

## 1.0 INTRODUCTION

### 1.1 GENERAL

This Environmental Impact Statement (EIS) has been prepared to accompany an application to An Bord Pleanála for full planning permission for the development of a gas power plant at Lumcloon, Cloghan, Ferbane, Co. Offaly (OSI ITM Ref. 613700 719700). This EIS will also be submitted to the Environmental Protection Agency (EPA) in support of an application for an Integrated Pollution Prevention and Control (IPPC) licence for the proposed facility.

Lumcloon Energy Limited (Lumcloon Energy), the applicant company, was established in November 2008 and comprises R & R Mechanical Limited and Terotech International Limited. Further details regarding the company and the company shareholders are detailed in Section 1.1.

Lumcloon Energy is applying for full planning permission for this development on lands under the company's control in the town land of Lumcloon, approximately 5km south east of Ferbane, 22km south of Athlone and 20km west of Tullamore. A site location map is shown on Figure 1.1. The site is a brownfield site and formed part of the former ESB owned peat fired power station site which was fully decommissioned in 2004. The ESB subsequently obtained planning permission in 2004 for a 100MW gas fired power plant at the site, but never proceed with the proposed development. There are large parcels of cutaway bogland and forestry to the south west and north-west of the site and industrial railway associated with the former peat power station runs out from the former peat power station to the surrounding boglands. The surrounding topography is generally flat with nearby once-off rural housing primarily located south west of the site along a local road which borders the site to the west and runs in a south western direction from the R357 to the R437. The existing site layout is shown on Figure 1.2.

### 1.2 APPLICANT COMPANY

Lumcloon Energy was established in November 2008 as a registered company and its current shareholders are R & R Mechanical Limited (Mechanical Engineering Contractors), Millennium House, Main Street, Tullamore, Co. Offaly, and Terotech International Limited (Engineering and Power Development Company), 18 Gardiner Place, Dublin 1.

R and R Mechanical Limited is a power plant erection and maintenance company with a client base that includes ESB, World Bank, General Electric, Alstom, Siemens, Synergen and the

Northern Power Service Company (an associate company of Electricity Corporation of Vietnam).

Terotech International Limited is a power and engineering development company with its main business base in Vietnam. Its client base includes the World Bank, the European Bank for Reconstruction and Development, Ministry of Industry and Energy Vietnam, ESB International, Mitsui and Company Limited and The World Investment Finance Company UK. Terotech provides consultancy services in the areas of power plant design, construction, operation and maintenance and Independent Power plant development and private investment funding coordination. The company has executed many projects in Vietnam, Cambodia, China, Honduras, Romania, Belarus and Mongolia.

## 1.3 REGULATORY FRAMEWORK

### 1.3.1 Strategic Infrastructure Development

A preliminary meeting was held with Offaly County Council in February 2009 to notify the planning department of, and discuss the proposed development. Offaly County Council recommended that An Bord Pleanála be consulted as it was believed that the proposed development may be considered strategic infrastructure.

The strategic infrastructure provisions of the Planning and Development (Strategic Infrastructure) Act 2006 (the 2006 Act) came into effect on 31<sup>st</sup> January 2007. The Act, which amends the Planning and Development Act 2000 (the 2000 Act), provides generally for applications for permission/approval for specified private and public strategic infrastructure developments to be made directly to the Board.

Part 18 of the Planning and Development Regulations 2006 (S.I. No. 685 of 2006) (the 2006 Regulations) relating to strategic infrastructure development (SID) also came into effect on 31<sup>st</sup> January 2007. The 2006 Regulations amend the Planning and Development Regulations 2001.

The proposed development at Lumcloon is listed in the 7<sup>th</sup> Schedule to the 2000 Act under the following:

- *A thermal power station or other combustion installation with a total energy output of 300 megawatts or more*

In accordance with Sections 37(A) and 37(B) of the Planning and Act, 2000, the applicant was obliged to enter into pre-application consultations with the Board to obtain clarification on whether or not the Board regard the proposed development as strategic infrastructure within one or more of the following parameters as listed in Section 37(A) (1):

- a. the development would be of strategic economic or social importance to the State or the region in which it would be situate
- b. the development would contribute substantially to the fulfilment of any of the objectives in the National Spatial Strategy or in any regional planning guidelines in force in respect of the area or areas in which it would be situate,
- c. the development would have a significant effect on the area of more than one planning authority.

Pre-application consultation was undertaken with An Bord Pleanála. The process resulted in the Board considering the proposed development to be considered SID. A copy of the letter from An Bord Pleanála, dated 27<sup>th</sup> July 2009, is contained in Appendix 1.1, stating that the Board decided that the proposed development is strategic infrastructure within the meaning of Section 37A of the Planning and Development Act, 2000, as amended.

### 1.3.2 Environmental Impact Assessment

The obligations under Irish law in respect of EIA and EIS are derived from obligations incurred as a result of membership of the European Community. Prior to 2000, legislation governing EIA was contained in various EC directives, brought into force by the European Communities (EIA) Regulations, 1989 and the EC (EIA) (Amendment) Regulations, 1999 and the Local Government (Planning and Development) Regulations, 1999. These Regulations have now been largely consolidated within the terms of *Part X* of the 2000 Act and Part 10 and Schedules 5, 6, and 7 to the 2001 Regulations. Essentially the various regulations require an EIA to be conducted by the developer before consent is given for projects likely to have significant effects on the environment by reason of their size, nature or location.

The type of development for which an EIS is required, has now been clarified and modified by *Part X* of the 2000 Act and Part 10 of and Schedules 5, 6, and 7 to the 2001 Regulations. The development is subject to EIS under Schedule 5, Part 1, 2(a) of the Planning Regulations;

Schedule 5, Part 1, 2(a): *'A thermal power station or other combustion installation with a heat output of 300 megawatts or more'*

The development will also require an IPPC license under paragraph 2.1 of the new First Schedule of the EPA Act 1992, as amended by the Protection of the Environment Act, 2003.

Paragraph 2.1 *'The production of energy in combustion plant the rated thermal input of which is equal to or greater than 50MW other than any such plant which makes direct use of the products of combustion in a manufacturing process.'*

This EIS has been prepared in accordance with the Environmental Protection Agency (EPA) *'Guidelines on the Information to be contained in Environmental Impact Statements'* and also *'Advice Notes on Current Practice in the Preparation of Environmental Impact Statements'*, published in 2002 and 2003 respectively.

### 1.3.3 Electricity Regulatory System

This task of regulating electricity supply and demand is undertaken by the Transmission System Operator (TSO), who is appointed by the Electricity Regulator. The Commission for Electricity Regulation (CER) was assigned responsibility over the regulation of the Irish electricity market following the enactment of the Electricity Regulation Act 1999. When the ESB was the sole electricity company, they undertook the duty of TSO. After the law was changed to permit competition in the Irish Electricity Market, a new company Eirgrid was appointed as TSO by CER. Eirgrid projects and plans how much electricity is needed to supply customer demand through the year and buys this from companies licensed by CER to generate electricity. Eirgrid is also responsible for ensuring the high voltage transmission network has sufficient capacity to carry electricity to all parts of the country.

#### 1.3.3.1 Commission for Energy Regulation (CER)

To connect to the electricity network, an applicant must hold an *Authorisation to Construct or Reconstruct a Generating Station* and a *Generator Licence*. The CER is the responsible body for assessing and for granting or refusing these permits. The conditions imposed in the authorisation and in the licence must be met by the generator and compliance is monitored by the CER on an ongoing basis.

Under Section 16 of the Electricity Regulation Act 1999, anyone wishing to construct a new generating station or reconstruct an existing generating station must obtain an authorisation

from the CER prior to commencing work. The criteria used to assess an application for an authorisation are detailed in SI 309 of 1999.

Under Section 14 of the Electricity Regulation Act all generators must obtain a generation licence from the CER. The CER can consider a number of factors in evaluating a licence application. These may include, for example, the availability of sufficient appropriate financial, managerial or technical resources to ensure that the generator is able to comply with the terms and conditions that govern the electricity generation licence.

### 1.3.3.2 Eirgrid

Eirgrid is a state-owned company which is responsible for the provision of transmission and market services for Ireland. Eirgrid's primary roles are:

- To operate a safe, reliable, economical and efficient national electricity grid
- To plan and develop the grid infrastructure needed to support Ireland's economy
- To supervise the security of the national grid
- To schedule electricity generation with power generators and stations
- To facilitate the market for renewable electricity in Ireland

### 1.3.3.3 Health and Safety Authority (HSA)

The Health and Safety Authority (HSA) is the competent authority responsible for administration and enforcement of the European Communities (Control of Major Accident Hazards Involving Dangerous Substances) Regulations 2006 (S.I. No. 74 of 2006). The site proposed facility at Lumcloon has been designated lower tier status by the HSA.

There are a number of implications to these regulations for lower-tier sites. The first, and most imminent, is that you have to notify the Health & Safety Authority (specifically the Process Industries Unit, Health & Safety Authority, 10 Hogan Place, Dublin 2) and your local planning authority. The requirements under the Regulations are discussed further under Section 1.3.4.

### 1.3.3.4 Environmental Protection Agency (EPA)

The EPA licenses the operation of power generation plants under the integrated pollution prevention and control (IPPC) licensing system and each licence application is considered on its merits.

IPPC licences aim to prevent or reduce emissions to air, water and land, reduce waste and improve energy and resource usage. An IPPC licence is a single integrated licence which covers all emissions from the facility and environmental management.

The EPA has also responsibility for implementing the EU's Emissions Trading Scheme in Ireland, which is a policy measure targeted at large producers to reduce greenhouse gases such as carbon dioxide and incentivise energy efficiency of plants. The proposed facility will be required to comply with various legislation and international agreements as discussed in Section 1.3.4 below.

### 1.3.4 EU Directives and International Agreements

#### IPPC Directive (96/61/EC as amended by Directive 2003/87/EC)

The installation falls within the scope of category 1.1 (Combustion installations with a rated thermal input exceeding 50MW) of Annex I of Council Directive 96/61/EC concerning integrated pollution prevention and control (IPPC). As a new activity the IPPC Directive requires that the competent authority take account of the general principles set out in Article 3 of the Directive when determining the conditions of a permit.

Best Available Technology (BAT) for gas turbines is detailed in Directive 2001/80/EC, which includes limitations on emissions of certain pollutants into the air from large combustion plant. In 2008 the EPA published a BAT Guidance Note on Best Available Techniques for the Energy Sector (Large Combustion Plant Sector) which is relevant to this development at Lumcloon.

#### Large Combustion Plant Directive (LCPD), 2001/80/EC

The Large Combustion Plant Directive 2001/80/EC, was transposed in Irish legislation under S.I. 644 of 2003. The Directive applies to combustion plants with a rated thermal input of equal to or greater than 50 MW, irrespective of the fuel used (solid, liquid or gaseous). The Directive focuses specifically on limiting the emissions of sulphur dioxide and nitrogen oxides from large combustion plants, including power plants.

#### Seveso Directive (96/82/EC and 2003/105/EC)

The European Communities (Control of Major Accident Hazards Involving Dangerous Substances) Regulations 2006 implements Council Directive 2003/105/EC (amending 96/82/EC) on the control of major accident hazards involving dangerous substances (also referred to as the 'Seveso 2' or COMAH Directive). They replace the EC (Control of Major Accident Hazards involving Dangerous Substances) Regulations, 2000 (SI 476 of 2000). The Regulations apply to establishments that present a major accident hazard by virtue of the

presence of specified quantities of dangerous substances. The recently introduced 2008 Chemical Act (No. 13 of 2008) also provides for the making of Regulations to re-transpose the 'Seveso' Directives and to replace the European Communities (Control of Major Accident Hazards Involving Dangerous Substances) Regulations 2006 (S.I. No. 74 of 2006).

The purpose of these Regulations is to ensure at establishments where dangerous substances are handled, a high level of protection is provided for people, property and the environment, through measures aimed at:

- (i) the prevention of a major accident,
- (ii) the use of any necessary measures to limit the consequences of such an accident, should it occur.

A '*major accident*' is defined in the Regulations as an occurrence such as a major emission, fire or explosion resulting from uncontrolled developments in the course of the operation of any establishment, leading to a serious danger either to human health or to the environment, whether immediate or delayed, inside or outside the establishment, and involving one or more dangerous substances.

To determine whether the Regulations apply to an establishment the criterion is whether those dangerous substances (listed in the first schedule to the Regulations) are present in quantities equal to or in excess of the thresholds set out in the schedule. If the inventory equals or is greater than that of column 3 (first schedule) it becomes 'upper-tier'. If it is less than this quantity but greater than the quantity in column 2 (first schedule), it becomes 'lower-tier'.

The proposed installation at Lumcloon will be a 'lower tier' Seveso site due to the storage of diesel (gas oil) as back-up fuel. The proposed storage volume exceed the threshold in column 2 (first schedule of the regulations) but is less than the threshold in column 3. All establishments under the Regulations have certain duties, depending on whether the establishment is classified as upper or lower tier. These duties are set out in Regulations 8-11 and consist of:

- Notification to the HSA and the local planning authority
- Discharging certain general duties
- Preparation and implementation of a major accident prevention policy
- Action in the event of a major accident
- Maintaining a register of notifiable incidents.

A major accidents hazard (MAH) report was requested by the HSA in accordance with Regulation 27(1) as part of the planning process to advise the planning authority on land use planning. This was prepared summary details are contained in Chapter 4, Human Beings. The full MAH report is contained in Appendix 4.1.

### Kyoto Protocol

The Kyoto Protocol, which established greenhouse gas (GHG) emissions targets for industrialised countries, was agreed in 1997 following publication of the IPCC second assessment report. The Protocol came into force on 16 February 2005. Ireland has committed to limiting the increase in GHG emissions in the period 2008-2012 to 13 per cent above its 1990 levels. For the period beyond 2012, the EU Council of Ministers has recently committed to achieving at least a 20 per cent reduction of greenhouse gas emissions by 2020, compared to 1990 levels.

Total GHG emissions in Ireland in 2007 were 69.205 million tonnes carbon dioxide equivalent (Mt CO<sub>2</sub>e), which is 0.477 Mt CO<sub>2</sub>e (0.68 percent) lower than the level of emissions in 2006. Agriculture is the single largest contributor to the overall emissions, at 26.8% of the total, followed by Energy (power generation and oil refining) at 21.5% and Transport at 20.8%. The remainder is made up by the Residential sector at 10.2%, Industry and Commercial at 17.9%, and Waste at 2.8%

Emissions from Energy Industries, principally electricity generation, decreased from 15.529 Mt CO<sub>2</sub>e in 2006 to 14.913 Mt CO<sub>2</sub>e in 2007, a decrease of 4.0 percent. Displacement of oil and coal by natural gas, which is a cleaner fuel, accounts for the majority of this decrease in emissions from this sector. Penetration of renewable energy sources such as wind has also contributed to the decrease.

### Greenhouse Gas Emissions Trading Directive 2003/87/EC

The EU emissions trading scheme came into operation on 1 January 2005. The first phase ran from 2005-2007 and the second phase will run from 2008-2012 to coincide with the first Kyoto commitment period. Emissions Trading is a 'cap and trade' scheme where participating installations are given a fixed allocation each year and must either abate CO<sub>2</sub> emissions to that level or purchase allowances to meet any exceedance. It is designed to bring about reductions in emissions at lowest cost, and is seen to play an increasingly important role in assisting European industry implement the type of reductions envisaged in the EU Commission's 2008 Energy and Climate Package for a 20% overall reduction of GHG emissions by 2020 (relative to 1990 levels).

These proposals were set out in the EU Commission's 2008 Energy and Climate Package, agreed by EU Parliament and Council in December 2008. In the package, the total effort for greenhouse gas reductions by 2020 has been divided between the sectors covered by the EU Emissions Trading Scheme (ETS) and non-ETS sectors. For those sectors covered by the EU ETS, a single EU-wide cap has been agreed. Consequently, there are no specific national emissions targets for emissions from ETS sectors in 2020.

The Emissions Trading Scheme covers over 100 major industrial and institutional sites in Ireland. These include power generation, other combustion, cement, lime, glass and ceramic plants and oil refining. Also included are large companies in areas such as food and drink, pharmaceuticals and semi-conductors. It should be noted that the target for Ireland for non-ETS sector emissions under the 2008 package is to reduce emissions by 20% by 2020 relative to 2005 levels. The non-ETS sector consists of agriculture, transport, residential and other sectors.

Once Ireland's National Allocation Plan for 2008 – 2012 for the emissions trading sector was accepted by the EU Commission, the Environmental Protection Agency (EPA) decided on allocations of GHG emission allowances to Ireland's major GHG emitters, under the Emissions Trading Directive until 2012. Power generation accounts for two thirds of the available national allowances. In total, Ireland's emissions trading scheme companies emitted 20.38 MT CO<sub>2</sub>e in 2008. This compares to a free allocation under Ireland's National Allocation Plan to these installations in 2008 of 19.97 million tonnes CO<sub>2</sub>e (Article 10 of the Directive requires that at least 90% of the allowances be issued free of charge). New entrants to the scheme in the five-year period are catered for through a specific set aside (9%) of available allowances.

A gas CCGT plant will generate roughly 400g of CO<sub>2</sub> per kWh of electricity output. The figure for thermal gas plant would be roughly 650g/kWh. A thermal oil plant would be roughly 900g/kWh, while the equivalent figures for coal and peat are 850 and 1,500 g/kWh respectively.

The proposed facility at Lumcloon will use natural gas to generate electricity and will require a GHG Permit in accordance with the European Communities (Greenhouse Gas Emissions Trading) Regulations 2004, (S.I. 437 of 2004 and amendments). These permits are issued by the EPA prior to commencement of the activity.

#### National Emissions Ceiling (NEC) Directive 2001/81/EC

The EU Directive on National Emission Ceilings (2001/81/EC) specifies challenging aggregate national ceilings for four transboundary pollutants, which must be achieved by 2010. The

four air pollutants concerned (sulphur dioxide, nitrogen oxides, ammonia and volatile organic compounds) contribute to acidification, eutrophication and ground level ozone.

Ireland has committed, along with other countries inside and outside the EU, to reducing emissions of these pollutants in addition to the GHG emissions reductions Ireland is committed to under the Kyoto Protocol. The Directive is transposed under the European Communities (National Emissions Ceilings) Regulations 2004, S.I. No. 10 of 2004.

The proposed development will support and provide the needed backup (peaking capability) to facilitate sustainable future penetration of wind generation plant in accordance with government renewable electricity targets, i.e. 15% by 2010 and 40% by 2020.

The proposed power generation plant at Lumcloon will use natural gas as its main fuel which is a cleaner fuel than coal or oil. The plant will be fitted with dry low NOx burners and by using natural gas as its primary fuel; the plant will have no sulphur dioxide emissions.

## 1.4 NEED FOR THE PROPOSED DEVELOPMENT

Electrical energy is an important factor in all aspects of our lives, including industry, agriculture, environment, and socio-economic in general. The government white paper entitled '*Delivering a Sustainable Energy Future for Ireland (Energy Policy Framework 2007 – 2020)*' sets out the Government's Energy Policy Framework to deliver a sustainable energy supply for Ireland. It is set firmly in the global and European context which has put energy security and climate change among the most urgent international challenges. The paper identifies security of energy supply as a primary objective for the economy and its development.

In November 2007, the Commission for Energy Regulation (CER) and Electricity Supply Board (ESB) signed the CER-ESB Asset Strategy Agreement. This strategy aims to ensure ESB's market share in power generation in Ireland is reduced to 40% by 2010. The strategy provides for the closure and sale of a number of ESB generation sites in order to make space for new independent generators.

A Single Electricity Market (SEM) was also established between Ireland and Northern Ireland in 2007. The key driver behind the establishment of the SEM is the promotion of wholesale competition between generators across Ireland and Northern Ireland and the associated benefits which this will bring for customers in both jurisdictions. The CER believes the market is proving successful in achieving this aim and it is attracting new generation capacity to enter the market. The SEM market is structured around a gross mandatory pool in which

participation is compulsory for generators having a maximum export capacity in excess of 10MW.

The Government's Renewable Energy policy, reflecting the RES-E Directive of the European Parliament and Council (Directive 2001/77/EC), sets a target for Ireland of 15% of total electricity consumption from renewable sources by 2010, and 33% by 2020. The target for 2020 was increased to 40% in October 2008.

### 1.4.1 Flexible Generation Power Plants

In their generation adequacy assessment (GAR 2009-2015 Report), Eirgrid concluded that the balance between demand and supply is expected to be manageable up until 2011, at which point significant new generation capacity will be required. This is also contingent on no major plant failures in excess of existing outage trends, Great Island and Tarbert remaining operational until the end of winter of 2011/12 and Aghada and Whitegate CCGTs connecting as planned. It should also be noted that there is also plans for increasing the amount of new wind power generation capacity over the next number of years.

Following consultation, the CER set out a final direction (CER/08/260) in December 2008 to the system operators on Gate 3 of Ireland's network connection policy for renewable generators. In keeping with the Government target, this direction allows for 40% of Ireland's electricity consumption coming from renewable generation by 2020. It does so by providing for circa 3,900 MW of renewable generator connection offers in Gate 3. The total capacity of conventional generation, as well as interconnection capacity, assumed for 2025 is outlined in Table 1.1 below and the figures match up to a 40% renewable penetration level (i.e. 6,494MW).

**Table 1.1 2025 Capacity Requirement of Conventional Generation Plants**

Type	Size	Number	Total
Base	500	8	4,000
Mid Merit	350	8	2,800
Peaking	100	16	1,600
CHP	100	4	400
Interconnectors	500	3	1,500

*Source CER/08/260*

The Regulatory Authorities, CER and Northern Ireland Authority for Utility Regulation (NIAUR), published a study in January 2009 to assess the impact of increasing wind penetration on the island of Ireland on the ability of the Single Electricity Market (SEM). The

results of the study suggest that increased renewable generation will have a significant impact on the operation of installed thermal generation capacity. In particular, existing baseload CCGTs will move into the mid-merit segment of the market and thereby see a sharp reduction in their capacity factors. Coal generation stations will also see a marked reduction in capacity factors. The number of unit starts of thermal stations is also likely to increase significantly, with implications for recurring maintenance costs and plant life.

The proposed power plant at Lumcloon compliments that outlined for *Mid Merit* type plant. Mid-merit units are modern, efficient power plants that can come on-line quickly in response to increases in the demand for power. The flexible generation plant proposed will be required to operate at high efficiency when demand is high and reduce output to lower levels at times when demand is low, having the plant on standby or spinning reserve mode, but with the ability to rapidly increase output.

The impact of an increased percentage of electricity coming from wind results in the need for increased levels of flexible plant to compensate for the variations in output from wind. Specifically, fast-acting and flexible dispatchable generation plants are required to provide back-up so that system stability can be maintained when the wind levels are low (or too high). Hence, Ireland's electricity generation portfolio needs to have sufficient flexible units (for example with sufficient ramp up and down rates as well as low start-up times) to be able to function at all times under extreme meteorological conditions.

The proposed plant will be capable of supporting up to 5% of installed wind capacity as well as a spinning reserve capacity having the characteristics to respond instantly to grid frequency degeneration.

Although the expected large growth of installed renewable capacity will increase portfolio diversity, it will only offer a limited contribution to generation adequacy and there will be need for conventional type plant to ensure adequacy of supply. It is also recognised that that proposed electrification of the transport sector (10% of national car fleet by 2020) will increase demand to that projected and alter the demand profile in future years.

Significant reliable flexible generation capacity is required to meet increased demand and any shortfall of capacity resulting from the closure of a number of older generating units and to offer capacity and availability in the system to accommodate wind generation.

### 1.4.1.1 Wind Power Generation

Wind power generation in Ireland is expected to be the major contributor to the 15% 2010 renewable target. This 15% target can be achieved with about 1,350 MW of wind power generation installed by 2010. In December 2008, the CER published its final direction for renewable operations on Gate 3. The direction provides for the 40% renewable target value by including circa 3,900MW of renewable generator projects in Gate 3.

If 40% of electrical consumption is met by renewable generation, it follows that 60% must be supplied from non-renewable 'conventional' generation or imports from abroad. Given that wind is expected to make up most of the renewable portfolio, the amount of conventional generation capacity must be adequate to ensure a reliable power supply for those hours when wind generation output is low. As the contribution from wind will be very low under specific meteorological conditions, we effectively need flexible and reliable plant capable of quick start up and with equivalent output levels to that which would be generated by wind

As more wind generation connects to the system, additional flexible plant are required to ramp-up and down quickly to maintain an adequate security of supply. Therefore the proposed flexible plant will be required to operate at high efficiency in the middle hours of the day when demand is elevated, and to reduce output to minimum stable generation or shut down at night depending on the output from wind.

## 1.4.2 Forecast and Demand

### 1.4.2.1 Forecast

The economic development experienced in Ireland over the past few years has contributed to the significant growth in demand on the Irish electricity system. The relationship between economic growth and electricity consumption is long established. However in the future, the rate of increase is not expected to continue at levels recently experienced. This is evident in the annual rate of increase of the total electricity requirement, which has averaged 3.9% per annum for the period 2002 to 2007. The median forecast for average growth between 2009 and 2015 is 2.6% and the average growth for the high demand forecast over this period is 3.3%. The average peak growth in the median demand case over 2009-2015 is forecasted at approximately 2.5%.

Table 1.2 presents the forecasts of transmission demand for the five years 2008 to 2015. These correspond to the median demand forecasts in Eirgrid's Generation Adequacy Report 2009-2015, which are calculated based on ESRI forecasts of economic activity. Total

electricity requirement (TER) values, are presented for each year along with TER growth percentage.

**Table 1.2 Transmission Peak Demand Forecasts, MW**

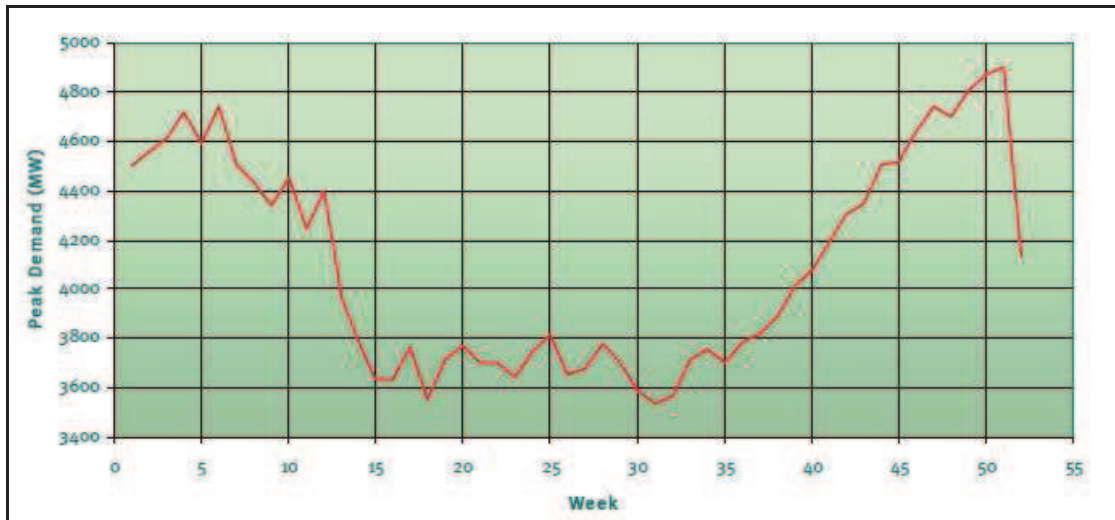
Year	TER Peak (MW)	TER Growth
2008	4,990	2.1%
2009	5,085	2.1%
2010	5,181	2.1%
2011	5,315	2.8%
2012	5,457	2.8%
2013	5,606	2.9%
2014	5,759	2.9%
2015	5,908	2.7%

The above figures show that a secure and reliable energy supply at competitive cost is critical for Ireland's ability to retain and attract foreign direct investment and for the competitiveness of all sectors of Irish enterprise. It is recognised by government, that increased competition and investment in the power generation sector will deliver better performance and operational efficiencies putting downward pressure on wholesale electricity prices and improving security of supply.

#### 1.4.2.2 Demand

Electricity usage in Ireland follows some generally accepted patterns. Figure 1.3 illustrates weekly peak demand values during 2007. The annual peak demand for electricity follows established usage patterns and occurs between 17.00 and 19.00 on winter weekday evenings, while minimum usage occurs during summer weekend night-time hours. As can be seen from the graph electricity demand is at its peak in the winter months, when the days are short and the weather is colder.

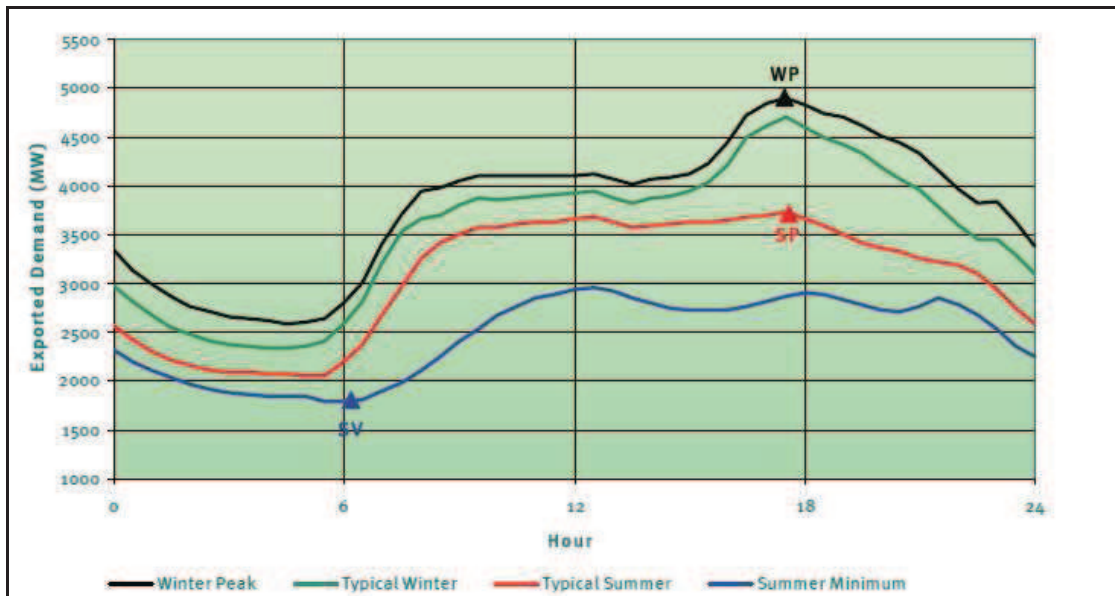
**Figure 1.3 Weekly Peak Values for 2007**



Source: Eirgrid Transmission Forecast Statement 2008-2014

Daily demand profiles also vary considerably throughout the day. Analysis of demand profiles undertaken by Eirgrid for the 2007 annual period, show levels ranging from approximately 1,787 MW to 4,902 MW. These annual and daily demand profiles demonstrate that the power system deals with a wide variation in demand throughout the year that the day demand variations are substantial. Daily demand profiles from 2007 usage figures are illustrated in Figure 1.4 below. The winter peak (WP), typical summer peak (SP) and summer valley (SV) demands are shown on the graph.

**Figure 1.4 Daily Demand Profile for 2007**



Source: Eirgrid Transmission Forecast Statement 2008-2014

At the beginning of 2008, Ireland had some 7,188 MW (net) of installed capacity. This figure however does not however consider system generation availability. Installed generation capacity reduces to between 75 and 82% (based on Eirgrid data taken from 2006 to present) of total capacity when generation system outages (forced and committed) are taken into account. The figure is further reduced when wind generation is considered since maximum wind generation output is limited by meteorological conditions. A generation portfolio which includes wind has a greater total installed generation capacity than a system which has no wind, as 1 MW of wind does not offer the same contribution towards generation adequacy as 1 MW of conventional plant. This is an important factor in forecasting as Ireland has committed to 6,494MW renewables penetration by 2025.

It should also be noted that in their strategy document (*Grid 25*) for the Development of Ireland's Electricity Grid for a Sustainable and Competitive Future, Eirgrid predicts that the demand for electricity in the Midlands region will grow by over 40% by 2025. Therefore it is essential that sufficient and suitable conventional generation is planned and provided for to ensure that energy is consistently available at competitive prices with minimal risk of supply disruption. This is the primary objective as outlined in the 2007 Energy White paper entitled '*Delivering a Sustainable Energy Future for Ireland*'.

## 1.5 ALTERNATIVES

Schedule 6 of the Planning and Development Regulations, 2001, sets out the mandatory information that must be contained in an Environmental Impact Statement. Item 1(d) requires:

*'An **outline** of the **main alternatives** studied by the developer and an **indication** of the **main reasons** for his or her choice, taking into account the effects on the environment.'*

It is noted that the Regulations do not use the word 'site'.

Guidelines on the Information to be contained in Environmental Impact Statements, EPA 2002, (Section 2.4.3) provide the following guidance in relation to the examination of alternatives.

*"The consideration of alternative routes, **sites**, alignments, **layouts**, **processes**, **designs** or **strategies**, is the single most effective means of avoiding environmental impacts. The acceptability and credibility of EIA findings can be significantly affected by the extent to which this issue is addressed".*

*"...for major infrastructure projects the intrinsic suitability of the site is the principal amelioration strategy".*

*...It is important... to acknowledge (that) other non-environmental factors may have **equal or overriding importance** to the developer e.g. **project economics, land availability**, engineering feasibility, planning considerations."*

"The consideration of alternatives also needs to be set within the parameters of **availability of land (it may be the only suitable land available to the developer)** or the need for the project to accommodate demands or opportunities which are site specific. **Such considerations should be on the basis of alternatives within a site e.g. design, layout.**

### 1.5.1 Alternative Locations

The 2002 EPA Guidelines are significant and relevant to the proposed development in the following material respects:

- The guidelines explicitly state that project economics and land availability are identified as criteria which may be of over-riding importance. Adding to this the availability of suitable development lands in close proximity to the existing gas grid network and electricity transmission network is a key factor in considering and determining a suitable site location for this development
- The availability of land is a material consideration in assessing the consideration of alternatives. The proposed development took cognisance of planning and development policy prescribed in the National Spatial Strategy (NSS) and Offaly County Development Plan which requires priority be given to the regeneration of disused brownfield sites ahead of greenfield development.
- Consideration of historical industrial activity was a significant factor in the site selection process
- The proximity of the proposed development in relation to large population centres is a material consideration in the assessment and consideration of alternatives sites. As the development is categorised as lower tier COMAH (SEVESO), the Health and Safety Authority (HSA) require preparation of a risk and consequence assessment to be in accordance with the HSA guidance document entitled '*Setting the Specified Area – The HSA Approach*' related to the COMAH Regulations 2006, S.I. No. 74 of 2006. Therefore

ideally, COMAH designated facilities should not be located adjacent to densely populated areas

- Alternatives were also considered at the levels of site, processes, design and layout

In the site selection process for a power plant it is necessary to carefully consider not only the technical issues, but also its impact on natural environment, economy and near local communities.

#### 1.5.1.1 Consideration of Sites for Generation

The Lumcloon Energy principals have for some time been actively engaged, individually and collectively, in the pursuit of an opportunity to develop a power plant in the Republic of Ireland since the publication of the European Union Directive on the deregulation of the electricity sector in 1998.

At this time it was then presumed that ESB, the vertically integrated company and the sole producer and trader of electricity, would be obliged to divest itself of a significant proportion of their generating capacity and particularly plant with little or no remnant life, thereby making brown field sites available to potential independent power developers interested in entering the electricity wholesale market. This however did not materialise at that time due to the relative small size of the market in Ireland.

A site in Drumcar, Co. Louth was conditionally acquired by Terotech International Ltd. at the time, which was within reasonable distance of a gas and electricity connection point. Environmental considerations were examined, found to be favourable and potential impacts were perceived to be low from preliminary studies. The project was abandoned after a prolonged period of feasibility analysis which included extensive market research. Regrettably, the results were not adequate to justify the project, as the plant would have to be classified as '*merchant plant*' for which an economic revenue stream was indeterminate as a result of the limited trading system that was operational at the time. A second site near the 400kv substation at Dunstown, Co. Kildare and close to the gas line was subsequently investigated and was likewise abandoned for similar reasons.

Subsequently a market system based on bilateral contracts for a small predetermined portion of the total country demand was put in place. The system in isolation offered little incentive to investors and not a single facility materialised until the introduction of the SEM in more recent years. The new system (CER-ESB Strategy, 2007) required the ESB to divest of some of their older plants and reduce their share in the Irish power generation market by 2010.

Therefore the opportunity for further attempts to enter the market did not materialise for the Lumcloon Energy partners until 2008. More favourable conditions relating to a brown-field site in proximity to services became available through decommissioned sites owned by the ESB. R and R Mechanical Ltd submitted a prequalification tender for sites at Great Island, Tarbert, Shannonbridge and Lanesboro, but was unsuccessful in its bids.

The brownfield site at the old Ferbane power plant, which was completely demolished in 2004, came on the market in 2008 for which R and R Mechanical Ltd tendered and were successful in acquiring the site. The site meets all the technical and financial requirements for the development of a modern gas turbine based thermal power plant. Prior to selling the site, the ESB received planning permission in 2004 from Offaly County Council for a 100 MW simple cycle gas turbine power plant at the proposed development site.

The proposed development site at Lumcloon has access to grid connection for a power plant in excess of 300MWs by the confluence of four 110kv three phase transmission lines at the site. A gas pipe connection is available within 20 kilometres of the proposed plant. The site is well serviced with accessible roadways, water sources, waste disposal facilities and other necessary amenities as existed during the construction and operation of the previous peat fired power plant located at the site.

#### 1.5.1.2 Assessment of Alternative Site in the Midlands

Once the former ESB power station site in Lumcloon had been identified as potentially suitable, an appraisal of other sites within the midlands of Ireland (Athlone-Tullamore-Mullingar gateway) was undertaken. The following sites within the midlands region were identified as sites which could be suitable for the proposed development:

1. Ferbane Business and Technology Park ITM Ref 612638 724974
2. IDA Business Park, Athlone ITM Ref 606596 740091
3. IDA Business and Technology Park, Srah, Tullamore ITM Ref 632693 725935

All three alternative sites are zoned for industrial use and are in close proximity to the gas (i.e. within 20km kilometres of the gas network) and high voltage electricity grid. Four sites were assessed following consideration of local and national planning and development policy. The sites at Ferbane, Athlone, and Tullamore are zoned for industrial use, but are not owned by the applicant. The site at Lumcloon is located on part of the fully decommissioned former ESB owned power station site and is considered brownfield. Table 1.3 outlines an assessment matrix. The four sites are scored relative to each other against the assessment

criteria and the scores are subsequently aggregated to identify the most suitable site for location of a 350MW gas power plant. All site locations considered and assessed at both national (Louth and Kildare) and regional (Midlands) levels are illustrated on Figure 1.5.

**Table 1.3 Site Suitability Matrix**

	Lumcloon	Ferbane	Athlone	Tullamore
<b>General Assessment Criteria for Location of Power Plants</b>				
History of Power Generation	4	1	1	1
Adequate supply of water	4	4	4	4
Proximity to the electricity network (high voltage), including connection	4	3	2	3
Proximity to the gas network (high pressure) <20km	4	4	4	4
Low population density	4	3	1	2
Land availability and ownership	4	3	3	3
<b>Total</b>	<b>24</b>	<b>18</b>	<b>15</b>	<b>17</b>
<b>Site Specific Assessment Criteria</b>				
Proximity to neighbouring occupied properties	4	2	1	2
Existing Ground Conditions	4	1	4	3
Brownfield Site	4	1	3	1
Traffic and Access	4	2	4	4
Visual	2	2	3	3
<b>Total</b>	<b>18</b>	<b>9</b>	<b>15</b>	<b>12</b>

Note:

- 4 High Weighting
- 3 High Medium Weighting
- 2 Low Medium Weighting
- 1 Low Weighting

As can be seen from Table 1.3, the proposed development site at Lumcloon is believed to be the most suitable for development of a new gas fired power plant. The site fulfils many of the assessment criteria. In key determining factors are summarised as follows:

The site is brownfield with a history of power generation

- Adjacent to an electricity grid connection as the former four transmission lines to Shannonbridge (2 no.), Thurles, and Portlaoise still exist on the site. The site is

approx 10km north of the 400kv line which runs across the country from west to east  
– See Figure 1.5

- Close to a gas network (<20km) – See Figure 1.5
- Preliminary environmental assessments have not shown any reason why the brownfield site could not be redeveloped for power generation purposes and this is concluded in the contamination assessment and exit audit reports prepared for the site on behalf of the ESB
- Located at a weak generation point on the grid
- Capable of meeting the demands outlined in the Eirgrid 2009-2025 forecasts
- Social benefits to the area including employment generation
- History of power generation in the local community – improves acceptability by the local community
- The site is accessible by regional road with no requirement for construction of roads to access the proposed location
- Low population density in the vicinity of the site
- There is adequate water supply at the site – existing well on site used for abstraction during peat plant operation. Abstraction volumes were believed to be four times greater than that required by the proposed development.
- The site is located adjacent to Silver River and there is no requirement to construct and route a pipeline for wastewater discharge purposes. It is proposed to discharge treated effluent to the river. The River is believed to have good assimilative capacity from preliminary assessments
- The site is adequate in size to locate the type and size of flexible gas power plant required to meet the generation needs.

Locating the development at Lumcloon will also address certain key issues and challenges as identified in County and Regional Development Plans prepared within and for the Midlands region. Targeting and prioritising specific critical infrastructural projects (including energy) will facilitate positive economic development and help sustain rural communities.

## 1.5.2 Alternative Designs and Processes

The development of electricity as a universal source of power was facilitated by the technological achievement of previous centuries in the discovery and harnessing of electromagnetic induction leading to electricity production in alternating current form. This allowed for the generation, transformation and transmission/distribution of electric power to consumers over wires and cables at various elevated voltages with minimum losses nationwide.

The main drawback with alternative current (AC) is that it cannot be stored directly and supply and demand must be matched instantaneously. The requirement to maintain the system frequency at a stable level (50 hertz in Ireland) is essential to avoid serious damage to equipment at the consumer end of the process as well as at the production and transportation ends. This is achieved by a range of equipment including voltage, current, power-factor, frequency and phase metering and controls.

Where the frequency falls below 50 hertz the operational procedures include the following:

- Load shedding manually or automatically. This is a costly exercise for producers and consumers
- Automatic use of spare capacity of machines in spinning reserve mode. This is achieved by the response of the generation plant in spinning reserve mode to changes in frequency affected through the operation of the speed regulatory devices on the machine. It is the most effective and economical method. In general the level of spinning reserve on the system should be equivalent to the size of the largest machine and in the case of Ireland it is of the order of 415mws, which is approximately 8.1% of peak demand

Therefore during the alternative assessment process, alternative designs were considered in the context of:

- National and Regional Requirements
- System Operator Requirements
- Suitability of Plant Types to the Preferred Site at Lumcloon
- Efficiency of Plant
- Flexibility of Plant
- Proven technologies
- Availability
- Flexibility
- Suitability to the selected site

The alternative design assessment process concluded that a 350MW output plant would be the most suitable and it should be flexible to meet fall off in wind energy generation plants. Following a comprehensive assessment, Lumcloon Energy considered in detail two scheme layouts for the proposed development. These are as follows:

**Option A** The power plant would be constructed as two power blocks (one combined cycle block and one simple cycle (peaking unit)). The anticipated total capacity of both

generating units would be 344MW output. The combined cycle block would be in a 2-2-1 configuration, i.e. two gas turbines, two heat recovery steam generator (HRSG) units and one steam turbine and all supporting auxiliary and ancillary plant. This would provide a net output of approximately 244MW.

The second power block comprise an open cycle gas turbine (OCGT) consisting of one gas turbine with a capacity of approximately 100MW. This plant would be capable of being ramped-up in the event of fall off from power produced from wind energy plants. A preliminary site layout plan for Option A is contained in Figure 1.6.

**Option B** The power plant would be constructed as one power block capable of being operated in either single or combined cycle modes, depending on the electricity demand. The anticipated total capacity for the entire plant would be approximately 325MW output with supplementary firing. The power block would be in 4-4-2 configuration, i.e. four gas turbines, four HRSG units, two steam turbines and supporting auxiliary and ancillary plant. A preliminary site layout plan for Option A is contained in Figure 1.7.

One of the primary considerations in determining the plant type was flexibility, i.e., plant designed with the capability of fast start up and the ability to adjust load output quickly and predictably to changing market requirements. High operational flexibility and availability are seen as essential prerequisites to ensure economic success of a plant in a liberalised market.

The principle feature of Option B plant design is that it is capable of accommodating a wind power loss in the range from 47 to 188MW in open cycle mode and could generate 3MW per minute to its maximum load in 10 minutes in supplementary firing mode. Supplementary-fired HRSGs involves further combustion of additional fuel in the gas turbine exhaust gas by utilising duct burners. The result of this additional firing being that the flue gas temperature is substantially increased which in turn improves steam production and raises superheated steam temperature. This

The use of supplementary firing will provide a form of spinning reserve which involves little capital cost and has an instant response to system demand, i.e. temporary increase for peak loads. Spinning reserve can be defined as the unused capacity which can be activated on decision of the transmission system operator and which is provided by devices which are synchronised to the network and able to affect the active power. These devices help maintain the security and the quality of the supply of electricity. In particular, control of the frequency

requires that a certain amount of active power be kept in reserve to be able to re-establish the balance between load and generation at all times

Option B was determined to be the preferred general plant design as it is one which, because of its configuration, provides for high reliability and flexibility and has a focus on simplicity and robustness.

Following consideration of gas turbine configurations, it was decided to design a generation plant with four small scale (50MW) gas turbines, instead of for example one larger turbine. This automatically heightens the availability of output, since it reduces the likelihood of the whole plant being rendered unavailable. It is proposed to install conventional drum design steam generators. Drum type boiler design is proven, efficient, flexible and reliable. Once through steam generator (OTSG) units were considered as an alternative and although the design has existed for many years they are still perceived as being novel with a higher risk than the conventional drum design. This is especially true in Europe where there is little reference plant. Additionally it should be noted that even though OTSG design does not require bypass ducts, the absence of bypass ducts means that gas turbines must be shut down in order to carry out maintenance on the HRSG system. This therefore would result in reduction in the flexibility of the proposed plant. In terms of a suitable cooling system, it is proposed to installed air cooled condenser (ACC) units. The advantage of ACC systems over wet cooling systems are that water usage requirements are minimal and there no issues associated with blowdown disposal and plume formation. Wet cooling systems also present potential difficulties in terms of thermal discharges.

In accordance with the requirements of the 2008 BAT Guidance Note for the Energy Sector (Large Combustion Plant Sector), the gas turbines will use dry low emissions technology. Dry abatement will eliminate the need for production and storage of large quantities of demineralised water for emissions control purposes. It will also significantly reduce the quantity of process wastewater (demineralisation process and wet scrubbing process) produced at the facility during its operation. Dry abatement reduces emissions without reducing efficiency of the plant. Particulate and sulphur dioxide emissions from gas-fired plant are very low and control measures are generally not required.

## 1.6 CONNECTION TO THE ELECTRICITY GRID AND GAS NETWORK

Connections to both the electricity and gas networks are not covered under this planning application. EirGrid, as TSO, operates a standard process for providing connection offers to parties seeking connection to the transmission system.

At the time of completion of the EIS, a grid connection application has been made by Lumcloon Energy within Gate 3. The application (node reference No. P187) has been assigned a new 220kV node looped into the Maynooth-Shannonbridge 200kV line. Power generated from the plant will be exported into the grid via the existing transmission lines located adjacent to the western boundary of the site.

It is anticipated that the length of the pipeline to connect the proposed development to the gas network at Ories, Athlone, Co Westmeath is below the threshold. The gas will enter the site at the above ground installation from the network, where it will be reduced prior to it being used at the facility.

In April 2006, the CER approved the Bord Gáis Networks Connection Policy Document regulating charges for customers connecting to the distribution and transmission pipeline systems. This policy document was again revised in June 2008. Connection charges imposed by An Bord Gáis for large Industrial and Commercial (I&C) customers now cover engineering costs associated with developing a new pipeline. A letter of agreement is signed between the developer and Gaslink (the independent system operator with responsibility for developing, maintaining and operating the natural gas transportation system in Ireland). Following detailed design, the developer is given a final cost for pipeline. It is normal practice that An Bord Gáis Networks then constructs the pipeline. If the pipeline is less than 20 kilometres in length and there are no associated above ground works, then there is no requirement to apply to local authority for planning permission. It is believed that the pipeline route from the gas network at Ories, near Athlone to the site in Lumcloon will be less than 20km. An Bord Gáis Networks would then apply to the CER for a licence to construct the proposed pipeline. This also requires preparation of an EIS or environmental reports to assess potential impacts to environmental aspects associated with its development.

It is normal practice for developers to first apply and receive planning permission from the planning authority for the power generation plant before commencing the gas connection process from the network to the AGI. This is due to the fact that the gas connection process

involves significant costs and the decision to proceed with this process before obtaining planning consent would not be practical or financially sound.

## 1.7 ENVIRONMENTAL IMPACT STATEMENT METHODOLOGY

### 1.7.1 EIS Format

The EIS is presented in the '*Grouped Format Structure*' as set down in the EPA's '*Guidelines on Information to be Contained in an EIS*' produced by the Environmental Protection Agency (March 2002). In general, EIS the framework presented in the EPA Advice Notes on Current Practice in the Preparation of Environmental Impact Statements (September 2003).

Under the EIA Regulations an EIS will contain the following:

#### Description of the proposed development

- site, design and size of the proposed development
- outline of main alternatives studied by developer
- nature and quantity of materials to be used
- physical characteristics of the development and land-use requirements during construction and operation

#### Description of the existing environment

- human beings
- flora and fauna
- soil and water (including soil/ geology, surface water and hydrogeology)
- air and noise
- climatic factors and the landscape
- material assets (including roads and traffic) and cultural heritage
- The inter-relationship between the above factors.

#### Description of the likely significant impacts

- the existence of the proposed development
- residues from the proposed development
- emissions from the proposed development
- aspects of the environment to be affected by the proposed development
- the use of natural resources

- the emission of pollutants
- the creation of nuisances

Description of the mitigation measures

Measures envisaged avoiding, reducing and if possible remedying those effects on each environmental aspect

## 1.7.2 Contributors to the EIS

The EIS was managed and collated by WYG Ireland Ltd. The contributors to the Statement are as follows:

<b>Project Development and Description</b>	Lumcloon Energy Ltd. and WYG Ireland Ltd.
<b>Air Quality</b>	WYG Ireland Ltd.
<b>Climate</b>	WYG Ireland Ltd.
<b>Construction</b>	WYG Ireland Ltd.
<b>Archaeological, Architectural and Cultural Heritage</b>	Cultural Resource Development Services Ltd.
<b>Flora and Fauna</b>	WYG Ireland Ltd.
<b>Human Beings</b>	WYG Ireland Ltd.
<b>Noise</b>	WYG Ireland Ltd.
<b>Roads and Traffic</b>	WYG Ireland Ltd.
<b>Soils and Geology</b>	WYG Ireland Ltd.
<b>Groundwater</b>	WYG Ireland Ltd.
<b>Hydrology</b>	WYG Ireland Ltd.
<b>Landscape and Visual Appraisal</b>	Park Hood Landscape Architects Ltd.
<b>Material Assets</b>	WYG Ireland Ltd.
<b>Orchestration of Statement</b>	WYG Ireland Ltd.
<b>Planning Issues</b>	WYG Ireland Ltd.
<b>Interactions</b>	All Specialists

In addition to the main contributors to the EIS, a number of organisations were engaged or referenced to provide data that was included in the EIS including meteorological, laboratory analysis, survey maps, aerial photography and geological/ hydrogeological information.

## 1.8 SCOPING

In order to identify the issues that needed to be addressed in the EIS, a Scoping Study was undertaken which included the following:

- Site reconnaissance and baseline surveys
- Visit to EPA offices in Wexford to review documents associated with ESB IPPC licence Application Reg. No. 695 – 100MW Gas Turbine generation plant at Lumcloon, Cloghan, Ferbane, Co. Offaly.
- Review of Ground Contamination and Exit Audit Reports prepared for the ESB owned site at Lumcloon, Cloghan, Ferbane, Co. Offaly
- Public Consultation with Local Community
- Written consultation to Prescribed Bodies
- Consultation Meeting with Offaly County Council Planning Department (Summary details are contained in Table 1.4)
- Pre Application Consultation Meetings with An Bord Pleanála (Summary details are contained in Table 1.4 and Records of meetings are attached in Appendix 1.2)

### 1.8.1 Site Reconnaissance and Baseline Surveys

Each specialist visited the site between January and June 2009 and completed baseline assessment works. The scope of baseline assessment works undertaken is discussed separately within each assessment chapter.

### 1.8.2 Review of ESB IPPC Application - Reg. No. 695

WYG undertook a review of the ESB IPPC application for the gas powered peaking plant which was granted planning permission by Offaly Council in 2004.

ESB proposed to install up to four Gas Turbine generators (dependent on the plant option chosen) on the site of the now decommissioned peat fired power station. The plant was intended to cater for peaks in electricity demand, mainly evening peaks during the winter months, until 2008. It was proposed to have the plant on standby throughout the year as it may be required to cover maintenance outages at other plant.

Two plant options were under consideration. One option consisted of four identical turbines, with a total rated electrical output of approximately 92MWe. The other option consisted of two 'Twinpac' turbines, each comprising two combustion turbines driving a common generator. The total rated electrical output of the Twinpacs was approximately 104MWe.

The development would also have involved the provision of a water treatment plant (ion exchange) on site, two steel storage tanks, one for gasoil, and the other for demineralised water storage. It was proposed to reuse two small tanks on site for fuel storage and two transformers would also have been installed.

ESB were granted permission to construct the development in 2004 by Offaly County Council but subsequently decided not to proceed with the development and as a consequence offered the site at Lumcloon for sale.

### 1.8.3 Review of Ground Contamination Reports

The following is a summary of the findings of the environmental exit audits undertaken (between 2005 and 2008) by the ESB for the former ESB owned peat power station at Lumcloon, Cloghan, Ferbane, Co. Offaly, hereinafter referred to as '*the former ESB owned power site*'). A more detailed review is provided in Chapter 7 of the EIS, Soils and Geology. It should be noted that the reports present findings for assessments undertaken on all lands within the boundary of the former ESB owned power site. Lumcloon Energy only acquired part (i.e. 11 acres) of the former ESB owned power site and proposes to develop the gas fired power station on these lands. The proposed development site contained the peat power plant infrastructure, i.e. cooling towers, plant buildings, ancillary and auxiliary plant.

A report on Phase 1 of the exit audit process reported that asbestos containing materials (ACM) had been detected in the station dump area (ash field) which is located 450m south east of the proposed development site boundary. Remediation work has been undertaken and the ACM removed. The Phase 1 report also indicated that the soils at the site had the potential to be impacted by oil or chemical spills within the station site.

Phase 2 assessment works included a site investigation (SI) which was undertaken in 2004 across the full former site. The SI found frequent low-level contamination by a number of metals which was attributed to the presence of peat ash disposed in the ash field south east of the proposed site boundary. Localised low-level contamination by a number of other metals and phenol was also reported in the shallow soils at the site. This was attributed to materials deposited during station activities or site demolition. It was concluded that the risk to human health from the observed contamination was low.

Low-level hydrocarbon contamination was found in near-surface soils in the location of the former transformer bays. An area of more elevated hydrocarbon contamination was identified in the electrical compound which borders the south west boundary of the proposed site. It was concluded that the hydrocarbon contamination encountered was unlikely to have an impact upon the local environment.

Surface waters within the site were generally uncontaminated; low-level contamination by some parameters (molybdenum, and sulphate) was noted in the surface waters associated with the ash field. No impact on the Silver River by station activities at the former power station was identified.

Groundwater at the site was found to be contaminated with ammoniacal nitrogen and total coliforms. This contamination was thought to be attributable to past station activities. Localised groundwater contamination was encountered close to the water treatment lagoon which is located towards the north east corner of the proposed site (manganese and nitrate); and close to the former station dump (arsenic and nickel). It was concluded that contamination of the groundwater was unlikely to have any significant impact upon the local environment.

The conclusions from Phase 2 of the exit audit are as follows:

- ESB has taken all reasonable steps to locate and remove any asbestos buried at the station dump during their ownership;
- The SI confirmed that the former ESB owned power site is asbestos safe; and in terms of asbestos the site is suitable for future commercial, industrial, or residential use;
- The SI did not encounter any organic contamination by mineral oil, PAHs or PCBs at the site
- Some elevated metals were encountered in the waste materials at the site, however it was concluded that they do not pose a significant risk to the current site users and are not expected to preclude redevelopment of the area.
- The low-level localised hydrocarbon contamination identified in the shallow soil in the electrical compound will need to be excavated for off site disposal

#### 1.8.4 Local Community Consultation

Lumcloon Energy consulted with the local community in September 2008 and in June 2009. The purpose of local community consultation process was to:

- inform the local community about the proposed development,

- ensure that all residents are kept informed of all proposals,
- highlight the economic benefit of the development, and
- strengthen relationships and build rapport between Lumcloon Energy and the local community residents.

Signed letters of support were obtained from local community residents in September 2008 and these are contained in Appendix 1.3 attached. Lumcloon Energy also conducted a public information meeting regarding the Environmental Impact Study for this project on Monday 29<sup>th</sup> June at Lumcloon Primary School. All attendees signed a register of attendance. The format of the information meeting was one of open forum where attendees were invited to put their questions in relation to the proposed development to Lumcloon Energy representatives. A continuous digital presentation providing information on the project was also displayed throughout the meeting.

Feedback from participants was facilitated three ways:

- Note taking of questions and comments throughout the meeting
- Each participant had an opportunity to provide their comments on the attendance register
- The attendees were invited to telephone or email Lumcloon Energy with any questions or observations

A commitment to conduct future information meetings was also made to keep the local community informed during the planning process.

### 1.8.5 Consultation with Statutory Bodies and Stakeholders

Written and telephone consultations was undertaken with statutory bodies and relevant stakeholders. All written responses received are contained in Appendix 1.4. All comments received were considered in length and are addressed within the EIS. A Scoping Report was prepared and submitted to An Bord Pleanála on 3<sup>rd</sup> June 2009 for information purposes. A final meeting was then held by An Bord Pleanála on 17<sup>th</sup> June 2009, at which the Board provided it's considerations in relation to the proposed development and outlined the procedure for making an application. A summary of responses and meetings undertaken during the pre-application consultation process is outlined in Table 1.4 below.

**Table 1.4 Summaries of Responses to Consultation Process**

Body	Response Received	Date	Summary of Comments
<b>All Assessments</b>			
Offaly Co. Co (OCC) Planning Department	Yes – meeting	<u>Meetings:</u> 06/02/09 28/07/09	The following comments are noted from the meeting with OCC: <ul style="list-style-type: none"> <li>▪ OCC expect that the development will be considered SID and therefore consultation should be undertaken with An Bord Pleanála</li> <li>▪ Development in area designated as high amenity – photomontages to be prepared to support the LVIA</li> <li>▪ The location of the development site in respect of Lough Boora should be considered</li> <li>▪ Grey Partridge and other protected avian species are present in the area (Lough Boora)</li> <li>▪ New County Development Plan should be considered</li> <li>▪ OCC actively encourage regeneration of brownfield site in the County</li> <li>▪ Consult with CMcC (OCC) on Roads aspect</li> <li>▪ Consult with DH on (OCC) Sanitary Aspect</li> <li>▪ What is potential impact to Silver River</li> <li>▪ Is the development subject to COMAH – consult with HSA</li> </ul>
An Bord Pleanála	Yes – meetings and letters	<u>Meetings:</u> 05/03/09 07/03/09 17/06/09	<ul style="list-style-type: none"> <li>▪ Pre-Application Consultation undertaken</li> <li>▪ Record of Meetings issued by An Bord Pleanála contained in Appendix 1.2.</li> <li>▪ Consult with Shannon Regional Fisheries Board, Department of Environment Heritage and Local Government (incl. NPWS), EPA and the public</li> <li>▪ Details of the former ESB power plant should be included in the LVIA for comparative purposes</li> <li>▪ Development considered to be SID</li> </ul>
<b>Roads and Traffic</b>			
Offaly County Council Roads Department	Yes – email	04/03/09	<ul style="list-style-type: none"> <li>▪ Traffic Impact Assessment to be completed using up-to-date traffic volumes</li> <li>▪ Road Safety Audit to be completed</li> <li>▪ Further consult on Road Pavement Analysis on any roads (excluding National) that will be used for construction purposes</li> <li>▪ Route of natural gas to the site should be shown</li> </ul>
National Roads Authority	Yes – letter	27/02/09 23/03/09	<ul style="list-style-type: none"> <li>▪ No specific observations</li> </ul>

Water			
Offaly County Council Water Department	Yes - email	01/04/09	<ul style="list-style-type: none"> <li>Foul and surface water discharge to Silver River</li> <li>Potable water supply for the development to be determined – Potential for connection to local group water scheme supply routed beneath road at front of site</li> </ul>
Environmental Protection Agency (EPA)	Yes – letter	09/03/09	<ul style="list-style-type: none"> <li>Development requires IPPC licence – environmental emissions will be considered as part of the licence application and BAT should be used in the design and carrying out of activities</li> <li>WYG also consulted with the EPA on 30/06/09 in respect of the former ash dump located south east of the proposed development lands.</li> <li>The former licence is surrendered and therefore the EPA have no concerns with it, but will consider the appropriate level of monitoring based on a new application</li> </ul>
Office of Public Works (OPW)	Yes –Letter	27/02/09 22/04/09	<ul style="list-style-type: none"> <li>Notification has been forwarded to the regional engineer</li> <li>The OPW noted that the development is located in an area identified as benefiting land from the Brosna Drainage Scheme, Channel C3(1). As there may be a risk of flooding at this location, the development should ensure that there is an adequate level of protection against flooding and may require the finished levels being set above the 100-year design flood level plus freeboard.</li> <li>OPW also request a 10m wide trip be retained for ongoing access and maintenance of channels (including minor) and embankments. The strip should be accessible to mechanical plant and should not be landscaped, paved or otherwise development to prevent access</li> </ul>
Shannon Regional Fisheries Board (SRFB)	No	-	<ul style="list-style-type: none"> <li>Followed up letter with further correspondences to PMcD and MF (SRFB). Received return phone calls from PMcD and MF in April and July 2009. Comments noted from correspondence are as follows: <ul style="list-style-type: none"> <li>The effect of abstraction of groundwater during summer months (low flow)</li> <li>The effect of temperature of wastewater discharges on the Silver River</li> <li>Adequate bunding should be provided for diesel storage on site</li> </ul> </li> </ul>
Archaeological and Architectural Heritage			
Department of Environment Heritage and Local Government (Development Applications Unit)	Yes – Letter	25/03/09	<ul style="list-style-type: none"> <li>Areas of high archaeological potential including subsurface archaeological structures should be assessed</li> <li>Architectural heritage also needs to be considered as part of the cultural heritage assessment. If no structures of heritage exist this should be documented</li> </ul>
The Heritage Council,	No		

Flora and Fauna			
Department of Environment Heritage and Local Government (Development Applications Unit)	Yes – Letter	25/03/09	<ul style="list-style-type: none"> <li>▪ No adverse impacts to Silver River and water quality from development</li> <li>▪ Bird Species – existence in the surrounding area (Bord na Mona cutaway bogland) of bird species including hen harrier, whooper swans, grey partridge and wintering waders.</li> <li>▪ WYG made follow-up call to Regional Manager NPWS and he confirmed that he received the notification letter and his comments are included in the letter received from the Development Applications Unit, dated 25/03/09</li> </ul>
Fáilte Ireland	Yes – Letter	19/03/09	<ul style="list-style-type: none"> <li>▪ Lough Boora Parklands – wildlife including grey partridge (turraun site)</li> </ul>
Shannon Regional Fisheries Board (SRFB)	No	-	<ul style="list-style-type: none"> <li>▪ Followed up letter with an email and telephone call to PMcD and MF (SRFB). Received return phone calls from PMcD and MF in April and July 2009. Comments noted from correspondence are as follows:               <ul style="list-style-type: none"> <li>▪ The effect of abstraction of groundwater during summer months (low flow)</li> <li>▪ The effect of temperature of wastewater discharges on the Silver River</li> <li>▪ Adequate bunding should be provided for diesel storage</li> </ul> </li> </ul>
National Parks and Wildlife Service – Regional Manager	No		<ul style="list-style-type: none"> <li>▪ WYG called Regional Manager (PC) to confirm receipt of notification letter. Regional manager confirmed he had received the letter and his comments are incorporated in the response letter received from the Development Applications Unit, dated 25/03/09</li> <li>▪ In addition, telephoned NB (West Offaly NPWS Conservation Ranger) on 05/8/2009. NB said he didn't think Grey Partridge would breed at the site of the proposed power station but that we should check with KB of the Irish Grey Partridge Conservation Trust. NB commented on potential badger setts in nearby woodland. He also enquired if new power lines would be constructed. NB said that at this stage he didn't see any problems with the development on the proposed brownfield site.</li> </ul>
Central Fisheries Board	No		
Irish Peatland Conservation Council	No		
Bat Conservation Ireland	No		
Irish Grey Partridge Conservation Trust	No		<ul style="list-style-type: none"> <li>▪ Telephoned KB (Irish Grey Partridge Conservation Trust) on 05/07/09. KB said that he had not received the notification letter issued in February and therefore requested that he be provided with more information.</li> </ul>
Birdwatch Ireland and Irish Wildlife Trust	No		

Coillte Teoranta	Yes – letter	06/05/09	<ul style="list-style-type: none"> <li>Provide more information on the potential impact of stack emissions (acidity) on forestry in the locality</li> </ul>
<b>Human Beings</b>			
Fáilte Ireland	Yes – Letter	19/03/09	<ul style="list-style-type: none"> <li>Lough Boora Parklands (being developed with Green Tourism agenda) and Wildlife –Amenities</li> <li>Development is on main approach route to Clonmacnoise</li> <li>Any further consultation (specific queries) should be undertaken with Shannon Development, Birr Technology Park, Birr, Co Offaly</li> </ul>
Health and Safety Authority (HSA)	Yes -letter and email	27/02/09 09/03/09 31/03/09	<ul style="list-style-type: none"> <li>Site considered lower tier COMAH/Seveso site due to diesel storage for back up fuel (ca 5,000m<sup>3</sup>). Therefore full development requires risk and consequence assessment as per guidelines including gas</li> <li>HSA require a detailed consequence and risk assessment in order to formulate a response to a request for advice on a planning application. This assessment should model the consequences of credible events, their effects at nearest residences and estimate the risks of same. See the following link for further information relating to the HSA approach to Land Use Planning</li> </ul>
Health Service Executive (HSE)	Yes	31/03/09	<p>The EIS should address</p> <ul style="list-style-type: none"> <li>Generators</li> <li>Delivery and storage of diesel and other chemicals</li> <li>Water supply and its treatment</li> <li>Storage and disposal of storm water</li> <li>Storage and disposal of foul water</li> <li>Welfare facilities for employees during construction and operation</li> </ul>
Irish Farmers Association	No		
<b>Material Assets</b>			
Fáilte Ireland	Yes – Letter	19/03/09	<ul style="list-style-type: none"> <li>Natural Resources - Lough Boora Parklands</li> </ul>
Department of Communication Energy and Natural Resources	Yes – Letter	13/03/09	<ul style="list-style-type: none"> <li>Will comment at a later stage on the specific energy characteristics of the proposed project and how fits in with energy policy</li> <li>No observations relating to planning and environment -outside of remit</li> <li>Refer to CER in respect of permission to construct development</li> </ul>
Commission for Energy Regulation	Yes		<ul style="list-style-type: none"> <li>Lumcloon Energy in Gate 3 application process</li> </ul>
Sustainable Energy Ireland	Yes – letter	06/03/09	<ul style="list-style-type: none"> <li>No comment but note the governments strategic goal of reliable, secure and competitively priced electricity and this demands additional generating plants</li> </ul>
Electricity Supply Board	Yes - letter	27/02/09	<ul style="list-style-type: none"> <li>No comment or view to express in relation to the planning application</li> </ul>

Bord Gáis	No		<ul style="list-style-type: none"> <li>WYG to consult Bord Gáis on the proposed development</li> </ul>
Irish Aviation Authority	Yes letter	04/03/09	<ul style="list-style-type: none"> <li>Aviation warning lighting will need to be considered if any structures are more than 80m above ground level</li> </ul>
<b>Soils and Geology</b>			
Department of Agriculture Food and Rural Development	No		
Teagasc	No		
Environmental Protection Agency (EPA)	Yes – letter	09/03/09	<ul style="list-style-type: none"> <li>Development requires IPPC licence – environmental emissions will be considered as part of the licence application and BAT should be used in the design and carrying out of activities</li> <li>WYG also consulted with the EPA on 30/06/09 in respect of the former ash dump located south east of the proposed development lands.</li> <li>The former licence is surrendered and therefore the EPA have no concerns with it, but will consider the appropriate level of monitoring based on a new application</li> </ul>
Geological Survey of Ireland	Yes - letter	09/03/09	<p>Irish Geological Heritage Section</p> <ul style="list-style-type: none"> <li>IGH is currently in partnership with NPWS to identify sites for NHA designation – in process of finalising the proposed sites. There are no geological heritage sites on the proposed development, however Lough Boora is located ca 2.8km SE of the site. It is listed under IGH7 and IGH14 themes</li> <li>Would like to be provided with SI reports for the site so that data could be added to national database of SI boreholes</li> <li>Also require notification of ground excavations – that may provide geological exposures for examination – record purpose</li> <li>Should any be bedrock be exposed – should be designed to be left exposed</li> </ul>
<b>Air</b>			
Environmental Protection Agency (EPA)	Yes – letter	09/03/09	<ul style="list-style-type: none"> <li>Development requires IPPC licence – environmental emissions will be considered as part of the licence application and BAT should be used in the design and carrying out of activities</li> <li>WYG also consulted with the EPA on 30/06/09 in respect of the former ash dump located south east of the proposed development lands.</li> <li>The former licence is surrendered and therefore the EPA have no concerns with it, but will consider the appropriate level of monitoring based on a new application</li> </ul>
Coillte Teoranta	Yes – letter	06/05/09	<ul style="list-style-type: none"> <li>Provide more information on the potential impact of stack emissions (acidity) on forestry in the locality</li> </ul>

Noise			
Environmental Protection Agency (EPA)	Yes – letter	09/03/09	<ul style="list-style-type: none"> <li>Development requires IPPC licence – environmental emissions will be considered as part of the licence application and BAT should be used in the design and carrying out of activities</li> </ul>
Landscape and Visual			
Fáilte Ireland	Yes – Letter	19/03/09	<ul style="list-style-type: none"> <li>Lough Boora Parklands (being developed with Green Tourism agenda) and Wildlife –Amenities</li> <li>Development is on main approach route to Clonmacnoise</li> <li>LVIA specialist also consulted with OCC in respect of potential visual impact</li> </ul>
Other Bodies			
An Taisce	Yes - Letter	29/05/09	<p>Spoke with An Taisce on 22/05/09. EM stated that An Taisce were totally opposed to gas power generation plants and are of the view that they are neither environmentally or economically sustainable. A formal letter of response was provided by An Taisce on 29/05/09. Comments outlined in letter relate to the following</p> <ul style="list-style-type: none"> <li>Background to the site</li> <li>Technical clarifications on plant type being proposed</li> <li>Operation times of plant</li> <li>Air pollutants generated</li> <li>Details of connection to the electricity grid</li> <li>Details of connection to the gas network</li> <li>EIS should be comprehensive</li> <li>An Appendix was also attached to response letter which outlines An Taisce’s comments in relation to the potential impacts and mitigation measures associated with a development in Co Donegal</li> </ul>
An Garda Síochána	No		
Border Regional Authority	No		

## 1.9 DIFFICULTIES IN COMPILING SPECIFIED INFORMATION

No significant difficulties were encountered during the compiling of the EIS.