

# **APPENDIX J.1**

## **CONSTRUCTION TRAFFIC REPORT**



INTERNATIONAL

## Grousemount Wind Farm

Client: ESB Wind Development

## Construction Traffic Report

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# 1 Introduction

## 1.1 Background

ESB Wind Development Limited is developing Grousemount Wind Farm, at a rural site approximately 7.5 km east of Kilgarvan, Co. Kerry. Construction traffic associated with the project will approach the site via the L3021 Third Class Road, this being accessed from N22 National Primary Route connecting Killarney and Cork and the R569 Regional Road connecting Kenmare and the N22 at Ballyvourney.

The L3021 connects Ballyvourney, Co Cork at the N22 with the R569 at Morley's Bridge near Kilgarvan, Co. Kerry. The L11187 Third Class Road extends approximately 1.3 km from its junction with the L3021 at Sillahertane into the wind farm site, where it terminates.

There will be three points of access to Grousemount Wind Farm site from the public road as follows:

- Access A: Site entrance from the L3021 Third Class Road near its junction with the L11187 Third Class Road at Coolknoohill.
- Access B: Site entrance from the L11187 Third Class Road at a location xx m south of its junction with the L3021.
- Access C: Site entrance from the L11187 Third Class Road, where the public road terminates.

This report describes the existing environment in relation to traffic and transport aspects of the project and discusses the potential impacts of the project on the local road network during the construction stage.

In addition to Grousemount Wind Farm, this report considers the route of the proposed underground cable (UGC) connection between the permitted Coomataggart Substation, which is located within Grousemount Wind Farm, and ESB Networks' Ballyvouskill Substation, which is located near Millstreet, Co. Cork

## 2 Report Objectives

The primary objectives of this Construction Traffic Report are:

- To outline the condition and characteristics of the existing public roads;
- To outline any potential road safety measures that may need to be employed;
- To demonstrate that the traffic implications arising from the construction are not significant and will not negatively impact the local community.

While there are potential traffic impacts arising from the construction and operational phases of the development, this report focuses on the construction phase. Once the wind farm and the UGC have been constructed, their operation will be for the main part fully autonomous. Limited traffic will be created by staff engaged in routine maintenance of the wind farm, but day-to-day access to the cable infrastructure by persons and vehicles will be very infrequent, only required to undertake minor routine maintenance and inspection.

The report analyses the potential receptors and risks, and suggests mitigation measures to ensure safe construction and to ensure it does not create a traffic hazard for road users.

The delivery of wind turbine components requires the use of special transport vehicles and is not considered in this report.

## 3 Baseline Description

### 3.1 Existing Conditions

In considering Grousemount Wind Farm this report focuses on the L3021 (L3400 on Cork County Council documentation), the local road that joins the N22 National Primary Route at Ballyvourney at its Eastern end to the R569 Regional Route at Morley's Bridge to the West.

The roads in close proximity to the wind farm site and along the cable route that will be subject to construction traffic are part of the road network that provides access to local homes and farms. The surrounding area in the vicinity of the wind farm and along the cable route is primarily agricultural land and as a result agricultural vehicles are typical on the local road network; bulk tankers associated with the dairy industry travel some of these routes. The existing road conditions have been analysed and are presented in Sections 3.1.1 & 3.1.2, along with accompanying photographs of the relevant sections.

The N22 attracts a high volume of traffic, as it serves as the main traffic route between Cork and Killarney / Tralee. The road is utilised throughout the year by both commuter traffic and tourists. As would be expected, this is also the road that has involved the highest number of traffic accidents in recent years, as highlighted by the collision data outlined in section 3.5. (The UGC only runs along this road for approximately 40m.)

The local road network has traffic volumes that are minimal relative to those of the N22 National Primary Route.

#### 3.1.1 Morley' Bridge to Ballyvourney

The Sillahertane junction can be accessed from both the East and West along the L3021.

The direction from which construction traffic approaches will depend on where the construction materials are sourced. Materials that are sourced from Killarney or

Kenmare will likely approach from the West, via the R569, whereas materials sourced from Macroom will likely approach the site from the West, via the N22.

### 3.1.1.1 R569 Regional Road

The R569 is the main transportation corridor between Kenmare and Clonkeen, travelling via Kilgarvan, Co. Kerry



Upon reaching Clonkeen to the North, the road terminates and joins the N22. The road is a marked two-lane road with a good metalled surface, suitable for supporting the vehicles utilised for the transportation of construction materials. The signage that is visible in the above indicates the turn from the R569 at Morley's Bridge, corresponding with the beginning of the L3021.

### 3.1.1.2 Morley's Bridge to Sillahertane Junction

Material deliveries originating from Killarney and Kenmare may approach the Grousemount site from the West, turning off the R569 and approaching Sillahertane junction from the Morley's Bridge direction.



This section of the L3021 is approximately 5.8 km in length. For approximately 1.2 km of this (beginning at Morley's Bridge and heading East), the road condition would be classified as a fair metalled surface.





The remainder of this section of the road could be classified as fair to good. There is no public transport or pedestrian pathway on this road section. The speed limit is posted as 80 km/h.

### 3.1.1.3 Sillahertane Junction to the “Top of Coom”

Once Sillahertane junction is reached, the L3021 continues East for approximately 15 km until it meets the N22 at Ballyvourney. The route enters Co. Cork approximately 2 km east of the Sillahertane junction and this of the route is numbered L3400 by Cork County Council

This section of road contains approximately 67 dwellings adjacent to the road, as well as multiple cul-de-sacs with residential properties on them. Four farms were identified along the route, suggesting the presence of agricultural traffic in this area. This road can be considered in two sections:







This section runs from the Sillahertane junction to a fork in the road 400 m east of the “Top of Coom” public house.

This road narrows at points, and hence cannot accommodate a partial road closure for construction of the UGC. An all-stop system may need to be implemented, incorporating a maximum wait time of 10 minutes. In this instance, all machinery and equipment will need to be removed from the road and stored at an appropriate passing bay or lot at the end of the 10 minute work period in order to allow the full lane width for traffic to pass. Consultation with the local community will determine whether or not this work can be done at night. This closure method is a requirement as no suitable diversion route is present without causing excessive inconvenience to the local population.

#### 3.1.1.4 From the “Top of Coom” to N22 at Ballyvourney

This road section passes through the small village of Coolea, which contains a local primary school, a church and a number of amenities. This area is where the dwellings are most densely located, with approximately 27 dwellings within the village.

Traffic management measures will minimise the level of interruption on this community during construction of the UGC and ensure that appropriate accessibility to the school is maintained throughout the works. The speed limit through the village lowers from 80 km/h to 50 km/h.



The road approaching Coolea is unmarked, and is approximately 3.5m - 4 m wide. The road surface through Coolea continuing on until Ballyvourney is 3.8 m - 5 m and is a good, marked metalled surface.

From the “Top of Coom” to the end of the L3021 at Ballyvourney, the road is wide enough to incorporate a single lane/partial road closure for construction of the UGC.

Approximately 200 m before reaching Ballyvourney, the cable route will divert into a field. From here, horizontal directional drilling (HDD) will be undertaken to place the cable ducts under the Sullane River, before they remerge in a field next to the N22 on the northern bank.

#### 3.1.1.5 N22 National Primary Road

The N22 attracts a high volume of traffic, as it serves as the main traffic corridor between Cork and Killarney / Tralee, Co. Kerry.



The road is utilised throughout the year by both commuter traffic and tourists. This is the section of road that has involved the highest number of traffic accidents in recent years, as highlighted by the collision data outlined in section 3.5.

The UGC corridor runs southeast along the N22 towards Macroom/Cork for approximately 40 m. This road is wide enough to incorporate a single lane closure. Temporary pedestrian measures will need to be incorporated to replace inaccessible footpaths. These measures should be suitable for all potential users, including both buggies and wheelchair users.

### 3.1.2 From Ballyvourney to Ballyvouskill Substation

The road network is east of the N22 and it will not be impacted upon by wind farm related traffic.



Progressing north-east from the N22, the UGC progresses along the L7418 and the L5226 for approximately 10 km, until it reaches Ballyvouskill 220 kV Station. This portion of the UGC can be considered in four sections for traffic management purposes.

This road is a two way, unmarked road. As there is a suitable diversion route available to local residents, a full road closure can be implemented on this road. The roadside residents will be consulted to mitigate any potential impacts.

#### 3.1.2.1 Capeagh West junction to the Coomnaclohy Road Junction

The latter is the last of three 90 degree bends when travelling west to east.





Certain parts of this section of road are wide enough to accommodate a single lane closure for construction of the UGC, while allowing room for cars to pass, using either traffic light signals or stop and go men.

An all-stop system will be needed where the road is not sufficiently wide to incorporate a partial closure.

### 3.1.2.2 Coomnaclohy Road Junction to Garrane Bridge



A full road closure will be required through this section of the road, as the road is not sufficiently wide to incorporate a single lane closure. Although the road is approximately 8.65 km long, traffic volumes are relatively low and the impact on local traffic should be negligible.

### 3.1.2.3 Garrane Bridge to Ballyvouskill Station Entrance



This road section consists of two way traffic on an unmarked road. A single lane closure can be utilised along this section during the construction phase, so that local traffic is not unreasonably impacted. Although the road narrows at points, careful traffic management will ensure that a safe single lane closure is achieved.

## 3.2 Potential Receptors

A desktop study and onsite inspection identified the number and location of residential properties along the route. In general, the route is sparsely populated, with approximately 80 residential properties directly along the L3021 / L3200. This excludes a number of adjacent roads containing residential properties that utilise this road as their transport route.

The village of Coolea contains approximately 27 dwellings along with local amenities, including a Church. There is also a primary school in Coolea, being set back approximately 150 m off the road. Traffic management will need to ensure that the safe transport for parents and children to this school is not impacted due to construction traffic.

Additionally, there are four farmyards located roadside, which would likely involve agricultural traffic along the route.

Roads that access onto the affected roads were also investigated to determine if there were dwellings that would be affected by construction traffic, and to check the availability of suitable diversion locations. There are approximately 25 dwellings that are not directly located roadside, but would depend on the L3021 / L3200 route for transport purposes, as no suitable diversion / alternative route is available.

The only pedestrian infrastructure in the locality is located in Ballyvourney, along the N22. There is a street-lit footpath, along with a pedestrian crossing.

## 3.3 Traffic Flows

The only traffic count along or in close proximity to the construction traffic route according to the NRA database was recorded along the N22, between Killarney and Macroom / Ballyvourney, County Cork. This road also has the largest traffic flows in the locality by a considerable margin, as it serves as the main route between Cork and Killarney. This road also contains a relatively high incidence of traffic collisions. The 2014 data, provided by the NRA website, identified the following:

**Table 1: NRA Data between Killarney and Macroom, Ballyvourney Co. Cork**

Recording Site Location	AADT estimate	HGV %
Slievereagh Cross	6,380*	5.1%

\*2014 value shown. AADT (Annual Average Daily Traffic) for 2015 to date is 6,180.

While there were no official traffic count volumes available along the remainder of the nearby roads, an initial onsite survey confirmed that the traffic volumes are relatively low.

### 3.3.1 Manual Traffic Survey

A manual traffic count was conducted on the 10<sup>th</sup> June 2015 on the L3021 / L3600 to estimate the AADT along this road which leads to the site. The location selected

was at the Eastern end of the L3021 / L3600 at the bridge adjacent to the N22 at Ballyvourney adjacent to Siopa de Róiste.

Two counts were conducted, one measurement being between 12pm and 2pm and another between 3pm and 5pm. This time frame was intended to get a representation of both school traffic and commuter traffic. The table below summarises the findings:

**Table 2: Traffic Count, Time Segment 12pm – 2pm**

Vehicle Type	Volume East	Volume West	Total
Cars	45 (2 with trailers)	47 (1 with trailer)	92
Vans/Light Vehicles	1	4	5
Agricultural Vehicles	0	1	1
HGVs	0	0	0
Motorbikes	0	0	0
Cyclists	1	0	1
Pedestrians	3	2	5
Other	1 (Motorhome)	1 (Motorhome)	2
<b>Total</b>	<b>51</b>	<b>55</b>	<b>106</b>

**Table 3: Traffic Count, Time Segment 3pm – 5pm**

Vehicle Type	Volume East	Volume West	Total
Cars	42 (2 with trailers)	40 (1 with trailer)	82
Vans/Light Vehicles	10	7	17
Agricultural Vehicles	0	0	0
HGVs	1	0	1
Motorbikes	0	0	0
Cyclists	0	1	1
Pedestrians	4	0	4
Other	1 (Large Bus)	1 (Large Bus)	2
<b>Total</b>	<b>58</b>	<b>49</b>	<b>107</b>

The above equates to 213 total trips over the combined 4-hour measurement period with no significant differences between the separate periods.

If it is assumed that the traffic rates are approximately uniform over the hours of 7am to 10pm, and that traffic outside this time period is approximately 50% of the busier “day” period, the road can be assumed to have a daily traffic volume of 1,040 journeys.

### 3.4 Public Transport

Bus Éireann route 40 passes through Ballyvourney on its Rosslare-Cork-Tralee route, with a stop located outside Ballyvourney newsagent (Siopa de Róiste). The earliest bus arrives at 07:20, travelling towards Cork from Tralee, while the latest bus is scheduled to arrive at 21:35, travelling north towards Tralee.

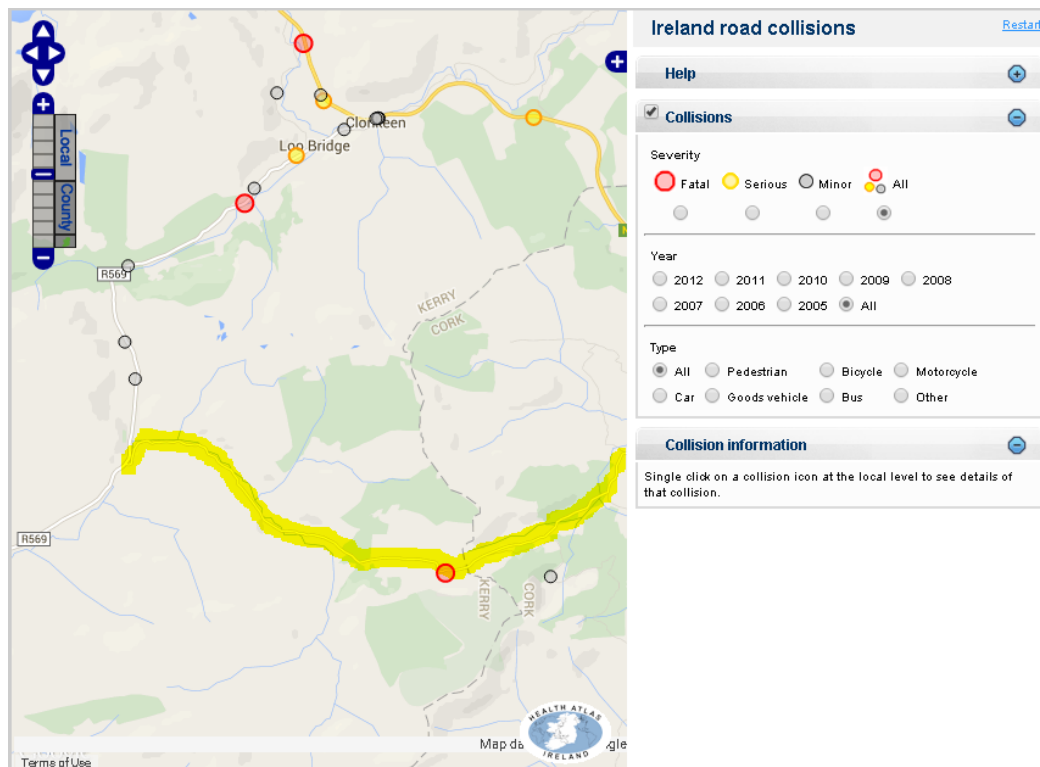
To the West of the site, Bus Éireann route 270 travels from Killarney to Sneem along the R569, with a stop adjacent to Morley’s Bridge.

There is no known public transport on the local road network.

### 3.5 Collision Data

The Road Safety Authority’s online database has compiled a map of the road collisions in Ireland between the years 2005 – 2012 inclusive. The collisions are categorised as “Fatal”, “Serious” or “Minor”.

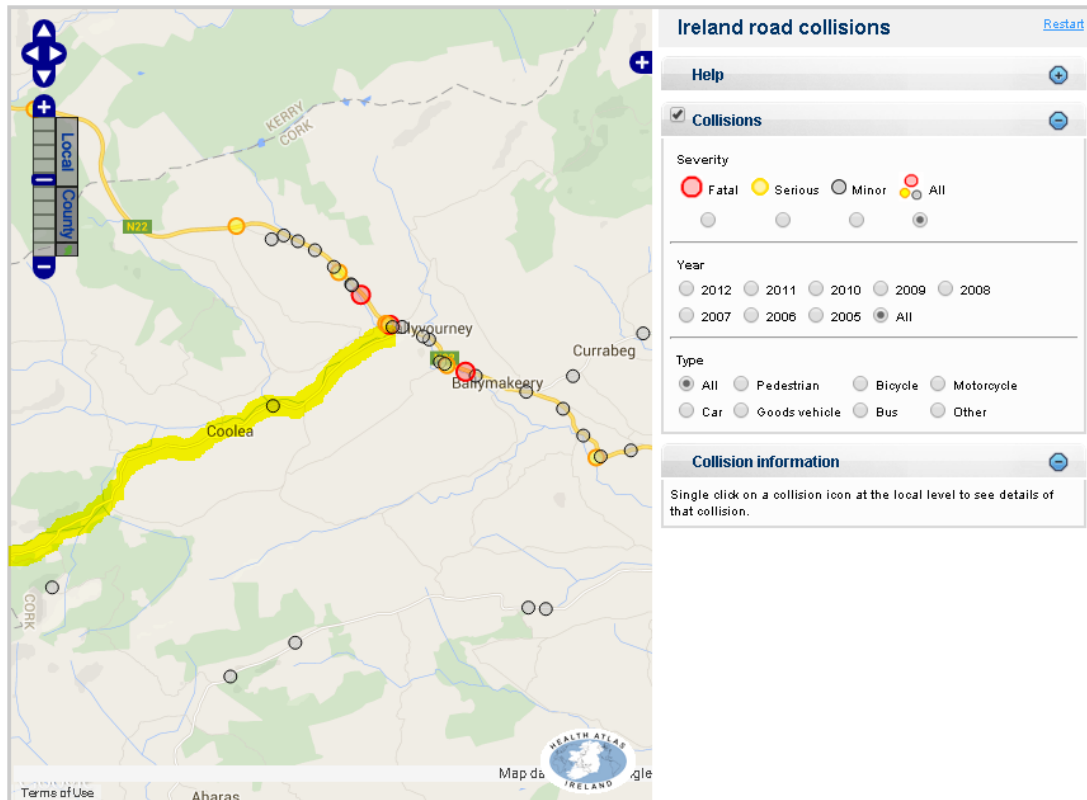
#### *Collision Data - Western Section of the L3021 / L3200 and the R569*



The collision data for the Western section of the L3021 and for the R569 between Morley’s Bridge and Clonkeen. Shows that there has been one fatal and one minor traffic collision on the L3021 between 2005 and 2012. The fatal accident occurred at the 90° bend at The Coom. There have been several minor accidents, a serious accident and a fatal accident along the referenced section of the R569.



### Collision Data - Eastern Section of the L3021 / L3200 & N22



The collision data for immediately East of the Sillahertane junction indicates that only a single minor incident has occurred. This was East of the village Coolea.

The N22 has experienced a large number of traffic collisions over the studied time period. In the centre of Ballyvourney, adjacent to where the N22 is accessed by the L3021, both a serious and a fatal accident have been recorded.

Mitigation measures will ensure that all potential risks have been minimised in this location. It is noted that no collisions have been recorded along the entire unnamed road from the N22 to the Ballyvouskill station entrance within the recorded time period (2005-2012).

No collisions have been recorded within the referenced time period (2005-2012), along the route of the UGC between the N22 at Ballyvourney and the entrance to Ballyvouskill Substation station entrance

## 4 Road Condition Summary

The conditions of the carriageway on the L3021 / L3200, which provide access to the site are summarised in Table 4.

**Table 4: Road Analysis**

Road Section	Approximate Length	Carriageway Condition
Grousemount Wind Farm to Sillahertane Junction	4 km	L11187 is approximately 2.5 m wide, in relatively poor condition.
Morley's Bridge to Sillahertane Junction	5.8 km	Road width varies from 3 m to 4 m. Majority of road section is good metalled surface.
Sillahertane Junction to "Top of Coom" (Where fork in road meets 400 m East of The Coom public house)	2.5 km	L3021: Single lane, two way traffic, majority is good metalled surface.
"Top of Coom" Junction to Ballyvourney	9.8 km	Road varies between 2 lane, 2 way traffic, and 2 way unmarked road. Mainly good metalled surface. Speed limit lowers from 80km/h to 50km/h through Coolea village.
N22 at Ballyvourney	40 m	N22 – National Road, two way traffic, one lane each way. Pedestrian pathway and public transport route present.
Ballyvourney to Cappagh West Junction	1.5 km	L7418 section approximately 4 m wide
Cappagh West Junction to Coomnaclohy Road Junction	1.05 km	Road width varies between 3m to 5m
Coomnaclohy Road Junction to Garrane Bridge	8.65 km	Continuation of L7418, approximately 2.75 m wide and in relatively poor condition in parts
Garrane Bridge to Ballyvouskill Substation	1.5 km	Approximately 5 m wide road rural road (L5226). Metalled surface in adequate condition

## 5 Traffic Management & Control

### 5.1 Wind Farm Construction Traffic

The primary construction traffic associated with the development of Grousemount Wind Farm will be as follows:

- Stone associated with construction of initial access tracks and capping of all tracks
- Concrete for the wind turbine and substation foundations
- Concrete blocks and other materials for the Control Buildings at Coomataggart Substation
- Electrical cables
- Electrical equipment for the Substation
- turbine components
- Fuel for plant and equipment
- Site commute

The transport of all materials and equipment will be undertaken by regular road going vehicles having no particular requirements regarding road width or alignment.

Construction of the wind is expected to take approximately 18 months.

### 5.2 UGC Construction Traffic

The primary construction traffic associated with construction of the UGC will be the delivery of materials, namely concrete and ducts. When subsequently installing the cables, the cable pulling activities will centre around joint bay locations.

The typical the rate of progress for a construction crew laying ducts for a 100 kV cable in a roadway is approximately 50 - 70 linear metres of trench per day, depending on the site conditions. With two construction crews engaged and a daily progress of 60 m an overall construction duration of approximately 12 months is anticipated.

### 5.3 Road Network

#### 5.3.1 Existing Traffic

The heaviest traffic along the UGC route is likely to occur along the N22, with an estimated AADT (Annual Average Daily Traffic) value of 6,380, according to the most recently available NRA traffic count data. As calculated elsewhere from the manual traffic count, the daily traffic along the L3021 / L3200 is estimated as 1,040 journeys.

#### 5.3.2 Public and Pedestrian Transport

The public transport infrastructure described should not be impacted by the presence of the construction deliveries associated with Grousemount Wind Farm.

A single lane closure will be required for the UGC construction in Ballyvourney. The Bus Éireann bus route that passes through there will not experience difficulties passing this and should not experience any significant delays during the construction phase.

It will be necessary to ensure that UGC construction does not compromise dedicated pedestrian footways. The majority of the proposed corridor does not incorporate pedestrian infrastructure. However, it is present along the N22 in Ballyvourney. Appropriate barriers and warning signage will be implemented to ensure that a viable alternative pedestrian route is available, which can accommodate irregular users such as buggies, wheelchairs, etc.

The majority of the UGC construction corridor is situated along local country roads, and there is no pedestrian infrastructure along these routes. Therefore, it can be assumed that the local pedestrian flows are negligible in these areas.

## 5.4 Management Measures

### 5.4.1 Receptor Consideration

The traffic management measures implemented in Coolea will consider the needs of the community in relation to travelling to and from the local primary school. A viable access route will be maintained at all times, and time will be assigned each morning and afternoon as the school opens and closes to ensure the maintenance of a safe route for parents and children with no moving construction traffic present.

### 5.4.2 Traffic Control

No special control measures are considered necessary for routine construction traffic associated with Grousemount Wind Farm

The following traffic control measures are considered appropriate for the UGC.

**Table 5: Traffic Control**

Road Section (Length)	Recommended Road Closure
Coomataggart Substation to Sillahertane Junction (4 km)	Full road closure
Sillahertane Junction to Top of Coom Junction (Where fork in road meets East of The Coom public house) (2.5 km)	Full road closure. All-stop system may be required for local residents as no suitable diversion route available
Top of Coom Junction to Ballyvourney (9.8 km)	Single lane closure
N22 at Ballyvourney (40 m)	Single lane closure
Ballyvourney to Cappagh West Junction (1.5 km)	Full road closure
Cappagh West junction to Coomnaclohy	Single lane closure as appropriate. An

Road Section (Length)	Recommended Road Closure
Road Junction (1.05 km)	all-stop closure on the narrower sections in absence of appropriate road diversion.
From Coomnaclohy Road Junction to Garrane Bridge (8.65 km)	Full road closure
Garrane Bridge to Ballyvouskill station entrance (1.5 km)	Partial road closure.

### 5.4.3 Mitigation

The following are among the traffic management measures that will contribute to mitigating risks of traffic impacts:

- All construction vehicles will be instructed to use only the approved and agreed means of access and movement of construction vehicles will be restricted to these designated routes.
- Speed limit compliance will be emphasised to all staff and contractors prior to commencement of construction, or during induction if relevant.
- Sufficient car parking spaces will be available during the construction phase. No parking of cars or vehicles by persons associated with the project will be permitted on any part of the public road that is not closed to traffic.
- Road sweeping will be implemented as appropriate to ensure construction traffic does not deteriorate the local road condition.
- Appropriate signage will be implemented. This will include temporary signage indicating site access, general information signage to inform road users of the nature and location of works and diversions, and signage in local communities providing relevant contact details. Signage will be checked regularly to ensure that it remains in place and is secure.

## 6 Conclusion

The existing local public road network adjacent to the site of Grousemount Wind Farm and along the route of the UGC from Coomataggart Substation to Ballyvouskill Substation will experience an increase in traffic throughout the construction stages of development.

The general construction traffic can be assumed to have minimal impact on the local road network, given its low level of current use.

The collision statistics, road conditions and potential receptors along the proposed route have been recorded and analysed, in order to mitigate any potential danger. During construction, constant communication with the relevant stakeholders and county councils will be conducted in order to ensure that the appropriate measures are being taken to provide a safe community, while minimising the effect on the local population.