CONSTANT ENERGY LIMITED

TIRAWLEY WIND FARM

COUNTY MAYO

TURBINE DELIVERY ROUTE REPORT

April 2026

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DOCUMENT APPROVAL

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CONTENTS

1 INTRODUCTION

Jennings O'Donovan was engaged by the Developer to conduct a review and assessment of the Turbine Delivery Route (TDR) for the Wind Farm Site.

The Wind Farm Site is located ~14.5 km northwest of Ballina Town, ~5.2 km northwest of the village of Killala and ~4 km east of Ballycastle village in north Mayo with a total area of ~108.06 ha. The Wind Farm Site is accessed via local public roads which branch off the R314 which joins Killala in the southeast to Ballycastle in the northwest. These local public roads serve numerous dwellings and associated farm buildings scattered in lands surrounding the Wind Farm Site. (**Figure 1 – Site Location Map**).

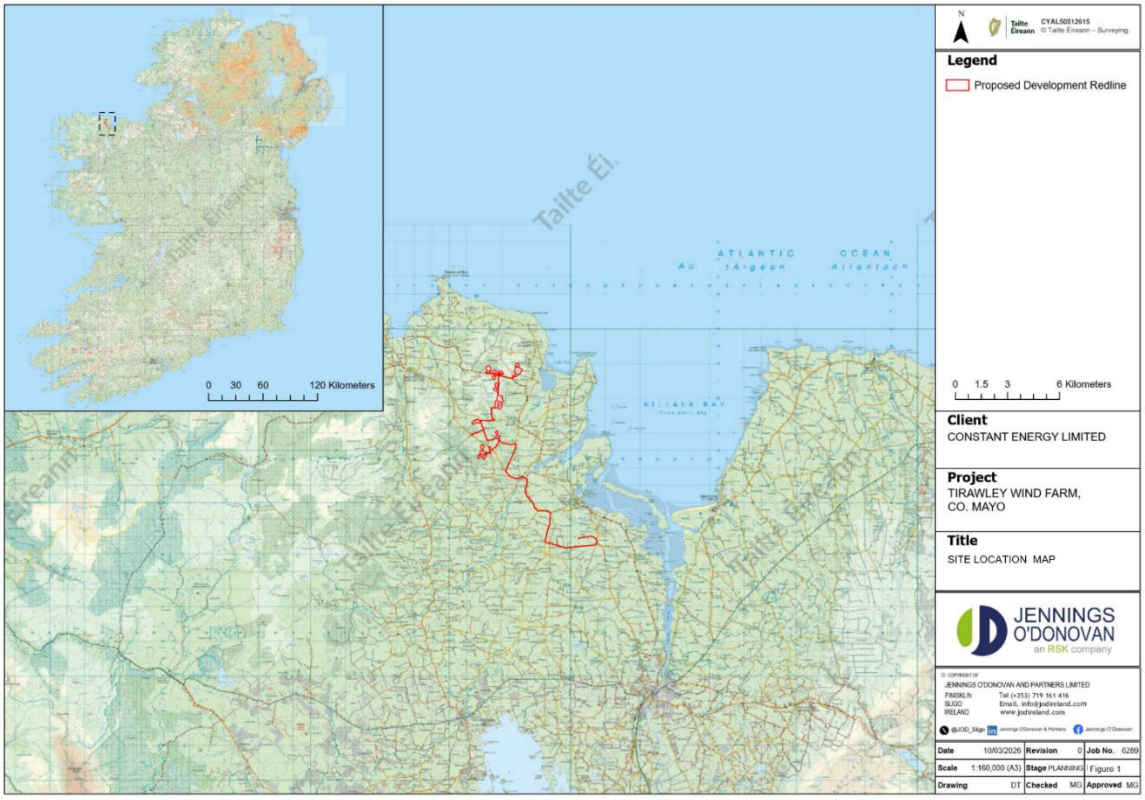

Figure 1 - Site Location Map

2 ASSESSMENT SCOPE

This assessment establishes origin-to-destination (port to Wind Farm Site) routes. It is assumed the unloaded vehicle can return via the same route due to reduced profile post-unloading. Three TDRs were assessed, all sharing a common final section from Ballina Town to the Wind Farm Site. The TDR from the port of Killybegs to Ballina (TDR Option 1) have been previously proven for turbine component delivery to other wind farm projects in the area, notably Oweninny Wind Farm. This preliminary assessment addresses:

2.1 VISUAL ASSESSMENT

A desktop review was undertaken to identify pinch points along the TDR. This was supplemented by site visits and documented with photos.

2.2 SWEPTH PATH ANALYSIS

An AutoTrack model was developed for this assessment. A Vesta V117 turbine blade measuring 57.2 m in length, each with additional overhang on a trailer, was used to track the path from Ballina Town Co. Mayo to the Wind Farm Site. **Refer to Figure 2 - Typical Turbine Delivery Vehicle (V117 Blade).**

Pinch points along the route were identified using aerial photography, available topographical survey data and site visits. The Swept Path analysis is illustrated in drawings included below in **Table 1**.

Table 1 - Swept Path Analysis Drawings

DRAWING NO.	TITLE
TIR-AT-BA-00B	Autotrack Analysis Ballina to Site Pinch Points Overall
TIR-AT-BA-001	Autotrack Analysis Ballina to Site Pinch Point 1
TIR-AT-BA-002	Autotrack Analysis Ballina to Site Pinch Point 2
TIR-AT-BA-003	Autotrack Analysis Ballina to Site Pinch Point 3
TIR-AT-BA-004	Autotrack Analysis Ballina to Site Pinch Point 4
TIR-AT-BA-005	Autotrack Analysis Ballina to Site Pinch Point 5
TIR-AT-BA-006	Autotrack Analysis Ballina to Site Pinch Point 6
TIR-AT-BA-007	Autotrack Analysis Ballina to Site Pinch Point 7
TIR-AT-BA-008	Autotrack Analysis Ballina to Site Pinch Point 8
TIR-AT-BA-009	Autotrack Analysis Ballina to Site Pinch Point 9
TIR-AT-BA-010	Autotrack Analysis Ballina to Site Pinch Point 10
TIR-AT-BA-011	Autotrack Analysis Ballina to Site Pinch Point 11
TIR-AT-BA-012	Autotrack Analysis Ballina to Site Pinch Point 12
TIR-AT-BA-013	Autotrack Analysis Ballina to Site Pinch Point 13
TIR-AT-BA-014	Autotrack Analysis Ballina to Site Pinch Point 14
~~TIR-AT-BA-015~~	~~Autotrack Analysis Ballina to Site Pinch Point 15*~~
~~TIR-AT-BA-016~~	~~Autotrack Analysis Ballina to Site Pinch Point 16*~~
TIR-AT-BA-017	Autotrack Analysis Ballina to Site Pinch Point 17
TIR-AT-BA-018	Autotrack Analysis Ballina to Site Pinch Point 18
TIR-AT-BA-019	Autotrack Analysis Ballina to Site Pinch Point 19
TIR-AT-BA-020	Autotrack Analysis Ballina to Site Pinch Point 20
TIR-AT-BA-021	Autotrack Analysis Ballina to Site Pinch Point 21

***Note Drawing No. TIR-AT-BA-015 and TIR-AT-BA-016 are obsolete and deleted.**

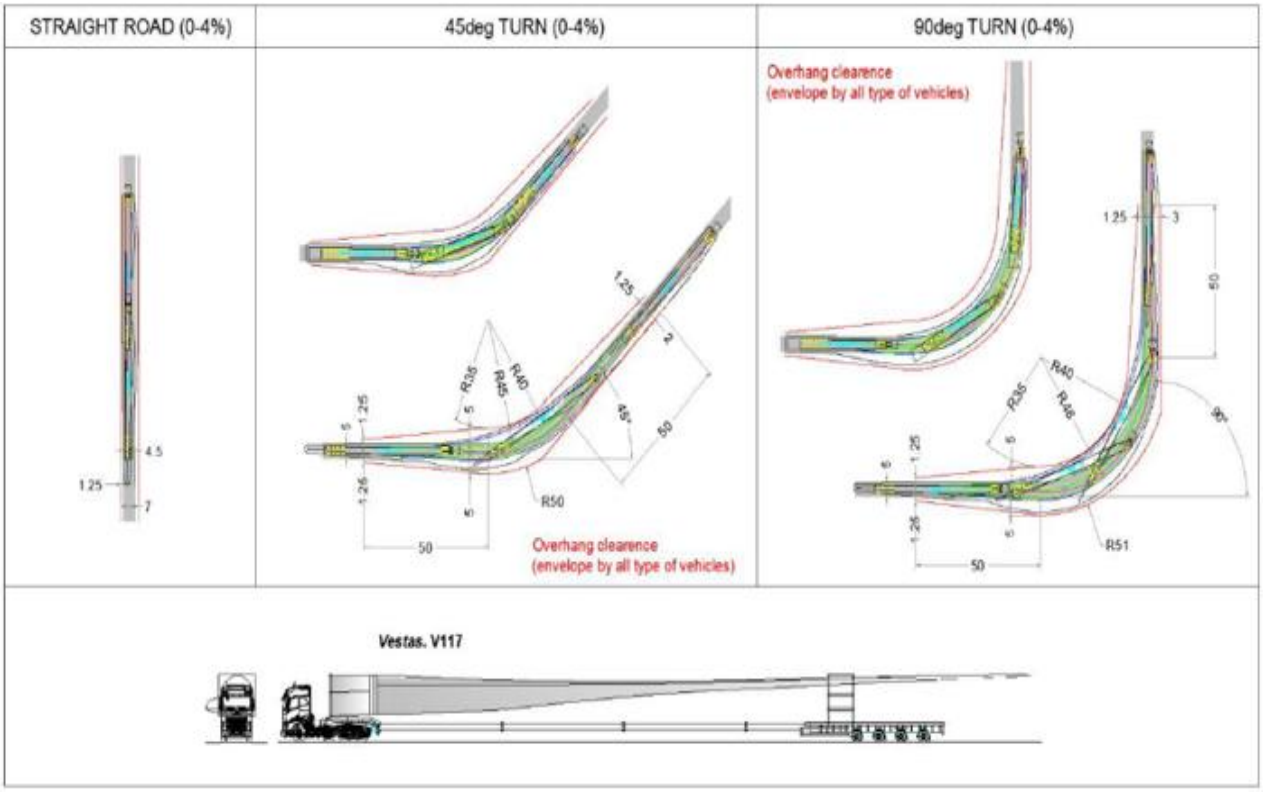

Figure 2: Typical Turbine Delivery Vehicle (Vestas V117 Blade)

2.3 ROUTE CONSTRAINTS

Figure 3 below highlights the typical road width and clearances that is required for the delivery of WTG towers. A total of 16 no. wind turbines delivered to the Wind Farm Site, consisting of Vestas V117 (4.3 MW).

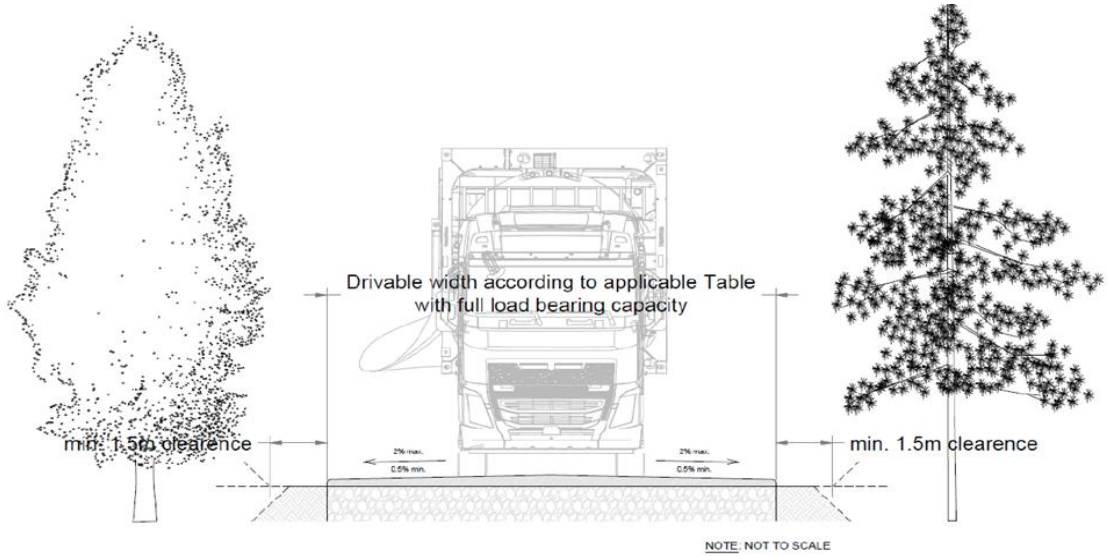

Figure 3 – Typological Examples of Access/Site Road Cross Sections

A minimum internal horizontal radius (Rint.min) of 40 m is always required on bends for the transport of Vestas blades, up to and including the Vestas V136 model.

The road length for the transition from a drivable road width value shall be at least 50 m (for instance to move from the road width of a straight section to the increased road width of a curve and vice-versa).

2.4 TURBINE DELIVERY ROUTE SELECTION

Three separate TDRs to the Wind Farm Site were assessed:

- TDR Option 1 – Killybegs Harbour, County Donegal to the Wind Farm Site (**Figure 4**)
- TDR Option 2 – Galway Port, County Galway to the Wind Farm Site (**Figure 5**)
- TDR Option 3 – Foynes Port, County Limerick to the To the Wind Farm Site (**Figure 6**)

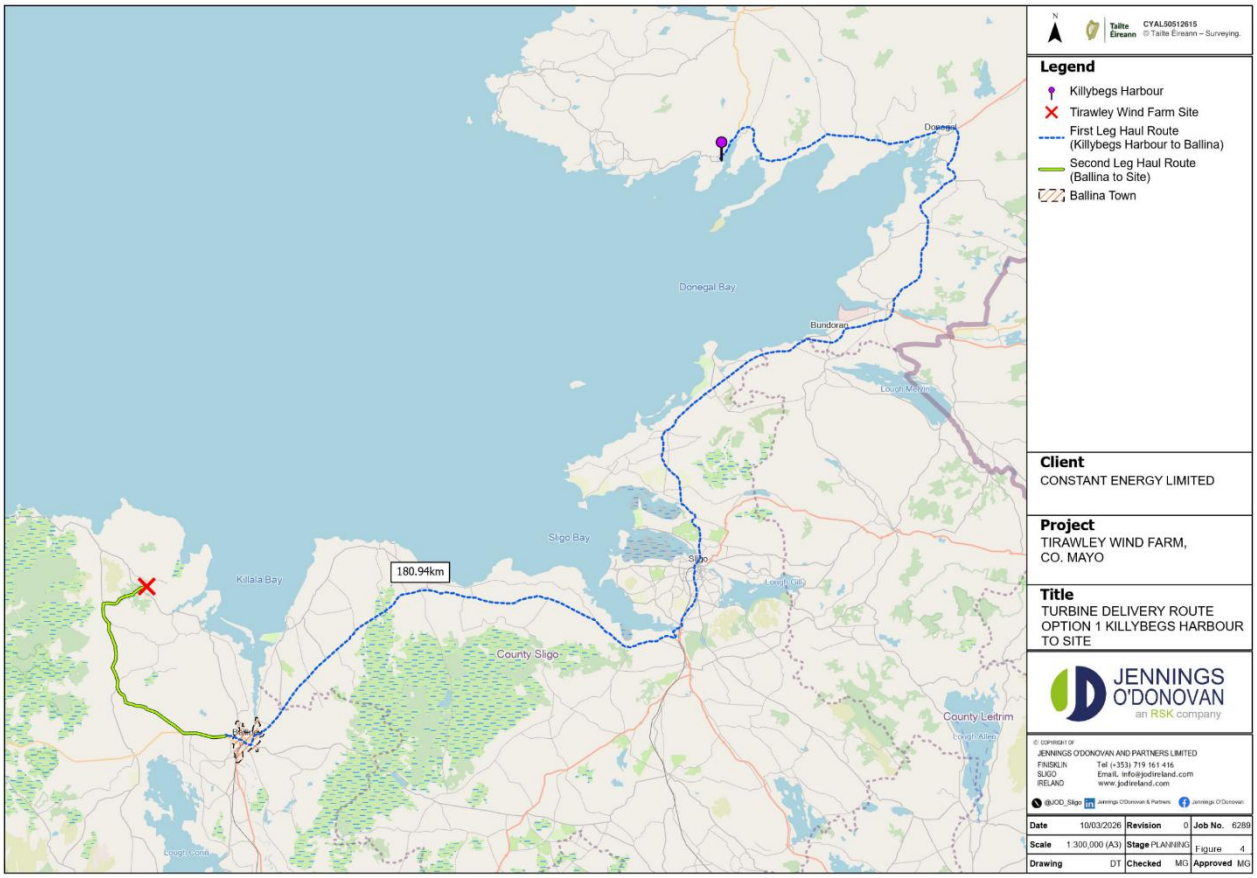

Figure 4 - TDR Option 1 – Killybegs Harbour, County Donegal to the Wind Farm Site

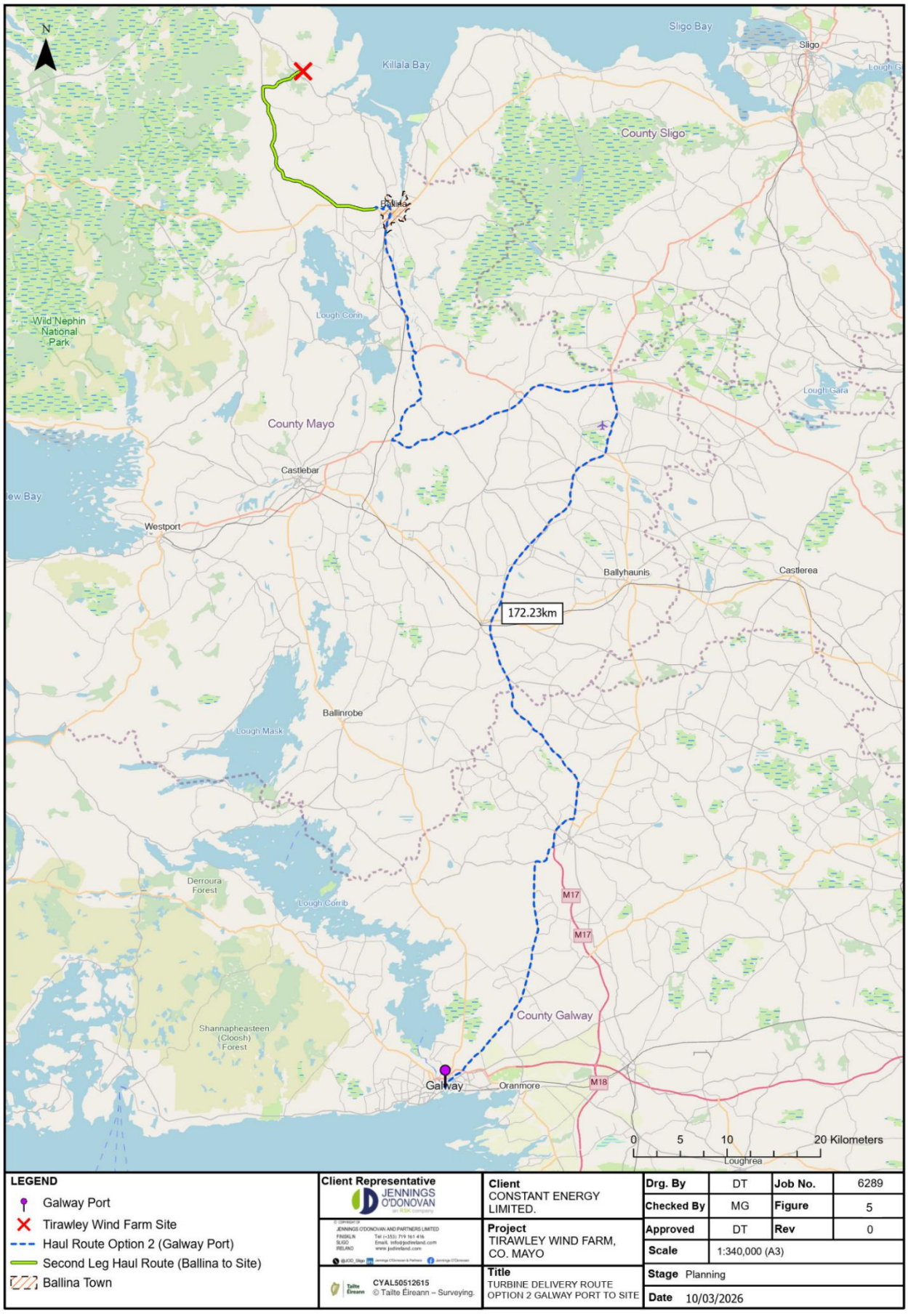

Figure 5 - TDR Option 2 – Galway Port, County Galway to the Wind Farm Site

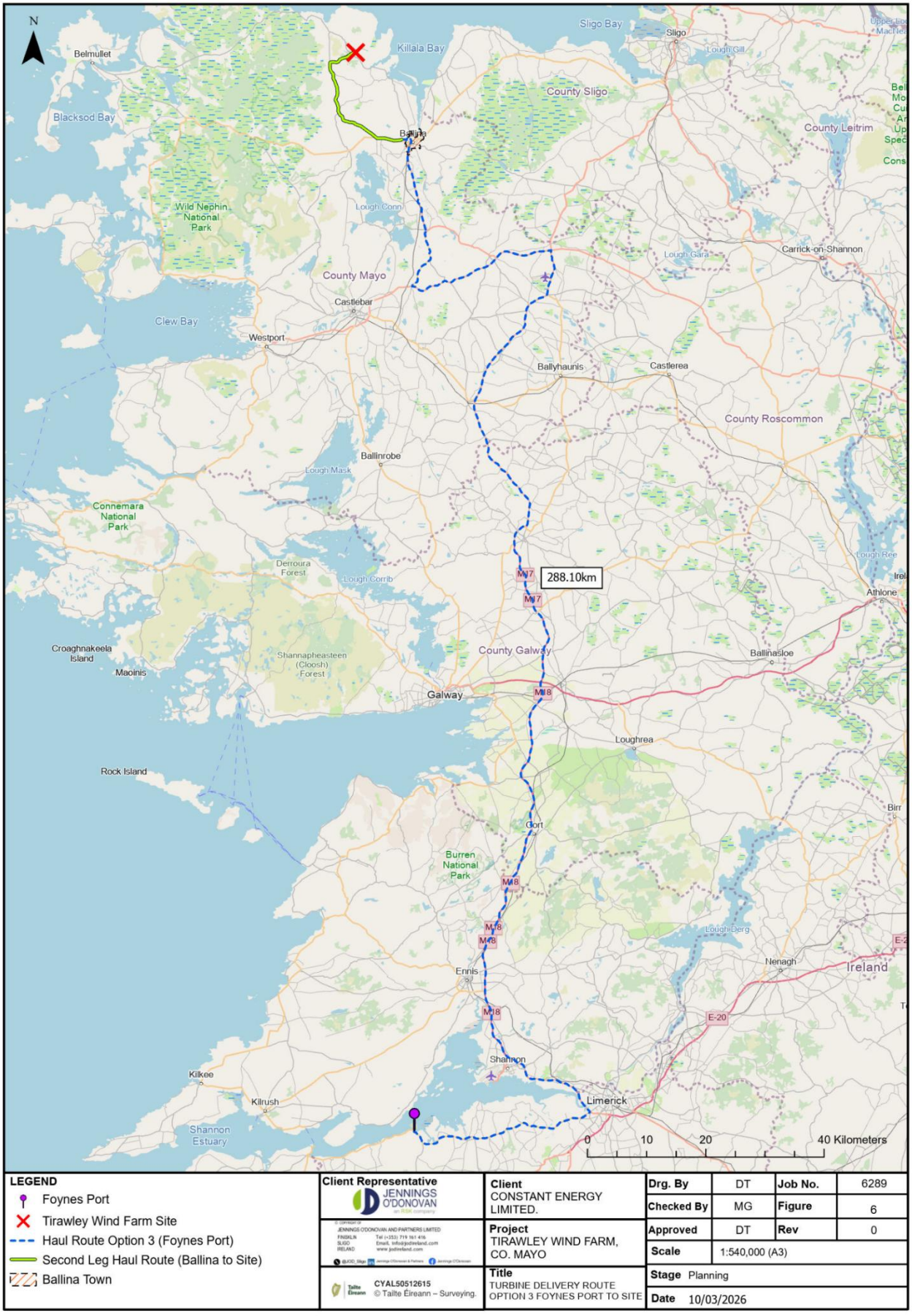

Figure 6 - TDR Option 3 – Foynes Port, County Limerick to the Wind Farm Site

For this assessment, each route option has been delineated into three stages i.e., Legs.

- The First Leg: Port to Ballina Town, Co. Mayo (TDR Option 1 – First Leg is shown **Figure 7,** refer to **Figure 5** and **Figure 6** for the First Leg of TDR Options 2 and 3)
- The Second Leg: Ballina Town to the Wind Farm Site (**Figure 8**)
- The Final Leg consisting of:
  - The Blue Route: AT01 to AT04 and Met Mast (**Figure 10**)
  - The Orange Route: AT05 to AT16 (**Figure 11**)

Site Entrance's to each turbines location onsite is shown below (**Figure 9**)

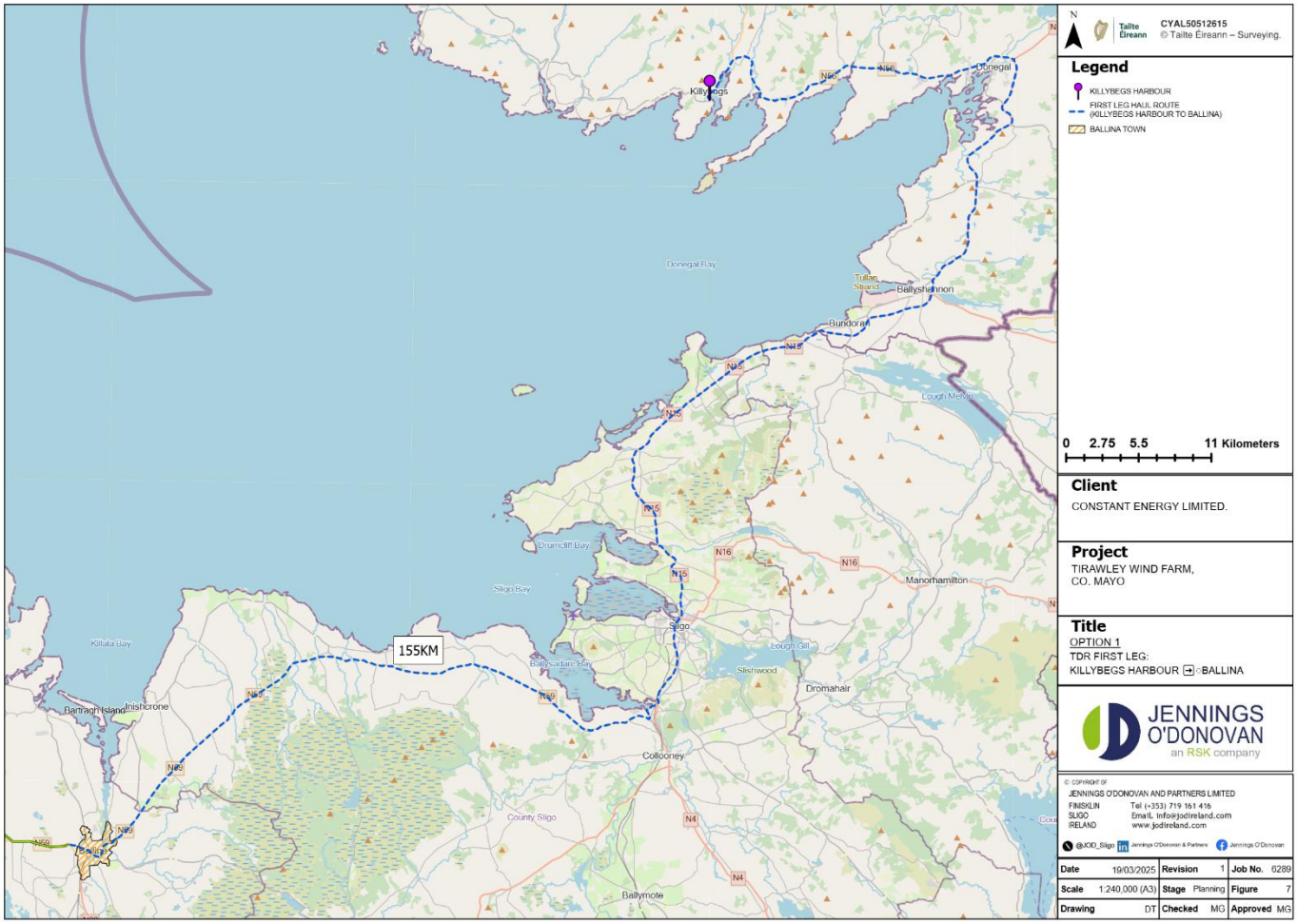

Figure 7 – The First Leg: Killybegs Port to Ballina Town, Co. Mayo

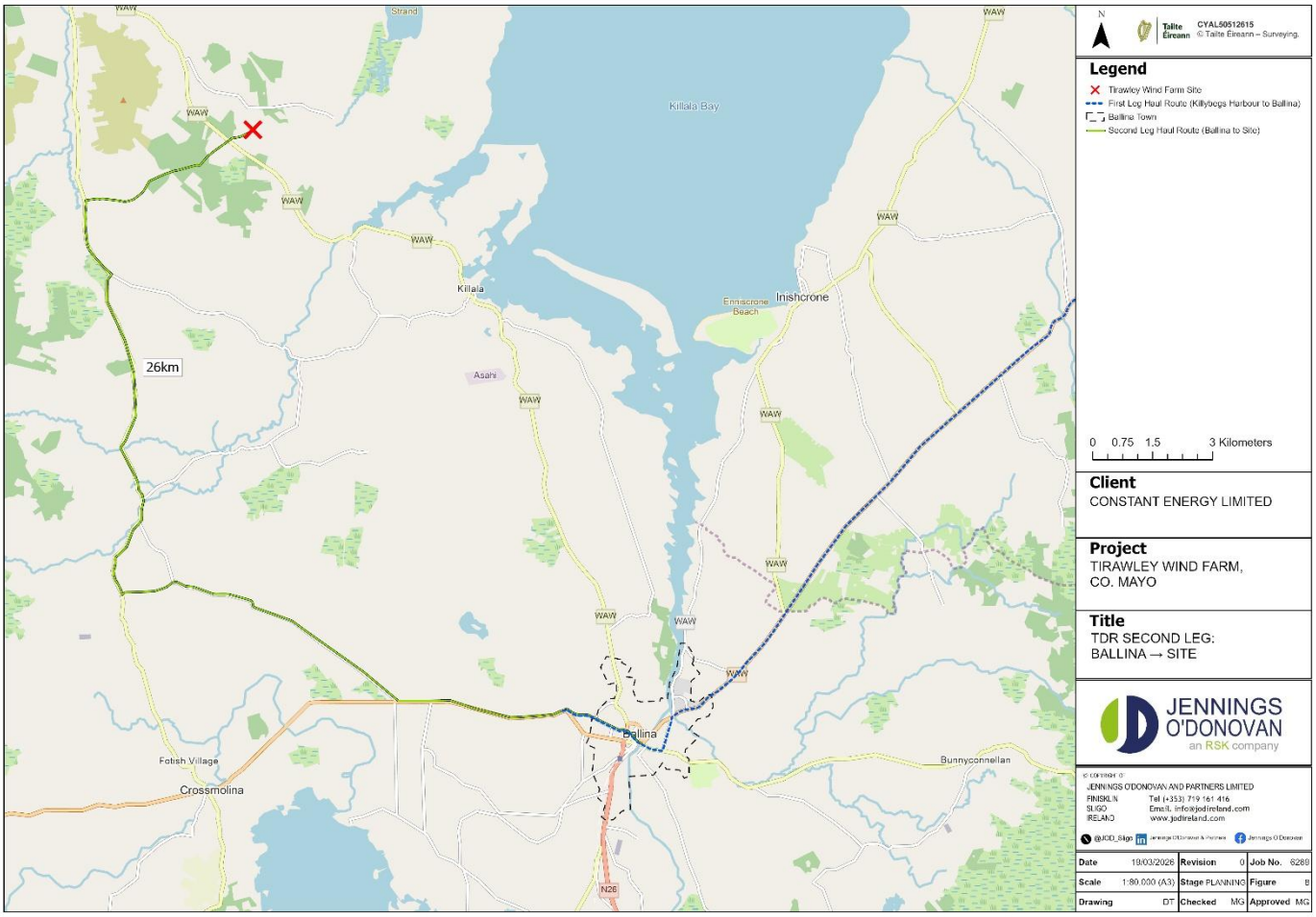

Figure 8 – The Second Leg: Ballina Town to the Wind Farm Site

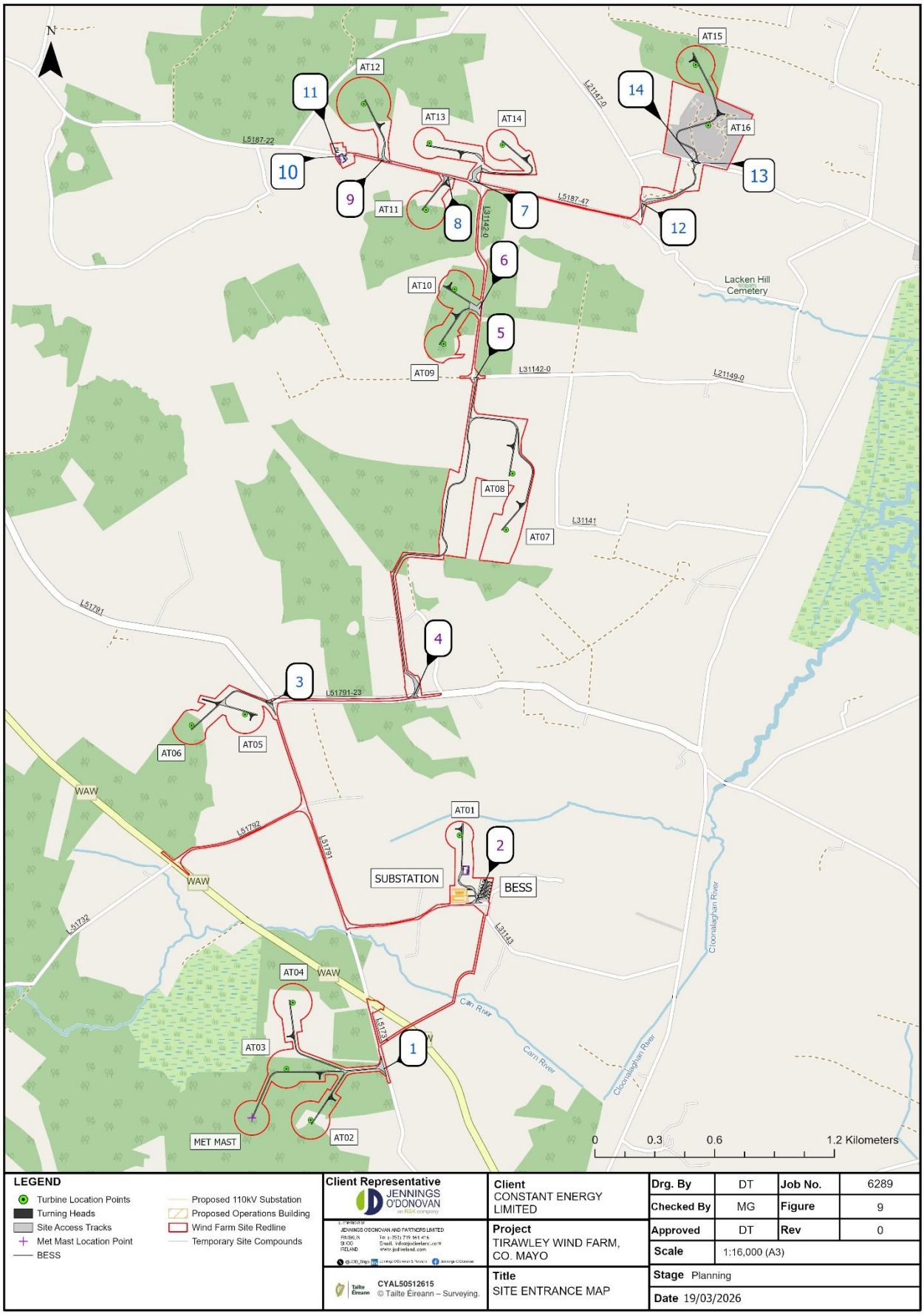

Figure 9 - Site Entrance's to each Turbine Locations onsite

3 TURBINE DELIVERY ROUTE SELECTION

3.1 KILLYBEGS TDR OPTION 1 – KILLYBEGS HARBOUR TO WIND FARM SITE

Killybegs Harbourt to Ballina has been identified as a potential TDR option to the Tirawley Wind Farm Site.

3.1.1 Killybegs TDR Option 1 - Route Break Down – Start to Finish

First Leg

- Exit Killybegs Port; At the roundabout take the 2nd onto Shore Road/R263 (700 m)
- Turn right onto the R263 (3.1 km)
- Continue on the N56 (23 km)
- At the roundabout, take the 2nd exit and stay on N56 (2.3 km)
- At Drumlonagher Roundabout, take the 2nd exit onto N15 (3.7 km)
- At Tullyearl Roundabout, take the 1st exit and stay on N15 (17 km)
- At Erne Roundabout, take the 1st exit and stay on N15 (6.4 km)
- At Drumacrin Roundabout, take the 1st exit and stay on N15 (4.3 km)
- At Tullaghan Roundabout, take the 1st exit and stay on N15 (31.9 km)
- Continue onto N4 (1.4 km)
- At Summerhill Roundabout, take the 2nd exit and stay on N4 (5.2 km)
- Use the left lane to take the N59 ramp to Ballina (280 m)
- Continue onto N59 (1.8 km)
- At the roundabout, take the 3rd exit and stay on N59 (260 m)
- At the roundabout, take the 2nd exit and stay on N59 (49.5 km)
- Turn left onto Bunree Rd. (850 m)
- Turn right onto Healy Terrace/R294 (750 m)
- Continue straight on Tone St onto Garden St
- Continue straight on Garden St onto McDermot St
- Continue onto Gurteens/L1119 (650 m)
- At the roundabout, continue straight (75 m)
- Continue onto N59 (4.2 km)

Second Leg

- Turn right onto L1108 Ballymanagh (550 m)
- Take L1108 Cloonkee and L1108 Ballyneety to R315 (7.8 km)
- Turn right onto R315 (8.7 km)
- Take Annagh Beg Rd. to Billoos junction on the R314 (4.1 km)

Refer to **Section 3.4**.

Final Leg

- From here take the final leg route options to desired turbines locations:
  - The Blue Route: AT01 to AT04 and Met Mast (**Figure 10**)
  - The Orange Route: AT05 to AT16 (**Figure 11**)

Refer to **Section 3.5**.

3.1.2 Killybegs TDR Option 1 First Leg – Killybegs Port to Ballina

The route from Killybegs Harbour to Ballina Town has been previously utilised for the transportation of turbine components for the following wind farms: Oweninny Wind Farm Phase I (55 m blades) and Phase II (57.5 m blades), Sheskin Wind Farm (57.3 m blades), and Killala Community Group Wind Farm (49 m blades). The initial segment (The First Leg) of TDR Option 1 was not assessed in this report, as it had been previously evaluated and employed by other operating wind farms in the region of the Wind Farm Site. This segment has already undergone modifications, including alterations to roundabouts, junctions, and roadside infrastructure, along with necessary upgrades, to facilitate the delivery of turbine components. The following is a brief description of TDR Option 1:

3.2 GALWAY TDR OPTION 2 – GALWAY PORT TO BALLINA

Galway Port to Ballina has been identified as a potential TDR option to the Tirawley Wind Farm Site.

3.2.1 Galway TDR Option 2 - Route Break Down – Start to Finish

First Leg

- Exit the Port of Galway and turn onto Lough Atalia Rd. (1.4 km)
- Lough Atalia Rd. turns slightly right and becomes College Rd/R339 (1.3 km)
- Turn right onto Tuam Rd/R336 (2.3 km)
- Continue onto N83 (25.9 km)
- At the roundabout, take the 1st exit onto N17 heading to Claremorris (4.1 km)
- At the roundabout, take the 1st exit and stay on N17 heading to Claremorris/Sligo (24.4 km)
- Continue straight to stay on N17 (30.6 km)
- At the roundabout, take the 2nd exit (270 m)

- Use the left lane to merge onto N5 via the ramp to Westport/Swinford (27 km)
- Turn right and continue on the N58 (11.3 km)
- Turn left onto Chapel Rd/N26 and continue to follow the N26 (15.5 km)
- Turn left onto Lord Edward St/N59 and continue to follow the N59 (1.8 km)
- At the roundabout, take the 2nd exit and continue onto the N59 (4.2 km)

Second Leg

- Turn right onto L1108 Ballymanagh (550 m)
- Take L1108 Cloonkee and L1108 Ballyneety to R315 (7.8 km)
- Turn right onto R315 (8.7 km)
- Take Annagh Beg Rd. to Billoos junction on the R314 (4.1 km)

Refer to **Section 3.4**.

Final Leg

- From here take the final leg route options to desired turbines locations:
  - The Blue Route: AT01 to AT06 and Met Mast (**Figure 10**)
  - The Orange Route: AT07 to AT16 **Figure 11**)

Refer to **Section 3.5**.

3.2.2 Galway TDR Option 2 First Leg – Galway Port to Ballina

Galway Port to Ballina has been identified as a potential TDR option to Sheskin South Windfarm, Co. Mayo. The route from Galway Port to Ballina Town previously assessed and considered as a potential TDR by the granted Oweninny Wind Farm Phase III. A swept path analysis using a 57.5 m blade was carried out as part of the Oweninny Wind Farm Phase III assessment.

Galway Port can accept and traverse large turbine components (180 m tip height).
Prior to the commencement of construction phase a detailed assessment should be carried out of this leg of the route. The following is a brief description of route:

3.3 FOYNES TDR OPTION 3 – FOYNES PORT TO BALLINA

Foynes Port to Ballina has been identified as a potential TDR option to the Tirawley Wind Farm Site.

3.3.1 Foynes TDR – Option 3 - Route Break Down – Start to Finish

First Leg

- Turn right onto Main St/N69 and continue to follow the N69 (29 km)
- At the roundabout, take the 2nd exit and stay on N69 (4.6 km)
- At Dock Rd W Roundabout, take the 2nd exit onto the N18 ramp to Galway/Shannon Airport (500 m)
- Merge onto N18 (10.5 km)
- Keep right to stay on N18 (7.6 km)
- Continue onto M18 (signs for Galway/N18/Ennis) (69.7 km)
- Continue onto M17 (24.3 km)
- At the roundabout, take the 2nd exit onto N17 heading to Claremorris (4.2 km)
- At the roundabout, take the 1st exit and stay on N17 heading to Claremorris/Sligo (24.4 km)
- Continue straight to stay on N17 (30.6 km)
- At the roundabout, take the 2nd exit (270 m)
- Use the left lane to merge onto N5 via the ramp to Westport/Swinford (27 km)
- Turn right and continue on the N58 (11.3 km)
- Turn left onto Chapel Rd/N26 and continue to follow the N26 (15.5 km)
- Turn left onto Lord Edward St/N59 and continue to follow the N59 (1.8 km)
- At the roundabout, take the 2nd exit and continue onto the N59 (4.2 km)

Second Leg

- Turn right onto L1108 Ballymanagh (550 m)
- Take L1108 Cloonkee and L1108 Ballyneety to R315 (7.8 km)
- Turn right onto R315 (8.7 km)
- Take Annagh Beg Rd. to Billoos junction on the R314 (4.1 km)

Refer to **Section 3.4**.

Final Leg

- From here take the final leg route options to desired turbines locations:
  - The Blue Route: AT01 to AT06 and Met Mast (**Figure 10**)
  - The Orange Route: AT07 to AT16 (**Figure 11**)

Refer to **Section 3.5**.

3.3.2 Foynes TDR Option 3 First Leg – Foynes Port to Ballina

Foynes is being used by Derrinlough wind farm, Co. Offaly (under construction) to transport turbine components (towers) for 180 m tip height turbines. A portion of this route is shared with the Proposed Tirawley Wind Farm, travelling east from the port to Limerick City, then north to Galway on the M18. This leg of the route has been modified for turbine components. The route from Foynes Port to Ballina Town previously assessed and considered as a potential TDR by the granted Oweninny Wind Farm Phase III. A swept path analysis using a 57.5 m blade was carried out as part of the Oweninny Wind Farm Phase III assessment.

Galway to Ballina Town has been identified as a potential TDR option to Sheskin South Windfarm, Co. Mayo (**Section 3.2.1**). Prior to the commencement of construction phase a detailed assessment should be carried out of the leg of the route. The following is a brief description of route:

3.4 SECOND LEG TDR – BALLINA TOWN TO THE WIND FARM SITE

The Second Leg of the TDR assessment is between Ballina Town and the Wind Farm Site. The Second Leg is common to all proposed TDR options. Refer to the Second Leg: Ballina Town to Wind Farm Site Map (**Figure 8**) and **Section 3.1 – Section 3.3**.
The assessment of this leg consisted of:

- Local road visual surveys, and
- Sweep path analysis of the Regional and Local Roads. A total of seven pinch points were identified, see **Section 5**.

3.5 FINAL LEG TDR – WIND FARM SITE

At the proposed Tirawley Wind Farm Site, the turbines are accessed via multiple site entrances (**Figure 9**). The Final Leg of the TDR is common to all proposed TDR options. The start point for the Final Leg TDR options is at Annagh Beg junction on the R314 (i.e. the cessation point of the Second Leg TDR). For the purpose assessment and the EIAR, the Wind Farm Site TDR (Final Leg TDR) was split into two individual routes (Blue and Orange).

- Blue route depicts the TDR for 4 turbines, refer to **Section 3.5.1**
- Orange Route depicts the TDR for 12 turbines, refer to **Section 3.5.2**

From the Annagh Beg junction turbine delivery will follow these routes to the required resting points of the turbines.

The assessment of this leg consisted of:

- Local road visual surveys.

Sweep path analysis of the Regional and Local Roads. A total of twenty-one pinch points were identified, refer to **Section 5.1.4**.

3.5.1 Final Leg TDR - Blue Route

The Blue Route (**Figure 10**) provides direction for the delivery of turbine components for wind turbines AT01 – AT04 from the cessation point of the Second Leg at TDR Annagh Beg junction to their final destination.

Directions for the delivery of turbine components for wind turbine AT01:

- Continue straight from the cessation point of the Second Leg TDR, through the Annagh Beg junction located on the R314 east onto the L51792
- Turn right onto the L51791, continue for 615 m
- Turn Left onto the L31143, continue for 656 m
- Turn left into the Wind Farm Site using **Site Entrance 2 (Figure 9)** to wind turbine AT01's final destination.

Directions for the delivery of turbine components for wind turbine AT02, AT03 & AT04:

- At the cessation point of the Second Leg TDR, turn right at the Annagh Beg junction south onto the R314
- Continue on the R314 for 721 m and turn right onto the L51731 for 347 m
- Turn right into the Wind Farm Site using **Site Entrance 1 (Figure 9)** to wind turbines AT02 through AT04's final destination.

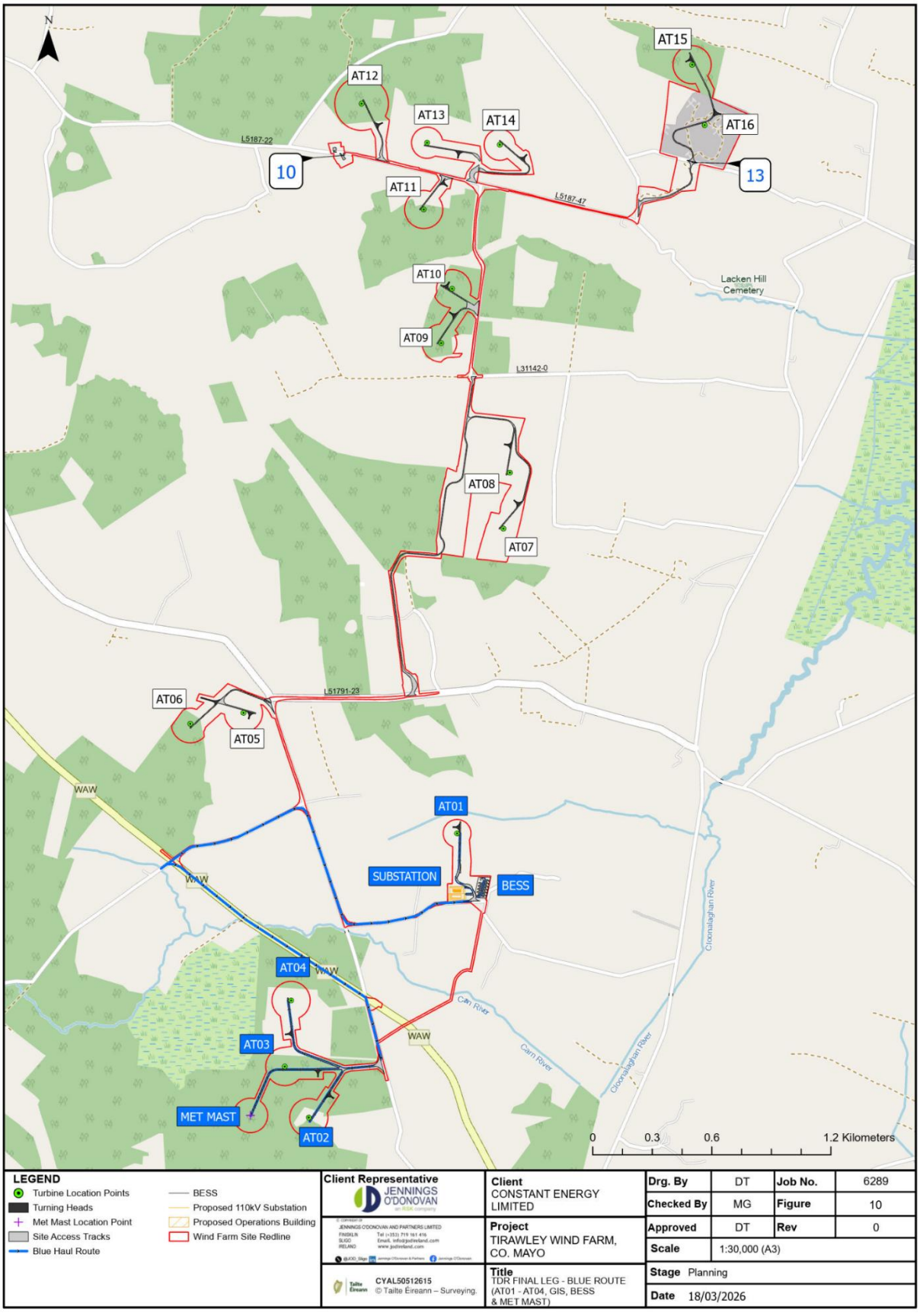

Figure 10 – TDR Final Leg – Blue Route: AT01 to AT04 and Met Mast

3.5.2 Final Leg TDR - Orange Route

The Orange Route (**Figure 11**) provides direction for the delivery of turbine components for wind turbines AT05 – AT16 from the cessation point of the Second Leg TDR at Annagh Beg junction to their final destination.

Directions for the delivery of turbine components for wind turbine AT05 and AT06:

- Continue straight from the cessation point of the Second Leg TDR, through the Annagh Beg junction located on the R314 east onto the L51792
- Turn left onto the L51791, continue north for 530 m
- Turn left into the Wind Farm Site using **Site Entrance 3** (**Figure 2.1**) to wind turbine AT05 and AT06's final destination.

Directions for the delivery of turbine components for wind turbine AT07 and AT08:

- Continue straight from the cessation point of the Second Leg TDR, through the Annagh Beg junction located on the R314 east onto the L51792
- Turn right onto the L51791, continue north for 530 m
- Turn left into the Wind Farm Site using **Site Entrance 4** (**Figure 2.1**)

Directions for the delivery of turbine components for wind turbine AT09 and AT10:

- Utilise the same route for wind turbines AT07 and AT08 as far as **Site Entrance 5** (**Figure 2.1**)
- At **Site Entrance 5**, continue north on the L31142 for 636 m and turn left onto Site Access Track.

Directions for the delivery of turbine components for wind turbine AT11 to AT12:

- Turn left off local road L31142-0 onto local road L5187-47
- Turn left off local road L5187-47 onto AT11 Site Access Track using **Site Entrance 8 (Figure 2.1)**
- Utilise the same route for wind turbine AT12 as far as **Site Entrance 9** (**Figure 2.1**)
- At **Site Entrance 9**, continue west on the L1587 for 337 m to **Site Entrance 10** for Site Compound and **Site Entrance 11** for Operations Building, all located along the L5187-22.

Directions for the delivery of turbine components for wind turbines AT13 & AT14:

- Utilise the same route for wind turbines AT11 and AT12 as far as **Site Entrance 7** (**Figure 2.1**)
- At **Site Entrance 8**, continue west on the L31142 for 236 m

- Turn left off the L31142 onto **Site Entrance 7** into AT13 and AT14.

Directions for the delivery of turbine components for wind turbines AT15 and AT16:

- Utilise the same route for wind turbines AT11 to AT14 traveling east from **Site Entrance 7** on the L5187-47 as far as **Site Entrance 12** (**Figure 2.1**).
- At **Site Entrance 12** travel north to **Site Entrance 13** for 636 m, onto the L21147-0.
- Continue along Site Access Track to **Site Entrance 13** (**Figure 2.1**)
- Continue north across the width of the L21148 to **Site Entrance 14** (**Figure 2.1**) to wind turbines AT15 and AT16's final destination.

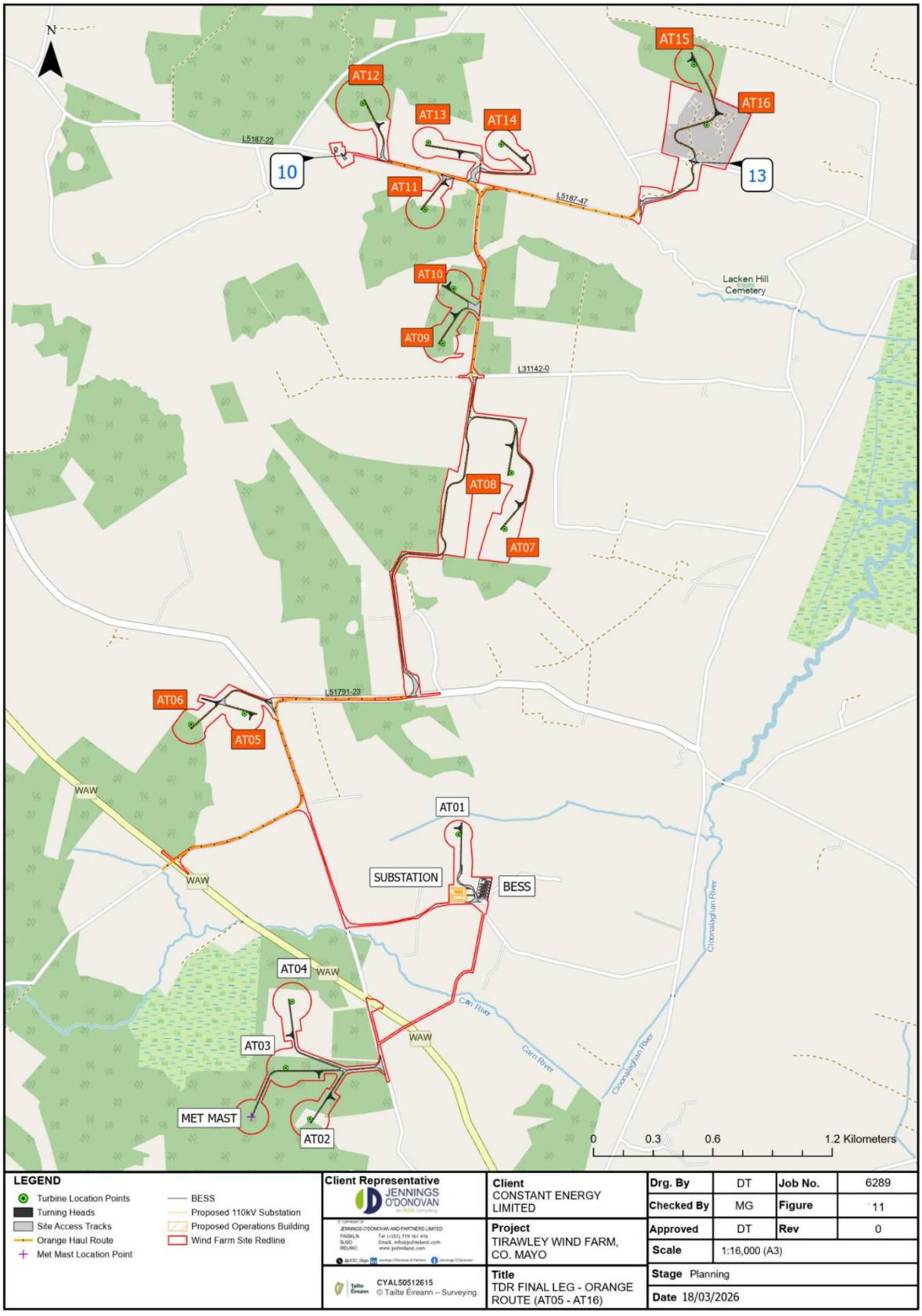

Figure 11 - TDR Final Leg – Orange Route: AT05 to AT16

4 TURBINE DELIVERY ROUTE ASSESSMENT

Each of the TDRs national road networks identified have been assessed based on overview assessment of the routes that will be utilised for the deliveries to the Proposed Development Site. These roads are as follows.

4.1 TDR NATIONAL ROADS

- **First Leg TDR Option 1:** Killybegs Port to the Wind Farm Site TDR primary follows the national network namely the N56, N15, N5, N4, N59 and N26.
- **First Leg TDR Option 2:** Galway Port to the Wind Farm Site TDR primary follows the national network namely the N83, N17, N5, N58 and N26.
- **First Leg TDR Option 3:** Foynes Port to the Wind Farm Site TDR primary follows the national network namely the N69, N18, M18, M17, N17, N5, N58 and N26.

4.2 TDR REGIONAL AND LOCAL ROADS

The Wind Farm Site is accessed via several local roads which branch off the regional road R314 running from Killala in the southeast to Ballycastle in the northwest. These roads service the residents, farmyards and land. Refer to **Figure 9, Site Entrance Map.**

4.3 TDR GENERAL ROAD WORK

The TDR decided on will require minor works to accommodate abnormal loads between their associated port considered (Killybegs Port, Galway Port or Foynes Port) and the Tirawley Wind Farm Site. Some of these works will be relatively minor in nature, for example temporary removal of street furniture and signage, while between Ballina town and the final turbine locations, some sections will require alterations to the local roads such as temporary widening, hardening of soft verges, hedge trimming and modifying tight bends on local roads (Pinch Points). Pinch points identified are located on the Second and Final Leg and are common to each TDR option considered.

These works may have a slight, negative, temporary effect on residents, businesses and road users due to the increased noise and vibration resulting from construction activities, and increased journey times and delays due to temporary traffic management. However, these effects will be short term during the construction phase, prior to the delivery of the turbine components and hence, are not predicted to have a significant effect.

4.4 TDR WORKING HOURS

Transportation is usually done outside of normal working hours (at night) and peak traffic to avoid disruption. Once works have been completed, the route will be reinstated in accordance with the requirements of the relevant County Councils.

4.5 TRAFFIC MANGEMENT

Traffic Management will be required for the delivery of the turbine components, with special arrangements made for the oversized components. This will include, liaising with the An Garda Síochána and Local Authorities, and applying for the relevant temporary traffic restrictions such as counterflow, parking bans, and one-way systems through towns. A **Traffic Management Plan** (**Management Plan No. 7**) will be developed as part of this Construction Environmental Management Plan (CEMP) **Appendix 2.1** of EIAR. Prior to the commencement of the construction phase, this Traffic Management Plan will be revised, and the route survey updated.

4.6 OVERHEAD ELECTRICTIY LINES

To determine the control measures required for a high load, ESB Networks will have to individually assess each overhead line crossing on the proposed route. In some cases, no specific control measures beyond this assessment may be required. In general, control measures may vary from having to arrange for ESB Networks to supervise load transport to switching out and earthing lines or, in more extreme cases, making arrangements for raising the height of the lines before the load is transported. Works along the TDR will adhere to the ESB Networks Guide ESB Networks Code of Practice for Avoiding Danger from Overhead Electricity Lines.

5 TURBINE DELIVERY ROUTE PINCH POINT ASSESSMENTS

The Second and Final legs of the TDR were assessed visually and using Swept Path Analysis. The local road survey and Sweep Path Analysis identified a total of 19 pinch points. These pinch points are summarised in this report and **Planning Drawings 6289-TIR-AT-BA-00B** to **6289-TIR-AT-BA-021** (**Table 1**).

TDR Pinch Point Assessment

A desktop review and site visits were carried out for the second and final leg of the TDR. For the purposes of this assessment and report, site visits were conducted in the summer of 2023/24. This consisted of a visual inspection of each pinch point identified in the desk top study, travelling along the route and by reviewing video footage taken from the car of the associated roads. Pinch Points and their associated roads are outlined below:

- Pinch Point 1, 2 and 3 – R314
- Pinch Point 4 and 5 – L51772-0/Annagh Beg Rd.
- Pinch Point 6 – R314/Annagh Beg Rd
- Pinch Point 7 – R314/L5179-0
- Pinch Point 8 – L51731
- Pinch Point 9 - L51792
- Pinch Point 10 – L5179-0, L31143-0
- Pinch Point 11 and 12 – L31143
- Pinch Point 13 – L51791-0/L-51791-23
- Pinch Point 14 – L5179-23
- ~~Pinch Point 15 –~~Deleted from Project
- ~~Pinch Point 16 –~~Deleted from Project
- Pinch Point 17 and 18 – L31142-0
- Pinch Point 19 – L311420-0/L5187-47
- Pinch Point 20 – L5187-47
- Pinch Point 21 – L5187-47/L21147-0

For clarity of the national routes and for assessment of the regional routes, Google Maps in conjunction with Google Street View was used.

Prior to the delivery of turbine components at construction phase, a detailed Route Survey and Trial Run will be completed in accordance with Vestas Site Roads and Hardstand Specifications, V117 Access Requirements Checklist.

5.1 PINCH POINT LOCATION MAP

Figure 12 below show each Pinch Point location along the Second and Final Leg of the TDR, between Ballina Town and the Wind Farm Site.

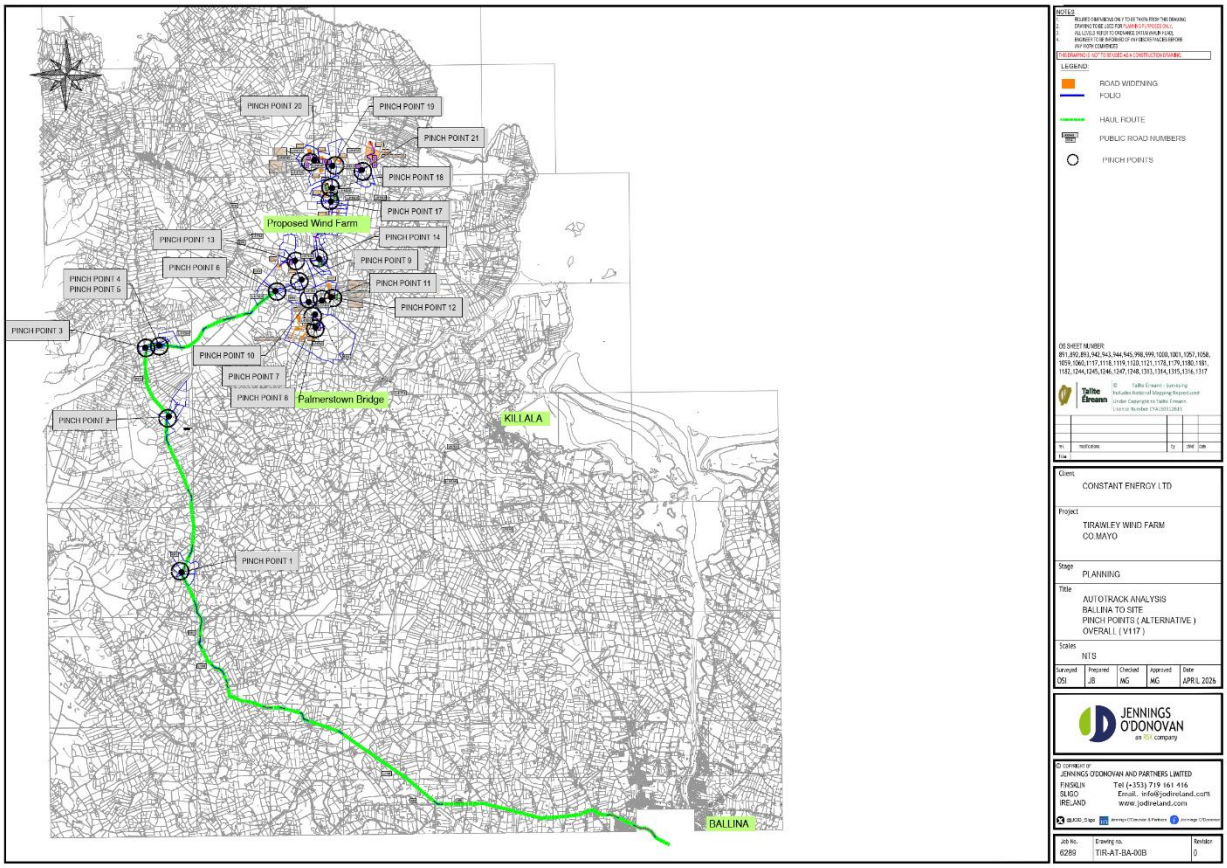

Figure 12 - TDR Pinch points from Ballina to the Wind Farm Site

5.1.1 Ballina Town

The TDR runs through Ballina Town along the N59, shown in **Figure 13**, this forms part of the route utilised for this windfarm. Ballina town has been used for the transportation of turbines similar in size to the Vestas V117 (Blade 57.2 m). Turbine components were transported through the town for Oweninny Phase I (55 m blades) and II (57.3 m blades) Windfarms, Sheskin Windfarm (57.3 m blades) and Killala Community Group Windfarm (49 m blades).

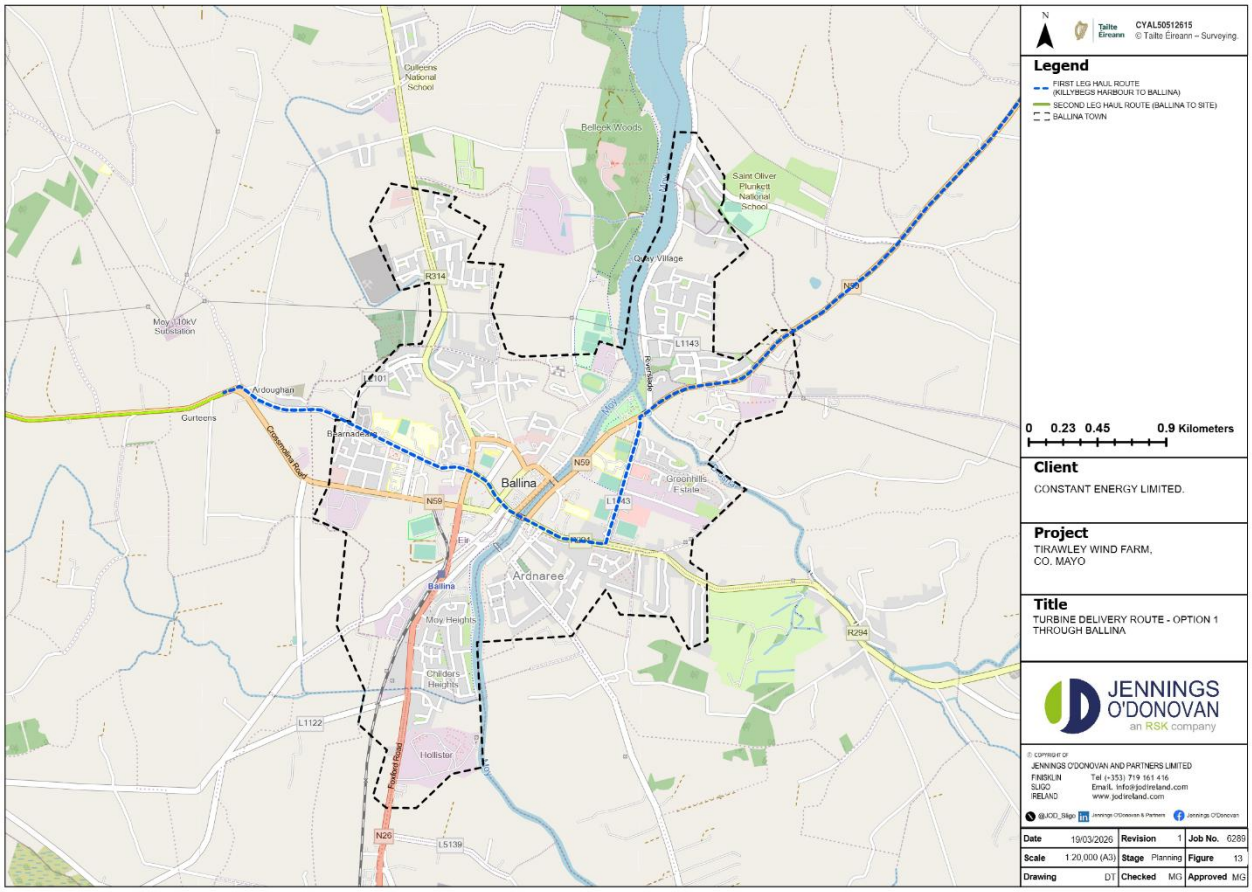

Figure 13 – TDR through Ballina. Co. Mayo

5.1.2 Ballina Town Traffic Management

As mentioned in **Section 4.3**, a Traffic Management Plan will be included as part of the CEMP, **Appendix 2.1** of the EIAR. Prior to the commencement of the construction phase, this Traffic Management Plan will be updated to include further details of the route, with particular focus on the requirements for Ballina Town, it will include details regarding:

- Route Surveys.
- Applying for Traffic Permits (Temporary Traffic Regulation Order).
- Liaising with the Garda to arrange escorts.
- Liasing with Local Authorities regarding traffic movements (counterflow), parking ban and towing vehicles.
- Prepare a Risk Assessment Method Statement (RAMS).
- Plan a Trial Run.

5.1.3 Ballina Town to the Wind Farm Site and Local Roads within the Wind Farm Site

A Swept Path Analysis was completed between Ballina Town to the Wind Farm Site. A total of 6 pinch points were identified between Ballina Town and the Wind Farm Site. The following is a summary of Pinch Points.

Pinch Point 1:

- Removal of Street Furniture (signpost).
- Road Strengthening Required.
- Hedge Removal and Trimming Required.
- ESB Pole and Overhead Wires to be assessed by ESB (min height clearance 5.5 m)

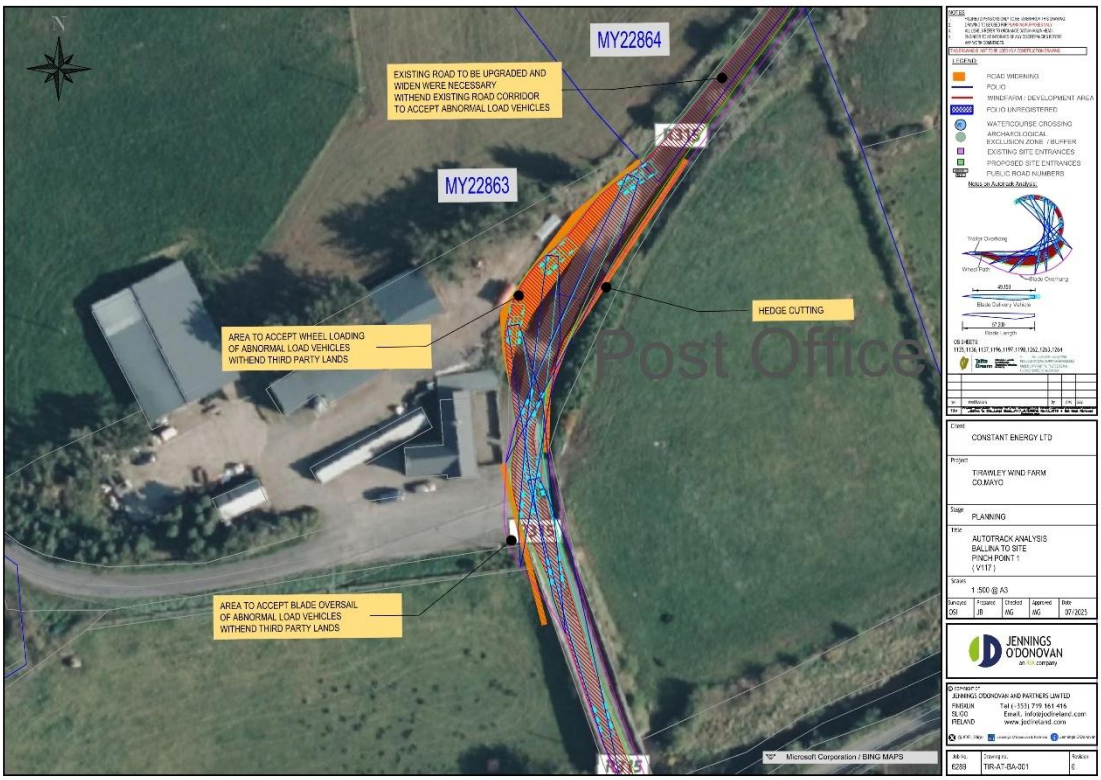

Figure 14 - Auto Track Analysis Ballina to Wind Farm Site Pinch Point 1

Plate 1 – Street View of Pinch Point 1

Pinch Point 2:

- Third-Party Land and Oversail Required.
- Road Strengthening Required.
- Removal of Street Furniture (signpost).

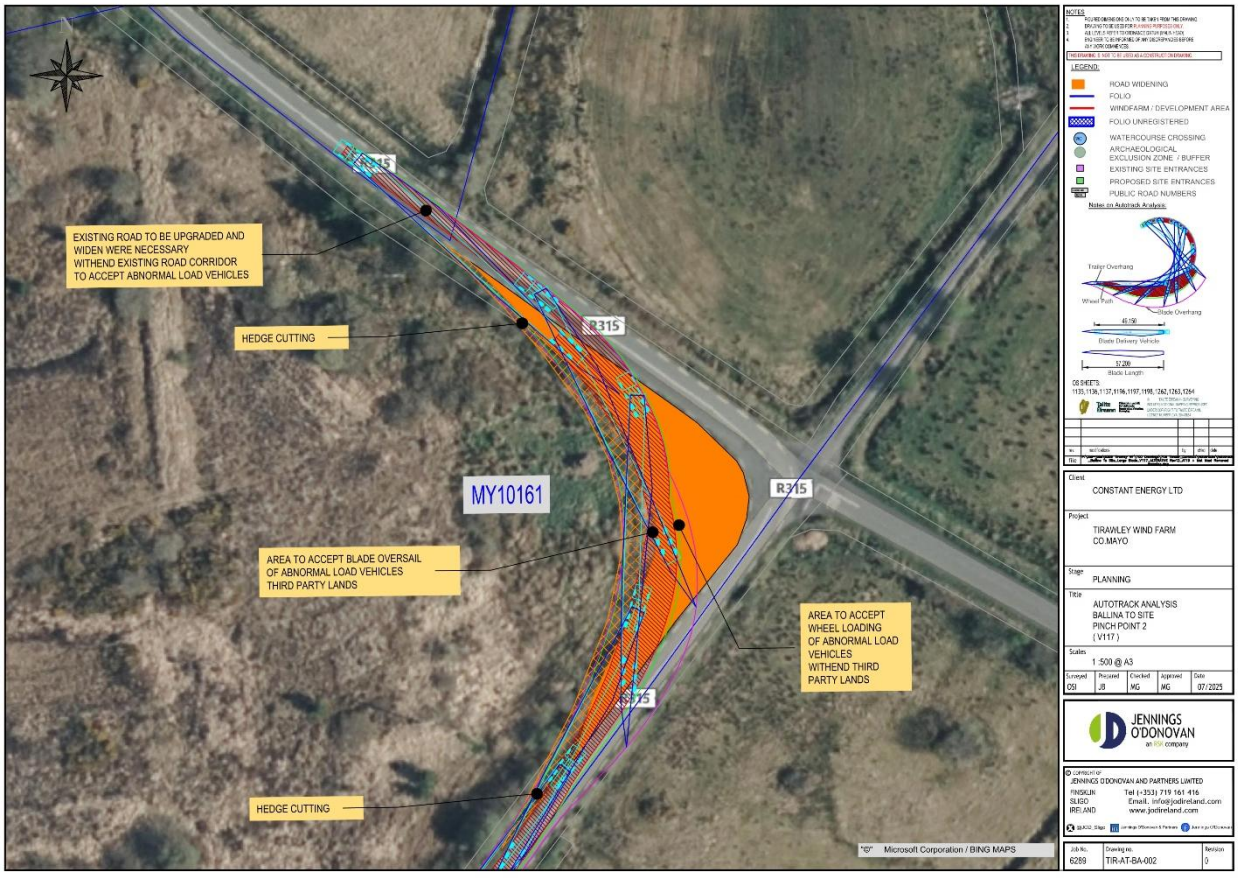

Figure 15 - Auto Track Analysis Ballina to the Wind Farm Site Pinch Point 2

Plate 2 – Street View of Pinch Point 2

Pinch Points No.3:

- Third-Party Land and Oversail Required.
- Road Strengthening Required.
- ESB Pole and Overhead Wires to be assessed by ESB (min height clearance 5.5m)

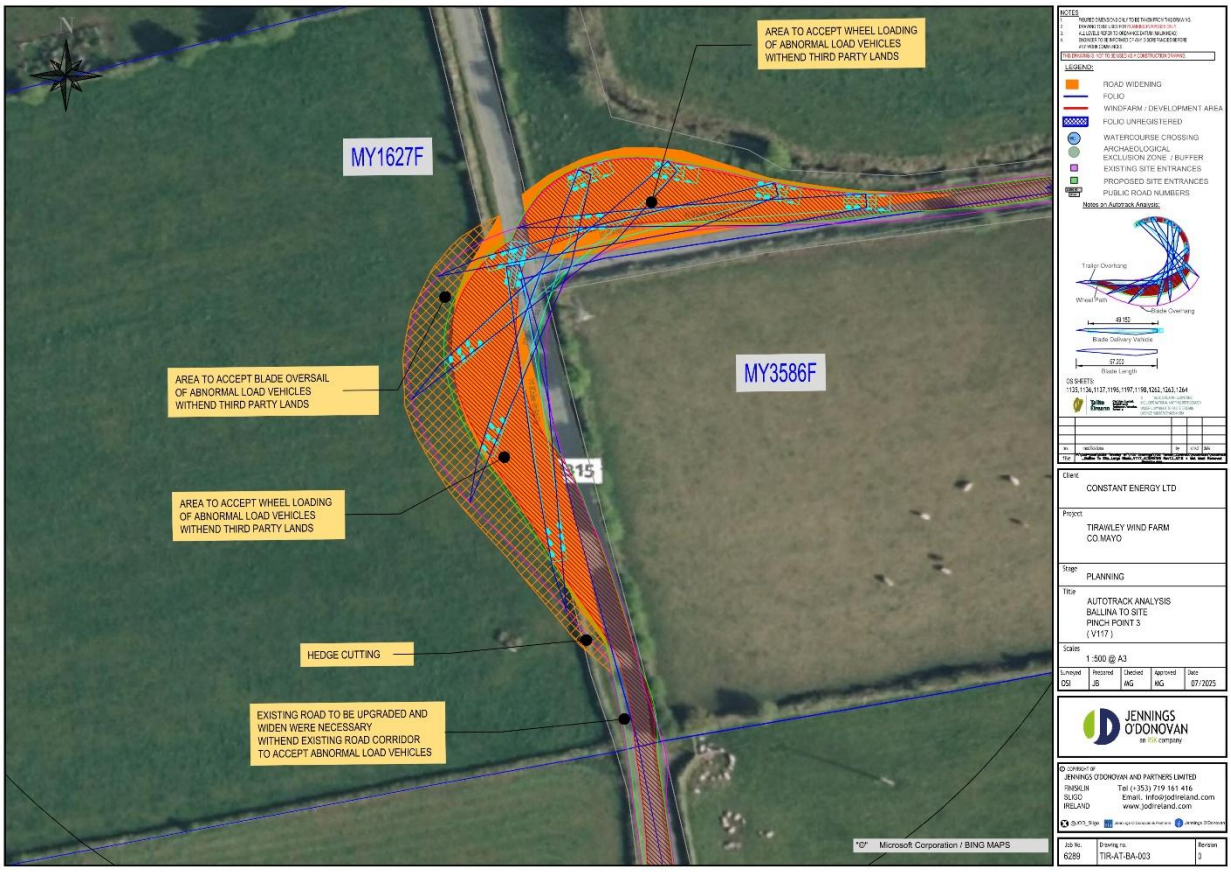

Figure 16 - Auto Track Analysis Ballina to the Wind Farm Site Pinch Point 3

Plate 3 – Street View of Pinch Point 3

Pinch Points No. 4:

- Third-Party Land and Oversail Required.
- Road Strengthening Required.
- Removal of Street Furniture.
- ESB Pole and Overhead Wires to be assessed by ESB (min height clearance 5.5m).
- Hedge Trimming Required.

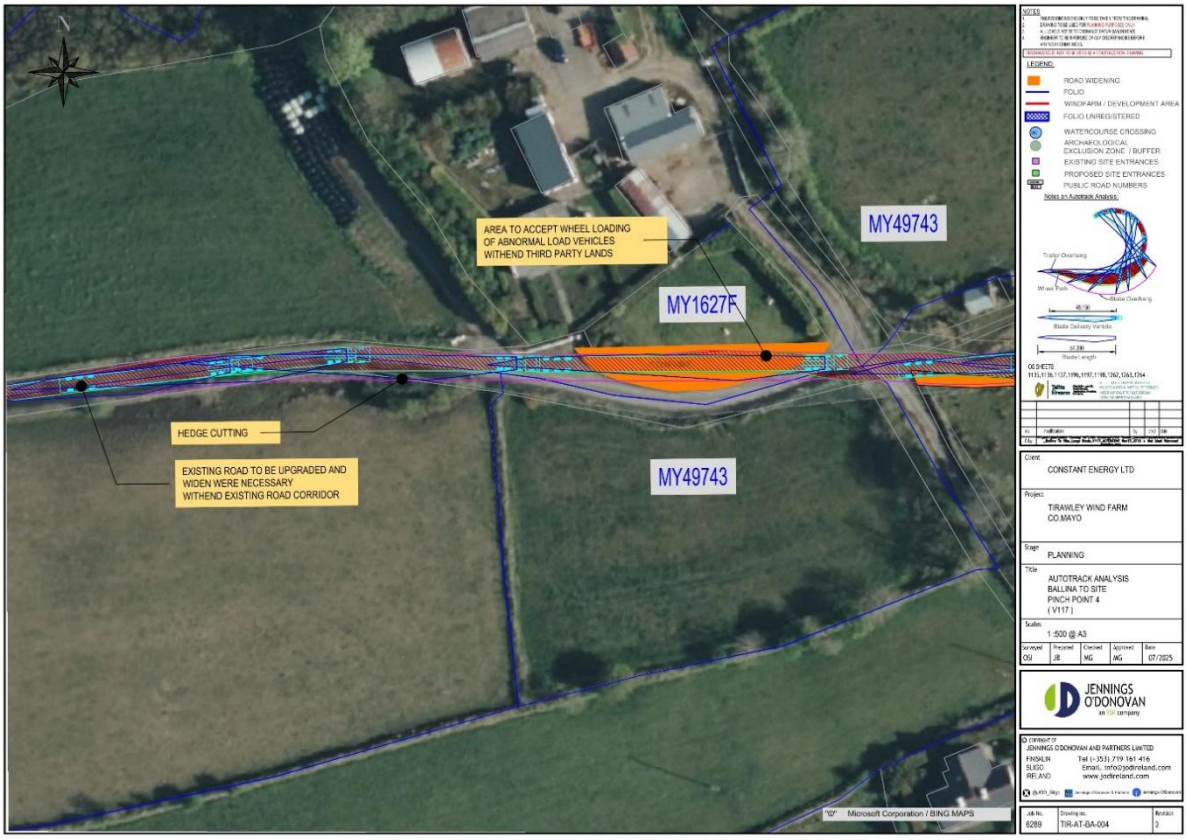

Figure 17 - Auto Track Analysis Ballina to the Wind Farm Site Pinch Point 4

Plate 4 – Street View of Pinch Point 4

Pinch Points No. 5:

- Third-Party Land and Oversail Required.
- Road Strengthening Required.
- ESB Pole and Overhead Wires to be assessed by ESB (min height clearance 5.5m).

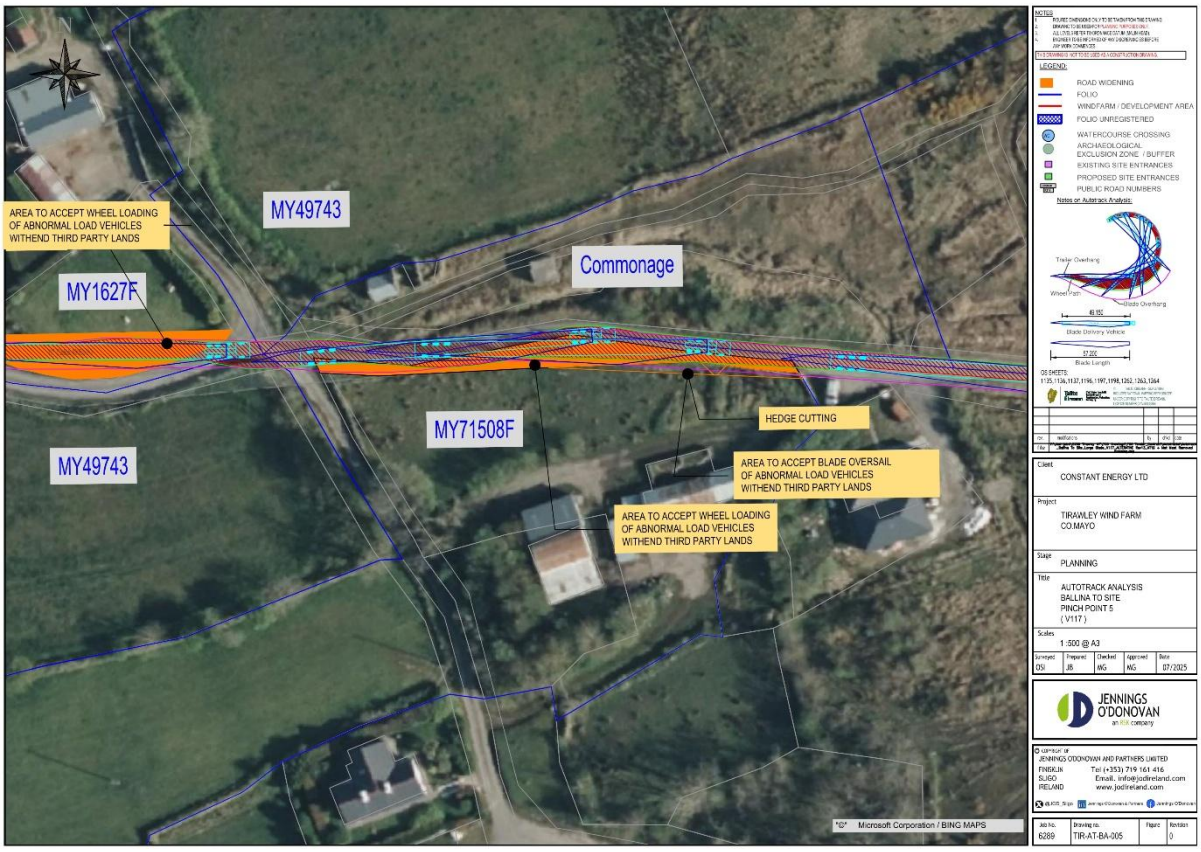

Figure 18 - Auto Track Analysis Ballina to Wind Farm Site Pinch Point 5

Plate 5 – Street View of Pinch Point 5

Pinch Points No. 6:

- Third-Party Land and Oversail Required.
- Road Strengthening Required.
- ESB Pole and Overhead Wires to be assessed by ESB (min height clearance 5.5m).

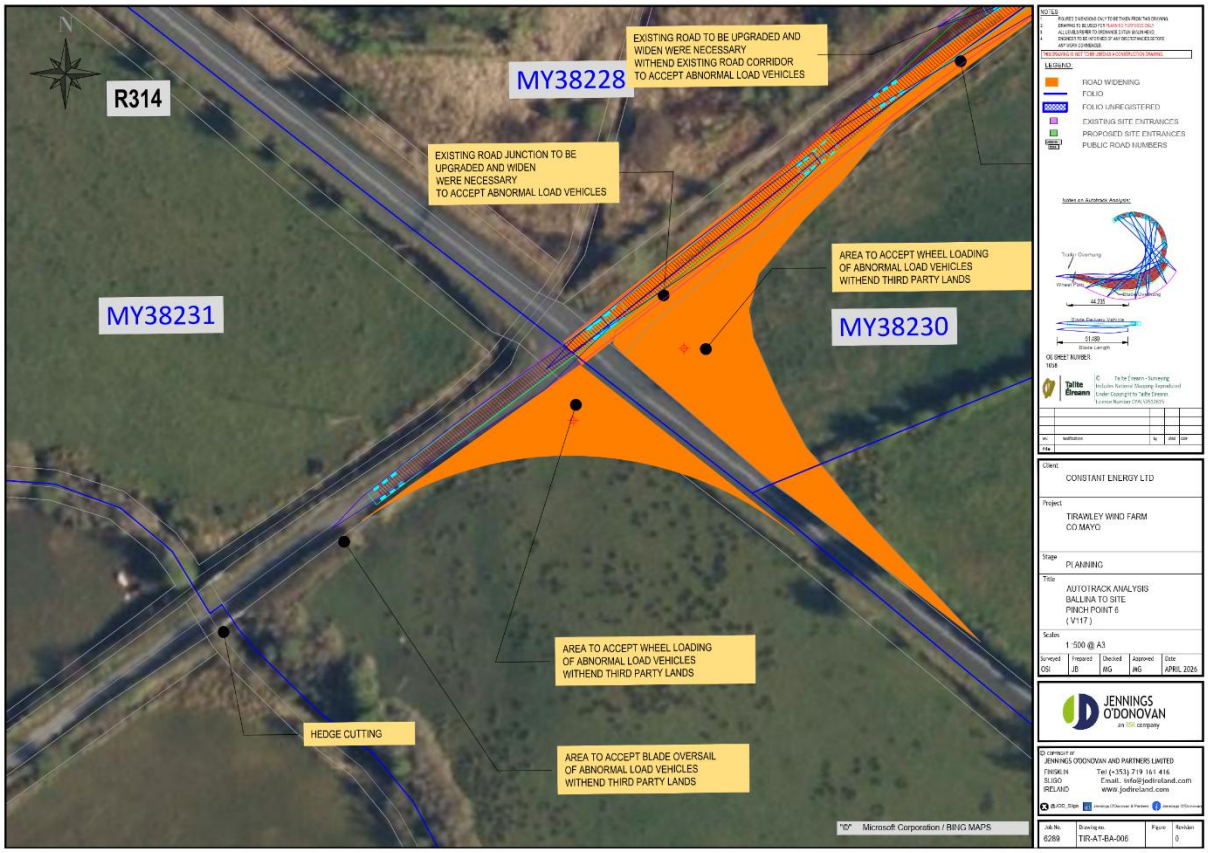

Figure 19 – Auto Track Analysis Ballina to the Wind Farm Site Pinch Point 6

Plate 6 – Street View of Pinch Point 6

5.1.4 Site Access and Local Roads

The Wind Farm Site has multiple entrances, for clarity the routes to these entrances have been split into two groups and colour coded: blue and orange. The Pinch Points and plates shown in **Section 5.1.4.1 Blue Route** and **Section 5.1.4.2 Orange Route** identify locations that will require upgrading to allow for the turbine component deliveries along these routes.

5.1.4.1 Blue Route – Pinch Points Local Roads and Access Tracks

The Blue Route has 6 Pinch Points No. 7, 8, 9, 10, 11 and 12. This route is for the delivery of the Met Mast and turbine components for AT01, AT02, AT03 and AT04. This route will also be used for the delivery of the substation and BESS components.

Pinch Point No. 7:

- Third-Party Land and Oversail Required
- Road Strengthening Required
- ESB Pole and Overhead Wires to be assessed by ESB (min height clearance 5.5 m)
- Hedge and Tree Removal and Trimming Required.

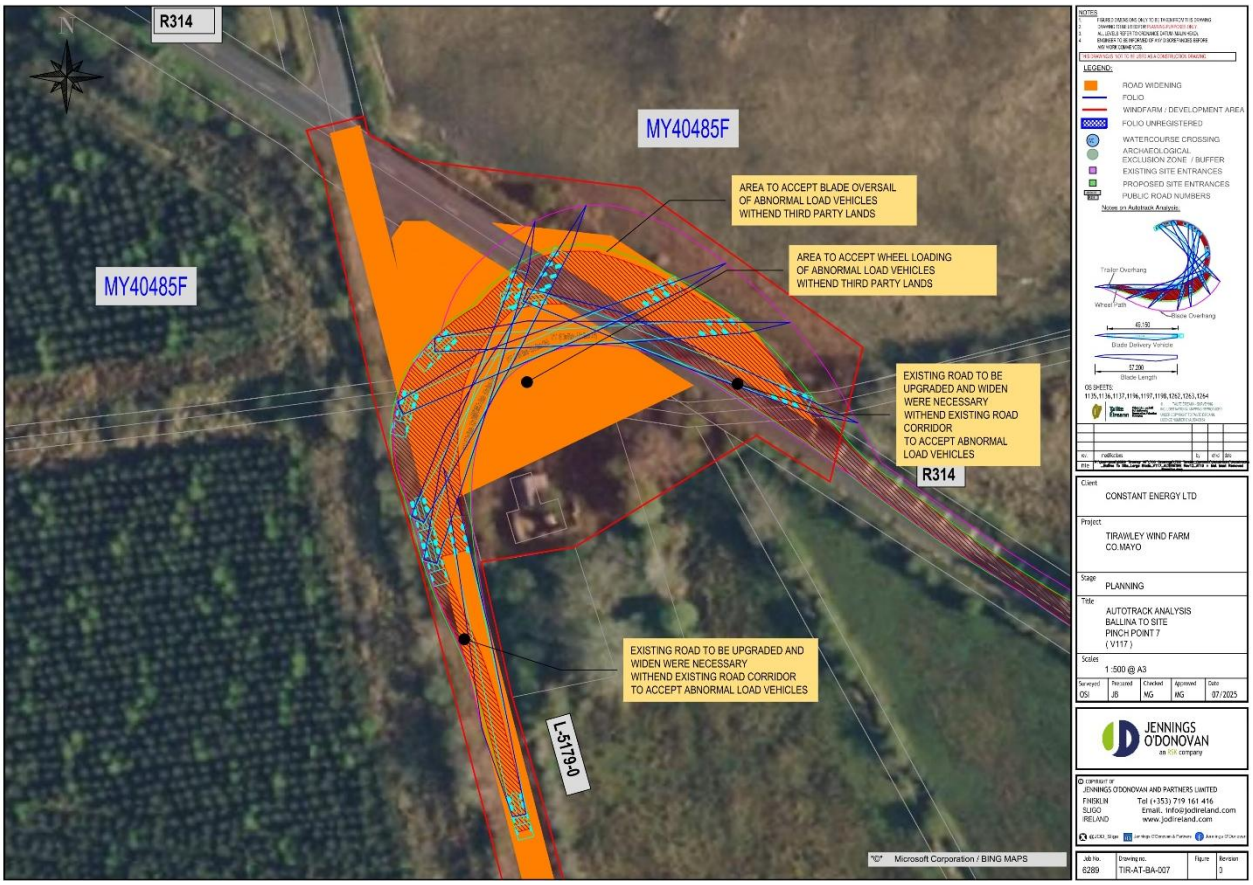

Figure 20: Auto Track Analysis Ballina to the Wind Farm Site Pinch Point 7

Plate 7 – Street View of Pinch Point 7

Pinch Point No. 8:

- Third-Party Land and Oversail Required
- Road Strengthening Required
- ESB Pole and Overhead Wires to be assessed by ESB (min height clearance 5.5 m)
- Hedge/Tree Removal and Trimming Required
- Removal of Street Furniture (sign post)

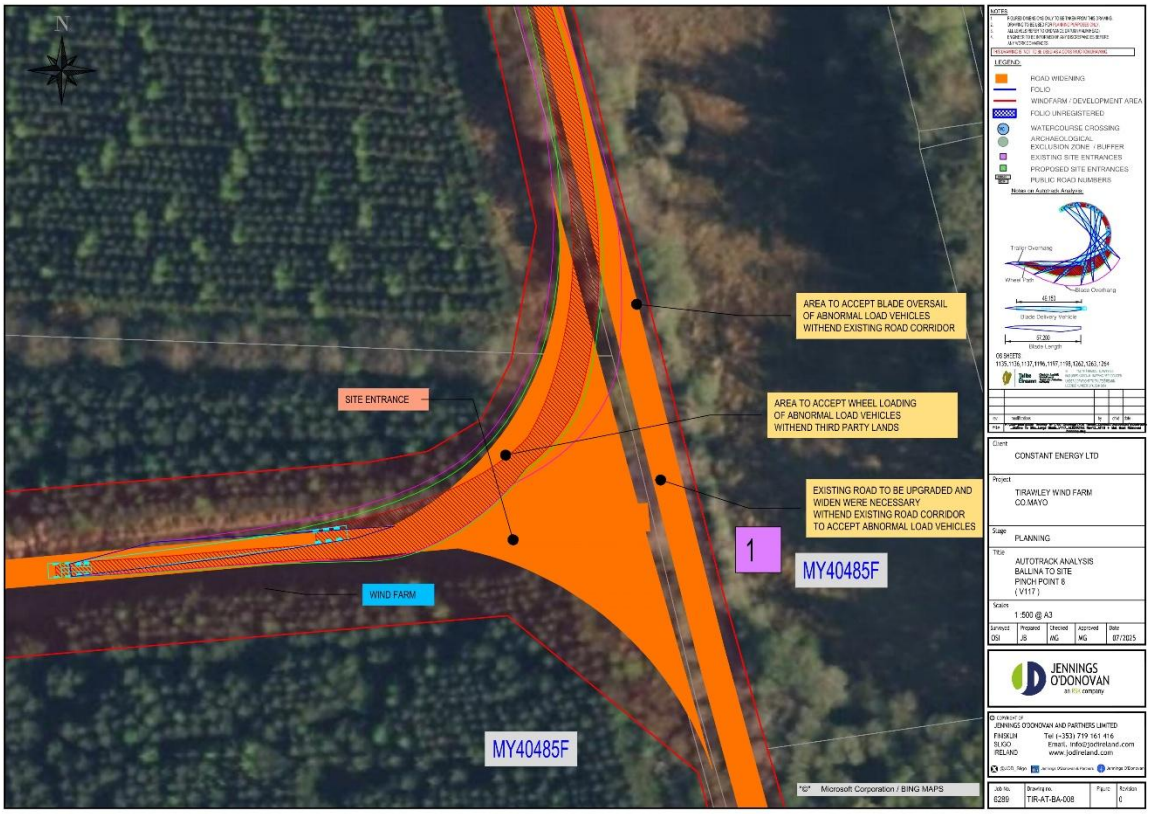

Figure 21: Auto Track Analysis Ballina to the Wind Farm Site Pinch Point 8

Plate 8 – Street View of Pinch Point 8

Pinch Point No. 9:

- Third-Party Land and Oversail Required
- Road Strengthening Required
- Road Widening into Verges Required
- Hedge/Tree Removal and Trimming Required

Figure 22: Auto Track Analysis Ballina to the Wind Farm Site Pinch Point 9

Plate 9 – Street View of Pinch Point 9

Pinch Point No. 10:

- Third-Party Land and Oversail Required
- Road Strengthening Required
- Road Widening into Verges Required
- ESB Pole and Overhead Wires to be assessed by ESB (min height clearance 5.5 m)
- Hedge Removal and Trimming Required.

Figure 23: Auto Track Analysis Ballina to the Wind Farm Site Pinch Point 10

Plate 10 – Street View of Pinch Point 10

Pinch Point No. 11:

- Third-Party Land and Oversail Required
- Road Strengthening Required
- Road Widening into Verges Required
- ESB Pole and Overhead Wires to be assessed by ESB (min height clearance 5.5 m)
- Hedge Removal and Trimming Required

Figure 24: Auto Track Analysis Ballina to the Wind Farm Site Pinch Point 11

Plate 11 – Street View of Pinch Point 11

Pinch Point No. 12:

- Third-Party Land and Oversail Required
- Road Strengthening Required
- Road Widening into Verges Required

- ESB Pole and Overhead Wires to be assessed by ESB (min height clearance 5.5 m)
- Hedge Removal and Trimming Required

Figure 25: Auto Track Analysis Ballina to the Wind Farm Site Pinch Point 12

Plate 12 – Street View of Pinch Point 12

5.1.4.2 Orange Route – Pinch Point Local Roads and Site Access Tracks

The Orange Route has 7 pinch points no.13,14,17, 18, 19, 20 and 21. These will be used to access turbines, AT05 to AT16.

Pinch Point No. 13:

- Third-Party Party Lands and Oversail Required.
- Road Strengthening Required
- Hedge Trimming Required.

Figure 26: Auto track Analysis Ballina to the Wind Site Pinch Point 13

Plate 13 – Street View of Pinch Point 13

Pinch Point No. 14:

- Third-Party Land and Oversail Required.
- Road Strengthening Required.
- Road Widening into Verges Required.
- ESB Pole and Overhead Wires to be assessed by ESB (min height clearance 5.5 m).
- Hedge/Tree Removal and Trimming Required.

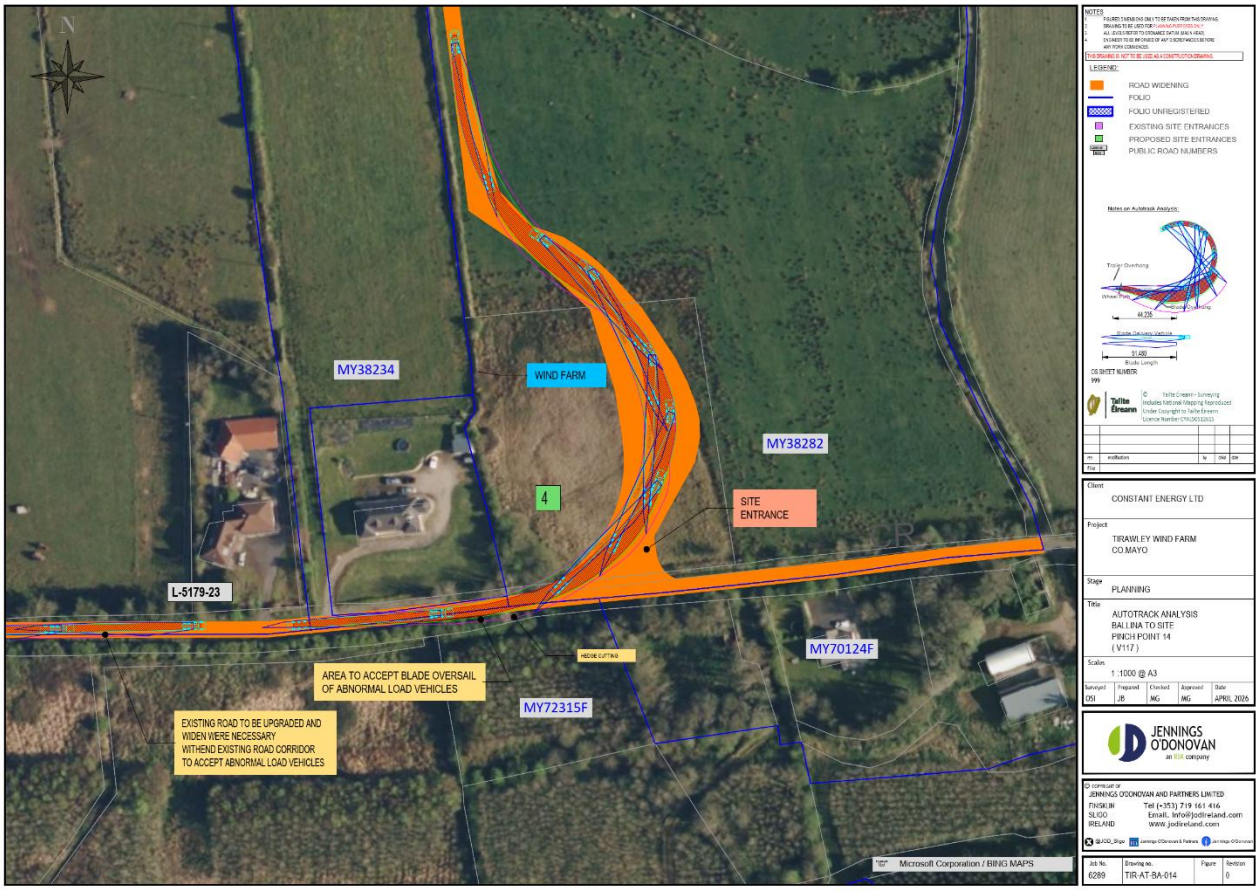

Figure 27: Auto Track Analysis Ballina to the Wind Farm Site Pinch Point 14

Plate 14 – Street View of Pinch Point 14

Pinch Point No. 17:

- Third-Party Lands and Oversail Required.
- Road Strengthening Required.
- Road Widening into Verges Required.
- Hedge Removal and Trimming Required.

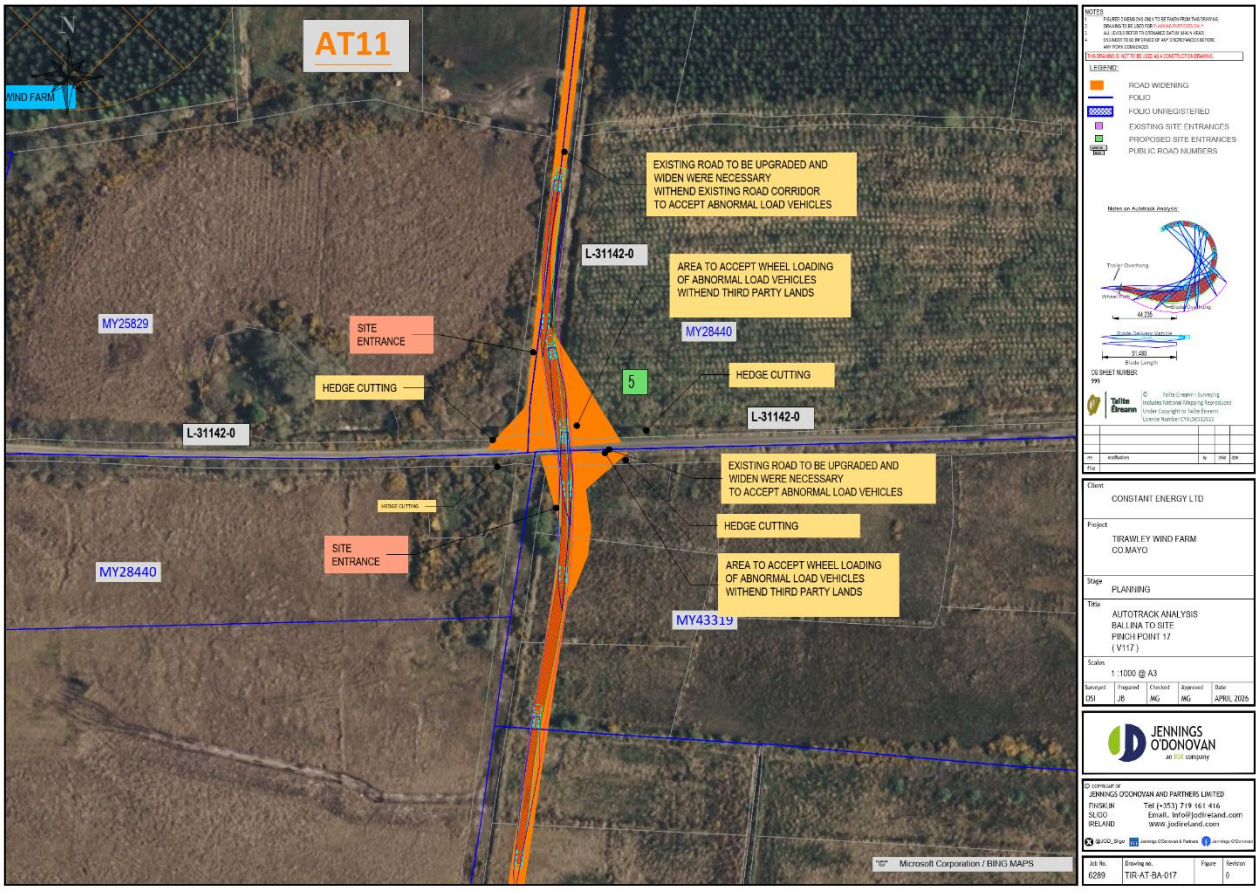

Figure 28: Auto Track Analysis Ballina to the Wind Farm Site Pinch Point 17

Plate 15 – Street View of Pinch Point 17

Pinch Point No. 18:

- Third-Party Lands and Oversail Required.
- Road Strengthening Required.
- Road Widening into Verges Required.
- Hedge Removal and Trimming Required.

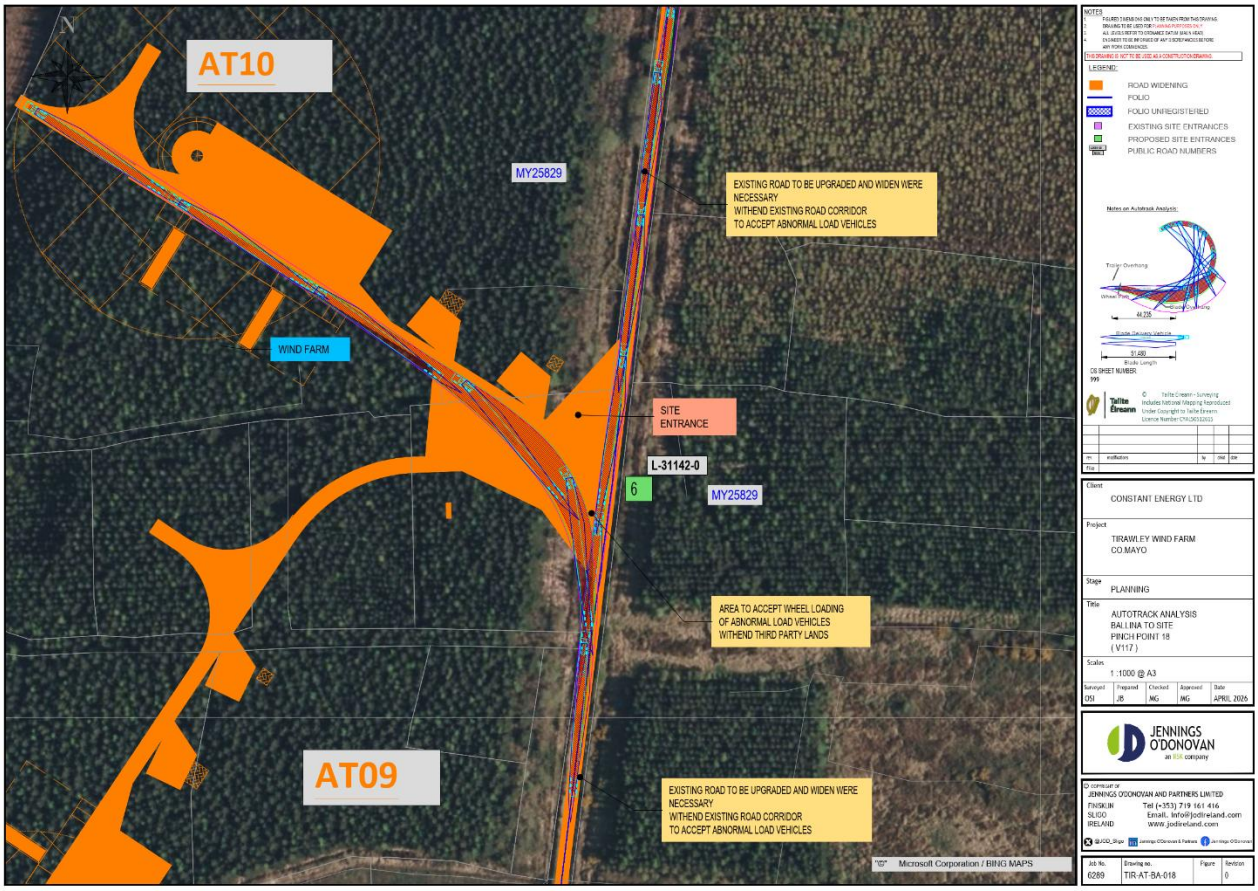

Figure 29: Auto Track Analysis Ballina to Site Pinch Point 18

Plate 16 – Street View of Site Pinch Point 18

Pinch Point No. 19:

- Third-Party Lands and Oversail Required.
- Road Strengthening Required.
- Road Widening into Verges Required.
- Hedge Removal Required.

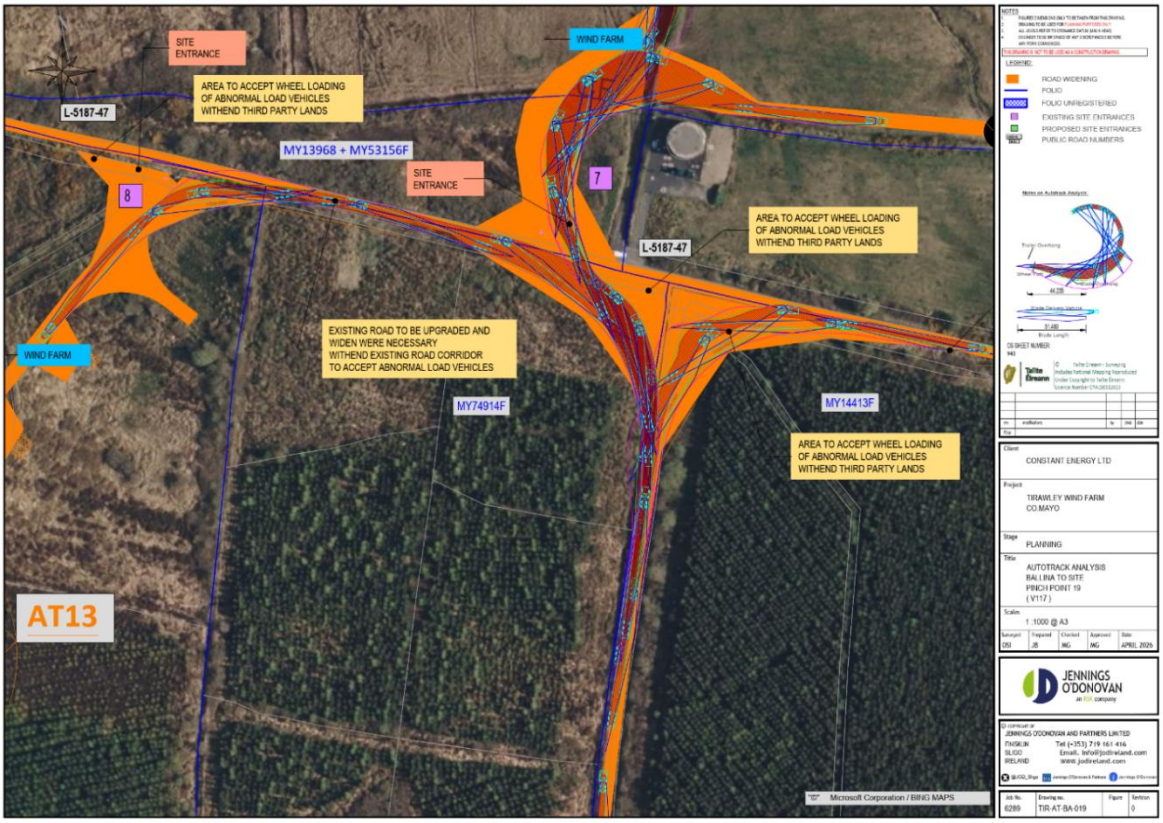

Figure 30: Auto Track Analysis Ballina to Wind Farm Site Pinch Point 19

Plate 17 – Street View of Pinch Point 19

Pinch Point No. 20

- Third-Party lands and Oversail Required.
- Road Strengthening Required.
- Road Widening into Verges Required.
- Hedge Removal and Trimming Required.

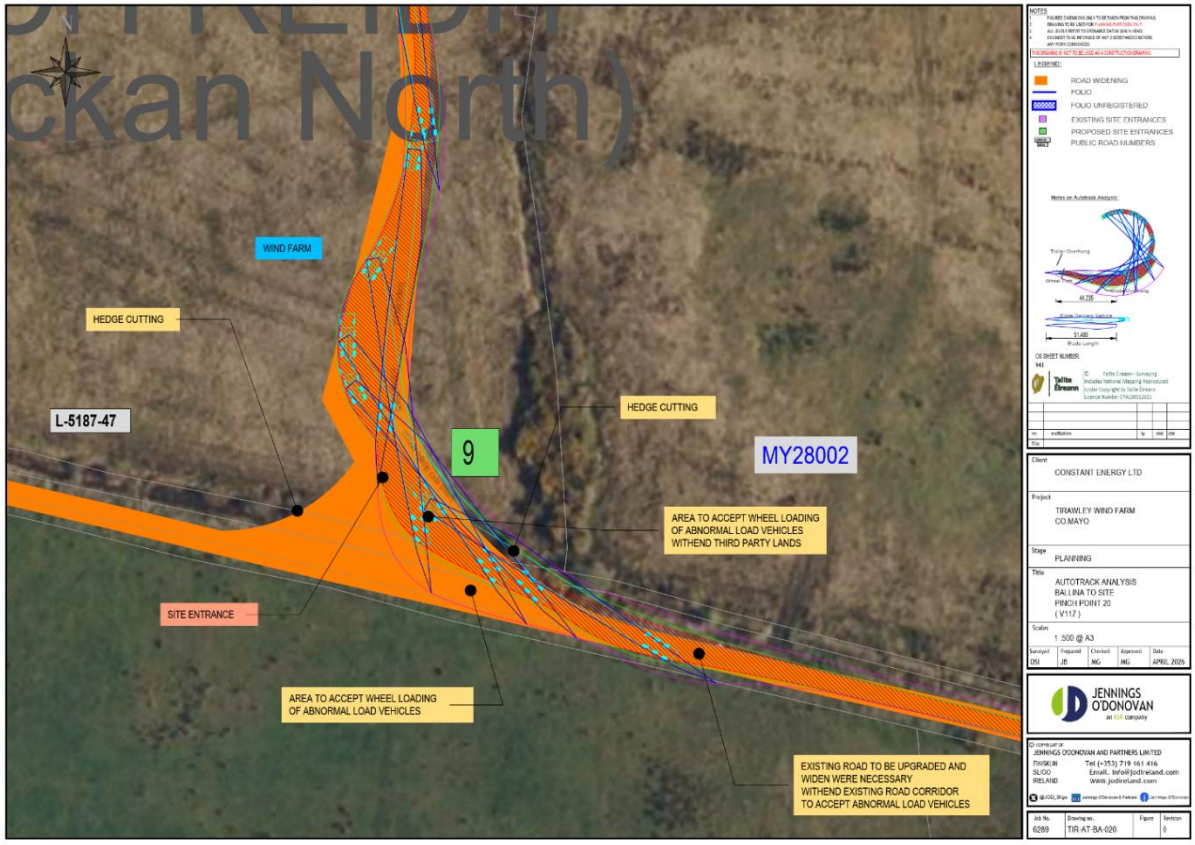

Figure 31: Auto Track Analysis Ballina to Wind Farm Site Pinch Point 20

Plate 18 – Street View of Site Pinch Point 20

Pinch Point No. 21:

- Third-Party Lands and Oversail Required.
- Road Strengthening Required.
- Hedge and Tree Removal and Trimming Required.

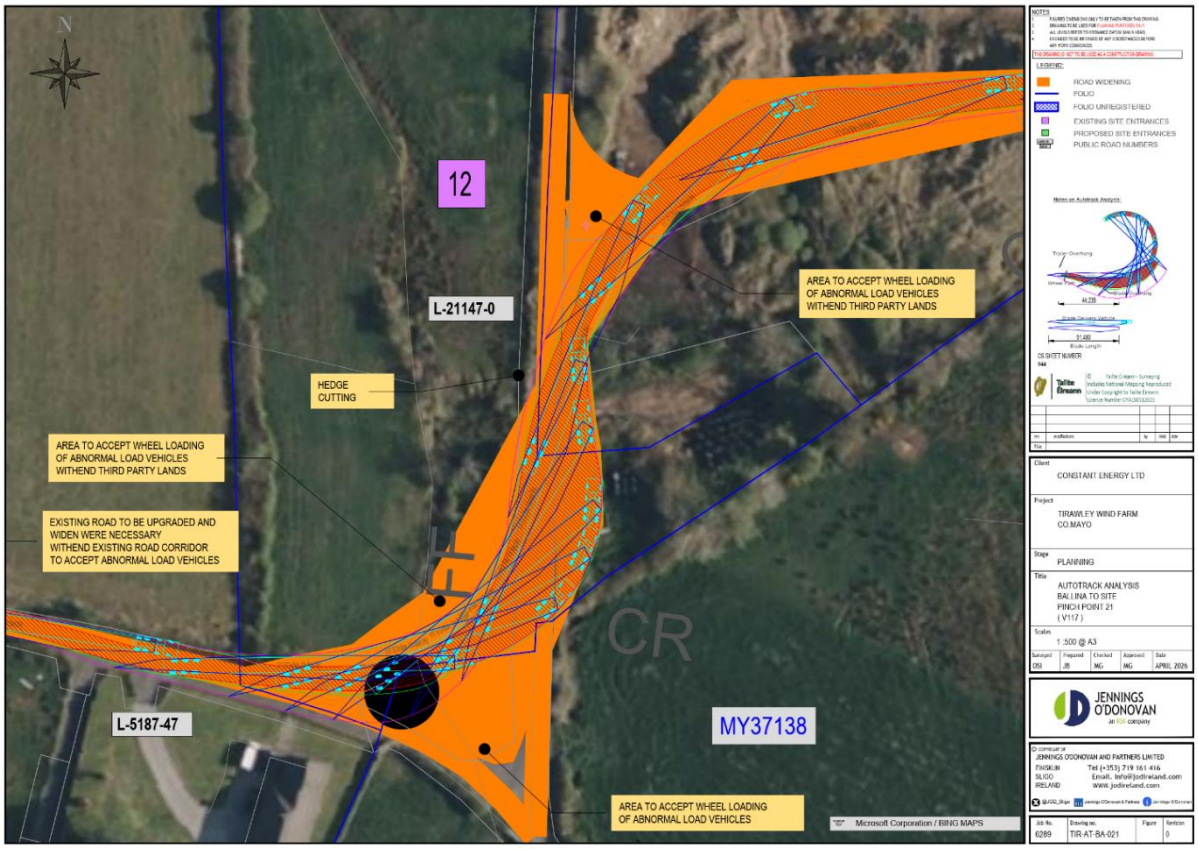

Figure 32: Auto Track Analysis Ballina to Wind Farm Site Pinch Point 21

Plate 19 – Street View of Site Pinch Point 21