

Ballyglass Grid Connection

Site Access Report

July 2026

Reeve·Wave·Ltd.

CSEA
CIVIL AND STRUCTURAL
ENGINEERING ADVISORS LTD.

Site Access Report
Ballyglass Grid Connection
County Clare

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1 INTRODUCTION

Civil and Structural Engineering Advisors Ltd. (CSEA) is providing engineering consultancy services to Reeve Wave Ltd. in relation to a proposed 110kV substation and associated grid connection at Ballyglass, Blackwater, Castlebank, Lakyle, Mountcatherine, Oakfield, Parkroe, Reanabrone, Rosmadda West and Ruanard (townlands), Ardnacrusha, County Clare.

A 110 kilovolt (kV) Air-Insulated Switchgear (AIS) electrical substation, including 2 no. single-storey control buildings with staff welfare facilities, underground wastewater storage tank, all associated electrical plant, cabling, equipment and apparatus, and security fencing, within a substation compound with a total footprint of approximately 0.8 ha; 5.6 kilometre (km) 110kV underground cabling route, with 4.75km following the public road corridor and 0.85km along new proposed access track across agricultural grassland and private access tracks (including joint bays, communication and earth sheath link chambers and all ancillary works along the route); 1 no. temporary construction compound (including offices and staff welfare facilities); temporary construction and operational access from a new entrance from the L70382; Spoil management, landscaping and earthworks; Site drainage; All ancillary works and apparatus.

The development subject to this application forms part of grid connection and access arrangements which will facilitate the connection of the permitted Ballyglass Solar Array Phase 1 (Clare County Council Reference P22-591 and An Coimisiún Pleanála Reference ABP-316043-23) and Phase 2 (Clare County Council Reference P24-60485 and An Coimisiún Pleanála Reference PL-500253-CE-25) to the national grid.

This is a Site Access Report for the proposed development.

This report is presented in the following sections to allow a detailed engineering appraisal of the local road network in relation to proposed construction and operational traffic:

- The proposed development.
- The site and its context in the local road network.
- Existing and anticipated traffic.
- Delivery routes and *Swept Path Analysis*.
- Vertical and horizontal road geometry.
- Pavement and roadside drainage.
- Sightline appraisal at proposed entrances.
- Proposed mitigation measures.

2 THE PROPOSED DEVELOPMENT

General

The proposed development will consist of the provision of the following:

A 110 kilovolt (kV) Air-Insulated Switchgear (AIS) electrical substation, including 2 no. single-storey control buildings with staff welfare facilities, underground wastewater storage tank, all associated electrical plant, cabling, equipment and apparatus, and security fencing, within a substation compound with a total footprint of approximately 0.8 ha; 5.6 kilometre (km) 110kV underground cabling route, with 4.75km following the public road corridor and 0.85km along new proposed access track across agricultural grassland and private access tracks (including joint bays, communication and earth sheath link chambers and all ancillary works along the route); 1 no. temporary construction compound (including offices and staff welfare facilities); temporary construction and operational access from a new entrance from the L70382; Spoil management, landscaping and earthworks; Site drainage; All ancillary works and apparatus.

The development subject to this application forms part of grid connection and access arrangements which will facilitate the connection of the permitted Ballyglass Solar Array Phase 1 (Clare County Council Reference P22-591 and An Coimisiún Pleanála Reference ABP-316043-23) and Phase 2 (Clare County Council Reference P24-60485 and An Coimisiún Pleanála Reference PL-500253-CE-25) to the national grid.

This application is accompanied by a Natura Impact Statement (NIS).

The proposed development works can be summarised as follows:

- Construction of new 110kV substation;
- Underground 110kV underground cable grid connection to the existing Ardnacrusha 110kV substation, including associated joint bays, communication chambers and earth sheath link chambers;
- Temporary construction compound;
- Provision of vehicular construction and operational entrance and access track from the L70382.
- Site drainage;
- Spoil management, landscaping and earthworks.

Site Access

The site will be accessed for both the construction and operational phases by means of a new entrance from the L70382. The entrance will be suitably splayed and has been subject to sight line and autotrack analysis, with the latter including modelling of abnormal load delivery for the transformer. Operational sightlines will be maintained by trimming back hedgerows with all necessary land within ownership.

A 4.5 metre wide compacted access track will extend from the entrance to the substation compound, approximately 330m in length. The access track material will be made of porous aggregate material to support percolation to ground. The autotrack analysis has demonstrated that delivery of the substation transformer can be safely accommodated.

Substation

The 110kV substation involves two separate compounds namely (i) the 110kV compound which will be in the ownership of ESB Network and (ii) the IPP compound which will be in the ownership of the customer. Please refer to the enclosed drawings by Reeve Wave Limited for site configuration and design layout. The main construction elements will include two substation buildings of concrete block construct with tiled roof, which will accommodate staff welfare facilities for the operational phase, High Voltage (HV) electrical equipment and associated infrastructure including palisade fences and concrete post and rail fences. The installation of HV electrical equipment will include a Transformer (TRAFO) with associated equipment along with:

- Cable Sealing End (CSE);
- Surge Arrestor (SA);
- Earth Disconnect (DA, DB, DL, DT);
- Current /Voltage Transformer (CT/VT);
- House Transformer (HoT);
- Circuit Breaker (CB);
- Lightning Masts (LM);
- Diesel Generator;
- Harmonic filters if required by EirGrid;
- Capacitor Bank if required by EirGrid;
- Underground cable trench for the grid connection to the existing Ardnacrusha 110kV substation comprising of 3 no. power ducts, 2 no. telecom ducts and 1 no. earth continuity ducts.

The substation compound has a total area of approx. 0.8ha. Earthworks will be undertaken so the compound is level, with a finish compound level of 44m.

Connection to the National Grid

In order to connect to the transmission network, it is proposed to connect the proposed 110kV substation to the existing 110kV Ardnacrusha substation by means of a 110kV underground grid connection which is approximately 5.6 km in length. The cable ducts will be installed in an excavated trench, typically to a depth of 1.30m. The cable will run west from the proposed substation through private lands for 0.33km to where it will join the local road network via the L70382. The cable will run south along the L70382 for approximately 1.3km to where it meets the R463. The cable will then run westward for circa 1.95km to where it will join the L3056. It will then travel west and south for approximately 1.45km along the L3056 until it leaves the public road corridor and enters private track. The cable continues along this track for 0.57 km before connecting with the existing Ardnacrusha substation. The exact connection point within the existing Ardnacrusha 110kV substation compound will be determined by ESB and EirGrid requirements.

Joint bays are required at approximately 750 metre intervals along the underground cable route to facilitate the joining of cable lengths and comprise pre-cast concrete chambers (typically c. 2.5m x 6m x 2.05m) installed below finished ground level. Communication chambers and earth sheath link chambers will also be provided at each joint bay and approximately every second joint bay respectively, in accordance with ESB Networks and EirGrid requirements. All joint bays, communication chambers and earth sheath link chambers will be backfilled

to finished ground level upon completion of cable installation, with no above-ground manifestation in the completed development.

All works will be carried out in accordance with international best practice and full compliance with health and safety requirements.

The underground cable route will involve five watercourse crossings. The crossing of the Blackwater River will be undertaken by means of Horizontal Directional Drilling (HDD) beneath the watercourse. The crossings of the Oakfield and West Roo watercourses will be undertaken by means of flatbed crossing methodology. All watercourse crossings will be carried out in accordance with Inland Fisheries Ireland guidelines. There is no requirement for instream works at any proposed crossing.

The construction phase of the proposed development is anticipated to take approximately 9 to 12 months to complete over an 18-month period, with construction anticipated to commence in Q3 2027 subject to the granting of planning permission. Construction activities will be carried out during normal daytime working hours of 07:00 to 19:00 hours Monday to Saturday. To ensure that optimal use is made of good weather periods or at critical periods within the programme, it may on occasion be necessary to work outside of these hours; any such out-of-hours working will be agreed in advance with Clare County Council.

Where vegetation removal is required (e.g. segments of hedgerow), this will be undertaken outside of the bird breeding season, which runs from 1st March to 31st August inclusive, in order to minimise the potential for impacts on nesting birds. Construction may commence in the September to February period so that construction activities are ongoing by the time the next bird breeding season comes around, with works continuing through that breeding season subject to the vegetation-removal restriction above..

Temporary Construction Compound

As outlined in the submitted site layout plans, it is proposed to provide a temporary construction compound west of the proposed substation, accessed from the entrance from the L70382. The temporary compound will include the following facilities at a minimum:

- Adequate canteen space to allow for all workers during the peak period;
- Office space with lighting, heating and internet facilities;
- Toilets and adequate welfare facilities for construction staff in accordance with the relevant statutory Health & Welfare guidelines;
- Parking space for both light and heavy vehicles;
- Designated skips and temporary storage areas.

Surface Water Drainage and Water Services

Surface water drainage proposals for the development have been developed to mimic the natural drainage patterns of the site and thereby be in accordance with the best management practices of Sustainable Drainage Systems (SuDS) including those set out in the SuDS Manual (C753) published by CIRIA in 2015. Specifically, this includes the following:

- The proposed access track to the substation compound will be permeable allowing rainwater to infiltrate through the stone structure to the subsoil below;

- The compound construction is formed with permeable stone thus mimicking a soakaway scenario. ESB compound stone is single sized for the first 150mm for safety purposes. It then changes to a graded 6F2 material;
- The area to be drained includes the roofs and the bunded plinths. These equate to 786.5m² which is relatively minor in comparison to the overall compound area;
- Assuming even the most basic of infiltration rates down through the permeable compound stone, it is clear that the existing greenfield situation will be easily maintained;
- The surface water generated in the hardstanding and bunded areas will discharge to soakaways via a Class 1 Full Retention Oil Separator.

In relation to wastewater, a 5m³ foul holding tank is proposed as part of the operational development. These tanks are normally used in ESB substations. It will be emptied periodically, with the capacity in excess of modelled holding requirements.

The control buildings will include staff welfare facilities for the operational phase of the Proposed Development. Toilet facilities will be installed with a low-flush cistern and low-flow wash basin. Due to the specific nature of the proposed 110kV onsite substation, there will be a very small water requirement for occasional toilet flushing and hand washing, and therefore a potable water source is not required. It is proposed to either harvest rainwater from the roofs of the buildings or, alternatively, install a groundwater well adjacent to the proposed 110kV onsite substation in accordance with the Institute of Geologists Ireland, Guide for Drilling Wells for Private Water Supplies (IGI, 2007). The well will be flush to the ground and covered with a standard manhole. A pump house is not required as an in-well pump will direct water to a water tank within the roof space of the control building. Bottled water will be supplied for drinking, if required. Section 3 of the submitted Construction and Environmental Management Plan includes a detailed summary of surface water, wastewater and water supply requirements for the proposed development.

Site Reprofilng

The subject site is relatively flat in nature but analysis of topographic data confirms that cutting and filling of the existing terrain will be required to establish a level platform for the substation compound. Cutting into the existing terrain and the requirement to relocate soil has been minimised by establishing the compound level to 44 m. The excavation area of the substation site is approximately 0.9 ha. It is estimated that approximately 4,600m³ of soil will need to be removed to form a level substation compound and approximately 650m³ of soil will need to be removed to build up the access track from competent strata. It is envisaged that the majority of this excavated soil will be reused on site as part of landscaping measures, including the formation of perimeter berms and reinstatement works. Any residual surplus soil that cannot be accommodated on site will be disposed of offsite at an appropriately licensed waste recovery or disposal facility, with the option of an Article 27 by-product declaration to the EPA (under the European Communities (Waste Directive) Regulations 2011, S.I. No. 126 of 2011) pursued where the material meets the relevant criteria. Similarly, the necessary amounts of fill material which must be to ESB Networks specification will be transported onto site, supplemented by suitable material won from the site excavation. This is expected to be 13,650m³.

Site Restoration and Landscaping

This will involve the reinstatement of all other excavated materials and associated landscaping works. It will include the replacement of topsoil in disturbed ground areas such as access tracks and the removal of the construction compound and other temporary work areas. The proposed landscaping is consistent with that proposed under Clare County Council and An Coimisiún Pleanála References P22-591/ ABP-316043-23 and P24-60485 / PL-500253-CE-25.

Within the boundary of the proposed development, the Proposed Ballyglass Solar Array (Phase 2) application includes for the removal of some c. 25 linear meters of existing hedgerow required to facilitate the construction of access track throughout the proposed solar parcels. Notwithstanding the above areas of removal, this will be offset by the planting of new native hedgerow (outside of the SID application boundary) and the bolstering of some c.1,400 linear metres. The removal of hedgerow to facilitate the SID substation is limited to 3 linear metres, where it is proposed to add levelling batter to the access track. Overall, there is an additional c. 175m of proposed bolstered hedgerow, with no further removal or new hedgerow planting required as part of the proposed SID substation development as it is wholly contained within the parcels that form part of the proposed Ballyglass Solar Array.

Other Planned Works

Permitted Phase 1 of Ballyglass Solar Array (Clare County Council Reference P22-591 and An Coimisiún Pleanála Reference ABP-316043-23):

On 21st November 2023, planning permission was granted by An Coimisiún Pleanála for Phase 1 of Ballyglass Solar Array comprising:

A 10-year planning permission for a solar array at Ballyglass, Coolderry, Dromintobin North, Reanabrone, and Oakfield (townlands), Ardnacrusha, Co. Clare. The development will consist of c.265,000 m² of solar panels on ground mounted frames, 8 no. single storey control cabins with associated electrical transformer units and hardstand areas, 2 no. ring main units, underground cabling within the solar array site and within the L70382 public road to connect solar array field parcels, security fencing, CCTV, access tracks (upgrade of existing and new), upgrades to four existing agricultural field entrances on the R463, L3046 and L70382 and creation of new entrance on L70382, temporary construction compound, landscaping and all associated ancillary apparatus and development works.

Proposed Phase 2 of Ballyglass Solar Array (Clare County Council Reference P24-60485 and An Coimisiún Pleanála Reference PL-500253-CE-25):

Phase 2 of Ballyglass Solar Array was submitted to Clare County Council on the 4th October 2024, comprising:

A 10-year planning permission for a solar array at Coolderry, Dromintobin North, Dromintobin South, Knockbrack Lower, Knockbrack Upper, Monaskeha, Oakfield and Ruanard (townlands), Ardnacrusha, County Clare. The development will consist of c. 330,000 m² of solar panels on ground mounted frames, 13 no. single storey control cabins with associated electrical transformer units and hardstand areas, 2 no. ring main units, underground cabling within the solar array site and within the R471 public road to connect solar array field parcels, security fencing, internal CCTV, access tracks (upgrade of existing and new), upgrade to 1 no. existing agricultural field entrance and creation of 2 no. new entrances on the R471 and 1 no. new entrance on the L70382, 2 no. temporary construction compounds (including site

offices and welfare facilities), landscaping and all associated ancillary apparatus and development works.

The proposed development provides for minor modifications to the solar array permitted under Clare County Council Reference P22/591 / An Coimisiún Pleanála Reference ABP-316043-23. These modifications comprise the omission of 1 no. single storey control cabin and associated electrical transformer unit, omission of solar panels and access track, and reconfiguration of internal cabling. The solar array will connect to the national grid and will have an operational lifespan of 40 years.

Clare County Council granted conditional permission on the 16th October 2025. First and Third Party appeals were submitted to An Coimisiún Pleanála regarding same, An Coimisiún Pleanála Reference PL-500253-CE-25 refers. This case is due to be decided by 17th June 2026.

3 THE SITE AND CONTEXT

3.1 SITE LOCATION

The site (including Ballyglass Solar Arrays Phase 1 and 2) is located at Ballyglass, Coolderry, Dromintobin North, Dromintobin South, Reanabrone, Oakfield, Knockbrack Lower, Knockbrack Upper, Monaskeha, and Ruanard (townlands), Ardnacrusha. The substation site is located at Latitude 52.726004 N and Longitude 8.570658 W. The site is approximately 8km northeast of Limerick with good national road access from the M7 and M18/N18 routes. Figure 3.1 shows the location of the site. Figure 3.2 shows the road network local to the proposed development site indicated with the Red Line Boundary.

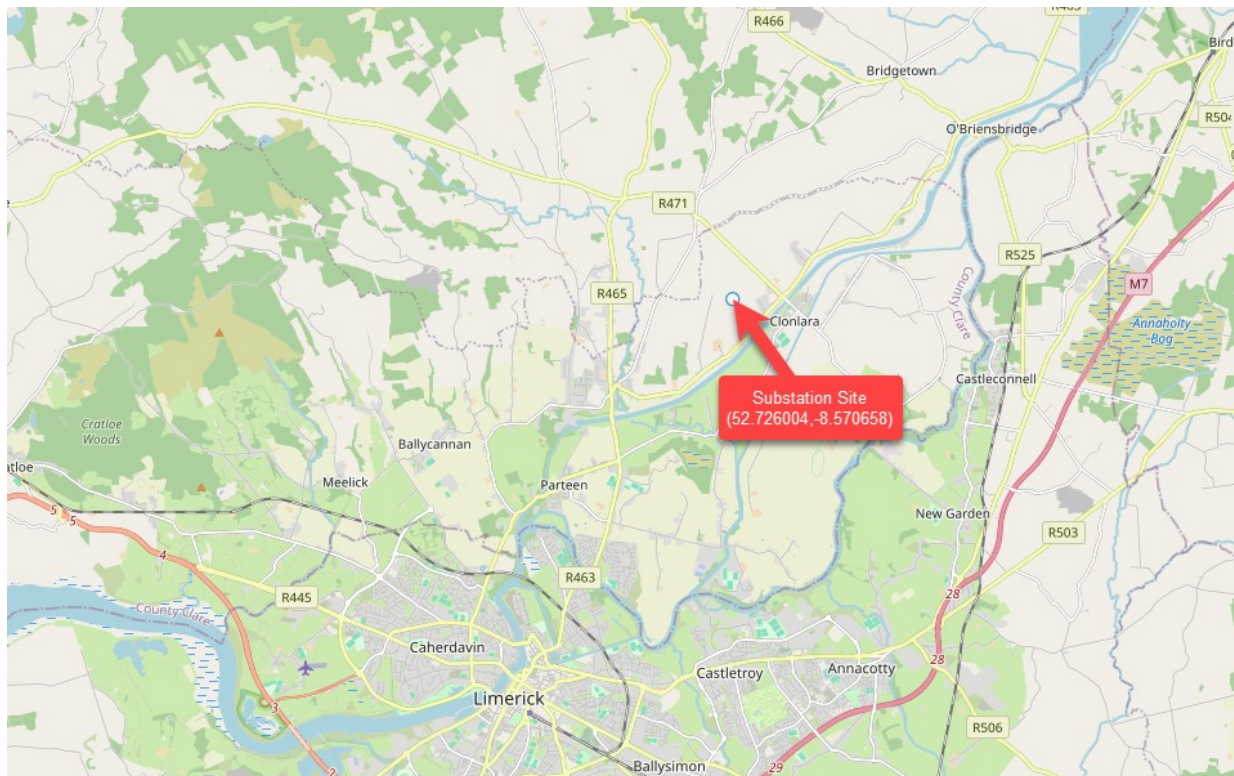


Figure 3.1: Development site location



Figure 3.2: The proposed development site including grid connection to Ardnacrusha and Ballyglass Solar Array Phase 1 and 2. (A full scale version of this image is included in Appendix A.)

3.2 SITE ENTRANCE

It is proposed to access the substation site via the L70382 local road at the location of an existing field entrance. A new entrance on the L70382 will be provided for as per the submitted plans. The adjoining hedgerows in ownership in the vicinity of the entrance will be maintained to facilitate appropriate sightlines. Figure 3.3 shows the proposed entrance. A link to a video of the site entrance is provided in the footnote¹.

Detailed consideration of sightlines at these entrances is presented in Section 8 of this report. The entrance will be used for the construction phase having regard to the planned location of site construction compounds. The entrance will all be maintained for operational stage access. As outlined in Chapter 4, trips to the facility during the operational phase will be very infrequent.

The proposed site entrance formed part of the Ballyglass Solar Array Phase 2 which was granted conditional permission (Clare County Council Reference P24-60485) and which is currently under consideration with An Coimisiún Pleanála (Reference PL-500253-CE-25) with first and third party appeals.

¹ <https://ln5.sync.com/dl/e906077a0#hyahfnrz-rrmik62k-f49v973e-xmk896kn>



Figure 3.4(a): Proposed Site Entrance (L70382)

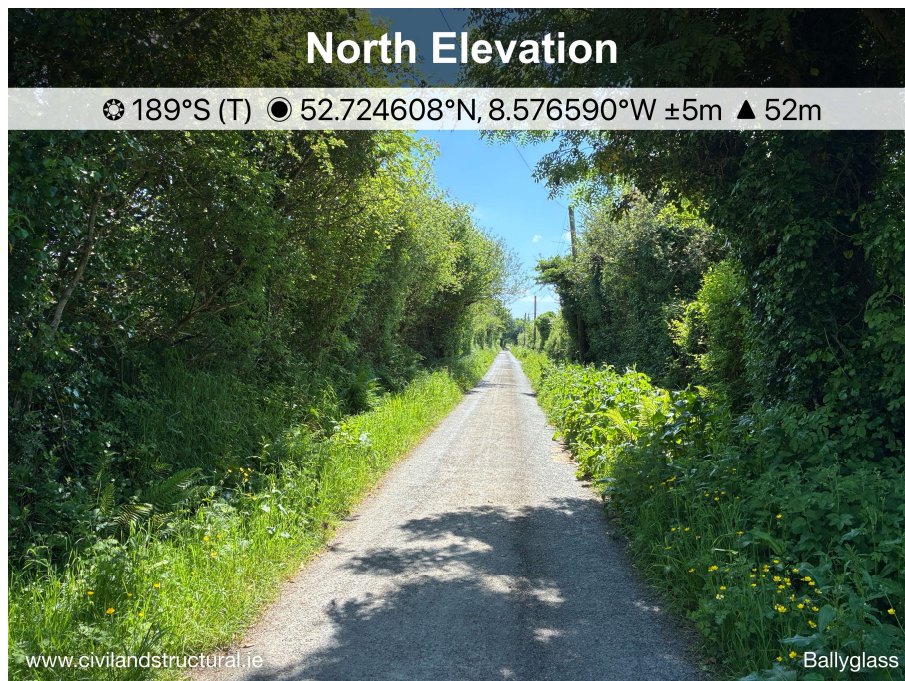


Figure 3.5: L70382 at Site Entrance (looking south)

3.3 GRID CONNECTION

In order to connect to the transmission network, it is proposed to connect the proposed 110kV substation to the existing 110kV Ardnacrusha substation by means of a 110kV underground grid connection which is approximately 5.6 km in length. The cable ducts will be installed in an excavated trench, typically to a depth of 1.30m. The cable will run west from the proposed substation through private lands for 0.33km to where it will join the local road network via the L70382. The cable will run south along the L70382 for approximately 1.3km to where it meets the R463. The cable will then run westward for circa 1.95km to where it will join the L3056. It will then travel west and south for approximately 1.45km along the L3056 until it leaves the public road corridor and enters private track. The cable continues along this track for 0.57 km before connecting with the existing Ardnacrusha substation. A detailed construction methodology for the grid connection works is provided in Section 2.4.8 of the Construction and Environmental Management Plan for the scheme which is provided as part of the Application documents.

3.4 TOPOGRAPHY AND LAND USE

The site is on topography characterised by gentle gradients rising from the south to the north. There are no inclines nor other topographical features impacting on the current road geometry which is free of steep gradients and hairpin bends. The site and its surrounds are predominantly in agricultural use with occasional domestic dwellings.

4 TRAFFIC

4.1 ANTICIPATED TRAFFIC

A cumulative assessment of traffic for the proposed Ballyglass Solar Arrays (Phases 1 and 2) and the substation and grid connection works is provided here. The construction phase is anticipated to take 18 months and a programme with an indicative start date of Q3 2026 is provided in Figure 4.1.

A detailed breakdown of the principal construction phase activities is provided in Figure 4.2. Materials will be delivered by Heavy Goods Vehicles (HGV). Table 4.2 provides an assessment of HGV trips for the permitted Phase 1 solar array, the proposed Phase 2 solar array and the proposed substation and grid connection which is the subject of this report. This allows for the presentation of the cumulative HGV trips for all 3 developments.

Stage	Site Works	Installation	Commissioning	Completion	Total
Solar Array Phase 1					
Solar Farm Phase 1	584	431	36	66	1,117
Solar Array Phase 2					
Solar Farm Phase 2	733	538	44	71	1,386
Substation (SID Application)					
Substation / Grid Connection	542	2734	708	80	4,064

Table 4.1: Cumulative HGV trips for the Phase 1 solar array, the Phase 2 solar array and the substation and grid connection.

The construction stage traffic impact under the permitted Phase 1 solar array development (Clare County Council Reference P22/591 / An Bord Pleanála Reference ABP-316043-23) considered HGV trips from both Phase 1 of the Solar Farm and the future Substation / Grid Connection. HGV trips were assessed as 5,181 trips equivalent of 13 no. average trips per working day over a 72-week construction period (assuming 5.5 working days per week which is typical for construction projects). HGVs trips from the proposed Phase 2 construction phase are assessed as a total of 1,386 trips. This is equivalent of 3.5 no. average HGV trips per day.

The total assessment of HGV trips for the combined Phase 1 + Phase 2 + future substation / grid connection is 6,567 HGV trips. This is equivalent to an average of 16.6 HGV trips per day for duration of construction period.

Construction staffing numbers will vary over the construction period reaching a peak of 80 workers during the construction stage. Staff will access the site using light vehicles (cars/minibuses), and car parking facilities will be available on site to ensure that traffic flows on the local road network in the vicinity will not be impeded during construction. Car-pooling for staff will be encouraged for workers. Standard working hours for construction will be 7.00am to 7.00pm daily. Final construction hours will be agreed with Clare County Council prior to commencement of construction. On completion of the works and commissioning of the solar array, it will be an unmanned facility which will be remotely monitored. Operational and maintenance activities in relation to the solar array will generate occasional vehicle trips, estimated at 2 to 4 van or tractor/trailer type vehicles per month.

4.2 TRAFFIC ASSOCIATED WITH EXISTING LAND USE

The land parcels forming the proposed solar array site currently comprise of working farms. The estimated existing traffic associated with agricultural activity at the Phase 2 site is detailed in Table 4.2. This is the average

agricultural traffic from the subject site benchmarked with agricultural traffic surveys from recent solar farm projects of a similar scale to Ballyglass Solar Array Phase 2. The table shows trips related to agricultural activity over a 52-week period. The total number of trips in this period amounts to 436 per annum, or 36 per month. Once construction of the solar array commences, vehicle trips associated with agricultural activity will cease. After a temporary increase in traffic numbers during the construction phase, the absence of agricultural vehicles from the local road network will result in a reduction of traffic on the network. The monthly average trips are expected to drop from the current 36 trips to an estimated 2 to 4 trips per month during the solar array's operational phase.

Activity	Vehicle Type	Approximate No. of Trips
Silage making	Tractors/trailers, loading shovels, harvesters (10 tonne/15 tonne vehicles)	112
Feed delivery	Articulated Trucks (20 tonne vehicles)	38
Milk Collection	Articulated Tankers (20 tonne vehicles)	62
Animal sales and movement	Tractors/trailers and single/double axletrucks (15 tonne vehicles)	100
Grain extraction	Tractors with double-axle trailers	124
Total		436

Table 4.2: Traffic Associated with Existing Agricultural Land Use

		Q3 - 26			Q4 - 26			Q1 - 27			Q2 - 27			Q3 - 27			Q4 - 27		
		Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Substation																			
Site Works																			
Civil Works																			
Electrical Works																			
Commissioning																			
Solar Farm																			
Site Preparation																			
Solar Panel Erection																			
Commissioning																			
Completion Works																			

Table 4.1: Anticipated Construction Programme

5 DELIVERY ROUTE AND SWEEP PATH ANALYSIS

5.1 PROPOSED DELIVERY ROUTES

5.1.1 General Delivery Route

It is anticipated that solar panels and other equipment will be imported via the Port of Foynes. It is proposed that the development site be accessed via N21, M20 and N18 national roads, the R645 and R463 regional roads and the L70382 local road to the proposed site entrance. A *Swept Path Analysis* of the proposed routes showed no difficulties for the largest delivery vehicle proposed for the construction stage of the development. Appendix A of this report includes a **detailed suite of drawings** showing the *Swept Path Analysis* of the delivery routes. It is noted that the delivery routes presented here are proposed routes to site which reflect the technical reviews completed for the project to date. Further to any grant of permission, the final delivery routes shall be subject to agreement with Clare County Council.

5.1.2 Route to Substation Entrance

It is proposed to access the substation site directly from the R463 via the L70382 to a new entrance. Figure 5.1 shows the proposed delivery route from the L70382 to Site Entrance 1. A *Swept Path Analysis* of the proposed route showed no difficulties with this route for the largest delivery vehicle proposed for the construction stage of the scheme.



Figure 5.1: Route to Site Entrance (L70382) (A3 drawing provided in Appendix)

5.2 VEHICLE TYPE FOR SWEPT PATH ANALYSIS

A *Swept Path Analysis* of the delivery routes and site entrances has been conducted using specialist software (AutoTrack by AutoDesk). *Swept Path Analysis* is helpful to identify areas on vehicle routes where trailers overfly pavement edges when turning movements are being conducted. Such areas require consideration to ensure there are no obstacles present to obstruct vehicle movements. Temporary removal of roadside features such as utility poles and boundary fences is sometimes required to facilitate vehicle movements.

The *Swept Path Analysis* of the delivery routes and site entrances is based on the largest vehicles likely to require access to the site during the construction phase of the proposed development. In this case, the analysis vehicle is a 40ft articulated lorry for general deliveries as shown in Figure 5.2. The exact dimensions and axle locations of the vehicle are taken from the Road Safety Authority’s publication “Guidelines on Maximum Weights and Dimensions of Mechanically Propelled Vehicles and Trailers including Manoeuvrability” (current version dated March 2020).

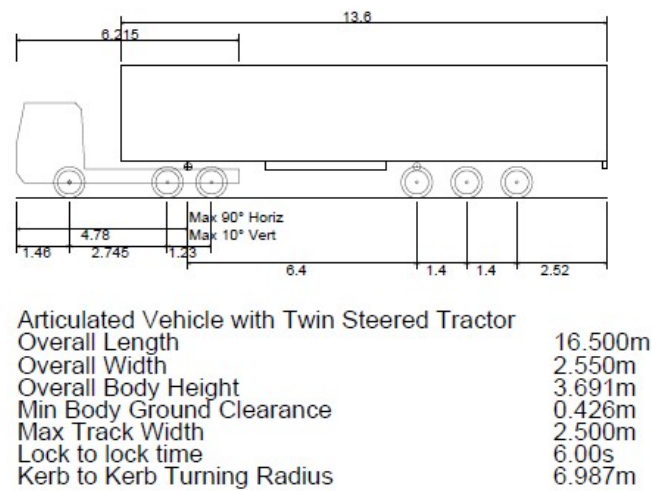


Figure 5.2: Swept Path Analysis Vehicle: 40t Articulated Vehicle for general deliveries.

The Swept Path Analysis was also undertaken for a typical transformer delivery vehicle with rear steering axles as shown in Figure 5.3.

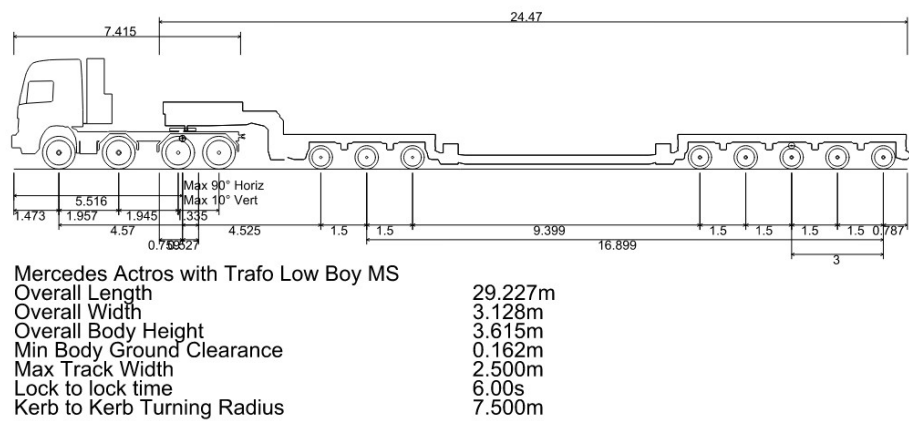


Figure 5.3: Swept Path Analysis Vehicle: Special Vehicle with Rear Steering Axles for Transformer Delivery.

5.3 SWEPT PATH ANALYSIS – SITE ENTRANCE – L70382

The Swept Path Analysis of the Site Entrance is provided in Figure 5.4. The analysis shows that the delivery vehicle and the abnormal load vehicle can access and egress the site without the need for any works to the L70382. Sight lines are discussed in Section 8 of this report. The proposed site entrance forms part of the Ballyglass Solar Array Phase 2 which was granted conditional permission (Clare County Council Reference P24-60485) and which is currently under consideration with An Coimisiún Pleanála (Reference PL-500253-CE-25) with first- and third-party appeals.

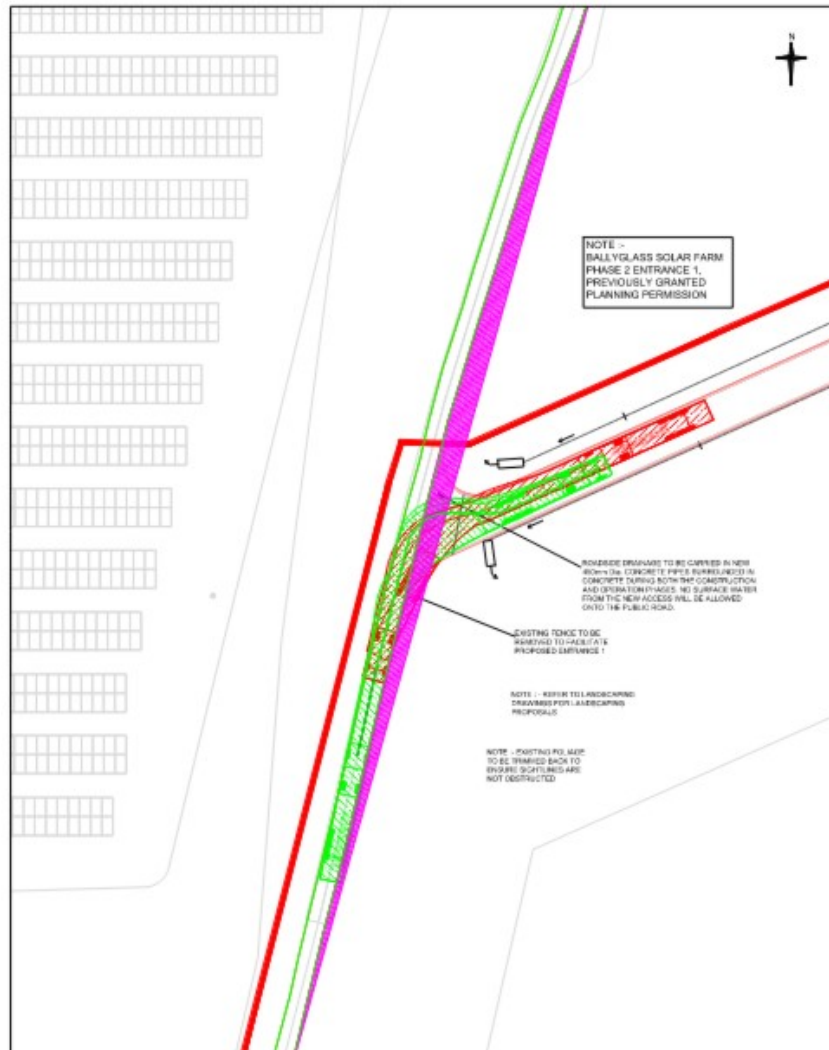


Figure 5.4: Swept Path Analysis of Site Entrance 1 (L70382) (A3 drawing provided in Appendix)

6 VERTICAL AND HORIZONTAL ROAD GEOMETRY

6.1 VERTICAL GEOMETRY

It is proposed that guidance documents from the wind farm industry and the forestry industry provide a basis for the vertical geometry review for construction vehicles to the proposed substation development. These guidance documents are:

- Vestas Transportation Guidelines V52. This document provides good advice on the access requirements for long wheel base vehicles to all types of sites.
- COFORD Forest Road Manual – Guidance for the Design, Construction and Maintenance of Forest Roads.

These documents allow access routes to be appraised in terms of the ability of delivery vehicles to access and egress construction sites for energy projects with regard to vertical geometry. The maximum gradients permitted in these guidance documents are:

- Vestas Transportation Guidelines V52 – 14%.
- Forest Roads Manual – Maximum Engineered Track Gradient – 16.7%.

For precautionary purposes, the lower figure of 14% will be used to assess the vertical geometry in relation to the proposed development.

There are no locations on the proposed delivery routes where the gradient exceeds 14%. The road gradients on the proposed route are shallow. The road level at the Site Entrance on the L70382 is approximately 51mOD. The gradient on the L70382 from its junction with the R463 is 1.63%.

A review of the vertical geometry for crests and dips that could cause difficulties for long wheelbase delivery vehicles was undertaken and no significant crests nor dips in the existing alignment were found.

6.2 HORIZONTAL GEOMETRY

For the horizontal geometry review, the same guidance documents as those listed in Section 6.1 form the basis of the review and they are supplemented by the Swept Path Analysis described in Section 5 of this report.

The horizontal geometry design parameters from the guidance documents are:

- Vestas Transportation Guidelines V52: Minimum Inner Bend Radius: 3m, Minimum Outer Bend Radius 27.5m.
- Forest Roads Manual: Desirable Minimum Radius for Curves: 20m; Absolute Minimum Bend Radius at Hairpins: 12m.

The existing horizontal geometry of the proposed route was found to be adequate in accordance with these parameters. The Swept Path Analysis of the proposed delivery route showed that no works are required to the local road network to facilitate the passage of a 40ft articulated lorry to and from the site (see Section 5).

6.3 PAVEMENT WIDTH

Pavement widths measured on site on the R463 were typically in the range 4.5 to 7.5m. The L70382 varies in width between 2.0m and 3.5m. The maximum width of mechanically propelled vehicle permitted on the public road network is 2.7m. The maximum width of a vehicle together with its load is 2.9m (Figure 6.1). It is proposed to lay a clause 804 track on the unpaved areas of the L70382 as far as Entrance 1 for construction access. (Section 7.2 of this report refers). This will ensure construction and delivery vehicles can safely access the solar array site.

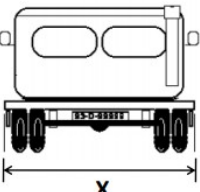
MAXIMUM WIDTH		
THESE DIMENSIONS DO NOT APPLY TO A LAND IMPLEMENT OR VEHICLE FOR GRASS CUTTING, HEDGE-TRIMMING OR FORESTRY OPERATIONS WHILE USED IN THE DAY TIME, OR A LAND IMPLEMENT USED DURING LIGHTING UP HOURS FROM JULY TO AUGUST INCLUSIVE, PROVIDED THAT THE VEHICLE COMPLIES WITH THE ROAD TRAFFIC (LIGHTING OF VEHICLES) REGULATIONS 1963 (S.I. NO. 189 OF 1963).		
DESCRIPTION	WIDTH (X)	IMAGE
AGRICULTURAL TRAILER / PIECE OF INTERCHANGEABLE TOWED EQUIPMENT	2.55m ⁸	
CONDITIONED VEHICLE	2.6m	
LARGE TRACTOR	2.75m	
PASSENGER VEHICLE WITH SEATING CAPACITY FOR MORE THAN EIGHT PASSENGERS	2.55m	
REFRIDGERATED VEHICLE, TRAILER OR SEMI-TRAILER	2.55m (For vehicles first registered or trailers first licensed on or before 31 st Dec 1997 the limit was 2.6m but this expired on 31 st Dec 2006)	
RIGID TRUCK, TRACTOR UNIT OF AN ARTICULATED VEHICLE, TRAILER OR A SEMI-TRAILER	2.55m (Provided that the vehicle's DGWV exceeds 3.5 tonnes)	
VEHICLE OR TRAILER	2.5m	
VEHICLE TOGETHER WITH ITS LOAD (Apart from loose agricultural produce which is not in bales or crates)	2.9m	

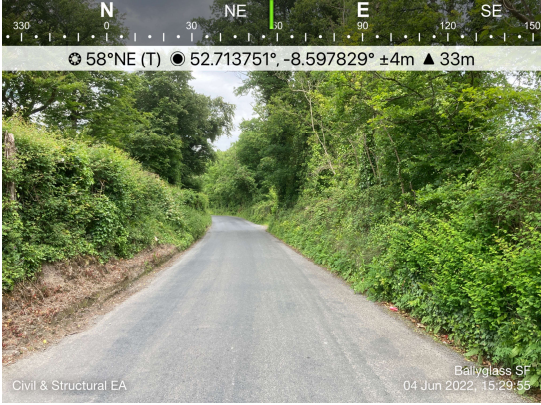
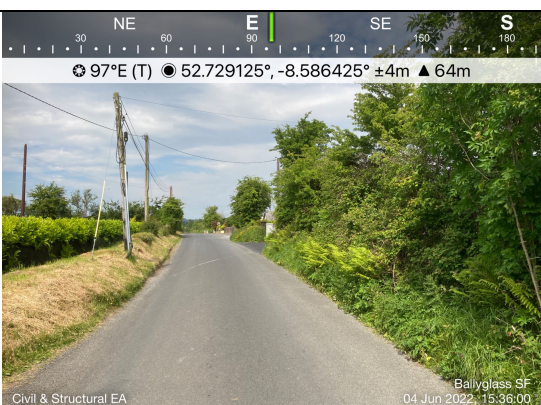
Figure 6.1: Excerpt from Road Safety Authority's publication "Guidelines on Maximum Weights and Dimensions of Mechanically Propelled Vehicles and Trailers including Manoeuvrability" (current version dated March 2020).

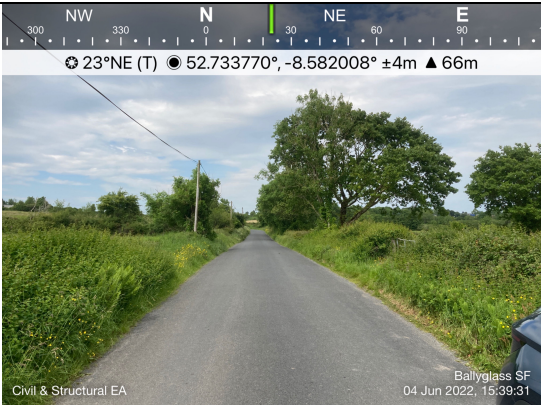
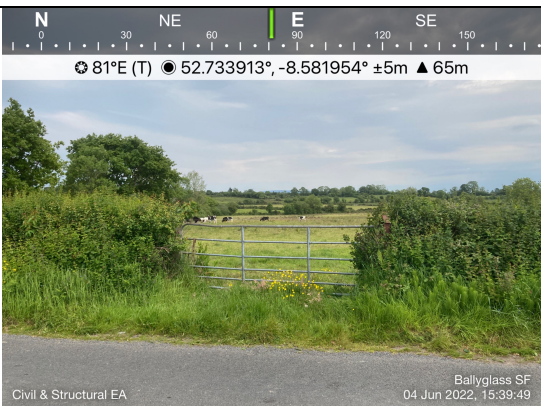
7 PAVEMENT AND ROADSIDE DRAINAGE

7.1 DELIVERY ROUTE INSPECTION

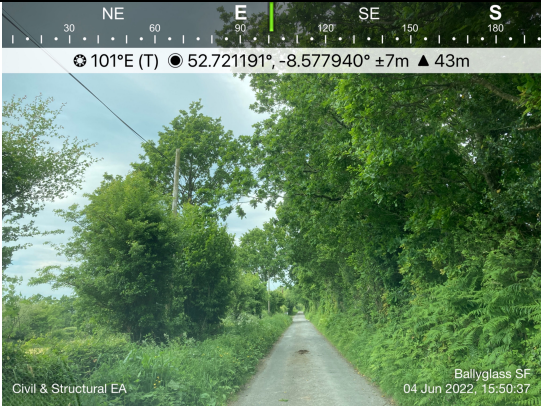
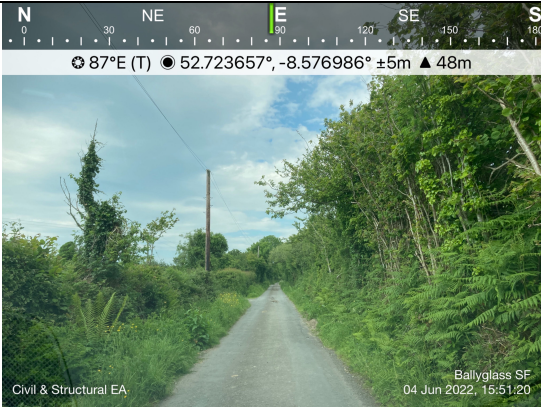
An inspection of the proposed delivery route was conducted on a number of occasions to log pavement conditions and widths as well as roadside drainage and utility plant. Images of the proposed delivery route to the site are provided in Table 7.1. The locations of the images are provided in Figure 7.1.

No.	Description	Image
1	R463 Looking West. Pavement condition good.	 Picture 1: IMG_7311
2	R463 Looking East. Pavement condition good.	 Picture 2: IMG_7313
3	R463 Looking West (sightlines). Pavement condition good.	 Picture 3: IMG_7317

No.	Description	Image
4	L3046 Looking North. Pavement condition good. Approx. width 5m.	 Picture 4: IMG_7319
5	L3046 Looking North. Pavement condition good. Approx. width 5m. Overhead cables LHS.	 Picture 5: IMG_7325
6	L3046 Looking North. Pavement condition good. Approx. width 4.5m. Overhead cables crossing.	 Picture 6: IMG_7327
7	L3046 Looking North. Pavement condition good. Approx. width 4.5m. Overhead cables LHS and crossing.	

No.	Description	Image
		Picture 7: IMG_7329
8	L3046 Looking North. Pavement condition good. Approx. width 4.5m. Overhead cables LHS.	
		Picture 8: IMG_7331
9	L3046 Looking East. Pavement condition good. Approx. width 4.5m. Overhead cables LHS and crossing.	
		Picture 9: IMG_7333
10	L3046 Looking North. Pavement condition good. Approx. width 4.5m. Overhead cables LHS.	
		Picture 10: IMG_7335

No.	Description	Image
11	L3046 Looking South. Pavement condition good. Approx. width 4.5m. Overhead cables RHS.	 Picture 11: IMG_7337
12	L70382 Looking North. Pavement fair. Approx width 2.5m. Overhead cables LHS.	 Picture 12: IMG_7340
13	L70382 Looking North. Pavement fair. Approx width 2.5m. Overhead cables LHS.	 Picture 13: IMG_7342
14	L70382 Looking North. Pavement fair. Approx width 2.5m. Overhead cables LHS.	

No.	Description	Image
		Picture 14: IMG_7344
15	L70382 Looking North. Pavement fair. Approx width 2.5m. Overhead cables LHS.	 Civil & Structural EA Ballyglass SF 04 Jun 2022, 15:50:37
		Picture 15: IMG_7346
16	L70382 Looking North. Pavement fair. Approx width 2.5m. Overhead cables LHS.	 Civil & Structural EA Ballyglass SF 04 Jun 2022, 15:51:20
		Picture 16: IMG_7348
17	L70382 Looking North. Unbound pavement. Approx width 2.5m. Overhead cables LHS.	 Civil & Structural EA Ballyglass SF 04 Jun 2022, 15:52:00
		Picture 17: IMG_7350

No.	Description	Image
18	L70382 Looking North. Unpaved road. Approx width 2.5m.	
		Picture 18: IMG_7352
19	L70382 Looking North. Unbound pavement. Approx width 2.0m.	
		Picture 19: IMG_7356
20	L70382 Looking North. Unbound pavement. Approx width 2.0m.	
		Picture 20: IMG_7360
23	L70382 Looking North. Unpaved road, soft in places. Approx width 2.0m.	

No.	Description	Image
		Picture 21: IMG_7366
25	L70382 Looking North. Unpaved road, soft in places. Approx width 2.0m.	
		Picture 225: IMG_7371
26	L70382 Looking South. Unpaved road, soft in places. Approx width 2.0m.	
		Picture 26: IMG_7375
30	R471 Just N of junction with R463. Pavement condition good. Occasional ponding. Approx. width 4.0m.	
		Picture 30: IMG_8201

No.	Description	Image
31	R471 Pavement condition good. Occasional ponding. Approx. width 4.0m. OH cables LHS.	
		Picture31: IMG_8202
32	R471 At Site Entrance 3 Solar Array. Pavement condition good. Occasional ponding. Approx. width 4.0m. OH cables LHS.	
		Picture32: IMG_8203
33	R471 At Site Entrance 4 Solar Array. Pavement condition good. Occasional ponding. Approx. width 4.0m. OH cables LHS.	
		Picture33: IMG_8204
34	R471 At Site Entrance 2 Solar Array. Pavement condition good. Occasional ponding. Approx. width 4.0m. OH cables LHS.	

Table 7.1: Proposed Access Route (Refer to Figure 7.1 for Image Locations)**Figure 7.1: Access Route Image Locations**

7.2 PAVEMENT CONDITION AND ROADSIDE DRAINAGE

The pavement condition was found to be in good condition on the R471, R463 and L3046 surveyed routes. It appears that pavement resurfacing works were completed on these routes in recent years and the pavements were generally free of significant defects. In general, the roadside drainage was *over the edge* to roadside verges. The pavement was cambered to facilitate this.

The proposed Site Entrance is located approximately 1,200m north of the L30782 / R463 junction at Oakfield. The L70382 is narrow and paved to a distance of approximately 1,550m from the junction at Oakfield. The pavement is in good condition. Though the road is narrow it is regularly used by wide agricultural vehicles. sight line appraisal at site entrances.

8 VISIBILITY STANDARDS

Transport Infrastructure Ireland's document *DN-GEO-03060 Geometric Design of Junctions (Priority Junctions, Direct Accesses, Roundabouts, Grade Separated and Compact Grade Separated Junctions)* provides the visibility standards required for junctions and accesses. The basic design parameters are shown in Figure 8.1 and include the 'X Distance' which is the distance back along the minor road / direct access from which the full visibility is measured, the 'Y Distance' which is the distance that the driver on the minor road / access road must be able to see clearly to the left and to the right on the nearer edge of the major road carriageway and the 'Z Distance' which is the unobstructed visibility distance that drivers approaching the junction from the minor road / direct access must have to allow him/her to slow down safely and stop.

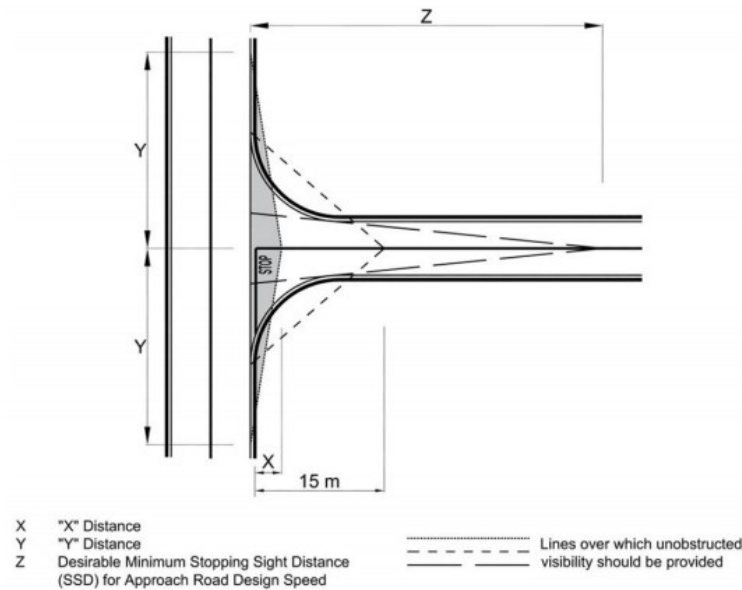


Figure 8.1: Visibility Standards (TII Document DN-GEO-03060)

An 'X Distance' of **2.4m** and a 'Y-Distance' of **90m** have been adopted as the visibility standard for the proposed site entrances on the R471 regional road. An 'X Distance' of **2.4m** and a 'Y-Distance' of **70m** have been adopted as the visibility standard for the proposed site entrances on the L70382 local road.

The 'Z Distance' is the Stopping Sight Distance and relates to the design speed of the minor road. In the case of direct accesses such as those proposed for the site entrances a 'Z-Distance' of **35m** is proposed and this is based on a conservative design speed within the site of 30km/h (Table 5.7 of DN-GEO-03060 refers).

The visibility requirement for drivers emerging from a minor road or direct access is to a high object (1.05m) on the major road. It is best practice (and mandatory for National Roads) that the full 'Y Distance' be achieved to this 1.05 metre height. The purpose of having a high object in the visibility standards is to ensure that the vertical geometries of the road junctions are considered in the visibility analysis. An appraisal of the sight lines at the proposed site entrances has been undertaken. Detailed drawings are provided in Appendix A and the analysis results are presented below.

In common with all junctions, ongoing routine maintenance will be required to ensure vegetation is removed each year to ensure sightlines are not obstructed by seasonal vegetation growth.

8.1 SITE ENTRANCE (L70382)

The Sight line Analysis of the Site Entrance is provided in Figure 8.2. Subject to trimming back of hedgerows at the entrance, the 70m sightlines are available at the proposed location. The vertical geometry of the road is essentially flat at the entrance location and the visibility to the 1.05m high object is achieved over the full 'Y-Distance' of 120m in both directions. The 'Z-Distance' of 35m is also achieved within the site boundary. The proposed site entrance forms part of the Ballyglass Solar Array Phase 2 which was granted conditional permission (Clare County Council Reference P24-60485) and which is currently under consideration with An Coimisiún Pleanála (Reference PL-500253-CE-25) with first- and third-party appeals.

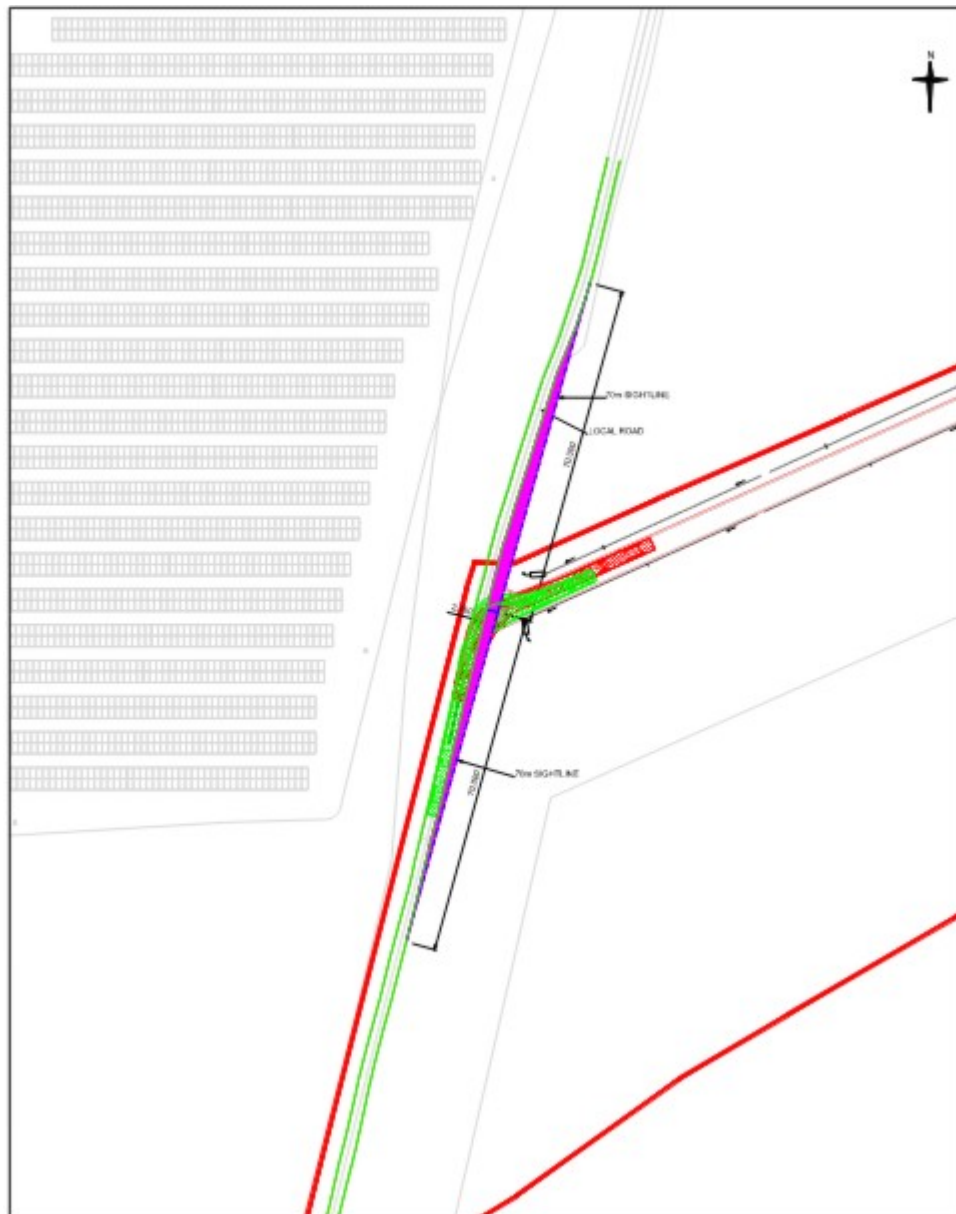


Figure 8.2: Sight lines at Site Entrance 1 at the L70382. (A3 drawing provided in Appendix)

9 DRAINAGE

9.1 REVIEW OF EXISTING SITE DRAINAGE REGIME

A review of the existing drainage regime of the proposed site of the solar array has been undertaken. Figure 9.1 shows the surface water features in, and adjacent to, the site based on the Environmental Protection Agency databases. There are watercourses located within the proposed site and to the west of the proposed site. Both watercourses are referred to as the River Blackwater Clare (020) on the EPA Rivers Database. The watercourse west of the the development site is known locally as the Oakfield Stream. Both watercourses drain to the south before heading east. The natural fall of the land is to the south and surface water naturally falls to the watercourses present on site. The tailrace of the Ardnacrusha Dam is located south of the site. The site has been well provided with land drains and is currently operating as farmland. Land drains have been recorded on topographical surveys undertaken for the proposed scheme and they are depicted on the drainage drawings provided in the Appendix.

The OPW's National Hazard Mapping Tool was used to check for historical floods on the site. There are no recorded flood events on the site or level of identified flood hazard.

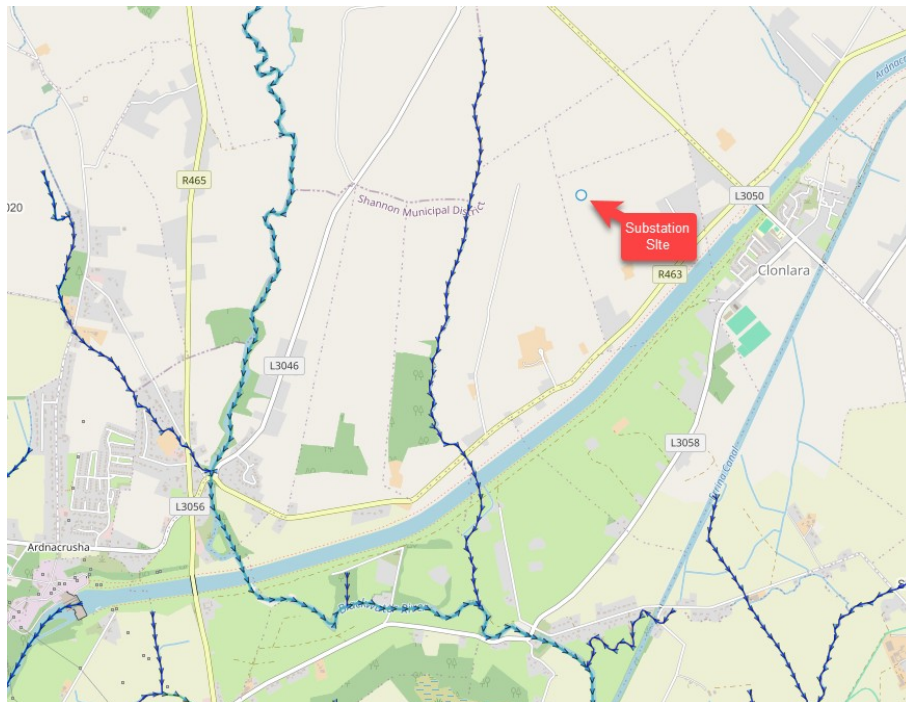


Figure 9.1: Surface Water Features in the vicinity of the proposed site

9.2 SURFACE WATER DRAINAGE STRATEGY

A surface water drainage strategy will be developed at detailed design stage and it will be based on mimicking the existing natural drainage regime on site. Subject to appropriate design specifications, the installation of solar PV arrays will not give rise to increased surface water runoff (volumes or rates) in an agricultural setting. This position is supported by both academic and industry testing of pre and post-panelled ground conditions. A

recent paper on the hydrologic response of solar farms (reference Lauren M. Cook and Richard H. McCuen²) published in the Journal of Hydrologic Engineering confirmed that "solar parks themselves did not have a significant effect on runoff volumes, peaks or times to peak". This research advocates the establishment of well-maintained grass underneath erected panels promoting kinetic friction and the avoidance of bare-ground in adjacent spacer sections (areas between array rows).

Having regard to the above, three distinct design aspects have been incorporated to mitigate against surface water issues. Generous separation distances have been incorporated between the array rows to avoid blanket coverage of the site and the maintenance of normal ground conditions. In addition, substantial buffer strips are established in a number of areas. The installation frames and panels themselves will be pitched at a slope. The panels will be positioned on a rack above the ground. This provides two-fold benefits, reducing/mitigating against any concentrated rainwater runoff from the panels (compared with more pronounced angles sited closer to the ground surface) and the creation of natural conditions which allow seeded grass beneath panels to flourish and be maintained. The maintenance of grass underneath the panels is a critical component of scheme design as it preserves peak water runoff rates at optimal natural levels. Part of the drainage strategy for the site will also include routine inspection and maintenance of all site drains.

CIRIA guidelines stipulate that drainage systems should aim to replicate the natural rainfall-runoff processes occurring pre-development. Any access tracks will be constructed using permeable materials, whereby any potential surface water will infiltrate to the ground naturally. Over-the-edge drainage is facilitated for surface water which may initially pond on the access tracks after spells of dry weather. Over-the-edge drainage is facilitated by the provision of cross-falls on access tracks (Figure 9.2). An attenuation pond for storage and slow release of surface water from compound areas is also proposed. As such, the frequency of discharge rates throughout the site will be the equivalent of greenfield conditions, with no alteration to natural flow patterns. The existing drainage regime will be retained for the purposes of the subject proposal. This approach will provide for environmental benefits, utilising natural resources, with no adverse risk impacts for the receiving environment.

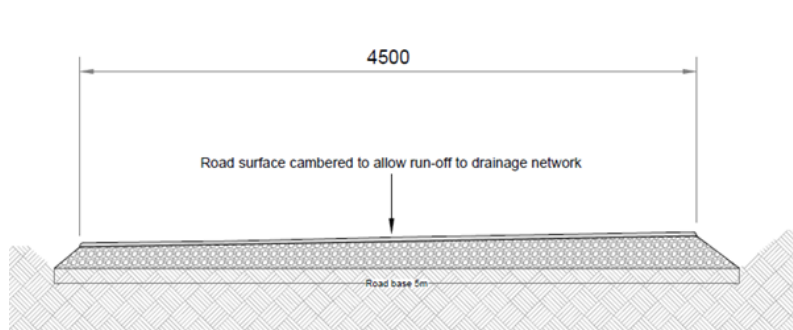


Figure 9.2: Access tracks are permeable and cambered to allow *through-* and *over-the-edge* drainage

² <https://ascelibrary.org/doi/abs/10.1061/%28ASCE%29HE.1943-5584.0000530>

9.3 DRAINAGE AT SITE ENTRANCES

No surface water from the proposed site entrances will be allowed to drain onto the local roads. This will be achieved by the provision of a linear drainage system, within the site lands, which will run parallel to the public road at the site entrances. This drainage system will be designed to intercept any surface water at site entrances and direct such surface water to soakaways located within the site lands. The linear drainage system will be a heavy-duty system with D400 rating to EN 1433 complete with 450 diameter precast concrete drainage pipes in surround concrete to ensure it is of sufficient robustness for site traffic.

10 MITIGATION

As described in Section 4 of this document, the construction phase will see the highest traffic volumes associated with the proposed development. In order to minimise the impact of this period on existing road users and to secure against any impacts on the surface condition of the roads, the following mitigation is proposed during the construction phase. These mitigation measures should be read in conjunction with the Construction Management Plan (CEMP) submitted with this planning application.

10.1 STOP / GO SYSTEM

It is proposed to provide a temporary manual controlled STOP/GO system, which will briefly stop through traffic flow on the L70382 road, while construction vehicles are accessing and egressing the proposed site entrance. The final layout and sequencing arrangements of the Stop/Go system will be agreed with Clare County Council Area Engineers' Office in advance of commencing construction.

Having regard to the low background local traffic observed during this assessment, the modest volumes of construction vehicles set out in Section 4 and the use of the manual controlled STOP/GO system during access /egress of construction traffic only; delays to vehicles waiting at the STOP/GO discs will be of minimal duration.

10.2 ROAD SIGNAGE

It is proposed to provide advance warning signage of the construction site access along the L70382 road at 50m, 100m and 150m distances in both directions. In addition, there will be advance warning signage to alert road users of the temporary Stop/Go system. All warning signage will be in accordance with Chapter 8 "Temporary Traffic Measures and Signs for Roadworks" from the Department of Transport, Tourism and Sports Traffic Signs Manual.

10.3 BOOKING SYSTEM

In order to streamline and manage the arrival/departure of construction vehicles over a working day, a delivery booking and scheduling system will be implemented. On a weekly basis the site manager will evaluate the daily profile of truck movements proposed for the upcoming week and schedule them to spread out over the day to prevent any potential overlap. Sufficient time will be given between truck movements to allow for any delays in arrival times or when loading/unloading takes longer than expected. Prior to departure of a delivery truck from the site, the site manager will review the delivery schedule for that day, and if there is any risk of conflict with another scheduled delivery arrival, the departing vehicle will be held on site until that vehicle arrives.

10.4 PAVEMENT CONDITION INDEX SURVEY

Prior to the commencement of works, a detailed Pavement Condition Index Survey will be carried out in accordance with ASTM Standard D8433³ (or alternative standard to be agreed in advance with Clare County

³ ASTM D8433 Standard Practice for Roads and Parking Lots Pavement Condition Index Surveys

Council). This Pavement Condition Index Survey will be repeated on completion of the works to ascertain if there has been deterioration (beyond normal wear and tear) of the pavement in the works period. Any deterioration which has occurred as a result of works traffic will be addressed by the developer through a programme of remedial works. These remedial measures are subject to Clare County Council's approval and will be agreed with the Council in advance of construction.

10.5 DRAINAGE AT PROPOSED SITE ENTRANCES

No surface water from the proposed site entrances will be allowed to drain onto the local roads. This will be achieved by the provision of a linear drainage system, within the site lands, which will run parallel to the public road at the site entrances. This drainage system will be designed to intercept any site surface water at site entrances and direct such surface water to soakaways located within the site lands. The linear drainage system will be a heavy duty system with D400 rating to EN 1433 complete with 450 diameter precast concrete drainage pipes in surround concrete to ensure it is of sufficient robustness for site traffic.

10.6 TRAFFIC REDUCTION

A summary of the vehicle numbers associated with the temporary 18-month construction phase of the solar arrays and substation and grid connection have been provided. Over the 18-month period, the average number of HGV trips is 13 per day, based on a 5.5 day working week. Estimated farm traffic associated with existing land use amounts to 436 trips each year which is an average of 36 return trips per month. This traffic will cease when the construction of the solar arrays commence and remain absent from the local road network thereafter. Given that traffic numbers for the solar farms operational phase are an average of 2 – 4 vehicles per month, it is proposed that over the lifetime of the project there will be a net reduction of traffic related to the subject site on the local road network.

11 SUMMARY AND CONCLUSION

An engineering appraisal of the local road network for the proposed solar arrays and substation and grid connection at Ballyglass, Blackwater, Castlebank, Lakyle, Mountcatherine, Oakfield, Parkroe, Reanabrone, Rosmadda West and Ruanard (townlands), Ardnacrusha, County Clare has been undertaken.

The site is well served by the local and national road network. The local topography comprises gentle gradients and there are no severe inclines present that adversely affect road geometry.

The construction of Ballyglass Solar Arrays – Phases 1 and 2, and the proposed substation and grid connection is expected to take c.18 months weeks. The construction stage traffic impact under the permitted Phase 1 solar array development (Clare County Council Reference P22/591 / An Bord Pleanála Reference ABP-316043-23) considered HGV trips from both Phase 1 of the Solar Farm and the future Substation / Grid Connection. HGV trips were assessed as 5,181 trips equivalent of 13 no. average trips per working day over the construction period (assuming 5.5 working days per week which is typical for construction projects). HGVs trips from the proposed Phase 2 construction phase are assessed as a total of 1,386 trips. This is equivalent of 3.5 no. average HGV trips per day. The total assessment of HGV trips for the combined Phase 1 + Phase 2 + future Substation / Grid Connection is 6,567 HGV trips. This is equivalent to an average of 16.6 HGV trips per day for duration of construction period. Estimated farm traffic associated with existing land use amounts to 436 trips each year which is an average of 36 return trips per month. This traffic will cease when the construction of the solar farm commences and remain absent from the local road network thereafter. Given that traffic numbers for the solar farms operational phase are an average of 2 – 4 vehicles per month, it is proposed that over the lifetime of the project there will be a net reduction of traffic related to the subject site on the local road network.

The pavement was found to be in good condition along the length of the proposed delivery routes on the regional road network. It appears that pavement resurfacing works were completed in recent years in a number of locations and the pavement was generally free of significant defects. In general, the roadside drainage is *over the edge* to roadside verges and the pavement is cambered to facilitate this. The pavement on the L70382 route was good and the northern part of the route is unpaved.

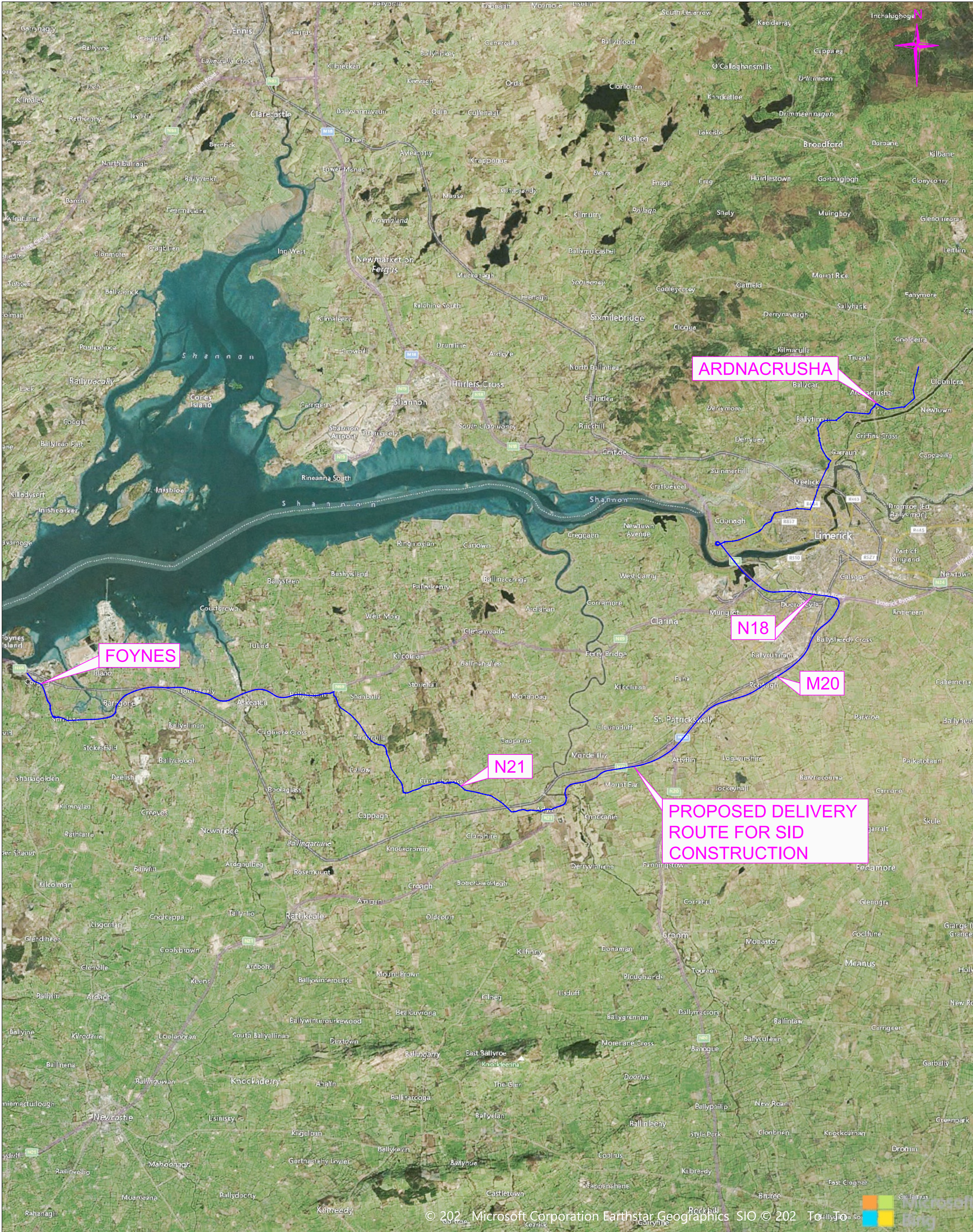
A Swept Path Analyses of the delivery routes proposed to the site entrance shows that no additional are required to the local road network to facilitate the passage of a 40ft articulated vehicle along local roads to the site entrance. Swept Path Analyses has been completed on all proposed site entrances, the design of which has been tested and meet requirements for articulated vehicle access.

70m sightlines are proposed on the L70382 and these sightlines are available at these proposed site entrance. The adjoining hedgerows in ownership in the vicinity of these entrances will be maintained to facilitate appropriate sightlines.

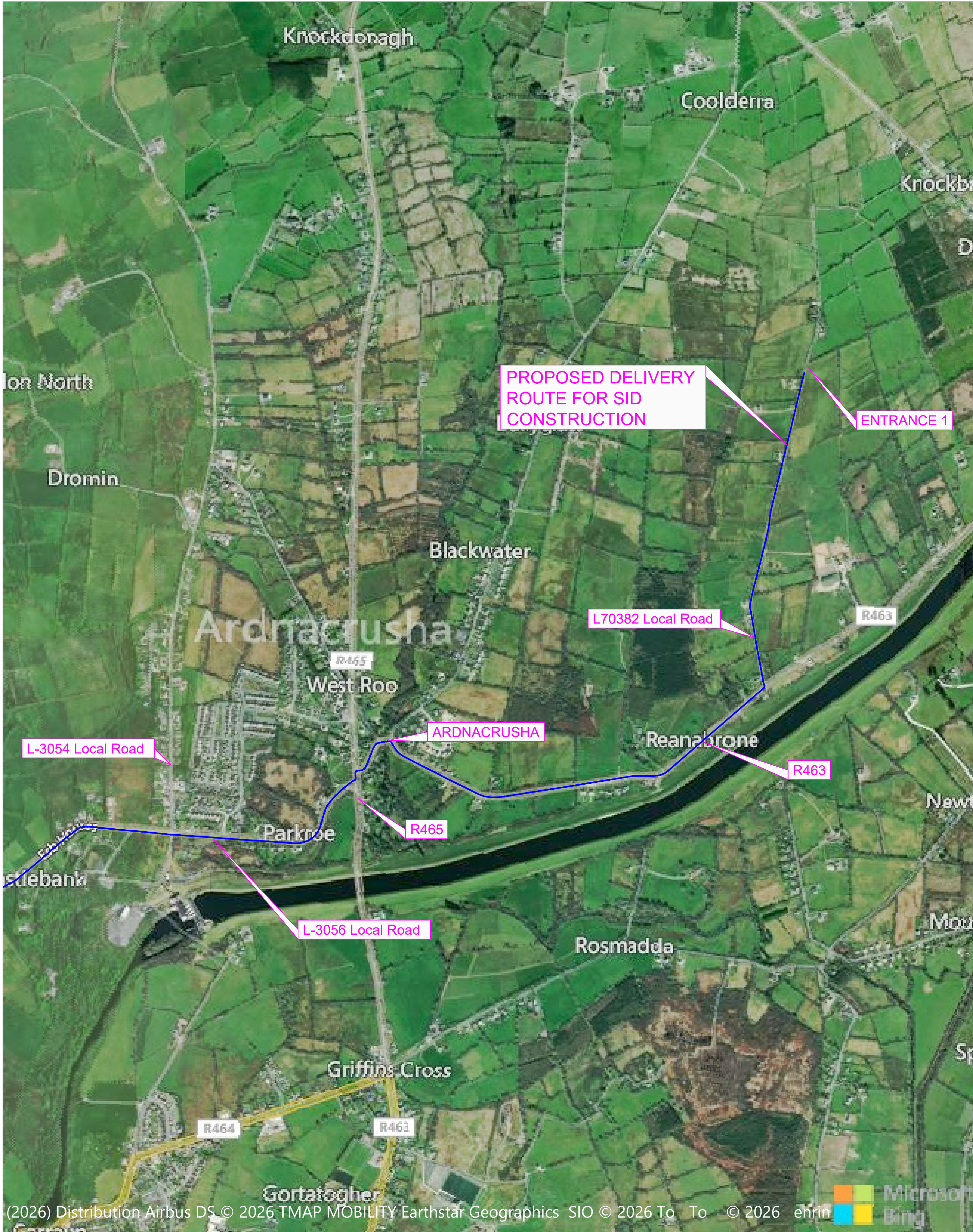
The average gradients on the local road delivery routes are shallow and will not be problematic for delivery vehicles. A review of the horizontal alignment of the delivery routes coupled with the Swept Path Analyses described above shows that there are no issues of concern for the passage of delivery vehicles around horizontal road bends. A suite of mitigation measures is proposed for the construction phase of the development as part of this site access appraisal. These include a temporary Stop/Go system, temporary road signage, a booking system for construction deliveries and a pavement condition survey. At the proposed site entrance, new drainage works will mitigate the potential for surface water flowing onto the adjacent public roads.

APPENDIX A

DRAWINGS

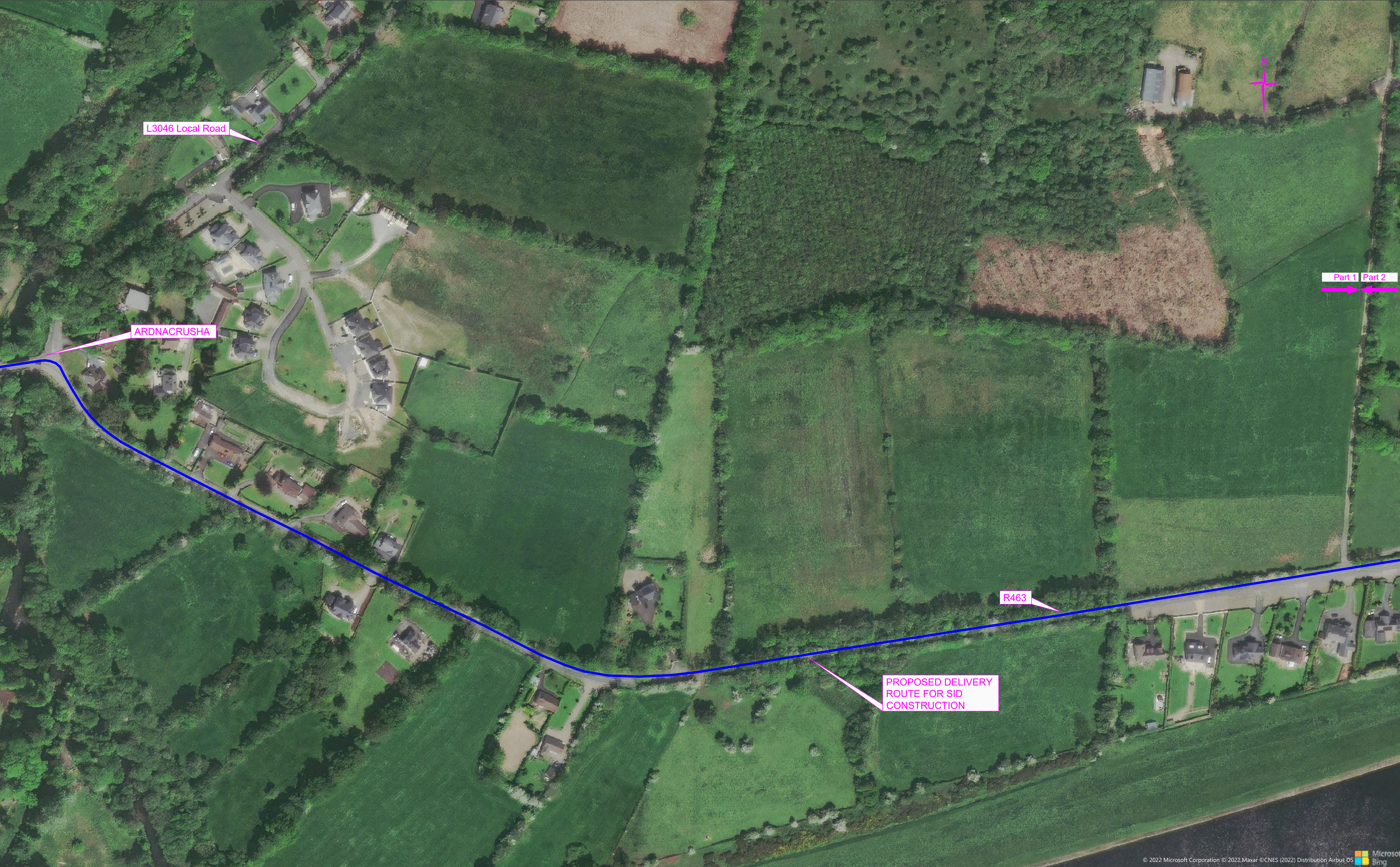


POSSIBLE DELIVERY ROUTES FROM FYONES - 1 : 100,000
(Scale 1 : 100,000)



PROPOSED ENTRANCE LOCATION - 1 : 10,000
(Scale 1 : 10,000)

Client		General Notes		D01 May 26 DC KR Draft Issue For Information KR		CSEA CIVIL AND STRUCTURAL ENGINEERING ADVISORS LTD.		Drawn DC Checked KR Approved KR Date May 2026 Scale Half @ A3 Shown @ A1		Project Ballyglass SID	
Reeve Wave Ltd.				No. Date DC KR Amendment / Issue App				Title Delivery Route (Sheet 1 of 1)		File Ref. 2026-05-02.dwg	
								Job No.		Drg. No. 01	
										Rev. D01	



PROPOSED DELIVERY ROUTE - Part 1 of 5

(Scale 1: 1,250)

Client

Reeve Wave Ltd.

General Notes

5
4
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1 2

Key Plan

D01	May 26	DC	KR	Draft Issue For Information	KR
No.	Date	DC	OK	Amendment / Issue	App

CSEA

CIVIL AND STRUCTURAL

ENGINEERING ADVISORS LTD.

Drawn	DC
Checked	KR
Approved	KR
Date	May 2026
Scale	Half @ A3
	Shown @ A1
Job No.	

Project	Ballyglass SID		
Title	Proposed Delivery Route - 1,250		
	(Sheet 1 of 3)		
File Ref.	2026-05-02.dwg	Drg. No.	02
Rev.	D01		



PROPOSED DELIVERY ROUTE - Part 4 of 5
(Scale 1: 1,250)



PROPOSED DELIVERY ROUTE - Part 5 of 5
(Scale 1: 1,250)

Client

Reeve Wave Ltd.

General Notes

5
4
3
2
1

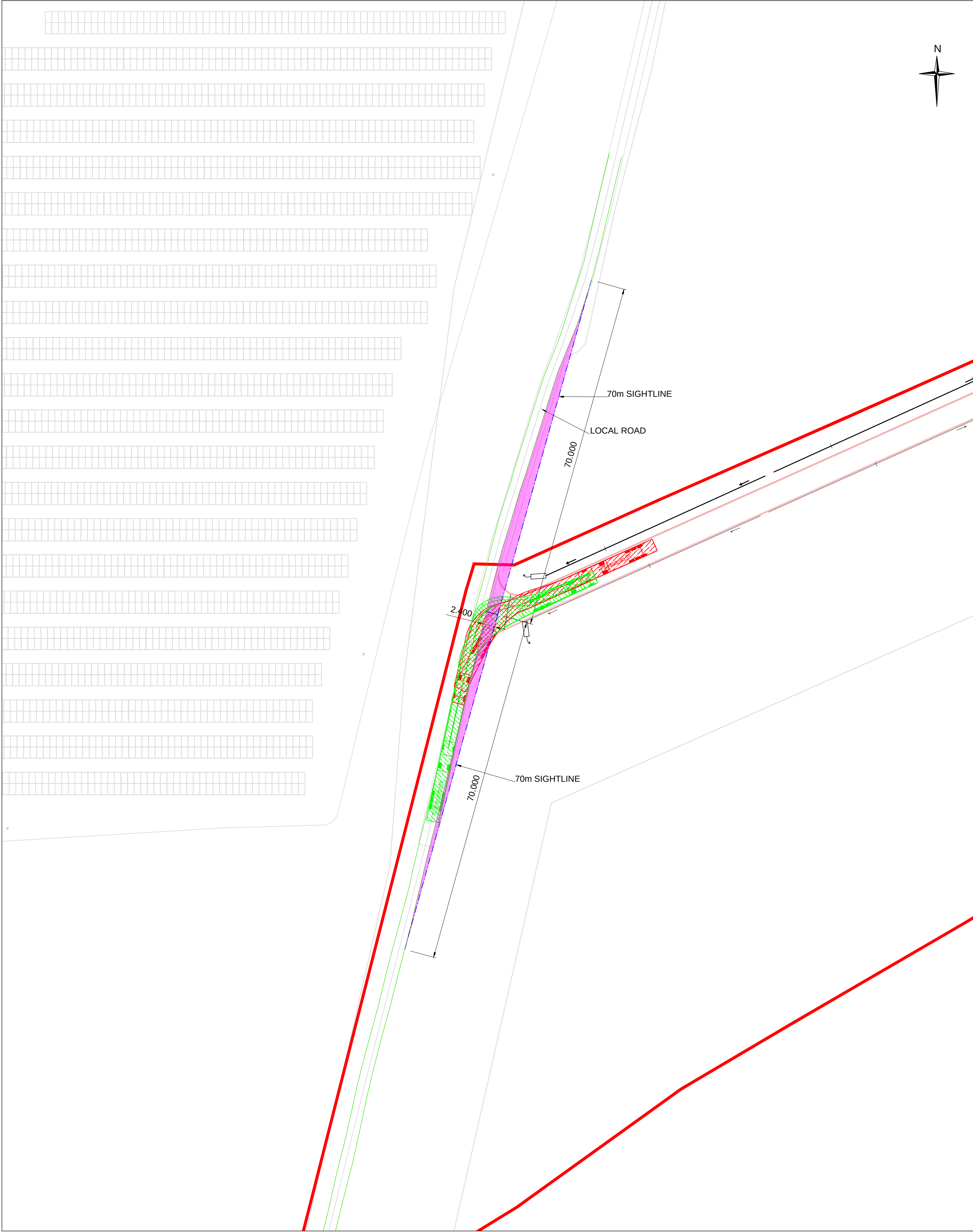
Key Plan

D01	May26	DC	Draft Issue For Information	KR	
No.	Date	DC	Amendment / Issue	App	
		OK			

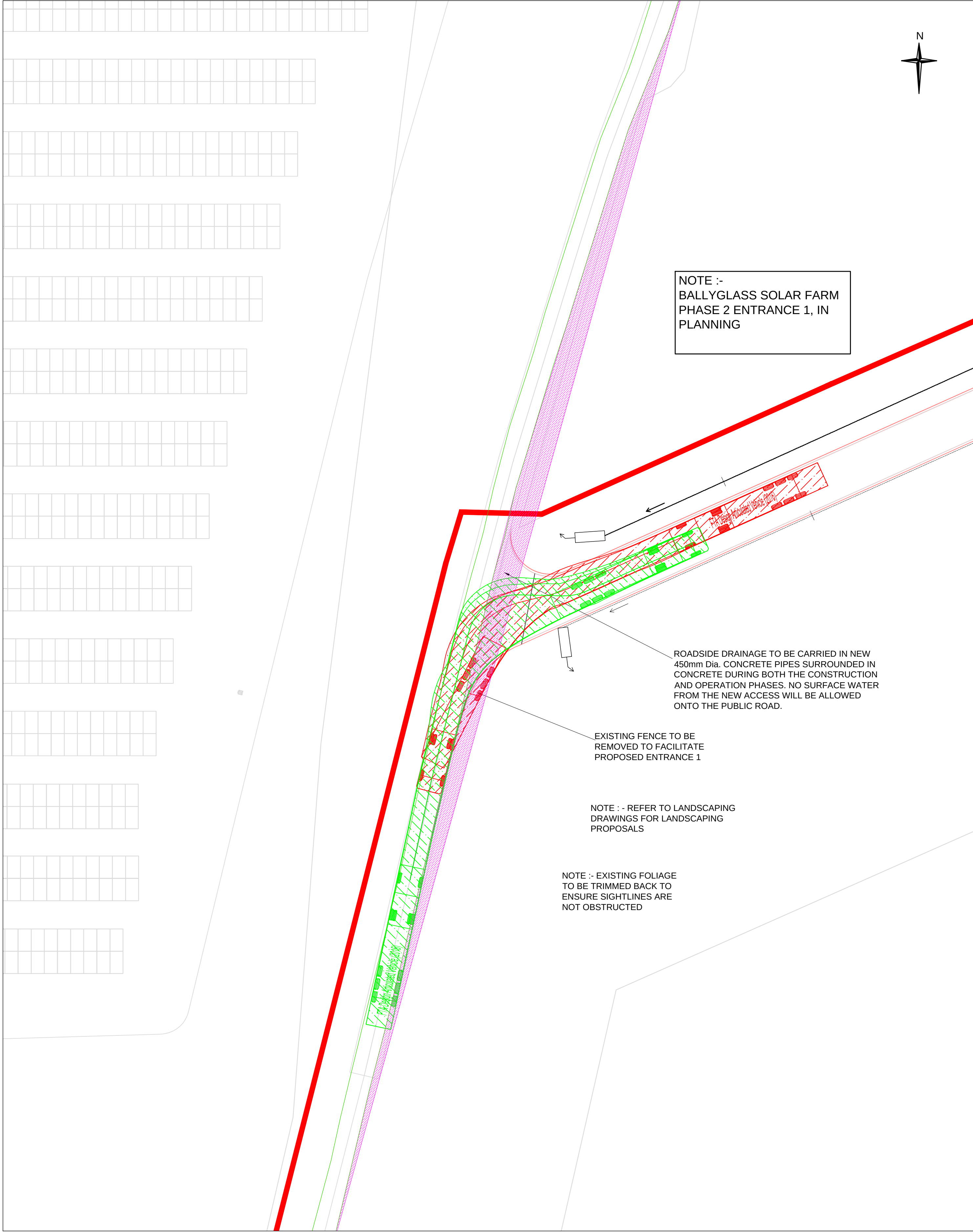


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Drawn	DC	Project			Ballyglass SID
Checked	KR				
Approved	KR				
Date	May 2026	Title			Proposed Delivery Route - 1,250
Scale	Half @ A3				(Sheet 3 of 3)
Shown	@ A1				
Job No.		File Ref.	2026-05-02.dwg	Drg. No.	04
				Rev.	D01



PROPOSED SITE ACCESS 1 - SIGHTLINES
(Scale 1 : 500)



PROPOSED SITE ACCESS 1 - ENTRANCE
(Scale 1 : 250)

Client

Reeve Wave Ltd.

General Notes

D01	May26	DC	KR	Draft Issue For Information	KR
No.	Date	Dr.	Chk.	Amendment / Issue	App

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Drawn	DC
Checked	KR
Approved	KR
Date	May 2026
Scale	Half @ A3
Shown	@ A1
Job No.	

Project	Ballyglass SID		
Title	Proposed Entrance 1		
File Ref.	Drg. No.	Rev.	
	01	D01	