Contents

6 Traffic and Transportation

6.1 Introduction

This chapter describes the likely effects of the proposed development on traffic and transportation, during its construction, operational and decommissioning phases. Mitigation measures are also detailed which minimise the negative effects, where they arise.

The proposed development consists of the following permanent and temporary elements:

Landfall Compound – a temporary landfall compound at Baginbun, where the high voltage direct current (HVDC) cable will be installed underground, below the beach and cliff at Baginbun Beach, by horizontal directional drilling (HDD);

HVDC Cables – two HVDC electricity cables with a nominal capacity of 500 megawatts (MW), installed underground from the landfall at Baginbun to the converter station, including jointing bays and ground level marker posts at intervals along the route;

Converter Station – a converter station situated close to the existing Great Island substation in Wexford;

Tail Station - a 220kV substation located beside the converter station. The Loughtown tail station connects the HVAC 220kV cable into the 220kV grid via the existing Great Island substation;

MV Substation – an ESB MV substation will be located outside the converter station and tail station perimeter fences but within the landholding. This substation will provide the MV and LV connections required for the development;

Converter station construction compound - temporary compound for the construction of the converter station and tail station at Great Island;

Cable Contractor compound – three temporary cable contractor compounds will be required (i) at the landfall site close to Baginbun Beach (ii) at the proposed converter station and (iii) along the onshore route in the townland of Lewistown;

HDD Compounds – temporary HDD contractor compounds are required. One will be located close to the cable contractor compound at Baginbun Beach with another HDD compound located at either side of the Campile River Estuary crossing;

High Voltage Alternating Current (HVAC) Cables – one 220 kV HVAC electricity cable circuit consisting of three cables, installed underground connecting the converter station via the tail station to the EirGrid Great Island substation;

Fibre Optic Cables – fibre optic cables for operation and control purposes, laid underground with the HVDC and HVAC cables;

Community Gain Roadside Car Parking near Baginbun Beach – in consultation with Wexford County Council, circa 54 roadside car parking spaces will be constructed; and

Community Gain in Ramsgrange Village – in consultation with Wexford County Council, extension to existing footpaths, four new streetlights and a speed activated sign at Ramsgrange.

Further information on the proposed development is described in **Chapter 3** and **Chapter 4** of this EIAR. This chapter examines the construction, operational and decommissioning phase effects of the proposed development onshore in Ireland on traffic and transportation. However, it is envisaged that the likely effect of the proposed development on the transport network will be greatest during the construction phase.

This chapter presents the receiving transport environment including existing traffic volumes based on traffic counts carried out on the surrounding road network. The projected increase in traffic associated with the proposed development, phasing and scheduling of the proposed construction works, and likely effects on the receiving transportation network is discussed. Finally, any mitigation measures which will assist in reducing the potential effect of the development on the surrounding transportation network is presented.

This chapter has been prepared by Niamh O'Regan of Arup. A description of the author's qualifications and experience is presented in **Appendix 1.1**.

6.2 Assessment Methodology

6.2.1 General

The following sections present the methodology for specific elements of this assessment.

6.2.1.1 Construction Traffic Trip Generation

The volume of traffic generated by the construction of the proposed development has been estimated based on the likely construction programme and the different types of trips generated (i.e. staff, excavation, deliveries etc.) by each element of the development. Traffic generation associated with construction activities has been calculated based on the estimated vehicles required by the construction programme across all activities in the various working areas.

6.2.1.2 Construction Traffic Distribution

The distribution of traffic generated by the construction of the proposed development on the surrounding road network has been assumed based on the likely origin and destination of staff, as well as movements of construction materials and waste to and from the compound locations. This traffic is then assigned to the network to determine the increase in traffic associated with the construction works.

In addition, a programme of works for installing cables in public roads and verges has been developed. In some locations these works will require temporary closure of a lane or the full road.

The diversion of existing traffic due to these works is included in the assessment of the construction stage effects on the transport network.

6.2.2 Operational Traffic Impact Assessment

As detailed in **Section 3.6**, traffic generated during the operational phase of the proposed development will be solely confined to inspection vehicles accessing the converter station site and other areas of the onshore routing, if required. These levels of traffic generated will be minimal, and therefore no effects are envisaged. Therefore, no further assessment is required.

6.2.3 Decommissioning Traffic Impact Assessment

As detailed in **Section 3.6**, when it becomes appropriate to decommission the interconnector, the HVDC cables will remain in-situ. The link boxes and fibre optic joints will be removed, as will all equipment in the converter station and tail station and above ground civil works. The converter station site and the sites of all joints in the cable route will be returned to their original states following these removals. The design life of the converter station and the tail station is 40 years. It is therefore anticipated that decommissioning will take place circa 2062. Decommissioning works will be less extensive than construction works, and background traffic growth between now and 2062 will lead to higher baseline traffic numbers on the road network. For these reasons, the relative impact of traffic associated with the decommissioning works will be less than that associated with the construction works.

6.2.4 Study Area

The study area shown in **Figure 6.1** is the primary zone of influence with respect to the management of traffic during the construction phase of the proposed development and is the area most likely to experience temporary changes in traffic flow during the construction phase. As mentioned above, the operational phase is expected to have little or no impact on the surrounding road network.

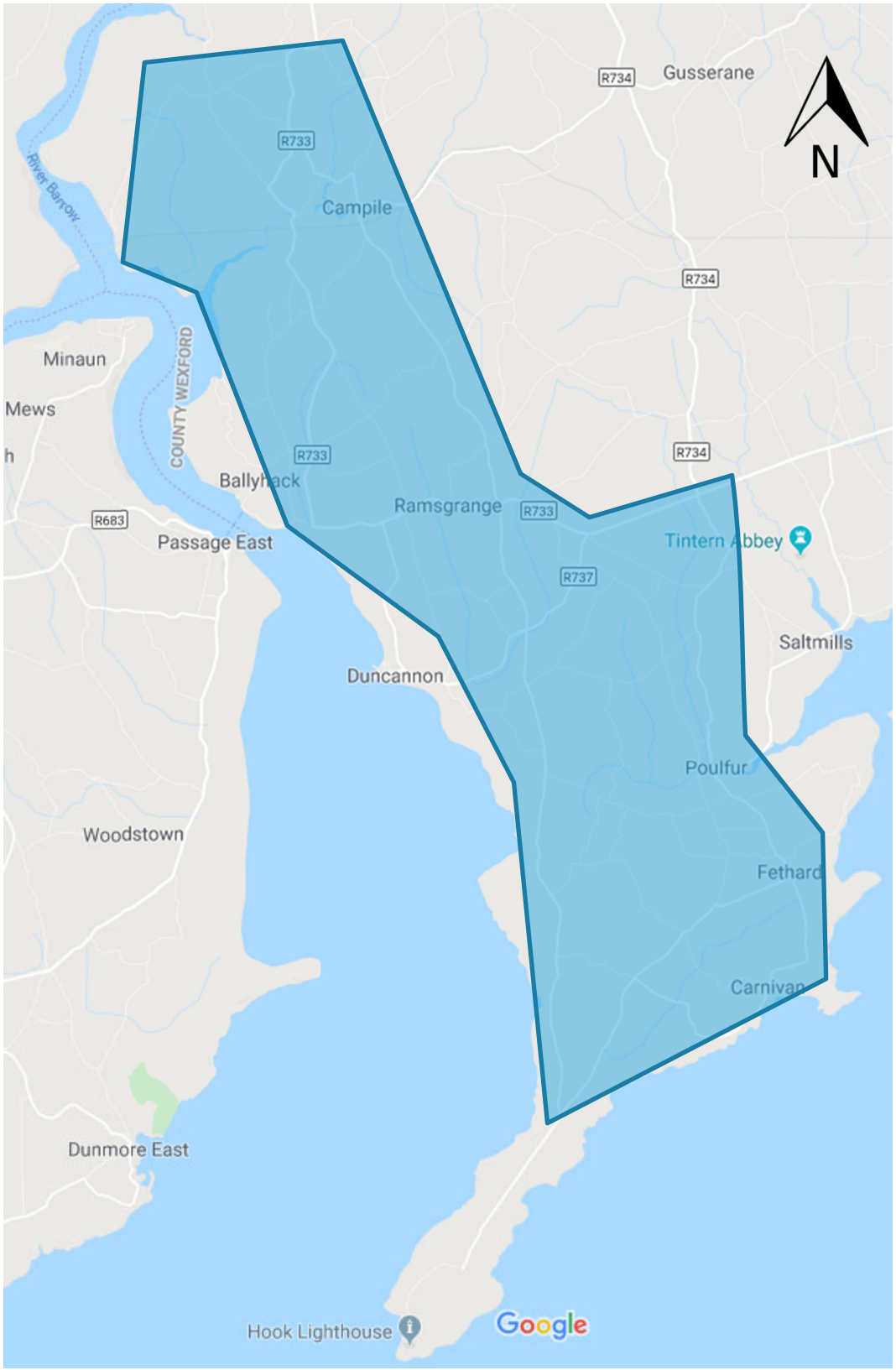

Figure 6.1 Study Area | not to scale [source: © Google Maps 2020]

6.2.5 Traffic Survey Data

Traffic surveys were carried out over two seven-day periods at the 20 locations shown in **Figure 6.2** below from 9th August 2018-15th August 2018 and 26th November 2018-2nd December 2018. These surveys were carried out to establish link flows only on an all-day basis. Due to the travel restrictions imposed during the pandemic, it was considered that 2020 traffic surveys would not be representative of the baseline situation.

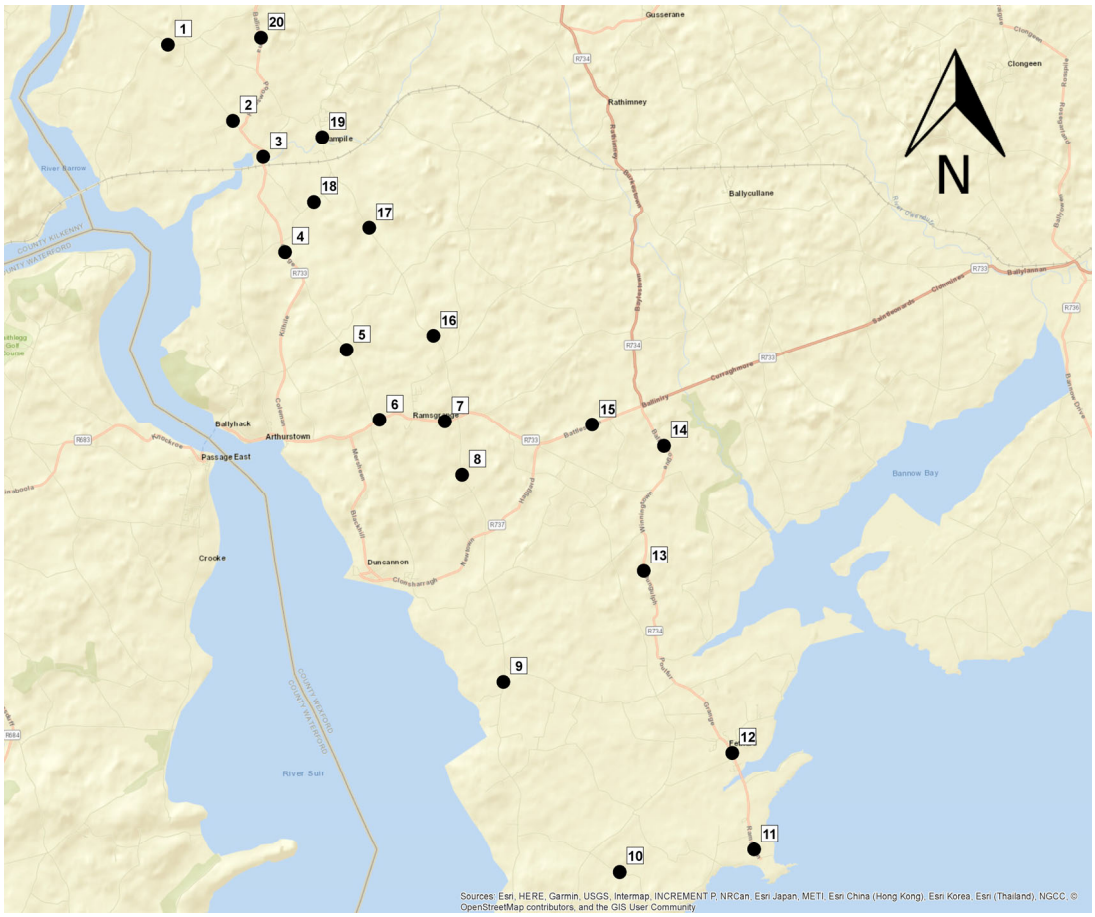

Figure 6.2 Traffic Survey Locations | not to scale

6.2.6 Future Year Traffic Growth Rates

Future traffic growth on the external road network is based on Transport Infrastructure Ireland's growth rates for the Wexford Region (Ref: *Transport Infrastructure Ireland's Project Appraisal Guidelines for National Roads Unit 5.3 - Travel Demand Projections, May 2019*). Based on Table 6.2 of the guidelines as presented in **Figure 6.3** below, the recorded traffic flows have been increased by the central growth rates to establish traffic flows for the 2021 construction year.

2021 is expected to be the busiest year with respect to construction activity on the surrounding street/road network and has been used to present the potential impact of the construction works. However, should the project be delayed slightly there will be no change in the projected increase in traffic. Background traffic flows will increase slightly based on the above guidelines,

but the construction traffic in that case will represent a lower percentage increase. This transport assessment is a conservative assessment under those circumstances.

Table 6.2: Link-Based Growth Rates: County Annual Growth Rates (excluding Metropolitan Area)

County	Low Sensitivity Growth Rates						Central Growth Rates						High Sensitivity Growth Rates					
	2016-2030		2030-2040		2040-2050		2016-2030		2030-2040		2040-2050		2016-2030		2030-2040		2040-2050	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
Dublin	1.0163	1.0303	1.0046	1.0123	1.0036	1.0143	1.0180	1.0317	1.0062	1.0139	1.0050	1.0158	1.0211	1.0348	1.0100	1.0170	1.0099	1.0250
Kildare	1.0180	1.0363	1.0044	1.0135	1.0035	1.0169	1.0197	1.0378	1.0062	1.0155	1.0053	1.0187	1.0229	1.0413	1.0098	1.0191	1.0107	1.0283
Laois	1.0130	1.0265	1.003	1.0105	1.0018	1.0136	1.0147	1.0280	1.0047	1.0125	1.0036	1.0155	1.0179	1.0314	1.0082	1.0160	1.0090	1.0248
Longford	1.0119	1.0298	1.0019	1.0104	1.0000	1.0138	1.0134	1.0313	1.0038	1.0124	1.0027	1.0157	1.0167	1.0347	1.0072	1.0161	1.0073	1.0256
Louth	1.0134	1.0347	1.0054	1.0153	1.0048	1.0180	1.0148	1.0363	1.0070	1.0174	1.0063	1.0198	1.0177	1.0397	1.0100	1.0211	1.0103	1.0295
Meath	1.0156	1.0349	1.0052	1.0164	1.0043	1.0189	1.0173	1.0365	1.0070	1.0186	1.0059	1.0207	1.0205	1.0400	1.0108	1.0226	1.0116	1.0304
Offlay	1.0103	1.0307	1.0021	1.0119	1.0014	1.0158	1.0118	1.0323	1.0042	1.0139	1.0033	1.0176	1.0152	1.0357	1.0081	1.0176	1.0100	1.0272
Westmeath	1.0145	1.0300	1.0042	1.0126	1.0033	1.0156	1.0161	1.0316	1.0062	1.0147	1.0053	1.0176	1.0194	1.0352	1.0101	1.0185	1.0100	1.0279
Wicklow	1.0140	1.0361	1.0033	1.0153	1.0029	1.0185	1.0157	1.0377	1.0051	1.0173	1.0047	1.0204	1.0189	1.0412	1.0091	1.0211	1.0110	1.0305
Cavan	1.0098	1.0295	1.0024	1.0108	1.0010	1.0140	1.0112	1.0311	1.0041	1.0127	1.0028	1.0158	1.0141	1.0345	1.0076	1.0164	1.0084	1.0256
Donegal	1.0097	1.0270	1.0024	1.0123	1.0017	1.0142	1.0111	1.0286	1.0039	1.0141	1.0035	1.0161	1.0139	1.0320	1.0072	1.0178	1.0094	1.0258
Galway	1.0243	1.0430	1.0087	1.0177	1.0088	1.0218	1.0259	1.0446	1.0109	1.0198	1.0105	1.0236	1.0294	1.0480	1.0148	1.0236	1.0181	1.0336
Leitrim	1.0044	1.0299	0.9973	1.0105	0.9927	1.0140	1.0060	1.0313	0.9990	1.0124	0.9971	1.0157	1.0090	1.0348	1.0025	1.0161	1.0029	1.0257
Mayo	1.0111	1.0314	1.0009	1.0128	1.0005	1.0173	1.0127	1.0330	1.0028	1.0148	1.0026	1.0192	1.0161	1.0364	1.0063	1.0186	1.0097	1.0290
Monaghan	1.0103	1.0236	1.0032	1.0093	1.0021	1.0119	1.0115	1.0252	1.0047	1.0112	1.0041	1.0138	1.0141	1.0285	1.0079	1.0147	1.0080	1.0234
Roscommon	1.0092	1.0267	1.0012	1.0115	1.0001	1.0152	1.0107	1.0284	1.0031	1.0135	1.0022	1.0172	1.0142	1.0318	1.0069	1.0174	1.0075	1.0270
Sligo	1.0133	1.0307	1.0028	1.0118	1.0018	1.0154	1.0147	1.0323	1.0045	1.0136	1.0041	1.0171	1.0178	1.0357	1.0082	1.0173	1.0107	1.0268
Carlow	1.0116	1.0309	1.0027	1.0124	1.0016	1.0161	1.0133	1.0324	1.0047	1.0144	1.0034	1.0178	1.0165	1.0359	1.0085	1.0180	1.0093	1.0275
Clare	1.0139	1.0402	1.0019	1.0138	1.0011	1.0179	1.0156	1.0417	1.0038	1.0157	1.0029	1.0197	1.0191	1.0451	1.0075	1.0193	1.0105	1.0292
Cork	1.0173	1.0361	1.0067	1.0141	1.0059	1.0181	1.0189	1.0377	1.0087	1.0160	1.0078	1.0200	1.0223	1.0411	1.0124	1.0197	1.0154	1.0297
Kerry	1.0094	1.0269	0.9990	1.0094	0.9983	1.0129	1.0111	1.0285	1.0011	1.0113	1.0000	1.0146	1.0144	1.0319	1.0048	1.0150	1.0079	1.0245
Kilkenny	1.0108	1.0253	1.0016	1.0109	1.0006	1.0147	1.0124	1.0268	1.0037	1.0129	1.0027	1.0166	1.0157	1.0302	1.0075	1.0166	1.0087	1.0261
Limerick	1.0199	1.0307	1.0071	1.0110	1.0069	1.0158	1.0215	1.0323	1.0092	1.0130	1.0088	1.0177	1.0249	1.0357	1.0129	1.0167	1.0163	1.0274
Tipperary	1.0102	1.0290	1.0019	1.0096	1.0008	1.0136	1.0119	1.0306	1.0037	1.0116	1.0027	1.0155	1.0152	1.0340	1.0073	1.0152	1.0084	1.0250
Waterford	1.0154	1.0342	1.0059	1.0157	1.0053	1.0203	1.0171	1.0358	1.0079	1.0179	1.0073	1.0220	1.0205	1.0393	1.0119	1.0218	1.0143	1.0319
Wexford	1.0051	1.0196	0.9999	1.0096	0.9989	1.0122	1.0068	1.0211	1.0022	1.0116	1.0006	1.0140	1.0100	1.0245	1.0060	1.0152	1.0077	1.0232

Figure 6.3 TII Project Appraisal Guidelines Table 6.2 Growth Rates (May 2019)

6.2.7 Time Periods Assessed

The time periods assessed include the morning peak period, the evening peak period and on an all-day basis (24 hour). All three of these time periods have been assessed for summer and winter scenarios to account for local traffic movements during the winter and school term-time, and tourist movements during the summer including cyclist movements on the Eurovélo routes as detailed further below. As expected, the peak hours across the network vary between summer and winter. Peak hours in summer are 11.15-12.15 and 16.45-17.45, while peak hours in winter are 09.15-10.15 and 15.45-16.45.

In order to provide a robust assessment given that this is based on rural link flows which can vary on a daily basis, the volumes were assessed based on typical weekday and also Friday traffic volumes. Friday is the busiest day year-round in terms of traffic volumes.

A typical day (closest to the average traffic volumes observed) has also been included for all analysis scenarios in order to present the potential largest effect in terms of percentage of existing traffic.

6.2.8 Impact Assessment Criteria

The significance of effects has been based on the projected change in prevailing travel conditions which has regard to the 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports (Draft) August 2017' and with reference to professional judgement. These assessment criteria are set out in **Appendix 1.5**.

6.2.9 Guidance and Legislation

This assessment has been prepared having regard to the guidance in Transport Infrastructure Ireland (2014) *Traffic and Transport Assessment Guidelines*.

6.3 Existing Environment

6.3.1 Site Location

The proposed converter station site is located to the west of the village of Campile, County Wexford. The proposed landfall site is at Baginbun beach, approximately 1.5km south of Fethard-on-Sea, County Wexford.

Traffic associated with the proposed development will potentially affect roads in the immediate vicinity of the proposed converter station site and landfall site, as well as the roads along and near the onshore cable route which is shown in **Figure 6.4** below. At its closest point, the cable route lies 12km from the nearest national road, the N25 at New Ross. The total cable route length is approximately 23km. The cable will be installed in sections. The roads throughout the study area comprise regional and local roads only and are lightly trafficked.

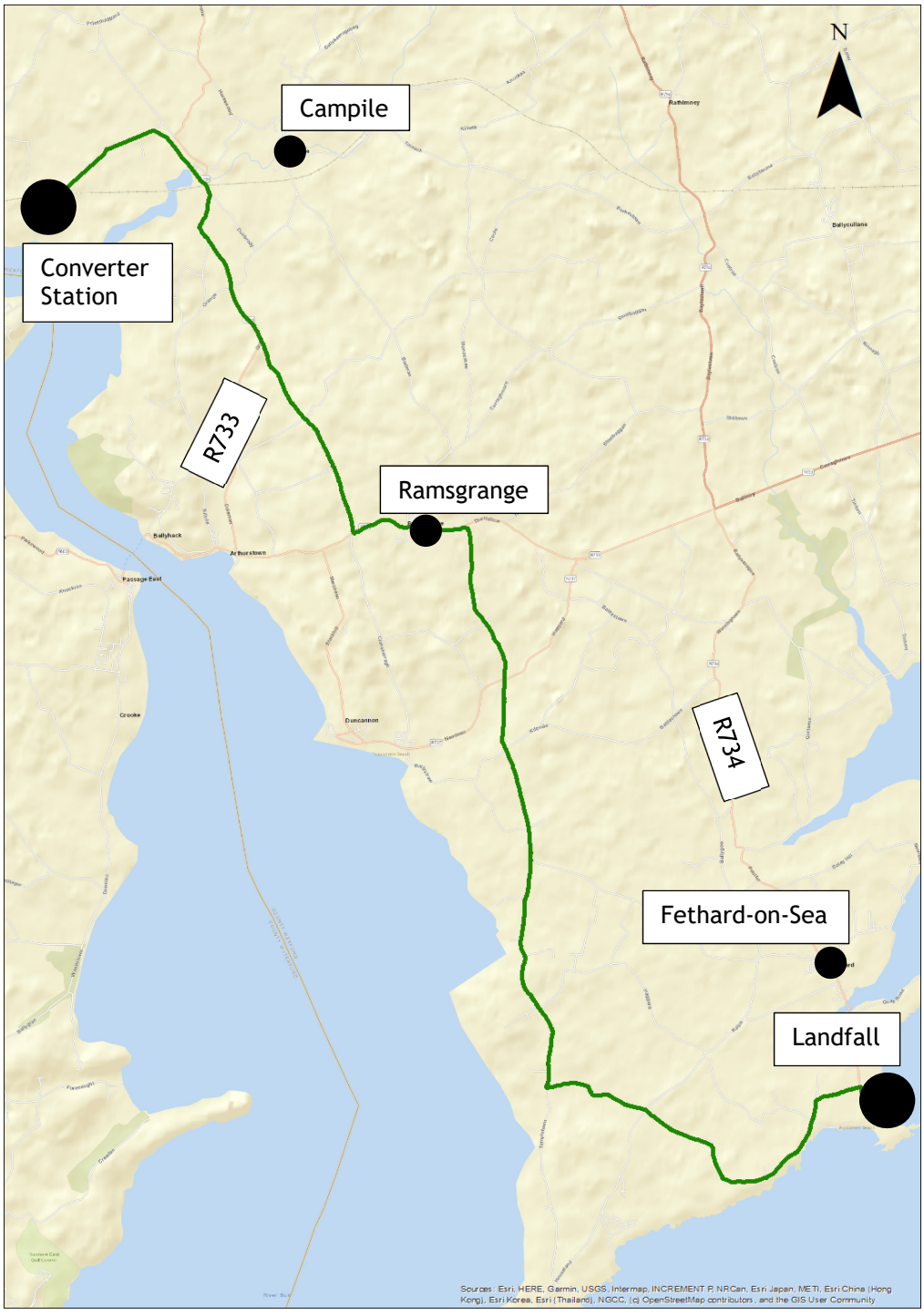

Figure 6.4 Onshore Cable Route, Converter Station and Landfall Site Locations | not to scale

6.3.2 Local Transport Network

The character of the roads along the cable route varies considerably depending on the environment. In general, the regional roads along the cable route and in the study area, the R733, R734, and R737, are approximately 6-7m wide with grass verges but no hard shoulders. Local roads vary from 4-7m wide and also generally have grass verges but no hard shoulders. Some specialist components

may be too large to be delivered via the road network and will require delivery to site by sea. This is described in further detail in **Section 4.7.2** of **Chapter 4**.

Footpaths are provided on a localised basis in villages and small settlements. There are no continuous dedicated cycle or public transport lanes.

Bus Éireann regional services travel to the north and east of the proposed cable route but do not travel on the route itself. The 373 regional service from New Ross to Wexford via Fethard-on-Sea operates once a week in each direction and does not travel on the proposed cable route.

6.3.3 Existing Traffic Patterns

To assess the potential impact of the proposed development on the local road network an examination of the existing traffic flows was necessary. Traffic counts were carried out during August 2018 and November/December 2018 at the following locations as illustrated in **Figure 6.5**.

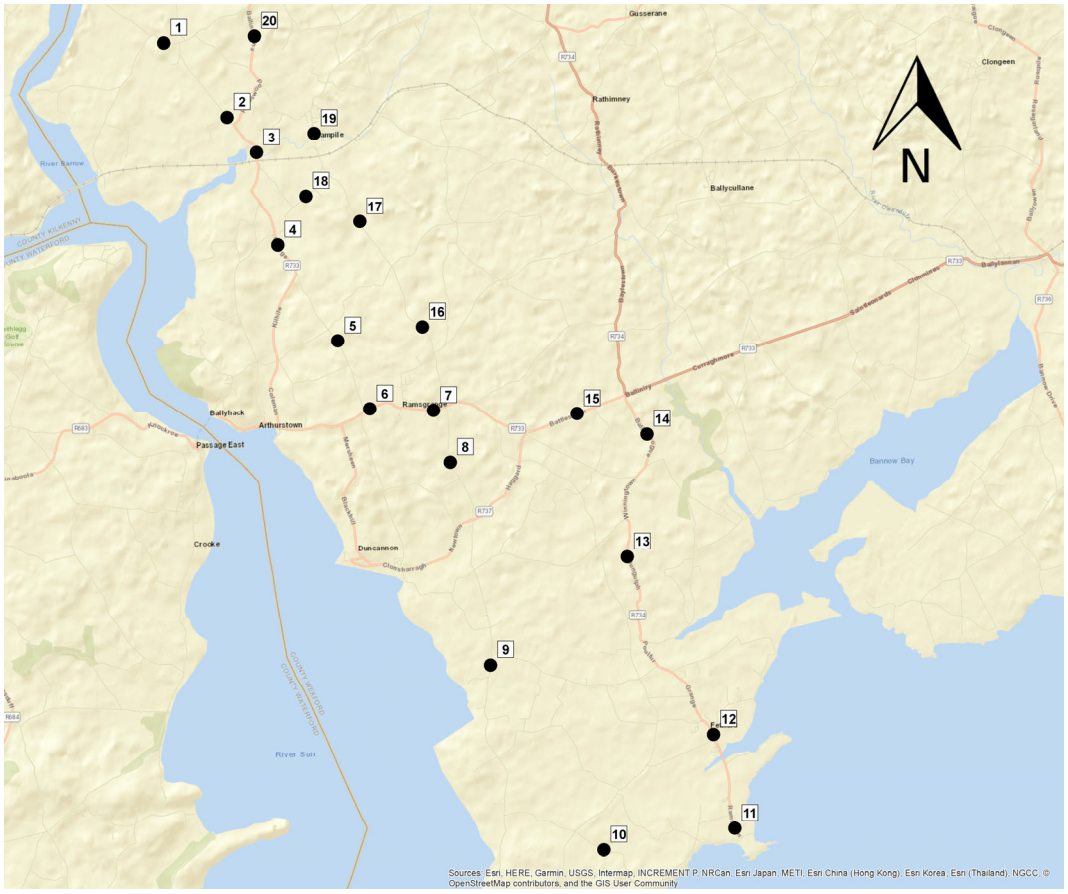

Figure 6.5 Traffic Survey Locations | not to scale

- Location 1: Local Road to Great Island/Fisherstown
- Location 2: Local Road Ballyedock
- Location 3: Campile River Bridge Crossing
- Location 4: R733 South of River Campile
- Location 5: Local Road Rosetown

- Location 6: R733 West of Ramsgrange
- Location 7: R733 Ramsgrange Village
- Location 8: L4045 South of Ramsgrange
- Location 9: L4045 South of R737
- Location 10: Local Road Graigue Great
- Location 11: R734 Hook Head
- Location 12: R734 Fethard-on-Sea
- Location 13: R734 North of Wexford Boats
- Location 14: R734 South of R733
- Location 15: R733 West of R734
- Location 16: L4045 North of Posture
- Location 17: L4045 South of Carrigabruce
- Location 18: Local Road Carrigabruce
- Location 19: L4045 North of Campile
- Location 20: R733 North of Horeswood Nurseries

Tables 6.1 to **6.4** below present the morning peak, evening peak and weekday daily traffic flows for the key road links near and along the proposed development for summer and winter respectively. These flows are quite low, as would be expected given the rural nature of the area. Flows are generally higher in summer due to tourist traffic, particularly in the southern sections of the study area.

Table 6.1 2018 Base Year Friday Two-Way Traffic Flows (Summer) (vehicles)

Link	Fri AM Peak Summer 11:15-12:15	Fri PM Peak Summer 16:45-17:45	Fri 24-Hour Summer
Local Road to Great Island	43 (7% HGV)	54 (6% HGV)	724 (1% HGV)
R733 Campile River Crossing	65 (5% HGV)	100 (4% HGV)	1296 (5% HGV)
R733 West of Ramsgrange	252 (4% HGV)	324 (6% HGV)	3789 (2% HGV)
R733 Ramsgrange village	212 (5% HGV)	301 (8% HGV)	3591 (2% HGV)
L4045 South of Ramsgrange	129 (4% HGV)	163 (7% HGV)	1910 (2% HGV)
R733 West of R734	242 (9% HGV)	324 (10% HGV)	3760 (3% HGV)
R734 Fethard-on-Sea	170 (6% HGV)	191 (8% HGV)	2322 (3% HGV)
Local Road Graigue Great	20 (15% HGV)	28 (7% HGV)	257 (3% HGV)
R734 Hook Head	26 (4% HGV)	59 (3% HGV)	352 (4% HGV)

Table 6.2 2018 Base Year Typical Day Two-Way Traffic Flows (Summer) (vehicles)

Link	Typical AM Peak Summer 11:15-12:15	Typical PM Peak Summer 16:45-17:45	Typical 24-Hour Summer
Local Road to Great Island	41 (12% HGV)	56 (4% HGV)	725 (13% HGV)
R733 Campile River Crossing	85 (9% HGV)	95 (6% HGV)	1135 (8% HGV)
R733 West of Ramsgrange	201 (7% HGV)	257 (5% HGV)	3239 (6% HGV)
R733 Ramsgrange village	199 (12% HGV)	262 (7% HGV)	3134 (7% HGV)
L4045 South of Ramsgrange	110 (11% HGV)	133 (7% HGV)	1604 (7% HGV)
R733 West of R734	227 (11% HGV)	320 (9% HGV)	3453 (10% HGV)
R734 Fethard-on-Sea	140 (14% HGV)	192 (7% HGV)	2049 (7% HGV)
Local Road Graigue Great	15 (7% HGV)	18 (6% HGV)	298 (10% HGV)
R734 Hook Head	39 (5% HGV)	51 (0% HGV)	432 (4% HGV)

Table 6.3 2018 Base Year Friday Two-Way Traffic Flows (Winter) (vehicles)

Link	Fri AM Peak Winter 09:15-10:15	Fri PM Peak Winter 15:45-16:45	Fri 24-Hour Winter
Local Road to Great Island	34 (12% HGV)	62 (13% HGV)	726 (8% HGV)
R733 Campile River Crossing	62 (10% HGV)	68 (13% HGV)	848 (8% HGV)
R733 West of Ramsgrange	212 (5% HGV)	251 (7% HGV)	2529 (7% HGV)
R733 Ramsgrange village	205 (7% HGV)	308 (5% HGV)	2762 (7% HGV)
L4045 South of Ramsgrange	93 (10% HGV)	131 (11% HGV)	1356 (10% HGV)
R733 West of R734	186 (9% HGV)	256 (5% HGV)	2609 (9% HGV)
R734 Fethard-on-Sea	103 (17% HGV)	120 (8% HGV)	1392 (10% HGV)
Local Road Graigue Great	6 (0% HGV)	9 (11% HGV)	93 (15% HGV)
R734 Hook Head	7 (0% HGV)	6 (0% HGV)	57 (7% HGV)

Table 6.4 2018 Base Year Typical Day Two-Way Traffic Flows (Winter) (vehicles)

Link	Typical AM Peak Winter 09:15-10:15	Typical PM Peak Winter 15:45-16:45	Typical 24-Hour Winter
Local Road to Great Island	39 (3% HGV)	62 (13% HGV)	708 (10% HGV)
R733 Campile River Crossing	55 (7% HGV)	59 (5% HGV)	715 (8% HGV)
R733 West of Ramsgrange	172 (8% HGV)	213 (10% HGV)	2152 (9% HGV)
R733 Ramsgrange village	178 (9% HGV)	412 (10% HGV)	2710 (8% HGV)
L4045 South of Ramsgrange	88 (6% HGV)	125 (11% HGV)	1309 (10% HGV)
R733 West of R734	124 (10% HGV)	223 (13% HGV)	2203 (11% HGV)
R734 Fethard-on-Sea	89 (16% HGV)	125 (10% HGV)	1171 (10% HGV)
Local Road Graigue Great	2 (0% HGV)	8 (25% HGV)	68 (12% HGV)
R734 Hook Head	4 (0% HGV)	2 (0% HGV)	38 (5% HGV)

6.4 Characteristics of the Proposed Development

The proposed development includes the construction of a converter station and tail station near Great Island, a landfall near Baginbun where the subsea cable will connect to an underground cable on land, and installation of an underground cable connecting the two sites. The underground cable will primarily be installed along public roadways. The cable will be installed on private lands in a small number of locations along the route, including a longer section of approximately 3km in length between the convertor station and the Campile River crossing. Cable will be installed via narrow trenches and there will be a joint approximately every 1km and at least every 1.8km where wider excavations will be required. The provisional locations of these joint bays and the cable contractor compounds for these construction activities are indicated in **Figure 6.6** below.

A construction compound is required at Great Island for the converter station and tail station. Three cable contractor compounds will be required for the proposed development, adjacent to the converter station, at the landfall site close to Baginbun Beach, and one along the onshore cable route in the townland of Lewistown near Dollar Bay. In addition temporary HDD contractor compounds are required. One will be located close to the cable contractor compound at Baginbun Beach with another HDD compound located at either side of the Campile River Estuary crossing. At the Great Island converter station site there will be two separate construction compounds for the cable contractor and for the converter station and tail station contractor. At Campile there will be a compound for the HDD contractor on either side of the river. There will be a construction compound at Lewistown for the cable contractor. Similar to Great Island, there will be two separate construction compounds at Baginbun, for the cable contractor and for the HDD contractor. All of these compounds are temporary in nature and will be in use for a maximum of approximately 2 years. They will include materials storage and welfare facilities.

Table 6.5: Traffic associated with each of the main working areas

Great Island	Converter Station Construction compound
	Tail Station Construction compound
	Cable Contractor Compound
Baginbun	Cable Contractor Compound
	HDD Contractor Compound
Lewistown	Cable Contractor compound
	Construction Compound
Campile	HDD Contractor Compound (crossing)

For the purposes of programming of the works, the cable route has been divided into three distinct sections as shown in **Figure 6.6**.

The volume of traffic within the respective sections of cable works will vary according to the aspect of work undertaken. **Table 6.6** details the typical elements of work that are undertaken within a two-kilometre cable section over a 7+ week period and the associated vehicular traffic.

The first section from the converter station to east of Ramsgrange village is approximately 8.5km long and shown in purple. This runs along a combination of regional and local roads. The third section from Templars Inn to the landfall site is approximately 5.9km long and shown in blue. This section runs along local roads. It is envisaged that the cable on these two sections will be installed concurrently, between September and December 2021, to avoid the summer tourist season.

The central section from Ramsgrange to Templars Inn is shown in green and is approximately 8.5km long. It runs along the R733 regional road through Ramsgrange village, and on local roads thereafter. This section is programmed to be installed after the other two sections, between December 2021 and March 2022.

The cable works have been programmed to avoid works on public roads during the summer; however, the assessment below includes traffic figures for summer and winter to include for potential delays to the programme.

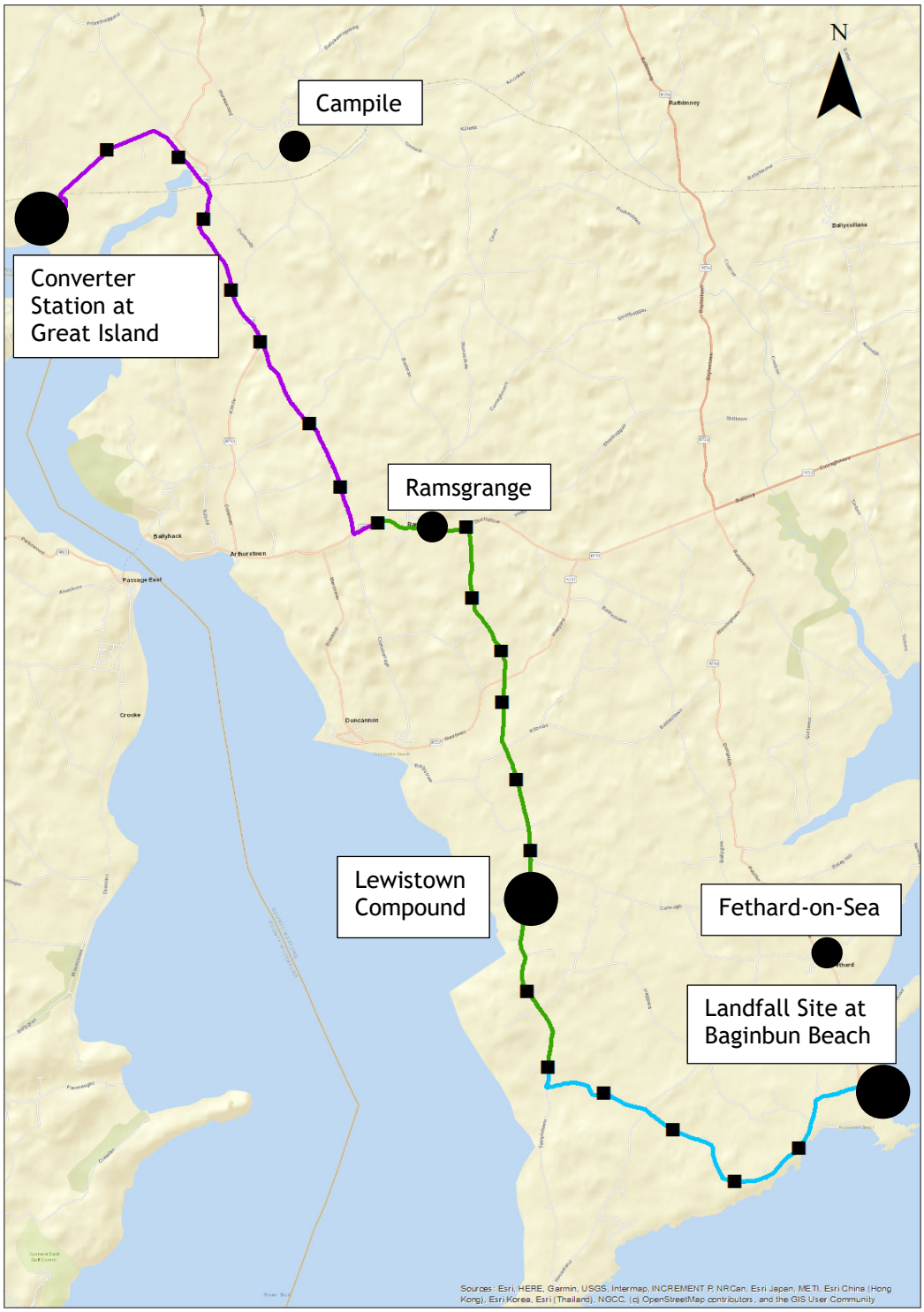

Figure 6.6: Cable Route Sections and Joint Bay Locations | not to scale

6.5 Potential Effects

The effects on the transport network have been assessed separately for the converter station site, the landfall site, the three sections of the cable route and haulage. These effects are detailed in **Sections 6.5.1.2** to **6.5.1.7** below.

6.5.1 Construction Phase

6.5.1.1 Traffic Generation

The level of traffic generated during the construction phase of the proposed development is set out below.

The traffic will consist of construction staff commuting to and from the construction compounds, trips to and from the cable route working areas, and general construction traffic. Materials will be delivered and waste removed on an ongoing basis throughout construction. Materials for the cable route will be delivered to the closest cable construction compound and then distributed to the working area as needed for installation of ducts and cable and reinstatement of the road.

The following activities will also generate construction traffic and will be on a once-off basis during the construction period:

- Delivery and removal of construction equipment; and
- Delivery and removal of lifting and hoisting equipment.

It is estimated that there will be approximately 50 staff per day at each of the cable compounds, 8 at the HDD compound in Campile, and 190 staff at the converter station at the peak of construction. It has been assumed that some of these staff will travel together to site (apprentices, subcontractors who work together as small teams etc.) and therefore an occupancy rate of 1.2 people per vehicle has been assumed. Daily trips have been calculated by multiplying these vehicles numbers by 2.5 to account for arriving to the site in the morning, leaving in the evening, and a small number of trips during the day for lunch, collecting small tools and materials, and travelling between compounds. This results in a daily two-way trip total of 105 vehicles for staff at the cable compounds, 17 vehicles for staff at the HDD compound in Campile and 396 vehicles for staff at the converter station.

HGV trips to and from the site locations have been calculated based on the volumes of material for import/export and other construction deliveries. HGV trips will likely be spread evenly over the day for logistics management as well as traffic management. The maximum HGV movements will be due to import of fill materials at the converter station and import and export of fill and excavated material for the cable trenches. These movements have been calculated as shown in Table 6.5 below, with the assumption that each HGV carries 10m^3 of material and the construction periods as per the programme.

Table 6.6 HGV Trip Generation

Location/Trip Generator	Material Volume (m^3)	No. Days Construction	Total No. HGVS	HGVs per day	HGV Trips per day
Cable Compounds	6,300 (excavation and fill)	196	1,260	6	12
Converter Station	20,500 (fill only)	297	2,050	7	14

Note that some efficiencies may be possible by ensuring that deliveries and removals of material are carried out by the same vehicle, thus ensuring no empty trips. For the purposes of this assessment a worst-case scenario has been assumed from this point of view, in that all deliveries and removals are assumed to require a separate vehicle.

Trips generated by each compound due to staff movements, deliveries/removal of material, and movements of vehicles from compounds to cable route construction locations are set out in **Table 6.7** below.

Table 6.7 Trips Generated by Site Location

Location/Trip Generator	Total No. Trips	Heavy Goods Vehicles	Light Vehicles
Great Island	526	26	500
Campile	31	10	21
Baginbun	133	12	121
Lewistown	116	12	104
Cable Route Construction Areas	14	4	10

Whilst it is unlikely that the peak traffic volumes for the convertor station will coincide with peak cable installation at Great Island, this assessment has assumed that they will as a worst-case scenario in terms of traffic. For a robust assessment, the above traffic has been assumed to coincide and to occur on the day of the week with highest traffic volumes on the surrounding road network, which is Friday, as this will be the largest effect in absolute terms. A typical day (closest to the average traffic volumes observed) has also been included for all analysis scenarios in order to present the potential largest effect in terms of percentage of existing traffic.

The number of construction vehicles expected by Greenlink Interconnector Ltd. to be required for the onshore cable construction at each location for installation along the route is detailed in **Table 6.8**. This does not include for construction worker vehicles, as the staff will travel to the nearest site compound in their own vehicles as outlined above. They will then travel out from the compound to the works area in one or two vehicles to reduce the number of vehicles in the works area and minimise the disturbance to the

network operation. This will be detailed further in the Construction Traffic Management Plan.

Table 6.8 Estimated Number of Vehicles for Onshore Cable Construction

Construction Activity	Duration per 1km of cable	Vehicles
Excavation/Ducting	2-3 weeks (per cable section of up to one kilometre)	5 no. vehicles
	Or, a typical HDD crossing requires 4-6 weeks to install.	5 no. HGVs & 2 no. vehicles daily
Cable Pulling and Jointing	To excavate and prepare joint bay: 5 days	5 no. vehicles
	To pull cables into joint bays: 4 days	4 no. HGVs to deliver each drum: 1 per day & 5 no. vehicles
	Jointing activities: 5 days	4 no. vehicles
	Fill in joint and re-surface road: 5 days	5 no. vehicles

6.5.1.2 Converter Station

It is assumed that most construction site staff will be on site for standard working hours of 07.00-19.00 and will arrive before and depart after these times. Cut and fill on the site will be balanced to ensure that all excavated material will be re-used on site. As the summer and winter peak hours all fall within this time, the effects on peak hour traffic will be negligible. The projected two-way traffic volumes on the roads near the site for the peak hours in 2021 without the development in place are shown in **Table 6.9** and **Table 6.10** below.

Table 6.9 Construction Year 2021 Two-Way Base Traffic Volumes in Vicinity of Converter Station and Tail Station Site (Summer) (vehicles)

	Fri AM Peak 11:15-12:15	Fri PM Peak 16:45-17:45	Fri 24-hour	Typical AM Peak 11:15-12:15	Typical PM Peak 16:45-17:45	Typical 24-hour
Local Road to Great Island	44 (7% HGV)	55 (6% HGV)	741 (8% HGV)	42 (13% HGV)	57 (4% HGV)	744 (13% HGV)
R733 North of Horeswood Nurseries	199 (6% HGV)	238 (6% HGV)	3081 (8% HGV)	186 (10% HGV)	213 (10% HGV)	2982 (9% HGV)

Table 6.10 Construction Year 2021 Two-Way Base Traffic Volumes in Vicinity of Converter Station and Tail Station Site (Winter) (vehicles)

Link	Fri AM Peak 09:15-10:15	Fri PM Peak 15:45-16:45	Fri 24-hour	Typical AM Peak 09:15-10:15	Typical PM Peak 15:45-16:45	Typical 24-hour
Local Road to Great Island	35 (12% HGV)	64 (13% HGV)	744 (9% HGV)	40 (3% HGV)	64 (13% HGV)	726 (11% HGV)
R733 North of Horeswood Nurseries	201 (9% HGV)	222 (7% HGV)	2807 (9% HGV)	201 (10% HGV)	195 (9% HGV)	2586 (10% HGV)

It can be seen that traffic levels do not vary significantly on this section of the network throughout the year or between typical days and peak days (Fridays).

It has been assumed that all construction traffic will access the site from the north as this is the only land access route. The volumes of traffic on the R733 at this location are relatively low, with the local road volumes lower again. The increases in the peak hours will be extremely low, relating primarily to deliveries and traffic associated with the cable route construction rather than construction worker arrivals and departures.

The daily percentage increases are shown in **Table 6.11** and **Table 6.12** below.

Table 6.11 Construction Year 2021 Two-Way Traffic Volumes With and Without Development near Converter Station and Tail Station Site (Summer) (vehicles)

Link	Fri 24-hour Without Devt	Fri 24-hour With Devt	Increase in Friday Traffic	Typical 24-hour Without Devt	Typical 24-hour With Devt	Increase in Typical Traffic
Local Road to Great Island	741 (8% HGV)	1267 (7% HGV)	71.0%	744 (13% HGV)	1270 (10% HGV)	70.7%
R733 North of Horeswood Nurseries	3081 (8% HGV)	3607 (8% HGV)	17.1%	2982 (9% HGV)	3508 (9% HGV)	17.6%

Table 6.12 Construction Year 2021 Two-Way Traffic Volumes with and without development near Converter Station and Tail Station Site (Winter) (vehicles)

Link	Fri 24-hour Without Devt	Fri 24-hour With Devt	Increase in Friday Traffic	Typical 24-hour Without Devt	Typical 24-hour With Devt	Increase in Typical Traffic
Local Road to Great Island	744 (9% HGV)	1270 (7% HGV)	70.6%	726 (11% HGV)	1252 (8% HGV)	72.5%
R733 North of Horeswood Nurseries	2807 (9% HGV)	3333 (8% HGV)	18.7%	2586 (10% HGV)	3112 (9% HGV)	20.3%

The percentage increase in daily traffic volumes varies between approximately 17-20% on the regional road, and approximately 70-73% on the local road, depending on season. Whilst this represents a large percentage increase, this is reflective of the existing low traffic volumes on the local road, and the overall traffic volumes remain below the carrying capacity of the road. The Annual Average Daily Traffic (AADT) capacity on a Type 3 Single Carriageway road is 5,000 vehicles, as per the TII standard for Rural Road Link Design (DN-GEO-03031).

Construction works near the Campile Estuary crossing, including the HDD, will not be carried out in the period 1 October to 31 March inclusive to avoid potential effects on wintering birds in the vicinity of the construction activity.

It is concluded that the proposed construction works for the converter station will have a moderate to significant temporary negative effect on traffic conditions in the local vicinity.

6.5.1.3 Landfall Site

The landfall site will generate lower traffic volumes than the converter station and tail station site. This site will include a HDD compound and a cable contractor compound. As set out in **Section 6.5.1.1**, these compounds will generate approximately 17 trips per day and 105 trips per day respectively in terms of staff movements. Additional HGV trips are anticipated for delivery and distribution of cable drums. The maximum traffic volumes will occur during mobilisation and demobilisation phases of the HDD works. Typically, there would be up to 20 HGV two-way trips during mobilisation and demobilisation for transporting HDD plant, welfare facilities and material. These will be spread out over the day to give a maximum of one trip per hour in each direction. During normal HDD and cable work there would be up to 40 LV trips per day in each direction.

It is assumed that most of the construction site staff will be on site for standard working hours of 07.00-19.00 and will arrive before and depart after these times. As the AM and PM peak hours on the network all fall within this time, and do not coincide with the times construction workers are expected to be

travelling, the effects on peak hour traffic will be negligible. The projected two-way traffic volumes on the roads near the site for the peak hours in 2021 are shown in **Table 6.13 and Table 6.14** below.

Table 6.13 Construction Year 2021 Two-Way Base Traffic Volumes in Vicinity of Landfall Site (Summer) (vehicles)

Link	Fri AM Peak 11:15-12:15	Fri PM Peak 16:45-17:45	Fri 24-hour	Typical AM Peak 11:15-12:15	Typical PM Peak 16:45-17:45	Typical 24-hour
R734 Hook Head	27 (4% HGV)	60 (4% HGV)	360 (2% HGV)	40 (5% HGV)	52 (0% HGV)	442 (4% HGV)
R734 Fethard-on-Sea	174 (6% HGV)	196 (9% HGV)	2377 (7% HGV)	144 (14% HGV)	197 (7% HGV)	2098 (8% HGV)

Table 6.14 Construction Year 2021 Two-Way Base Traffic Volumes in Vicinity of Landfall Site (Winter) (vehicles)

Link	Fri AM Peak 09:15-10:15	Fri PM Peak 15:45-16:45	Fri 24-hour	Typical AM Peak 09:15-10:15	Typical PM Peak 15:45-16:45	Typical 24-hour
R734 Hook Head	7 (0% HGV)	6 (0% HGV)	58 (7% HGV)	4 (0% HGV)	2 (0% HGV)	39 (5% HGV)
R734 Fethard-on-Sea	106 (18% HGV)	123 (8% HGV)	1427 (10% HGV)	91 (16% HGV)	128 (11% HGV)	1200 (11% HGV)

Similar to the converter station site, the volumes of traffic on the regional road at this location, the R734, are relatively low, with the local road volumes extremely low, particularly in winter. The increases in the peak hours will be extremely low as they do not coincide with the times that workers will be arriving to and departing from the site.

It has been assumed that all delivery traffic will access the site from the north, via Fethard-on-Sea on the R734. Construction staff are also assumed to primarily use the R734 regional road. The daily percentage increases are shown in **Table 6.15** and **Table 6.16** below.

Table 6.15 Construction Year 2021 Two-Way Traffic Volumes With and Without Development in Vicinity of Landfall Site (Summer) (vehicles)

Link	Fri 24-hour Without Devt	Fri 24-hour With Devt	Increase in Friday Traffic	Typical 24-hour Without Devt	Typical 24-hour With Devt	Increase in Typical Traffic
R734 Hook Head	360 (2% HGV)	492 (4% HGV)	36.9%	442 (4% HGV)	574 (27% HGV)	30.1%
R734 Fethard-on-Sea	2377 (7% HGV)	2509 (7% HGV)	5.6%	2098 (8% HGV)	2231 (13% HGV)	6.3%

Table 6.16 Construction Year 2021 Two-Way Traffic Volumes With and Without Development in Vicinity of Landfall Site (Winter) (vehicles)

Link	Fri 24-hour Without Devt	Fri 24-hour With Devt	Increase in Friday Traffic	Typical 24-hour Without Devt	Typical 24-hour With Devt	Increase in Typical Traffic
R734 Hook Head	58 (7% HGV)	191 (9% HGV)	227.7%	39 (5% HGV)	172 (81% HGV)	341.7%
R734 Fethard-on-Sea	1427 (10% HGV)	1560 (10% HGV)	9.3%	1200 (11% HGV)	1333 (20% HGV)	11.1%

The percentage increases on the R734 to Hook Head are significantly higher in winter than in summer due to the low baseline volumes, although the actual effects would be considered less due to the lower traffic volumes outside the peak tourist season. The increased traffic volumes in winter remain lower than the summer volumes without the development. The large percentage increases are reflective of the lightly trafficked rural nature of these routes and low baseline volumes.

The percentage increase on the R734 through Fethard-on-Sea is between 6-11% on an all-day basis. The percentage increase in winter is higher due to the lower base traffic volumes; however, this is a consequence of the works being programmed to avoid the peak tourist season - construction works at the landfall and along public roads will not be carried out in the period from 1 July to 31 August.

It is concluded that the proposed construction works for the landfall will have a moderate to significant temporary negative effect on traffic conditions in the vicinity, which is due to a relatively large increase in traffic compared to the extremely low existing traffic volumes.

6.5.1.4 Cable Route: Section 1

Section 1 of the cable route extends from the converter station site to Ramsgrange village, as shown in **Figure 6.7** below. Construction staff for the cable route on this section will be based in a site compound in Great Island and their journeys to and from work are therefore taken into account in **Section 6.5.1.2** above. Traffic volumes associated directly with the cable works are a maximum of 7 vehicles per day (5 HGVs and 2 LVs) as set out in **Table 6.7**. The increase in traffic volumes on the road due to the arrival and departure of these vehicles is negligible.

There will be an additional site compound on this section of the route at the Campile River crossing to facilitate a HDD. The daily percentage increases in traffic at this location are shown in **Table 6.17** and **Table 6.18** below.

Table 6.17 Construction Year 2021 Two-Way Traffic Volumes With and Without Development on Section 1 of Cable Route (Summer) (vehicles)

Link	Fri 24-hour Without Devt	Fri 24-hour With Devt	Increase in Friday Traffic	Typical 24-hour Without Devt	Typical 24-hour With Devt	Increase in Typical Traffic
Campile River Bridge Crossing	1326 (6% HGV)	1371 (7% HGV)	3%	1162 (8% HGV)	1193 (9% HGV)	3%

Table 6.18 Construction Year 2021 Two-Way Traffic Volumes With and Without Development on Section 1 of Cable Route (Winter) (vehicles)

Link	Fri 24-hour Without Devt	Fri 24-hour With Devt	Increase in Friday Traffic	Typical 24-hour Without Devt	Typical 24-hour With Devt	Increase in Typical Traffic
Campile River Bridge Crossing	868 (8% HGV)	913 (10% HGV)	5%	732 (8% HGV)	777 (10% HGV)	6%

The percentage increases in this location are extremely low.

It is acknowledged that whilst the increase in traffic due to the cable route component of the works will be minimal, there will be a certain level of inconvenience to local residents and businesses along these routes as a result of the works, in particular due to their linear nature and temporary potential lane or road closures. However, the works will be co-ordinated to minimise these effects in consultation with the local authority and local residents. This will be addressed in detail as part of the Construction Traffic Management Plan as detailed in **Section 6.6**.

An analysis of the road widths and geometry of the roadways along the route has been considered in developing the programme for this section of the route. This section will require:

- Full Road Closure of 200m stretches: 10 days total
- Stop/Go system of 120m stretches: 47 days total
- Works in Verge (with road open as normal) of 70m stretches: 6 days total

Figure 6.7 Cable Route Section 1 | not to scale

Traffic volumes along this section of roadway are generally quite low, with maximum summer volumes of 1,910 vehicles per day and maximum winter volumes of 1,216 vehicles per day projected for 2021.

Parallel local roads to the east carry similar daily volumes of traffic. TII's standard for Rural Road Link Design (DN-GEO-03031) recommends a type 3

single carriageway (6.0m wide) for Annual Average Daily Traffic (AADT) up to 5,000 vehicles.

Most of the alternative routes in the vicinity are at least 5.5m wide and it is therefore considered that they have ample spare capacity to carry diverted traffic for the short periods outlined above. These works have been programmed to avoid the peak summer tourist season to reduce the effects on the road network. Construction works along public roads will not be carried out during the period 1 July to 31 August. Construction activity near the Campile Estuary crossing, including HDD, will not be carried out during the period 1 October to 31 March inclusive.

The stop/go system and temporary diversions are considered to have a slight to moderate temporary effect on traffic conditions along this section of the cable route.

6.5.1.5 Cable Route: Section 2

Section 2 of the cable route extends from Ramsgrange village to the Templars Inn, as shown in **Figure 6.8** below. Construction staff for the cable route on this section will be based in the site compound in Lewistown. The daily percentage increases in traffic at this location are shown in **Table 6.19 and Table 6.20** below, which also include for movement of vehicles between the compound and the various localised works areas along the cable route.

Table 6.19 Construction Year 2021 Two-Way Traffic Volumes With and Without Development on Section 2 of Cable Route (Summer) (vehicles)

Link	Fri 24-hour Without Devt	Fri 24-hour With Devt	Increase in Friday Traffic	Typical 24-hour Without Devt	Typical 24-hour With Devt	Increase in Typical Traffic
L4045 South of Ramsgrange	1954 (6% HGV)	2084 (6% HGV)	6.7%	1642 (7% HGV)	1758 (8% HGV)	7.1%
R733 East of Ramsgrange	3851 (8% HGV)	3981 (9% HGV)	3.4%	3539 (10% HGV)	3655 (10% HGV)	3.3%

Table 6.20 Construction Year 2021 Two-Way Traffic Volumes With and Without Development on Section 2 of Cable Route (Winter) (vehicles)

Link	Fri 24-hour Without Devt	Fri 24-hour With Devt	Increase in Friday Traffic	Typical 24-hour Without Devt	Typical 24-hour With Devt	Increase in Typical Traffic
L4045 South of Ramsgrange	1390 (10% HGV)	1520 (10% HGV)	9.4%	1342 (11% HGV)	1472 (11% HGV)	9.7%
R733 East of Ramsgrange	2673 (10% HGV)	2803 (10% HGV)	4.9%	2259 (12% HGV)	2389 (12% HGV)	5.8%

The percentage increases associated with the works in these locations are quite low. The percentage increases on the local road are slightly higher; however, this is due to the lower existing traffic volumes on this part of the road network. This holds true across summer and winter for typical days and peak days in terms of relative percentage increases.

Similar to Section 1 of the Cable Route, it is acknowledged that whilst the increase in traffic due to the cable route component of the works will be minimal, there will be a certain level of inconvenience to local residents and businesses along these routes as a result of the works, in particular due to their linear nature and temporary potential lane or road closures. However, the works will be co-ordinated to minimise these effects in consultation with the local authority and local residents. This will be addressed in detail as part of Construction Traffic Management Plan as detailed in **Section 6.6**.

An analysis of the road widths and geometry of the roadways along the route has been considered in developing the programme for this section of the route. This section will require:

- Stop/Go system of 120m stretches: 66 days total
- Works in Verge (with road open as normal) of 70m stretches: 2 days total

Figure 6.8 Cable Route Section 2 | not to scale

Traffic volumes along this section of roadway are generally quite low, with maximum summer volumes of 1,954 vehicles per day and maximum winter volumes of 1,390 vehicles per day projected for 2021. The parallel regional road to the east, the R734, carries similar daily volumes of traffic. Although no road closures are required for this section, some traffic may divert to alternative routes to avoid stop/go systems. TII's standard for Rural Road Link Design (DN-GEO-03031) recommends a type 3 single carriageway (6.0m wide) for Annual Average Daily Traffic (AADT) up to 5,000 vehicles. Most of the alternative routes in the vicinity are at least 6.0m wide and it is therefore considered that they have ample spare capacity to carry diverted traffic for the short periods outlined above should this be required. These works have been programmed to avoid the peak summer tourist season to reduce the effects on the road network. Construction works along public roads will not be carried out during the period 1 July to 31 August.

Higher baseline traffic volumes are evident in Ramsgrange village, in the order of 3,700 vehicles daily during summer and 2,800 daily during winter. This section of the route will require careful consideration as part of the Construction Traffic Management Plan but no road closures are currently envisaged through the village.

The stop/go system is considered to have a slight to moderate temporary effect on traffic conditions along this section of the cable route.

6.5.1.6 Cable Route: Section 3

Section 3 of the cable route extends from the Templars Inn to the landfall site, as shown in **Figure 6.9** below. Construction staff for the cable route on this section will be based in a site compound near the landfall site, and their journeys to and from work are therefore taken into account in **Section 6.5.1.3** above. Traffic volumes associated with the cable works are a maximum of 7 vehicles per day (5 HGVs and 2 LVs) as set out in **Table 6.6**. The increase in traffic volumes on the road due to the arrival and departure of these vehicles is low as shown in **Table 6.21** and **Table 6.22** below.

Table 6.21 Construction Year 2021 Two-Way Traffic Volumes With and Without Development on Section 3 of Cable Route (Summer) (vehicles)

Link	Fri 24-hour Without Devt	Fri 24-hour With Devt	Increase in Friday Traffic	Typical 24-hour Without Devt	Typical 24-hour With Devt	Increase in Typical Traffic
Local Road Graigue Great	263 (9% HGV)	277 (10% HGV)	5.3%	305 (11% HGV)	319 (12% HGV)	4.6%

Table 6.22 Construction Year 2021 Two-Way Traffic Volumes With and Without Development on Section 3 of Cable Route (Winter) (vehicles)

Link	Fri 24-hour Without Devt	Fri 24-hour With Devt	Increase in Friday Traffic	Typical 24-hour Without Devt	Typical 24-hour With Devt	Increase in Typical Traffic
Local Road Graigue Great	96 (16% HGV)	110 (17% HGV)	14.7%	70 (12% HGV)	84 (15% HGV)	20.1%

As for Sections 1 and 2 of the Cable Route, it is acknowledged that whilst the increase in traffic due to the cable route component of the works will be minor, there will nevertheless be a certain level of inconvenience to local residents and businesses along these routes as a result of the works, in

particular due to their linear nature and temporary potential lane or road closures.

However, the works will be co-ordinated to minimise these effects in consultation with the local authority and local residents. This will be addressed in detail as part of the Construction Traffic Management Plan as detailed in **Section 6.6**.

An analysis of the road widths and geometry of the roadways along the route has been considered in developing the programme for this section of the route. This section will require:

- Full Road Closure of 200m stretches: 10 days total
- Stop/Go system of 120m stretches: 25 days total
- Works in Verge (with road open as normal) of 70m stretches: 15 days total

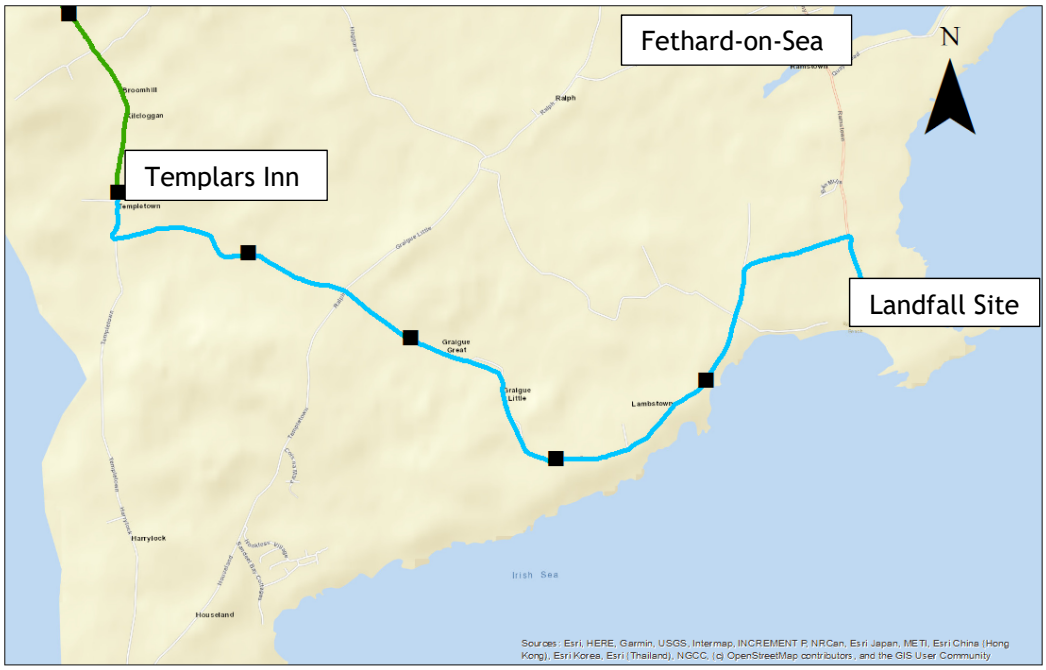

Figure 6.9 Cable Route Section 3

Traffic volumes along this section of roadway are generally very low, with maximum summer volumes of 360 vehicles per day and maximum winter volumes of 96 vehicles per day. Parallel local roads to the east carry similar daily volumes of traffic. TII's standard for Rural Road Link Design (DN-GEO-03031) recommends a type 3 single carriageway (6.0m wide) for Annual Average Daily Traffic (AADT) up to 5,000 vehicles. The alternative routes in the vicinity are generally narrower than this, at less than 5.0m wide in places. However, given the extremely low traffic volumes, it is considered that they have ample spare capacity to carry diverted traffic for the short periods outlined above.

The stop/go system and temporary diversions are considered to have a moderate temporary effect on traffic conditions along this section of the cable route.

As noted above, the cable routes in Section 1 and Section 3 will be installed concurrently. As these sections are approximately 9km distant from each other, no cumulative effects are expected from these works.

This has been programmed deliberately to minimise the overall duration of any disruption in the area and particularly to avoid the peak summer tourist season to reduce the effects on the road network. Construction works along public roads will not be carried out during the period 1 July to 31 August.

It should also be noted that Section 2 and Section 3 of the proposed cable route coincide with sections of the Eurovélo Cycle Route as shown in **Figure 6.10** below.

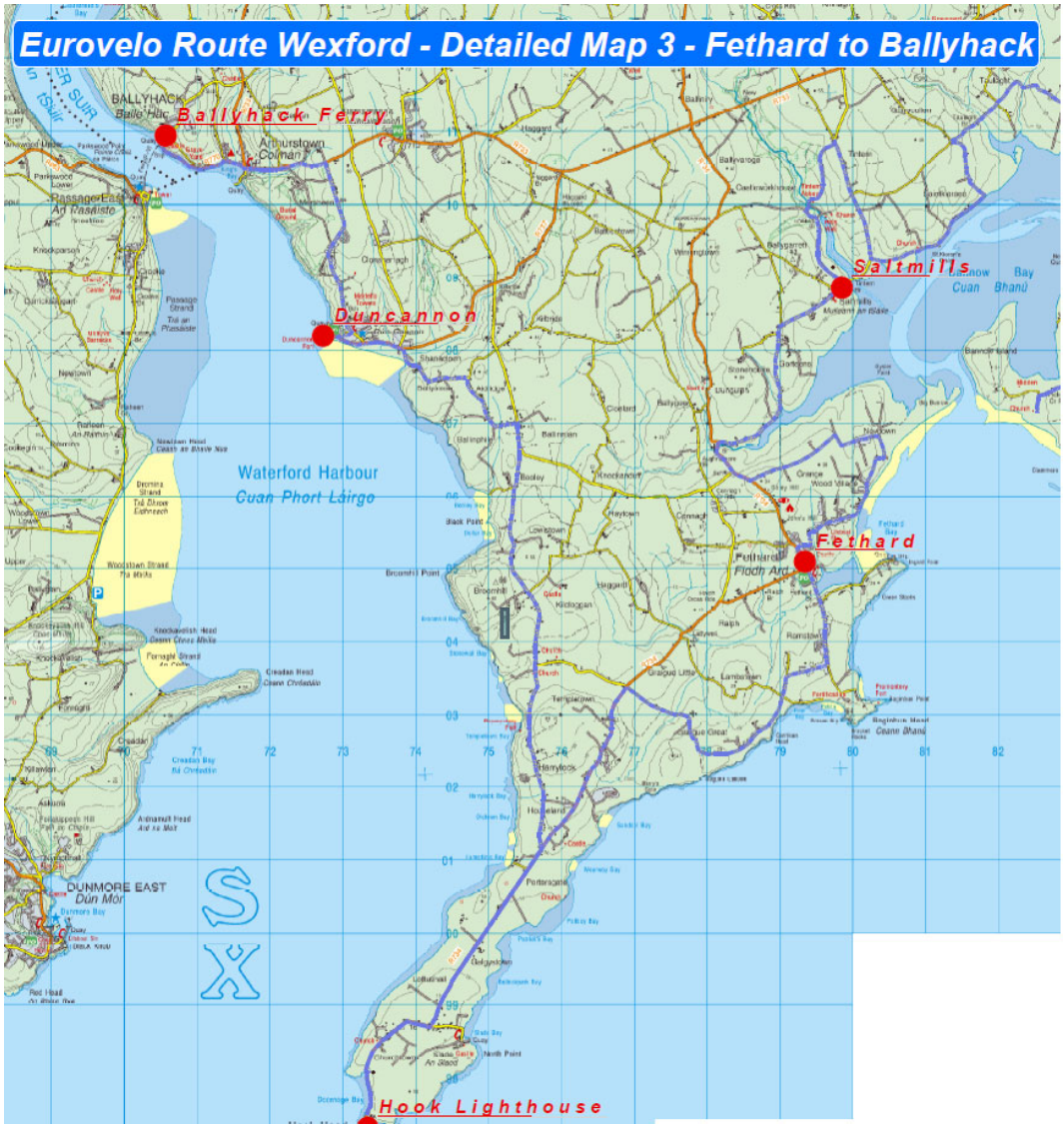

Figure 6.10 Eurovélo Cycle Routes (source: Wexford County Council)

The traffic surveys undertaken included all vehicle categories, one of which groups motorcycles and bicycles. The weekly volumes for summer and winter along the Eurovélo route are shown in **Table 6.23** below.

Table 6.23 Cyclist Volumes between Templars Inn and Duncannon in 2018

Location	Cyclist & Motorist Weekly Volumes (Summer)	Cyclist & Motorist Weekly Volumes (Winter)
Templars Inn – Duncannon (Survey location 9)	171	35
Baginbun – Templars Inn (Survey location 10)	83	11

Works along all sections of the cable routes are currently programmed to avoid the peak summer tourist season to reduce the effects on the road network, including for cyclists on the Eurovélo routes. As can be seen above, cyclist volumes in summer are significantly higher than in winter. Construction works along public roads will not be carried out during the period 1 July to 31 August. Notwithstanding this, every endeavour will be made to minimise inconvenience for cyclists following the Eurovélo route throughout the year, and advance signage for alternative routes will be included in the Construction Traffic Management Plan which will take specific account of cyclist movements.

6.5.1.7 Construction Access, Haul Routes and Abnormal Loads

Dedicated construction areas within the roadway will be required at each of the working areas at the joint bays, with areas set aside within the roadway for vehicle parking and equipment storage such as the cable drum. All accesses will be temporary and used solely during the construction period.

All site access routes will be connected to, or form part of, the existing local road network. Minor road works may occur such as removal of existing kerbs, paving and a small amount of excavation prior to replacement of paving and realigned kerbs.

Car parking spaces for the personal vehicles of construction workers will be available at each of the construction compounds, at the converter station site, Lewistown and the landfall site. No car parking will be provided at the joint bays other than for vehicles required for works at the site, and minimal transport for construction staff. Staff will park in one of the three site compounds and carpool to the joint bay locations in order to minimise road space required for the works.

Most of the material to be delivered to site will travel via the N25 from the wider motorway network (the M9 at Waterford or the M11/N11 at Wexford), from Belview Port or from Rosslare Harbour for specialist component parts. Some specialist components may be delivered via the Great Island CCGT temporary berth. Indicative haul routes are shown in **Figure 6.11** below.

Material from quarries and other suppliers is also likely to travel via the N25 and south via regional roads. The effects on these regional roads are considered negligible given that higher traffic volumes are experienced on and close to the national road network, and the most concentrated effects are likely closest to the construction sites as outlined above.

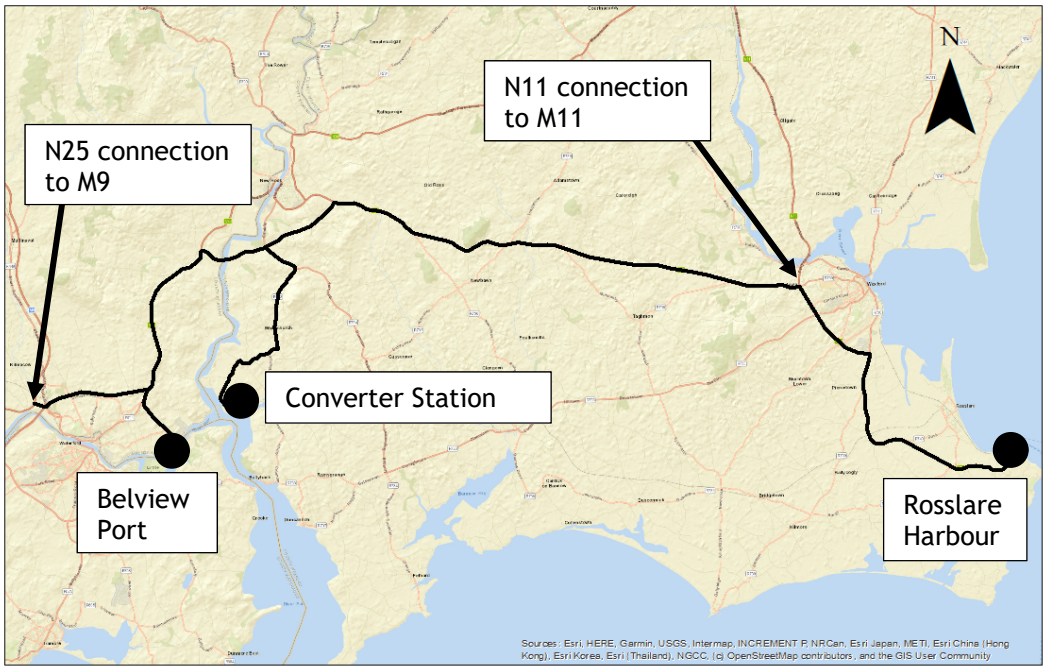

Figure 6.11 Indicative Haul Routes | Not to Scale

Several specialist component parts will require delivery to site. The largest individual pieces of equipment are expected to be the transformers, which will have maximum dimensions of 8.5m x 5m x 5m, with a 5m height for transport. The transformers will be transported to site on specialist vehicles, either by road, or by sea. Further details are provided in **Section 4.7.2** of **Chapter 4** *Construction Strategy*.

Table 5.1 of TII's standard for Cross-Sections and Headroom (DN-GEO-03036) gives guidance on headroom at structures. This is reproduced in **Table 6.24** below.

Table 6.24 TII Standard for Headroom at Structures

Type of Structure	New Construction Headroom (m)	Maintained Headroom (m)
Overbridges	5.30	5.03
Footbridges and Sign/Signal Gantries	5.70	5.41
Free Standing Temporary Structures	N/A	5.41

This indicates a maximum dimension of 5.03-5.30m for passing under bridges. However, it should be noted that this applies to new structures, and older structures may not provide this. The route from Rosslare Harbour does not have any structures with less than the minimum standard headroom.

The route from Belview Port will use the new N25 New Ross bypass, which was recently completed. The new N25 passes over the local and regional roads in the area.

To leave the eastbound carriageway to travel south, the route will pass under one of these new overbridges. The clearance height at these locations cannot be confirmed currently. It has been assumed the clearance will comply with the minimum specified in **Table 6.11** above. Should the headroom not be sufficient for the transformer and vehicle dimension, the haul route will be diverted to the east after exiting the N25 and use a local overbridge to cross the N25 and travel south.

6.5.2 Operational Phase

The level of traffic generated during the operational phase of the proposed development will be minimal.

There will be two personnel stationed at the converter station at all times, operating the interconnector. In addition, it is expected that one or two vehicles will attend the site every week for an inspection. Each inspection will be limited to approximately four hours and will take place within normal working day hours.

The converter station will also undergo maintenance work on an annual basis for a period of four consecutive days. This work will typically require 12 to 15 vehicles per day. It may be undertaken on a shift pattern to allow for 24-hour working.

These traffic levels are considered very low and the impact during the operational phase will therefore be imperceptible.

6.5.3 Decommissioning Phase

As set out in **Section 6.2.3**, the decommissioning phase will involve the removal of link boxes and fibre optic joints, all equipment in the converter station and tail station, and above ground civil works. The HVDC cables will remain in-situ. It is anticipated that decommissioning will take place circa 2062.

Decommissioning works will be less extensive than construction works, and background traffic growth to 2062 will lead to higher baseline traffic numbers on the road network. For these reasons, the impact of traffic associated with the decommissioning works will be less than that associated with the construction works. Effects are predicted to be short term and slight.

6.5.4 Do-Nothing Scenario

If the proposed development does not proceed, the traffic near the proposed development is expected to remain at its current levels, with a gradual increase into the future in line with TII Project Appraisal Guidelines Growth Rates.

6.5.5 Cumulative Effects

6.5.5.1 Related Development

The proposed development forms part of the Greenlink project. The other components of the project are the subsea HVDC cable from the landfall at Baginbun beach to a landfall near Pembroke in Wales, an underground HVDC cable from the Welsh landfall to the Pembroke converter station, and a HVAC cable connection from the Pembroke converter station to the UK National Grid substation at Pembroke.

During the construction phase, some operations of the subsea cable installation near Baginbun Beach may be supported by vessels operating from Waterford Port or Rosslare Port. Any traffic arising from these support vessels will use the road network serving Waterford and Rosslare ports and the national primary route network, and no traffic will be generated in the immediate vicinity of the proposed development. It is unlikely that there will be a significant cumulative impact with the traffic generated by the proposed development.

There will be no cumulative impact with traffic generated by the construction works in Wales. Following completion of construction of the project, there is no potential for any effects to arise from the cumulative impact of the project.

6.5.5.2 Unrelated Development

The cumulative impact on traffic and the road network from the proposed development with existing and future developments has been addressed in the above assessment. Traffic associated with existing developments using the network is incorporated into the baseline surveys. Future developments are accounted for by use of the TII Central Growth rates for the region in the absence of details of future developments as yet unknown.

Two permitted large-scale developments have been identified in the general vicinity of the proposed development which have the potential to result in cumulative impacts with the Greenlink project from a traffic point of view. These projects are described in detail in **Chapter 18**. The potential for cumulative traffic impacts is assessed below.

Great Island – Kilkenny 110kV Line Uprate Project (Planning ref. 20181228)

This project proposes to increase the capacity of the Great Island – Kilkenny 110kV line by using a higher rated conductor, which will involve re-stringing the conductor and replacing existing structures with associated ancillary works along the 49km length of the line. 2.6km of the line lies in Co. Wexford, leading to the Great Island substation. This section of the works will involve traffic on the local road to the Great Island substation, which is also the access route for the site compounds associated with the proposed converter and tail stations and Section 1 of the cable route. Whilst the locations of the site compounds for the line uprate project are not specified in the planning documentation, the traffic assessment for that project states that a maximum of 3-7 construction workers is anticipated in any one location at a time, with a maximum of 8 HGVs over a period of 1-2 days for peak construction.

These traffic volumes are extremely low, and depending on project programmes, may not coincide with traffic associated with the proposed Greenlink development. Should they coincide, the cumulative impact will be slight and of short duration.

Great Island Energy Storage System (Planning ref. 0180506)

This project involves construction of a grid system services facility, including two substation buildings, access tracks and ancillary works. As set out in **Chapter 18**, it is unlikely that the construction period of this project will overlap with the proposed Greenlink development. However, should it overlap, traffic associated with the proposed ESS development comprises a maximum of 2 2-way HGV trips per day, plus 20 staff at peak construction. The traffic volumes associated with these staff numbers are quite low. The haul route for equipment to the site for the ESS development coincides with the haul route for Greenlink along the last 2km of the route only, on the local road approaching the Great Island substation. As construction of the ESS development is anticipated to be nearing completion when the construction of Greenlink would begin, any potential cumulative impact is considered very unlikely, and should it occur it would be slight and of short duration.

6.5.6 Transboundary Effects

Considering the nature and location of the proposed development as described in **Chapter 3** and **Chapter 4**, and as Wales and Ireland are not connected by land, no transboundary effects are predicted from a traffic and transport point of view.

6.6 Mitigation Measures

6.6.1 Construction Phase

6.6.1.1 Construction Traffic Management Plan (CTMP)

A construction traffic management plan is included in **Appendix 6.1**. This is a live document which has been prepared to comply with the Department of Transport, Tourism and Sport *Guidelines for Managing Openings in Public Roads* (Second Edition, April 2017).

Traffic management will include the use of temporary traffic lights to maintain two-way traffic flows and the use of a 'stop and go' system. The construction traffic management plan will demonstrate how pedestrians, cyclists and motorised vehicles can pass through the works areas safely where appropriate and that measures are in place which ensure traffic operates in as efficient a manner as possible. Particular care will be taken to include for cyclist movements on the Eurovélo routes as these are likely to include tourist cyclists who are unfamiliar with the area.

Ramsgrange village, which includes a primary and a secondary school, is the only urban settlement along the cable route. The CTMP will incorporate specific measures for the village. In particular, HGV traffic will be scheduled to avoid school starting and finishing times, where feasible.

The CTMP will include a detailed consultation plan to deal with third party queries from both residents and retail/commercial operators along the cable route in particular but also in the vicinity of the proposed site compounds. The construction traffic management plan will require agreement with both Wexford County Council and An Garda Síochána prior to commencement of works. The contractor will appoint a single point of contact to facilitate the communication of the various traffic management plans and the preparation of a project specific website to aid communications would also be beneficial.

Site traffic movements at the converter station site, landfall site and working areas will be planned to ensure traffic movements to and from these areas are managed efficiently and in accordance with Health and Safety requirements, whilst endeavouring to minimise disturbance and provide continuous access to local businesses and residences.

6.6.1.2 Construction Mitigation Measures

- Deliveries of materials will be planned and programmed to ensure that the materials are delivered only as they are required at the working areas along the cable route and will avoid peak hours for set-up and removal of equipment;
- Works requiring multiple vehicle deliveries, such as concrete pours, will be planned so as to ensure there will no queuing on the public roadways around the working areas;
- Deliveries of materials will be limited to outside of peak hours on the existing road network and/or likely commuter movement times;
- All trucks entering and exiting the working areas which are carrying materials which could become windborne will be covered with tarpaulin;
- Trucks will not be allowed to park on public roads either outside the working areas or on any of the approach roads leading to the working areas;
- All trucks entering the working areas will be restricted to suitable speed limits and will be directed to the relevant area by the site manager, avoiding school areas at drop off and collection times;
- Trucks required to wait at the working areas will switch off engines to avoid unnecessary fuel usage and noise;
- All trucks exiting the construction compounds will be required to pass through a wheel wash. All water from the wheel wash will be collected and removed off site for treatment by a licenced contractor;
- Roads immediately adjacent to the construction compounds will be visually inspected on a daily basis and power swept and washed as and when required; and
- Adequate parking will be provided at the converter station site, landfall site, and the cable contractor compound in Lewistown to avoid queuing at the site entrances and prevent disruption to neighbouring businesses and residences.

6.6.2 Operational Phase

No mitigation measures are required for the operational phase.

6.6.3 Decommissioning

The mitigation measures, described above for the construction phase, updated to reflect best practice at the time, will be implemented for the decommissioning phase.

6.6.4 Monitoring

6.6.4.1 Monitoring During Construction

The effectiveness of the construction traffic management plan will be continually monitored to ensure the effects on traffic flows on the surrounding road network are minimised and additional mitigation measures are introduced as required to assist the flow of traffic. The monitoring regime needs to consider all modes of traffic including pedestrians, cyclists and car parking provision.

6.6.4.2 Monitoring During Operation

No monitoring has been proposed with respect to effects from the operation of the proposed development as the projected increase in traffic will have no effect on prevailing traffic conditions.

6.7 Residual Effects

6.7.1 Construction Phase

Following the implementation of the mitigation measures outlined above, there will be a short-term significant impact on the residents and road users in the vicinity of the HVDC cable trench excavations and cable installation works for the duration of the works. Once the cable works have been completed, there will not be a significant impact on the road network or on traffic.

Construction of the converter station and the HVAC cable will have a short-term moderate impact on road users. Once construction of the proposed development has been completed, there will be no residual impact on the road network or traffic.

6.7.2 Operational Phase

No significant residual effects on traffic and transportation are envisaged during the operational phase.

6.7.3 Decommissioning Phase

The decommissioning phase will require less extensive works than the construction phase but will nevertheless require similar mitigation measures. Residual effects, similar to the construction phase, are predicted to be short term and slight.

6.7.4 Do-Nothing Scenario

If the proposed development does not proceed, the traffic in the vicinity of the proposed development is expected to remain at its current levels, with a gradual increase into the future in line with TII Project Appraisal Guidelines Growth Rates.

6.7.5 Cumulative Effects

6.7.5.1 Related Developments

The proposed development forms part of the Greenlink project. The other components of the project are the subsea HVDC cable from Baginbun beach to a landfall near Pembroke in Wales, an underground HVDC cable from the Welsh landfall to the Pembroke Converter station, and a HVAC cable connection from the Pembroke Converter station to the UK National Grid substation at Pembroke.

During the construction phase, some operations of the subsea cable installation in the vicinity of Baginbun beach may be supported by vessels operating from Waterford Port or Rosslare Port. Any traffic arising from these support vessels will use the road network serving Waterford and Rosslare ports and the national primary route network, and no traffic will be generated in the immediate vicinity of the proposed development. It is unlikely that there will be a significant cumulative impact with the traffic generated by the proposed development.

There will be no cumulative impact with traffic generated by the construction works in Wales. Following completion of construction of the project, there is no potential for any effects to arise from the cumulative impact of the project.

6.7.5.2 Unrelated Development

The cumulative impact on traffic and the road network from the proposed development with existing developments using the network, and with future growth as predicted by TII for the region, has been addressed above.

Two permitted large-scale developments have been identified in the general vicinity of the proposed development which have the potential to result in cumulative impacts with the Greenlink project from a traffic point of view. These projects are described in detail in **Chapter 18**. The potential for cumulative traffic impacts is assessed below.

Great Island – Kilkenny 110kV Line Uprate Project (Planning ref. 20181228)

This project proposes to increase the capacity of the Great Island – Kilkenny 110kV line by using a higher rated conductor, which will involve re-stringing the conductor and replacing existing structures with associated ancillary works along the 49km length of the line. 2.6km of the line lies in Co. Wexford, leading to the Great Island substation. This section of the works will involve traffic on the local road to the Great Island substation, which is also the access route for the site compounds associated with the proposed converter and tail stations and Section 1 of the cable route. Whilst the locations of the site compounds for the line uprate project are not specified in the planning documentation, the traffic assessment for that project states that a maximum of 3-7 construction workers is anticipated in any one location at a time, with a maximum of 8 HGVs over a period of 1-2 days for peak construction. These traffic volumes are extremely low, and depending on project programmes, may not coincide with traffic associated with the proposed Greenlink development. Should they coincide, the cumulative impact will be slight and of extremely short duration.

Great Island Energy Storage System (Planning ref. 0180506)

This project involves construction of a grid system services facility, including two substation buildings, access tracks and ancillary works. As set out in **Chapter 18**, it is unlikely that the construction period of this project will overlap with the proposed Greenlink development. However, should it overlap, traffic associated with the proposed ESS development comprises a maximum of 2 2-way HGV trips per day, plus 20 staff at peak construction. The traffic volumes associated with these staff numbers are quite low. The haul route for equipment to the site for the ESS development coincides with the haul route for Greenlink along the last 2km of the route only, on the local road approaching the Great Island substation. As construction of the ESS development is anticipated to be nearing completion when the construction of Greenlink would begin, any potential cumulative impact is considered very unlikely, and should it occur it would be slight and of short duration.

6.7.6 Transboundary Effects

The proposed development is not likely to have a transboundary effect on road networks and traffic in Wales.

6.8 Impact Assessment Summary and Conclusion

Receptor	Potential Effects	Mitigation	Monitoring	Residual Effects
Local Residents, Businesses and Tourists	Inconvenience due to roadworks and diversions due to road closures	Programming of works to avoid summer tourist peak, following consultation with local residents and businesses; Construction Traffic Management Plan	Monitoring of traffic volumes and compliance with CTMP during the works	Short-term temporary significant

There will be no long-term residual negative effects on the surrounding road network due to the vast majority of traffic generation occurring during the construction phase. Mitigation measures will be implemented to reduce the effects as much as possible during the construction phase.

6.9 References

Transport Infrastructure Ireland (2014) *Traffic and Transport Assessment Guidelines*

Transport Infrastructure Ireland (May 2019) *Project Appraisal Guidelines for National Roads Unit 5.3 - Travel Demand Projections*

Transport Infrastructure Ireland (June 2017) *DN-GEO-03031 Rural Road Link Design*

Transport Infrastructure Ireland (May 2019) *DN-GEO-03036 Cross Sections and Headroom*