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ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAR) FOR THE PROPOSED DREHID WINDFARM AND SUBSTATION, CO. KILDARE

VOLUME 2 – MAIN EIAR

CHAPTER 13 – TRAFFIC AND TRANSPORTATION

Prepared for:

North Kildare Windfarm Ltd

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13. TRAFFIC AND TRANSPORTATION

13.1 Introduction

This section of the EIAR describes the existing roads, traffic and transportation system in the vicinity of and leading to the Proposed Development. This section also examines the various aspects of the construction, operation and decommissioning of the development which have the potential to impact on roads, traffic and transportation and the magnitude of these impacts are considered prior to mitigation. Mitigation measures are then discussed and the residual impact (post mitigation) is outlined. For the location and layout of the Proposed Development, refer to Figures 1.1 and 3.3 in Chapters 1 and 3 respectively of this EIAR.

As set out in Chapter 1- Introduction, the 'Proposed Development' assessed in this EIAR comprises the following elements:

- The 'Proposed Wind Farm' consisting of 11 no. turbines, turbine foundations and hardstanding areas, new access tracks, underground electrical and communications cabling, drainage, temporary site compounds and associated works; The Proposed Wind Farm also includes the 'Proposed Recreation and Amenity Trail'.
- The 'Proposed Substation' (110 kV substation and loop-in connection to the existing overhead lines).
- Turbine Delivery route (TDR)

13.1.1 Study Area

The study area for this section of the EIAR includes the immediate vicinity of the Proposed Development and the network of public roads leading to and from the Proposed Development. As described below, as well as the Proposed Wind Farm, the assessment also includes the Proposed Substation and looped-in connection, and haul routes and the turbine delivery route from the National road network. In this regard, the study area is expanded to include these affected roads.

The Proposed Wind Farm is wholly located in County Kildare and includes lands in the townlands of Ballynamullagh, Kilmurry, Killyon, Coolree, Mulgeeth and Drehid. The Proposed Substation, including the loop-in connection to the existing Kinnegad-Rinawade overhead line, is wholly located in County Kildare, within the townland of Coolree.

The Proposed Development is approximately 79 ha in size. The site is accessed by the main site entrance on the L5025. The access will be from the M4 motorway until Enfield, then along the R402 for ca. 7.7 km and finally along the local road (L5025) to the entrance of the site. The L50242 cul de sac road will be utilised as a connection between the southern and northern sections of the site throughout construction with a secondary construction entrance to the site on the L50242.

There will also be a temporary-use site entrance constructed off the L5012, immediately west of the existing Coillte entrance, for the purposes of turbine delivery for the northern section of the site only during the construction of the Proposed Wind Farm. While this entrance is required for the lifetime of the project, the utilisation of this entrance will be infrequent in nature. Post use for turbine delivery to the northern section of the site, this site entrance shall only be utilised in the case that a turbine blade/other oversized component requires replacing throughout the projects lifetime. All other construction traffic will be via the main site entrance. The site lies c. 2.8 km south of the motorway M4 at Enfield and 1.2 km southeast of the regional road R402 linking the M4 to the R420 east of Tullamore in County Offaly.

13.2 Assessment Methodology

This chapter describes the existing traffic situation, estimates the volume of traffic which will be generated by the Proposed Development during its construction, operation and decommissioning phases, the likely traffic distribution on the local road network and finally makes recommendations to mitigate the impact of the projected increase in traffic on the local road network.

This assessment has been undertaken using a combination of desktop studies, field surveys and consultation with statutory agencies and local authority representatives in line with current good practice and policy advice. The assessment looks at the Proposed Wind Farm development, the associated haul route for materials, the proposed Substation and looped-in connection, and the turbine delivery routes.

13.2.1 Consultation

A number of meetings were held with various departments of Kildare County Council (KCC), including the planning and transportation departments as part of the development of the scheme proposal and associated planning application. These discussions have included the topic of haul routes for construction haulage. At meeting with KCC in November 2018 and June 2019, feedback and guidance was received from KCC in relation to the suitability of the road network in the site vicinity.

Following this meeting, the assessment carried out to date was amended to include a roundabout junction in Carbury. The distribution of HGVs on the network was also altered to remove HGV traffic from lower order roads to the east of the proposed development site which KCC deemed unsuitable for heavy vehicles and reroute them via the regional road network as much as possible. Similarly the HGV distribution was amended to ensure that villages and towns were avoided where possible.

Following the recommendation of KCC a Road Safety Assessment has been carried out (in March 2019) for the proposed development specifically to consider the suitability of the haul routes for the proposed development. The findings of the RSA resulted in a number of local roads in the vicinity of the site being removed as potential haul routes (the L5024, L5017, L5011). The RSA also advised that, where possible, bypass rotes of urban centres should also be used (Prosperous, Clane, Enfield, Naas, ect.).

As mentioned in Chapter 5, KCC were contacted again by way of a Scoping Update Letter on 13th May 2024, to notify them of any changes to the Proposed Development since previous consultations. KCC responded to say that the information provided was being passed to their planning department. We have not received any further correspondence from KCC.

A number of potential haul routes are assessed as part of this chapter; however, a single haul route will be agreed with KCC following the appointment of a contractor should the development receive planning permission.

13.3 Existing Environment

This section describes the existing environment in terms of roads in the vicinity of the Proposed Development.

13.3.1 Existing Road Network

Roads in the Republic of Ireland are classified as motorways, national (primary and secondary), regional and local roads. Transport Infrastructure Ireland (TII) has overall responsibility for the planning and supervision of the construction and maintenance of motorways, national primary and national secondary roads. The local authorities have responsibility for all non-national roads. The hierarchy of road types throughout Ireland is outlined in Table 13-1 below.

Table 13-1: Road Classification

Road Category	Description
Motorways	These are high quality multiple lane roads with limited grade separated junctions. They are high speed (120kph) roads predominantly provided to facilitate strategic traffic, with reduced journey times.
National Primary Roads	These are predominantly single carriageway, with some that are dual carriageway. Generally high speed (100kph) roads they also facilitate strategic traffic, with reduced journey times.
National Secondary Roads	These are medium distance through-routes connecting important towns, serving medium to large geographical areas and links to primary routes to form a homogeneous arterial network.
Regional Roads	Predominantly single carriageway roads of regional and local importance. These receive higher priority in maintenance criteria than Local Roads; hence tend to be structurally sound.
Local Roads (Primary, Secondary and Tertiary)	The local road system is operated in three tiers defining local importance, usage and maintenance priorities. They form a network of single carriageway roads of varying quality.

The existing road network in the general vicinity of the Proposed Development is outlined below.

National Roads

Apart from the M4 Motorway described below, the general area surrounding the Proposed Development is not served by national primary or national secondary roads.

M4 Motorway: The M4 is a motorway standard section from Leixlip to the west of Kinnegad, Co. Westmeath, forming part of the N4 national primary road which runs from Dublin to Sligo. The M6 to Galway diverges from the route west of Kinnegad, Co. Westmeath. The Proposed Development site is located to the south of the motorway, approximately 2.2km from Junction 9 Enfield.

In 2024, the M4 had an annual average daily traffic (AADT) of approximately 30,869[1].

Regional Roads

There are two regional roads in the vicinity of the Proposed Development. These include the R402, which runs to the west of the site, and the R403, which runs to the south.

[1] TII permanent count location TMU M04 030.0 E, M4 Enfield (Source: TII website trafficdata.tii.ie/publicmultinodemap.asp)

R402: The R402 is a regional road which runs from Enfield, Co. Meath towards Daingean, Co. Offaly via Johnstownbridge and Edenderry. The road generally consists of a single carriageway road with one lane in each direction and a hard shoulder on either side of the road. The R402 had an AADT of 9,578[2] in 2023 in Johnstownbridge village.

R403: To the south of the Proposed Development another regional road, the R403, runs from the R402 (at Carbury) through the settlements of Derrinturn, Allenwood, Prosperous, Clane, and Celbridge in Co. Kildare, to Lucan in Co. Dublin. The R403 generally consists of a single carriageway road with a 3m-wide lane in either direction.

Local Roads

The local road network in the vicinity of the Proposed Development is depicted in Figure 13.1. These include the L5025, where the main site entrance is located, the L5024 running to the west of the site, the L5013 to the east, L1004 to the north and other local roads in the surrounding area. A temporary use site entrance will be constructed off the L5012, immediately west of the existing Coillte entrance, for the purposes of turbine delivery to the northern section of the site only during construction. Post construction this site entrance will only be utilised in the case that a turbine blade/other oversized component requires replacing throughout the project's lifetime.

The indicative haul and cable routes, which are discussed below, will also make use of the local roads. The sections of local roads impacted by the routing of cable are discussed in more detail below. Figure 13.1 also shows the indicative location of the Proposed Development in red.

The L50242 local road is a cul de sac located in a central location of the proposed development site. A section of the L50242 will be utilised for cable installation so as to connect the northern and southern section of the site. The road will also be utilised as a connection between the southern and northern sections of the site throughout construction and operation with a secondary construction entrance on the L50242.

[2] The calculation of the AADT was based on the nearest non-Motorway TII permanent count location TMU R148 040.0 W (Source: TII website trafficdata.tii.ie/publicmultinodemap.asp)

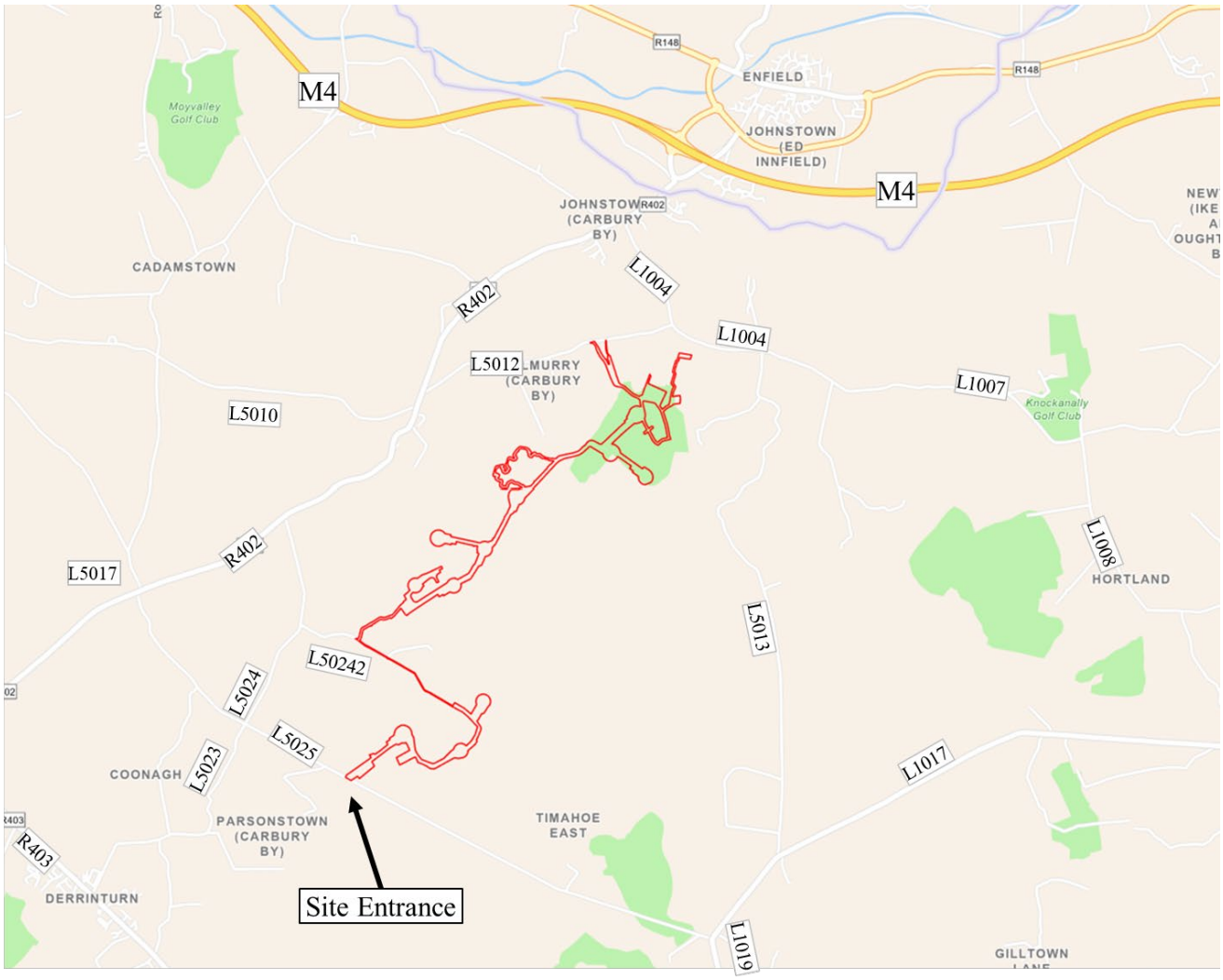

Figure 13-1: Proposed site location and surrounding road network

13.3.2 Existing Traffic Patterns

Currently the road network in the vicinity of the proposed development is operating below capacity, with users experiencing no significant delays.

TII maintains a network of almost 300 traffic counters on the national road network throughout Ireland. There are a number of traffic counters within 20-30km of the site, on the N52, M3, M4/N4 and M7/N7, as illustrated inFigure 13.2.

Figure 13-2: Existing TII counter locations in site vicinity (Source: TII)

As the above counter locations are located outside of the immediate area of the proposed development, Arup commissioned short-period traffic counts at 14 junctions in the vicinity of the proposed development to ascertain the traffic patterns which exist in the area, and to assess the impact of the proposed development on this traffic.

The traffic surveys were undertaken on Thursday 25 May 2023. The junctions surveyed are listed below and also shown in Figure 13.3 below:

1. L1003/R402 Applegreen Access;
2. R402 Roundabout on Johnstown Road;
3. L1004/R402 at Johnstownbridge;
4. L1003/R402 at Johnstownbridge;
5. L1004/L5012 at Johnstownbridge GAA Club;
6. L1004/L5013 Dunfierth Crossroads;
7. L1004/L1008 Hortland Junction;
8. L1018/L1009/L1008/L1017 Ballagh Crossroads;
9. L1017/L5013 Coologmartin Junction;
10. L5025/L1017/L1019 Timahoe Junction;
11. L5024/L5025 Drehid Crossroads;
12. L5025/R402/L5011 at Collinstown;
13. R402/L5024 at Clonkeeran; and
14. R402/L5012 at Kilmurry.

Figure 13-3: Junctions Surveyed

A number of these junctions and links have been assessed in relation to the impact of the proposed scheme. This is detailed in Section 13.5 below.

13.3.3 Public Transport Infrastructure

Given the rural nature of the surrounding area, the public transport infrastructure in the immediate vicinity of the proposed development is very limited.

The nearest bus stops are located at R403, approximately 4 km away from the site, and are served by routes 120, 120A, 120E, 120X from Edenderry to Prosperous and Dublin. In addition to these lines, bus 120C runs along the R402, with the nearest bus stop being located at the R402/R403 roundabout, approximately 5 km from the site. Line 120C connects Enfield, Edenderry and Tullamore.

Line 120 runs with a frequency of 1 hour, while routes 120A and 120E are single-departure routes and route 120X runs twice a day. Route 120C runs every 3 hours on weekdays.

The 820 Local Link route operates via the R402, stopping at the roundabout at the R402/R403. This operates from Edenderry to Enfield on weekdays, between 1-2 times per hour.

13.3.4 Walking and Cycling Infrastructure

Being located in a rural area, the site lacks in terms of pedestrian and cycling infrastructure. The roads in the vicinity of the site are generally characterised by lack of footpaths, while no cycle lanes are provided in the surrounding links.

13.4 Description of the Proposed Development

As outlined above, the Proposed Development consists of 11 turbines, turbine foundations and hardstanding areas, new access tracks, underground electrical and communications cabling, drainage, temporary site compounds and associated works; The Proposed Wind Farm also includes the 'Proposed Recreation and Amenity Trail'. The 'Proposed Substation' (110 kV substation and loop-in connection to the existing overhead lines. A full description of the development is included in Chapter 3.

13.4.1 Construction Programme

It is anticipated that the construction of the scheme will take approximately 18 months. Within this programme, there will be a number of independent work streams, some of which will be carried out in parallel. These are broken down into the following general categories:

1. Initial Site Establishment;
2. Site Roads;
3. Construction of turbine hard standings;
4. Construction of turbine foundations;
5. Internal Collector System;
6. Substation Construction and LILO connection;
7. WTG Delivery;
8. WTG Installation;
9. Commissioning; and
10. Site reinstatement and demobilisation.

An indicative 18-month programme and associated breakdown of activities is shown below in Figure 13.4.

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Main Construction Element																		
Site Establishment																		
Site Roads																		
Hardstands 11no																		
Foundations 11no																		
Internal Collector System																		
Substation Construction and LILO connection																		
WTG Delivery 11no																		
WTG Install 11no																		
Comissioning																		
Site Reinstatment and Demob																		

Figure 13-4: Indicative construction works programme

13.4.2 Grid Connection and Cable Route

The Proposed Development will have a Maximum Export Capacity (MEC) of 52.8 MW. Connection for this project was granted through the Enduring Connection Process (ECP), ECP-2.1, the first of a number of annual batches part of the second stage of the ECP policy. The project received an offer for a new loop-in connection to the Harristown – Dunfierth(Tee) – Rinawade overhead line (OHL) in September 2021, deemed the preferred connection method.

To connect to the existing Harristown – Dunfierth(Tee) – Rinawade OHL, a new outdoor 110 kV substation will have to be constructed on site in order to ramp up the voltage to the 110 kV voltage required to loop-in to the existing OHL. 2 no. line-cable interface masts are necessary to enable this loop-in connection to the existing OHL. A length of 110kV underground cable will be required to connect the new 110 kV substation and interface masts, into the existing OHL.

Within the windfarm itself, medium voltage (MV) cables from each of the individual turbines will connect to the Proposed Substation located within the site. It is required to install cabling within a small section of the L50242 in order to connect the southern and northern sections of the site. Figure 13.5 below illustrates the cable route through the L50242.

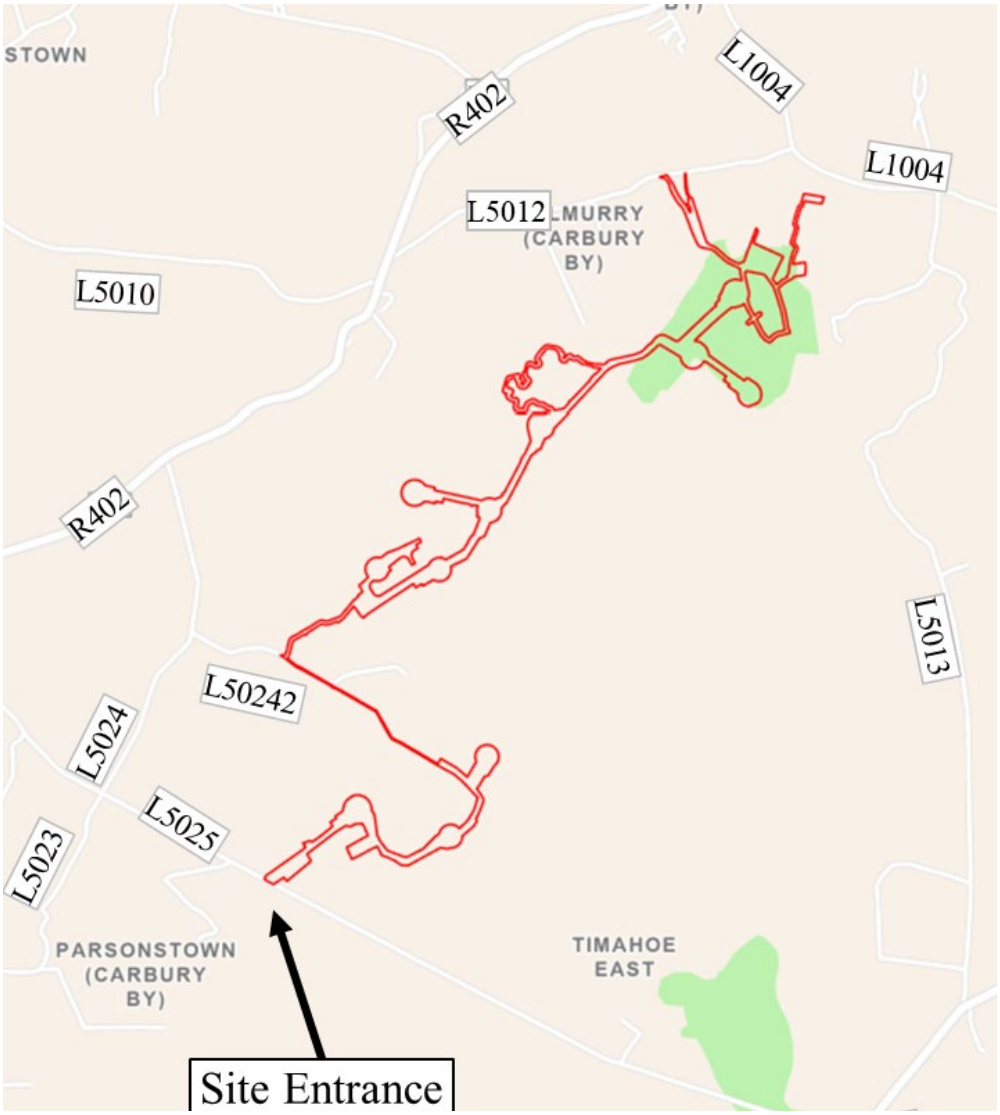

Figure 13-5: Cable Route in the Public Road L50242

It is expected that cabling works will be undertaken via a combination of full and partial road closures rather than stop/go systems, as requested by KCC. This will enable the works to be completed as quickly and as safely as possible, with minimal disruption time for residents of the area. The L50242 is a cul de sac and therefore diversions are not suitable, local access will be maintained wherever possible for residences and properties on this section of the L50242. In order to maintain this local access it is proposed to trench the cabling within the grass verge along the section of the route where local access needs to be maintained. This prevents the requirement for full road closures for the entire length of the cable route and effectively maintains local access where it is required. All traffic management measures will be developed and agreed in advance with KCC.

The L50242 cul de sac is at present too narrow for vehicles to pass each other except for where passing bays exist. There are existing passing bays on the route, which provide good visibility along the route and thus will continue to operate effectively in combination with the use of a banksmen at the site entrances on the L50242 and passing bays in order to hold vehicles until the route ahead is clear, allowing for HGVs to pass. The L50242 will operate effectively through the use of these existing passing bays combined with the use of banksmen, the good forward visibility currently present for vehicles and the relatively low frequency of vehicles on the route (owing to the fact that there are only two dwellings along the stretch of road in question).

13.4.3 Turbine Delivery Routes

Turbine component delivery, including specific items such as rotor blades and tower sections, is a specialised operation which requires careful planning. The delivery of these components is often done at night, in conjunction with An Garda Síochána, and via a permit from the local authorities involved along the route.

A Delivery Route Selection and Assessment was carried out by Pell Frischmann to identify the optimum delivery route to site and is included in Appendix 13.1. As part of this assessment, a number of routes were surveyed to and from the proposed site entrance. It is proposed to deliver turbines to the site from the M4 motorway and then the R402 to the junction of the L402/L5025 and follow the L5025 to the main site entrance. There will also be a temporary use site entrance constructed off the L5012, immediately west of the existing Coillte entrance, for the purposes of turbine delivery for the northern section of the site only during construction. As previously mentioned, this entrance will not be utilised post construction with the exceptional case of a turbine blade/oversized component requiring replacement during the project's lifetime. All other construction traffic will be via the main site entrance.

Due to the oversized nature of the wind turbine components, some alterations will be required along the route. These points along the route are termed points of interest (POIs). Further details of the alterations required are identified in the Turbine Delivery Route in Appendix 13.1.

The number of these deliveries will be low in comparison to the overall number of vehicular movements to and from the site during the construction period. As these deliveries will take place at night, the potential impacts associated with this element of the works are likely to be minor and temporary in nature.

13.4.4 Proposed Development Construction and Material Haul Routes

The scheme construction phase will give rise to additional traffic on the local road network to and from the site. These will include:

- HGVs importing construction materials, including concrete, road build-up materials, building materials, drainage/ducting materials, structural steel, cabling, site boundary fencing and electrical components, etc;
- HGVs delivering plant/cranes and fuel; and
- General traffic associated with workforce cars and vans.

Although the site is surrounded by a comprehensive road network with numerous routing options available, the above traffic will have a short term impact on the local road network in the site vicinity, albeit temporary in nature. This impact is analysed and assessed in Section 13.5 below.

Statkraft have actively engaged with KCC to obtain their feedback and input into the identification of suitable haul routes within Kildare and have taken all recommendations made into account in the refinement of potential haul routing options.

Figure 13-6 below identifies the proposed haul routes from quarries in the vicinity of the site.

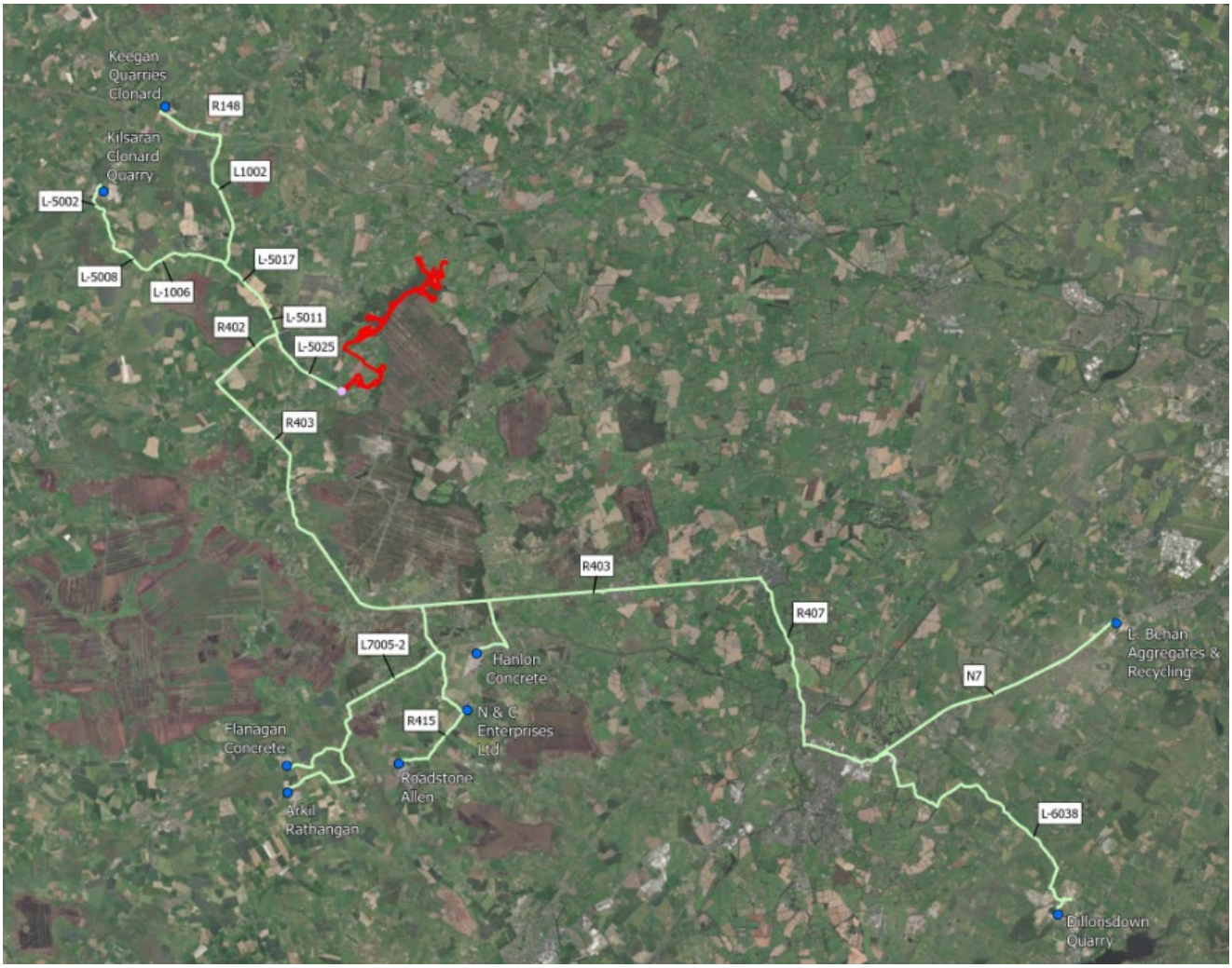

Figure 13-6: Proposed Haul Routes to/from nearby quarries (with less preferred quarries to the east indicated)

The list of quarries indicated in Figure 12.6 above for the haul routes is as follows:

- Kilsaran Clonard, Kilrathmurray, Co. Kildare;
- Keegan Quarries Clonard Ltd, Ballyonan, Co. Kildare;
- Arkil Rathangan, Rathangan, Co. Kildare;
- Roadstone Allen Naas, Co. Kildare;
- Hanlon Concrete Products, Naas, Co. Kildare;
- N & C Enterprises Ltd, Naas, Co. Kildare;

- Flanagan Concrete Ltd, Rathangan, Co. Kildare;
- L Behan Aggregates & Recycling Ltd, Rathcoole, Co. Dublin; and
- Dillonsdown Quarry, Red Lane, Co. Wicklow.

The proposed haul routes for the delivery of materials associated with the construction of the scheme are indicated in Figure 13-6 above. This figure illustrates the various quarries in the locality of the site and the proposed routes from each of these to the proposed site entrance at its southern boundary, along the L5025 Derrymahon Road. It should be noted that a preferred quarry will be selected prior to construction from the list above, and the list is therefore included for assessment purposes only. As recommended by KCC, the Proposed Development will use the same haul route as the proposed expansion of the existing Waste Management Facility at Drehid, which is described in Section 13.5.6.

The haul routes are primarily along regional and national roads, with additional local roads leading to the site. From the north and north-west, the R402 will be the principal haul route to and from the L5025 Derrymahon Road. From the south and east the M7/N7, R403 and R415 will be the principal haul routes. The R409 has been omitted from the proposed haul routes due to localised constraints at Cook Bridge, near Goatstown.

Local roads will be avoided where possible, with the exception of the L5025 Derrymahon Road as the proposed development will be accessed directly from this road. This will ensure that the impacts on local roads in the site vicinity are minimised. HGV traffic will be removed from local roads to the east of the Proposed Development site and re-routed to travel along the regional road network as much as possible. In previous discussions with Kildare County Council the local roads to the east of the site were deemed unsuitable for heavy vehicles, and therefore their use will be avoided. Villages and towns are also to be avoided where possible, and any roads proposed for use are to be agreed with the local Area Engineer.

It is acknowledged that some local roads in the area are narrow, and to this effect, every effort has been made to ensure that the extent of use of the local roads is minimised. During construction, the site will be accessed by the main site entrance on the L5025. During construction, turbines T01, T02 and T03 will be accessed by the main site entrance off the L5025, while turbines T04 to T11 and the Proposed Substation will be accessed via the L5025 site entrance and then through the site to the secondary site entrance off the L50242.

There will also be a temporary use site entrance constructed off the L5012, immediately west of the existing Coillte entrance, for the purposes of turbine delivery for the northern section of the site only during the construction of the Proposed Wind Farm. While this entrance is required for the lifetime of the project, the utilisation of this entrance will be infrequent in nature and, post use for turbine delivery to the northern section of the site, this site entrance shall only be utilised in the case that a turbine blade/oversized component requires replacing throughout the project's lifetime. All other construction traffic will be via the main site entrance.

Following consultations with KCC a Road Safety Assessment has been carried out (in March 2019) for the proposed development, specifically to consider the suitability of the haul routes indicated in the previous EIAR for use. The findings of this RSA resulted in a number of local roads in the site vicinity being removed as potential haul routes (the L5024, L5017, L5011). The RSA also advised that, where possible, bypass routes of urban centres should also be used (for example, the urban centres of Prosperous, Clane, Enfield, Naas, etc. should be avoided by haul traffic where possible). The current approach has been influenced by both the recommendations of KCC and the findings of this RSA to refine the haul routes as presented again in 2025 and will be used to refine the potential quarries and routes further at detailed design stage.

The indicative haul routes will be further examined at the detailed design phase, depending on origin of materials, units, staff, etc., which are all to be confirmed nearer the commencement of construction, to ensure the impacts on the road network are minimised as much as possible.

It is also proposed that a detailed road inspection will be completed in conjunction with Kildare County Council's Roads Department prior to construction. A pre- and post-construction condition survey will be carried out as a basis for agreeing remedial works to be carried out on completion of the project, and the developer will be responsible for any repair works required.

13.4.5 Trip Generation

13.4.5.1 Construction Phase

The anticipated construction-related traffic that will be generated by the scheme on the surrounding road network has been developed by estimating the number of vehicles (HGV and LV) required for each of the individual works elements, and subsequently allocating these vehicles across the proposed 18-month programme according to the planned occurrence and duration of each element. The number of vehicles was then converted to the associated number of two-way trips, whereby every vehicle will generate two 'trips', to and from the site. This is presented in Appendix 13.2.

An additional allowance has been made to account for additional LV movements beyond the daily arrivals and departures to and from the site, for example to include localised trips for lunch breaks in the nearby villages.

A number of assumptions have been applied to the trip generation associated with the scheme, as follows:

- Construction works will be carried out six days per week, over a ten-hour day;
- All of the excavated material within the site will be suitable for re-use within the site for construction-related activities, and the remainder will be used on-site to construct berms;
- No borrow pits are available within the site for the supply of general fill material, therefore this material will have to be imported to the site;
- A delivery vehicle carrying non-concrete materials has a carrying capacity of $10m^3$; and
- A delivery vehicle carrying ready-mix concrete has a carrying capacity of $8m^3$.

The anticipated vehicular movements associated with the scheme works, across the 18-month programme, are detailed below in Table 13-2.

Over the duration of the scheme, it is anticipated that the construction traffic added to the local road network will be (on average) 3,104 trips per month, equivalent to 129 trips per day. This will typically be comprised of 48% HGV and 52% LV traffic, although this ratio will vary depending on the nature of the works in each stage.

Table 13-2: Construction Phase Trip Generation

Month	HGV Trips	LV Trips	% HGV Trips	% LV Trips	Total Trips
1	3150	990	76%	24%	4140
2	6386	1710	79%	21%	8096
3	7465	1800	81%	19%	9265
4	3867	1800	68%	32%	5667
5	2968	1950	60%	40%	4918
6	1239	2100	37%	63%	3339

Month	HGV Trips	LV Trips	% HGV Trips	% LV Trips	Total Trips
7	427	2040	17%	83%	2467
8	344	2280	13%	87%	2624
9	290	2130	12%	88%	2420
10	72	2640	3%	97%	2712
11	145	2430	6%	94%	2575
12	222	2460	8%	92%	2682
13	115	2010	5%	95%	2125
14	4	960	0%	100%	964
15	0	360	0%	100%	360
16	0	360	0%	100%	360
17	10	510	2%	98%	520
18	39	600	6%	94%	639
Total	**26,743**	**29,130**	**-**	**-**	**55,873**

HGV traffic will be relatively evenly distributed across a typical working day, whereas LV traffic will have more defined peaks in the morning and evening, and to a certain extent at lunchtimes, when the construction workers arrive and depart.

It can be seen in Table 13-2 that the most intensive period of the works programme will be Months 2 to 5. During this period, a number of intensive works will be ongoing in parallel, including civils works as well as construction of the bases for turbines and the substation. It is anticipated that there will be an average of (2018-210) 291 trips per day to and from the site during this period, comprising of about (2018 134) 215 HGV trips and (76)76 LV trips. HGV trips during this period are higher due largely to deliveries of concrete and other material to the site for the construction of the bases. The busiest weeks are weeks 7-12, when site roads and hardstanding works will be ongoing in parallel. These weeks will see a total of (2018 1162)1,866 two-way HGV trips and (2018 450) 450 two-way LV trips. Over a six-day week, the maximum daily traffic would therefore be approximately (2018-270) 386 two-way trips. The analysis below uses these figures for the development traffic as a worst-case scenario for potential impacts on the local road network operation.

The latter phases of the construction programme are significantly reduced in terms of trip generation, as the scheme enters the commissioning phase and grid connection works are ongoing, ahead of the final site reinstatement and demobilisation.

13.4.5.2 Operational Phase

The trip generation for the Proposed Development once operational will be minimal. The windfarm in its operational stage will be unmanned. There will be a small number of trips generated by the Proposed Development for inspection, monitoring and maintenance purposes. These are estimated at a maximum of approximately two vehicles per day entering and exiting the site, or a total of four trips.

13.4.6 Trip Distribution

13.4.6.1 Construction Phase

The distribution described below applies to the construction traffic for the windfarm construction component of the Proposed Development, and material deliveries for the grid connection. The R402 will be the principal haul route to and from the L5025 Derrymahon Road, from which the site is accessed directly. It is important to note that the junction to the east of the L5925 Derrymahon Road at Timahoe has been included in the assessment for staff trip distribution only, this has been done for the purposed of increasing the robustness of the assessment. This route does not form part of the Haul route for HGV trips which will avoid the use of lower order roads to the east of the Proposed Development site.

The R402 has an existing estimated AADT of 6,295 vehicles to the north of the junction with the L5025, and an estimated AADT of 6,574 vehicles to the south of the junction with the L5025. Further north, the R402 has an estimated AADT of 9,901 vehicles (at the roundabout on Johnstown Road). The L5025 Derrymahon Road has an estimated AADT of 1029 vehicles at the junction with the R402.

The distribution of the trips generated by the Proposed Development is set out in Figure 13.7 below.

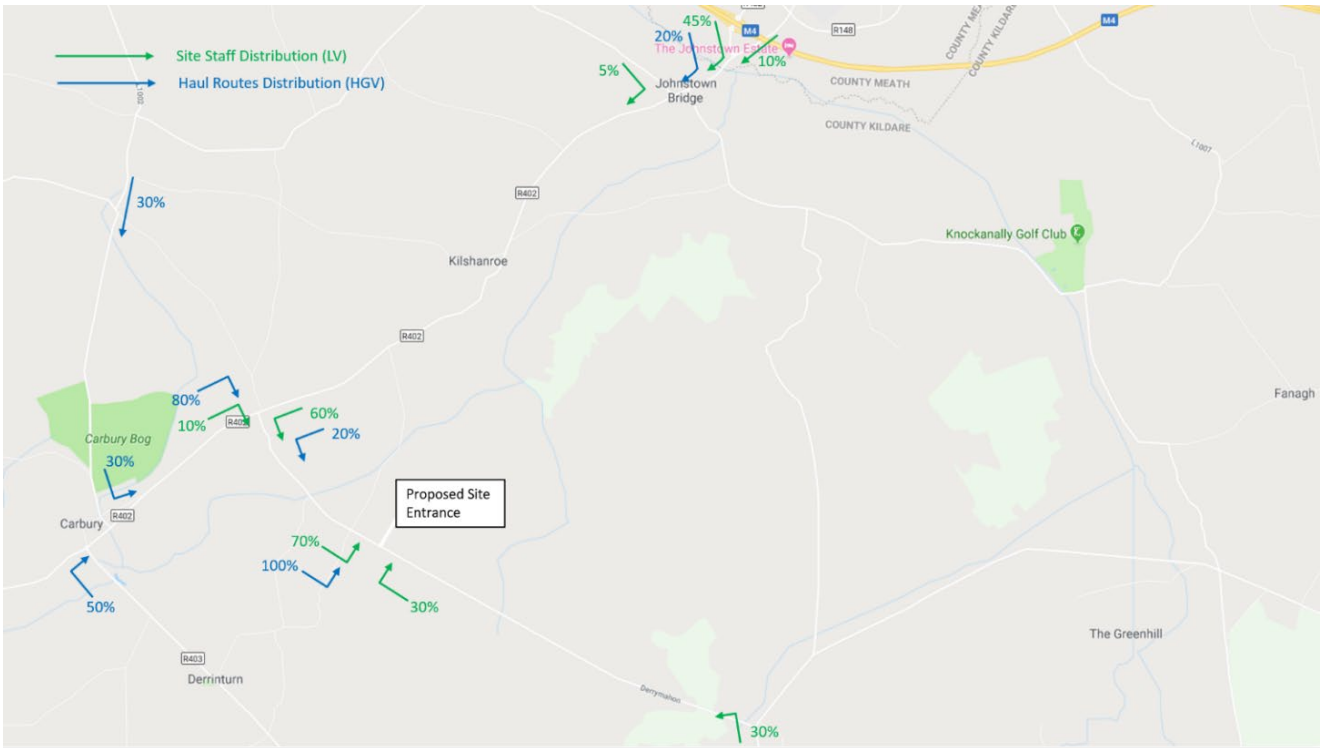

Figure 13.7: Construction Phase Trip Distribution

13.4.6.2 Operational Phase

As described above, the maximum traffic generated by the Proposed Development in the operational phase is approximately four vehicular trips per day. These vehicles may approach the site from any direction; however, the number is so low that a typical distribution could not be applied and there would be no impact on the surrounding road network.

13.5 Impacts of the Proposed Development

Any potential impacts of the Proposed Development on the surrounding road network will be experienced during the construction phase, due to the almost zero traffic generated during the operational phase.

13.5.1 Impacts of Cable Routes

There will be a small section of cable installed over circa 1.38km of the public road L50242 required in order to connect the northern and southern turbines. It is important to note that the road works and the associated impact will move as the works progress and therefore the impact along this one stretch of road will be temporary. Traffic associated with delivery of construction materials for the cable routes has been included in the traffic figures for the overall construction as set out in Section 13.5.3 below.

Reasonable access to local dwellings, farms, and businesses is to be maintained at all times through trenching the cable in the grass verge adjacent to the carriageway for a section of the route. This prevents the requirement for full road closures throughout the cable route and allows for local access to be effectively maintained.

For the above reasons, the installation of the cables will have a temporary negative impact on the local road network, albeit severely localised to the L50242 and of very short duration.

13.5.2 Impacts of Turbine Delivery Routes

The proposed turbine delivery routes will be via the M4 Motorway and the R402 as far as the L5025. An assessment of the proposed turbine delivery route has been carried out and is presented in Appendix 13.1. This assessment has confirmed the suitability of this route. Localised accommodation works will be carried out at specific areas identified as part of this assessment. Access from the south to the northern turbine locations is not possible using internal access tracks, so all northern turbine components will need to access the southern junction where blades will be transferred to a blade lifting trailer (required to overcome physical constraints). Tower and all other loads will undertake a U turn in the southern area, and will then backtrack until the R402 Raven Junction, where they will turn right for the northern access junction.

Turbine component deliveries will be carried out off-peak, likely at night, and in conjunction with An Garda Síochána. This will be carried out in such a manner as to minimise effects on operation of the road network, and as such this process will have a negligible and temporary impact.

13.5.3 Impacts of Proposed Development Construction

The anticipated construction-related traffic that will be generated by the scheme on the surrounding road network, and the distribution of this traffic across the network are set out in Sections 13.4.5 and 13.4.6 respectively. The impact of this additional traffic on the network operation has been analysed for the AM and PM peak hours by comparing link flows and junction performance for the Do Nothing (Without Development) and Do Something (With Development) scenarios.

The TII (formerly NRA) 'Guidelines for Transport Assessment' recommend these assessments be carried out in the opening year, +5 and +15 years after opening. However, in the case of this development, operational traffic volumes will be negligible, and therefore the analysis has been carried out for the construction phase only. It is anticipated that construction will be carried out in 2026/2027. In order to provide a robust assessment of the network performance, the highest monthly construction traffic volumes were used with an assessment year of 2026.

Analysis of the local road network operation was carried out using Junctions 10 software, which is a dedicated software package for the analysis of standard priority junctions (containing the PICADY and ARCADY analysis packages). The assessment is presented for the various scenarios below in terms of link flows and junction performances for the Do Nothing and Do Something scenarios.

13.5.3.1 Scope of Assessment

Traffic counts were carried out at 14 junctions in the vicinity of the site in order to inform this assessment. Following the development of haul routes to and from the site, and estimation of the trip distribution for construction staff, a total of six junctions were analysed using Junctions 10. These junctions were selected for to be modelled as they experiences a percentage increase in traffic flows as a result of the construction phase of the Proposed Development. The junctions surveyed and analysed are presented below in Figure 13.8. It is anticipated that construction traffic will not make turning movements at the other eight junctions surveyed, and therefore their performance will not be affected by the Proposed Development. It should also be noted that the junctions which were not analysed are all rural in nature, forming connections between local roads where traffic volumes are generally lower than in those junctions which were analysed. Link flows for these sections of the network are included for completeness, however it will be noted that they experience no increase in traffic between the Do Nothing and Do Something scenarios.

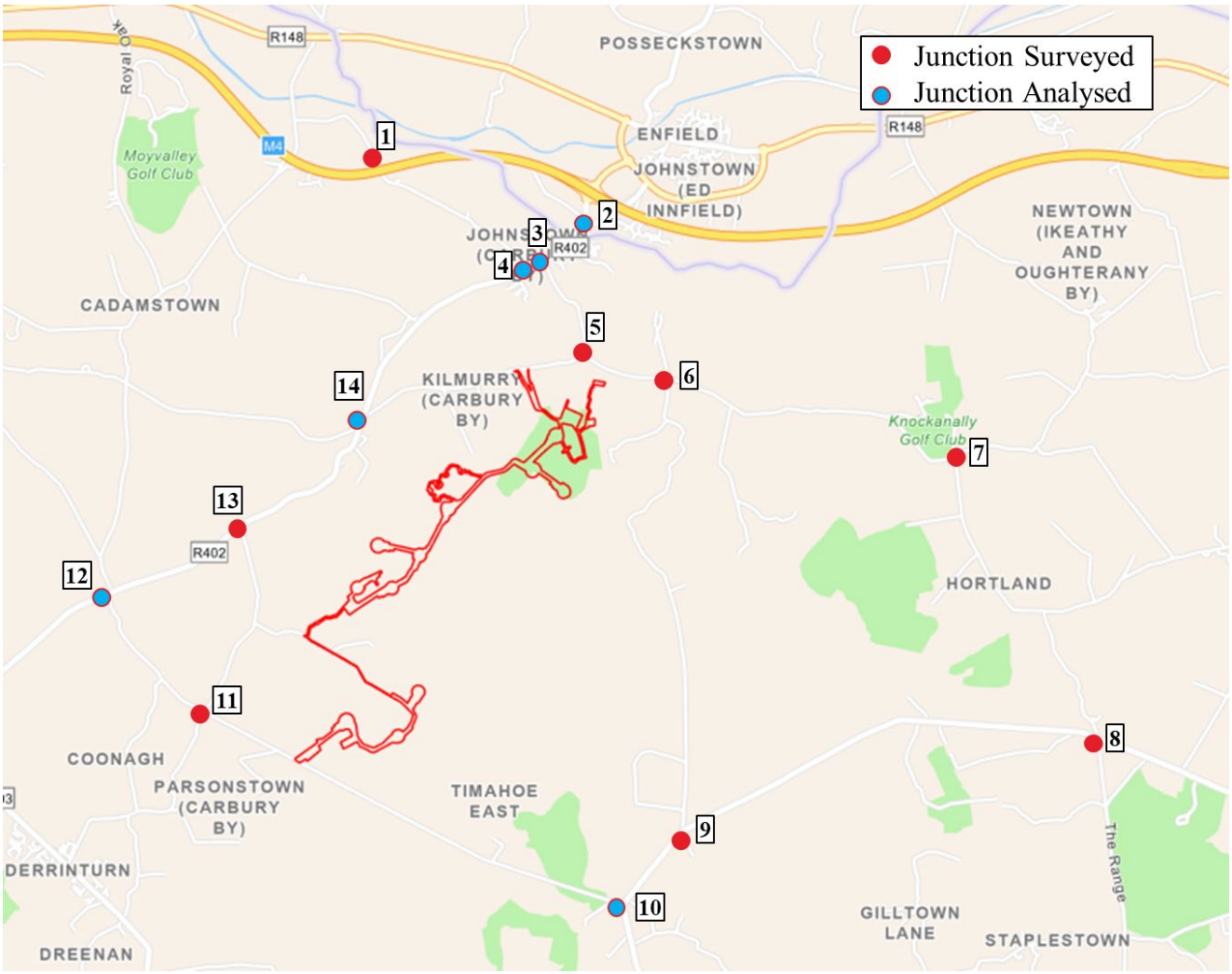

Figure 13.8: Junctions Surveyed and Analysed

13.5.3.2 Link Flows

Link flows are presented in terms of two-way traffic volumes in the AM and PM peak traffic periods, i.e. 08.15-09.15 and 17.00-18.00 respectively.

The two-way flows on links in the vicinity of the proposed development in 2023 is shown in Table 13-3 over.

Table 13-3: Existing Two-Way Traffic Flows – Base Year 2023

Link	AM Peak Volumes	PM Peak Volumes
R402 (J2-J3)	837	986
R402 (J3-J4)	728	839
L1003 (J1-J4)	76	84
R402 (J4-J14)	607	743
R402 (J13-J14)	552	668
R402 (J12-J13)	490	659
L5024 (J11-J13)	35	27
L5025 (J11-J12)	70	130
L5025 (J10-J11)	66	85
L1017 (J9-J10)	144	166
L5013 (J6-J9)	100	135
L1019 (South of J10)	175	209
L1017 (J8-J9)	90	94
L1018 (South of J8)	129	107
L1009 (East of J8)	78	105
L1008 (J7-J8)	101	99
L1007 (East of J7)	58	57
L1004 (J6-J7)	87	91
L1004 (J5-J6)	226	264
L1004 (J3-J5)	211	256
L5012 (J5-J14)	66	62

The two-way flows on links in the vicinity of the Proposed Development in 2026 is shown in Table 13-4 below, for both the Do Nothing and Do Something scenarios. The percentage increase due to the Proposed Development, if any, is also shown in each case. As can be seen in the two-way flow analysis, the percentage increase on the effected arms are generally minimal, for the most part impacted arms experience an increase of 5% or less. The L5025 (J11-J12) experiences the highest increase in traffic flows, this is to be expected as this is the route to the entrance of the site. It is also worth noting that in the Do Nothings scenarios, existing flows on these links are low, and therefore any increase results in a larger percentage increase. It is also important to note that this percentage increase is a short term impact during the peak construction phase, and not a permanent increase in flows.

Table 13-4: Two-Way Traffic Flows – Construction Year 2026, DN and DS

Link	AM Peak Volumes DN	AM Peak Volumes DS	PM Peak Volumes DN	PM Peak Volumes DS
R402 (J2-J3)	894	927 (+4%)	1049	1082 (+3%)
R402 (J3-J4)	778	810 (+4%)	892	925 (+4%)
L1003 (J1-J4)	81	81 (–)	89	89 (–)
R402 (J4-J14)	649	682 (+5%)	790	823 (+4%)
R402 (J13-J14)	590	622 (+6%)	711	743 (+5%)
R402 (J12-J13)	524	557 (+6%)	702	735 (+5%)
L5024 (J11-J13)	37	37 (–)	29	29 (–)
L5025 (J11-J12)	75	153 (+104%)	138	216 (+57%)
L5025 (J10-J11)	71	82 (+16%)	90	102 (+12%)
L1017 (J9-J10)	153	153	177	177 (–)
L5013 (J6-J9)	107	107	144	144 (–)
L1019 (South of J10)	188	199 (+6%)	223	234 (+5%)
L1017 (J8-J9)	96	96 (–)	99	99 (–)
L1018 (South of J8)	138	138 (–)	114	114 (–)
L1009 (East of J8)	83	83 (–)	111	111 (–)
L1008 (J7-J8)	108	108 (–)	105	105 (–)
L1007 (East of J7)	62	62 (–)	61	61 (–)
L1004 (J6-J7)	93	93 (–)	96	96 (–)
L1004 (J5-J6)	240	240 (–)	281	281 (–)
L1004 (J3-J5)	225	225 (–)	272	272 (–)
L5012 (J5-J14)	70	70 (–)	65	65 (–)

13.5.3.3 Junction Assessment – Site 2: Roundabout on Johnstown Road

The 2026 Construction Year AM and PM results are shown below in Table 13-5 and Table 13-6, indicating Queue Length, Delay and Ratio of Flow to Capacity (RFC) values for the respective arms for both the Do Nothing and Do Something scenarios.

Table 13-5: Junctions 10 Assessment – Site 2, 2026 Construction Year, AM and PM Peaks – Do Nothing

Site 2	AM Peak (08.15-09.15)			PM Peak (17.00-18.00)		
Approach Arm	Queue (PCU)	Delay (s)	RFC (%)	Queue (PCU)	Delay (s)	RFC (%)
R402 Northern Arm	0.6	9.93	37	0.7	9.52	41
Johnstown Road	0.4	7.50	30	3.6	26.44	80
R402 Southern Arm	5.1	30.53	85	1.4	11.77	59
Eastern Arm (Unnamed Road)	0	7.62	2	0	6.50	2

It can be seen in Table 13-5 above that the roundabout on Johnstown Road will continue to operate within capacity during the AM Peak period and the PM Peak period in the 2026 Do Nothing scenario.

Table 13-6: Junctions 10 Assessment – Site 2, 2026 Construction, AM and PM Peaks – Do Something

Site 2	AM Peak (08.15-09.15)			PM Peak (17.00-18.00)		
Approach Arm	Queue (PCU)	Delay (s)	RFC (%)	Queue (PCU)	Delay (s)	RFC (%)
R402 Northern Arm	0.7	10.67	41	0.7	9.71	42
Johnstown Road	0.5	7.75	31	3.7	26.87	80
R402 Southern Arm	5.3	31.88	86	1.7	13.08	63
Eastern Arm (Unnamed Road)	0	7.69	3	0	6.64	2

It can be seen in Table 13-6 above that the roundabout on Johnstown Road will continue to operate within capacity during the AM Peak period and the PM Peak period in the 2026 Do Something scenario.

13.5.3.4 Junction Assessment – Site 3: L1004/R402 at Johnstownbridge

The 2026 Construction Year AM and PM results are shown below in Table 13-7 and Table 13-8, indicating Queue Length, Delay and Ratio of Flow to Capacity (RFC) values for the respective arms for both the Do Nothing and Do Something scenarios.

Table 13-7: Junctions 10 Assessment – Site 3, 2026 Construction Year, AM and PM Peaks – Do Nothing

Site 3	AM Peak (08.15-09.15)			PM Peak (17.00-18.00)		
Approach Arm	Queue (PCU)	Delay (s)	RFC (%)	Queue (PCU)	Delay (s)	RFC (%)
Johnstown Road	0.5	13.40	33	0.6	16.48	39
R402	0.2	4.56	10	0.2	5.78	11

It can be seen in Table 13-7 above that the Johnstown Road/ R402 junction will continue to operate within capacity during the AM Peak period and the PM Peak period in the 2026 Do Nothing scenario.

Table 13-8: Junctions 10 Assessment – Site 3, 2026 Construction Year, AM and PM Peaks – Do Something

Site 3	AM Peak (08.15-09.15)			PM Peak (17.00-18.00)		
Approach Arm	Queue (PCU)	Delay (s)	RFC (%)	Queue (PCU)	Delay (s)	RFC (%)
Johnstown Road	0.5	13.83	34	0.6	16.91	39
R402	0.2	4.57	10	0.2	5.63	11

It can be seen in Table 13-8 above that the Johnstown Road/ R402 junction will continue to operate within capacity during the AM Peak period and the PM Peak period in the 2026 Do Something scenario.

13.5.3.5 Junction Assessment – Site 4: L1003/R402 at Johnstownbridge

The 2026 Construction Year AM and PM results are shown below in Table 13-9 and Table 13-10, indicating Queue Length, Delay and Ratio of Flow to Capacity (RFC) values for the respective arms for both the Do Nothing and Do Something scenarios.

Table 13-9: Junctions 10 Assessment – Site 4, 2026 Construction Year, AM and PM Peaks – Do Nothing

Site 4	AM Peak (08.15-09.15)			PM Peak (17.00-18.00)		
Approach Arm	Queue (PCU)	Delay (s)	RFC (%)	Queue (PCU)	Delay (s)	RFC (%)
L1003	0.2	8.80	13	0.1	8.48	9
R402	0.1	5.80	4	0.3	4.69	12

It can be seen in Table 13-9 above that the L1003/R402 junction will continue to operate within capacity during the AM Peak period and the PM Peak period in the 2026 Do Nothing scenario.

Table 13-10: Junctions 10 Assessment – Site 4, 2026 Construction Year, AM and PM Peaks – Do Something

Site 4	AM Peak (08.15-09.15)			PM Peak (17.00-18.00)		
Approach Arm	Queue (PCU)	Delay (s)	RFC (%)	Queue (PCU)	Delay (s)	RFC (%)
L1003	0.2	8.84	14	0.1	8.63	9
R402	0.1	5.67	4	0.3	4.70	12

It can be seen in Table 13-10 above that the L1003/R402 junction will continue to operate within capacity during the AM Peak period and the PM Peak period in the 2026 Do Something scenario.

13.5.3.6 Junction Assessment – Site 10: Timahoe Junction

The 2026 Construction Year AM and PM results are shown below in Table 13-11 and Table 13-12, indicating Queue Length, Delay and Ratio of Flow to Capacity (RFC) values for the respective arms for both the Do Nothing and Do Something scenarios.

Table 13-11: Junctions 10 Assessment – Site 10, 2026 Construction Year, AM and PM Peaks – Do Nothing

Site 10	AM Peak (08.15-09.15)			PM Peak (17.00-18.00)		
Approach Arm	Queue (PCU)	Delay (s)	RFC (%)	Queue (PCU)	Delay (s)	RFC (%)
L5025	0.1	8.18	10	0.1	8.46	7
L1017	0.0	5.80	1	0.0	5.86	4

It can be seen in Table 13-11 above that the Timahoe junction will continue to operate within capacity during the AM Peak period and the PM Peak period in the 2026 Do Nothing scenario.

Table 13-12: Junctions 10 Assessment – Site 10, 2026 Construction Year, AM and PM Peaks – Do Something

Site 10	AM Peak (08.15-09.15)			PM Peak (17.00-18.00)		
Approach Arm	Queue (PCU)	Delay (s)	RFC (%)	Queue (PCU)	Delay (s)	RFC (%)
L5025	0.1	8.20	10	0.1	8.79	10
L1017	0.0	5.82	1	0.0	5.86	4

It can be seen in Table 13-12 above that the Timahoe junction will continue to operate within capacity during the AM Peak period and the PM Peak period in the 2026 Do Something scenario.

13.5.3.7 Junction Assessment – Site 12: Collinstown Junction

The 2026 Construction Year AM and PM results are shown below in Table 13-13 and Table 13-14, indicating Queue Length, Delay and Ratio of Flow to Capacity (RFC) values for the respective arms for both the Do Nothing and Do Something scenarios.

Table 13-13: Junctions 10 Assessment – Site 12, 2026 Construction Year, AM and PM Peaks – Do Nothing

Site 12	AM Peak (08.15-09.15)			PM Peak (17.00-18.00)		
Approach Arm	Queue (PCU)	Delay (s)	RFC (%)	Queue (PCU)	Delay (s)	RFC (%)
L5025	0.1	9.27	9	0.2	11.36	19
R402 East	0.0	5.20	1	0.0	5.13	2
L5011 Colinstown	0.1	8.82	11	0.1	9.37	11
R402 West	0.0	5.00	2	0.0	5.77	4

It can be seen in Table 13-13 above that the Collinstown junction will continue to operate within capacity during the AM Peak period and the PM Peak period in the 2026 Do Nothing scenario.

Table 13-14: Junctions 10 Assessment – Site 12, 2026 Construction Year, AM and PM Peaks – Do Something

Site 12	AM Peak (08.15-09.15)			PM Peak (17.00-18.00)		
Approach Arm	Queue (PCU)	Delay (s)	RFC (%)	Queue (PCU)	Delay (s)	RFC (%)
R402 East	0.2	9.25	15	0.5	13.77	34
L5025	0.0	5.21	1	0.0	5.19	2
R402 West	0.1	8.95	11	0.1	9.58	11
L5011 Colinstown	0.1	5.27	5	0.1	6.01	7

It can be seen in Table 13-14 above that the Collinstown junction will continue to operate within capacity during the AM Peak period and the PM Peak period in the 2026 Do Something scenario.

13.5.3.8 Junction Assessment – Site 14: Kilmurry Junction

The 2026 Construction Year AM and PM results are shown below in Table 13-15 and Table 13-16, indicating Queue Length, Delay and Ratio of Flow to Capacity (RFC) values for the respective arms for both the Do Nothing and Do Something scenarios.

Table 13-15: Junctions 10 Assessment – Site 14, 2026 Construction Year, AM and PM Peaks – Do Nothing

Site 14	AM Peak (08.15-09.15)			PM Peak (17.00-18.00)		
Approach Arm	Queue (PCU)	Delay (s)	RFC (%)	Queue (PCU)	Delay (s)	RFC (%)
L5012	0.1	8.58	6	0.0	7.84	4
R402	0.2	5.84	9	0.1	4.42	4

It can be seen in Table 13-15 above that the Kilmurry junction will continue to operate within capacity during the AM Peak period and the PM Peak period in the 2026 Do Nothing scenario.

Table 13-16: Junctions 10 Assessment – Site 14, 2026 Construction Year, AM and PM Peaks – Do Something

Site 14	AM Peak (08.15-09.15)			PM Peak (17.00-18.00)		
Approach Arm	Queue (PCU)	Delay (s)	RFC (%)	Queue (PCU)	Delay (s)	RFC (%)
L5012	0.1	8.63	6	0.0	7.97	4
R402	0.2	5.68	9	0.1	4.43	4

It can be seen in Table 13-16 above that the Kilmurry junction will continue to operate within capacity during the AM Peak period and the PM Peak period in the 2026 Do Something scenario.

13.5.3.9 Junction Assessment – Site 15: Carbury Roundabout

Following consultation with Kildare County Council, the operation of the Carbury roundabout, at the junction of the R402 and R403, was included in the analysis of the surrounding road network. However, traffic movements at this junction had not been surveyed as part of the traffic counts undertaken. Traffic flows on the R402 are known from the conducted traffic surveys, and a similar distribution to the Kilmurry junction was assumed. Trips on the R403 were then increased over those on the L5012 at Kilmurry to account for its operation as a regional road and the presence of Derrinturn village as a concentrated settlement generating more trips than the ribbon-type development along the L5012.

The 2026 Construction Year AM and PM results are shown below in Table 13-17 and Table 13-18 over, indicating Queue Length, Delay and Ratio of Flow to Capacity (RFC) values for the respective arms for both the Do Nothing and Do Something scenarios.

Table 13-17: Junctions 10 Assessment – Site 15, 2026 Construction Year, AM and PM Peaks – Do Something

Site 15	AM Peak (08.15-09.15)			PM Peak (17.00-18.00)		
Approach Arm	Queue (PCU)	Delay (s)	RFC (%)	Queue (PCU)	Delay (s)	RFC (%)
R403	0.2	3.10	17	0.6	3.87	36
R402 South	0.1	2.66	12	0.1	2.91	12
R402 North	0.2	2.72	20	0.1	2.44	11

It can be seen in Table 13-18 above that the Carbury roundabout will continue to operate within capacity during the AM Peak period and the PM Peak period in the 2026 Do Something scenario.

13.5.3.10 Junction Assessment Summary

As can be seen from Sections 13.5.3.3 to 13.5.3.9 above, all junctions in the vicinity of the proposed development will continue to operate well within capacity during the AM and PM peaks throughout the construction phase of the development.

13.5.4 Potential Impacts – Operational Phase

As outlined above, the windfarm will be unmanned once operational, and will be remotely monitored. Traffic associated with the operational phase of the scheme will comprise ESB personnel visiting the substation and individual turbines. There will also be traffic associated with routine environmental monitoring and operational and maintenance staff. It is anticipated that the traffic associated with this phase will be minimal, with approximately two vehicles a day on average, i.e. four vehicle trips.

Although routine maintenance is performed within the structure of the turbines themselves, non-routine maintenance would potentially require the use of a crane under specific circumstances. Where this is required, there would be an impact on the wider road network in terms of the delivery and removal of the crane; however, this would be non-routine and would have a minimal and temporary impact.

13.5.5 Potential Impacts – Decommissioning

The traffic impact associated with a decommissioning programme for the site would be subject to the development and agreement of a decommissioning plan with Kildare County Council. Decommissioning would have a lesser impact than the construction phase as specific parts of the scheme are likely to remain in place, such as access roads and/or foundations.

It is anticipated that the turbines and their respective components would, however, be removed from the site, and this would be undertaken in a manner similar to the proposals for facilitating turbine delivery. However, during decommissioning the turbine blades will be broken down on site, and as such, no special accommodations will have to be made for the oversize components during decommission.

Any potential impacts from decommissioning would be significantly less than the above-mentioned impacts of construction, which as previously stated are generally slight and temporary in nature.

Grid connection infrastructure including the on-site substation and ancillary electrical equipment will form part of the national grid and will be left in situ.

13.5.6 Cumulative Impacts

The Proposed Development site is located in a rural area, and is generally surrounded by undeveloped land, bog, and small residential settlements. A number of cumulative developments, within 5km of the Proposed Development, have been taken into consideration in the preparation of this chapter and in the modelling of junctions analysed in Section 13.5.3. A list and brief description of these cumulative developments is provided below in Table 13-18.

Table 13-18: Cumulative developments within 5 km of the Proposed Development

Development	Direction from Proposed Development site	Distance from Proposed Development site (km)	Status
Timahoe North Solar Farm	**E**	**Adjoining eastern boundary**	**In construction/nearing completion**
The consented development comprises (a) the construction and operation of 2 areas of solar photovoltaic arrays mounted on metal frames over an area of approximately 200ha, and having a maximum overall height of 3 metres over ground level; (b) Internal solar farm underground cabling; (c) 2 no. temporary construction compounds; (d) recreation and amenity works, including looped walk (upgrade of existing tracks and provision of new tracks, car parking and vehicular access); (e) 1 no. Battery Storage compound; (f) upgrade of existing tracks and provision of new site access roads; (g) site drainage; (h) forestry felling and replanting; (i) permanent signage; and (j) all associated site development and ancillary works. The proposed renewable energy development will have an operational life of 35 years from the date of commissioning. The solar farm has been in construction since 2022 and is exporting power to the grid since September 2024. Construction is nearing completion at the time of writing this EIAR and is expected to be minor works at this time such as snagging.			
Mulgeeth Solar Farm	**NE**	**Adjoining eastern boundary**	**Refused Feb 2025 – may be appealed**
Kildare planning reference 2460568. Consent is for a period of 10 years to construct and complete a solar PV energy development with a total site area of 80.9 hectares, comprising of the construction of PV panels mounted on metal frames, transformer stations, GRP units, internal access tracks, perimeter fencing with CCTV cameras and access gates, electrical cabling and ducting, temporary construction compounds, widening of an existing entrance, landscaping and all ancillary infrastructure and associated works. The solar farm would be operational for 35 years. The export capacity to grid is estimated to be c. 56MW MEC.			
Coolcarrigan Solar Farm	**SE**	**3.7 km**	**Granted consent**
Kildare planning reference 2360073. Consent for a 10-year permission, for the construction and operation of a renewable energy development within a site boundary of c. 114 ha. The proposed development will consist of a development area of circa 71.7 ha including solar on fixed on ground mounted frames with a maximum height of 3 metres, 1 No. battery storage compound, 1 No. customer switchgear container, 1 No. 110kv grid connected single storey substation, 1 No. single storey customer substation and all associated electrical plant, inverter units, electrical transformers, battery units, cooling equipment, underground cabling and ducting, boundary fencing, security entrance gates, CCTV, upgrading of existing access road and new internal access roads and all associated ancillary activities. The proposed development will have a 35-year operational life from the date of commissioning. Revised by significant further information which consists of Provision of quantum of energy export (of up to 80MW) in the proposed development and storage capacity of proposed battery compound (of up to 80MWh).			
Hortland Solar Farm	**E**	**3.9 km**	**Operational since 2022**
An existing solar farm with a total site area of 38.08 hectares. The consented development included two electrical substation buildings, six electrical transformer and inverter station modules, solar PV panels ground mounted on support structures, vehicular access, access gates and internal access tracks, one spare parts container, security fencing, electrical cabling and ducting, CCTV cameras and other ancillary infrastructure, drainage, temporary construction compound, landscaping and habitat enhancement as required and associated site development works and services.			

Dysart Solar Farm	**NE**	**2.5 km**	**Granted consent**
10 year permission for the construction of an up to 25 MW solar PV farm comprising approximately 86,200 no. photovoltaic panels on ground mounted frames within a site area of 35.6 hectares and associated ancillary development including 20 no. transformer stations, 20 no. auxiliary transformer stations, 20 no. inverters, 1 no. client side substation, 1 no. single storey storage building, 1 no. single storey communications building, 1 no. single storey DNO building, 6 no. CCTV security cameras mounted on 4 metre high poles and perimeter security fencing (2 metres high) and localized improvements to an existing agricultural access from the adjoining L1004 road to the south.			
A number of residential developments	**N**	**2.8 km**	**Granted consent**
There are a number of consented large residential developments in Enfield which have been integrated into one large project. The planning references are Meath Co. Co. Reg Ref. 21/1449, 21/1461, 21/1462, 23/272. The consents include 99 residential units (21/1449), 67 residential units (21/1461) 77 residential units (21/1462) and a further 77 residential units (23/272); all with ancillary infrastructure such as public open space, car parking, bicycle parking etc.			
Johnstown Estate Renovations	**N**	**2 km**	**Granted consent**
Kildare planning reference 23/613. The proposed works are principally to the existing banquet hall and conference centre located to the south of the main hotel building and associated external landscaped areas. The proposed external works comprise: (i) the provision of a new 210 sq.m. store room extension (5.450m in height) over existing service yard to the rear (east) of the building; (ii) a 136 sq.m. extension to the south east corner of the building to provide a new glazed orangery bar; (iii) demolition of existing single storey draught lobby (30 sq.m.) and construction of a new 60 sq.m. extension (4.050m in height) on the northern side of the building to provide for a bar area (44 sq.m.) and 2 no. store rooms (8sq.m. each); (iv) a new 20 sq.m. entrance lobby with an external canopy to the southern side of the building; (v) 2 no. new external seating areas to the east and west of the proposed entrance lobby; (vi) a new vehicular circulation layout with roundabout and water feature to the front of the proposed entrance lobby, loading bay, access ramp, external stair case, footpaths; (vii) relocation of the approved bike store located in the service yard (Reg. Ref. 22/1089) underneath proposed store building; and, (viii) the provision of a landscaped seating deck to the south of the building. Proposed internal works comprise reconfiguration of existing conference and banqueting accommodation to provide (a) 2 no. conference banqueting suites (320sq.m. and 280 sq.m.), (b) 2 no. meeting rooms (180 sq.m. and 110 sq.m.). (c) reception lobby (135 sq.m.) and (d) associated toilets, storage, cloakrooms and staff areas. Retention permission is sought for 4 no. accessible car parking spaces provided to the front of the hotel (southwest facade) and existing landscaping works comprising an existing timber pergola structure to south of the hotel development. The development also includes all other associated engineering works, landscaping, and ancillary works necessary to facilitate the development.			
Restoration of 5 ha of agricultural land	**N**	**3.2 km**	**Granted Consent**
Meath planning reference TA200121. The development comprises: a) use of existing stockpiles for site restoration (b) importation of inert excavation spoil comprising natural materials of clay, silt, sand, gravel or stone for the purposes of restoration of a previously extracted area (QY/54) to restore the site to a beneficial agricultural and ecological afteruse (5.85 hectares) (c) Temporary Portacabin Offices and Staff Facilities 100sqm. (d) Wheel Wash and weighbridge 134m2 (e) Site entrance and access road (f) Lockable access gate at the pit entrance (g) All other ancillary buildings, plant and facilities for the restoration, and all ancillary site works. The application is accompanied by an Environmental Impact Statement (Environmental Impact Assessment Report) and associated documents. The application relates to a restoration development for the purpose of an activity requiring a Waste Permit to be issued by the Meath County Council. Significant further information/revised plans submitted on this application.			

Blackwood Equestrian Centre	**SE**	**2.5 km**	**Granted consent**
Kildare planning reference 191031. Proposed two storey stable block, consisting of 6 no. horse stables & 7 no. pony stables, a wheelchair accessible toilet & two no. stairwells at ground floor level, tack room, kitchen/dining/lounge area for refreshment purposes (for staff and patrons of the livery centre only), male and female changing rooms and toilets and an office at first floor level (total floor area 494.6 sq.m), proposed horse walker (305.8 sq.m) and horse lunge (305.8sq.m) with proposed dungheap/effluent tank (18.5 sq.m). Existing concrete slab to be demolished and removed off site to authorised waste facility and to install proposed exercise area (1732 sq.m) to include 6 no. floodlights & equine fencing along the existing driveway and proposed exercise area. Permission is sought to install a septic tank and percolation area, 8 no. car parking spaces, gravel pathway to forest, proposed signage (2m sq) at existing gate and all associated site works at the above address. Permission is also sought to retain existing storage shed (24sq.m) and existing driveway.			
Drehid Land Fill Extension	**S**	**0.5 km**	**Granted consent**
ABP reference 317292. Increase in waste material at disposal facility at Drehid Waste Management Facility to accept 440,000 tonnes per annum of non-hazardous waste material.			
Mixed Use Development in Enfield	**N**	**3.9 km**	**Granted consent**
The development will consist of: The construction of a mixed-use development including a 4 storey over ground floor level mixed use building (c.7,953 sq. m) comprising ground floor lobby (c.169 sq. m), bulky goods retail at ground (c.1,062sq,m) and first floor (c.l,219sq.m), ground floor cafe (c.304 sq. m), ground floor gym (c.352sq. m), first floor health centre (c.822 sq. m), second, third and fourth floor office and conference space (c.2,733 sq. m), core, circulation and plant facilities across all levels (c.1,292 sq.m) and 227 no. car and 80 no. cycle parking spaces to serve the building; 80 no. residential units comprising 1 3 no. 2 storey four-bedroom terraced housing units, 67 no. 2 storey three bedroom terraced housing units with associated private open space in the form of rear gardens and terraces, 164 no. car and 320 no. cycle residential parking spaces plus 60 visitor cycle parking spaces; c.4,224 sq. m of landscaped public open space; a 2 storey creche facility (c.400 sq. m) with 12 no. car parking spaces; green roofs; solar panels; a two-lane access road linking the development to the roundabout where the R148 meets Dublin Road, providing 2 no. multimodal, priority-controlled junctions and segregated pedestrian and cyclist facilities with a controlled crossing; provision of roadway to access the development from the south via the existing roundabout on the Dublin Road; an internal road and shared surface network, including walkways and its associated infrastructure; watermain, foul and surface water drainage, extension to the proposed foul network and connection to the pump station (permitted under ABP-308357- 20), extension to the proposed watermain, connecting to the existing DN 300 HDPE adjacent to the R148 roundabout, an attenuation pond at the north east of the site (1770 sq.m); and all other ancillary site development works including hard and soft landscaping, boundary treatments, lighting, SuDs, and above and below ground services to facilitate the development.			
Royal Oaks Residential Development	**N**	**3.9 km**	**Granted consent**
Meath planning reference 2492, which is an extension of duration of reference SH304296. Construction of 133 no. dwelling units, creche and associated site works.			
68 residential units in Johnstown Bridge	**N**	**1.8 km**	**Granted consent**
Kildare planning reference 22488. Development of 68 No residential units comprising 59 No houses (10 No. 2 bed, 31 No. 3 bed and 18 No. 4 bed) and 9 No. maisonette apartments (8 No. 1 bed and 1 No. 2 bed) and a retail unit/cafe measuring 77.2 sq m, with heights ranging from two storeys to two storeys with attic accommodation over.			

The development also proposes a new vehicular entrance off Johnstown Road, ancillary car-parking; cycle parking; a pump station; hard and soft landscaping; lighting ;balconies; solar panels; boundary treatments; bin storage; ESB substation and all associated site works above and below ground.

Projected traffic volumes generated by the above committed developments has been considered as future background traffic in the analysis conducted in Section 13.5 of this report for both the Do Nothing and Do Something scenarios.

13.6 Mitigation Measures

This section outlines the various mitigation measures that will minimise or eliminate the potential impacts of the scheme in terms of traffic and transportation. Certain aspects of the development of the scheme to date have already included mitigation in terms of scheme design and route selection, for example. It is considered that no further mitigation measures are required for the operational stage of this development.

13.6.1 Turbine Delivery Route

As outlined above, the Turbine Delivery Route has been evaluated and identified following a detailed appraisal of potential route options and the identification of the most appropriate route and the necessary accommodation works along the route to mitigate the impact of turbine delivery. These works are summarised in Section 13.4.3 above, and the report is presented in Appendix 13.1.

13.6.2 Haul Routes

The proposed haul routes have been selected in order to maximise use of regional and national roads, and to minimise HGV traffic on narrow local roads. All HGV traffic will approach the site entrance from the west, with HGV traffic travelling to and from sites routed along the R403 and R402 via Carbury roundabout in order to avoid the local road network to the east and the junction at Timahoe in particular.

13.6.3 Cable Routes

The need for lengthy cable routes has been minimised due to the location of the site and layout of the proposed development. There is a section of cable installation which will be routed through circa 1.38km of the L50242, for the purposes of connecting the southern and northern sections of the Proposed Development site.

13.6.4 Site Entrance

The site will be accessed by the main site entrance on the L5025 Derrymahon Road and secondary access on central public road L50242 for T4-11. There will also be a temporary use site entrance constructed off the L5012, immediately west of the existing Coillte entrance, for the purposes of turbine delivery for northern section of the site T4-T11. As this entrance will only be used temporarily, it is considered inappropriate to carry out significant accommodation works to achieve sight lines. Rather, use of this entrance will be controlled by banksmen, and only right-in, left-out turns will be permitted.

Local accommodation works are proposed at the Main site entrance and the secondary site entrance to provide sufficient exit visibility, as shown in the site entrance drawings and reproduced in Appendix 13.3.

The Kildare County Development Plan states that sightline and visibility requirements are determined on a case by case basis (Section 17.7.1) but that guidance for stopping distances and visibility splays at junctions and accesses are set out in the TII c (DMRB). DN-GEO-03031 (NRA TD9) sets out a desirable minimum stopping sight distance of 160 m for roads of design speed of 85km/h, which is generally the design speed of roads posted at 80km/h. One step below the desirable minimum is 120m, and two steps below is 90m.

As the speed limit in the vicinity of the main site entrance is 80km/h, the recommended visibility would be 160 m to either side of the site entrance/exit. Sightlines of 160m are achievable to the north of the proposed entrance. However, the presence of a mature tree approximately 155m from the proposed entrance prevents the full sightline from being achieved to the south. The sightline available to the south far exceeds the one step below desirable minimum visibility of 120m required by TII. It is considered that the sightline of 155m to the south will provide adequate visibility to oncoming traffic for traffic exiting the site, and vice versa. Advance signage will be provided on the L5025 in both directions to alert road users to the presence of HGVs and the proximity of the construction site.

In the vicinity of the secondary access on the central road L50242, while there are no posted speed limits, the narrow carriageway width and low traffic volumes lead to low speeds on the road. Visibility splays of 90m are achievable to both the east and the west of the proposed junction, which are considered to provide adequate visibility to oncoming traffic for traffic exiting the site, and vice versa.

As mentioned previously, an additional access point is currently present on the northern boundary of the site via Coillte lands, to the L1004. This entrance will only be used for pedestrians and cyclists to access the proposed amenity trail and it is not proposed to use this access point for construction or operational traffic.

13.6.5 Construction Mitigation Measures

The following mitigation measures are proposed for the construction phase of the scheme:

Construction Environmental Management Plan and Construction Traffic Management Plan

A Construction Environmental Management Plan (CEMP), including a Construction Traffic Management Plan, has been prepared and is presented in Appendix 3.2 of this EIAR. This will be updated by the appointed contractor in advance of the works. This will be agreed with Kildare County Council and An Garda Síochána.

The TMP will clearly identify the routes to be used to access the site for different types of traffic as appropriate, i.e. haul routes and construction staff access routes, as well as those sections of road which are not to be used. This will be planned and executed in accordance with best practice, including Chapter 8 of the Traffic Signs Manual.

Traffic Management Co-ordinator

The appointed contractor will provide a competent person with responsibility for traffic management coordination for the duration of the project. This person will be the main point of contact for all matters relating to traffic management on the project.

Road Pre-Condition Surveys

A pre-condition survey will be carried out in advance of any construction works on the public roads that will be agreed to be used as haul routes in connection with the works to record the condition of the road. The specification and timing of the pre-construction survey will be agreed with Kildare County Council and TII as appropriate. A joint survey shall be undertaken if required by the relevant roads authority.

Site Induction

All workers will receive a comprehensive site induction which shall include, as appropriate, a section on traffic management and clear guidance on the routes which should and should not be used.

Emergency Procedures

A 24-hour emergency phone number will be maintained for the duration of the construction works. This number will be noted on temporary signage at each works area for cable works, and at the site entrance, at a minimum.

Public Consultation

Subject to agreement with the planning authority, a letter drop will be carried out to notify members of the public living near the proposed site/route/roadworks, to advise them of any particularly significant upcoming traffic related matters e.g. temporary lane/road closures, delivery of turbine components at night.

Signage

A system of clear signage relating to the project, both temporary and permanent, will be agreed with the planning authority. These signs will also identify those roads to be used (and not to be used) for accessing the site in line with the objectives of the Construction TMP.

On-Site Vehicle Cleaning

Temporary wheel washing facilities will be located at the main site entrance, subject to agreement with the planning authority, to prevent soil/dirt from being transported onto the public road network.

Road Cleaning and Maintenance

Road sweepers will be utilised to maintain the public roads in a clear condition. This will apply especially during the earthworks stages of the project.

Road Opening Licensing

Road works associated with the cabling on the public road will be undertaken in line with the requirements of the road opening licence, the terms of which will be set out by Kildare County Council.

Adjacent Dwellings

A number of mitigation measure shall be put in place so as to reduce the impact on the residential dwelling adjacent to the site entrance during construction. These include the following:

- All construction traffic shall follow the identified haul route, as such, any temporary noise from construction will be moving away from the dwelling on entering the site.
- A noise attenuation barrier will also be put in place along the boundary of the site to reduce any further temporary noise impacts on the dwelling. This can be done in consultation/agreement with the neighbouring residents if permitted.
- A commitment is given that no construction traffic vehicles will loiter outside the dwelling.
- The residents will be kept informed of the traffic movements during construction by way of leaflet drops so they are aware of different stages of development/construction.
- Commitment to keep speed below 20-30kph beside the dwelling to reduce noise/vibration from passing trucks.

- Dust monitoring will take place at the site entrance and there will be done daily visual checks for dust deposition. Dust screens or other suitable measures will be put in place , as required.

Local Access

Reasonable access to local dwellings, farms, and businesses is to be maintained at all times during any road closure associated with the cable works. The details of this will be agreed with the roads authority in advance of the works, in consultation with the local residents in so far as is practicable. The section of local road impacted during cable works is a cul de sac and therefore diversions are not suitable. Reasonable access will be retained and the works will be short term in duration for the impact owing to the cabling works.

Road Safety Assessment Stage 1/2

A Road Safety Assessment has been carried out by an independent consultancy JB Barry & Partners Ltd. in March 2019 for the proposed development, specifically, to consider the suitability of the haul routes indicated in the previous 2018 EIAR for use. The findings of this RSA resulted in a number of local roads in the site vicinity being removed as potential haul routes (the L5024, L5017, L5011). The RSA also advised that, where possible, bypass routes of urban centres should also be used (for example, the urban centres of Prosperous, Clane, Enfield, Naas, etc. should be avoided by haul traffic where possible).

The Road Safety Assessment has been carried out to confirm the suitability of the existing road network, from a safety point of view, to accommodate the proposed construction traffic. The following paragraphs identify the links on the road network surrounding the proposed development. The findings and recommendations of the RSA have been incorporated into current the approach.

M4

The M4 is a dual carriageway motorway, designed and constructed in compliance with NRA/TII guidelines. Road Safety Audits are carried out on all motorways as part of the various stages of the design and construction process. The M4 will be used for transporting materials as well as turbine components to the site. This road carries large volumes of traffic and functions as a strategic national route. It is therefore suitable for use by HGV traffic for material deliveries to the site. The Turbine Delivery Report (TDR), which is included in Appendix 13.1, assesses the suitability of a route for abnormal load delivery, such as turbine blades or tower sections for the turbines. This TDR report also outlines accommodation works required to facilitate these deliveries on the preferred route. The M4 was selected as the preferred route as alternatives would require vehicles to pass through areas of soft ground or towns such as Edenderry. Accommodation works are not required on the M4 itself. The Enfield Interchange (Junction 9 on the M4) requires minor accommodation works but these do not raise any safety concerns. Any signs to be removed to facilitate deliveries will be reinstalled immediately following the delivery, and deliveries will be coordinated in conjunction with An Garda Síochána.

R402

The R402 is a regional road which will be used for HGVs and general traffic to and from the proposed development, as well as forming part of the turbine delivery route. It forms the main road between Edenderry and the M4. This is generally a wide and flat road with one lane in each direction, approx. 7m wide, with good visibility. There are a number of bends on the road, but it is reasonably heavily trafficked, and no safety concerns are anticipated for use by general traffic, including HGVs. This section of the R402 was upgraded in recent years and the junction of the R402/L5025 was widened and upgraded to include left-turn and right-turn pockets. This junction is considered to provide sufficient visibility and geometry to allow HGV movements in all directions. Minor accommodation works are required to facilitate turbine delivery; however, these are generally limited to temporary removal of signage and a street light, which will be reinstated immediately following the deliveries. As with the M4, turbine deliveries will be coordinated in conjunction with An Garda Síochána.

R403

The R403 is a regional road connecting Carbury and Allenwood. It is proposed to use this for HGV traffic approaching the site from the south. Similar to the R402, it is a single carriageway road with generally good visibility. It is not proposed to route turbine deliveries via the R403.

L5025

The L5025 is a local road which provides the access route to the site itself from the R402. It will therefore be used by all traffic entering and exiting the site.

Turbine deliveries via this route will require accommodation works including paving an area of verge on the southern side of the road, and potential trimming of hedgerows. Turbine deliveries will be coordinated in conjunction with An Garda Síochána to ensure safe navigation of this stretch of road.

The L5025 is narrower than the regional roads and carries lower volumes of traffic. Visibility is good and there are locally widened areas. It should be noted that this road passes through a rural area and therefore is regularly used by agricultural vehicles, with approx. 60 HGVs currently passing along it in both directions each day. HGVs and site traffic will therefore use this road in both directions and it is not anticipated that there will be any particular safety concerns on this section of road for delivery vehicles. Prior to construction, the appointed contractor will liaise with Kildare County Council with regard to the Construction-stage Traffic Management Plan, including any construction stage speed limits that may be required on the L5025.

L50242

The L50242 local road is a cul de sac located in a central location of the proposed development site. The L50242 will be utilised for cable installation so as to connect the northern and southern section of the site. The road will also be utilised as a connection between the southern and northern sections of the site throughout construction with a secondary construction entrance on the L50242.

L5012

Prior to construction, the appointed contractor will liaise with Kildare County Council with regard to the Construction-stage Traffic Management Plan, including any construction stage speed limits that may be required on the L50242 and the L5012.

13.7 Residual Impacts

13.7.1 Construction Phase

As discussed above, the construction of the Proposed Development will lead to additional construction traffic on the existing road network, including HGV, oversized loads and LVs. The impacts of this traffic are discussed above and are considered to be slight short term negative impacts, with no residual impact post-construction.

Similarly, the installation of cable on the public road L50242 are discussed above, given the short term nature of disruption, it is considered a slight short term negative impact, with no residual impact post-construction.

13.7.2 Operational Phase

As outlined above, there will be no significant operational stage traffic impacts associated with the proposed development.

13.7.3 Decommissioning Phase

On decommissioning, the adoption of and adherence to a decommissioning plan which will include traffic management proposals, similar to during the construction phase, will ensure that the residual impacts on traffic and transport at the decommissioning stage will not be significant.

13.8 Conclusion

The Proposed Development has undergone a detailed Transport Assessment whereby the varying elements of construction and operational activity have been identified and assessed to establish the impact that the proposed development may have on the receiving road network.

An 18-month programme of works has been outlined and the associated traffic movements have been calculated to establish the peak periods of activity.

Traffic Count Surveys were carried out in May 2023 on 14 no. junctions in the vicinity of the Proposed Development. These surveys have enabled a link flow assessment and junction analysis to be carried out for the AM and the PM peak traffic periods during the construction phase.

The windfarm will be unmanned once operational and will be remotely monitored. Traffic associated with the operational phase of the scheme will comprise personnel visiting the substation and individual turbines. There will also be traffic associated with routine environmental monitoring and maintenance. It is anticipated that the traffic associated with this phase will be minimal. Visits for maintenance purposes will be intermittent and equate to a maximum of two vehicles a day, when necessary, i.e. four vehicle trips.

The results of the analysis indicate that the local road network has an abundance of spare capacity to accommodate the traffic associated with the construction stage of the proposed development. It should also be noted that the committed developments taken into account in the traffic analysis include developments which have not yet received planning permission. The assessment and associated results therefore represent a conservative estimate of the network's performance, which indicates that the network has spare capacity and can comfortably accommodate traffic associated with the proposed development.

As set out above, the Proposed Development is likely to incur slight temporary negative impacts on localised sections of the road network during construction and will have no permanent impacts on the road or transport network in the vicinity of the site.

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