Chapter 15 Material Assets – Traffic and Transport

Ballinla Wind Farm

Ballinla Wind Farm Limited

July 2025

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Project No.	Doc. No.	Rev.	Date	Prepared By	Checked By	Approved By	Status
23882	6019	A	June 2025	S Quigley	G Thornton	G Thornton	Final

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15. Material Assets – Traffic and Transport

15.1 Introduction

This chapter considers the potential effects on traffic and transport material assets arising from the Proposed Development. A full description of the Proposed Development, development lands and all associated project elements is provided in Chapter 2 Description of the Proposed Development of this EIAR. The nature and probability of effects on traffic and transport arising from the overall project have been assessed.

15.1.1 Scope of Assessment

The scope of the assessment in this chapter includes the following:

- Existing and expected future road and transport network.
- Existing and predicted future baseline traffic volumes on the surrounding local road network.
- Predicted Proposed Development construction, operational and decommissioning traffic volumes and likely impacts.
- Proposed mitigation measures.

15.2 Methodology and References

This chapter has been prepared in the context of the following:

- Offaly County Council's Offaly County Development Plan 2021-2027.
- The Transport Infrastructure Ireland (TII) Traffic and Transport Assessment (TTA) Guidelines PE-PDV-02045 May 2014.
- TII's Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections PE-PAG-02017 October 2021.
- TII's Rural Road Link Design DN-GEO-03031 May 2023.
- The UK Traffic Capacity of Urban Roads TA79/99.
- The Environmental Protection Agency Guidelines on the Information to be Contained in Environmental Impact Assessment Reports May 2022 (EPA EIAR Guidelines).

15.2.1 Assessment Criteria

Existing baseline traffic volumes on the surrounding local road network have been established on the basis of onsite traffic surveys completed by MWP, and automatic traffic counter data from TII's online database for national roads.

The significance and duration of predicted impacts have been defined in accordance with the EPA EIAR Guidelines.

15.2.2 Statement of Limitations and Difficulties Encountered

The site inspection and road network inventory for the preparation of this chapter assessment was carried out during October 2024, which was prior to the introduction of new 60 km/hour speed limits on rural Local Roads on the 7th of February 2025 by the Department of Transport.

Otherwise, there were no limitations and difficulties encountered during the preparation of this Assessment.

15.2.3 Competency of Assessor

This chapter assessment has been prepared by Seamus Quigley BE CEng MIEI MCIHT of MWP. Seamus Quigley has 34 years' experience in transport planning and traffic engineering projects, including EIS/EIAR traffic and transportation chapters, traffic impact assessments, traffic management studies, mobility management plans, traffic modelling studies, feasibility studies and road safety audits. He is a Chartered Engineer with Engineers Ireland, and also a member of the Chartered Institution of Highways and Transportation. He joined MWP in 2007, having spent over sixteen years with Atkins.

15.3 Baseline Environment

15.3.1 Existing Roads and Transport Network

The Proposed Development shown in **Figure 15-1**. The Proposed TDR is detailed in **Appendix 2-2** Turbine Delivery Route Assessment Report of this **EIAR**.

The Proposed Development local road network map is provided in **Figure 15-2**. The Proposed Wind Farm site is located north and south of the L5010 Local Road, and the proposed substation is located north of the L5010. The Proposed Grid Connection route extends along L5010, L5006 Local Road and R401 Regional Road.

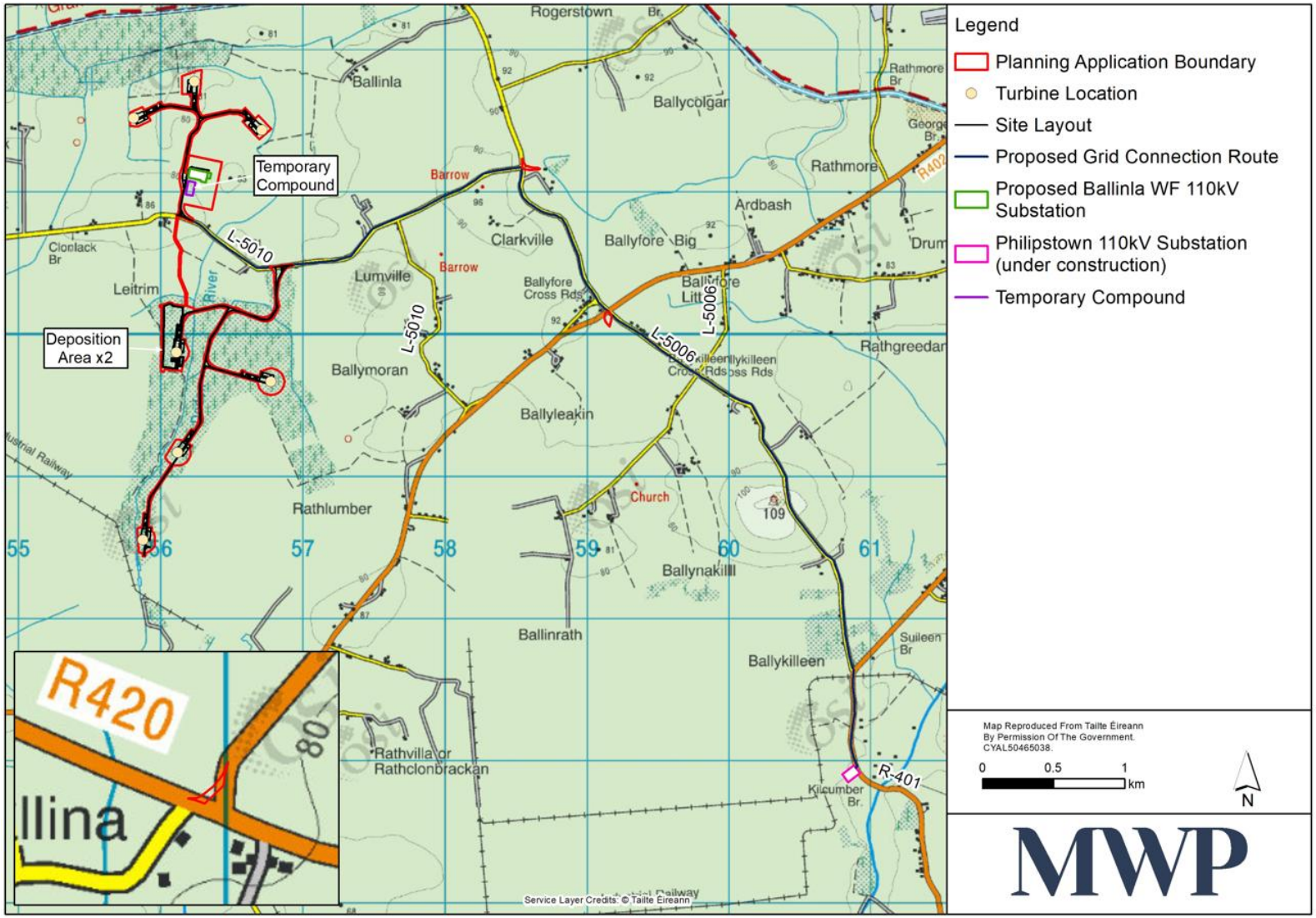

Figure 15-1Proposed Development Location with Local Roads

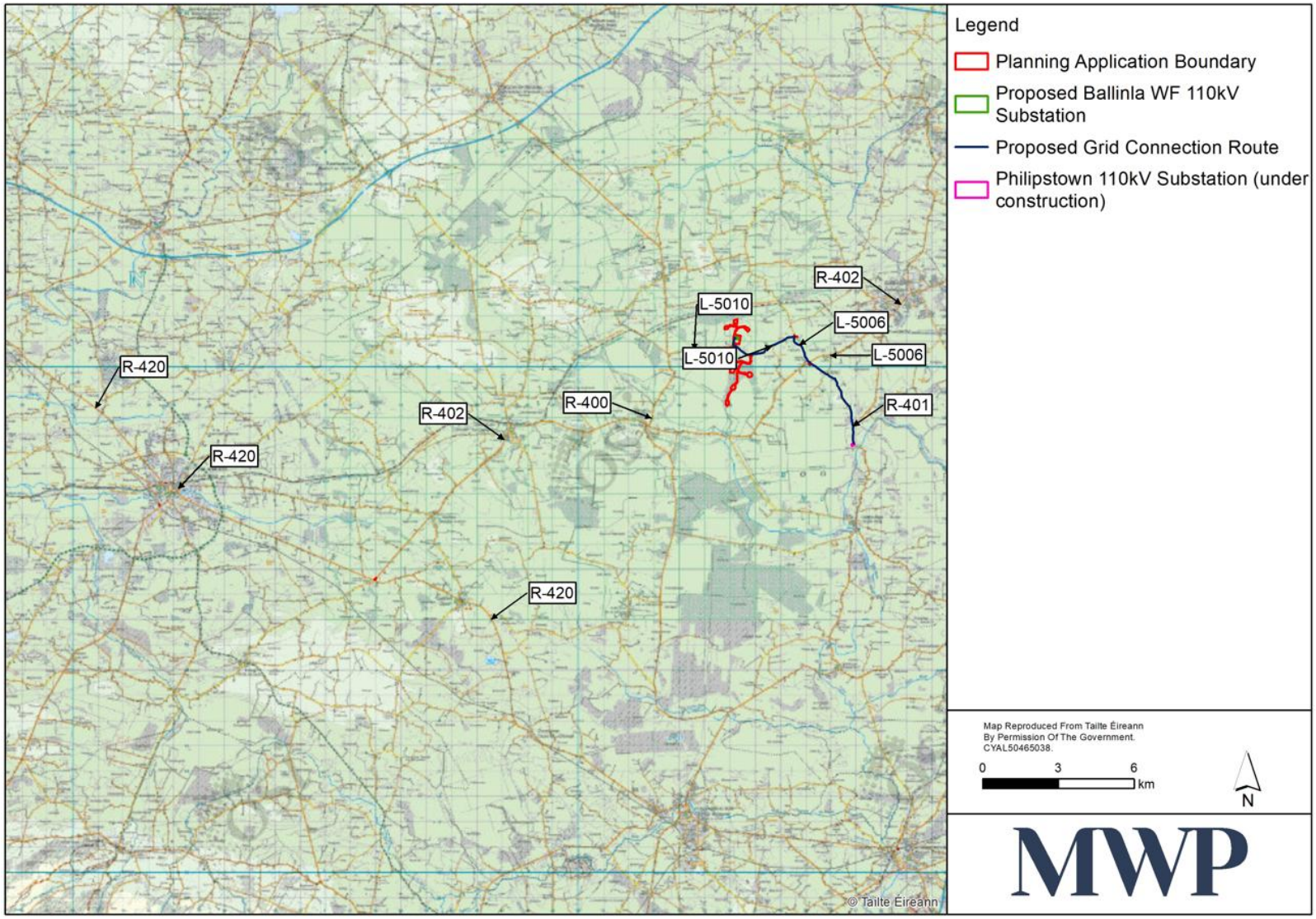

Figure 15-2: Proposed Development Local Road Network Map

15.3.1.1 L5010 Road Characteristics

In the vicinity of the Proposed Ballinla Wind Farm site and west of the site, the L5010 has a typical road carriageway width of 3.5m and 3.6m, with circa 2.0m wide verges on both sides. There are existing verge widths in excess of 2.0m on sections of the L5010 located on horizontal alignment curves. East of the Proposed Wind Farm, the L5010 has carriageway widths of 3.8m and 4.0m. The L5010 extends for circa 5.3km from its priority T-junction with the L5006, in the east, to its priority T-junction with the R400 in the west.

Approximately 1.3km south of its L5010 junction, the L5006 forms crossroads junction with the R402 Regional Road at Ballyfore and has a typical road carriageway width of 4.6m, with variable width grass verges. North of its L5010 junction, the L5006 has a typical road carriageway width of 4.4m, including at its Trimblestown Bridge on the Grand Canal.

In the vicinity of Ballyfore, the R402 has a typical road carriageway width of 6.2m with centreline and hard strip road markings.

15.3.1.2 L5006 Road Characteristics

South of its R402 crossroads junction at Ballyfore, the L5006 has typical road carriageway widths of 4.2m and 4.4m on its northern local section, and 5.0m on its southern local section, with variable width grass verges. A 3.8m wide road carriageway with hard strip markings is provided on the southern end of the L5006, at and in the vicinity of its priority T-junction with the R401 Regional Road.

Immediately south of its L5006 junction, the R401 has a typical road carriageway width of 6.2m with centreline and hard strip road markings.

Approximately 3.2km south of its L5010 T-junction, the R400 forms a right-left staggered crossroads junction with the R402 at Mount Lucas. Between its L5010 and R402 junctions, the R400 has typical rural road carriageway widths of 5.3m and 5.1m with centreline and hard strip road markings. a typical urban road carriageway width of 5.5m at Mount Lucas.

15.3.1.3 R400 Road Characteristics

North of its L5010 T-junction, the R400 has a typical road carriageway width of 5.5m with centreline and hard strip road markings. The R400 has a reduced carriageway width at its Rhode Bridge on the Grand Canal, where a traffic signals control is provided to alternate traffic movements. North of the Grand Canal, the R400 has urban controlled pedestrian crossing facilities, footways and recessed school set-down parking at Rhode.

15.3.1.4 R402 Road Characteristics

The R402 at Mount Lucas has an urban central median marking with 3m wide traffic lanes in each direction and footways.

15.3.1.5 R401 Road Characteristics

The R401 has a vertical crest curve bridge on the River Figile, approximately 220m south of the Philipstown substation (under construction) access. The R401 has a reduced road carriageway width of 4.2m on the bridge, with a posted Stop for northbound traffic for priority for southbound traffic at the bridge.

15.3.1.6 Speed Limits

50 km/hour urban speed limit zones are provided on the L5006 at Ballyfore, on the R400 and R402 at Mount Lucas, and on the R400 at Rhode. Elsewhere on the Proposed Development local road network, the existing rural

roads are located within the 80 km/hour rural non-national speed limit zone. The site inspection and road network inventory for the preparation of this chapter assessment was carried out during October 2024, which was prior to the introduction of new 60 km/hour speed limits on rural Local Roads on the 7th of February 2025 by the Department of Transport.

15.3.1.7 Controlled Junctions

The R402 urban route through Edenderry includes a traffic signal-controlled junction with the R441 on the west side of the town centre. a mini-roundabout junction on JKL Street with Fr. McWey Street at The Grand Canal with Zebra controlled pedestrian crossings on all junction arms. a mini-roundabout junction with the R401 in the town centre with Zebra controlled pedestrian crossings on all junction arms. Zebra controlled pedestrian crossings are also provided along the R402 on JKL Street between these mini-roundabout junctions. A Zebra pedestrian crossing is also provided on the R402 northeast of the town centre. North of Edenderry, the R401 has a typical rural road carriageway width of 5.5m.

15.3.1.8 National and Regional Network

As shown in Figure 15-3, the R400 links with the M6 Motorway, north of Rhode, at the M6 Junction 3. The R402 extends southwest to the R420, on the southeast of Tullamore, where the R420 has a typical road carriageway width of 7m with hard strips. The R420 links with the N52 National Secondary Road at Tullamore. The N52 extends north of Tullamore to M6 Junction 5.

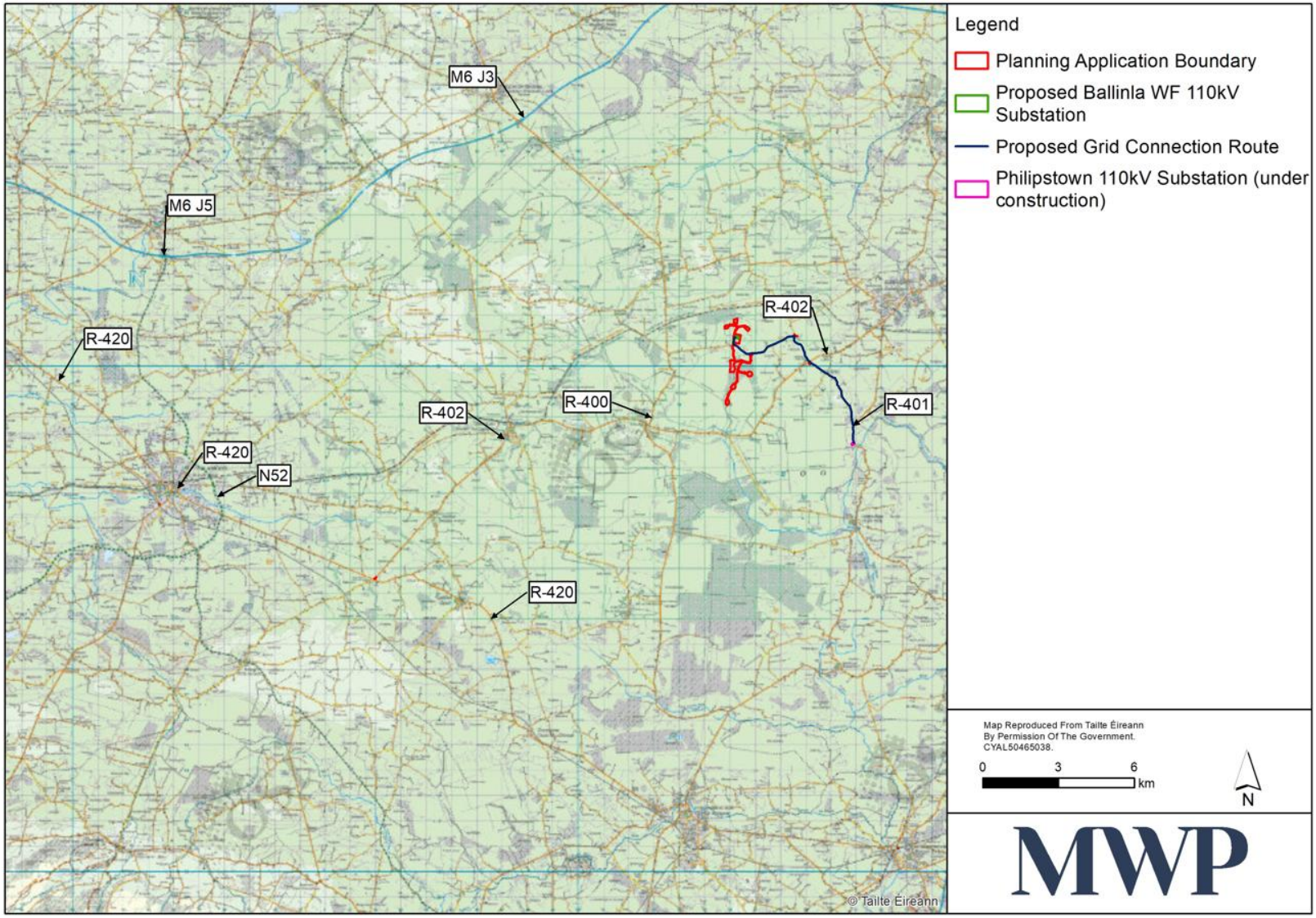

Figure 15-3: National and Regional Road Network Map

15.3.2 Existing Traffic Volumes

An onsite 24 hours classified traffic volumes survey was carried out by Idaso, on behalf of MWP, on the L5010 at the Proposed Development, on Thursday 14th March 2024.

Onsite peak traffic hours' classified road traffic volumes were recorded by MWP on Wednesday 16th October 2024, on the existing local and regional public roads, in the vicinity of the Proposed Development, including along the Proposed Grid Connection route and Proposed TDR. The recorded peak traffic hour at each location occurred between the hours 4.00pm to 6.00pm. The peak hour traffic volumes were factored on the basis of TII's automatic traffic counter data, for the nearby N52, to establish typical Annual Average Daily Traffic (AADT) volumes for the latest full year, 2023, on the local road network. The equivalent TII automatic traffic counter data for the M6 and N52 are also provided. The existing baseline traffic volumes are provided in Table 15-1. These are total two-way vehicles at the road locations identified. The volumes of peak hour Heavy Goods Vehicles (HGVs) and the proportions (%) of AADT HGVs are also provided.

Table 15-1: Existing Traffic Volumes

Road Location	Total Vehicles (HGVs)	
	2024 PM Peak Hour	2023 AADT (% HGVs)
L5010 @ WF site	15 (0)	154 (4.5%)
L5006, north of R402	63 (2)	647 (3.6%)
L5006, south of R402	70 (2)	712 (3.2%)
R401, south of L5006	251 (26)	2,573 (13.2%)
R400, north of R402	152 (4)	1,552 (2.7%)
R402 @ L5006 (Ballyfore)	366 (16)	3,745 (4.6%)
R402 @ R400 (Mount Lucas)	393 (17)	4,022 (4.5%)
R402 @ Edenderry	648 (14)	6,622 (2.2%)
M6 Motorway, west of Junction 5	1,743 (80)	20,071 (7.6%)
N52 south of M6	1,754 (55)	15,059 (7.3%)
R420 between N52 and R402	776 (40)	7,951 (5.3%)

The rural road link capacity of the R402 and R401 regional roads within the 80 km/hour rural speed limit zone, estimated on the basis of the TII Rural Road Link Design DN-GEO-03031 May 2023, for a typical road carriageway width of 6m, is provided in Table 15-2. The equivalent rural road link capacity of the R420 for its typical road carriageway width of 7m is also provided. The TII rural road link capacities are an AADT capacity at Level of Service (LOS) D. TII does not provide rural road link capacities for rural roads with typical road carriageway widths of less than 6.0m.

Table 15-2: Estimated Regional Rural Roads TII Road Link Capacity

Regional Rural Road	TII Rural Road Link		
	Type	Carriageway Width (m)	AADT Capacity (Vehicles)
R402 and R401 Rural Roads	Type 3 Single	6.0	5,000
R420 Rural Road	Type 2 Single	7.0	8,600

The estimated existing rural road link AADT volume/capacity ratios for the R402 and R401 rural roads in the vicinity of the Proposed Development, including along the Proposed Grid Connection, are provided in Table 15-3, on the basis of the TII Rural Road Link Design, for the latest full year, 2023. The equivalent estimated existing rural road

link AADT volume/capacity ratio for the R420, between its N52 and R402 junctions, which is along the Proposed TDR, is also provided.

Table 15-3: Estimated TII Regional Rural Road Link 2023 AADT Volume/Capacity Ratios

80 km/hour Rural Road	2023 AADT Vehicles	AADT Capacity (Vehicles) @ LOS D	AADT Volume/Capacity Ratio
R402	4,022	5,000	81%
R401	2,573	5,000	52%
R420	7,951	8,600	93%

The R402 is operating within its estimated rural road link AADT capacity, with a 2023 volume/capacity ratio of 81%. The R401 is operating well within its estimated rural road link AADT capacity, with a 2023 volume/capacity ratio of 52%. The R420, between its N52 and R402 junctions, is operating within its estimated rural road link AADT capacity, with a 2023 volume/capacity ratio of 93%.

The urban road link capacity of the R402 at Mount Lucas and Edenderry, within the 50 km/hour urban speed limit zones, estimated on the basis of the Traffic Capacity of Urban Roads TA79/99, is provided in Table 15-4. The capacity is per direction based on a 60/40 directional split.

Table 15-4: Estimated R402 Urban Road Link Capacity

R420 Urban Road	Urban/Suburban Road Link			
	Type	Lanes	Carriageway Width (m)	Capacity/Hour/Direction (Vehicles)
R402	UAP3	2	6.0	900

The estimated existing urban road link peak hour volume/capacity ratios for the R402, at Mount Lucas and Edenderry, are provided in Table 15-5, on the basis of the Traffic Capacity of Urban Roads TA 79/99.

Table 15-5: Estimated Existing R402 Urban Road Link Peak Hour Volume/Capacity Ratios

R420 Urban/Suburban Road	Highest Direction Peak Hour Vehicles	Capacity/Hour/ Direction (Vehicles)	Volume/Capacity Ratio
R402 @ Mount Lucas	236	900	27%
R402 @ Edenderry	389	900	44%

The R402 is operating well within its estimated urban road link capacity, at Mount Lucas and Edenderry, with highest volume/capacity ratios during the peak hour of 27% and 44%, respectively.

15.3.3 Future Conditions

The roads and transportation objectives and policies of OCC are set out in their Offaly CDP 2021-2027.

OCC has adopted a restrictive policy in relation to new development on certain regional routes in the interests of preserving the traffic capacity of these routes and in order to avoid the creation of traffic hazards. These include the northern section of the R400 between Rhode and the county boundary, the R402 and the R420. It is the Councils' objective to protect the capacity, efficiency and road safety of the foregoing Regional Roads.

Subject to planning permission, it is envisaged that work would commence at the Proposed Development during 2027, with a construction duration of approximately 18 to 24 months. Accordingly, the Proposed Development is scheduled to be fully complete and operational during 2029.

The TII Traffic and Transport Assessment Guidelines recommend that the opening year of a development proposal and plan years, five and 15 years after the opening year, should be considered for assessing a development proposal. In this case, the opening year is 2029 and the plan years are 2033 and 2043. The peak construction year is 2027.

TII in their Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections October 2021 envisage that car and light vehicle volumes on Offaly national roads would increase by an annual factor of 1.0118 during the period to 2030, and by a factor of 1.0323 for heavy vehicles, based on their central growth rates. The equivalent factors for the periods 2030 to 2040 and 2040 to 2050 are 1.0042 and 1.0139, respectively, and 1.0033 and 1.0176, respectively.

The predicted peak hour and AADT volumes on the existing local, regional and national roads in the vicinity of the Proposed Development site, including along the Proposed Underground Grid Connection route and the turbine delivery route, with the foregoing TII predicted traffic growth rates, are provided in Table 15-6.

Table 15-6: Predicted Traffic Volumes with TII Growth

Road Location	Year	Total Vehicles (HGVs)	
		Peak Hour	AADT (% HGVs)
L5010 @ WF site	2027	16 (0)	162 (4.9%)
	2029	16 (0)	167 (5.4%)
	2034	17 (0)	171 (5.3%)
	2044	17 (0)	180 (6.1%)
L5006, north of R402	2027	65 (2)	680 (3.8%)
	2029	67 (2)	698 (4.0%)
	2034	70 (3)	719 (4.2%)
	2044	72 (3)	751 (4.7%)
L5006, south of R402	2027	73 (2)	748 (3.5%)
	2029	74 (2)	767 (3.7%)
	2034	77 (3)	791 (3.8%)
	2044	80 (3)	825 (4.2%)
R401, south of L5006	2027	262 (29)	2,727 (14.2%)
	2029	270 (31)	2,807 (14.6%)
	2034	279 (33)	2,914 (15.4%)
	2044	294 (39)	3,084 (17.0%)
R400, north of R402	2027	157 (4)	1,631 (2.9%)
	2029	162 (5)	1,671 (3.1%)
	2034	167 (5)	1,723 (3.3%)
	2044	174 (6)	1,797 (3.6%)
R402 @ L5006 (Ballyfore)	2027	381 (18)	3,940 (4.9%)
	2029	390 (19)	4,042 (5.1%)
	2034	405 (21)	4,172 (5.4%)

Road Location	Year	Total Vehicles (HGVs)	
		Peak Hour	AADT (% HGVs)
	2044	421 (24)	4,362 (6.1%)
R402 @ R400 (Mount Lucas)	2027	409 (19)	4,231 (4.9%)
	2029	419 (20)	4,340 (5.1%)
	2034	432 (22)	4,480 (5.3%)
	2044	451 (25)	4,684 (5.9%)
R402 @ Edenderry	2027	672 (15)	6,953 (2.4%)
	2029	689 (16)	7,126 (2.5%)
	2034	710 (18)	7,343 (2.6%)
	2044	740 (21)	7,652 (2.9%)
M6 Motorway, west of Junction 5	2027	1,811 (88)	21,168 (8.2%)
	2029	1,858 (94)	21,745 (8.5%)
	2034	1,916 (102)	22,488 (9.0%)
	2044	2,005 (119)	23,616 (9.9%)
N52 south of M6	2027	1,821 (61)	15,839 (7.6%)
	2029	1,867 (65)	16,267 (7.9%)
	2034	1,924 (70)	16,818 (8.4%)
	2044	2,009 (82)	17,648 (9.4%)
R420 between N52 and R402	2027	807 (44)	8,370 (5.7%)
	2029	828 (47)	8,589 (5.9%)
	2034	853 (51)	8,869 (6.3%)
	2044	895 (60)	9,284 (7.0%)

The estimated existing rural road link AADT volume/capacity ratios for the R402, R401 and R420 rural roads in the vicinity of the Proposed Development, including along the Proposed Grid Connection and Proposed TDR, are provided in Table 15-7, on the basis of the TII Rural Road Link Design, for the predicted 2027, 2029, 2034 and 2044 AADT volumes, with the TII predicted traffic growth rates.

Table 15-7: Predicted TII Rural Regional Road Link AADT Volume/Capacity Ratios with TII Growth

80 km/hour Rural Road	Year	AADT Vehicles	AADT Capacity (Vehicles) @ LOS D	AADT Volume/Capacity Ratio
R402	2027	4,231	5,000	85%
	2029	4,340		87%
	2034	4,480		90%
	2044	4,684		107%
R401	2027	2,727	5,000	55%
	2029	2,807		56%
	2034	2,914		58%
	2044	3,084		62%
R420	2027	8,370	8,600	97%

80 km/hour Rural Road	Year	AADT Vehicles	AADT Capacity (Vehicles) @ LOS D	AADT Volume/Capacity Ratio
	2029	8,589		100%
	2034	8,869		103%
	2044	9,284		108%

The R402 would continue to operate within its estimated rural road link AADT capacity at Level of Service (LOS) D, in 2027, 2029 and 2034, with volume/capacity ratios of 85%, 87% and 90%, respectively. The R402 would operate in excess of its LOS D AADT rural link capacity in 2044, with a volume/capacity ratio of 107%.

The R401 would continue to operate within its estimated rural road link AADT capacity at LOS D, in 2027, 2029, 2034 and 2044, with volume/capacity ratios of 55%, 56%, 58% and 62%, respectively.

The R420, between its N52 and R402 junctions, would operate within its estimated rural road link AADT capacity at LOS D, in 2027 with volume/capacity ratio of 97%. would operate at its LOS D AADT rural link capacity in 2029 (post the peak construction year 2027), with a volume/capacity ratio of 100%. Post the Proposed Development opening year (2029), the R420 would operate in excess of its LOS D AADT rural link capacity in 2034 and 2044, with volume/capacity ratios of 103% and 108%, respectively.

The predicted 2027, 2029, 2034 and 2044 urban road link peak hour volume/capacity ratios for the R402 at Mount Lucas and Edenderry are provided in Table 15-8, on the basis of the Traffic Capacity of Urban Roads TA 79/99, with the TII predicted traffic growth rates.

Table 15-8: Predicted R420 Urban/Suburban Road Link Peak Hour Volume/Capacity Ratios with TII Growth

R420 Urban/Suburban Road	Year	Highest Direction Peak Hour Vehicles	Capacity/Hour/ Direction (Vehicles)	Volume/Capacity Ratio
R402 @ Mount Lucas	2027	246	900	28%
	2029	252		28%
	2034	260		29%
	2044	271		31%
R402 @ Edenderry	2027	404	900	45%
	2029	414		46%
	2034	426		48%
	2044	444		50%

The R402 at Mount Lucas and Edenderry would continue to operate well within its estimated urban road link capacity, with the predicted 2027, 2029, 2034 and 2044 peak hour traffic volumes on the basis of the TII predicted traffic growth rates, with highest volume/capacity ratios during the peak hour of 31% and 50%, respectively, in 2044. The highest volume/capacity ratios during the Proposed Development peak construction year, 2027, would be 28% and 45%, respectively.

15.4 Assessment of Effects

A detailed description of the Proposed Development construction is provided in Chapter 2 Description of the Proposed Development of this EIAR. Subject to planning permission, it is envisaged that work would commence at the Proposed Development site by 2027, with a construction duration of approximately 18 to 24 months. Assessment is based on an 18-month construction timeframe which is a worst-case scenario for construction volumes. The Proposed Development is scheduled to be fully complete and operational during late 2029.

15.4.1 Construction Phase

15.4.1.1 Temporary Construction Compound

A temporary construction compound will be established upon commencement of the construction phase.

The compound will be used as a secure storage area for construction materials and will also contain temporary site cabins to provide welfare facilities for site personnel. Facilities will include office space, meeting rooms, canteen area, and mobile sanitary facilities.

Temporary construction materials' storage for the Proposed Grid Connection along the public road network may be provided at existing site locations convenient to the works' locations, as the route works progress, which would be subject to the pre-approval of the planning authority prior to the works.

15.4.1.2 Access

Two site entrances are proposed to provide access to the northern and southern sections of the Proposed Wind Farm from the L5010.

Access for the Proposed Grid Connection and Proposed TDR construction works along public roads would be via the associated existing roads.

15.4.1.3 Hours and Duration

The proposed construction hours are 7.00am to 7.00pm, Monday to Friday and 7.00am to 4.00pm on Saturdays. On occasion, the working day may extend outside normal working hours when critical elements of the works need to be advanced.

The overall duration for the proposed construction works is approximately 18 months.

The expected construction duration for the Proposed Grid Connection works along the public road network, which will be carried out concurrently with the proposed substation works, is approximately four months. The Proposed Grid Connection works would be carried out on a linear basis, from the proposed substation to the permitted Philipstown substation, by a single construction crew.

15.4.1.4 Staff

The expected peak staff would be up to 60 construction personnel, which would generate approximately 40 car and van trips, both to and from the site each working day, on the basis of an average vehicle occupancy rate of 1.5 personnel per vehicle.

Canteen facilities for personnel would be provided onsite. Site personnel would travel to site prior to 8.00 am and depart from site from 6.00pm, on weekdays, outside the peak traffic hours.

It is envisaged that the construction crew for the Proposed Grid Connection works would include up to ten construction personnel, which are included in the foregoing expected peak construction staff.

15.4.1.5 Delivery Vehicle Volumes

Subsoil and topsoil will be reused onsite where possible for landscaping, surplus soils will be stored in a designated spoil deposition area with the Proposed Wind Farm.

Over the 18-month construction period, it's expected that up to 10,973 truckloads of construction materials will be delivered to the site, while around 623 loads, mainly from the Proposed Grid Connection works along the public road, will be removed. All construction materials would be transported using standard heavy vehicle delivery trucks with capacities of $10m^3$ and 20 tonnes, and $8m^3$ for concrete trucks. The peak daily and hourly

imported loads would occur during periods of the substation access road/track works, turbine hardstand works, substation formation works and concrete works. The proposed construction works heavy vehicle loads are provided in Table 15-9.

Table 15-9: Proposed Construction Works Heavy Vehicle Loads

Total Construction (18 months)	Typical Daily	Peak Daily	Highest Hourly Peak
11,596	30	180	18

The abnormal loads associated with the Proposed Development would be delivered in consultation with OCC, other County Councils and TII motorway operators located along the proposed turbine delivery route and An Garda Síochána, during off-peak traffic periods. A total of 90 delivery vehicles would be required for the seven turbines in delivery convoys during the night. This could result in temporary delays for other local traffic during the off-peak traffic delivery periods.

15.4.1.6 Delivery Vehicle Routes

The potential material sources for the Proposed Development construction are detailed in Chapter 2 Description of the Proposed Development of this EIAR, and include likely suppliers located in the northwest, southeast and northeast of the Proposed Development site. The majority of materials for delivery to site will be sourced from local quarries.

It is envisaged that the delivery of construction materials would be typically circa 50% via the R400/R402, and circa 50% via the R5006/R402, but could be up to 100% via either direction during specific periods of construction. The haul routes to the Proposed Wind Farm are presented in Figure 15-4.

The routing for the delivery of the Proposed Wind Farm components is summarised in Chapter 2 and detailed in Appendix 2-2 TDR Assessment Report, and would be via the R5006/R402, R420, N52 and M6.

No construction delivery vehicles would access the site via the northern section of the L5006 and its Trimblestown Bridge on the Grand Canal.

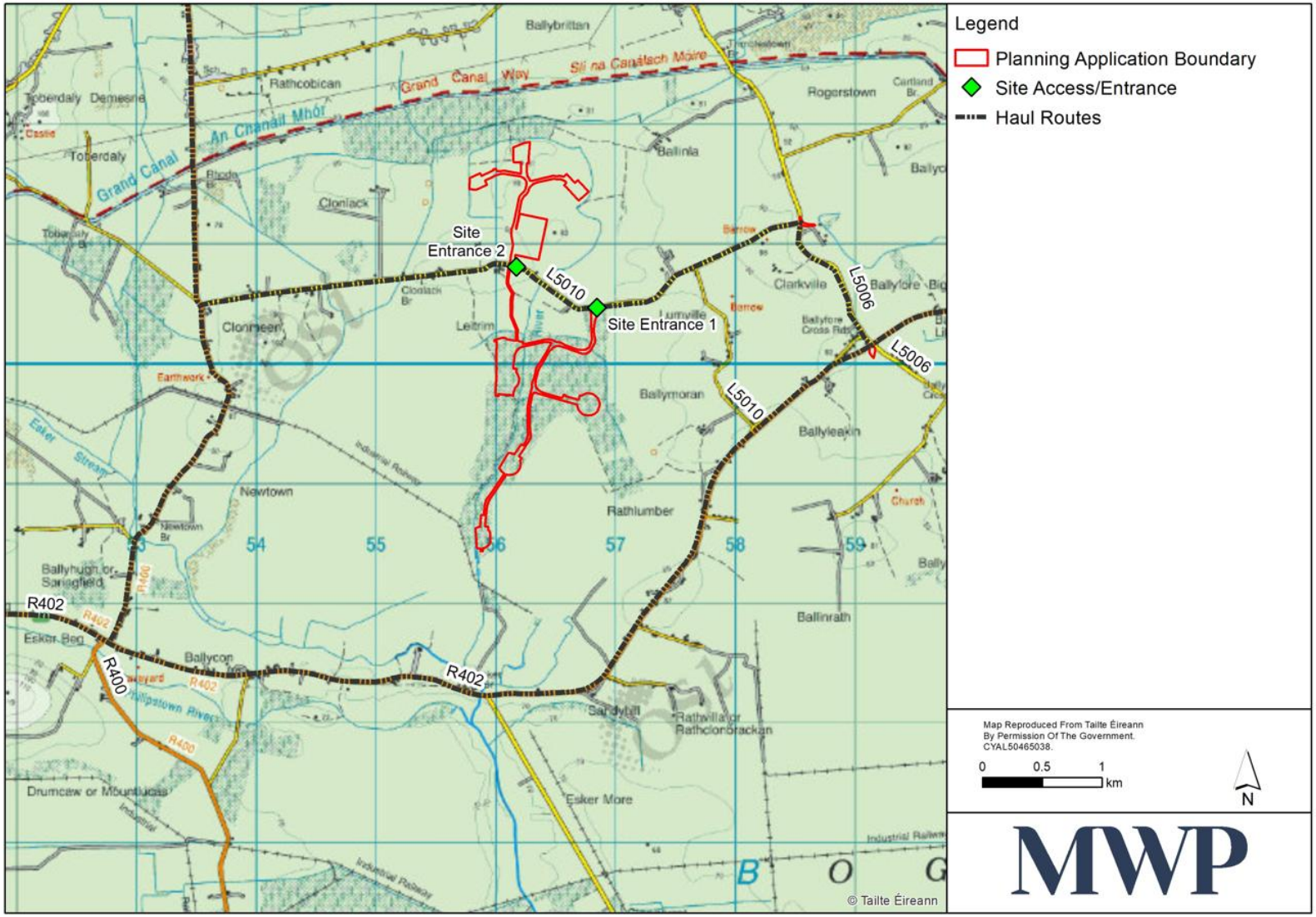

Figure 15-4: Haul Routes

15.4.1.7 Traffic Volumes

Traffic volumes have been calculated based on the spoil excavation and construction material volumes in Chapter 3 Engineering Table 3-1. The predicted typical daily volumes, peak daily traffic volumes and highest peak hour traffic volumes generated by the Proposed Development construction are provided in Table 15-10, including heavy vehicles (HVs).

Table 15-10: Proposed Construction Works Traffic Volumes

Total Two-Way Vehicles (HVs)		
Typical Daily	**Peak Daily**	**Highest Peak Hour**
140 (60)	440 (360)	36 (36)

The predicted 2027 AADT, peak daily and highest peak hour traffic volumes, on the existing local and regional roads in the vicinity of the Proposed Development site, with the proposed construction works' traffic volumes, are provided in Tables 15-11 and 15-12, respectively,

Table 15-11: Predicted 2027 AADT Traffic Volumes with Proposed Construction

Road Location	Total Vehicles (HVs)			
	AADT	**Total Vehicles (inc HVs)**	**HVs Only**	**Change (%)**
L5010 @ WF site	232 (38)	+70	+30	43.2%
L5006, north of R402	750 (56)	+70	+30	10.3%
L5006, south of R402	766 (35)	+18	+18	2.4%
R401, south of L5006	2,745 (396)	+18	+18	0.6%
R400, north of R402	1,701 (78)	+70	+30	4.3%
R402 @ L5006 (Ballyfore)	4,010 (225)	+70	+30	1.8%
R402 @ R400 (Mount Lucas)	4,301 (236)	+70	+30	1.7%
R402 @ Edenderry	7,023 (196)	+70	+30	1.0%
R420 between N52 and R402	8,440 (508)	+70	+30	0.8%

Table 15-12: Predicted 2027 Peak Traffic Volumes with Proposed Peak Construction

Road Location	Total Vehicles (HVs)			
	Peak Daily	**Change**	**Highest Peak Hour**	**Change**
L5010 @ WF site	382 (188)	+220 (180)	34 (18)	+18 (18)
L5006, north of R402	900 (206)	+220 (180)	83 (20)	+18 (18)
L5006, south of R402	801 (52)	+53 (26)	76 (5)	+3 (3)
R401, south of L5006	2,780 (413)	+53 (26)	265 (32)	+3 (3)
R400, north of R402	1,851 (228)	+220 (180)	175 (22)	+18 (18)
R402 @ L5006 (Ballyfore)	4,160 (375)	+220 (180)	399 (36)	+18 (18)
R402 @ R400 (Mount Lucas)	4,231 (206)	+220 (180)	427 (37)	+18 (18)
R402 @ Edenderry	6,953 (166)	+220 (180)	690 (33)	+18 (18)
R420 between N52 and R402	8,370 (478)	+220 (180)	825 (62)	+18 (18)

During the proposed 18 months construction duration, the proposed construction works would increase AADT volumes up to 70 vehicles, including 30 heavy vehicles, which equates to an AADT increase of up to 4.3% on

regional roads. The proposed grid construction works along public roads would increase AADT volumes on those roads by up to 18 vehicles, including nine two-way heavy vehicles.

During peak construction traffic generation periods, the peak daily increase in daily traffic volumes would be up to 220 vehicles, including up to 180 heavy vehicles. The construction highest peak hour increase in traffic volumes would be up to 18 heavy vehicles. The peak daily increase in traffic volumes generated by the proposed grid construction works along public roads would be up to 53 vehicles, including 26 two-way heavy vehicles.

15.4.1.8 TII TTA Assessment Thresholds

The predicted increases in AADT volumes on the existing R400, R402, R420 and R401 Regional Roads, during the Proposed Development 18 months construction phase, are less than the volumetric threshold (5%) identified by TII in their TTA Assessment Guidelines for consideration of sensitive locations.

15.4.1.9 Volume/Capacity Ratios

The estimated existing rural road link AADT volume/capacity ratios for the R402, R401 and R420 rural roads in the vicinity of the Proposed Development, including along the Proposed Underground Grid Connection route and Turbine Delivery Route, are provided in Table 15-13, on the basis of the TII Rural Road Link Design, for the predicted 2027 AADT volumes, with the TII predicted traffic growth plus the Proposed Development construction.

Table 15-13: Predicted TII Rural Regional Road Link AADT Volume/Capacity Ratios with TII Growth Plus Proposed Construction

80 km/hour Rural Road	Year	AADT Vehicles	AADT Capacity (Vehicles)	AADT Volume/Capacity Ratio
R402	2027	4,301	5,000	86%
R401	2027	2,745	5,000	55%
R420	2027	8,440	8,600	98%

The R402, R401 and R420 would continue to operate within their estimated rural road link AADT capacities at Level of Service (LOS) D, with the predicted 2027 AADT traffic volumes on the basis of the TII predicted traffic growth plus the Proposed Development construction, with volume/capacity ratios of 86%, 55% and 98%, respectively. This compares to ratios of 85%, 55% and 97%, respectively, without the Proposed Development construction.

The predicted 2027 urban road link peak hour volume/capacity ratios for the R402 at Mount Lucas and Edenderry are provided in Table 15-14, on the basis of the Traffic Capacity of Urban Roads TA 79/99, with the TII predicted traffic growth plus the Proposed Development construction.

Table 15-14: Predicted R420 Urban/Suburban Road Link Peak Hour Volume/Capacity Ratio with TII Growth Plus Proposed Construction

R420 Urban/Suburban Road	Year	Highest Direction Peak Hour Vehicles	Capacity/Hour/ Direction (Vehicles)	Volume/Capacity Ratio
R402 @ Mount Lucas	2027	257	900	29%
R402 @ Edenderry	2027	415	900	46%

The R402 at Mount Lucas and Edenderry would continue to operate well within its estimated urban road link capacity, with the predicted 2027 peak hour traffic volumes on the basis of the TII predicted traffic growth plus the Proposed Development construction, with highest volume/capacity ratios during the peak hour of 29% and

46%, respectively. This compares to ratios of 28% and 45%, respectively, without the Proposed Development construction.

15.4.1.10 Temporary Traffic Management

A stop/go alternating direction temporary traffic management arrangement would be provided during construction of Proposed Grid Connection works along the public road network to facilitate the works. No public road closures are proposed for the Proposed Grid Connection works along public roads, and local access will be maintained. Local diversions may be required on Local Roads during exceptional construction circumstances.

The temporary construction traffic management arrangements would be provided in accordance with the DoT Traffic Signs Manual Chapter 8 Temporary Traffic Measures and Signs for Roadworks, with the prior approval of the planning authority.

The expected construction duration for the Proposed Grid Connection works along the public road network, which will be carried out concurrently with the proposed substation works, is four months. The Proposed Grid Connection works would be carried out on a linear basis, from the proposed substation to the permitted Philipstown substation currently under construction, by a single construction crew, with an expected 100m of works to be completed each day.

The temporary traffic management arrangements would increase journey times for users during the proposed construction working hours along the Proposed Grid Connection route.

15.4.1.11 Road Pavements Monitoring

HV traffic volumes generated by the Proposed Development construction could result in damage to existing and proposed road pavements on public roads, including at vehicle turning, accelerating and decelerating locations. To ensure the integrity of the local road network during the construction phase, a road pavement monitoring programme will be implemented. This will involve pre-construction road and bridge condition surveys on the haul routes on the L5010 and L5006, including photographic and structural assessments, to establish a baseline. Monitoring will continue throughout the construction period, with periodic inspections to identify any deterioration attributable to construction traffic, particularly from HVs. Post-construction surveys will also be carried out, and any damage directly linked to project activities will be repaired in consultation with OCC.

15.4.2 Construction Phase

The construction phase of the Proposed Development is anticipated to result in a **negative**, **slight** to **moderate**, **local**, **likely**, **short-term** effect on the local road network due to increased traffic volumes, particularly from HGVs.

15.4.3 Operational Phase

A detailed description of the proposed operational phase is provided in **Chapter 2** Description of the Proposed Development of this **EIAR**.

The Proposed Development will typically have two operational staff and will generate negligible operational traffic volumes. Occasional traffic will be generated by routine inspection and maintenance.

The operational phase of the Proposed Development is anticipated to result in a **neutral**, **imperceptible**, **local**, **likely**, **long-term** effect on the local road network due to increased traffic volumes.

15.5 Decommissioning

A detailed description of the proposed decommissioning and restoration phase is provided in Chapter 2 Description of the Proposed Development of this EIAR.

Traffic and transport effects would be similar to the construction phase mobilisation and turbine abnormal loads delivery phase when decommissioning occurs. The grid cable and substation will remain a permanent part of the national grid infrastructure and will not be decommissioned.

The decommissioning phase of the Proposed Development is anticipated to result in a negative, slight, local, likely, short-term effect on the local road network due to increased traffic volumes.

Table 15-15: Summary of the Potential Effects: Material Assets - Traffic and Transport

Phase	Impact	Quality of Effect	Significance	Spatial Extent	Duration
Construction Phase	Increased traffic volumes on local road networks	Negative	Slight-Moderate	Local	Temporary-short-term
Operational Phase	Operational traffic	Neutral	Imperceptible	Local	Long-term - permanent
Decommissioning Phase	Increased traffic volumes on local road networks	Negative	Slight	Local	Temporary-short-term

15.6 Cumulative Impacts and Effects

Consideration has been given to the potential cumulative traffic effects arising from the Proposed Development in combination with other nearby permitted, operational, or proposed developments. While the primary traffic impacts of the Proposed Development are expected to be localised and temporary, cumulative effects may arise where construction timelines overlap or where shared haul routes and receptors are involved. Notable renewable energy projects within a 15 km radius (refer to Chapter 2) have been reviewed as part of this assessment. The majority of these developments are either completed, nearing completion, or located at sufficient distance to limit the potential for significant cumulative traffic interactions. Furthermore, all developments, including the Proposed Development, are subject to TMPs and CEMPs, which include mitigation measures to manage construction traffic and minimise disruption. Based on the spatial separation, staggered construction timelines, and the implementation of best-practice traffic controls, the potential for cumulative traffic effects is assessed as negative, slight to moderate, local, unlikely and short term.

15.7 Mitigation Measures

15.7.1 Construction Phase

All traffic management and road signage will be in accordance with the Department of Transport (DoT) Traffic Signs Manual Chapter 8: Temporary Traffic Measures and Signs for Road Works. in agreement with Laois County Council and OCC.

In consultation with OCC's Roads Department, vehicle passing bays will be provided along the L5010, prior to the commencement of the proposed site construction, to facilitate two-way vehicle traffic movements.

To ensure the integrity of the local road network during the construction phase, a road pavement monitoring programme will be implemented. This will involve pre-construction road and bridge condition on the haul routes on the L5010 and L5006, including photographic and structural assessments, to establish a baseline. Monitoring will continue throughout the construction period, with periodic inspections to identify any deterioration

attributable to construction traffic, particularly from HVs. Post-construction surveys will also be carried out, and any damage directly linked to project activities will be repaired in consultation with OCC.

A **Traffic Management Plan (TMP)** outlining the required traffic management procedures to be implemented on the public roads during the construction of the Proposed Development is included as **Appendix 15** in **EIAR Volume 3**. The TMP will be updated, as appropriate, following the Proposed Development detailed design/tendering stage, and submitted for the approval of Offaly County Council, prior to construction.

The Proposed Grid Connection and Proposed TDR works will require a Road Opening License (ROL) prior to the commencement of works on the public road. The road surface of the public roads will be reinstated to the standards set out by the Department of Transport (DoT) Guidelines on the Opening, Backfilling and Reinstatement of Trenches on Public Roads (April 2017). All road permanent reinstatement works will be in accordance with the requirements of OCC.

No construction delivery vehicles would access the site via the northern section of the L5006 and its Trimblestown Bridge on the Grand Canal.

A construction wheel wash facility will be provided at the construction compound to wash truck tyres leaving the construction site.

15.7.2 Operational Phase

The Proposed Development will not generate regular operational traffic, and no mitigation measures are required.

15.8 Residual Impacts and Effects

The residual impacts after implementation of all mitigation measures for potential effects on the land and soil environment are presented in **Table 15-16**. No significant residual efforts as a result of traffic and transport are likely.

Table 15-16: Residual Effects: Material Assets - Traffic and Transport

Phase	Pre-Mitigation Impact	Mitigation	Post Mitigation Impact	Residual Effect
Construction	Negative, slight to moderate, local, likely, short-term effect	Section 15.6.1	Negative, slight, local, unlikely, short-term effect	**Slight**
Operational	Neutral, imperceptible, local, likely, long-term	Section 15.6.2	Neutral, imperceptible, local, unlikely, long-term	**Imperceptible**

15.9 Risk of Major Accidents and Disasters

The potential for major accidents and disasters associated with traffic and transport during the construction and operation of the Proposed Development is considered low. Construction traffic, including the movement of abnormal loads and HVs, will be managed through a TMP developed in consultation with the local authority. This plan will include measures to mitigate risks such as road collisions, load spillage, and obstruction of emergency routes. Given the rural location of the site and the relatively low baseline traffic volumes, the likelihood of a major traffic-related accident or disaster is considered unlikely. Nonetheless, contingency procedures will be in place to respond to any incidents, ensuring public safety and minimal disruption to the local road network.