TOBIN

Rooaunalaghta Green Energy Project

Appendix 17-1

Construction Traffic Management Plan

ROOAUNALAGHTA
Green Energy

BUILT ON KNOWLEDGE

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1. Introduction

CST Group Chartered Consulting Engineers were commissioned by TOBIN to carry out a Construction Traffic Management Plan for the Proposed Rooaunalaghta Green Energy Project in Rooaunalaghta, Co. Mayo. The purpose of this Construction Traffic Management Plan is to ensure safety, efficiently manage traffic and pedestrian flow, to protect vulnerable road users during the construction of this development and to detail the haulage routes which will be used during construction.

The proposed project is located approximately 4.5km north/northwest of Headford Town and approximately 4km southwest of the village of Shrule. The proposed wind farm site is located on either side of the R334 Regional Road, which runs in a northwest-southeast direction connecting Headford to Ballinrobe. The Turbine Delivery Route for the Wind Turbine components will depart from the Port of Galway and travel through Galway City via Lough Atalia Road, College Road (R339), the Tuam Road (R336) and the N6. Once out of Galway City the route follows the N84 to Headford, departing the N84 here and joining on the R334 for approximately 4.5km until reaching the site.

The proposed underground 33kV GCR associated with the grid connection runs through the townlands of Brodullagh South, Kinlough, Cloonbanaun, County Mayo, and the townlands of Largan, Joyce's Park, Shrulegrove, Carrowmore, Tonacooleen, Ralusk, Abbeytown, Ballinvoher, Killamanagh and Bunnasillagh, County Galway. The proposed 110kV loop-in substation and associated 110kV cables and end masts to connect to the existing overhead line are located in the townlands of Killamanagh and Bunnasillagh, County Galway (the substation itself is within the former townland).

Chapter 2 of the EIAR provides a detailed description of the proposed project and the works to be carried out.

It is estimated that the construction phase will begin in November 2028 and will take approximately 24 months.

This report will outline the management of vehicles and pedestrians on and in proximity to the site during the construction stage to ensure the safety of the road network and vulnerable road users. A site location map is provided in Figure 1.1 below.

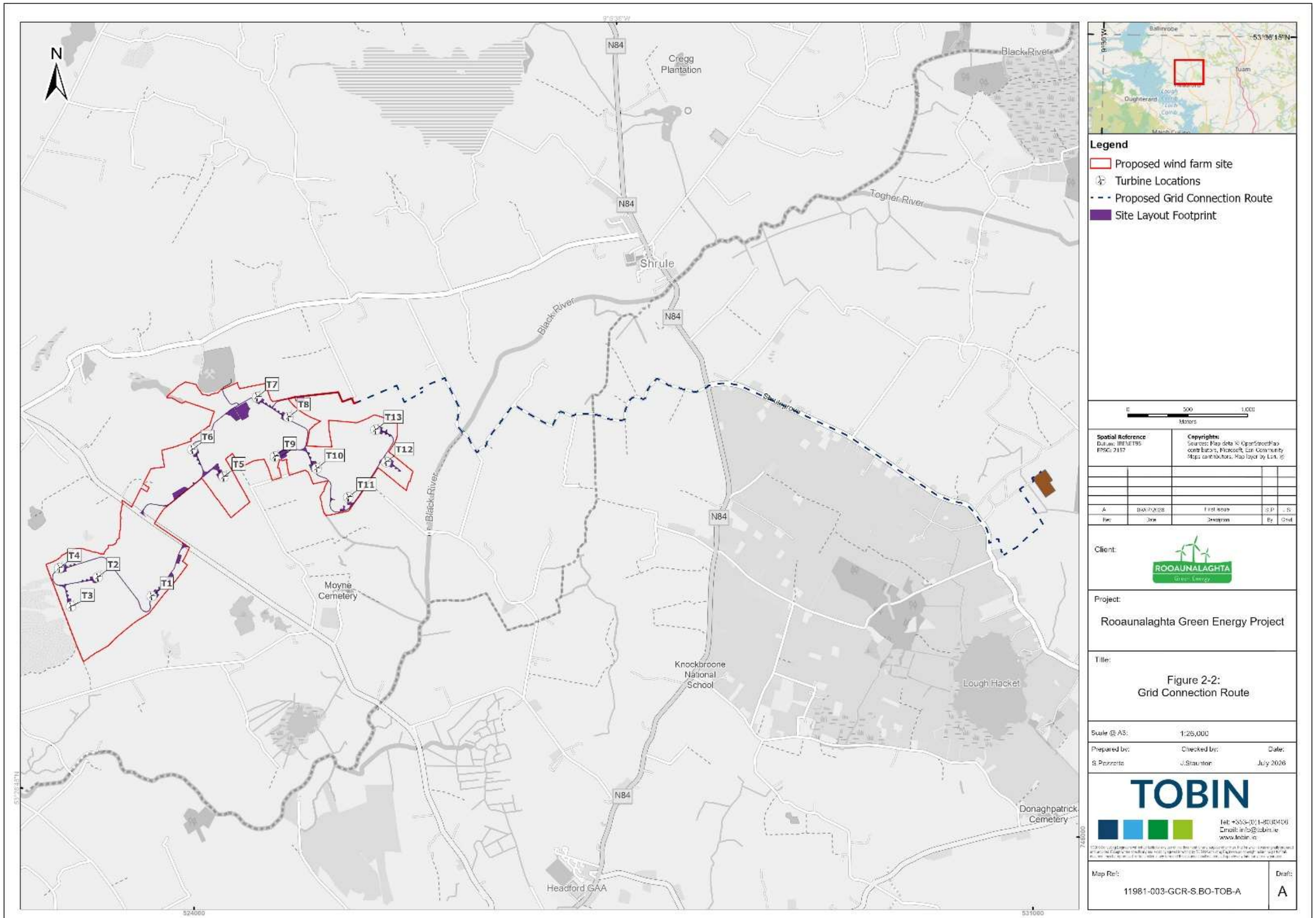


Figure 1.1 Site Location Map

2. Site Access and Egress

2.1 Wind Farm Site Access

There are two main construction accesses to the proposed wind farm site as the site is separated by the R334 Regional Road. There will be an access track located on both sides of the Regional Road which will link the two areas of the site to the R334 Regional Road. There is also a proposed entrance off the L2104 which will provide an access to the proposed 110kV substation located in Killamanagh. This will be for construction and operation uses and will be retained permanently.

Additionally, there is a possibility of accessing the adjacent quarry (P&D Lydon) directly from the site access tracks. However, the trucks would still have to join back onto the R334 for a short section to access the section of site on the opposite side of the Regional Road. Passing bays have been provided throughout this access track to allow for the passing of large vehicles during the construction stage.

The proposed site accesses should provide sufficient turning radii and manoeuvring space to accommodate the delivery of oversized wind turbine components, including rotor blades, tower sections, and nacelles. Due to the length and swept path requirements of the transport vehicles, it may be necessary for them to occupy part or all of the opposing traffic lane while completing the turning manoeuvre. To facilitate the safe turning of these vehicles into the access tracks, temporary traffic management measures will be required during the delivery process. Figure 2.1 below shows the proposed access tracks connecting onto the R334.

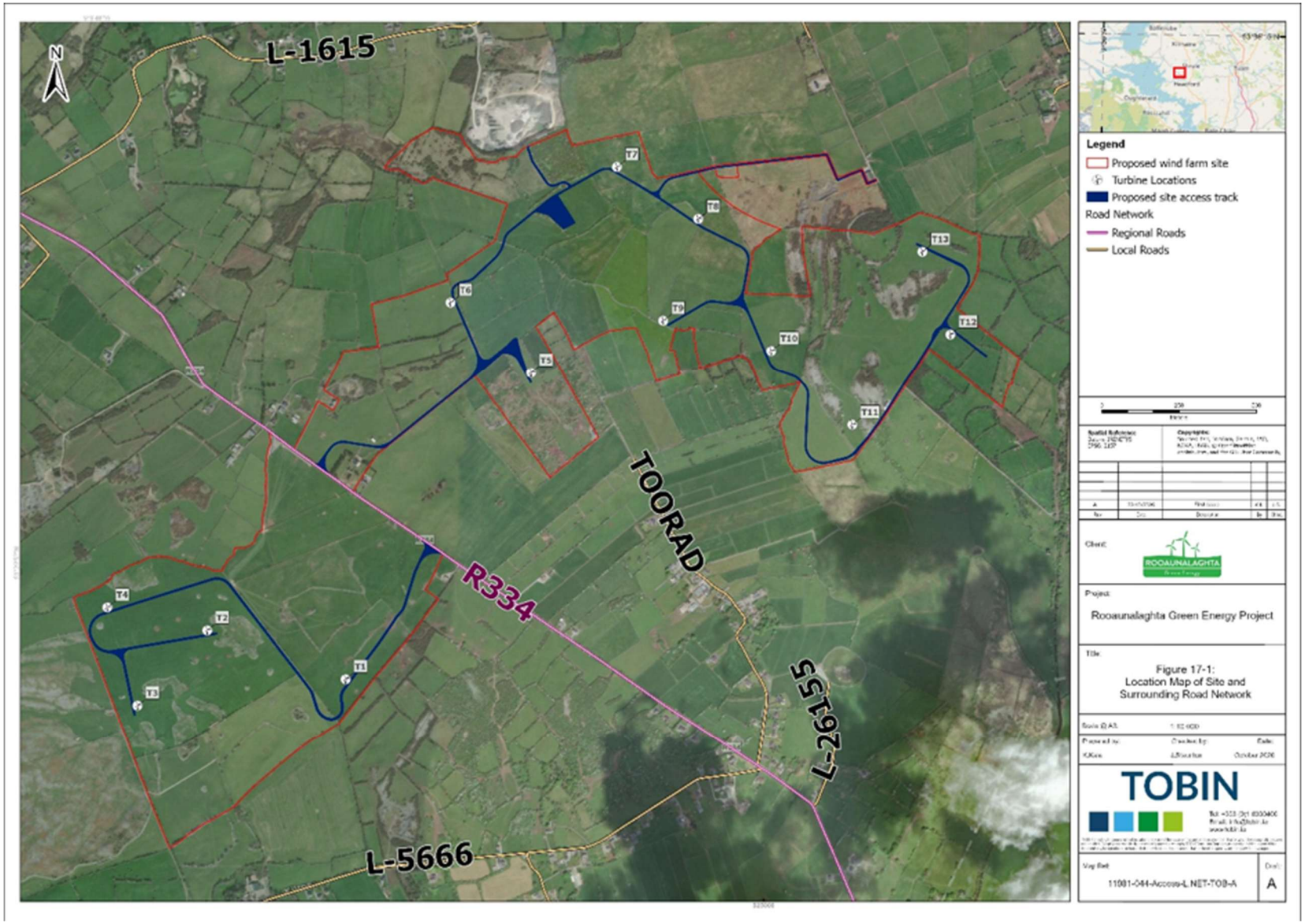


Figure 2.1 Proposed Access to the Site

In advance of all site accesses, in both north and south directions, sufficient advance warning signage will be placed along the R334 and the L2104 (and maintained for the duration of construction) indicating works ahead and a site entrance/site exit.

The three site entrances will have gates to ensure that the site is secured from unauthorised access. These gates are to be situated a minimum of 16.5m from the public road to ensure that long vehicles turning into the site are not jutting out onto the public road if the gates happen to be closed during the time of a delivery. The width of the construction entrances will be such that a vehicle exiting the site does not impede a vehicle entering the site at the same time, to ensure no obstruction of the public road.

There are no existing pedestrian facilities within the R334 in proximity to either of the construction site entrances. Additionally, there are no existing pedestrian facilities within the L2104 in proximity to the proposed entrance.

2.2 Construction Haulage Routes

The haulage routes for three quarries within proximity to the proposed site location have been provided below. Figure 2.2 displays a map with all three quarry locations and the potential haul routes leading to windfarm site. Additionally, the haul route to the substation can be seen in Figure 2.2. Figures 2.3,2.4 and 2.5 show alternative routes from the quarries to the site.
The three haulage routes depart from the following quarries:

- P&D Lydon, Carrowoughteragh, Co. Mayo (Direct Link to Site)
- Harringtons Concrete and Quarries, Claregalway, Co. Galway (31.3km)
- Mortimer Quarries, Belclare, Co. Galway (21.2km)

The haulage route to the substation from both Mortimer Quarries and Harringtons will follow the same route as to the windfarm site up until the R333. The route will divert off the R333 and onto the L2104 in Carrowconlaun. The route follows the L2104 for approximately 2km until reaching the proposed entrance to the substation on the right-hand side. If approaching the substation from P&D Lydon, the route involves exiting the quarry to the right and onto the L1615 and following this road until reaching the T-junction connecting to the N84. Turn right onto the N84 and then after approximately 1.4km turn left onto the L2104. The proposed substation entrance will be on the left-hand side after approximately 2.5km.

The haulage routes chosen for each quarry have been selected with the aim of:

- Prioritizing National and Regional Roads over Local Roads where possible
- Avoiding primary and post-primary schools where possible
- Selecting the shortest route, provided there are no repercussions to this
- Avoiding villages and towns where possible
- Avoiding narrow bridges

The routes departing from Harringtons and Mortimer Quarry would arrive to the site from the south, while P&D Lydon Stone links directly to the access track within the site from the quarry.

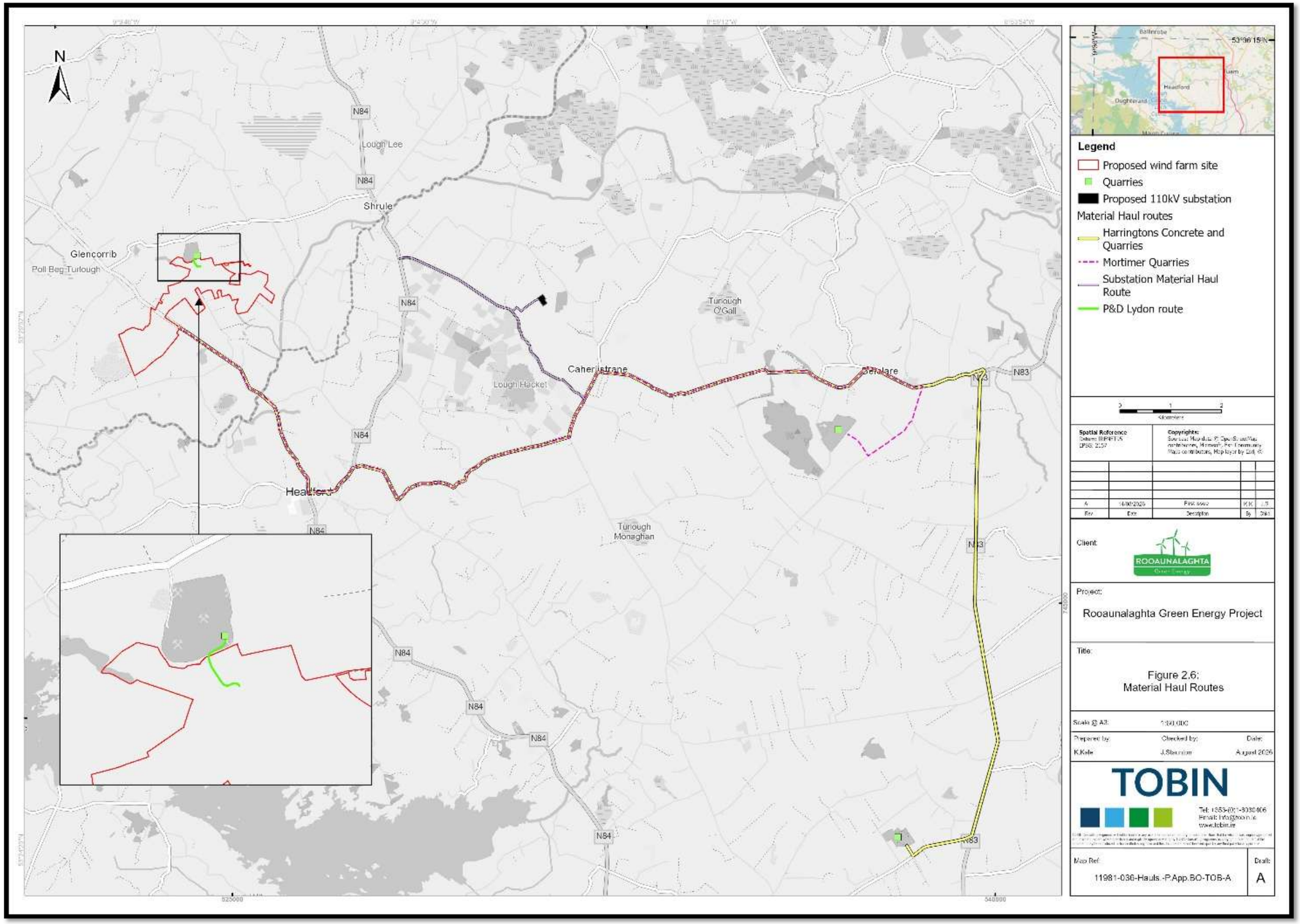


Figure 2.2 Quarry Locations and Haul Routes

Figure 2.3 illustrates an alternative route from P & D Lydon encase it is not possible to connect directly into the site from the quarry. Figure 2.4 illustrates an alternative shorter route from Harringtons Concrete and Quarries, however, it consists of more Local Roads. Figure 2.5 illustrates an alternative route from Mortimer Quarries which avoids Scoil Croí Ró Naofa, however, it consists of more local roads.

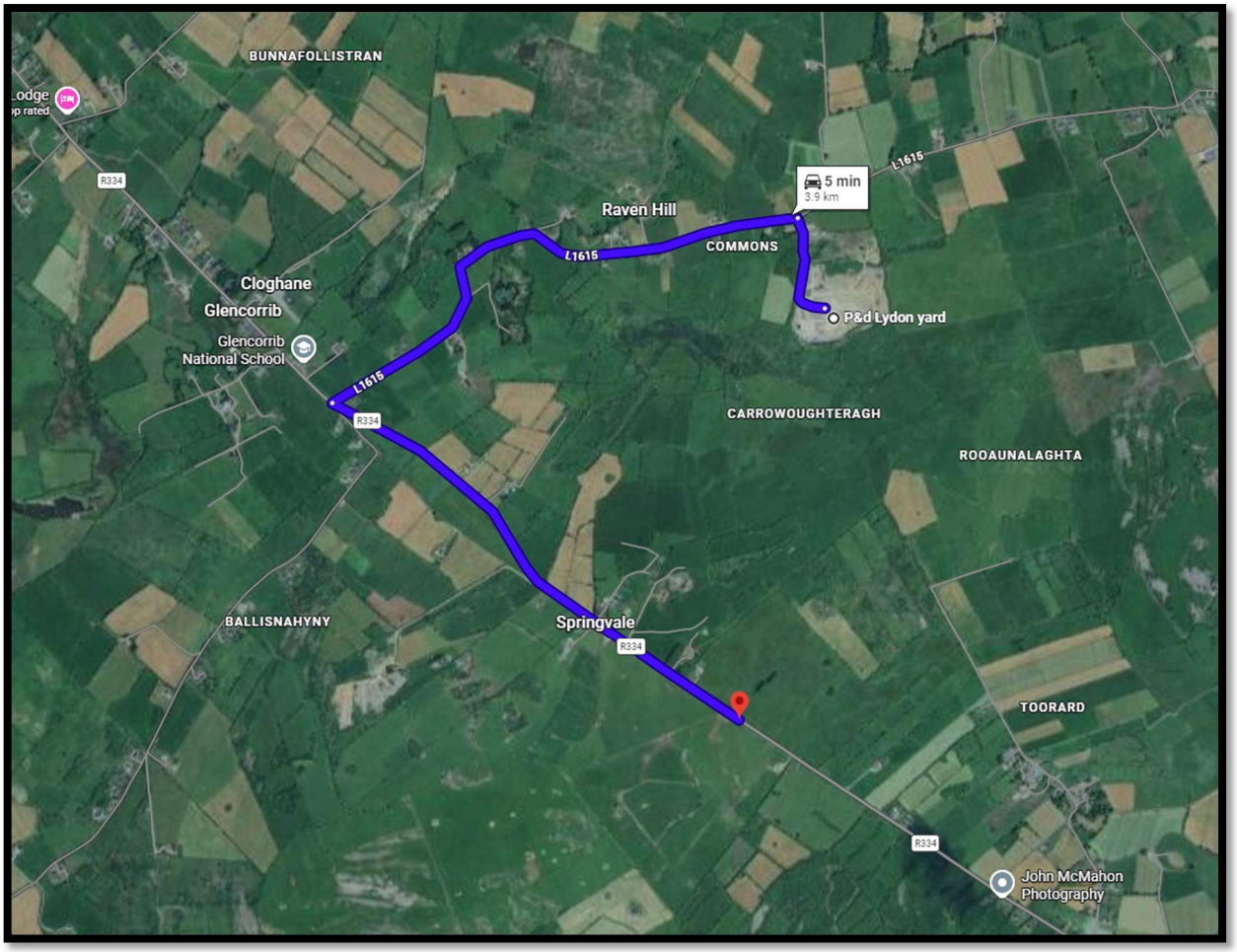


Figure 2.3 Alternative Haulage Route from P&D Lydon Quarry, Carrowoughteragh to Site (3km)

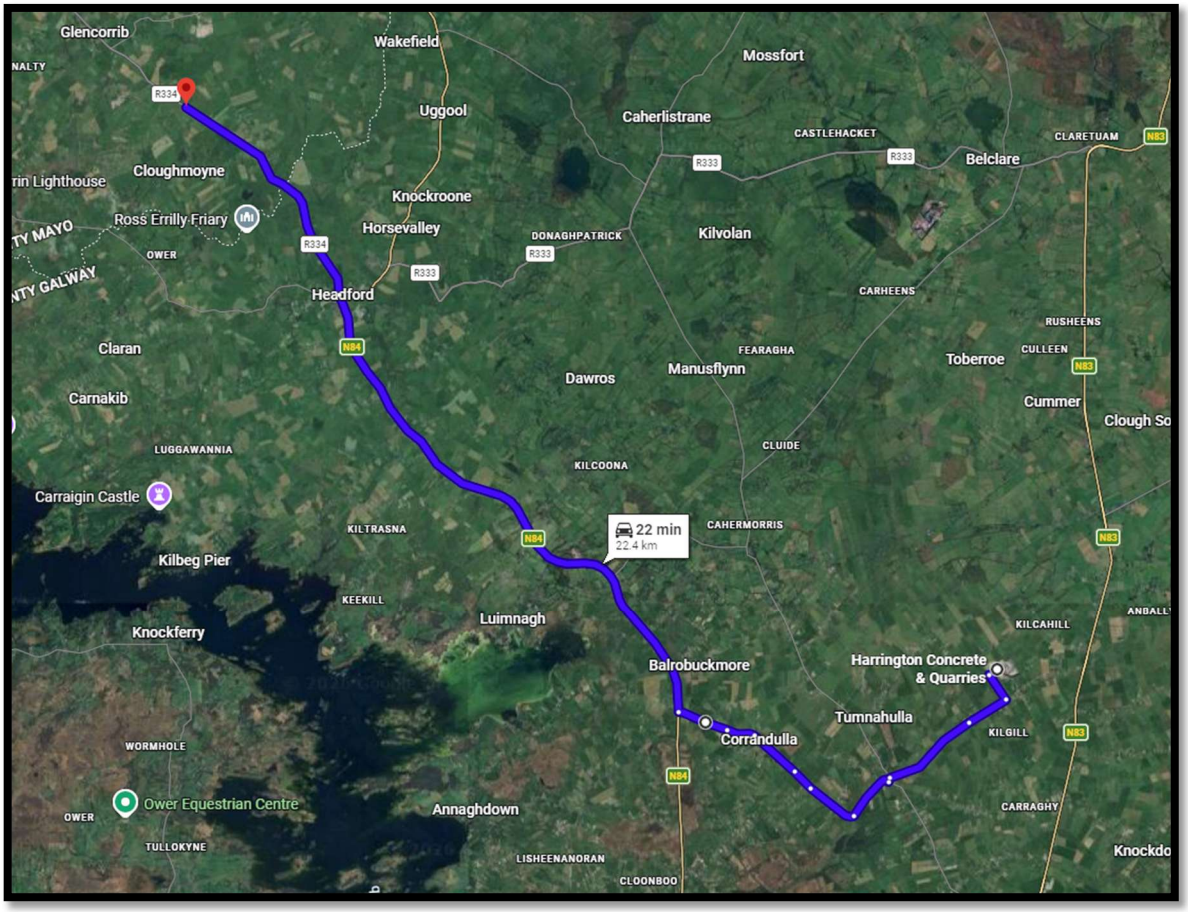


Figure 2.4 Alternative Haulage Route from Harringtons Concrete and Quarries, Claregalway to Site (22.4km)

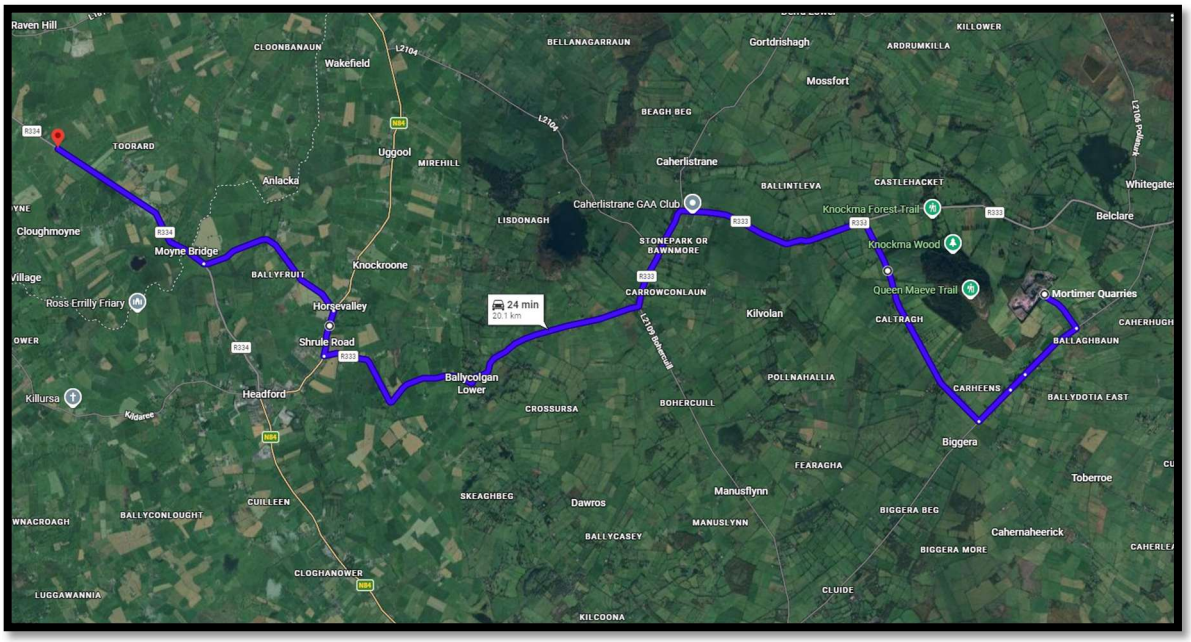


Figure 2.5 Alternative Haulage Route from Mortimer Quarries, Belclare to Site (20.1km)

Of the three haulage routes, the route departing from P&D Lydon would be the preferred route due to the ability to link directly to the site from the quarry, thus reducing construction traffic within the R334 and reduced travel times.

Both Mortimer Quarries and Harringtons Concrete and Quarries will pass through the town of Headford, whereas P&D Lydon will avoid this. Additionally, Mortimer and Harringtons will travel towards the site via the R333 Regional Road, briefly joining the N84 before turning right onto the R334 within Headford Town.

The route from Mortimer Quarries consists primarily of Regional Roads with a brief section of Local Road when exiting the quarry. This route will also pass a primary school (Scoil an Croi Ro Naofa) in Belclare.

The route from Harringtons Concrete and Quarries follows the N83 until joining onto the R333 and follows the same route as Mortimer quarries, also passing by Scoil an Croi Ro Naofa in Belclare.

Following P&D Lydon, the next preferred route departs from Mortimer Quarries due to it being mostly the same route as Harringtons but shorter. Finally, the least preferred route is Harringtons.

2.3 Turbine Delivery Route to Wind Farm Site

CST Group Consulting Engineers have been commissioned by TOBIN to carry out a Turbine Delivery Route Assessment for the project. The proposed TDR can be seen in the submitted EIAR Appendix 2-4 (TDR Report) along with the pinch points along the route. Swept path analysis has been carried out using Autodesk Vehicle Tracking on these pinch points to determine areas which may require 3rd party land take and accommodation works for the turbine to pass. The areas which will require accommodation works can be seen in the TDR Report.

There are some areas where there are signs to be removed etc. and one particular area in Galway City where the footpath needs to be traversed by the Blade Delivery Truck. Localised traffic management will be required in these areas in accordance with Chapter 8 of the Traffic Signs Manual.

2.4 Grid Connection Route

The proposed grid connection route can be seen in Figure 1.1. This grid connection route from the proposed windfarm site measures approximately 8.3km long to the proposed 110kV lop-in substation in the townland of Killamanagh, Co. Galway. The grid connection route will be underground and will follow off road sections through private lands, in addition to sections within the public road corridor.

Where the route is being constructed within the public road corridor, traffic management measures will be required to be put in place. Temporary traffic management measures shall be in accordance with Chapter 8 of the Traffic Signs Manual. Due to the narrow width of some sections of the route, road closures will be required. These will be carried out as “rolling” road closures where only shorter sections of the road will be closed at any one time. Where road closures are required for the works to be carried out, a diversion route for traffic will be implemented and clearly signposted. Notification will be issued to locally affected residents/landowners. Where sufficient road width is available a STOP/GO arrangement will be utilised to

minimise road closures. Where roadworks will impede dwelling access onto the road network, the residents shall be informed on how to access/egress their property and the associated timeline. Access will be maintained to residences and farms at all times other than for very short periods where the works are crossing a single narrow entrance. The grid connection route crosses the N84 National Secondary Road and it is intended that this will be carried out in two halves so that no road closure is required. Any diversion routes and all temporary traffic management measures shall be agreed with the local roads authority and An Garda Síochána.

3. Traffic Management System within Construction Sites

The contractor shall develop a site layout plan of the construction site which is to be regularly updated and accessible to all on-site personnel. The contractor shall design and implement a traffic management system to ensure the safe movement of vehicles, machinery, pedestrians and expected deliveries within the site.

A clear route providing access to each turbine location as well as other ancillary infrastructure located on the site should be established for vehicles and pedestrians, including one-way systems where appropriate. This route should be signposted and segregated as appropriate. Pedestrian crossing points should be clearly marked out. Additionally, a designated area for parking should be provided during the construction works.

Regular monitoring of the effectiveness of the traffic management system is to be put in place to ensure any required adjustments can be made. This traffic management system is to be reviewed and revised for the various phases of construction. Clear communication of this traffic management system with site personnel and visitors on the site is essential and shall be communicated via an induction or briefing documents. Additionally, any revised plans are to be effectively communicated.

The contractor shall ensure all vehicles and machinery are operated by trained personnel with the required training and permits. Where seatbelts have been provided for vehicles and machinery, they are to be worn. An account of all personnel on site should be accounted for as well as visitors coming and going. The contractor shall appoint a member of the staff to keep a record of this.

The contractor shall have an emergency procedure prepared for responding to incidents, including vehicle incidents and pedestrian incidents.

4. Pedestrian Management

Safe pedestrian movement on the site should be managed through the use of traffic control devices such as cones and barriers where necessary. Heavy machinery and vehicles should be equipped with appropriate audio and visual devices where required. These devices should be monitored to ensure they are always working.

The site shall be well lit to ensure proper visibility for pedestrians and vehicle operators.
The contractor shall ensure that workers are equipped with the relevant safety equipment as needed such as but not limited to:

- High-vis vest
- Safety Helmet
- Steel cap boots
- Protective eyewear

Areas where excavation is taking placed should be guarded by barriers to prevent pedestrians from falling into any excavated areas on site. Areas at risk of falling objects/materials should be clearly identified and marked for warning.

5. Temporary Signage and Markings

Temporary signage in accordance with Chapter 8 of the Traffic Signs Manual ”Temporary Traffic Measures and Signs for Roadworks” is to be used where necessary within the site and on the public road. Advance warning signs within both directions of access/egress on the R334 and the L2104 will be required indicating works ahead and a site entrance. Traffic control may be required at the junctions at specific busy periods, and this can be determined by the contractor. Ensure any temporary signage erected does not obstruct sightlines for both pedestrians and vehicles. Ensure any temporary signage and traffic management within the public road has been agreed with the local roads authority, An Garda Síochána and any relevant emergency services.

Temporary road markings are to be used where needed to ensure the safety of personnel on site, including pedestrians, vehicles and visitors.

6. Deliveries to Site

The contractor shall provide a safe route for deliveries arriving to the site. This may involve the use of a flagman during deliveries. Clear signage should be provided for delivery drivers when driving through the site. Delivery drivers should be instructed as to where to park their vehicles upon entering the site.

Loading and unloading of deliveries to site is to be carried out in a designated area within the site to ensure no obstruction of the public road. Sufficient turning area within the site should be provided to ensure no reversing movements are required on the public road.

This proposed development will require the delivery of long, heavy components such as wind turbine blades. Special trucks are required for the delivery of such blades; therefore, the site and site entrance will need to accommodate such trucks. The proposed access tracks within the site will need to be capable of providing sufficient turning area for the safe delivery of these blades. Additionally, the delivery of these blades will need to be carefully monitored to ensure no pedestrian or vehicles conflict with the delivery of the blades.

7. Road Cleaning

The contractor shall ensure that the R334 Regional Road and the L2104 Local Road adjacent to the site access/egress and substation are kept clean. Additionally, where there are road works to be carried out for the turbine delivery route and grid connection route, these areas will require road cleaning during and after the works.

Wheel washing facilities should be installed immediately in advance of the R334 and L2104, to minimise the transfer of mud, debris and other materials onto the public road network by construction vehicles. Where it is not possible to provide wheel washing facilities directly in advance of these roads, the contractor shall undertake road sweeping of the R334 and the L2104. The contractor shall ensure that equipment and materials are not stored on public roads and do not provide any obstructions on the public road. Figure 7.1 illustrates the location of the wheel wash facilities within the wind farm site and Figure 7.2 illustrates the location of the wheel wash facility within the substation access/egress directly in advance of the L2104.

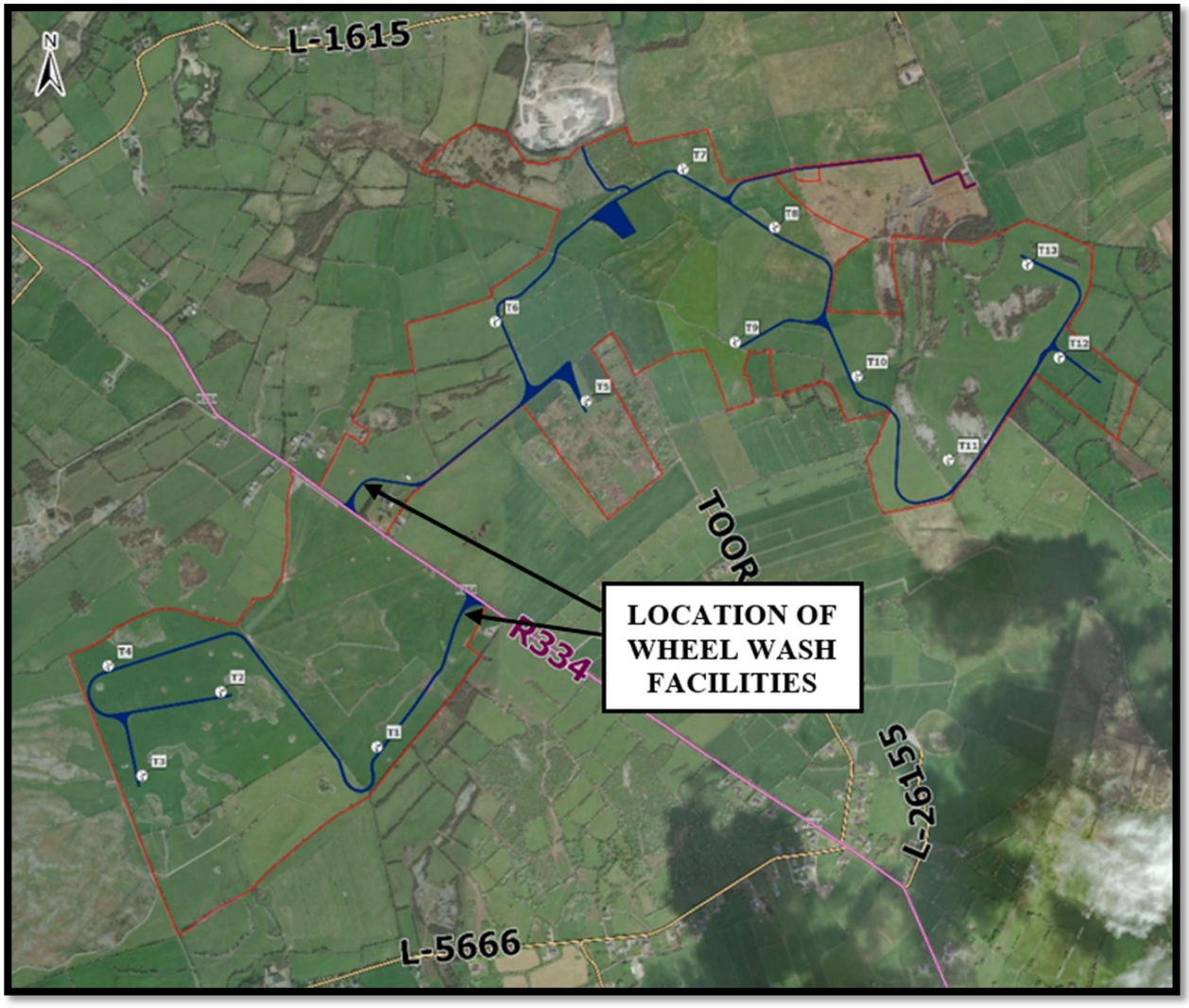


Figure 7.1 Wheel Washing Facility Locations

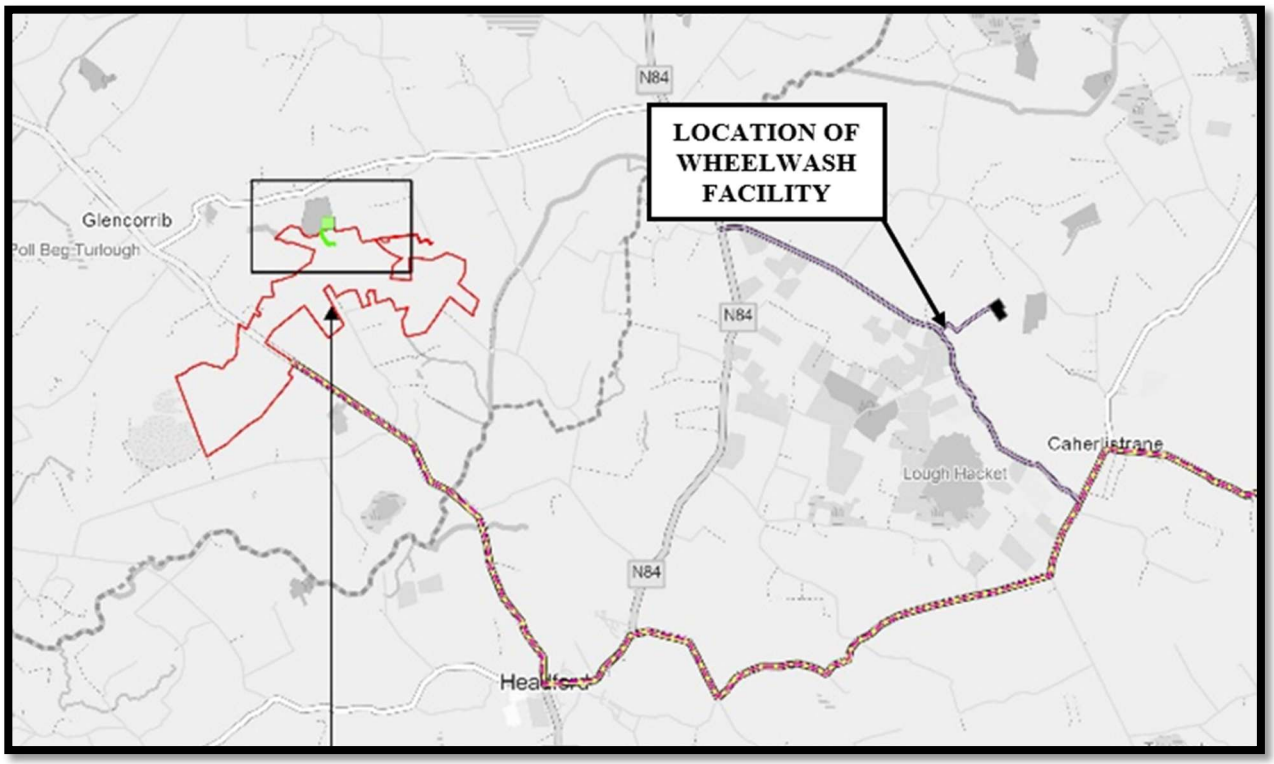


Figure 7.2 Wheel Washing Facility at the Substation

8. Training Required for Traffic Management

All site personnel to have the required training. Machinery, vehicles and equipment are only to be used by competent personnel with the relevant permits and training.

9. Potential Risks

The potential risks that may occur during the construction stage of the project in regard to traffic management have been listed below along with their mitigation measures. This is a non-exhaustive list.

Table 9.1 Potential Risks and Mitigation Measures Regarding Traffic

Potential Hazards	Mitigation Measures
Areas where excavations are being carried out	-Provide adequate protection in the form of barriers. -This should be supplemented by use of warning tape and/ or cones to prevent any pedestrians from falling into excavated areas.
High risk areas (Eg. LPG, Fuel, Gas, Electrical)	-Provide appropriate signage around high-risk areas
Pedestrian safety throughout the site	-Provision of pedestrian pathways. -Pedestrians to wear high-vis vests and other relevant PPE. -Required training for machine operators and vehicle drivers. -Clearly defined traffic routes. -Designated parking areas for site personnel. -Proper maintenance of vehicles and equipment. -Ensure site is well lit. -Ensure site is clear of any trip hazards which could cause harm to pedestrians. -Ensure that when the turbine blade reaches the site there are no interferences with pedestrians and the blade.
Collisions at the site entrance/exit	-Ensure adequate spacing is provided -Ensure sufficient traffic control is put in place both on site, on the R334 and on the L2104 when required.
Speeding on site	-Provide relevant speed limit signage. -Provide ramps if deemed necessary.
Emergencies	-Staff trained for emergency situations. -Designated area for emergency services. -Ensure emergency area parking is unobstructed at all times
Potential visitor injury	-Visitors should be accompanied at all times on site. -Visitors should sign in upon entry and be briefed on the site.
Delivery Driver Collision	-Delivery drivers to be instructed upon entry. -A safe route for delivery drivers should be provided on site including the appropriate signage. -Loading and unloading are carried out in a designated area on site. -Adequate space to be provided at the site entrance for delivery drivers.
Reversing Vehicles and machinery	-Vehicles and machinery to be equipped with the appropriate audio and visual devices where required.
Poorly lit areas around the site	-Ensure that the site is well lit throughout the site for the duration of working hours.