1 APPENDIX 14.2 TRAFFIC IMPACTS OF CONSTRUCTION OF UNDERGROUND CABLE LINKING MEENBOG WIND FARM TO CLOGHER SUBSTATION

1.1 Introduction

This section identifies the potential impacts and assesses the likely effects that will be incurred by local traffic during the construction and operation of the underground electricity cabling cable that would serve the Meenbog Wind Farm, as shown in Figure 4.16 of this EIAR.

A full description of the development is provided in Section 4.3.7 of the EIAR.

1.1.1 Underground Cabling Route

The potential effects of the underground cabling works have been considered in terms of construction phase and operational phase effects.

1.1.1.1 Construction Phase

Along the N15 the cable will be placed in the hard shoulder within the curtilage of the public road. Potential effects to existing traffic may therefore take the form of;

- Time - due to delays at road works and time spent undertaking local diversions if required, and,
- Distance - travelled, as a result of local diversions, if required.

Effect on traffic is considered under the following headings;

- Effect on traffic on the underground cable route due to excavation and cable laying,
- Effect on traffic on the underground cable route due to crossing water courses (similar to above),
- Effect on traffic on side roads as cable is set across junctions along the route.

The assessment was undertaken based on the cable route on the 7 kms section of the N15 and the 2 kms of local road network between the proposed access (existing quarry access) to the Meenbog Wind Farm site and the access to the Clogher Substation.

1.1.1.2 Traffic impact on cable route due to excavation, cable laying and crossing watercourse

An estimate of the delay and additional distance travelled by local traffic due to all works associated with ground excavation and cable laying along the route is set out in Table 1 of this Appendix), which was based on the following;

- For N15 section of the route it is assumed that the works will be undertaken on the hard shoulder and 2-way traffic flow will be maintained at all times. For the 1.5 km of local road off the N15 a one-way "stop and go" will operate,

Table 1 Traffic impact due to trench excavation and cable laying

								Time			Distance		
Section	**Description**	**Road type**	**Length**	**Main Road TMM**	**Duration in days(based on 150m / day)**	**Assumed daily flow impacted**	**Trips impacted**	**Ave delay per vehicle (secs)**	**Total delay veh hours / day**	**Total delay veh hours in total**	**Ave detour per vehicle (kms)**	**Total detour veh kms / day**	**Total detour veh kms in total**
Local road network	Local road off N15 at Barnesmore	2-way	1.5	one-way stop and go	10.0	200	2,000	10	0.6	5.6	0	0	0
N15	N15 between Lough Mourne and Barnesmore	2-way with hard shoulder	6.5	Remain open	43.3	7,146	309,660	0	0.0	0.0	0	0	0
Total			8		53.3					5.6			0

Table 2a Traffic impact due to crossing watercourses (type 1)

								Time			Distance		
Section	**Description**	**Road type**	**Watercourses**	**Main Road TMM**	**Duration in days (0.25 days / location)**	**Assumed daily flow impacted**	**Trips impacted**	**Ave delay per vehicle (secs)**	**Total delay veh hours / day**	**Total delay veh hours in total**	**Ave detour per vehicle (kms)**	**Total detour veh kms / day**	**Total detour veh kms in total**
Local road network	Local road off N15 at Barnesmore	2-way	2	one-way stop and go	0.5	200	100	10	0.6	0.3	0.0	0.0	0.0
N15	N15 between Lough Mourne and Barnesmore	2-way with hard shoulder	5	Remain open	1.3	7,146	8,933	0	0.0	0.0	0.0	0.0	0.0
Total			7		1.8					0.3			0.0

Table 2b Traffic impact due to crossing watercourses (type 2)

								Time			Distance		
Section	**Description**	**Road type**	**Watercourses**	**Main Road TMM**	**Duration in days (0.5 days / location)**	**Assumed daily flow impacted**	**Trips impacted**	**Ave delay per vehicle (secs)**	**Total delay veh hours / day**	**Total delay veh hours in total**	**Ave detour per vehicle (kms)**	**Total detour veh kms / day**	**Total detour veh kms in total**
Local road network	Local road off N15 at Barnesmore	2-way	0	one-way stop and go	0.0	200	0	10	0.6	0.0	0.0	0.0	0.0
N15	N15 between Lough Mourne and Barnesmore	2-way with hard shoulder	15	Remain open	7.5	7,146	53,595	0	0.0	0.0	0.0	0.0	0.0
Total			15		7.5					0.0			0.0

Table 2c Traffic impact due to crossing watercourses (type 3)

								Time			Distance		
Section	**Description**	**Road type**	**Watercourses**	**Main Road TMM**	**Duration in days (1 day / location)**	**Assumed daily flow impacted**	**Trips impacted**	**Ave delay per vehicle (secs)**	**Total delay veh hours / day**	**Total delay veh hours in total**	**Ave detour per vehicle (kms)**	**Total detour veh kms / day**	**Total detour veh kms in total**
Local road network	Local road off N15 at Barnesmore	2-way	0	one-way stop and go	0.0	200	0	10	0.6	0.0	0.0	0.0	0.0
N15	N15 between Lough Mourne and Barnesmore	2-way with hard shoulder	0	Remain open	0.0	7,146	0	0	0.0	0.0	0.0	0.0	0.0
Total			0		0.0					0.0			0.0

Table 2d Traffic impact due to crossing watercourses (type 4/5)

								Time			Distance		
Section	**Description**	**Road type**	**Watercourses**	**Main Road TMM**	**Duration in days (10 days / location)**	**Assumed daily flow impacted**	**Trips impacted**	**Ave delay per vehicle (secs)**	**Total delay veh hours / day**	**Total delay veh hours in total**	**Ave detour per vehicle (kms)**	**Total detour veh kms / day**	**Total detour veh kms in total**
Local road network	Local road off N15 at Barnesmore	2-way	0	one-way stop and go	0.0	200	0	10	0.6	0.0	0.0	0.0	0.0
N15	N15 between Lough Mourne and Barnesmore	2-way with hard shoulder	3	Remain open	30.0	7,146	214,380	0	0.0	0.0	0.0	0.0	0.0
Total			3		30.0					0.0			0.0

Table 2e Traffic impact due to crossing watercourses (all)

								Time			Distance		
Section	**Description**	**Road type**	**Watercourses**	**Main Road TMM**	**Duration in days**	**Assumed daily flow impacted**	**Trips impacted**	**Ave delay per vehicle (secs)**	**Total delay veh hours / day**	**Total delay veh hours in total**	**Ave detour per vehicle (kms)**	**Total detour veh kms / day**	**Total detour veh kms in total**
Local road network	Local road off N15 at Barnesmore	2-way	2	one-way stop and go	0.5	200	100	NA	NA	0.3	0.0	0.0	0.0
N15	N15 between Lough Mourne and Barnesmore	2-way with hard shoulder	23	Remain open	38.8	7,146	276908	NA	NA	0.0	0.0	0.0	0.0
Total			25		39.3					0.3			0.0

while the single lane 500m section of single lane road leading to the site will require to be closed for short periods.

- For the "stop and go" arrangement it is assumed that an average of 10 seconds will apply (based on 150m taking 30 seconds to travel, plus an additional 10 seconds clearance, with 50% of traffic having no delay (as they arrive on a green signal), with the average delay incurred by those required to stop being 20 seconds.

- An estimate of the duration of the construction on each section based on an assumption that 150m will be completed each day. This is a worst case scenario as up to 300m could be completed by 2 No. separate crews each day.

- An estimate of the daily traffic flow on each section.

- Estimates of the average delay incurred to each vehicle. For this case there are no delays assumed as 2-way flow will be maintained at all times.

Similar assumptions were applied to the effect on the cable route during construction works associated with the 25 no. water courses that occur along the public road network along the underground cable route. There are 5 methods of crossing water courses as detailed in Section 4 of this EIAR. The type, number along the route and the time taken to construct each are summarised as follows;

- Option 1 – Piped culvert crossings over culvert – 7 locations on route, with each location taking 0.25 days.
- Option 2 – Piped culvert crossings under culvert – 15 locations on route, with each location taking 0.5 days.
- Option 3 – Flatbed formation over culverts – 0 locations on route, with each location taking 1 day.
- Options 4/5 – Directional/horizontal drilling – 3 locations on route, with each location taking 10 days.

The impacts associated with water courses are set out in Tables 2a to 2e of this Appendix, with the total impact incurred by traffic travelling on the route set out in Table 3.
The main points to note from Table 3 are as follows;

- Completion of the route will take approximately 96 working days, or almost 4 months,

- On 10.5 of these days approximately 200 vehicles on the local road network will experience on average of 10 seconds delay. This will result in a total vehicle delay of 6 hours over these 10.5 day,

1.1.1.3 Delays to traffic on side roads

Some delay and detours will apply to trips crossing or joining the cable route from side roads. This will occur on days that trenches are excavated and the cable set across the side road resulting in a one day closure at each location. It is estimated that there are 10 local roads that will be impacted, with delays and additional distance travelled as a result determined based on the broad assumptions set out previously, with the assessment set out in Table 4. For this element it is assumed that an average detour of 2 kilometres will apply for all affected trips with the main points to note as follows;

Table 3 Traffic impact due to trench excavation and cable laying + water courses

								Time			Distance		
Section	**Description**	**Road type**		**Main Road TMM**	**Duration in days**	**Assumed daily flow impacted**	**Trips impacted**	**Ave delay per vehicle (secs)**	**Total delay veh hours / day**	**Total delay veh hours in total**	**Ave detour per vehicle (kms)**	**Total detour veh kms / day**	**Total detour veh kms in total**
Local road network	Local road off N15 at Barnesmore	2-way		one-way stop and go	10.5	200	2,100	NA	NA	5.8	NA	NA	0
N15	N15 between Lough Mourne and Barnesmore	2-way with hard shoulder		Remain open	82.1	7,146	586,568	NA	NA	0.0	NA	NA	0
Total					92.6					5.8			0

Table 4 Traffic impact due to side road closures

								Time			Distance		
Section	**Description**	**Road type**	**Side roads**	**Main Road TMM**	**Duration in days (based on one side road per day)**	**Assumed daily flow impacted**	**Trips impacted**	**Ave delay per vehicle (secs)**	**Total delay veh hours / day**	**Total delay veh hours in total**	**Ave detour per vehicle (kms)**	**Total detour veh kms / day**	**Total detour veh kms in total**
Local road network	Local road off N15 at Barnesmore	2-way	0	Closure	0.0	0	0	144	0.0	0	2	0	0
N15	N15 between Lough Mourne and Barnesmore	2-way with hard shoulder	1	Closure	1.0	500	500	144	20.0	20	2	1,000	1,000
Total			1		1.0					20			1,000

- The impact on side roads will occur on one side road per day for 1 day out of the 4 month construction period.

- Each trip affected will incur an average detour of approximately 2km, with and increased journey time of approximately 144 seconds.

- On the 1 day that that work will be undertaken on side roads, up to 500 trips will be affected, resulting in a total of 20 additional vehicle hours spent travelling on the network, and 1,000 vehicle kilometres travelled on the network.

1.1.1.4 Construction generated traffic

The trench along the route will be excavated using 2 No. 13 tonne rubber tracked 360 – degree excavator and dump trucks, with all surplus soil removed to on-site borrow pit located within the proposed Meenbog Wind Farm site. It is anticipated that a maximum of 10 workers will be on a particular site at any one time. It is anticipated that the additional traffic movements generate by the work will be as follows;

- The delivery and collection of the excavator by HGV. This will be required on day one of construction, when it will be delivered to site, and the last day of construction when it will be removed. It will remain on location over-night.

- Up to 10 HGV/Dumper truck movements daily delivering and removing materials.

- Passenger car vehicles for workers arriving to site.

While the construction generated traffic will be noticeable on the local highway network, the impact due to increased traffic volumes will be negligible and confined to the relatively short sections of roadways where the works will be ongoing at any one time.

It is noted that all works will be accompanied by a Road Opening License (ROL) and detailed traffic management plan that will be submitted with the ROL.

1.1.2 Overall effect of the Underground Cable Route

The assessment presented demonstrates that the traffic impacts resulting from the construction of the cable route will last approximately 4 months, will impact on very isolated sections of the route at any one time and will be slight in nature. It is noted that in practice, construction may commence simultaneously on more than one section of the cable route. While this will reduce the construction period by up to a half, the assessment presented in this section still applies. There will be an overall insignificant effect on traffic.

1.1.3 Cumulative Impacts

The potential cumulative impacts and associated effects between the proposed development and those permitted and proposed developments outlined in Section 2.7 of this EIAR have been considered in terms of traffic and transport.

As the impacts from the proposed wind farm and the underground cable route are estimated to be slight to imperceptible it is unlikely that there will be any significant cumulative effects arising between the proposed wind farm and the associated

underground cable route and the projects outlined in Section 2.3 once the mitigation measures set out in Section 14.1 of the EIAR have been implemented.

There will be no potential for cumulative impacts or associated effects on the local road networks between the proposed wind farm, the associated underground cable route and the proposed replanting lands as they are located in a different county and at a significant distance from each other.