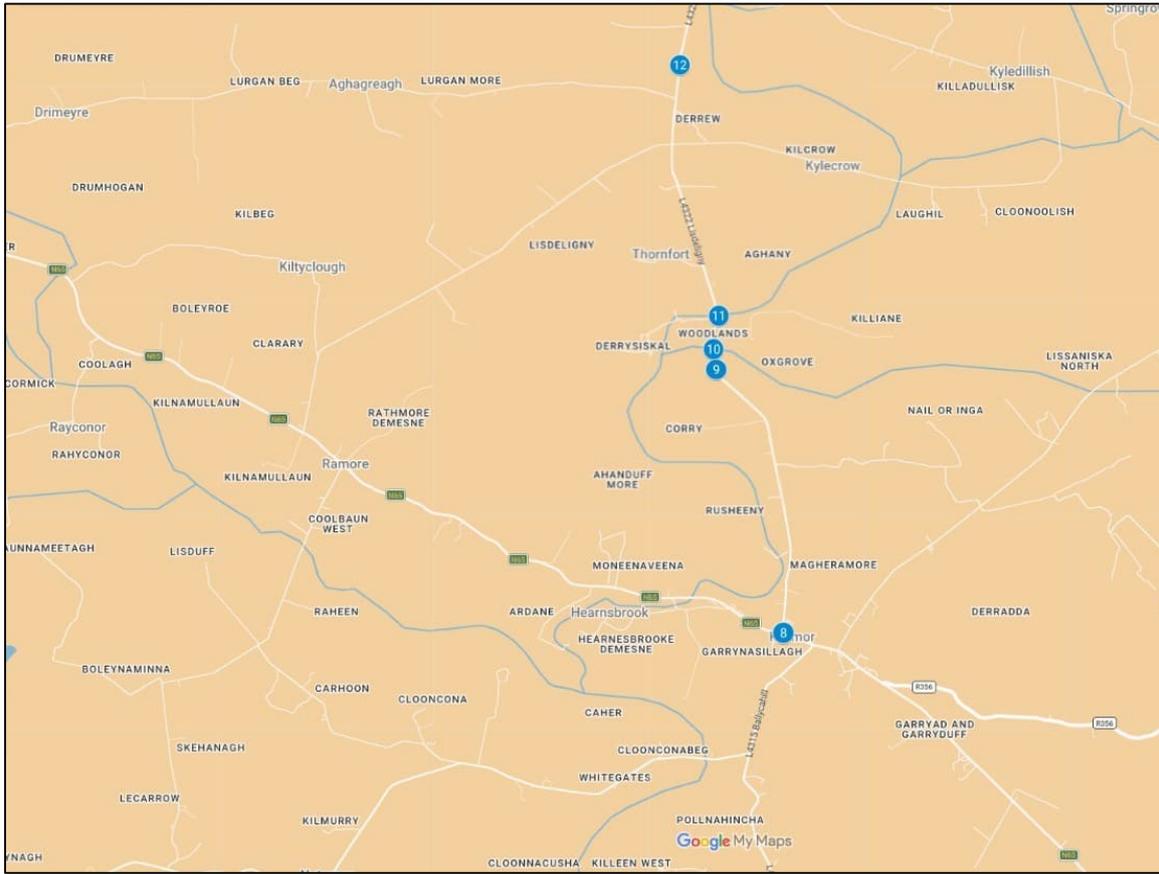
### 10.2 Further Actions

The following actions are recommended to pursue the transport and access issues further. This work can be undertaken post consent and prior to construction, once the delivery port for the transformer has been identified and the haulier commissioned.

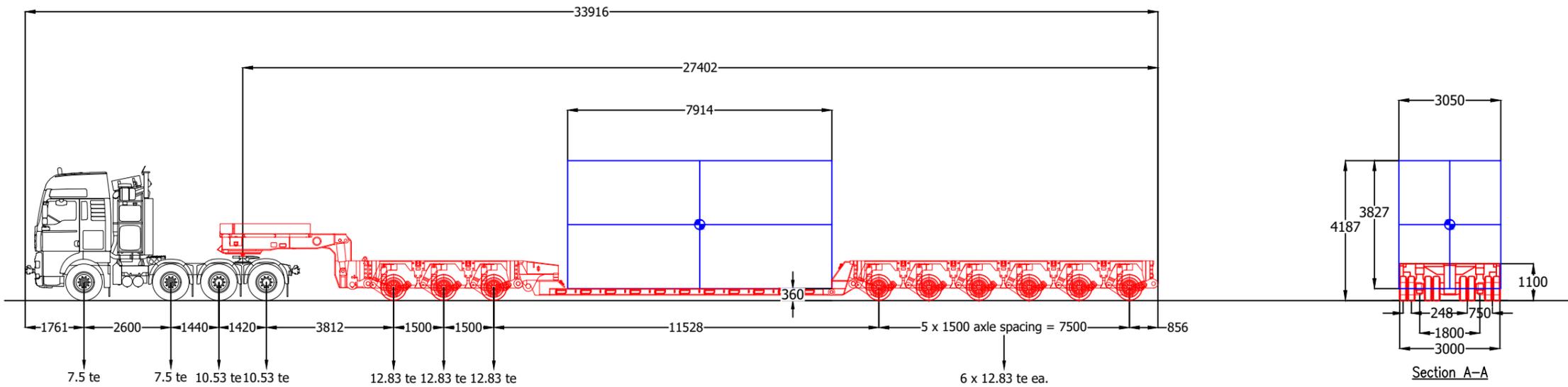
- Obtain responses from TII on current structural capability of the route to accommodate the proposed AILs;
- Undertake structural assessment of 11 structures identified by GCC;
- Undertake discussion with the affected utility providers and roads agencies;
- Prepare detailed mitigation design proposals to help inform the land option / consultee discussions;
- Obtain the necessary statutory licences to enable the mitigation measures; and
- Develop a detailed operational Transport Management Plan to assist in transporting the proposed loads.

## Appendix A Points Of Interest

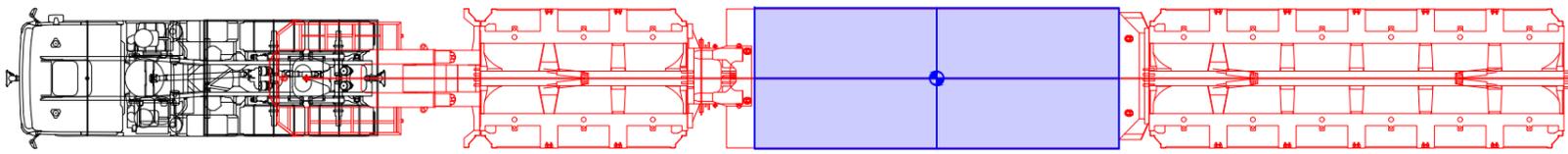




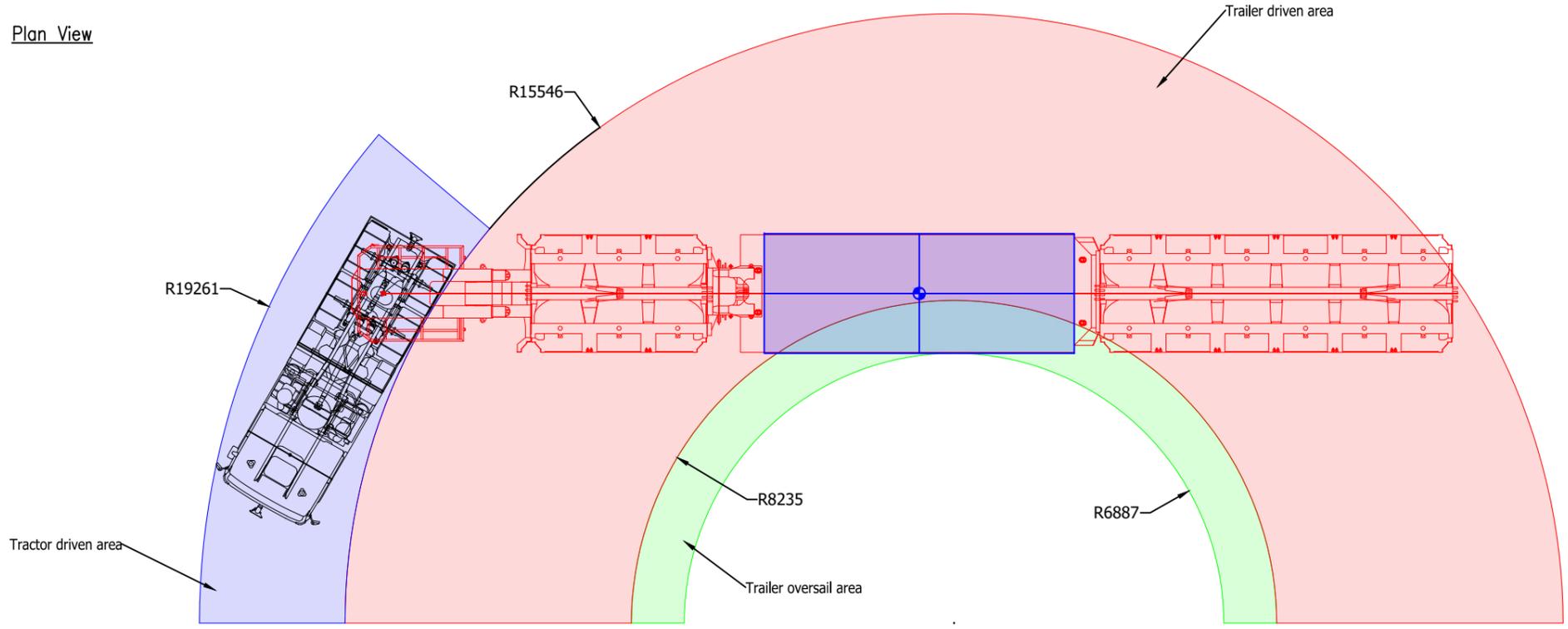
## Appendix B Transport Configuration



Elevation View



Plan View



Minimum Turning Radii

© Pell Frischmann

| LOAD TABLE  |        |
|---|--------|
| Load weight [te]  | 91.00  |
| Trailer weight [te]                                       | 46.53  |
| Tractor weight [te]                                       | 14.00  |
| Combined weight [te]                                      | 151.53 |
| Max. load per axle line [te]                              | 12.83  |
| Max. load per axle [te]                                   | 6.42   |
| Max. load per wheel [te]                                  | 1.60   |
| Max. overall ground bearing pressure [te/m <sup>2</sup> ] | 4.28   |

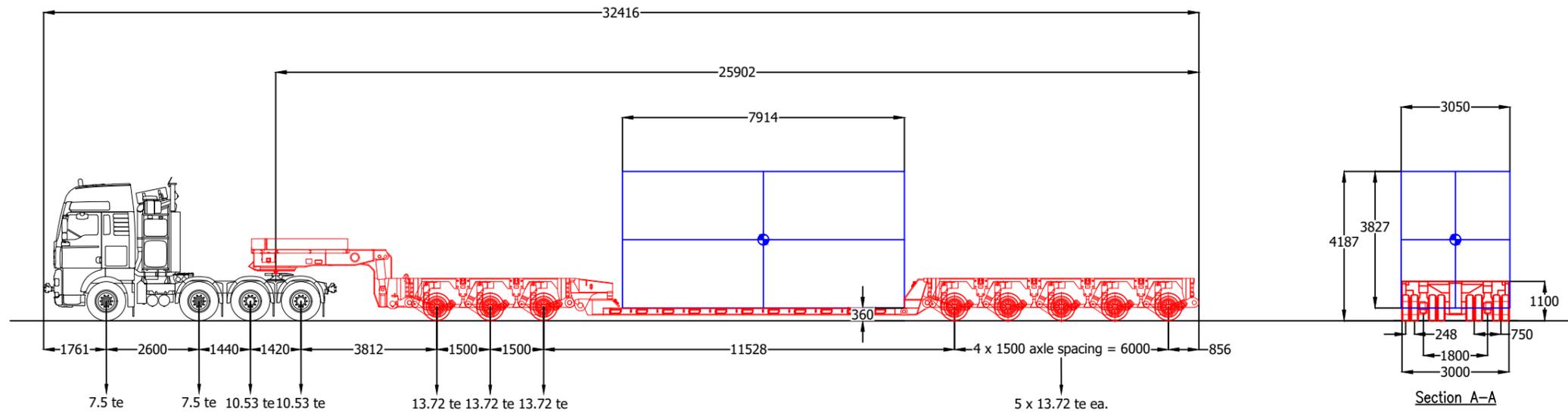
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Client: RES Ltd

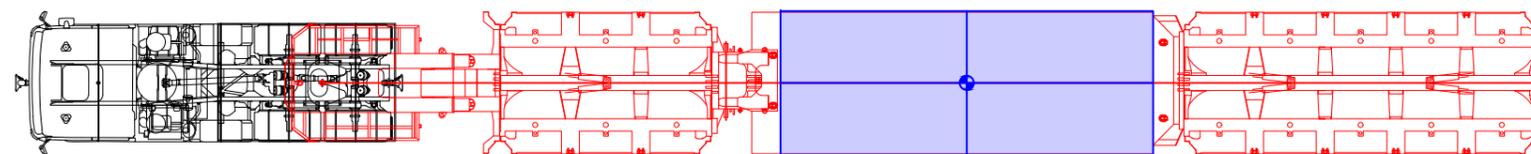
Project: 10110915 Gortnalug 110 kV Substation

Drawing Title: 91 te Transformer Neck 3-Axle Bed 6-Axle Transport Configuration

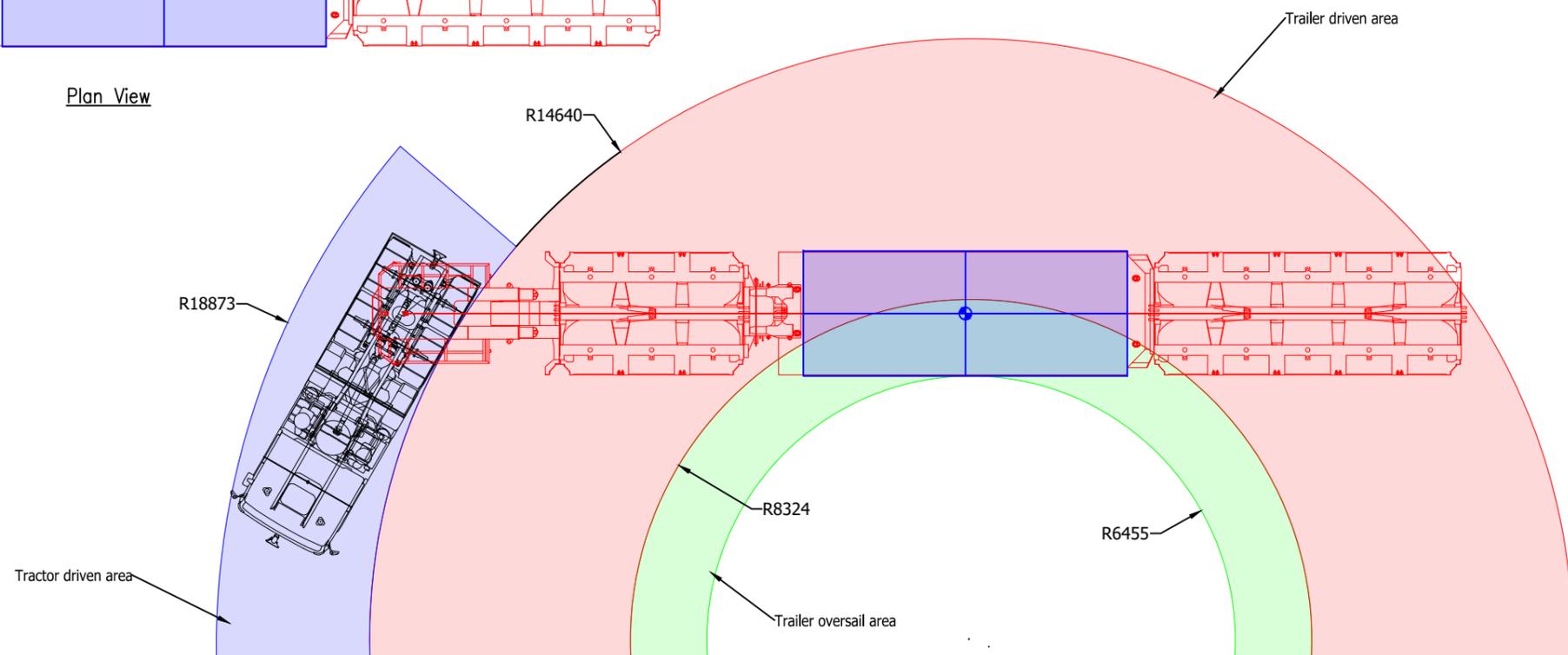
| Name   | Date       | Scale                         | Revision |
|--|------------|-------------------------------|----------|
| Drawn: SJW   | 02/12/2025 | DNS                           | 0        |
| Designed: SJW  | 02/12/2025 | Drawing No. 10110915-PF-TA-01 |          |
| Checked:   |            | Drawing Status: Final         |          |
| Notes:<br>1. All dimensions in millimetres, unless specified.<br>2. Assume central COG and transport lugs within dimensional envelope. |            |                               |          |



Section A-A



Plan View



Minimum Turning Radii

LOAD TABLE

|   |        |
|---|--------|
| Load weight [te]  | 91.00  |
| Trailer weight [te]                                       | 40.78  |
| Tractor weight [te]                                       | 14.00  |
| Combined weight [te]                                      | 145.78 |
| Max. load per axle line [te]                              | 13.72  |
| Max. load per axle [te]                                   | 6.86   |
| Max. load per wheel [te]                                  | 1.72   |
| Max. overall ground bearing pressure [te/m <sup>2</sup> ] | 4.57   |

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Project

10110915 Gortnalug 110 kV Substation

|          |      |            |                |                   |
|----------|------|------------|----------------|-------------------|
|          | Name | Date       | Scale          | DNS               |
| Drawn    | SJW  | 03/12/2025 | Drawing No.    | 10110915-PF-TA-02 |
| Designed | SJW  | 03/12/2025 | Drawing Status | Final             |
| Checked  |      |            |                |                   |

Client RES Ltd

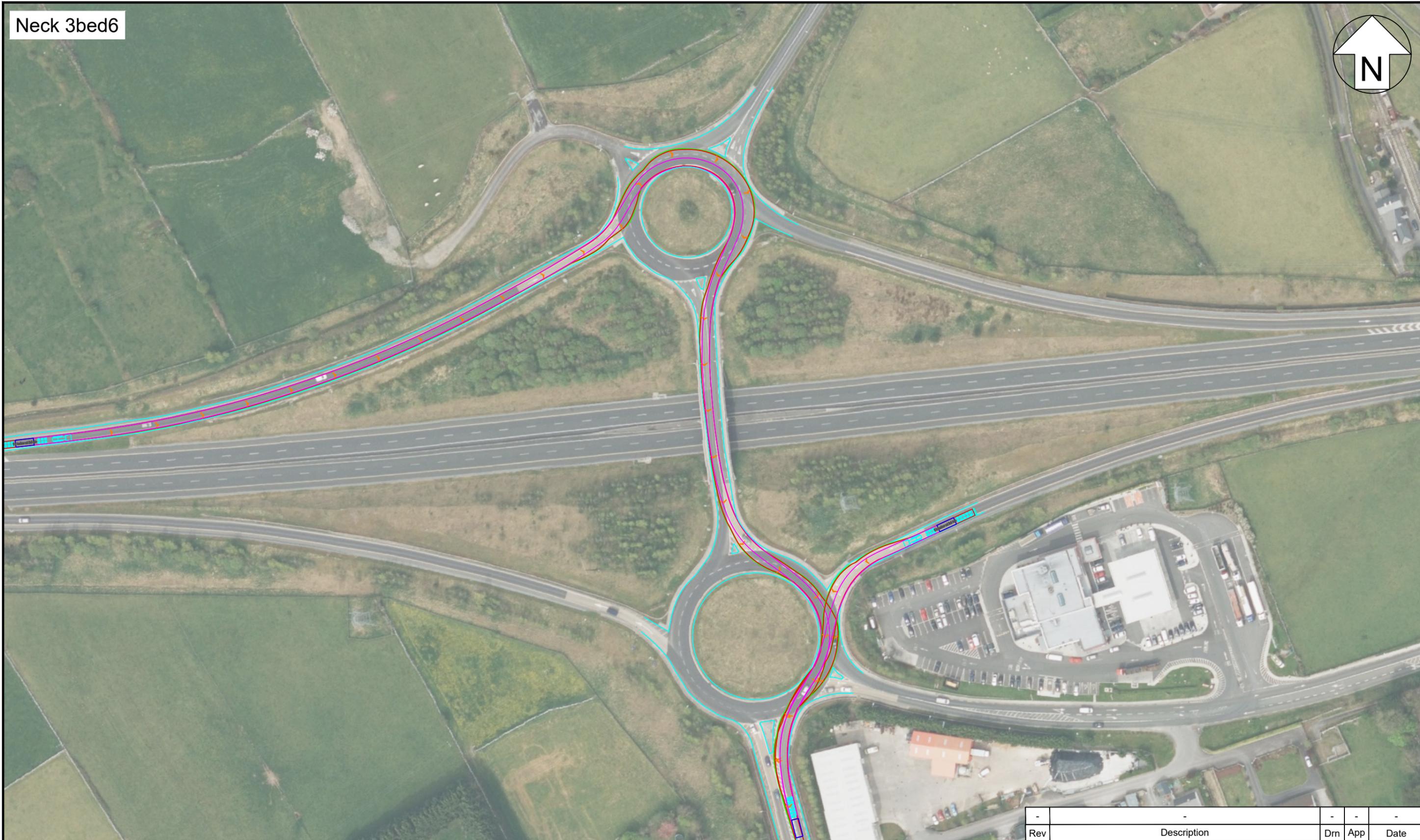
Drawing Title

91 te Transformer Neck 3-Axle Bed 5-Axle Transport Configuration

|  |          |
|--|----------|
| Notes:   | Revision |
| 1. All dimensions in millimetres, unless specified.<br>2. Assume central COG and transport lugs within dimensional envelope. | 0        |

## Appendix C Swept Path Assessments

Neck 3bed6



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Client **Renewable Energy Systems Limited**

Project **Gortnalug 110 kV Substation**

POI **1 - 4**

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

Drawing Title **91 te Transformer**

**M6 Jct 16 / N65 Interchange**

**NO MITIGATION REQUIRED**

|          |             |          |            |          |            |     |   |      |   |
|----------|-------------|----------|------------|----------|------------|-----|---|------|---|
| Rev      | -           |          |            | Drn      | -          | App | - | Date | - |
| Drawn    | TMcL        | Approved | SJW        | Date     | 02/03/2026 |     |   |      |   |
| Status   | Final       |          | Key        |          |            |     |   |      |   |
| Revision | 00          |          | Wheel SPA  | Overrun  |            |     |   |      |   |
| Scale    | 1:1500 @ A3 |          | Body SPA   | Oversail |            |     |   |      |   |
|          |             |          | Load SPA   | DoT      |            |     |   |      |   |
|          |             |          | Indicative |          |            |     |   |      |   |

Drawing No. **10110915 - PF - SPA - 01**

Neck 3bed6



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Client **Renewable Energy Systems Limited**

Project **Gortnalug 110 kV Substation**

POI **1 - 4**

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

Drawing Title **91 te Transformer**

**M6 Jct 16 / N65 Interchange**

**NO MITIGATION REQUIRED**

|             |                           |          |     |  |            |     |   |      |   |
|-------------|---------------------------|----------|-----|--|------------|-----|---|------|---|
| Rev         | -                         |          |     | Drn  | -          | App | - | Date | - |
| Drawn       | TMcL                      | Approved | SJW | Date   | 02/03/2026 |     |   |      |   |
| Status      | Final                     | Key      |     | Wheel SPA     Overrun<br>Body SPA     Oversail<br>Load SPA     DoT<br>Indicative |            |     |   |      |   |
| Revision    | 00                        |          |     |  |            |     |   |      |   |
| Scale       | 1:1500 @ A3               |          |     |  |            |     |   |      |   |
| Drawing No. | 10110915 - PF - SPA - 01A |          |     |  |            |     |   |      |   |

Neck 3bed6



Loads to controflow northbound lane.  
Traffic controls required.



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Client: **Renewable Energy Systems Limited**

Project: **Gortnalug 110 kV Substation**

Drawing Title: **91 te Transformer**

POI: **5** SPA Location: **N65 Monearmore Roundabout**

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

| Rev | Description | Drn | App | Date |
|-----|-------------|-----|-----|------|
| -   | -           | -   | -   | -    |

Drawn: **TMcL** Approved: **SJW** Date: **02/03/2026**

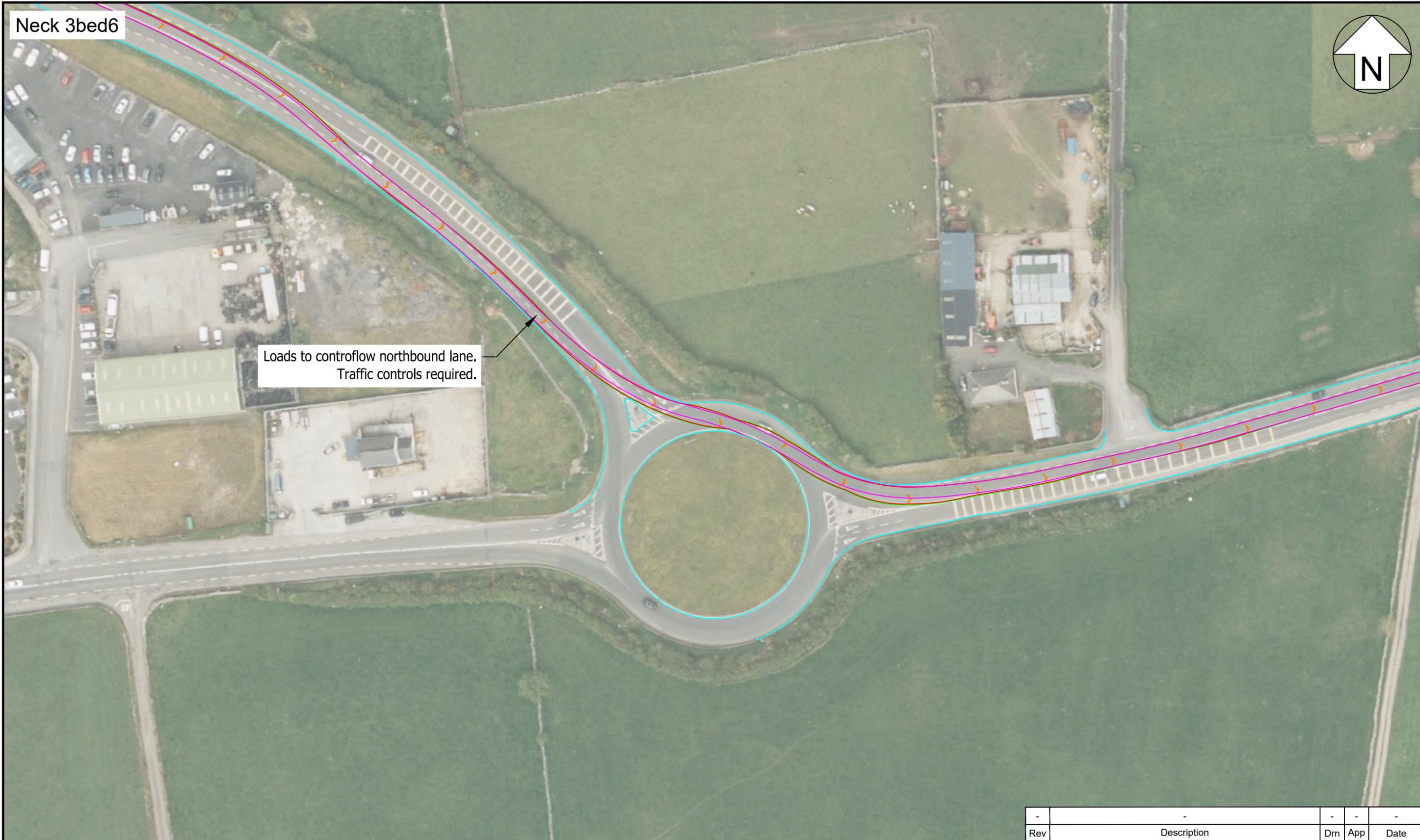
| Status   | Final       | Key        |          |
|----------|-------------|------------|----------|
| Revision | 00          | Wheel SPA  | Overrun  |
| Scale    | 1:1000 @ A3 | Body SPA   | Oversail |
|          |             | Load SPA   | DoT      |
|          |             | Indicative |          |

Drawing No. **10110915 - PF - SPA - 02**

Neck 3bed6



Loads to controflow northbound lane.  
Traffic controls required.



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Client **Renewable Energy Systems Limited**

Project **Gortnalug 110 kV Substation**

POI **6** SPA Location **N65 Fairfield Roundabout**

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

Drawing Title **91 te Transformer**

|       |      |          |     |      |            |      |
|-------|------|----------|-----|------|------------|------|
| Rev   | -    |          |     | Drn  | App        | Date |
| Drawn | TMcL | Approved | SJW | Date | 02/03/2026 |      |

|          |             |  |
|----------|-------------|--|
| Status   | Final       | <b>Key</b><br><span style="color: red;">—</span> Wheel SPA <span style="border: 1px solid red; padding: 2px;"> </span> Overrun<br><span style="color: green;">—</span> Body SPA <span style="border: 1px solid blue; padding: 2px;"> </span> Oversail<br><span style="color: magenta;">—</span> Load SPA <span style="color: orange;">↙</span> DoT<br><span style="color: cyan;">—</span> Indicative |
| Revision | 00          |  |
| Scale    | 1:1000 @ A3 |  |

Drawing No. **10110915 - PF - SPA - 03**

Neck 3bed6



Loads to contraflow junction.

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Client **Renewable Energy Systems Limited**

Project **Gortnalug 110 kV Substation**

POI **7**

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

Drawing Title **91 te Transformer**

**N65 / R446 junction**

|             |                          |          |            |          |            |      |
|-------------|--------------------------|----------|------------|----------|------------|------|
| Rev         | -                        |          |            | Drn      | App        | Date |
| Drawn       | TMcL                     | Approved | SJW        | Date     | 02/03/2026 |      |
| Status      | Final                    |          | Key        |          |            |      |
| Revision    | 00                       |          | Wheel SPA  | Overrun  |            |      |
| Scale       | 1:500 @ A3               |          | Body SPA   | Oversail |            |      |
| Drawing No. | 10110915 - PF - SPA - 04 |          |            |          |            |      |
|             |                          |          | Load SPA   | DoT      |            |      |
|             |                          |          | Indicative |          |            |      |

Mitigation



Loads to contraflow junction.

Temporary load bearing surface to be laid. One bollard to be removed.

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Client **Renewable Energy Systems Limited**

Project **Gortnalug 110 kV Substation** Drawing Title **91 te Transformer**

POI **7** SPA Location **N65 / R446 junction**

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

|             |                           |          |           |          |            |      |
|-------------|---------------------------|----------|-----------|----------|------------|------|
| Rev         | -                         |          |           | Drn      | App        | Date |
| Drawn       | TMcL                      | Approved | SJW       | Date     | 02/03/2026 |      |
| Status      | Final                     |          | Key       |          |            |      |
| Revision    | 00                        |          | Wheel SPA | Overrun  |            |      |
| Scale       | 1:500 @ A3                |          | Body SPA  | Oversail |            |      |
| Drawn       | TMcL                      |          | Load SPA  | DoT      |            |      |
| Drawing No. | 10110915 - PF - SPA - 04A |          |           |          |            |      |



Electrical box noted during site visit not included on topographical survey. Indicative size and position shown only.

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Client **Renewable Energy Systems Limited**

|         |                             |              |                      |                   |  |
|---------|-----------------------------|--------------|----------------------|-------------------|--|
| Project | Gortnalug 110 kV Substation |              | Drawing Title        | 91 te Transformer |  |
| POI     | 8                           | SPA Location | N65 / L4322 junction |                   |  |

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

|             |                          |          |     |      |  |     |   |      |   |
|-------------|--------------------------|----------|-----|------|--|-----|---|------|---|
| Rev         | -                        |          |     | Drn  | -  | App | - | Date | - |
| Drawn       | TMcL                     | Approved | SJW | Date | 02/03/2026   |     |   |      |   |
| Status      | Final                    |          | Key |      | — Wheel SPA       Overrun<br>— Body SPA       Oversail<br>— Load SPA<br>— Indicative       DoT |     |   |      |   |
| Revision    | 00                       |          |     |      |  |     |   |      |   |
| Scale       | 1:500 @ A3               |          |     |      |  |     |   |      |   |
| Drawing No. | 10110915 - PF - SPA - 05 |          |     |      |  |     |   |      |   |



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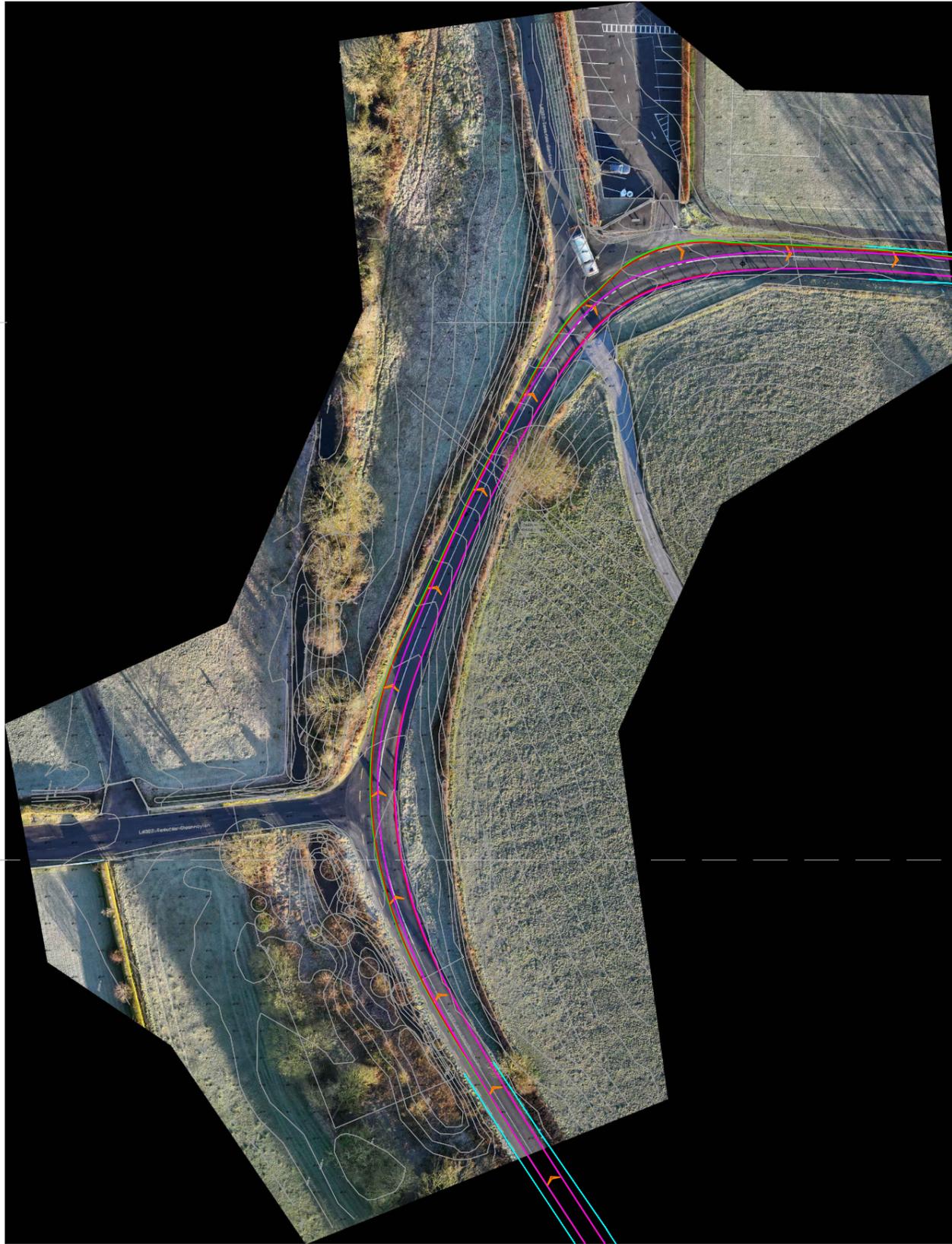
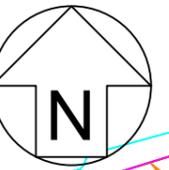
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Client **Renewable Energy Systems Limited**

|   |   |   |  |
|---|---|---|--|
| Project<br><b>Gortnalug 110 kV Substation</b> |   | Drawing Title<br><b>91 te Transformer</b> |  |
| POI<br><b>8</b>                               | SPA Location<br><b>N65 / L4322 junction</b> |   |  |

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

|             |             |                                  |          |      |            |      |
|-------------|-------------|----------------------------------|----------|------|------------|------|
| Rev         | Description |                                  |          | Drn  | App        | Date |
| Drawn       | TMcL        | Approved                         | SJW      | Date | 02/03/2026 |      |
| Status      | Final       | Key                              |          |      |            |      |
| Revision    | 00          | Wheel SPA                        | Overrun  |      |            |      |
| Scale       | 1:500 @ A3  | Body SPA                         | Oversail |      |            |      |
|             |             | Indicative                       | DoT      |      |            |      |
| Drawing No. |             | <b>10110915 - PF - SPA - 05A</b> |          |      |            |      |



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Client **Renewable Energy Systems Limited**

Project **Gortnalug 110 kV Substation**

POI **16**

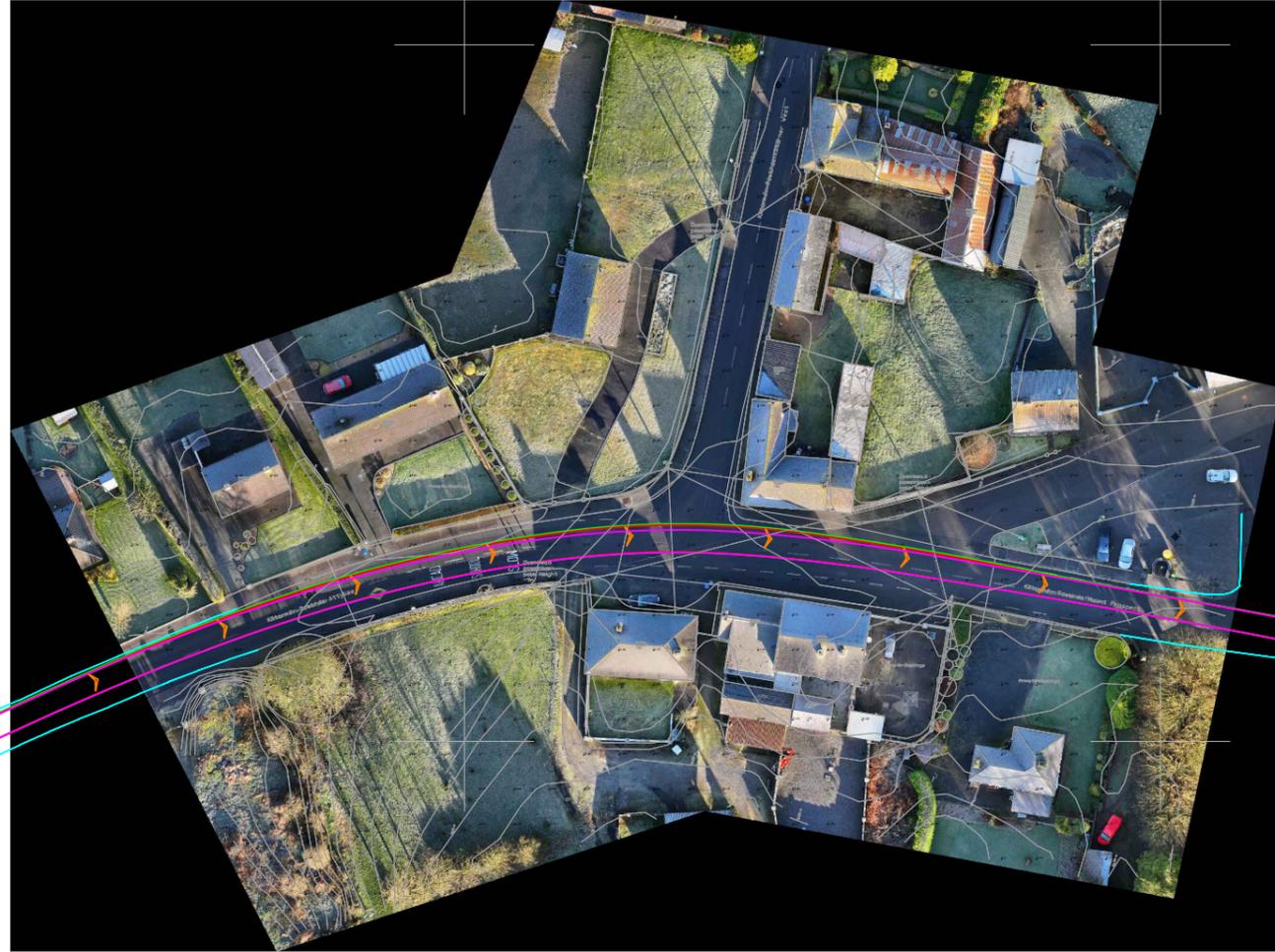
Notes  
 1. All mitigation is subject to confirmation through a test run.  
 2. This is not a construction drawing and is intended for illustration purposes only.  
 3. Do not scale from this drawing.

Drawing Title **91 te Transformer**

**L4322 / L4301 junction**

**NO MITIGATION REQUIRED**

|             |                          |          |           |          |            |      |
|-------------|--------------------------|----------|-----------|----------|------------|------|
| Rev         | -                        |          |           | Drn      | App        | Date |
| Drawn       | TMcL                     | Approved | SJW       | Date     | 02/03/2026 |      |
| Status      | Final                    |          | Key       |          |            |      |
| Revision    | 00                       |          | Wheel SPA | Overrun  |            |      |
| Scale       | 1:1000 @ A3              |          | Body SPA  | Oversail |            |      |
| Drawn       | TMcL                     |          | Load SPA  | DoT      |            |      |
| Drawing No. | 10110915 - PF - SPA - 06 |          |           |          |            |      |



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|         |   |               |   |
|---------|---|---------------|---|
| Project | Gortnalug 110 kV Substation   | Drawing Title | 91 te Transformer   |
| POI     | 20  | SPA Location  | L4301 / L8408 Kiltormer RH bend <b>NO MITIGATION REQUIRED</b> |
| Notes   | 1. All mitigation is subject to confirmation through a test run.<br>2. This is not a construction drawing and is intended for illustration purposes only.<br>3. Do not scale from this drawing. |               |   |

|          |       |             |             |   |            |     |   |      |   |
|----------|-------|-------------|-------------|---|------------|-----|---|------|---|
| Rev      | -     | Description | -           | Drn   | -          | App | - | Date | - |
| Drawn    | TMcL  | Approved    | SJW         | Date  | 02/03/2026 |     |   |      |   |
| Status   | Final | Key         |             | — Wheel SPA  Overrun<br>— Body SPA  Oversail<br>— Load SPA  DoT<br>— Indicative |            |     |   |      |   |
| Revision | 00    | Scale       | 1:1000 @ A3 | Drawing No. 10110915 - PF - SPA - 07  |            |     |   |      |   |

Client **Renewable Energy Systems Limited**



**From:** John Connor, Galway County Council  
**Sent:** 11 December 2025 15:28  
**To:** Sally Weston  
**Cc:** Abnormal Load Permit  
**Subject:** RE: Abnormal load structural feasibility enquiry

Hi Sally,

The following is a non-exhaustive list of structures on the route from the site to the N65.

| Bridge Name           | Road Section |
|-----------------------|--------------|
| Cloonineen Bridge     | L-4301-11    |
| Moaty Townland Bridge | L-4304-1     |
| Attikee Bridge        | L-4304-1     |
| Attikee Bridge 2      | L-4304-1     |
| Attikee Bridge 3      | L-4322-0     |
| Claremadden Bridge    | L-4322-14    |
| Claremadden Bridge 2  | L-4322-19    |
| Derrew Bridge         | L-4322-29    |
| Oxgrove Bridge        | L-4322-44    |
| Oxgrove Bridge 2      | L-4322-53    |

Please see attached maps showing their respective locations.

You will have to get an independent engineering assessment on each of these structures and any others you find along the route to ensure they are capable of withstanding the envisaged loading that will be transversing them. These will need to be issued to the LA for review prior to application for the abnormal load permit.

Regards,  
John



**Comhairle Chontae na Gaillimhe**  
**Galway County Council**

**From:** THOMAS KERR (NRDO)  
**Sent:** 09 January 2026 14:27  
**To:** Sally Weston  
**Cc:** ROGER RYAN (NRDO); JAMES LEONARD (NRDO); Fergal Cahill, TII  
**Subject:** FW: 10110915 Gortnalug BESS 91 te transformer structural feasibility request

Sally,

Roger, James and I work in bridge management of national roads, non-PPP, in the Northwest region. I'm not sure if someone has been in contact with you re the below. The permit for transportation of these types of loads on public road issues from the respective local authority. When you have arranged contact with the relevant people in the local authority can you please keep us involved in your communications so that we can advise on any national roads bridges requirements.

Just to note the map shown in the email below is different to that provided in the link. We would have some concerns about the transportation of abnormal loads over bridges along the N65, shown on the map below and not on the Google maps link, between the junction of the N65/R446 and the turnoff at Killimor.

Thanks,

Thomas



---

**From:** Martin Bourke, TII  
**Sent:** Thursday 18 December 2025 10:41  
**To:** Fergal Cahill, TII  
**Subject:** FW: 10110915 Gortnalug BESS 91 te transformer structural feasibility request

**From:** Martin Bourke, TII  
**Sent:** Thursday 18 December 2025 10:15  
**To:** Sean Hollywood, TII; Brian McHugh, TII; James Dowling, TII  
**Cc:** Daniel Pentony, TII  
**Subject:** RE: 10110915 Gortnalug BESS 91 te transformer structural feasibility request

All,

TII has no role in granting abnormal load permits with the responsibility resting with the relevant LAs which would appear to be Galway City and Galway County in this case.

On application to the LA's, TII and our agents (MMaRC & PPPs) may be consulted as required if the proposed route impacts National Roads but again the permit issues directly from the relevant LA.

For information, the DOT has issued guidance (RW18 2024) to LAs and indeed hauliers on the process to be followed for all abnormal/exceptional abnormal loads.

This RW18 process is attached for ease of reference.

Regards,  
Martin



**From:** Sean Hollywood, TII  
**Sent:** Thursday 18 December 2025 09:39  
**To:** Martin Bourke, TII; Brian McHugh, TII; James Dowling, TII  
**Cc:** Daniel Pentony, TII  
**Subject:** FW: 10110915 Gortnalug BESS 91 te transformer structural feasibility request

**From:** Abnormal Load, MTCC  
**Sent:** Tuesday 16 December 2025 13:55  
**To:** Sean Hollywood, TII  
**Cc:** MOCC Supervisors, ERT0; Daniel Pentony, TII  
**Subject:** FW: 10110915 Gortnalug BESS 91 te transformer structural feasibility request

Hi Sean,  
Was hoping you might have a contact that we could provide RE the below?

Best,  
Eamonn  
**The Abnormal Load Team**  
**Motorway Traffic Control Centre**  
**Egis Road & Tunnel Operation Ireland**



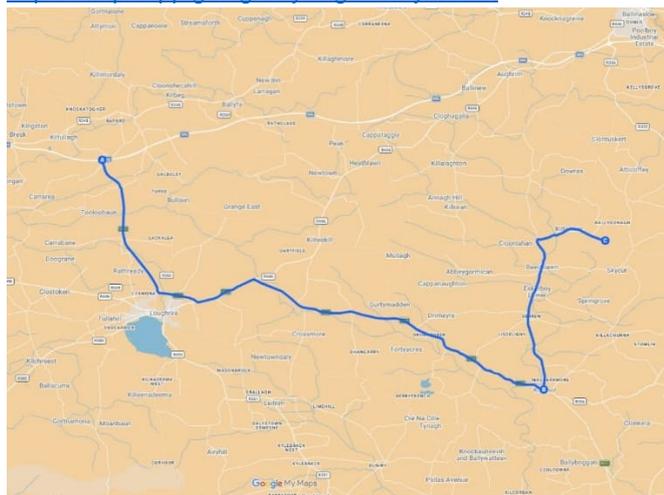
---

**From:** Sally Weston  
**Sent:** Thursday 11 December 2025 16:27  
**To:** Abnormal Load MTCC  
**Subject:** 10110915 Gortnalug BESS 91 te transformer structural feasibility request

Good afternoon,  
We are currently undertaking a route feasibility study for the delivery of 91 te transformers loaded onto a neck 3bed5 trailer from Port of Galway to a site to the south of Dunlo. The transport configuration drawing is attached.

The route that we are assessing is as follows:

<https://maps.app.goo.gl/7ayw2gEmhPyikx9P9>



The study is at an early stage, and we are conducting physical negotiability checks, however, please could you advise on the current structural feasibility of the chosen route for these dimensions? A more detailed assessment will be undertaken once a haulier has been appointed.

Many thanks,  
Sally  
**Sally Weston MRINA CEng**  
**Associate**  
**Pell Frischmann**