

TRANSPORT ASSESSMENT/
TRAFFIC IMPACT ASSESSMENT

PROPOSED BIOMASS FUELLED POWER PLANT

BALLYVANNON ROAD, NR GLENAVY

PLANNING REFERENCE S/2008/0630/F

ROSE ENERGY

JUNE 2009

TRANSPORT ASSESSMENT/
TRAFFIC IMPACT ASSESSMENT

PROPOSED BIOMASS FUELLED POWER PLANT

BALLYVANNON ROAD, NR GLENAVY

PLANNING REFERENCE S/2008/0630/F

ROSE ENERGY

JUNE 2009

PREAMBLE

This report has been prepared by Mr Stephen Lockwood, Managing Director of Doran Consulting, a Chartered Civil Engineer, Member of the Institution of Civil Engineers, Member of the Institution of Structural Engineers, Member of the Institution of Highways and Transportation.

Mr Lockwood has in excess of 25 years of civil engineering experience including the preparation of traffic and transportation studies, for both public and private sector clients, in support of a wide variety of developments types.

Mr Lockwood was assisted by Jonathan Skelton, Associate and Alistair Toner, Project Engineer.

NON-TECHNICAL SUMMARY

This Transport Assessment/Traffic Impact Assessment (TA/TIA) is an amended report that supersedes the TA/TIA - May 2008 submitted as part of the Environmental Statement - May 2008. The report addresses issues raised by Roads Service and their consultants Atkins who reviewed the TA/TIA - May 2008.

The additional information contained in this TA/TIA is as follows:

- Report format altered according to DRD *Transport Assessment Guidelines for Development Proposals in Northern Ireland October 2006*.
- Planning Policy context
- Accident Statistics
- Traffic Impact Sensitivity Analysis
- Separate Travel Plan
- Separate Servicing Plan

The TA/TIA assesses the volume of traffic (based on incoming and outgoing material) generated by the Power Plant and its impact on the greater road network. The theoretical increase in traffic volume has been shown to be minimal. Junction analysis has been carried out that shows the existing junctions can accommodate the increase in traffic for all scenarios.

The routes that the Power Plant traffic will take have been assessed in detail according to their suitability to take the increase in traffic. A Servicing Plan has been prepared that highlights route restrictions in relation to road safety. The Servicing Plan ensures there is a mechanism for enforcement of the route restrictions and contains an HGV Access Code of Practice.

A Travel Plan has been prepared to encourage travel by modes other than the private car for Power Plant employees.

The TA/TIA concludes the existing road network can accommodate the increase in traffic associated with the Power Plant and declares the suitable access routes.

TRANSPORT ASSESSMENT/TRAFFIC IMPACT ASSESSMENT
ROSE ENERGY GLENAVY

CONTENTS		Page No.
1	INTRODUCTION	1
2	ASSESSMENT OF TRAVEL CHARACTERISTICS	2
3	MEASURES TO INFLUENCE TRAVEL TO THE SITE	5
4	TRAFFIC IMPACT ASSESSMENT	6
5	CONCLUSIONS	20

FIGURES

Figure 1	Site Location - General
Figure 2	Site Location - Local
Figure 3	Walking Catchment
Figure 4	Cycling Catchment
Figure 5	Public Transport
Figure 6	Traffic Survey Locations

APPENDICES

Appendix A	Traffic Flow Diagrams – Turning Counts
Appendix B	Traffic Flow Diagrams – ATC March 2008
Appendix C	Traffic Flow Diagram – ATC March 2007
Appendix D	Graphs
Appendix E	Chicken Farm Locations
Appendix F	Junction Analysis
Appendix G	Site Layout
Appendix H	Access Arrangement
Appendix I	Autotracking
Appendix J	Translink Correspondence
Appendix K	Sensitivity Analysis
Appendix L	Traffic Survey – Ulster Farm Access
Appendix M	Accident Statistics
Appendix N	Travel Plan (refer to separate document)
Appendix O	Servicing Plan (refer to separate document)

1 INTRODUCTION

- 1.1 Doran Consulting have been commissioned by Rose Energy to carry out a Transport Assessment (TA)/Traffic Impact Assessment (TIA) that addresses traffic issues for a planning application to construct a new bio-mass fuelled Power Plant near Glenavy. The proposed Power Plant is to be constructed and operated by Rose Energy Ltd, a joint venture Company of Moy Park Ltd, O'Kane Poultry Ltd and Glenfarm Holdings Limited, Moy Park and O'Kane both produce and process poultry and Glenfarm Holdings Ltd is the owner of the adjoining plant of Ulster Farm By Products. The Power Plant would be fuelled with poultry bedding and meat and bone meal (MBM), a product of Ulster Farm By Products.
- 1.2 The TA/TIA has been undertaken in accordance with the DRD *Transport Assessment Guidelines for Development Proposals in Northern Ireland October 2006* and the Institution of Highways & Transportation's '*Guidelines for Traffic Impact Assessment*'.
- 1.3 The TA/TIA has also been undertaken with consideration to *PPS3 Access, Movement and Parking* and *PPS13 Transportation and Land Use*.
- 1.4 A meeting was held with Roads Service and Atkins on 28 October 2008 at which the scope of the TA/TIA and approach to this amended TA/TIA was agreed. It was also agreed at this meeting that a separate Travel Plan and Servicing Plan be submitted as part of the amended TA/TIA. The content and level of detail of this amended TA/TIA has been prepared in accordance with discussions and comments by Roads Service that have been ongoing through the process.
- 1.5 This TA/TIA supersedes the previously submitted TA/TIA dated May 2008.

2 ASSESSMENT OF TRAVEL CHARACTERISTICS

2.1 Existing Site

2.1.1 The site of the proposed Power Station is located on the Ballyvannon Road 2km west of Glenavy and east of Lough Neagh. It adjoins the site of Ulster Farm By-Products Ltd which operates a rendering plant. Refer to Figure 1 which shows the site in its greater geographical context and Figure 2 which shows its local location at a larger scale. Ulster Farm By-Products is a wholly owned subsidiary of Glenfarm Holdings Ltd.

2.2 Proposed Development

2.2.1 There is a need in Northern Ireland, as elsewhere in the United Kingdom, to reduce dependence upon fossil fuels for generating energy and, combined with a switch to renewable fuel sources, thus also reduce carbon emissions. Use of poultry bedding as a fuel is a tried and tested process. This need also coincides with the requirement under the Nitrates Directive to reduce spreading material, such as poultry bedding, as a means of disposal or use as fertiliser in areas which are nitrates vulnerable. Consequently, there is the potential to achieve both objectives in a new bio-mass fuelled power plant.

2.2.2 The proposal is to construct a 30 MWe Bio-Mass Fuelled Power Plant which will consume approximately 220,000 tonnes of poultry bedding and 40,000 tonnes of meat and bone meal (MBM) per year, refer to site layout Appendix G.

2.2.3 The access into the Power Plant will be via a new access off Ballyvannon Road at the location of the existing access to number 23. This will be an in only and traffic exiting the Power Plant will do so via the existing Ulster Farm access which has appropriate sightlines. Refer to Appendix H. There is a footway alongside the access road into the Power Plant. There is no footway on the link road between the Power Plant and Ulster Farm. This is because this is a transport route only and there will be no pedestrian movement between Ulster Farm and the Power Plant.

- 2.2.4 The proposed separate ingress/egress is desirable for biosecurity reasons. For example in the event of an animal epidemic (Foot and Mouth, Avian Flu, Newcastle's disease etc) movements through Ulster Farm By-Products Ltd are strictly controlled. This could potentially force a temporary closure of the Power Plant which would be an unnecessary penalty. Conversely if poultry bedding is contaminated it should not be taken through Ulster Farm but direct into the Power Plant then thoroughly cleaned vehicles can exit via Ulster Farm.
- 2.2.5 Twenty six car parking spaces (including 3 disabled spaces) are being provided for staff and visitors. The internal road layout allows for the safe circulation, parking and turning of HGVs, refer to Appendix I.
- 2.2.6 The poultry bedding and MBM will most likely be imported to the site on 27.5 tonne tipper trucks from across Northern Ireland 5.5 days a week. It will be delivered between the hours of 7am to 7pm 5.5 days a week, (Monday – Friday, Saturday AM) subject to the restrictions outlined in the Servicing Plan, refer to Appendix O. The location of the poultry farms is indicated on a map in Appendix E.
- 2.2.7 Ash is produced as a by product of the Power Plant process at approximately 15% of the input material. A maximum of 40,000 tonnes of ash will be removed off the site per year. Ash will be taken off the site in 20 tonne loads between the hours of 7am to 7pm, 5.5 days a week, (Monday – Friday, Saturday AM)
- 2.2.8 The Power Plant will operate 24 hours a day, 7 days a week and will have around 25-30 full time employees, some of whom will operate on a 4 shift work pattern. There will be general deliveries (LGV) including fuel to the Power Plant day to day between the hours 7am to 7pm, 5.5 days a week (Monday – Friday, Saturday AM)
- 2.3 Planning Policy
- 2.3.1 The proposal has been reviewed in the context of Planning Policy as set out in *PPS3 Access, Movement and Parking, PPS13 Transportation and Land Use, PPS 4 Industrial Development and PPS 11 Planning and Waste Management* .

- 2.3.2 The primary policy objective is to integrate land use planning and transport by:
- Promoting sustainable transport choices
 - Promoting accessibility for all and
 - Reducing the need to travel, especially by private car
- 2.3.3 The proposed development is a Power Plant which by its nature will generate heavy vehicular traffic. The small number of staff who will work at the Power Plant will be encouraged to travel by modes other than the private car through a Travel Plan, refer to Appendix N. This Transport Assessment considers whether the proposal will result in a significant increase in traffic congestion or be a hazard to road safety thus addressing Planning Policy Objectives.
- 2.3.4 The location of the proposed Power Plant allows it to make use of the MBM which is produced by the existing rendering plant on the adjoining site run by Ulster Farm By-Products Ltd. MBM not only provides a high calorific value fuel but its use in the Power Plant removes the need for export of MBM from Ulster Farm By-Products Ltd, i.e. the proposed Power Plant location reduces heavy vehicular movements currently generated Ulster Farm By-Products Ltd.
- 2.3.5 The majority of heavy vehicular traffic generated by the Power Plant is a result of the transportation of poultry bedding from poultry producers. These poultry producers are located predominantly in the north and west of Northern Ireland as shown on the Map in Appendix E. The Power Plant site from a transport point of view is well located in the context of the poultry producer locations and Northern Ireland as a whole in that the poultry transportation would be concentrated onto the primary road network, M1, M2 and A26.
- 2.4 Walking and Cycling
- 2.4.1 The walking catchment for the Power Plant is shown in Figure 3. Glenavy is within a 30 minute walk of the site. There are no footways on the roads immediately surrounding the site, refer to Figure 3.

- 2.4.2 The cycling catchment for the Power Plant is shown in Figure 4. The National Cycle Network Route 94 runs adjacent to the site along the Ballyvannon Road (B156). Crumlin and Glenavy are within a 20 minute cycle. Existing pedestrian and cycle movements on the road network were recorded as negligible during traffic surveys on Thursday 6 March 2008 with 3 pedestrians and 8 two-way cyclists recorded on the Ballyvannon Road between 0700-1900 hours.
- 2.5 Public Transport
- 2.5.1 Translink have been contacted regarding public transport provision, refer to their response in Appendix J. Service 53 passes the site on the Ballyvannon Road twice a day during School term. Approximately 8 School children wait on the south side of the Ballyvannon Road near its junction with the Lurgan Road for Service 53 at 0800 hours. Parents also wait in their cars with their children until the bus arrives at this time. No one has been observed waiting for the afternoon 1635 Service. Two passengers (one was a School pupil) were observed alighting at this time, on one occasion.
- 2.5.2 A more frequent level of Bus Service is provided at Main Street, Glenavy with services to Belfast, Antrim and Crumlin. Main Street is a 30 minute walk from the Power Station site which is beyond the recommended 5 minute walk for public transport to be a viable option.
- 3 MEASURES TO INFLUENCE TRAVEL TO THE SITE
- 3.1 A separate Travel Plan has been prepared that promotes non car modes for employees at the site, refer to Appendix N.

4 TRAFFIC IMPACT ASSESSMENT

4.1 Existing Conditions

4.1.1 Turning count surveys were carried out on Thursday 6 March 2008 between 0700-1900 at the following locations, refer to Figure 6 and Appendix A, Traffic Flow Diagrams A1-A3:

- Ulster Farm access
- Lurgan Road/Ballyvannon Road/Edenturchar Road
(Referred to as Lurgan Road Crossroads)

4.1.2 Automatic Traffic Count (ATC) surveys were carried out between Tuesday 4 March and Monday 10 March 2008 at the following locations, refer to Flow Diagrams B1-B3 in Appendix B and Figure 6. Station Road was closed for resurfacing when the above ATC surveys were being carried out and was therefore resurveyed between Tuesday 1 to Monday 7 April 2008:

- Lurgan Road (50m south of Ballyvannon Road)
- Edenturchar Road (500m east of junction with Lurgan Road)
- Lurgan Road (50m north of Ballyvannon Road)
- Ballyvannon Road (75m west of Ulster Farm Access)
- Ballyvannon Road (200m west of junction with Lurgan Road)
- Aughnadarragh Road (200m east of junction with Lurgan Road)
- Station Road (150m east of junction with Crumlin Road)

4.1.3 ATC traffic surveys were previously carried out between Tuesday 20 March and Wednesday 28 March 2007 at the following junctions, refer to Flow Diagram C1 in Appendix C. The flows at the Lurgan crossroads in March 2007 are very similar to those recorded in March 2008 so it is robust to conclude the closure of Station Road did not influence the March 2008 ATC surveys.

- Lurgan Road (50m south of Ballyvannon Road)
- Edenturchar Road
- Lurgan Road (50m north of Ballyvannon Road)
- Ballyvannon Road (50m west of Lurgan Road)

- 4.1.4 The ATC survey indicated the existing roads surrounding the site are very lightly trafficked. The recorded daily flows are summarised in Table 1, refer to Flow Diagram B3, Appendix B. *Design Manual for Roads and Bridges (DMRB), Chapter 2, Volume 5, Section 1, Part 3 TA 46/9* indicates the capacity of a 7.3m road with 1m hard strips (referred to as S2) is 13,000 vehicles daily. The carriageways of the surveyed roads are typically 6m with grass verges. DMRB Classification S2 is an appropriate reference and the best indicator for the capacity of a 6m wide rural road. The maximum flow of 2,083 vehicles on the 6m wide Lurgan Road is significantly less than the 13,000 vehicle capacity of a 7.3m road as outlined in DMRB. It is therefore robust to conclude by inspection that the surveyed roads are operating well within link capacity.

Location	Existing Daily 2-Way Flow (5 day weekday average)
Ballyvannon Road (5.5m carriageway)	1395
Lurgan Road (6m carriageway)	2083
Edenturchar Road (6m carriageway)	1371
Aughnadarragh Road (5.5m carriageway)	615
Station Road (6m carriageway)	978

Table 1 – Existing ATC Traffic Flows March 2008

- 4.1.5 The ATC data has been plotted on graphs presented in Appendix D. These graphs indicate the peak periods and split of traffic between HGVs, LGVs and cars. The peaks on the main local road network are the usual AM and PM peak periods of 0700-0900 and 1600-1800 respectively. The appropriate peak hours from the surveys are deemed to be 0800-0900 and 1700-1800.
- 4.1.6 From inspection of the 5 day weekday average graphs the HGV movements are generally consistent between 0700-1700 hours on all the roads surveyed. The maximum volumes of existing HGV movements are presented in Table 2 to understand the scale of the HGV flows.

Location	HGV Peak Hours	Maximum 2-way hourly volume of HGVs based on 5 day average weekday survey
Ballyvannon Road 75m west of Ulster Farm Access	1400-1700	8
Ballyvannon Road 200m west of Lurgan Rd junction	1100-1200	17
Lurgan Road (south of crossroads)	1600-1700	17
Lurgan Road (north of crossroads)	1600-1700	14
Aughnadarragh Road	1500-1600	8
Edenturchar Road	1500-1600	9
Station Road	1500-1600	14
Ulster Farm Access	1100-1200	10

Table 2 – Existing Peak HGV Movements

- 4.1.7 The turning count survey indicated the HGV peak hour at the Lurgan Road cross roads and Ulster Farm access on Thursday 6 March 2008 was 1200-1300, refer to Flow Diagram A2, Appendix A. The turning count survey indicates that there are negligible HGV movements between Ballyvannon Road and Lurgan Road south. The HGV movements to/from Ballyvannon Road are distributed evenly between Lurgan Road (north) and Edenturchar Road.
- 4.1.8 From inspection of the turning count and ATC surveys it can be seen that although Ballyvannon Road is lightly trafficked it carries as much HGV movements as Lurgan Road. This is because of HGV movements predominantly generated by Whitemountain Quarry, Stoneyford Cement and Ulster Farm. Ulster Farm accounts for half the HGV movements on Ballyvannon Road at the Lurgan Road junction and other businesses such as Whitemount Quarry and Stoneyford Cement account for the other half.
- 4.1.9 Accident statistics for the period 1 April 2005 - 31 March 2008 have been obtained from the PSNI at key junctions on the surrounding road network along which Power Plant traffic will travel, refer to Table 3. The routes are discussed in more detail in a Servicing Plan produced under separate cover.

- 4.1.10 Accident statistics have also been obtained for the stretches of road between the junctions, refer to Table 4. Refer to Appendix M for record sheets received from PSNI.
- 4.1.11 No fatal accidents were recorded. There was one serious accident recorded at each of the following three junctions over the three year period:
- Lurgan Road (B12) / Ballyvannon Road (B156) / Edenturchor Road (B156)
 - Moira Road (A26) / Main Street (B12)
 - Crumlin Road (B12) / Ogales Road / Station Road
- 4.1.12 The accident statistics do not reflect a particular cause of concern across the surrounding road network along which the Power Plant traffic will be travelling.

Location	Fatal	Serious	Slight	All
Moirra Road (A26) / Gobrana Road	0	0	0	0
Crumlin Road (B12) / Gobrana Road	0	0	0	0
Crumlin Road (B12) / Glenavy Road (B12) / Aghnadarragh Road	0	0	0	0
Lurgan Road / Aghnadarragh Road	0	0	0	0
Lurgan Road (B12) / Ballyvannon Road (B156) / Edenturchor Road (B156)	0	1	1	2
Edenturcher Road (B156) / Glen Road (B156) / Glen Road	0	0	0	0
Main Street (B12) / Glen Road (B156)	0	0	0	0
Moirra Road (A26) / Main Street (B12)	0	1	6	7
Lurgan Road (B12) / Crumlin Road (B12) / Aghadolgan Road / Chapel Road	0	0	1	1
Crumlin Road (B12) / Lough Road	0	0	1	1
Crumlin Road (B12) / Ogales Road / Station Road	0	1	0	1
Station Road / Hillhead Road / Irwinstown Lane	0	0	0	0
North Street / Station Road / Glenavy Road	0	0	0	0
Glenavy Road (A26) / Old Glenavy Road	0	0	0	0

Table 3 – Accident Statistics Junctions

Location	Fatal	Serious	Slight	All
Gobrana Road	0	0	0	0
Crumlin Road (B12)	0	0	0	0
Aghnadarragh Road	0	0	1	1
Lurgan Road between Aghnadarragh Rd and Ballyvannon Rd	0	1	0	1
Ballyvannon Road (B156)	0	0	0	0
Edenturchar Road (B156)	0	0	1	1
Glen Road (B156)	0	1	0	1
Main Street (B12)	0	0	0	0
Lurgan Road between Ballyvannon Rd and Chapel Rd	0	0	1	1
Crumlin Road (B12)	0	0	0	0
Station Road	0	0	2	2
Old Glenavy Road	0	0	0	0

Table 4 – Accident Statistics on stretches of road between junctions

4.2 Trip Generation

4.2.1 The proposed Power Plant will generate car trips from employees, and heavy vehicular traffic associated with deliveries and removal of ash.

4.2.2 The expected daily vehicle movements are summarised in Table 5. The trips in Table 5 are based on delivery of 220,000 tonnes of poultry bedding a year. The daily flow assumes a 5.5 day week, over a 48 week year and that deliveries arrive in 25 tonne loads (in 27.5 tonne capacity tipper trucks). Thus 220,000 tonnes/48 weeks/5.5 days/25 tonne lorry equals 33 lorries therefore 33 multiplied by 2 gives 66 two-way daily lorry movements. As the density of Ash is low it has been assumed it is taken off site in 20 tonne loads.

Material	Two way vehicles/day	Two-way vehicles peak hour (10% of daily except for employee see below*)
Poultry Bedding 220,000 tonnes	66	7
MBM 25,000 tonnes (net reduction as provided by Ulster Farm)	-8	-1
MBM 15,000 tonnes Imported	4	0
Ash 40,000 tonnes	16	2
General Deliveries	14	1
Employees and Visitors (Assumed 1.3 daily trips/employee – 30 employees and 0.17* trips/employee in peak hour)	39	5
Total	131	14

Table 5 – Proposed Net Power Plant Movements on Road Network

- 4.2.3 The poultry bedding figures in Table 5 are robust as they are based on the design thermal output of the power plant. The loads are also directly related to the fairly standard size of poultry shed, the known number of birds, their feed regime and drop out of chicken litter. For example a 20,000 bird shed produces around 25 tonne of litter. The litter is taken out of the sheds once the chickens have reached maturity which is approximately 56 days. It is proposed that all the litter will come from farms owned by or contracted to the two poultry producing partners within the client Company and therefore constancy of operation and control is assured.

- 4.2.4 The majority of MBM used in the Power Station will come from Ulster Farm By-Products. Consequently there will be no need for the Ulster Farm MBM to continue to be transported off site via the main road network. These MBM movements are counted as a reduction in Table 5. The MBM will be transported from Ulster Farms to the Power Station via lorry on the short stretch of Ballyvannon Road to the new 'in' access point, (as noted in Section 2.2 access to the site is one way). This is reflected in the Flow Diagrams A8 and A9 in Appendix A for robustness and account for 1 vehicle movement during the peak hour.
- 4.2.5 There are expected to be approximately 30 employees working at the Power Plant in 4 shift patterns. Employees will be encouraged to car share and cycle through the Travel Plan. Their daily trip generation has been robustly assumed at 1.3 trips/employee. The peak hour trip generation accounting for shift pattern has been assumed as 0.17 trips/employee. This equates to 8 employees (including visitors) arriving at the same time for a shift and 3 of them not driving.
- 4.2.6 The traffic survey, refer to Appendix L, indicates the AM peak hour 0800-0900 for HGV and LGV delivery movements (7 vehicles) of Ulster Farm By-Products is 5% of its daily HGV and LGV delivery flow (128 vehicles). The AM/PM peak hour HGV and LGV general delivery movements of the proposed power plant has assumed to be 10% of the proposed daily traffic which is considered to be realistic based on comparison with Ulster Farm.
- 4.2.7 Following a meeting with Roads Service a sensitivity analysis has been carried out that takes another approach to the Power Plant peak hour derivation to demonstrate robustness.
- 4.2.8 Again comparison has been made with Ulster Farm By-Products Ltd. From the traffic survey the absolute peak hour for HGV and general delivery (LGV) movements at Ulster Farm By-Products Ltd is 1400-1500 when there are 18 two-way movements (13HGV plus 5 LGV). These 18 movements account for 14% of the daily 12 hour flow (128). Refer to the traffic survey in Appendix L.
- 4.2.9 For the sensitivity analysis it is therefore assumed that 15% of the daily Power Plant HGV and general deliveries (LGV) occur in the AM/PM peak hour. This is summarised in Table 6 and Flow Diagrams K1-K6 in Appendix K.

Material	Two way vehicles/day	Two-way vehicles peak hour (15% of daily except for employee see below*)
Poultry Bedding 220,000 tonnes	66	10
MBM 25,000 tonnes (net reduction as provided by Ulster Farm)	-8	-1
MBM 15,000 tonnes imported	4	1
Ash 40,000 tonnes	16	2
General Deliveries	14	2
Employees and Visitors (Assumed 1.3 daily trips/employee – 30 employees and 0.17* trips/employee in peak hour)	39	5
Total	131	19

Table 6 – Trip Generation Sensitivity Analysis

4.3 Trip Distribution and Assignment

- 4.3.1 The incoming chicken litter will arrive from farms across Northern Ireland as indicated on the plan in Appendix E. The farms are concentrated fairly evenly between the north east and south west of the province. By inspection of the location of the site, (refer to Figure 1) the main routes to the site will be via the A26 Nutts Corner roundabout to the north and Moira roundabout to the south.

- 4.3.2 For all traffic arriving and departing the Power Plant the A26 is the primary road corridor that the traffic will travel via. Between the A26 and the Power Plant there is a choice of three routes available:
- Lurgan Road (north)/Aughnadarragh Road/ Crumlin Road/Gobrana Road
 - Edenturcher Road/Glen Road/ Main Street (south)
 - Lurgan Road (south)/Crumlin Road/Station Road/Glenavy Road
- 4.3.3 As agreed with Roads Service the suitability of these routes has been assessed in detail in a Servicing Plan, refer to Appendix O.
- 4.3.4 Ingress to the Power Plant will be via the new access and egress will be via the existing Ulster Farm access. All the Power Station traffic will enter and exit the site via Ballyvannon Road – Lurgan Road crossroads. This is robust from inspection of the site's location in the road network and surveys of the existing Ulster Farm access which indicate this is what currently happens. Refer to Flow Diagrams A1 and A4 in Appendix A and Appendix L.
- 4.3.5 As noted above the immediate destination for the Power Plant traffic is the A26. This is the same immediate destination for the majority of existing traffic on the Ballvannon Road. It is therefore appropriate to assume that the most likely distribution of the Power Plant traffic will be the same as existing traffic at the Lurgan crossroads:
- 45% Lurgan Road (north)
 - 45% Edenturcher Road
 - 10% Lurgan Road (south)
- 4.3.6 A sensitivity distribution has also been considered where 100% of the Power Plant traffic is assigned to each of the above three arms of the Lurgan Crossroads. This is considered to be unlikely in reality as the traffic will naturally travel the most direct route to the A26 available but has been considered for impact purposes and ensure flexibility is possible within the Servicing Plan. Refer to Flow Diagrams L1-L6 in Appendix L.

4.4 Assessment Years

4.4.1 The assessment years remain as presented in the TA/TIA May 2008 even though as the planning process has continued the likely year of opening is now 2012. In terms of traffic growth the assessment years remain valid as the existing roads are lightly trafficked and year on year traffic growth is minimal. The assessment years are as follows:

- 2008 - existing year
- 2011 - base year, i.e. year of opening
- 2021 - future year, i.e. base year plus 10 years
- 2026 - future year, i.e. base year plus 15 years

4.4.2 Traffic growth has been applied to the 2008 traffic survey according to Table 2, Part B, of the NRTF (GB) 1997, Central Estimate. This estimate of growth is conservative and traffic on the surveyed roads is not expected to grow by this much due to their locality. Refer to Table 7.

Year	Annual Growth Index	Total Growth (relative to 2008)	
		Index	%
2008			
2009	1.0153	1.0153	1.53
2010	1.0153	1.0308	3.08
2011	1.0153	1.0466	4.66
2012	1.0148	1.0621	6.21
2013	1.0148	1.0778	7.78
2014	1.0148	1.0938	9.38
2015	1.0148	1.1100	11.00
2016	1.0148	1.1264	12.64
2017	1.0119	1.1398	13.98
2018	1.0119	1.1533	15.33
2019	1.0119	1.1671	16.71
2020	1.0119	1.1810	18.10
2021	1.0119	1.1950	19.50
2022	1.0091	1.2059	20.59
2023	1.0091	1.2169	21.69
2024	1.0091	1.2279	22.79
2025	1.0091	1.2391	23.91
2026	1.0091	1.2504	25.04

Table 7 – Traffic Growth Relative to 2008

4.5 Highway Impact

4.5.1 As demonstrated already in Section 4.1 the existing road network is lightly trafficked and has spare capacity. The proposed increase in traffic generated by the Power Station is also low with a total net increase of 14 two-way vehicle movements in the peak hour of which 8 are HGVs.

4.5.2 The IHT Guidelines recommend that the threshold approach should be used to establish the area of influence of the proposed development and that the study area should include all links and associated junctions where traffic to and from the development will exceed 10% of the existing two-way traffic (or 5% in congested or other sensitive locations).

4.5.3 It is considered that the use of the 10% threshold is appropriate at all locations on the surrounding road network as the traffic surveys indicated there was no significant congestion or sensitivity.

4.5.4 Percentage Impact Diagrams have been calculated for the year of opening and are presented in Appendix A, Flow Diagrams A18 and A19. The percentage impacts are greater than 10% at the following junctions:

- Site access
- Ballyvannon Road/Lurgan Road/Edenturchar Road

4.5.5 The main reason the percentage impacts are greater than 10% is because the traffic volumes on the existing road network are so low. For robustness the above two junctions have been analysed using the Transport Research Laboratory's computer software PICADY 4.1. The results are summarised in Appendix F and Table 8. RFC (Reference Flow to Capacity Ratio) is a theoretical indicator of junction performance that is generated by the PICADY model based on geometry and traffic volumes. A junction is deemed to be approaching capacity when the RFC = 0.85. It is clear the junctions are operating well within capacity under the proposals.

Junction	Future Year	Maximum RFC
New Site access - in	2026	0.027
Site access – out (existing Ulster Farm Access)	2026	0.038
Ballyvannon Road/Lurgan Road/Edenturcher Road	2026	0.177

Table 8 – Junction Analysis Summary

- 4.5.6 The total proposed Power Station traffic through the day has been plotted on the existing traffic graphs for Ballyvannon Road, Lurgan Road (north and south), Edenturcher Road and is presented in Appendix D. The trend of traffic generated through the day by the Power Station has been based on the same trend as Ulster Farm. It can be clearly seen the minimal impact the proposed traffic has on the road network.
- 4.5.7 Another robust indicator of the acceptable increase of traffic volume generated by the proposed Power Station is given in the *Transport Assessment Guidelines for Development Proposals for Northern Ireland October 2006*. This as a guide indicates a threshold of 100 or more additional two way vehicle movements in the peak hour before a detailed Transport Assessment is required. At an increase of 14 two-way vehicle movements in the peak hour the proposed Power Station traffic is well within this threshold.
- 4.6 Sensitivity Analysis
- 4.6.1 As already noted a sensitivity analysis has been carried out that considers a peak hour trip generation that is 15% of the proposed daily flow and has a distribution 100% via the three routes Lurgan Road north, Lurgan Road south and Edenturcher Road.
- 4.6.2 The percentage impacts on Lurgan Road north and Lurgan Road south under the Sensitivity analysis are 8% and the percentage impact on the Edenturcher Road is 18%. Although the percentage impact on Edenturcher Road is greater than 10% it is deemed acceptable as the traffic flows are so low on Edenturcher Road.

- 4.6.3 Junction analysis for has been carried out for the Sensitivity Analysis using Transport Research Laboratory's computer software PICADY 4.1. The results are summarised in Table 9 and indicate the Lurgan cross roads operates well within capacity for all three scenarios. The Sensitivity Analysis robustly proves the theoretical capacity of the existing road network to carry the proposed Power Plant traffic. The Sensitivity Analysis also shows there is the flexibility for different routes to be used without significant impact.

Junction	Future Year	Maximum RFC
Sensitivity north	2026	0.187
Sensitivity middle	2026	0.187
Sensitivity south	2026	0.198

Table 9 – Junction Analysis Summary – Sensitivity Analysis

- 4.7 Route Assessment
- 4.7.1 Although the theoretical capacity of the existing road network has been demonstrated due to the increase in HGV movements a Route Assessment has been carried out to deem the existing road infrastructure's physical suitability to carry the Power Plant traffic. This has been carried out in a Servicing Plan. Refer to Appendix O..
- 4.8 Construction Traffic
- 4.8.1 The construction period of the Power Station is estimated by the contractor to be 2.5 years. Up to 400 people in the peak will be working on the site with 200 people the norm.
- 4.8.2 Parking for all the construction workers will not be achievable within the site boundary. It is recommended that a park and ride facility is provided by the Contractor so workers can be bussed to the site.
- 4.8.3 The Contractor should therefore submit a method statement to Roads Service for traffic management during the construction period. It would also be recommended that the surrounding roads are inspected before during and after the construction period and repaired where necessary. Vehicle undercarriages should be washed before leaving the site.

4.9 Environmental Impact

4.9.1 The IHT Guidelines recommend that environmental assessment of traffic links in the road network be undertaken where traffic flows will increase by more than 30% in the opening year as a result of development traffic. The proposed increase in traffic is below this threshold with a maximum percentage increase of 14% on the Ballyvannon Road during the AM Peak Hour therefore further assessment is not required.

4.9.2 It is noted that noise and air quality are being assessed as part of the Environmental Impact Assessment. The noise and air quality assessments consider the increase in vehicle movements at the site entrance where they are greatest as appropriate.

5 CONCLUSIONS

5.1 The TA/TIA has demonstrated that the impact of the proposed Power Station traffic can be accommodated on the road network. This is robust for the following reasons:

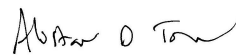
- Traffic surveys indicate the existing road network is lightly trafficked with spare capacity.
- The proposed increase in traffic is small at 131 vehicles two-way daily on the Ballyvannon Road of which 78 are HGVs. This is a very low increase in traffic which is significantly less than would normally generate a need for a TA/TIA.
- Junction analysis has demonstrated the junctions can accommodate the proposed traffic.
- A Travel Plan has been produced to encourage non car modes for staff.
- A Servicing Plan has been produced to ensure the safe management of heavy vehicular traffic.



Stephen E Lockwood
Managing Director
Doran Consulting
at/071039/



Jonathan Skelton
Associate
Doran Consulting



Alistair Toner
Project Engineer
Doran Consulting

Appendix A
Traffic Flow Diagrams – Turning Counts

Appendix B
Traffic Flow Diagrams – ATC March 2008

Appendix C
Traffic Flow Diagrams – ATC March 2007

Appendix D
Graphs - Existing Traffic

Appendix E
Chicken Farm Locations

Appendix F
Junction Analysis

Appendix G
Site Layout

Appendix H
Access Arrangement

Appendix I
Autotracking

Appendix J
Translink Correspondence

Appendix K
Sensitivity Analysis

Appendix L
Traffic Survey – Ulster Farm Access

Appendix M
Accident Statistics

Appendix N
Travel Plan – Under separate cover

Appendix O
Servicing Plan – Under separate cover