



# DOCUMENT CONTROL SHEET

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**Environmental Impact Statement**

**for**

**Gormanston Above Ground Installation (AGI)**

**Gormanston, Co. Meath**

**Volume 1 Non-Technical Summary**

**Volume 2 Main Report**

**Volume 3 Technical Appendices**



**Scotland to Ireland  
Second Gas Interconnector Project**

**Gormanston AGI**

**Environmental Impact Statement**

**Volume 1  
Non-Technical Summary**



## STUDY TEAM

The study was carried out by M.C. O'Sullivan & Co. Ltd, Consulting Engineers, who were responsible for the overall production of the EIS. The EIS was undertaken on behalf of Sofregaz of France, Project Managers for the development of Gormanston AGI. Specialist input was obtained from sub-consultants in the following areas:-

<b>Consultant</b>	<b>Specialist area of Study</b>
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Enterprise Ireland	Noise
Envirocon Ltd.	Air Quality
GVA Dónal Ó Buachalla	Material Assets
Margaret Gowen & Co. Ltd.	Archaeology & Cultural Heritage
Mitchell and Associates	Landscape Specialists
Philip Farrelly & Co	Agriculture
Roger Goodwillie & Associates	Flora and Fauna

We wish to acknowledge the assistance of Bord Gáis Éireann and Meath County Council in the preparation of this document. We would also like to acknowledge the assistance and contributions of all other bodies consulted during the course of this study.

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## VOLUME 1

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# 1. INTRODUCTION

## 1.1 EIA REGULATIONS & THE GAS ACT

This document is a Non Technical Summary of the Environmental Impact Statement (EIS), prepared for Bord Gáis Éireann by M.C. O' Sullivan & Co. Ltd. for an Above Ground Installation (AGI) at Gormanston, Co. Meath. The AGI is to be constructed as part of a second gas interconnector pipeline from Scotland to Ireland which will reinforce gas supply to Ireland. Under Part II of the European Communities (Environmental Impact Assessment) Regulations 1999 (S.I. 93 of 1999) an EIS must be undertaken to determine the impact of the proposed development on the environment before construction of the AGI is allowed to proceed. The EIS will form part of the Application for Section 8 Approval (Gas Act, 1976), which must be lodged with the Minister for Public Enterprise.

The EIA Regulations state that;

*'gas pipelines and associated installations ... where the design pressure would exceed 16 bar and the length of new pipeline would exceed 40 kilometers'*

are subject to Environmental Impact Assessment. The Gormanston AGI would be categorised as an *'associated installation'* as specified in these regulations.

The Gas Act (1976) established Bord Gáis Éireann (The Gas Board) as the single statutory body responsible for the acquisition, transmission and distribution of natural gas in Ireland. The functions of the Board are given in Section 8 of the Act as follows:

*'It shall be the duty of the Board to develop and maintain a system for the supply of natural gas being a system which is both economical and efficient and which appears to the Board to be requisite for the time being'.*

Section 8 (3) of The Gas Act is of particular relevance to the construction of AGIs as under this section the board may *'provide operate or maintain...pressure reducing stations...as or necessary or expedient in relation to, or ancillary to, the provision, development or maintenance of a system of gas supply'*.

According to section 8(8):

*'...the Board shall take all reasonable measures to protect the natural environment and to avoid injuring the amenities of the area....'*

and

Section 8(9) requires that the Board:

*'...take all reasonable steps to prevent injury to any building, site, flora, fauna, feature or other thing which is of particular architectural, historic, archaeological, geological or natural interest....'*



## 1.2 CONTENT OF E.I.S.

The scope and content of the E.I.S. has been prepared having regard to the information requirements specified in the European Communities (Environmental Impact Assessment) (Amendment) Regulations 1999 (S.I. 93 of 1999). 'Advice Notes on Current Practice in the preparation of Environmental Impact Statements', as published by the Environmental Protection Agency (1995) was also used as a guideline document. In addition, the report entitled 'Technical Guidance for the Construction of Gas Pipelines in Ireland', (Draft, 2<sup>nd</sup> edition 2000) issued by the Department of Public Enterprise was considered. This document sets out the technical information the Minister expects to receive from anyone, seeking the Minister's consent under the Gas Act, 1976 as amended, to construct a pipeline in Ireland, for the purpose of transporting natural gas.

## 1.3 PUBLIC COMMENTS ON EIS

On submission of the EIS, BGÉ are required by Article 40(2) of the Gas Act, 1976 (as inserted by Article 20 of the 1989 Regulations (S.I. 349 of 1989)) to publish in one or more newspapers circulating in the area of the proposed AGI a notice stating

- That an application or notice has been given indicating location and nature of the proposed AGI
- An EIS has been submitted
- Name of a place where a copy of the EIS can be inspected free of charge or purchased
- Specified time and prescribed period during which the EIS can be inspected
- That any person can make submissions and observations on the proposed AGI within the prescribed period.

In the case of any interested person, the prescribed period is one month from the date of publication of the notice in the relevant newspapers (Gas Act, 1976 Regulations 1990 (S.I. No. 51 of 1999)).

Furthermore, extensive consultation has taken place with landowners and the general public throughout the EIA and design process.



## 2. PROJECT DESCRIPTION

BGE has been responsible for the supply, transmission, distribution and sale of natural gas in Ireland since it was established in 1976 following the discovery of natural gas off the coast of Kinsale, Co. Cork. Gas was first brought ashore in Cork in 1978 and in 1983 the Cork/Dublin pipeline was built. In 1995 the first sub-sea interconnector between Scotland and Ireland was built which provided access to an international gas network, including North Sea gas.

BGE propose to construct a second sub-sea gas interconnector pipeline from Scotland to Ireland in 2002. The purpose of the pipeline is to reinforce the supply of natural gas to Ireland, which, due to the depletion of the Kinsale Gas Field, will experience a shortfall of supply in the winter of 2002. Furthermore, the existing sub-sea interconnector pipeline does not have the capacity to meet the growing demand for gas to the year 2025. The construction of a second interconnector will serve to meet this demand and will also provide additional security of supply.

The Above Ground Installation (AGI) at Gormanston, Co. Meath is one element of the proposed Second Gas Interconnector Project which also includes an onshore pipeline in Scotland, the sub-sea pipeline and an onshore pipeline in Ireland linking the proposed AGI at Gormanston with an existing AGI on the BGE transmission system at Ballough, Co. Dublin (Figure 1).

The proposed Second Gas Interconnector Pipeline begins at Beattock in Scotland where gas will be taken from the British gas transmission network and transported overland for 80km via a new pipeline to Brighthouse Bay, where the sub-sea route commences. The subsea element of the pipeline, 195km in length and operating at a pressure of 147 bar, terminates at a landfall location at Gormanston, Co. Meath, where the pipeline comes ashore. The pipeline then runs inland for approximately 600m to the proposed Gormanston AGI. It is necessary to locate the AGI near the landfall, in order to reduce the pressure of the gas from 147 bar to its Maximum Allowable Operating Pressure (MAOP) of 85 bar thereby rendering it suitable for transmission in the existing BGE network. This EIS deals specifically with Gormanston AGI.

On initial assessment of this project it was considered necessary to undertake an Environmental Impact Assessment (EIA) of the Gormanston AGI location, which would include the publication of an Environmental Impact Statement (EIS). In accordance with Irish Legislation, an EIA must be conducted for projects of certain sizes or those proposed within particularly environmentally sensitive areas. An EIA was undertaken for this AGI as it is associated with the development of a pipeline which is greater than 40km in length and will operate at a pressure greater than 16 bar. It is also necessary to undertake EIAs for discrete elements of projects and therefore EISs will accordingly be completed for the sub-sea and onshore pipeline elements of this project.



Bantry

Enniscorthy

Wick

Manchester

**LEGEND**

- Compressor station
- Pressure reduction & metering station
- Existing Onshore Pipelines
- Proposed Sub-Sea Pipeline
- Existing Sub-Sea Pipeline

**Fig. No.**  
**1**

Prepared	P. Healy
Checked	J. Shalloo.
Scale	N.T.S.
Date	Feb. 2001
File Ref.	Fig. 1-1.dwg

Job. **Gormanston AGI E.I.S.**

Title **Existing & Proposed Sub-Sea Interconnector**



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### 3. PUBLIC CONSULTATION

As part of the Environmental Impact Assessment process a 'Public Information Evening' was held at Gormanston College on the 26<sup>th</sup> September 2000 to give all interested parties an opportunity to review the development and ask questions or air their concerns. During the week prior to the information evening advertisements were placed in local newspapers and radio advertisements were run announcing the information evening and inviting all interested parties to attend.

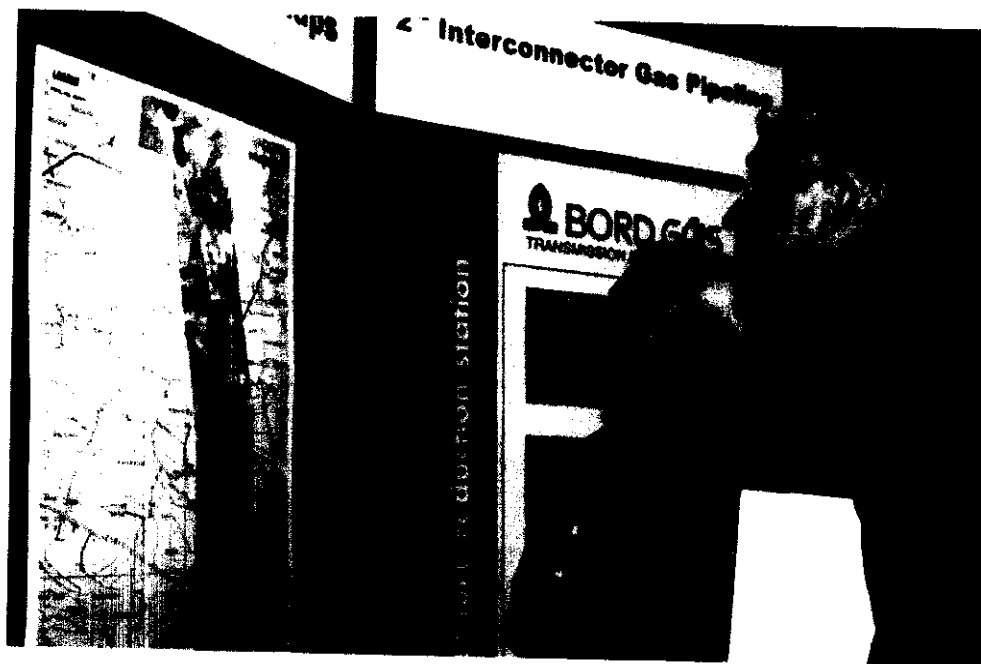
The session commenced at 3pm and finished at 9pm. This time frame was deemed most suitable in order to accommodate a good cross section of the community, for example farmers who may not have completed farm-work until late in the evening. A local photographer attended and as result photos were placed in the local and regional newspapers.

The presentation for the Information Evening comprised a series of display boards, which included both text and photos, which described and illustrated the background to the project, the construction and environmental impact assessment process and the project time-scale.

Representatives from BGÉ, M.C. O'Sullivan & Co. Ltd., and Sofregaz, design consultants for the AGI development, were in attendance to discuss various aspects of the project including construction methods, environmental and agricultural issues. Representatives from BGÉ included the Agricultural Liaison Officer (ALO) and Public Relations Personnel.

The Information Evening was attended by people of various backgrounds including landowners, representatives from local businesses and organisations, local authority representatives, as well as the general public with an interest in the provision of gas to local towns. Furthermore, consultations have taken place with the local authority and government departments regarding the proposed development.

Plate 1



Public Information Evening at Gormanston College



## **4. STRUCTURE OF THE EIS**

This Environmental Impact Statement is covered by three separate volumes as follows:

- Volume 1 Non-Technical Summary
- Volume 2 Main Report
- Volume 3 Technical Appendices

Volume 1 is a Non-Technical Summary of the main findings of the EIS and includes a table outlining the predicted impacts and their magnitude.

Volume 2 (Main Report) deals with both the design and environmental aspects of the EIS. The report initially describes the background to the project, the AGI design and its key processes. Following this the environmental aspects of the EIS are discussed in detail by outlining the existing environment, the impacts of the proposed development and mitigation measures to be employed.

Volume 3 (Technical Appendices) contains reports submitted by environmental specialists.



## 5. AGI SITE DESCRIPTION

The proposed AGI site is located in the townland of Gormanston, approximately 1km east of the village of Gormanston in Co. Meath, as shown on Figure 2.

The site is located in the south west corner of a large, flat field. A small number of dwellings lie within 300m of the site. The surrounding hinterland is agricultural in nature with arable farming and market gardening characterising this fertile area. High hedges and trees surround the site on the roadside (N1) providing good screening.

Gormanston railway station is located approximately 200m to the south east of the site on the Dublin to Belfast railway line. This railway station is predominantly used by Dublin City commuters as the Dublin to Newry train service serves the station. The old N1 National Primary route, recently downgraded to local road status due to the opening of part of the M1 Dublin to Belfast motorway, lies approximately 120m west of the proposed AGI site. The Irish Defence Forces operate a military aerodrome and training centre, approximately 1km to the north of the site as shown on Figure 3.

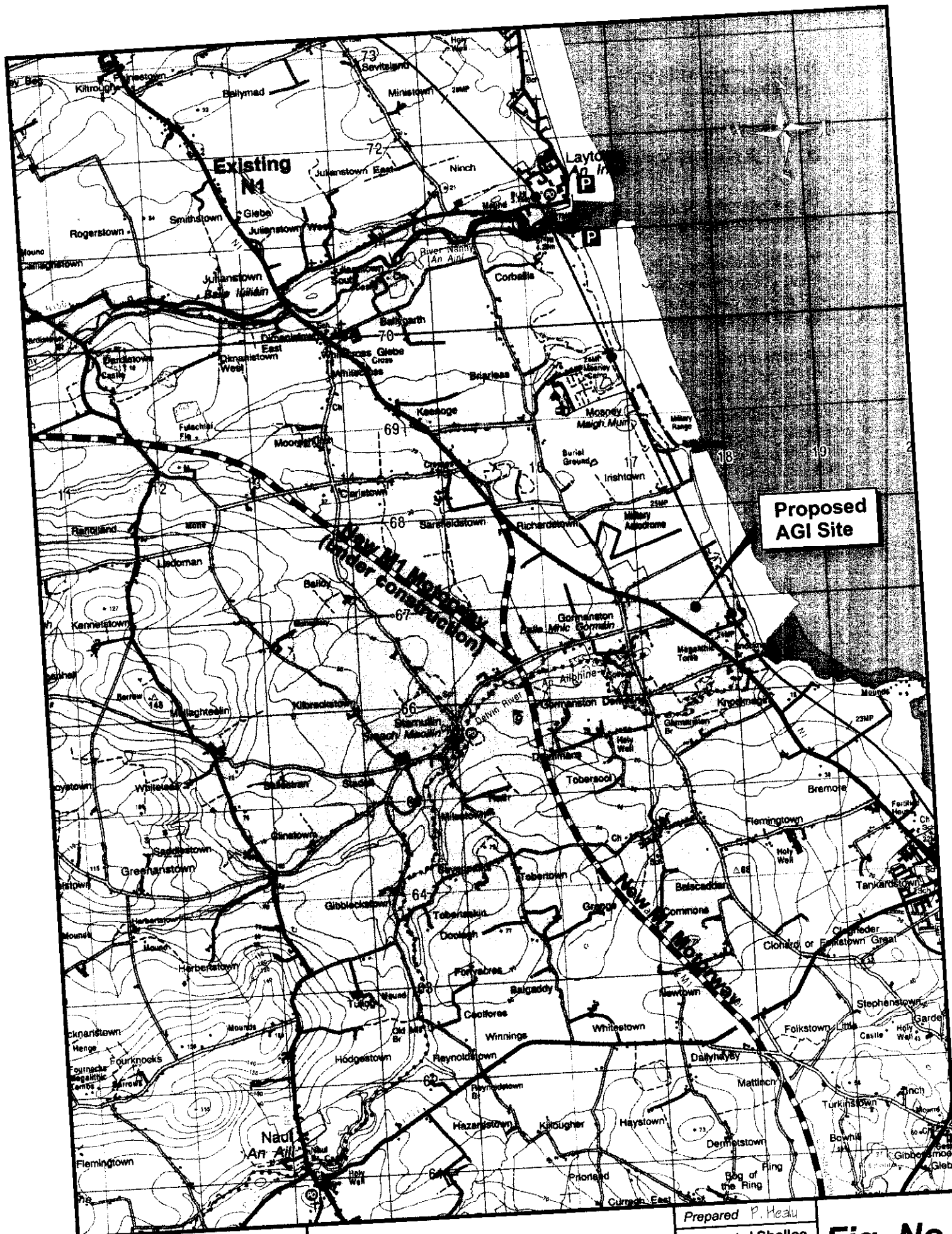
A typical AGI is shown in Plate 2 below.

**Plate 2**



**Typical AGI, Abbotstown, Co. Dublin**







## 6. AGI LAYOUT & PROCESSES

The AGI site dimensions are 100m x 90m. There will be two main buildings on site and an additional small building as follows:

- Control room (15m x 7.5m x 4.5m)
- Pressure Control Valve Shelter (18m x 10m x 3m)
- Chromatograph Building – this is a small building where the exact composition of the gas is determined prior to usage.

The control room will contain all of the equipment necessary for the electrical supply to the station. The PCV (Pressure Control Valve) shelter will house the pressure control valves (also known as regulators) which are the main sources of noise in an AGI of this type. The noise is created when the gas flows through the regulators at very high pressures. The regulators are enclosed in a specially designed building, which will eliminate or minimise the level of noise emitted.

The highest structures on site are the water bath heaters which stand at 8.5m above ground level. The water bath heaters are fitted with stacks from which the gas is vented once it has been burned to heat the water.

The first stage of the AGI process is gas filtration to remove any impurities. The gas must then be heated, inside the water bath heaters, to avoid the possibility of the gas freezing, which would otherwise result during the pressure reduction stage. Regulation is the term used to describe the pressure reduction stage which reduces the pressure from 147 bar coming from the sub-sea pipeline to an onshore MAOP of 85 bar. Metering is the final step in the process and this involves recording the gas flow rate in the pipeline leaving the AGI.

An important safety measure is also undertaken at the AGI whereby the normally odourless natural gas is injected with a fluid giving it a characteristic smell, commonly associated with natural gas. Extremely low concentrations of this odour rendering fluid are detectable creating a very reliable method of gas leak detection.



## 7. CONSTRUCTION DESCRIPTION

Access to the site from the N1 will be provided via Station Road, the road leading from the N1 to Gormanston Railway Station (see Figure 3). This access route will be used for both the construction and operational phase of the development. An entrance will be constructed from the site onto Station Road which will be used for permanent access to the site. However, this will only be used on an intermittent basis as the AGI will be unmanned and therefore infrequently visited.

The site perimeter will be fenced off and any work taking place beyond the site compound will also require appropriate fencing or barriers. A certain amount of excavation will be required within the site compound. The site compound, including access road from Station Road, as well as being the general area of construction, will also accommodate facilities such as offices, catering facilities, toilets and washing facilities, car parking and storage areas. It will take approximately 9 months to complete the construction phase of the AGI.

Working hours will follow the standard requirement for hours of work in the construction industry. However, any work to be undertaken outside normal working hours, will only take place with the approval of the Engineer. If this is the case BGÉ will notify local residents in advance.

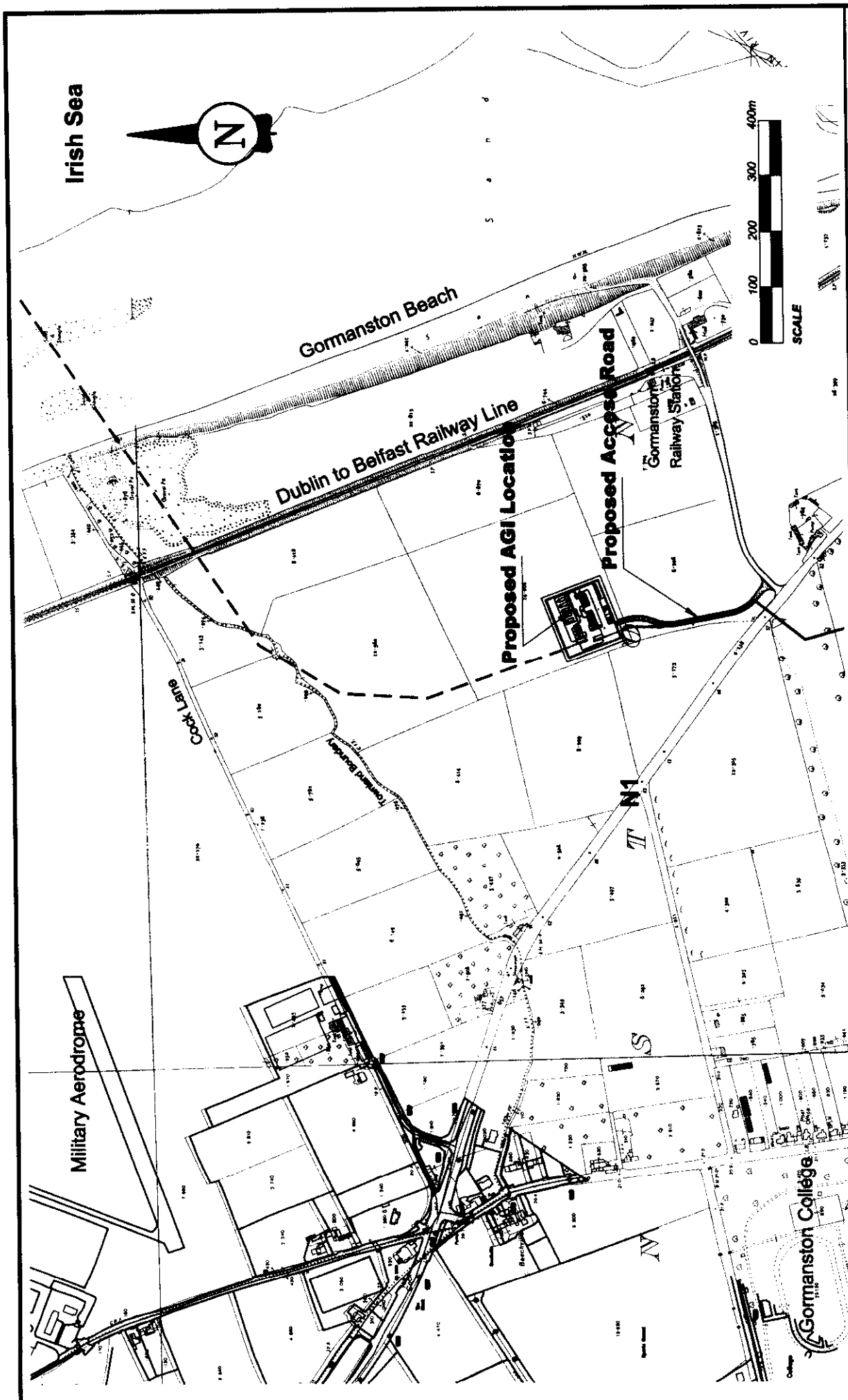
The appropriate health and safety requirements will be necessary to maintain a safe place of work and also to protect the public from construction activities. The Construction Regulations (S.I. No. 44 of 1993) set forth statutory requirements aimed at improving the management and co-ordination of health and safety on construction sites and requires that safety, health and welfare is;

- taken into account during the design and tendering phases of the project
- managed and co-ordinated on site using the Health and Safety Plan
- passed on, in a Safety File (to allow subsequent safe maintenance and repair).

Responsibilities are placed in particular on BGÉ (Client and Developer), Sofregaz (Designers) and the Contractor.

On completion of the construction phase of the project the commissioning of the AGI will commence. This will involve a range of testing operations on various aspects of the AGI to ensure that the facility operates to design specifications.



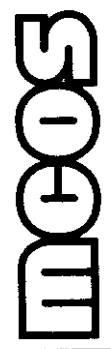


**Fig. No.**  
**3**

Prepared:	P. Higgins
Checked:	J. Shalloo
Scale:	N.T.S.
Date:	Feb. 2001
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## Gormanston AGI EIS

### Detailed Site Location



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## 8. ALTERNATIVES

A number of alternatives to this project were examined during the early stages of the EIS. The main alternatives examined in the validation of this project's feasibility are:

- Implication of 'Do Nothing' Strategy
- Alternative Gas Import Options
- Alternative Landfall Location
- Alternative Site Location
- Alternative Site Design.

The option of the 'Do Nothing' strategy (i.e. what would happen if this project did not go ahead?) would ultimately result in a situation where Ireland's supply of gas would not be sufficient to meet demand, as the existing sub-sea interconnector does not have the required capacity and the Kinsale gas field is near depletion. In this scenario, it is essential that the development of the second sub-sea interconnector proceed in order to meet the shortfall. This study concluded that, despite the recent discovery of gas in the Corrib Gas Field, off the Mayo coast, where production is expected to begin in 2003, the imminent depletion of the Kinsale Gas Field would result in a shortfall in supply in the Winter of 2002.

During the preliminary design of the interconnector, a number of landfall locations were examined with regard to the sub-sea pipeline. Alternative landfall sites considered comprised various locations along the east coast of counties Louth, Meath and Dublin. However, for technical reasons, related to the construction of the sub-sea pipeline, Gormanston was deemed the most suitable area. The location of the onshore reception facility (AGI) must be in close proximity to the landfall such that the pressure of the gas can be reduced to a safe operating pressure consistent with onshore pipelines in Ireland.

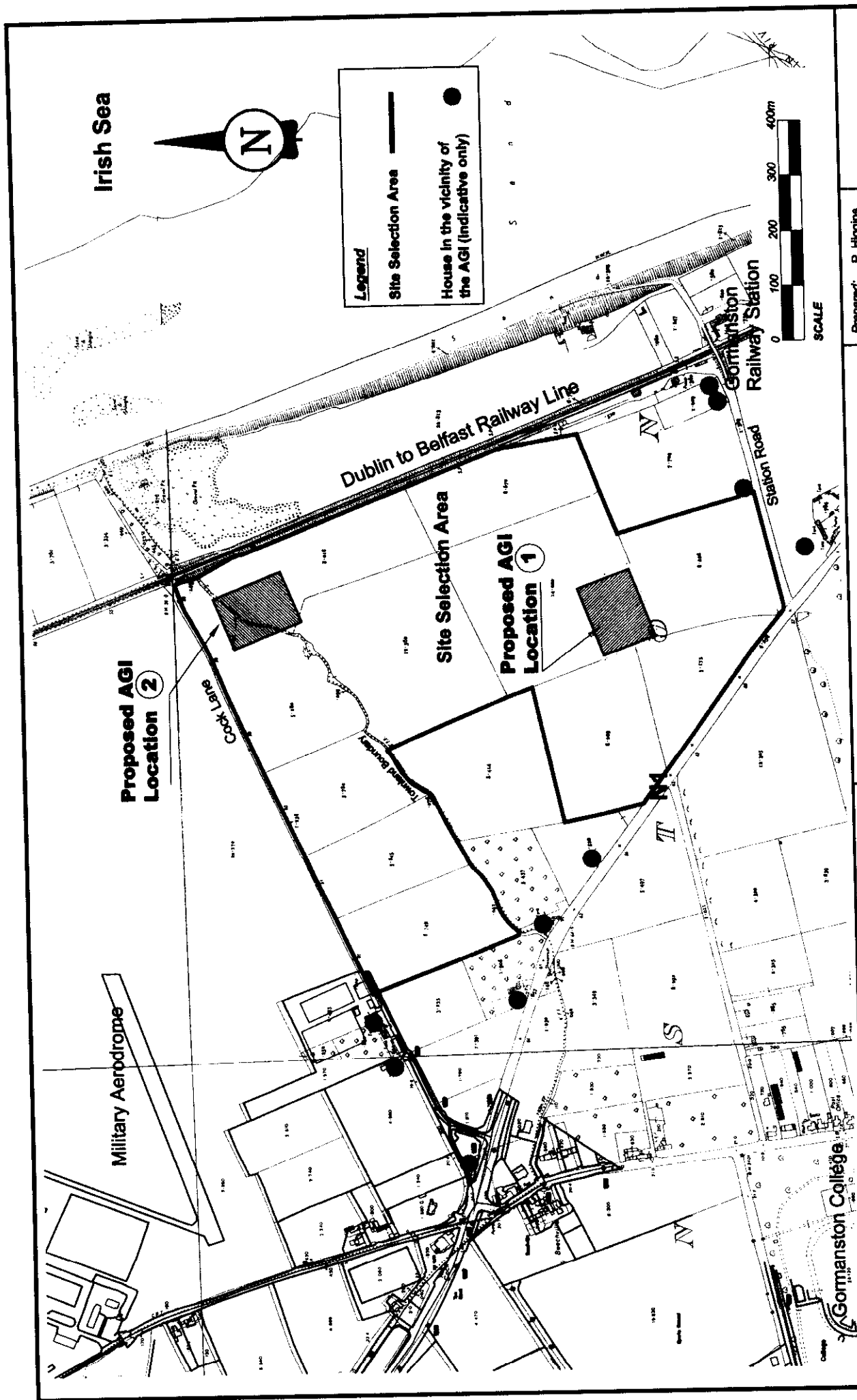
Having chosen the most suitable landfall location, two AGI sites were examined within an allocated study area. Site location 1 was deemed to be the most suitable site location (see Figure. 4).

Site Location No. 2 (Figure. 4) was eliminated primarily due to its proximity to the military aerodrome and the Dublin to Belfast railway line. This site was situated within the approach zone of a runway in the military camp. This site location is also situated in an area of development restriction pertaining to the nature and height of proposed structures. In addition, Site Location No. 2 also contains some features of ecological importance, the hedgerow along Cock lane and a triangular section of grassland immediately south of Cock Lane which would be affected by the proposed development.

In summary, Site Location No. 1 (Figure. 4) is considered an appropriate location for the following reasons;

- Outside the area of influence of the military aerodrome and firing range
- Located outside the area of development restrictions
- Not located in close proximity to the Dublin to Belfast Railway Line
- Does not conflict with any ecologically sensitive areas
- Good screening available
- Close to the sub-sea pipeline landfall.



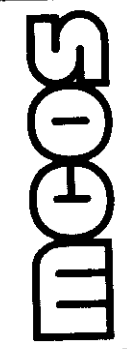


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Scale:	N.T.S.
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**Gormanston AGI EIS**

**Proposed Site Location Options**



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Alternative design elements of the AGI, explained in detail in Volume 2, were also examined during the course of the EIS and engineering design.

Furthermore, the Gas 2025 Feasibility Study, conducted in 1998, examined the technical feasibility and economic viability of a number of other gas import options.

The study found that although a number of the options were technically feasible, the associated costs of developing the infrastructure were prohibitive. Furthermore, some options did not provide the desired security of supply. It concluded that the most technically and economically viable option was to duplicate the existing Scotland to Ireland interconnector.

An additional sub-sea interconnector is an important development for the provision of a secure supply of natural gas to Ireland for the future. The Gormanston AGI is an essential link in the operation of a second sub-sea interconnector from Scotland. After looking at the potential alternatives, it is considered that the AGI is located in the most appropriate position. The most modern AGI design will be carried out, incorporating the most up to date technology providing a safe working environment and assisting in the reduction of any environmental impacts on the Gormanston area.



## 9. ENVIRONMENTAL ASSESSMENT

The environmental aspects of the EIA are summarised in the following section. Table 1 provides the definitions of the particular impact types as defined in the document entitled 'EPA Draft Guidelines on the Information to be Contained in Environmental Impact Statements' (EPA, 1995). However, Table 2 identifies the main impacts and their magnitude.

**Table 1: Glossary of Impact Terms**

<b>Slight Impact</b>	An impact which causes changes in the character of the environment which are not significant or profound.
<b>Significant Impact</b>	An impact which, by its magnitude, duration or intensity alters an important aspect of the environment.
<b>Negative Impact</b>	A change which reduces the quality of the environment.
<b>Positive Impact</b>	A change which improves the quality of the environment.
<b>Temporary Impact</b>	Impact lasting for one year or less
<b>Short-term Impact</b>	Impact lasting one to seven years.
<b>Permanent Impact</b>	Impact lasting over fifty years.
<b>Neutral Impact</b>	A change which does not affect the quality of the environment.

### 9.1 AGRICULTURE AND LAND USE

As part of the EIA an assessment of impacts on agricultural lands potentially affected by the proposed Gormanston AGI site was undertaken. This describes the current conditions on the proposed AGI site and identifies agricultural impacts of the AGI both during its construction and operational phases. Professional recommendations are also formulated to mitigate any potentially significant adverse impacts.

The agricultural practices carried out in the fields where the proposed development will be sited consist of grassland and various crops. The construction and operation of the Gormanston AGI has potential slight negative impacts upon aspects of the agricultural environment. However, ongoing liaison with landowners during the construction phase of the project will help to minimise impacts and difficulties. Also, the use of some of the suggested mitigation measures will ensure that impacts on agricultural activity at the AGI site are kept to a minimum. It is likely that the impact of the development of the AGI on the proposed site will be no greater than any alternative site chosen and it is therefore recommended that the development proceed.



## 9.2 MATERIAL ASSETS

The AGI will be located in a rural area and the site acquisition comprises agricultural land only. No residential or commercial property will be acquired. Compensation for loss of land will be agreed with the relevant landowner. The nearest house is approximately 200m from the site and taking the above factors into consideration it can be concluded that there will be a slight negative impact on the retained lands.

## 9.3 TRAFFIC

The daily levels of traffic during construction of the AGI are estimated to be in the order of single digit numbers. These additional levels are considered insignificant and their impact on present day traffic levels along the old N1 will be hardly noticeable as far as traffic operation is concerned. However, restrictions on truck movements to and from the site can be implemented if necessary.

## 9.4 TERRESTRIAL FLORA AND FAUNA

The Gormanston site and its access route consists of pastures occurring in a mixed grassland and arable area. It contains flora and fauna typical of cultivation on the Dublin/Meath border with no features of value in the county context.

The proposed development during construction and operation, will not have a significant effect on flora and fauna. Appropriate management of the site will ensure this.

## 9.5 ARCHAEOLOGY

There are no known monuments in the immediate vicinity of the proposed AGI site at Gormanston, Co. Meath. However, the presence nearby of two megalithic tombs, to the South, and a Bronze Age burial, to the North, indicates the importance of this area in prehistory. However, the area has been disturbed by both the construction of the railway in the nineteenth century, and by the extraction of sand from a pit in the area now occupied by a cycle track. It is, therefore, unlikely that this area has extensive *in situ* remains.

Due to the presence of archaeological material in the general area, archaeological monitoring is recommended during soil stripping and construction on the site.

## 9.6 GEOLOGY & HYDROGEOLOGY

The geology of the site is clayey/silty gravel, underlain by the Denhamstown Formation, which forms part of the Balbriggan Inlier. The thickness of the overburden at the site is likely to vary between 1-3m. Field observations show that the overburden material close to the site is derived from sandstones, siltstones and limestones.

In terms of hydrogeology, the Denhamstown Formation is classed as a poor aquifer, generally unproductive. The site is located 400m from the coastline and therefore it is likely that



groundwater in the deeper bedrock aquifer is brackish saline and would have no resource potential for potable water supplies. Water levels within the deeper bedrock aquifer are likely to fluctuate slightly in response to tidal variations in sea level. It is likely that groundwater flows from West to East across the site towards the sea. There may be perched water tables within the overburden due to the presence of the clay and silt in the gravel deposits. It is unlikely that minor perched water sources would be suitable or viable potable water abstraction resources. There is a locally important sand and gravel aquifer to the North of the site.

The construction and operation of the AGI will have no impact on geology, hydrogeology and overburden provided that proper mitigation measures are put in place.

## **9.7 AIR**

The location of the AGI site is remote and removed from nearby housing. During the construction phase the proposed AGI development will have a minor to moderate impact on air quality. This will arise from dust and particulate emissions generated due to the site construction and movement of construction traffic. The spraying of the site with water during dry dust periods will ensure that the impact of dust generated from the road surface, by passing vehicles, is restricted to a short-term, moderate impact.

When the AGI is completed, emissions of nitrogen oxides and hydrocarbons during normal operation will not be significant and no adverse impact on the local air quality is predicted. The gas odourising agent will be stored in a protected tank and injected into the natural gas under controlled conditions. Filling of the tank will take place by direct pipeline connection to ensure no loss of vapours during the filling process.

Controlled venting of gas from the AGI may be required for maintenance reasons. This will occur on an infrequent basis but could result in an odour being detected in the locality during release of the natural gas. These infrequent events will be carefully monitored and emissions would only last for a few minutes. However, apart from the potential to cause an odour, they will not have a significant impact on the surrounding air quality. No adverse effect on the health of the local community or damage to the surrounding environment is predicted.

## **9.8 NOISE**

The construction and operation of the AGI can be undertaken without undue impact on the noise environment. There will be no vibration perceptible off-site. The noise impact of the operation of the AGI can be defined as 'no impact'. The noise from the construction of the AGI can be defined as temporary 'slight impact'.

## **9.9 LANDSCAPE & VISUAL IMPACT**

During the construction phase the development will have a significant and negative impact but this impact will be temporary.

The visual impact will be caused by the following elements associated with construction work:-



- Dust
- Construction traffic
- Site huts
- Site security hoarding / fencing.

During operation the height of the structures on site, their location and the proposed screen planting around the site will render views into the site *visually insignificant*. Furthermore, the site is located in an area not frequented regularly by the public. In addition efforts will be made to lower the platform level of the AGI below existing ground level. This will, however, depend on ground conditions at the site. Therefore, the proposed development will not have a significant visual impact on the landscape or on the amenity of the land during operation. Figure 5 is a photomontage showing the proposed appearance of the site both prior to and after construction.

## 9.10 COMMUNITY EFFECTS & TOURISM

As the AGI site is located in a predominantly rural landscape, the community within the vicinity of the site consists of a small number of scattered dwellings along the minor roads and the old N1. During the construction phase, the development will result in temporary negative impacts resulting from traffic disruption, minor increases in noise levels and the potential for dust and particulate emissions. However, measures that can be used in the amelioration of these adverse impacts have been identified. The proposed development may also have a number of indirect benefits to the local economy through the possible use of local labour, service industries and local supplies of materials during the construction of the AGI.

The impact of the development on surrounding features of tourism/amenity potential i.e. Gormanston Beach and the River Delvin will be slight and of a temporary nature during the construction phase. However, the operation of the AGI will not impact on visitors to the area due to the distance separating the facilities from the AGI site and the surrounding landscape, which provides suitable screening against any visual impacts.

## 9.11 PLANNING POLICY

The 'Meath County Draft Development Plan, 2000' and the 'East Meath Development Plan, 2000' were examined to ensure that the development was not conflicting with any current or future development plans. Meath County Council has a number of policies for the development and conservation of the East-Meath sub-region. In particular, those relating to development zoning and conservation/amenity issues, i.e. protected structures, preservation of views & vistas, archaeology, natural heritage areas and tree preservation orders, were examined. Gormanston is classified as a separate development area within the East Meath sub-region with its own specific objectives. However, the development of the AGI will not interfere with any of these objectives.

## 9.12 HEALTH & SAFETY

The Health & Safety Authority (HSA) is the government agency responsible for implementation of health and safety regulations in Ireland. It requires that BGÉ (Developer), Sofregaz (Designer) and the Contractor manage and coordinate health and safety matters during the design and construction of the AGI through the implementation of the relevant health and safety legislation



Visual Assessment: View 4 From The N1 Facing North

Gormanston AGI

Date: 27 / 02 / 2001

Project:

Existing:

Proposed:

**Fig. 5 - Before and After Photomontage Views  
of Proposed AGI at Gormanston**



and standards. BGÉ are required to appoint a competent person as Project Supervisor for both the design stage and the construction stage. The Project Supervisor provides the health and safety link during the development of the project by working with BGÉ, Sofregaz and the Contractor.



Table 2: Summary of Environmental Impacts (Table 1 for definition of terms)

IMPACT		CONSTRUCTION	COMMENTS	OPERATION	COMMENTS
Agriculture: Material Assets	Livestock/Landscape	No impact <sup>1</sup>		No impact	
		Slight, negative, short term	Construction traffic will access the site via Station Road.	Slight, negative, long-term	As a result of the acquisition of agricultural land.
Traffic		No impact <sup>1</sup>		No impact	
	Air: Emissions (vehicular)	Moderate, negative, short term	Mitigation measures will ensure no adverse impact at dwellings in close proximity. Venting during emergency procedures only.	No impact	Odour as a result of venting will be detectable at the site perimeter but not further afield. Therefore, it will not impact on locals.
	Emissions (water bath heaters)	N/A		No impact	
	Dust Venting	Moderate, negative, short-term		N/A	
Noise		N/A		Slight, negative	
		Slight, negative, short term	Construction work will be limited to day-time hours.	No impact	No adverse impact at dwellings
Community Effects:	Regional	No impact		Positive, Permanent	Expansion of gas network.
	Local	Slight, negative, short term		Slight, negative, long-term	
Landscape & Visual Assessment	Impact	Significant, negative, short-term	As a result of site huts, fencing, site security hoarding.	Slight, neutral, long-term	Low structures and suitable screening will restrict views from the public domain
		No impact	An archaeologist will be present to supervise excavation.	No impact	
Archaeology		No impact		No impact	
		No impact <sup>1</sup>	Grassland to be fenced off during construction.	No impact	
Terrestrial Flora and Fauna		No impact <sup>1</sup>		No impact <sup>1</sup>	
Geology, Hydrogeology & Overburden		No impact <sup>1</sup>		No impact <sup>1</sup>	

<sup>1</sup> No impact provided mitigation measures are in place. Impacts and mitigation measures are discussed in more detail in Volumes 2 and 3.



### 9.13 CONCLUSION

Having undertaken an assessment and evaluation of all the possible impacts summarised above, it can be stated that the proposed Gormanston AGI development will not have a significant impact on the environment.

The majority of impacts will occur during the construction phase of the development, which is expected to last for a period of 9 months. Therefore, these impacts can be considered transient and of a short-term nature. Given the rural nature of the site, impacts are not expected to affect the local community in a significant way.

During the operational phase there will be minor impacts primarily due to intermittent gaseous emissions. It will be necessary for gas to be vented from the AGI on occasion, but this is not considered a significant impact, as it will only occur over a matter of minutes. Although the gas may be detectable, residents should not experience any adverse impacts and certainly gaseous emissions will not affect community health or damage crops.

The visual impact of the site is described as slight but neutral as the structure is a utility development in an agricultural and rural based environment. However, in the overall context of the existing environment the impact will be neutral. This is because the relatively low AGI structures, their location and the proposed screen planting around the site will render views into the site visually insignificant. For similar reasons noise emissions are not expected to have a significant impact.

Having conducted an Environmental Impact Study, the results of which are described in detail within the Environmental Impact Statement, it can be concluded that the proposed development of an AGI in Gormanston, Co. Meath will not have a significant impact on either the natural environment or human beings. Therefore it is recommended that this development should proceed, provided the appropriate mitigation measures are implemented during the construction and operational phases of the AGI.



**Scotland to Ireland  
Second Gas Interconnector Project**

**Gormanston AGI**

**Environmental Impact Statement**

**Volume 2  
Main Report**



## **STUDY TEAM**

The study was carried out by M.C. O'Sullivan & Co. Ltd, Consulting Engineers, who were responsible for the overall production of the EIS. The EIS was undertaken on behalf of Sofregaz of France, Project Managers for the development of Gormanston AGI. Specialist input was obtained from sub-consultants in the following areas:-

<b>Consultant</b>	<b>Specialist area of Study</b>
B.J. Murphy & Associates	Geology & Hydrogeology
Enterprise Ireland	Noise
Envirocon Ltd.	Air Quality
GVA Dónal Ó Buachalla	Material Assets
Margaret Gowen & Co. Ltd.	Archaeology & Cultural Heritage
Mitchell and Associates	Landscape Specialists
Philip Farrelly & Co	Agriculture
Roger Goodwillie & Associates	Flora and Fauna

We wish to acknowledge the assistance of Bord Gáis Éireann and Meath County Council in the preparation of this document. We would also like to acknowledge the assistance and contributions of all other bodies consulted during the course of this study.

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## 1.0 INTRODUCTION

### 1.1 BACKGROUND

Bord Gáis Éireann propose to construct a second gas interconnector pipeline from Scotland to Ireland. This pipeline will reinforce gas supply to Ireland. As part of this development an installation is required at the landfall in Gormanston, Co. Meath. Legislation requires that an Environmental Impact Statement be prepared for the Gormanston Above Ground Installation (AGI). It is in this context that the present document has been prepared by M.C. O'Sullivan & Co. Ltd. for Sofregaz.

The European Communities (Environmental Impact Assessment) (Amendment) Regulations, 1999, Article 24, Part II, state that an EIS is required for '*Gas pipelines and associated installations not included in Part I of this schedule, where the design pressure would exceed 16 bar and the length of new pipeline would exceed 40 kilometres*'. The Gormanston AGI would be categorised as an '*associated installation*' as specified in these regulations.

Environmental Impact Assessment (EIA) is a major component of a project development and is used for the evaluation of a project's environmental acceptability. Its purpose is to identify the predicted environmental effects of a project and determine steps of mitigation or ways of avoiding or minimising the uncovered impacts. An Environmental Impact Statement (EIS) is the document used to express all the environmental information associated with the EIA.

The Department of Public Enterprise (DPE) Technical Guidelines for the Construction of Gas Pipelines in Ireland, Section 2.1 Environmental Aspects, also state that '*Separate Environmental Impact Statements are required for discrete elements of the pipeline project (i.e. off-shore, on-shore, compressor station siting, landfalls)*.' Again, the Gormanston AGI would also be classified as one of these elements.

### 1.2 STRUCTURE OF THE REPORT

This Environmental Impact Statement (EIS) follows the general format outlined below:

- Volume 1 – Non-Technical Summary
- Volume 2 – Main Report
- Volume 3 – Technical Appendices

The Non-Technical Summary (Volume 1) outlines the main findings of the EIS and emphasises the most significant of these. A simple matrix is also included which summarises the magnitude of the impacts.

The Main Report (Volume 2) follows the format outlined below:

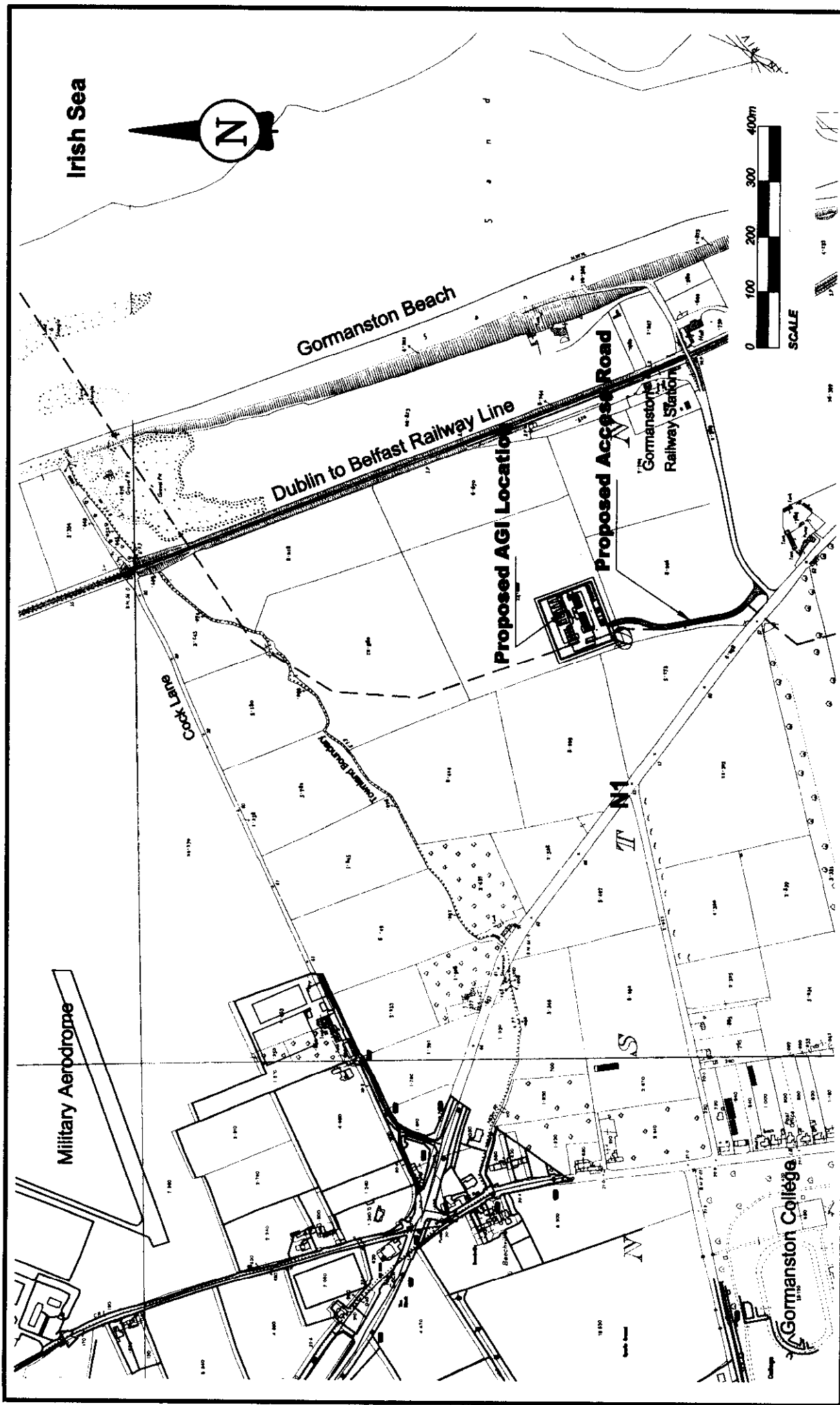
Chapter 1 is an introduction to the project giving details of the project and its developer, the need for the project and a description of the difficulties encountered during the EIA.



Chapter 2 and 3 explain the legislative requirements such as regulations, planning permission, Health & Safety and EIA legislation, EIS and consultation process.









 <b>BORD GÁIS</b> TRANSMISSION BUSINESS UNIT		<b>Gormanston AGI EIS</b>	Prepared: P. Higgins	<b>Fig. No.</b> <b>1.3</b>	
			Checked: J. Shalloe		
		<b>Detailed Site Location</b>			Scale: N.T.S.
					Date: Feb. 2001
		Job Title	File Ref: Fig 1.3.dwg		



## **1.7 DIFFICULTIES ENCOUNTERED DURING THE STUDY**

Certain aspects concerning the location of the site and site specifications did have a minor impact on the progress of the EIS. These related to land issues, access to the site and design changes. However, the majority of the study was carried out without difficulty.



Section 26 of the Gas Act states that any authorised officer of the Board may with the consent of a landowner, enter onto that land for the purposes of determining the suitability of the land for the purposes of the Gas Act including the performing of detailed site investigations. Similarly, Section 34 of the Act provides for entry on land by BGÉ for the purposes of assessing the suitability of the land for an object of the company.

Section 30 of the Gas Act allows BGÉ to make bye-laws, subject to Ministerial approval, for the protection and safety of the Board's system including any pressure reducing station.

Part III of the Gas Act, 1976 is concerned with Acquisition Orders. Under Section 32, the Board may if necessary, apply to the Minister for an acquisition order to compulsorily purchase land to enable it perform its functions. The Minister in turn;

*'shall consult with the Minister for Lands and the Commission and also such other Ministers of State, if any, as appears to him to be concerned'.*

The Gas Act is a comprehensive document which sets out in detail the powers and duties of the Gas Board. Related Acts and statutory instruments are listed in Table 2.1 below.

**Table 2.1: Gas Related Legislation**

Document	Title
Act	Gas Act, 1976
Act	Gas Regulation Act, 1982
Act	Gas (Amendment) Act, 1982
Act	Gas (Amendment) Act, 1987
Act	Gas (Amendment) Act, 1993
Act	National Standards Authority of Ireland Act, 1996
S. I. No. 349 of 1989, art. 20	European Communities (Environmental Impact Assessment) Regulations, 1989
S. I. No. 351 of 1998, reg. 13 (a)&(b)	European Communities (Environmental Impact Assessment) (Amendment) Regulations, 1998
S.I. 178 of 1991	Gas Act, 1976 (Section 9) (Establishment of Subsidiaries) Order, 1990
Irish Standard	IS 328 'Code of Practice for Design and Installation of Gas Transmission Pipelines', 1989
Irish Standard	IS 328 'Code of Practice for Gas Transmission Pipelines and Pipeline Installations', Edition 3, Draft 8, 2000

## 2.3 EIA REGULATIONS

Council Directives 85/337/EEC and 97/11/EC (amending the former) require under Article 4(1) that environmental impact assessment reports must be made for certain development projects. Such projects are listed in Annex I of 97/11/EC. Whether in the case of 'other projects' such a report is necessary or not will be decided on a case by case basis or on thresholds set by the member states. Classes of 'other projects' are listed in Annex II of 97/11/EC.

In the case of Ireland, S.I. No. 93 of 1999 sets thresholds which determine the need for an EIS. Classes of 'other projects' are listed in Part II of S.I. No. 93 of 1999 which includes 'gas pipelines **and associated installations** not included in Part I of this Schedule, where the design pressure would exceed 16 bar and the length of new pipeline would exceed 40 kilometers'. Therefore, under Part II, the proposed AGI Station is subject to an EIS, as the proposed development will



Further information is required by way of explanation or amplification of the information referred to above on the following matters;

- a description of the physical characteristics of the whole proposed development and the land-use requirements during the construction and operational phases
- a description of the main characteristics of the production processes, for instance, nature and quantity of the materials used;
- an estimate, by type and quantity, of expected residues and emission (including water, air and soil pollution, noise, vibration, light heat and radiation) resulting from the operation of the proposed development;
- a description of the aspects of the environment likely to be significantly affected by the proposed development, including in particular;
  - human beings, fauna, flora,
  - soil, water, air, climatic factors and the landscape,
  - material assets, including the architectural; archaeological, and cultural heritage,
  - the inter-relationship between the above factors;
- a description of the likely significant effects (including direct, indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative) of the proposed development on the environment resulting from:
  - the existence of the proposed development,
  - the use of natural resources,
  - the emission of pollutants, the creation of nuisances and the elimination of waste,

and a description of the forecasting methods used to assess the effects on the environment.

- an indication of any difficulties (technical deficiencies or lack of know-how) encountered by the developer in compiling the required information.

In accordance with Article 4(d)(a) of the EIA Regulations (S.I. No. 93) of 1999 local authorities are obliged to comment formally on the Environmental Impact Statement by means of a *written statement* prior to submission of the EIS for development consent, if the developer so requests. Article 4(d)(a) states as follows:

*'If an applicant or a person intending to apply for permission, before submitting an environmental impact statement in accordance with a requirement of or under regulations under this section, so requests, the relevant planning authority shall give a written opinion on the information to be contained in such statement'.*

A request may also be made to the *Minister* in the same regard for a written opinion on information to be contained in the EIS. Article 13 (a)(g) states as follows:

*'If the Board or a person before making an application or giving a notice (as the case may be), which is required in accordance with this subsection to be accompanied by an environmental impact statement, so requests, the Minister shall, after consulting the bodies prescribed for that purpose and the Board or person (as the case may be) give a written opinion on the information to be contained in such statement.*



*'A planning authority shall not later than 3 weeks after having received a request for a written opinion or, where further information or documentation was required pursuant to article 5, not later than 3 weeks after such requirement was complied with:-*

- give notice of having received the request concerned to the bodies referred to in article 32 of the 1994 regulations (as amended), as appropriate, indicating that submissions or observations in relation to the information to be contained in the environmental impact statement concerned may be made to the authority within a period of one month beginning on the date of the notice; and*
- give notice to the person who made the request concerned that submissions or observations in relation to the information to be contained in the environmental impact statement concerned may be made to the authority within a period of one month beginning on the date of the notice'.*

Article 7 states:

*'A planning authority shall not later than 3 weeks after:-*

- the expiry of the periods referred to in sub-article (1) of article 6, or*
- a requirement to provide further information or documentation pursuant to article 5 has been complied with*

*whichever is the later, give a written opinion to the person who made the request concerned'.*

Part IV of the 1994 Planning Regulations (S.I. No. 86 of 1994) deals with the procedural aspects of obtaining permission from the planning authority (see Figure 2.1). Applicants are required under Articles 16 and 17 of the said regulations to give notice of intention to apply for planning permission in a newspaper circulating in the area and by way of a notice erected on the site. The newspaper notice must be published during the two-week period before an application is made, while the notice must be erected on or before the day the application is made and maintained in position for one month. In addition, applicants who propose to submit an EIS are required under Article 17 of the said Planning Regulations to refer to the EIS in the notice. The contents of this notice are specified in the regulations and include specifying whether the development will require 'a licence under Part IV of the Environmental Protection Agency Act, 1992'. These requirements are intended to ensure that neighbours and the general public know of proposed developments so that they can make representations to the planning authority or, later on, appeal the decision.

The planning authority is required under Article 30 of the said Regulations to prepare a weekly list giving details of each application received. Planning authorities are also required under Article 31 to notify the Minister of any application accompanied with an EIS and send notice to the relevant prescribed bodies as outlined under Article 32 of the said regulations. Furthermore, all planning applications, including third party submissions, can be inspected at the offices of the planning authority during the period in which the application is being assessed. Copies of the EIS or extracts from the statement can also be inspected or purchased up until one month after the decision on the application has been made (DoELG, 2000).

The planning authority has a rigid time-frame for giving its decision. It is precluded from making any decision within 28 days of receipt of a planning application accompanied by an EIS. However, if the planning authority requires the applicant to submit any further information which they consider necessary to enable them to deal with the application, the expiration of 28 days begins on the day on which that requirement has been complied with. A planning authority must make a decision on an application with an EIS within two months of its receipt, or where further information has been requested from the applicant, within two months of receipt of that information (DoELG, 1997). This time-frame is designed to ensure that members of the public are not prevented from participating in the planning process by precipitant decision making.



Applications for planning permission are decided by the manager, acting in an executive capacity, and conditions are usually attached to the grant of permission. In deciding applications, authorities are restricted to considering the proper planning and development of the area concerned, including the preservation and improvement of amenities, the development plan, government policy and any submissions or observations made on a proposed development. Where permission is refused, or granted with conditions, the authority must give reasons for the decision (Grist, 1999). Once a decision has been made the planning authority are required under Article 42 of the 1994 Planning Regulations to make available not later than the third working day of a particular week a list of the planning applications in respect of which decisions were given by the authority during that week.

Any person may appeal against a grant or refusal of planning permission within one month of the decision. Ireland is unique among European countries in that it has an independent third party planning appeals system, which is operated by An Bord Pleanála (the Planning Appeals Board). In an appeal, the planning application is considered anew by the Board, who examine the relevant issues independently. The Board must, among other things, consider the proper planning and development of the planning authority's area and any submissions or observations received. The Board's decision may only be challenged, within two months, by judicial review in the High Court (DoELG, 2000).

## 2.4.1 Integrated Pollution Control

The Environmental Protection Agency Act, 1992, enacted on the 23<sup>rd</sup> April 1992, established a new institutional framework for the control of environmental pollution in Ireland. In addition to other functions, the EPA has responsibility for preventing and controlling environmental emissions from certain activities with potential for significant impact on the environment through the operation of a system of integrated pollution control (IPC) licences. The IPC licence takes account of the effect the activity has on the environment as a whole. The main environmental objective of IPC is to prevent or solve pollution problems rather than transferring them from one part of the environment to another. In the case of activities which need an integrated pollution control licence from the EPA, the Agency will assess those parts of the EIS relating to the environmental pollution issues. Planning authorities will continue to be responsible for assessing the planning issues while the EPA will be concerned with emissions to air and water, the treatment and disposal of waste and the control of noise (EPA, 1996).

All new activities in the following sectors of activity require an IPC licence. A detailed description of the various categories of activity are set out in the First Schedule to the EPA Act, 1992.

- |                                |                                     |
|--------------------------------|-------------------------------------|
| • Minerals and Other Materials | • Wood, Paper, Textiles and Leather |
| • Energy                       | • Fossil Fuels                      |
| • Metals                       | • Cement                            |
| • Mineral Fibres and Glass     | • Waste                             |
| • Chemicals                    | • Surface Coatings                  |
| • Intensive Agriculture        | • Other Activities                  |
| • Food and Drink               |                                     |

Consultation with the EPA's Licensing & Control Department established that the proposed AGI station will not require an IPC Licence under the first schedule of the EPA Act, 1992. All activities requiring an IPC License under '*Energy*' relate to either the use of gas, oil, peat or coal for the production of energy in combustion plants or the burning of gas, oil, peat or coal in a boiler or furnace. As the activities of the AGI involve pressure reduction and gas metering, it does not require an IPC License under the First Schedule of the EPA Act, 1992.



The Habitats Directive (92/43/EEC) requires the establishment of a European network of important high quality conservation sites that will make a significant contribution to conserving the 169 habitat types and 623 species identified in Annexes I and II of the said Directive. Habitat types listed in Annex I include Freshwater Habitats and Raised Bogs while Annex II includes species such as the White-clawed crayfish *Austropotamobius pallipes*.

The listed habitat types and species are those considered to be most in need of conservation at a European level. A number of the listed habitat types and species are given priority status in the Directive (Article 1d; Article 1h). Each Member State is required to designate Special Areas of Conservation (SACs) to protect those habitats and species, which are listed in the annexes of the Directive. The European Communities (Natural Habitats) Regulations, 1997 (S.I. 94 of 1997) provide for the designation of SACs but also for the protection measures that apply to SPAs as well as SACs.

The principal legal framework for the prevention and control of water pollution is contained in the Local Government (Water Pollution) Act, 1977 (No. 1 of 1977) and the Local Government (Water Pollution) (Amendment) Act, 1990, (No. 21 of 1990). These acts include a general prohibition on water pollution, provisions concerning licensing of discharges to waters and to sewers, water quality standards, etc.

The Fisheries (Consolidation) Act, 1959 (No. 14 of 1959) as amended by Fisheries (Amendment) Act, 1962 (No. 31 of 1962) and by the Fisheries Act, 1980 (No. 1 of 1980) Sections 171 and 172 of the 1959 Act, make it an offence to deposit deleterious matter, as defined, in waters. The Local Government (Water Pollution) (Amendment) Act, 1990 increased the penalties for offences under these sections committed after 18 July, 1990.

The main environmental legislation relevant to the EIA, design, construction and operation of the proposed development are outlined in Table 2.3.



## 2.6 GUIDELINES

### 2.6.1 Environmental Protection Agency

The 1992 Environmental Protection Agency Act (Section 72) provides for the preparation by the Environmental Protection Agency of guidelines on the information to be contained in EISs. The Act further provides that those preparing and evaluating EISs shall have regard to such guidelines. The guidelines are intended to provide developers, competent authorities and the public at large with an agreed basis for determining the adequacy of EISs, within the context of established development consent procedures. The first draft guidelines on the information to be contained in EIS were introduced in June 1997. Advice notes on current practice in the preparation of EISs were designed to accompany these guidelines. These contain greater detail on many of the topics covered by the Guidelines and offer guidance on current practice for the structure and content of EISs. The Draft Guidelines are currently being reviewed by the EPA who intend to publish Final Guidelines in January 2001.

### 2.6.2 Department of Public Enterprise – Technical Guidelines

*'Technical Guidance for the Construction of Gas Pipelines in Ireland'*, (Draft, 2<sup>nd</sup> edition 2000) which were issued by the Department of Public Enterprise, set out the technical information the Minister expects to receive from anyone, seeking the Minister's consent under the Gas Act, 1976 as amended, to construct a pipeline in Ireland, for the purpose of transporting natural gas. Part I of these guidelines summarise the information to be provided by the applicant under sections 8 and 40 of the Gas Act, 1976 for consent to construct and operate a natural gas pipeline. This includes a description of *'associated infrastructure'* i.e. the AGI, information on its design, and construction, commissioning and operation details e.g. details of planning consents, standards and codes of practice to be employed, safety and emergency procedures. Part II of the guidelines deals with how the Minister assesses an application for the construction and operation of a pipeline project.

### 2.6.3 I.S.328 Code of Practice for Gas Transmission Pipelines and Pipeline Installations

This code of practice is an Irish National Standard, which was prepared by the Technical committee TC5, of the Gas Technical Standards Committee. This document has recently been reviewed and updated to reflect current industry standards and practice. The most recent edition, Edition 3, 2000, defines minimum and adequate standards and procedures for the transmission of gas and relates to conditions and practices currently in use in the transmission of gas. It is divided into two parts:

- Part I Pipelines,
- Part II Pipeline Installations.

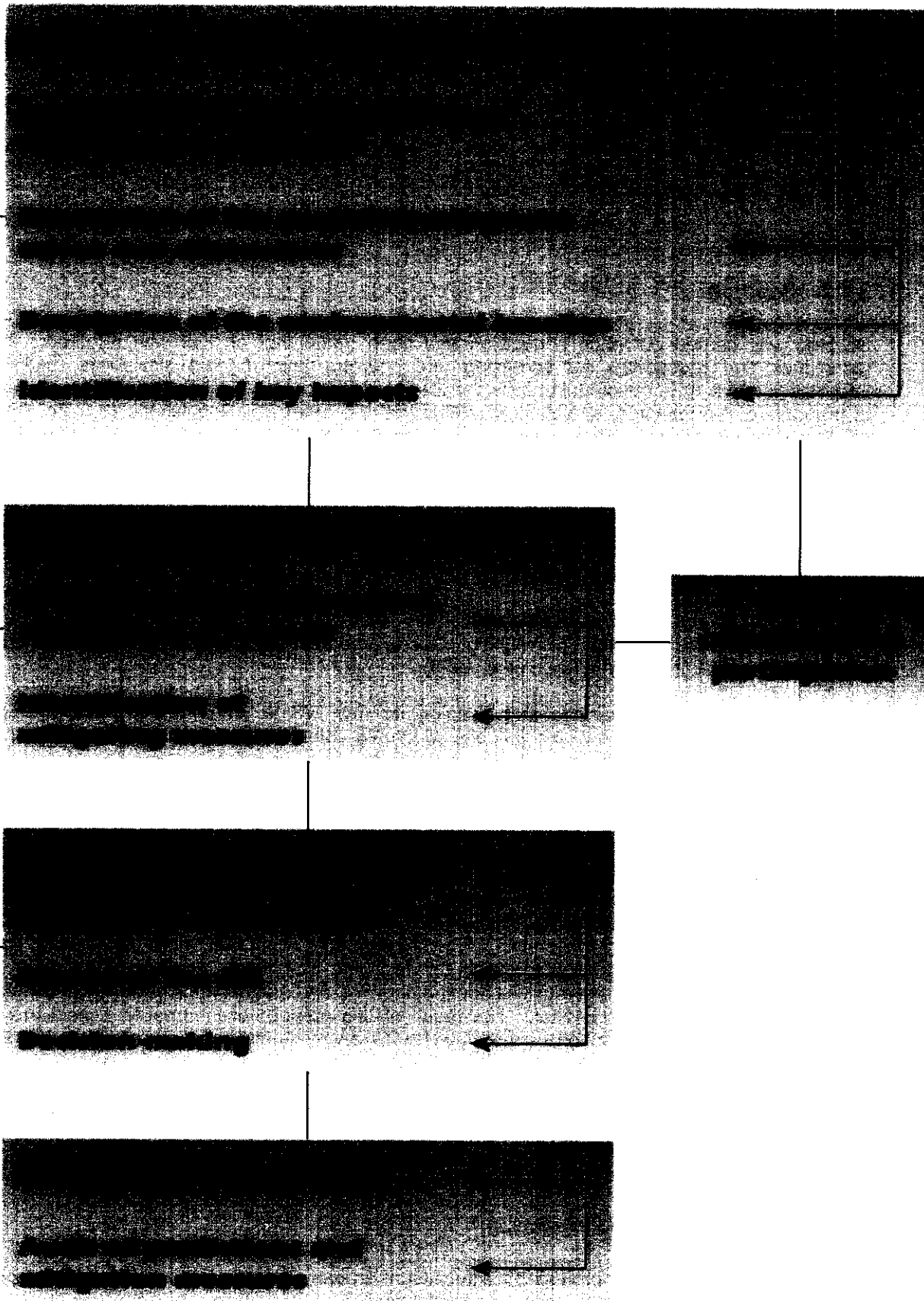
According to the Code *'pipeline installations include but are not restricted to pressure-reduction stations, meter stations, pig-trap stations and block valves'*. Part II applies to the design, construction, inspection, testing, operation and maintenance of installations on pipelines used for the transmission of natural gas. However, the code also specifies that installations shall comply with all the relevant requirements of Part I of the code.



**Table 2.4: Safety Legislation**

<b>Document</b>	<b>Title</b>
<b>Act</b>	Gas Act, 1976
<b>Act</b>	Factories Act, 1955
	Safety in Industry Act, 1980
<b>Act</b>	Safety, Health and Welfare at Work Act, 1989
<b>Act</b>	Building Control Act, 1990
	- Building Control Regulations, 1997
	- Buildings Regulations, 1997
<b>Act</b>	Public Safety Act, 1927
	Public Safety Act, 1928
<b>92/58/EEC</b>	Council Directive on Safety and Health Signs
<b>92/57/EEC</b>	Council Directive on Temporary or Mobile Construction Sites
<b>S.I. 3 of 1972</b>	Factories (Electricity) Regulations, 1972
<b>SI No 7 of 1989</b>	Safety, Health and Welfare at Work Act, 1989. This act applies to all places of work
<b>S.I. 44 of 1993</b>	Safety, Health and Welfare at Work (General Application) Regulations, 1993
<b>SI No 132 of 1995</b>	Safety, Health and Welfare at Work (Signs) Regulations, 1995
<b>SI No 138 of 1995</b>	Safety, Health and Welfare at Work (Construction) Regulations, 1995
<b>S.I. No. 157 of 1990</b>	European Communities (Protection of Workers) (Exposure to Noise) Regulations, 1990
<b>SI No 144 of 1994</b>	Protection of outside workers from Ionising Radiation Regulations, 1994
<b>SI No 43 of 1991</b>	Ionising Radiation Regulations, 1991
<b>SI No 157 of 1990</b>	European Communities (Protection of Workers) (Exposure to Noise) Regulations, 1990
<b>Irish Standard</b>	IS 328 'Code of Practice for Gas transmission Pipelines and Pipeline Installations', Edition 3, 2000





(Source: Glasson, J., Therivel R., Chadwick A., - "An Introduction to Environmental Impact Assessment, 1999")



## EA Always Required

**Annex 1 threshold**  
(some projects only)

EA more likely to be required, but test remains likelihood of significant environmental effects

## Case-by-Case Consideration of Requirement for EA

**"Indicative" threshold**  
(for guidance only)

EA less likely to be required, but test remains likelihood of significant environmental effects

## EA Ruled Out\*

**"Exclusive" threshold**  
(only for projects outside "sensitive areas")

(Source: Glasson, J., Therivel R., Chadwick A., - "An Introduction to Environmental Impact Assessment, 1999")



### Identification of Potential Impacts

The first step in scoping was to identify potential environmental impacts by considering how the project might interact with its environment during each phase of its implementation. In carrying out this review, account was taken of the requirements of legislation on the environmental aspects to be considered in the EIA. The EIA Directive requires impacts on the following factors to be addressed:

- Population
- Fauna and flora
- Soil
- Water
- Air and climatic factors
- Material assets including architectural and archaeological heritage
- Landscape
- Inter-relationships between these factors (European Commission, 1996).

### Review of alternatives

The EIA Directive indicates that where appropriate the environmental information submitted by the developer should include *'an outline of the main alternatives studied by the developer and an indication of the main reasons for his choice, taking into consideration the environmental impacts'*. Therefore, it was important to review the alternatives, which had been considered during the course of planning the project and to identify any further alternatives that might be considered, which would reduce the impact of the project. This included consideration of the 'No project' alternative i.e. what is likely to happen if the development does not go ahead (European Commission, 1996). The Scoping Report identified the following possible alternatives; alternative locations, alternative processes or equipment, alternative ways of dealing with environmental impacts e.g. noise and visual.

### Consultations

Scoping involved discussions with outside organisations (Government bodies, local communities, and landowners etc) to identify impacts, issues, concerns and alternatives, which they wished to see addressed in the EIS. Involvement of those who will be affected by the project was of great benefit in ensuring that the output from the EIA process reflected and took account of their concerns (European Commission, 1996).

The role of consultation in the EIA process is further expanded upon in Section 3.2.

### Deciding on the most significant impacts

This stage ensured that the EIA studies were focused on obtaining information needed for decision making, in order to ensure that time and effort were used effectively. The studies were focused on studying impacts, which were of most importance for decision-making or where there was most uncertainty about their magnitude or significance (European Commission, 1996). The EIS Scoping Report identified landscape, air, visual and noise as the principal impacts.

### Preparation, Consultation, Finalisation and Ongoing Review of the EIS Scoping

The EIS Scoping Report was circulated to consultees providing a further opportunity for interested and affected parties to advise on relevant issues. Submissions and written opinions were welcomed from all those to whom the EIS Scoping Report was issued and incorporated into the EIS if deemed necessary (European Commission, 1996).

In conclusion, the scoping process has facilitated an efficient EIA process by identifying key issues, concerns and alternatives that require investigation.



The aim of the assessment phase is to predict, as accurately as possible, the likely environmental effects of a development. Impact assessment techniques can be divided into two main types; qualitative, where the impacts are largely described on the basis of previous experience (either on similar developments or in terms of the planned location of development) and knowledge of the likely effects; or quantitative, where an attempt is made to measure more accurately the level of impact through a modeling exercise. The impact assessment technique for this EIS was based mostly on the qualitative approach.

### 3.1.7 Mitigation

Mitigation is defined in EC Directive 85/337 as '*measures envisaged in order to avoid, reduce and, if possible remedy significant adverse effects*'. The introduction of mitigation measures aims to reduce the scale and/or significance of an impact to a more acceptable level. During the design stage of a development certain measures should be incorporated so as to reduce the environmental impact. This is an essential component of environmental assessment and one that should be undertaken as an interactive part of development design.

The mitigation measures that can be adopted to reduce the scale of impacts at a site are a function of:

- The type and scale of the development and the impacts that will occur
- The sensitivity of the site in terms of proximity to residential properties, ecological areas of importance, water bodies etc.
- The extent of existing impacts.

### 3.1.8 EIA Presentation

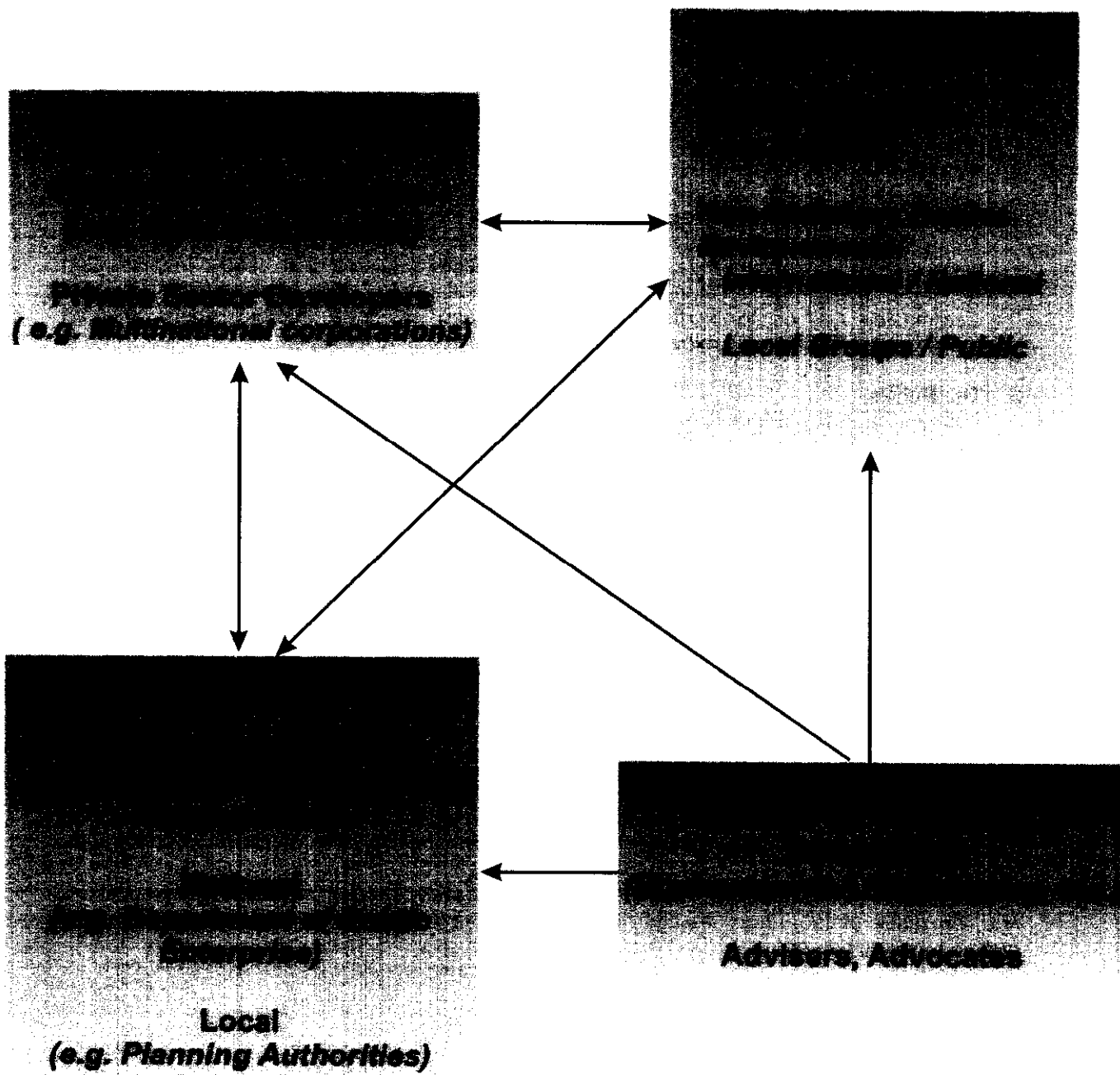
The EIA Regulations do not make any stipulations about the exact form of an EIS, however the information to be contained in an EIS is specified in the Second Schedule of the EIS Regulations (S.I. No. 93 of 1999). These include a description of the proposed development, the data required to identify and assess the main effects which that development is likely to have on the environment, an outline of the main alternatives studied by the developer and a description of the aspects of the environment likely to be affected (biological, geophysical and social).

The preparation of a non-technical summary is particularly important in an EIS as it provides a good overview of the project for the planning authorities, statutory authorities and members of the public. The non-technical summary covers all relevant impacts and emphasises the most important issues (Glasson et al, 1999).

This EIS is divided into the following volumes:

- |        |                       |
|--------|-----------------------|
| Vol. 1 | Non-Technical Summary |
| Vol. 2 | Main Report           |
| Vol. 3 | Technical Appendices  |







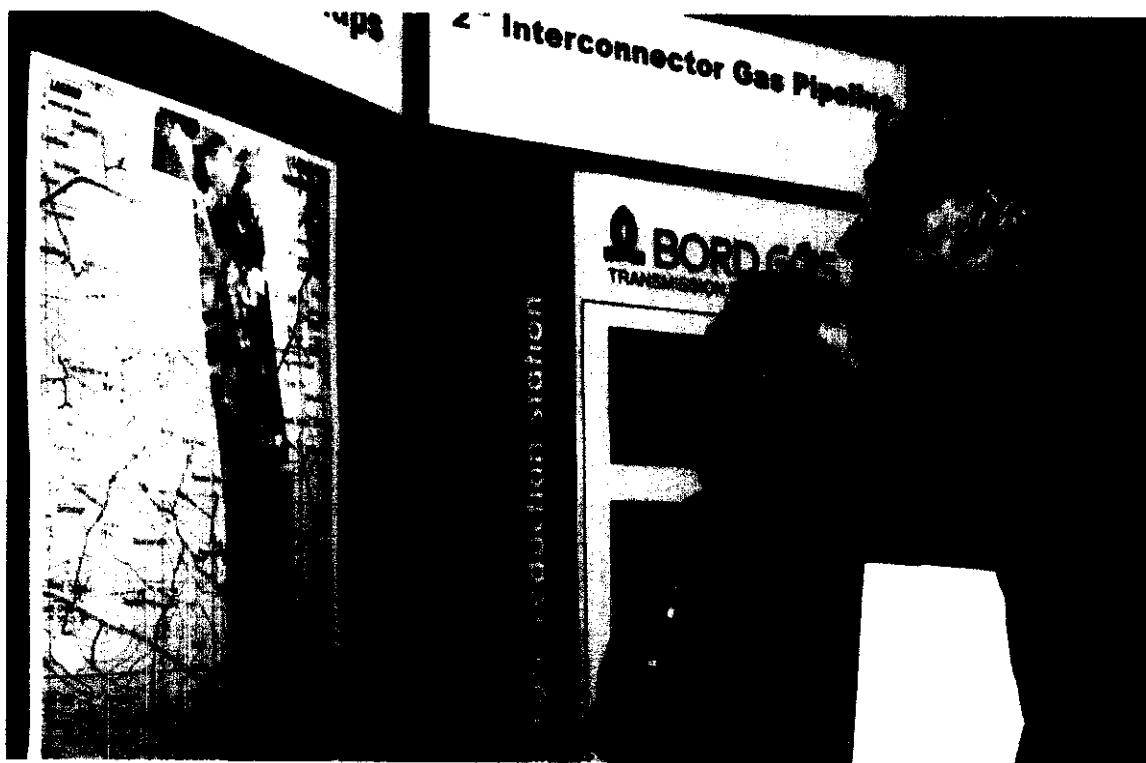
who may not have completed farm-work until late in the evening. A local photographer attended and as result photos were placed in the local and regional newspapers.

The presentation for the Information Evening comprised a series of display boards, which included both text and photos, which described and illustrated the background to the project, the construction and environmental impact assessment process and the project time-scale.

Representatives from Bord Gáis Éireann, M.C. O'Sullivan & Co. Ltd, and also Sofregaz who are the design consultants for the AGI development were in attendance to discuss various aspects of the project including construction methods, environmental and agricultural issues. MCOS ensured that an environmental scientist was in attendance to answer queries relating to the EIA. Representatives from Bord Gáis Éireann included the Agricultural Liaison Officer (ALO), who is in continuous liaison with landowners, and Public Relations Personnel.

The Information Evening was attended by people of various backgrounds including landowners, representatives from local businesses and organisations, local authority representatives, as well as the general public with an interest in the provision of gas to local towns.

Plate 1



Public Information Evening at Gormanston College

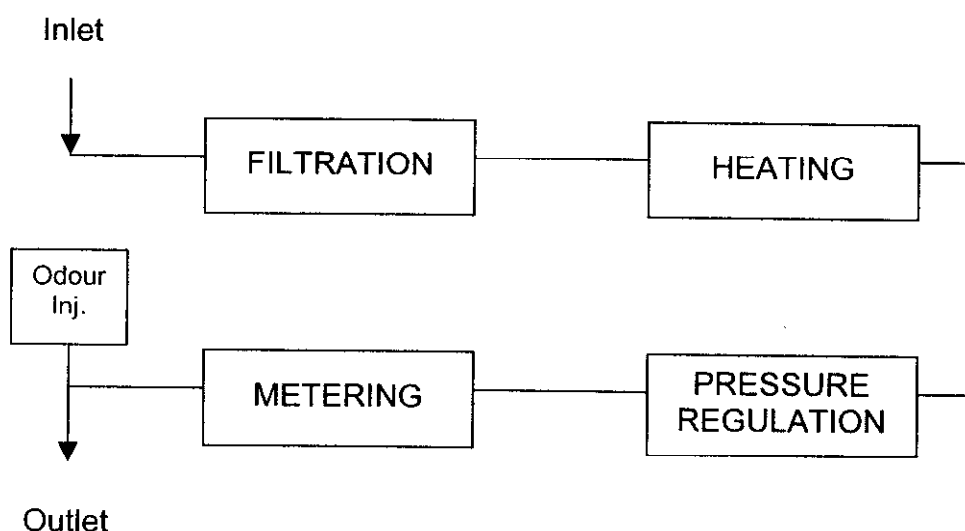


## 4.0 AGI DESCRIPTION

### 4.1 PROCESS DESCRIPTION

The proposed AGI will allow for pressure reduction from 147bar to a maximum of 85bar in normal operation. The maximum flowrate expected upon first use would be 162,887 scm<sup>h</sup><sup>-1</sup> and is predicted to rise to 1,291,117 scm<sup>h</sup><sup>-1</sup> in 2019.

The process within the AGI is outlined in Figure 4.1 below. The first stage of the process involves the filtration of particulate matter and fluids from the gas after its arrival from the sub-sea pipeline. The gas is then heated to counteract the rapid cooling of the gas as its pressure drops during the next stage of the process, which involves the pressure regulation of the gas. Metering of the gas is carried out in the final stage of the process.



**Figure 4.1 Major Components of the AGI Process.**

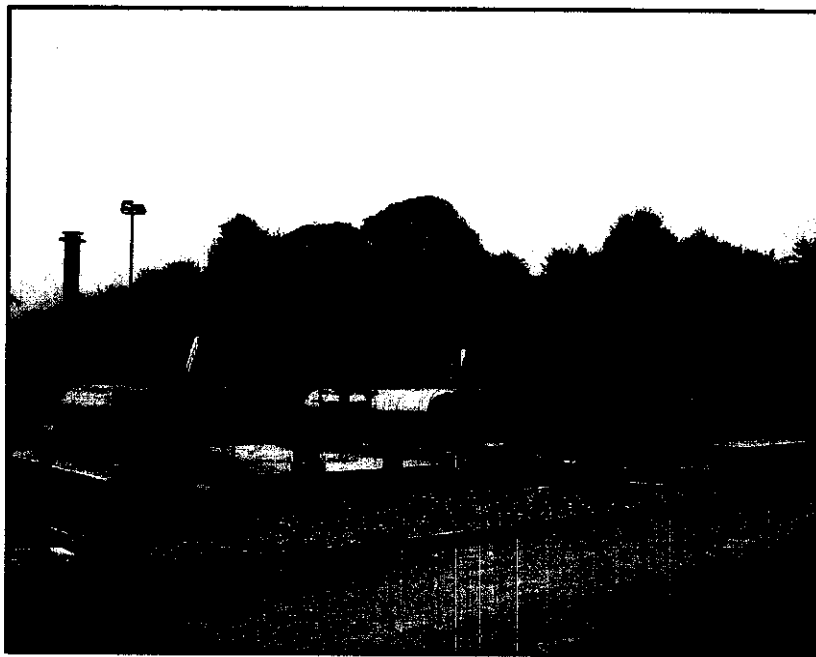
Gas composition is determined by means of a chromatograph situated between the pressure control valves (PCV) and the metering system. Odour injection is also carried out at the AGI and will be introduced after the pressure regulation and metering stages of the process on the main station outlet header. The inlet to the AGI contains a Pipeline Integrity Gauge (PIG) receiver while the outlet contains a PIG launcher.

The main plant is comprised of the following components:

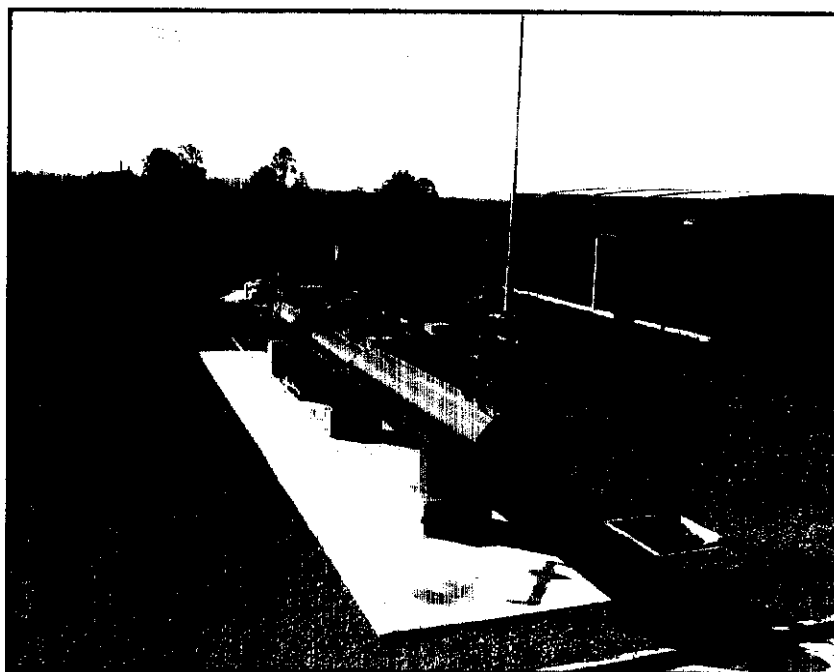
- **Two Stage Gas Filters**  
These filters, installed in parallel, are used to filter the natural gas to be sent to the pressure control and metering lines. The incoming gas will pass through either of the two filtration units, depending on which one is in service, to remove particles in the range of 5 to 10 microns. The filters are also capable of handling small amounts of liquid that may be present in the line. Differential pressure transmitters are located across the filters to monitor filter differential pressure, which in turn are monitored by the station supervisory control system. Liquids trapped by the filters manually drain to a condensate tank.



**Plate 2**



**Water Bath Heaters and PCV Acoustic Building, Abbotstown AGI, Co. Dublin**



**Pig Trap at Abbotstown AGI**



## 4.2 PLANT SIZE

The AGI site dimensions are 100m x 90m. There will be two main buildings on site and an additional small building as follows (drawing nos. T020.0001 & T020.0002):

- Control room (15m x 7.5m x 4.5m)
- Pressure Control Valve Shelter (18m x 10m x 3m)
- Chromatograph Building – this is a small building where the exact composition of the gas is determined prior to usage.

The highest structures on site are the water bath heaters, which stand at 8.5m high. The water bath heaters are fitted with stacks from which the flue gas is emitted once it has been burned to heat the water.

The pipework throughout the site consists of a number of different pipe diameters depending upon a pipe section's function within the process. The inlet pipe will be 30-inch in diameter while the main connecting gas pipework throughout the plant will be 26-inch diameter. The outlet will be 36-inch diameter. Metering and pressure regulation lines will be 18-inch in diameter.

## 4.3 SITE LAYOUT

### 4.3.1 Buildings

The AGI will contain the following buildings;

- *Control building*  
This building houses the electric switchgears, battery chargers and UPS for emergency electricity supply of the station. The basis of electricity supply to the station is from the local electricity supply system.

The Control building is comprised of the switchgear room, the battery room and the transformer room.

- *Chromatograph Building*  
This is a small building, which houses the chromatograph and its associated instrumentation. This is an analytical technique which identifies the components contained within a sample of gas. Calibration gases are located on the outside wall of the building along with some additional instrumentation.
- *PCV Building*  
The PCV's are usually contained within one overall enclosed area or shelter. An alternative method would be to house each line individually. The AGI in Gormanston will house all the PCV's in one shelter, mounted on rails which allows the shelter to slide open for access purposes.

### 4.3.2 Exhaust/Flue

Gas heating is provided by the water bath heaters. These units are fuelled by natural gas and are therefore fitted with stacks approximately 8.5m high.



## **4.4 PLANT OPERATION**

### **4.4.1 Staffing and Working Hours**

During day to day operations of the AGI, the site will be unmanned. Only during periods of maintenance and inspection will there be anybody on site. There may be one person overseeing a number of different AGI's and this person would oversee the Gormanston AGI as part of his/her duties. The time spent on site will be that to perform a routine inspection of the site.

### **4.4.2 Lighting**

Lighting will be used as required depending on whether the site is occupied or not. The time of year and amount of daylight hours available may dictate lighting requirements during visits to the site of BGÉ personnel. Generally 9m light masts would provide lighting of the site. However, normally the AGI would not be lit.

### **4.4.3 Emergency Procedures**

When the AGI is operational it will be unmanned so the installation of the appropriate detection facilities are of prime importance to enable the detection of an occurrence such as a gas leak. The detection facilities will be linked to the central BGÉ transmission network control and any anomaly in gas pressure or operation of valves will be immediately detected.

The correct emergency procedures must also be in place on site in case an emergency arises while the site is occupied. In the event of an emergency on site the correct procedures such as designated escape routes and gathering points, what to do in the case of an injury etc., must be outlined and followed by those on site.

Article 9 of the Safety, Health and Welfare at Work (General Application) Regulations, 1993 (S.I. No. 44 of 1993) specifies a number of emergency duties for employers. These outline necessary measures to be used by employees in the event of an emergency such as evacuation procedures or arranging contact with the relevant emergency services. Part IX of the said regulations refers to *First Aid* and obliges employers to provide first-aid equipment, which is suitably marked and easily accessible.



## **5.0 CONSTRUCTION DESCRIPTION**

### **5.1 SITE COMPOUND**

The construction of the AGI is expected to last for a period of approximately 9 months. During the initial stages of construction, a certain amount of excavation will be required on the site. Topsoil will be stripped and stored such that it can be used at a later stage for landscaping and returning areas affected by the construction to its original state. The quantity, if any, of excavated material which would be unsuitable for reuse is expected to be small. Such material would be disposed of off-site by the contractor in accordance with the current regulations for waste disposal.

During all stages of construction, the perimeter of the site, including access routes, will be securely fenced off. Use of the correct site signage will also be enforced. The appropriate health and safety requirements will be necessary to maintain a safe place of work and to protect the public from construction activities.

The site compound will also accommodate facilities such as offices, catering facilities, toilets and washing facilities, car parking and storage areas for the use of the contractor and resident engineering staff.

### **5.2 CONSTRUCTION TRAFFIC**

The access route to the site for construction traffic will be from the N1 via Station Road and along a newly constructed access road running directly north from Station Road to the AGI. This new site entrance will be approximately 200m in length. Initially the flow of traffic will involve the transport materials required to construct the AGI foundations. This stage of the construction is expected to last for approximately 2 months period and upon completion of this phase traffic to and from the site should be significantly lower and will predominantly involve material and equipment delivery for construction of above ground elements of the AGI.

### **5.3 WORKING HOURS**

Working hours will follow the standard requirement for hours of work in the construction industry. Any work carried out outside of these times will be on the instruction of the Engineer and will have regard for the surrounding community and the effects of construction noise and traffic etc. If this is the case BGÉ will notify local residents in advance.

### **5.4 HEALTH AND SAFETY**

The Health & Safety Authority (HSA) is the government agency responsible for implementation of the health and safety regulations in Ireland. As in all places of work, the Authority seeks to promote good safety management on construction sites through a combination of enforcement, advice, assistance and information.

The construction regulations (see section 2.7) deal with obligations for the design and management of construction projects. The regulations are aimed at improving the management



- *Performance testing* – valves, motors, turbines

The AGI will be de-commissioned by BGÉ when it reaches the end of its design life. Under the Gas 2025 strategy, gas supply would be assumed until the year 2025. The land may then be returned to its original state if required.

## REFERENCES

HSA (2000); '*Build in Safety - A Short Guide to Good Practice and Legislation*'; Health & Safety Authority, Dublin, ([www.hsa.ie/osh](http://www.hsa.ie/osh))

HSA (2000); '*Guidelines for Clients Involved in Construction Projects*'; Health & Safety Authority, Dublin, ([www.hsa.ie/osh](http://www.hsa.ie/osh))



## 6.2 IMPLICATIONS OF 'DO NOTHING' STRATEGY

If this project does not go ahead a problem of timing may arise concerning the supply of gas in Ireland and meeting the increasing energy demand, which is predicted for the future. There are a number of factors influencing these scenarios:

- Depletion of the Kinsale Gas Field
- Capacity of the first sub-sea interconnector
- Implementation of the Corrib Gas Field

Ireland will experience a shortfall in the supply of gas as the existing sub-sea interconnector supply and the depleting supply from Kinsale will not be sufficient to meet the demand for natural gas in Ireland in the interim period before the expected supply from the Corrib Gas Field comes onstream. This particular situation will occur in the Winter of 2002 in advance of a supply from the Corrib Field in 2003.

Furthermore, in the medium to long term, a second interconnector is necessary to provide Ireland with a security of supply to match European Gas Industry practices and meet the demand to the year 2025.

In the absence of a second interconnector, alternative sources of energy may have to be considered to meet the growing energy demand. Dependence on oil, coal and peat would increase and lead to higher purchasing costs as some of these fossil fuels would need to be imported. Our peat reserves would diminish even more quickly, leading to further elimination of associated valuable ecological systems. In addition, there would be a greater amount of harmful emissions released into atmosphere due to the rise in use of these fossil fuels. Such a policy would not be consistent with Ireland's current commitments under the Kyoto agreement, which calls for reduced emissions of greenhouse gases. At present consumption of energy from fossil fuels is a major contributor to greenhouse gas emissions in Ireland.

## 6.3 ALTERNATIVE GAS IMPORT OPTIONS

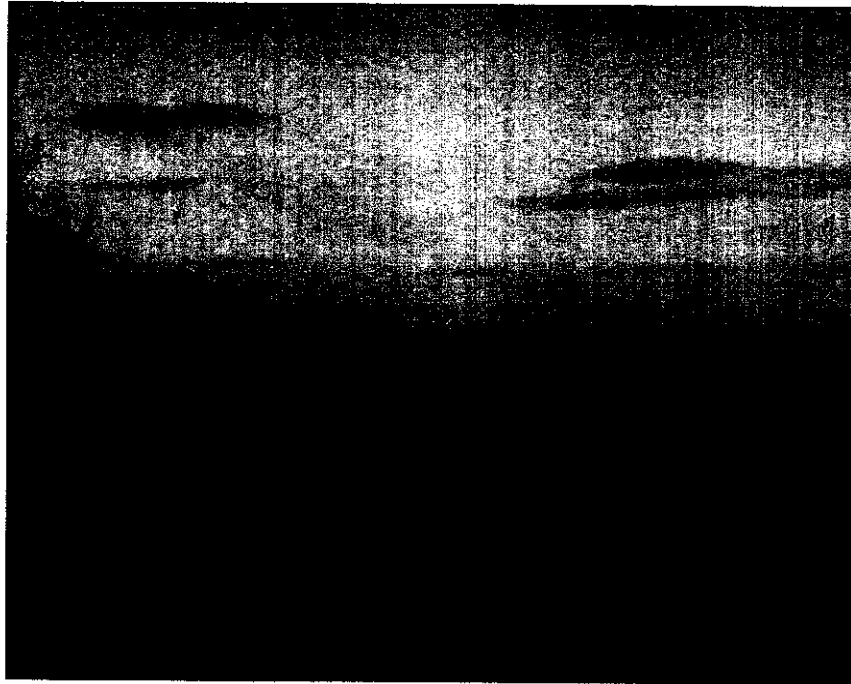
The primary purpose of the initial Gas 2025 Feasibility Study, conducted in 1998, was to examine the various options for importing natural gas to Ireland with associated onshore pipeline and AGI infrastructure. The study was conducted against a background of increasing demand for natural gas and the depletion of the Kinsale Gas Field. Security of supply was also addressed in terms of maintaining more than one source of supply.

The study examined the technical feasibility and economic viability of the following options:

- Interconnector from South Wales to Ireland (Wexford)
- Interconnector from North Wales to Ireland (Dublin)
- Second interconnector from Scotland to Ireland (Dublin)
- Interconnector from Scotland to Northern Ireland with onshore pipeline to Dublin
- Interconnector from France to Ireland (Cork)
- Underground storage options
- Liquid Natural Gas (LNG) termini in Cork Harbour or Shannon Estuary



**Plate 5**



**View of AGI Site (in background) from Station Road**



**Gormanston Beach**



reinforcement of existing hedgerows the AGI's visual impact from Station Road will be greatly reduced.

Site location 2 is situated in the north east corner of the study area, approximately 50m west of the railway line and 30m south of Cock Lane. The site is also in close proximity to the Gormanston Military Aerodrome. The site is situated within a valley centered around the townland boundary between Irishtown and Gormanston. However, this portion of the study area lies within a flight path of the aerodrome. Consequently, there are restrictions on development within this zone, pertaining to the nature and height of proposed structures. These restrictions are detailed in the East Meath Development Plan, 2000. This is further discussed in Section 10.1. Some features of ecological importance also exist in the area. These are the hedgerows along Cock Lane and the triangular section of grassland immediately south of Cock Lane, which would be affected by the proposed development.

Taking these factors into consideration, site location 1 was deemed to be the most appropriate location for the proposed AGI for the following reasons;

- Outside area of influence of the military aerodrome and firing range
- Located outside the area of development restrictions
- Not in close proximity to the Dublin to Belfast Railway Line
- Does not impinge upon ecological features of significance
- Some good screening available
- Close to the sub-sea pipeline landfill.

## **6.6 ALTERNATIVE AGI DESIGN**

A number of alternatives were considered in the design of the AGI as described below.

### **6.6.1 Method of Exhaust**

A relatively small quantity of gas will be continuously vented into the atmosphere at the AGI. This occurs in the PCV motorisation stage, as discussed in Section 4.3.2, where gas is released from the PCV housing at a rate of 1Nm<sup>3</sup>/h. A computer model of the plume generated from the PCV vent was produced indicating the Lower Flammable Limit (LFL) distances of the gas. The LFL distance was found to be negligible. An alternative of burning vented gas was considered not to be required due to the insignificant emission levels.

### **6.6.2 Pressure Control Valve (PCV) Noise Reduction**

Another alternative was also considered concerning the PCV's. The pressure reduction stage of this process is considered to be a potential source of noise disturbance as the regulators emit a high frequency 'hiss'. Two types of noise mitigation device were considered in this development:

#### **Individual cover**

Three individual lines will perform the pressure regulation stage in the AGI. Each of these lines may have an individual covering to reduce noise emission. This noise shelter takes the form of a covering which is fitted on rails to allow for its removal during periods of maintenance (indicated in Plate 6). However, maintenance would have to be carried out in the open.



## 7.0 EXISTING ENVIRONMENT

### HUMAN BEINGS

#### 7.1 AGRICULTURE & LAND USE

The study area proposed for use for the Gormanston AGI is made up of seven separate fields. Fields 1 - 3 are sown for vegetables; Field 4 and are grass fields and fields 6 and 7 appear to be in tillage or rough grass. The method of growing vegetables in this region is to sow a crop of potatoes early in the Spring and after these are harvested, crops such as cabbage, cauliflower etc. are sown. Field 2, which is 13.87 hectares, is the largest field on the block and consists of different plots of vegetables. The following table describes the crops and land use of each field within the study area. The relevant fields are identified in Figure 7.1. A detailed report is included as Appendix A within Volume 3 of this EIS.

**Table 7.1 Land Use within the AGI Study Area**

Field No.	Crop / Land Use	Area (ha)	Notes
1	Cabbage & Cauliflower	2.73	Usually with vegetable crops in this region, crops are rotated throughout the year.
2	Potatoes & Vegetables	13.87	This field runs by the railway line.
3 (1.01)	Vegetables	2.7	Railway line coming from Gormanston station runs by.
4 (1.02)	Grass	5.66	Sheep grazing in field.
5	Grass		Details Sourced from Aerial Photography.
6	Tillage		Details Sourced from Aerial Photography.
7	Tillage		Details Sourced from Aerial Photography.

#### 7.2 MATERIAL ASSETS

The entire study area comprises land in agricultural use (tillage / market gardening / grass). There are no residential properties or other buildings within the study area (although there are 4 residences in close proximity to the south of the study area).

According to the East Meath Development Plan (2000) the land is not zoned, however, there are development restrictions in the vicinity of the Gormanston Military camp, which is situated to the north of the proposed AGI. The proposed location of the AGI is outside these restrictive zones.

A detailed report is included as Appendix B within Volume 3 of this EIS.

#### 7.3 TRAFFIC

The AGI Site is located between the old N1 and the Dublin to Belfast railway line near the village of Gormanston. It should be noted that since the opening of part of the M1 Motorway, i.e. the Balbriggan Bypass, the section of the N1 from Rowans Little to the Meath/Dublin County Boundary has been demoted to a local road. However, discussions with Fingal County Council



have confirmed that it will be redesignated a Regional Road in the near future. The remainder of the N1 will also be demoted once the M1 Motorway has been completed and opened. For clarity purposes the N1 which runs by the AGI site will therefore be known as the 'old N1' throughout this section of the report.

Both the construction and operational access to the site will incorporate the same route from the N1 and along Station Road. A specific AGI entrance will be constructed from Station road, heading directly northwards to the proposed site, as shown in Figure 7.2. Visibility along the old N1 from the access at Station Road is good.

The National Roads Authority (NRA) publishes their 'best' Annual Average Daily Traffic (AADT) estimates by section of National Roads every year. No such estimates are available for the remainder of the public road network e.g. Regional Roads. Consequently, no relevant information for the old N1 is available, as it has been demoted recently to regional status due to the construction of the M1 and consequently the decrease in traffic along the old N1. Although the level of traffic on the old N1 will have dropped sharply, no Balbriggan traffic will have diverted to the new Balbriggan Bypass. A Traffic Management Plan will be put in place before commencement of the construction phase of the project.

Traffic levels on the old N1, including the Balbriggan Bypass, between Drogheda and Dublin Airport are presented underneath. Their locations are indicated on Figure 7.3.

**Table 7.2: Traffic Levels on the N1 & Balbriggan Bypass between Drogheda and Dublin Airport**

No.	Section	1996	1997	1998	2000*
12/1A	Drogheda Borough Boundary	13,049	13,514	17,549	19,000
14/1A	Junction to Mosney	12,943	13,002	14,056	16,000
15/1	Balbriggan Bypass (north)	-	-	15,072	17,000
17/1A	Balbriggan Bypass (south)	-	-	17,714	20,000
18/1A	Blakes Cross/Skerries	25,677	28,224	30,513	35,000
20/1	Roundabout North of Swords	32,889	35,779	39,953	46,000
24/1	Intersection to Dublin Airport	39,703	50,020	50,159	57,000

\* estimated using NRA's traffic growth predictions

## 7.4 AIR

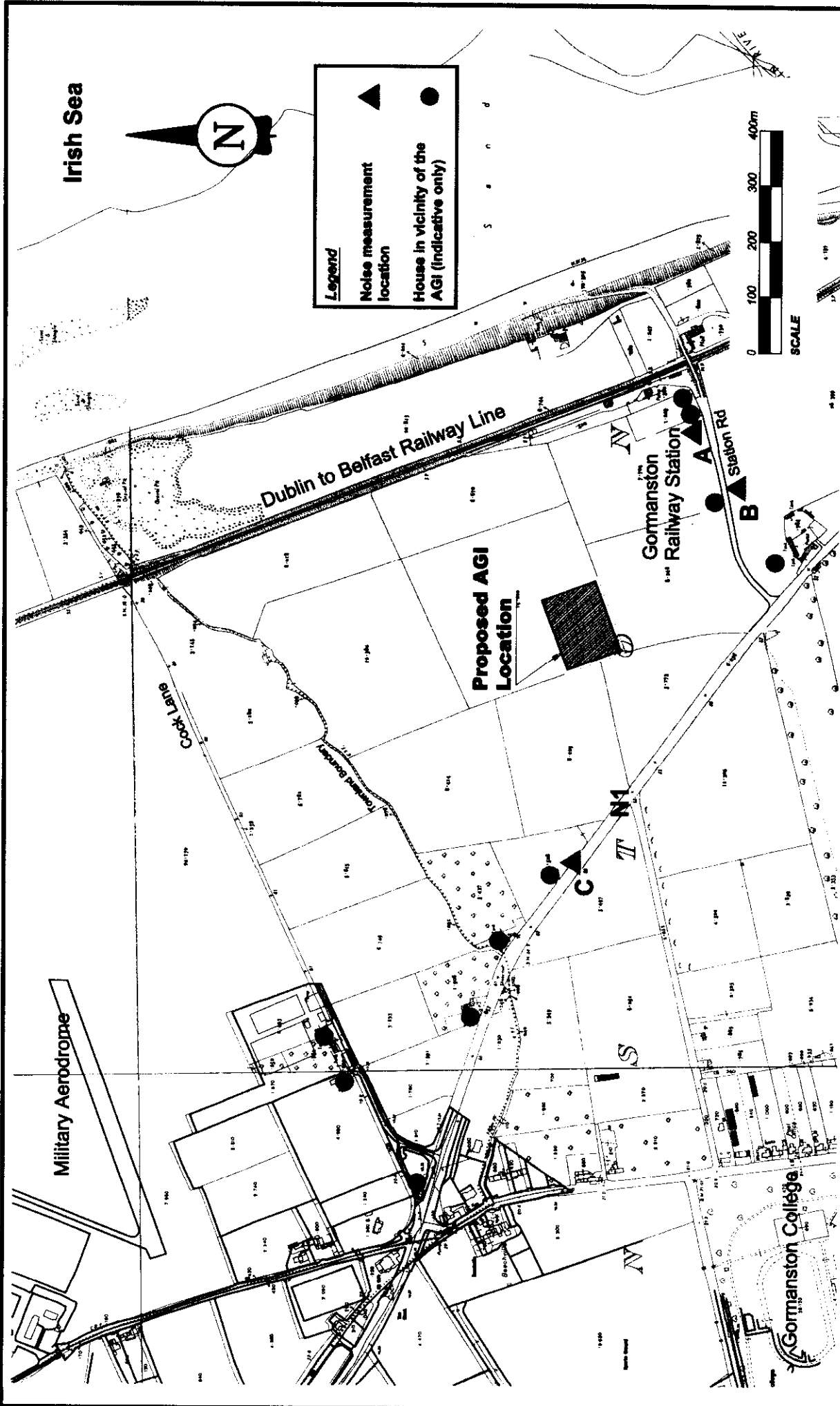
The air quality of the proposed location is good and there are no significant industrial activities located nearby. The primary source of gaseous and particulate concentrations in the air adjacent to the proposed site will be from the local road traffic, agricultural activities and from marine sources. Emissions from diesel powered rail traffic on the Dublin/Belfast line are also minor as traffic is relatively low throughout the day.

The levels of common air pollutants, such as smoke, sulphur dioxide and nitrogen dioxide will be very low and typical of background levels for Co. Fingal. Ambient concentrations would be less than 10% of the limit values specified in the National Air Quality Standards legislation (SI No 244 of 1987) and annual concentrations of nitrogen dioxide would typically be in the range of 5-10  $\mu\text{g}/\text{m}^3$ . These levels are well below the annual limit set for 2010 of 40  $\mu\text{g}/\text{m}^3$  specified in the 1999 E.U. Air Quality Directive (1999/30/EC). This Air Quality Directive gives air quality limit values for sulphur dioxide, nitrogen dioxide and particulate pollutants and will shortly replace the existing National Air Quality Standards.









<b>BORD GÁIS</b> TRANSMISSION BUSINESS UNIT		<b>Gormanston AGI EIS</b>  <b>Noise Monitoring Locations</b>	<b>Fig. No.</b> 7.4	
			Prepared: P. Higgins Checked: J. Shalloe Scale: N.T.S. Date: Feb. 2001 File Ref: P6.7.4.dwg	



Beach for Bass and Flounder, although conditions i.e. shallow depths are not very favourable for sea angling.

## 7.7 LANDSCAPE & VISUAL IMPACT ASSESSMENT

The majority of the land in the study area is at a height between 14m and 17m OD. The highest point of the study area is located along the boundary to the west, having a high point of approximately 17m OD. The proposed site area is located to the east of this high point where the land is approximately two metres lower at 15 m OD. There is a low point of approximately 8m OD to the north of the study area, at the eastern end of a small valley.

The steepest slopes are on the sides of this valley where the slope regime is in the region of 1 in 5 and 1 in 20, with the steepest slopes located to the northern side of the valley. The majority of the study area to the south is on level ground with a slope of 1 in 50 or less. The AGI will be located in this part of the study area. The slope regime of the site area is less than 1 in 50 with the land rising gradually to the west.

The land use of the study area mainly consists of agricultural crops, grasses and hedgerow planting. Figure 3, Appendix E shows the extent of existing hedgerows within and around the site and also extending out to the Balbriggan Road (N1).

The study area has a coastal location and is bounded to the north by a military aerodrome. There is an area of open grassland, approximately 300 metres wide, between the study area and the runway of the aerodrome. Between the aerodrome and the study area is a laneway known as Cock Lane, which is in poor repair and runs from the N1 Roadway to the coast, to the site of a former quarry. This quarry is now used as a motorbike track and for military training purposes. To the east is the Belfast to Dublin railway line, which forms a strong visual edge along the eastern boundary of the study area. Located to the east of the railway line is the former quarry and to the south of the quarry there is a narrow strip of agricultural land. To the south of the study area there is Station Road, which stretches from the Balbriggan Road (N1) eastwards to the railway station and the coast.

The majority of residential units are located along the N1 to the west. The nearest residences to the site are located approx. 200m to the south - east on Station Road. Land use within and around the site is shown on Figure 4, Appendix E.

Visually the site has little or no amenity value except that it forms part of the larger agricultural landscape. The railway line to the east forms a strong edge to the site as well as a visual barrier from views in from the east. The residential units located along Station Road to the south have direct views into the site, with the nearest residence being approximately 200m to the south east. The presence of hedgerow planting in the surrounding area around the site restricts views into the site, from the public domain, to isolated glimpses along the N1 and along Cock Lane. There are no long distance views into the site due to the topography of the land, together with the existing hedgerow structure. Views out from the site are restricted to long-distance views towards the south west.

As part of the 'Landscape and Visual Assessment' photomontage images showing before and after images of the AGI site from various viewpoints were created (see Appendix E of Volume 3). Figure 7.5 shows the before and after photomontage images of one of the views into the site.



## NATURAL ENVIRONMENT

### 7.8 ARCHAEOLOGY

No archaeological features were noted within the AGI Study Area and none became apparent on assessment of aerial photography. Furthermore, landowners were not aware of any archaeological material ever having turned up in the immediate area.

The AGI site is located directly north of Gormanston passage tombs, however, the tombs are not visible from the AGI site as high field boundaries and mature trees accompanied with flat terrain obstruct the view. The monuments below are those recorded within the immediate vicinity of the AGI site as shown in Appendix F.

- Irishtown  
ME028:018 Burial  
An Early Bronze Age crouched burial, which had been placed in a pit and covered with a large slab. Situated in the sand dunes c. 100m north of the AGI site.
- Gormanston  
ME028:021 Passage Tomb  
Fragmentary remains of a passage-tomb cairn, which was excavated in the nineteenth century. Situated at the edge of a sea cliff, c. 1000m Southeast of the AGI.
- Gormanston  
ME028:020 Passage Tomb  
The denuded remains of a passage-tomb cairn (diam. 37 m; height c. 1 m), situated c. 150 m from the seashore and c. 1000m south of the AGI.
- Gormanston  
ME028:019 Church (site) 'The Cloisters'  
Bence Jones (1979, 142) mentions that the church here had a Jansenist cross, and a date-stone (1687) over the door. It has since been destroyed. It was situated approximately 1500m southwest of the proposed AGI site. It is marked on the first edition OS six-inch map as 'The Chapel'.

Furthermore, a number of stray finds have been recorded in the vicinity of the AGI site, which are held in the National Museum, all of which are Neolithic in date. The artifacts include a number of flint tools and flakes, many of which have turned up in plough soil from the area around the Gormanston and Knocknagin passage tombs.

### 7.9 TERRESTRIAL ECOLOGY (FLORA & FAUNA)

#### 7.9.1 Flora

The AGI station and its access road are situated in two fields of pasture, grazed by cattle. They form part of a mixed farming area of tillage and pasture and adjoin tillage fields on one side and further grassland to the west. Hedges or fences surround the fields with the largest structure on the western side above a seasonal ditch. There is now no sign of the SW-NE stream marked on the O.S. maps to the north and it is presumably piped.



and meadow pipit also form larger flocks in winter and would feed sporadically here and on other farmland. Coastal regions are often important to migrating small birds and the bushy cover in the gravel pit (off-site) may be valuable to them.

The habitat is not suitable for waders which prefer damp grassy fields or mudflats. However a few lapwing and curlew may be found in winter especially after ploughing, which would also attract black-headed gulls. In summer swallow and sand martin are likely to be present with occasional willowwarbler and whitethroat.

A detailed report is included as Appendix G within Volume 3 of this EIS.

## 7.10 GEOLOGY & HYDROGEOLOGY

The geomorphology of the site is gently sloping and considered to be well drained. There is a 7-9m high cliff 400m east of the site between the site and the beach.

The OS 1:10,560 map for the area (Meath OS Sheet No. 28) indicates that there are a number of old disused shallow sand and gravel quarries in the area. Field investigations to the south of the site indicate that the overburden there is 2-3m thick and consists of rounded to sub-rounded clayey/silty gravel with some cobbles. The overburden cover at the site is likely to consist of similar rounded to sub-rounded clayey/silty gravel with occasional cobbles. The thickness of the overburden at the site is likely to vary between 1-3m but has not been confirmed by drilling. GSI (1:10,560) fieldsheet No: Meath 28/4a, indicates that the cliffs to the east of the site consist of limestone drift deposits, and field observations in the area during the preliminary site investigation, show that the overburden material close to the site was formed from a sandstone, siltstone and limestone genesis.

According to the Chevron/GSI geology map (Sheet No. 13) of the area, the site is underlain by pre-carboniferous metasedimentary and metavolcanic bedrock (Ref: Drawing 638a\_002). The geology of the area is shown in greater detail on the Groundwater Protection Scheme maps for Co. Meath (Map No.2E). This indicates that the site is underlain by the Denhamstown Formation, which consists of greywackes, sandstones and siltstones. The Denhamstown Formation forms part of the Balbriggan Inlier.

The Denhamstown Formation is classed as a poor aquifer, generally unproductive (Pu) by the GSI Groundwater Protection Scheme for Co. Meath (GSI, 1996). The site is located 400m from the coastline and therefore it is likely that groundwater in the deeper bedrock aquifer is saline and would have no resource potential for potable water supplies. Water levels within the deeper bedrock aquifer are likely to fluctuate slightly in response to tidal variations in sea level. It is likely that groundwater flows to the east across the site towards the sea.

The overburden at the site is likely to be shallow and is known to consist of sub-rounded clayey/silty gravel with some cobbles. There may be perched water tables within the overburden due to the presence of the clay and silt in the gravel deposits. It is unlikely that small perched water sources would be suitable or viable potable water abstraction resources.

Due to the shallow overburden cover and the high permeability of the gravel deposits the groundwater vulnerability for the area is classed as high to extreme.

There is a locally important sand and gravel aquifer to the north of the site. It is unlikely that activity on site during the construction phase or operation phase will have any effect on this locally important aquifer. The geology in the vicinity of the site is shown in Appendix H.



### **Visual Impact**

The station itself will be a new addition to the surrounding agricultural landscape and therefore, every effort will be made to minimize its impact on the visual aspects of the local rustic environment.

### **Loss of Agricultural Land**

The development of the AGI site will result in the loss of productive agricultural land in the local area and the corresponding loss to landowner incomes.

### **Traffic Impact**

The AGI site will be unmanned resulting in very little increase in traffic.

## **8.2 MATERIAL ASSETS**

Approximately 9,000m<sup>2</sup> of agricultural land (in grass) will be acquired for the AGI site. In addition approx. 7,500 sq.m. of agricultural land south of the proposed AGI site and east of the proposed access road will be temporarily acquired to house site offices, provide car parking and allow storage of materials during works. An access road is also to be constructed off Station Road, through an agricultural field into the AGI, which will require approx. 1,450 sq.m. (207 × 7) of agricultural land.

The impact on the retained lands is considered to be slight for the following reasons:

- The acquisition comprises an irregular shaped plot of land in the south western area of the holding, extending northwards from Station Road across two fields for approx. 300m.
- The acquisition will result in slight angulation to the southern field during works and will permanently sever this field due to the construction of the AGI access road.
- Working difficulties to the affected agricultural lands are not envisaged as these are currently in grass.
- The majority of the agricultural lands in the study area are unaffected by the acquisition.
- There are no residential properties to be acquired, nor are there any buildings in the study area.
- The nearest residence is approx. 200m south east of the AGI site. (and approx. 100 m east of the temporary acquisition).

The AGI will be located in a rural area, the acquisition comprises agricultural land only, and no residential or commercial property will be acquired. The nearest house is approx. 200m from the AGI. Having regard to the above it is considered that there will be a slight impact on the retained lands.

## **8.3 TRAFFIC**

### **8.3.1 Construction Phase**

During construction only a small number of truck movements per day are predicted. Such levels of traffic are insignificant compared to the levels of traffic along the old N1. Bearing in mind normal variation, the additional 'construction traffic flows' are well within normal day to day variation. If necessary, construction vehicle movements can be restricted to specific periods of the day.



these houses will be negligible, due to the separation distance, which is over 200m. With the implementation of the proposed mitigation measures, outlined in Section 9, no adverse impact should occur at the nearest private properties.

### 8.4.2 Operation Phase

The procedures carried out at the AGI involve the preparation of the gas arriving from the submarine pipeline for distribution to the land network. This involves filtration to remove particulates and heating the gas using water-bath heaters. The gas passes through a pressure regulator and an odourising agent is then added to the gas to give it a characteristic odour. Finally, the gas is passed through a metering system before entering the main outlet pipeline. The AGI also serves as a location within the gas pipeline network to introduce the pipeline monitor, known as a PIG, which examines the condition of the pipe for the presence of any defects or particles. An important feature of the AGI is the pig launcher/receiver section, which is above ground.

Table 8.1 gives the typical composition of natural gas and it is evident that 92% of the gas (by volume) is methane, with the remainder comprising nitrogen, carbon dioxide and non-methane hydrocarbons. The amount of sulphur in natural gas is negligible, typically less than 0.002%. The non-methane hydrocarbons present in natural gas are mainly ethane and propane with a number of trace hydrocarbons also present.

**Table 8.1: Typical Composition of Natural Gas**

Species	% Volume
Methane	92.5
Nitrogen	2.5
Carbon Dioxide	0.5
Ethane	2.9
Propane	0.9
Butane	0.2
2-methylpropane	0.2
Pentane	0.1
2-methylbutne	0.1
2,2 dimethylpropane	0.1
Total	100.0

Source: EEA Corinair Emission Inventory Handbook 2<sup>nd</sup> ed 1999

The odourising process takes place after the pressure reduction phase and the agent is stored in a double-skinned storage tank. The agent is a combination of Tertiary-Butyl-Mercaptan and Dimethyl Sulphide, both of which have very low odour detection levels. The amount of these compounds added by injection into the gas flow in the pipeline is very small and is at a rate of approximately  $7 \times 10^{-6} \text{ m}^3$  per  $1000 \text{ m}^3$  of natural gas. The odourising agent will be supplied directly to the AGI in sealed drums and the contents will be transferred to the storage tank via an airtight connection to prevent vapour losses to atmosphere during filling.

Under normal operating conditions at the AGI, emissions of gaseous or particulate compounds will not be significant and no odour will be detected beyond a few metres from the perimeter fence. Emissions from the water-bath heaters, which are heated by natural gas, will be mainly nitrogen oxides and will typically be less than 2.5 g/h. This emission estimate is based on a natural gas consumption rate of 500 kg/h and a rate of 5 g/tonne for nitrogen oxides, from this type of heating system. This volume of nitrogen oxides emissions is minor or insignificant. No adverse impact on the local air quality is predicted due to these emissions.



## **8.6 COMMUNITY EFFECTS**

The following sections aim to discuss the impacts of both the construction and operational phases of the development on communities at regional and local levels. However, as stated previously many of the effects are likely to be of a temporary nature and experienced only during the construction phase.

### **8.6.1 Regional Impact**

At a regional level the completion of the AGI will further expand the BGÉ gas network by connecting the sub-sea interconnector pipeline from Scotland to the existing BGÉ Gas Transmission network thereby increasing capacity on the existing network and also allowing expansion over the coming years. In the long term air quality will improve as traditional fuels such as coals and oil are replaced with natural gas, the most environmentally friendly of all fossil fuels. In addition the introduction of a cleaner and more efficient fuel supply to both industrial and domestic consumer markets will bring enormous benefits to the economy both nationally and internationally.

In general, the improved gas network brought about by the completion of this development will have significant benefits on a regional level. The supply of gas will bring major benefits to many homes, businesses and industries by providing access to low cost, environmentally friendly Natural Gas.

### **8.6.2 Local Impact**

At a local level, the development will result in temporary negative impacts during the construction phase. However, measures that can be used in the amelioration of these adverse impacts have been identified. Furthermore, construction normally takes place during the daytime thus minimising the disturbance to residents. The most significant long-term impacts experienced during the operational phase relate to noise, air and visual effects. The occupiers of residential properties are particularly sensitive to these nuisances. However, the nearest dwelling to the proposed site is situated at a distance of approximately 200m away and generally the severity of the impact diminishes as the distance from the construction site increases. Therefore, the operation of the AGI will not impact on local inhabitants.

Nuisances brought about by an increase in traffic, noise and air emissions are potentially the greatest cause for concern within the community. However, there are specialist technical reports dealing with the issues of noise, traffic and air, which should also be referred to within the appendices of this EIS.

#### **8.6.2.1 Social Activities**

Apart from the direct employment offered particularly during the construction period, the proposed development is likely to have a number of indirect benefits to the local economy. These will mainly come through the use of local labour, service industries and local supplies of materials during the construction of the AGI.

With a significant proportion of the specialist workforce being brought into the area for the duration of the construction and reinstatement activities, there will be some increase in the



## **NATURAL ENVIRONMENT**

### **8.8 ARCHAEOLOGY**

As there are no known monuments in the immediate vicinity of the proposed AGI site, there are no archaeological impacts associated with either the construction phase or operational phase. Although there are known to be a number of recorded archaeological sites in the general area, which would lead to the conclusion that there is potential for archaeological finds during construction. It is unlikely that this area would have extensive in situ remains as the area has been disturbed by the construction of the railway in the nineteenth century, and by the extraction of sand from a pit in the area now occupied by the motorcycle track.

### **8.9 TERRESTRIAL FLORA & FAUNA**

The site itself contains typical habitats for the Meath/Dublin border and has no features of significant ecological value. Adjacent habitats are more significant but only in a local context. The fauna is characteristic of this type of farmland and is therefore widespread in distribution.

The site is not included in any designated area (Natural Heritage Area, Special Area of Conservation etc.) and is unlikely to be so in the future. Also it does not contain habitats or species listed by the EU Habitats or Birds Directives (92/43/EEC, 79/409/EEC) or by the Flora Protection Order 1999.

The AGI station will occupy a small area of the site in the largest grassland field with an access from the Station Road to the south. It will have no real impact on the flora and fauna of the area though there will be local changes due to the fact that some intensive grassland will be removed and additional shrubs planted.

Long term changes to the flora and fauna will be dependant on the forms of land use in the surrounding area.

### **8.10 GEOLOGY & HYDROGEOLOGY**

The impact that the proposed development will have on the geological and hydrological environment during the construction and operational phases of the project depends to a large extent on the design and on the construction methods chosen.



## **9.0 MITIGATION MEASURES**

### **HUMAN BEINGS**

#### **9.1 AGRICULTURE & LAND USE**

##### **9.1.1 Construction Phase**

Adhering to the following recommendations will reduce the impact on agricultural activities during the construction phase of the Gormanston AGI.

##### **Noise & Dust**

Communication with farmers in the proximity of construction will facilitate them in organising their agricultural activities so that vulnerable livestock are kept as far away as possible from the construction work at critical times.

##### **Provision of Access**

As in the case of mitigation measures against noise and dust, communication between individual landowners and the construction authorities will minimize difficulties caused by the restriction of access to land parcels. Such communication should produce a workable arrangement that will allow all parties to continue their work.

Any removal of field access will be restored at a cost to the developer.

##### **Drainage Disturbance**

In cases where impeded drainage during construction will cause obvious difficulty to a particular landowner, temporary measures should be taken to allow waters to drain less critical areas and so minimise impact.

##### **9.1.2 Operational Phase**

Any impacts as a result of the daily operation of the AGI station will be minimised by landscaping to reduce any visual intrusion, which the station may have on the surrounding rustic landscape. Additional traffic will have a negligible impact on surrounding roadways. The landowner will be compensated by BGÉ for any loss in land.

#### **9.2 MATERIAL ASSETS**

Compensation payments for loss of land, injurious affection and disturbance will be agreed with the relevant property owner affected by land taken for the AGI, access road and temporary working area.



## 9.5.2 Operational Phase

As stated previously, although there are no statutory limits for environmental noise emissions for this type of plant or industry in general, the criteria for industrial noise generally lie in the range of 35-45dB (A) at night and 45-55dB (A) by day. The lower values are normally applicable to rural areas and zones of hospitals, and the higher values are sometimes applicable to city centre areas or special cases such as mining or quarrying.

Selection of the appropriate noise criteria values within the range of values above depends on the pre-existing noise levels, the character of the area and the nature of the development. Taking the above into account and the relatively low level of existing 'background' noise at Gormanston the following criteria is proposed as being appropriate for minimal impact on the noise environment:

At any existing residence:

Night	:	35 dB L <sub>Aeq</sub> (15 min)
Day	:	50 dB L <sub>Aeq</sub> (30 min)

These are limit values for the noise from the proposed plant measured outside any dwelling. There should be no significant pure tones or impulsive elements in the noise spectrum of the emissions from the plant.

The effect of the minimum distance of approximately 200m to the nearest residence will significantly decrease the noise emission level and ensure that there is no adverse impact due to the operation of the AGI. Comparison of the octave band levels at the measurement location and at the Loughshinny AGI shows the higher frequency 'hiss' from the PCV's. This component has the potential for disturbance but due to the distances involved will require no amelioration measures.

There will be no ground vibration perceptible off-site.

## 9.6 COMMUNITY EFFECTS

The mitigation measures recommended to avoid disturbance to the local community and any visitors to the area during the construction and operational phases are discussed in more detail in the relevant sections on air, noise, traffic and landscape.

## 9.7 LANDSCAPE & VISUAL IMPACT ASSESSMENT

Mitigation will be provided by the following measures being implemented as shown on Figure 6, Appendix E.

- Woodland screen planting around the development to create a visual barrier from the public domain.
- The reinforcing of the existing hedgerow planting around the site with additional woodland planting where necessary.



Excavation de-watering during the construction phase	<p>spills/leaks occur.</p> <p>If de-watering of trenches is required during the construction phase, then pumped water should be discharged to a watercourse or the sea via a temporary pollution interceptor. A recharge pit could also be used to allow pumped water to percolate back into the aquifer. The recharge pit would have to be located down gradient of the proposed AGI to prevent recirculation of pumped water. If major hydrocarbon or diesel spills are reported then de-watering of excavations on site should cease until remediation is complete.</p>
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**Table 9.1 cont.: Potential Impacts & Proposed Mitigation Measures During Operational Phase**

<b>Potential Impacts on Soil and Water Environment</b>	<b>Proposed Mitigation Measures</b>
Hydrocarbon or chemical spills or leaks during operation phase	<p>If a permanent store of diesel is required on site then it should be stored in suitable double skinned diesel tank. Spill kits should be stored permanently on site to clean up minor spills of diesel.</p> <p>If Lubricating oils or hydraulic oils or chemicals are required to be stored on site during the operation phase then they should be stored in suitable cabinets containing spill trays. The concrete floor of the AGI should prevent any direct migration of hydrocarbon or chemical spills to the soil or water environment.</p>



### Natural Heritage Area

It is the policy of the council to protect the proposed Natural Heritage Areas (pNHAs) set out in the Plan by prohibiting development that would have an adverse impact on these areas. However, there are no pNHAs in the Gormanston area.

### Tree Preservation

It is the policy of the council to protect individual or groups of trees, which have amenity value and to prepare Tree Preservation Orders (TPOs) where the Planning Authority considers it appropriate. Although there are 23 TPOs in the Gormanston area, all are situated at a minimum distance of 1km from the AGI. As a result, the AGI will not impact on these trees.

## 10.1.2 Development

The development objectives of the council for the Gormanston area relate to the following zones:

<b>A1</b>	Residential	To protect, improve and provide for residential development and amenity
<b>A2</b>	Residential/open space	To provide for low density residential development and public open space
<b>C</b>	Community Facilities	To protect existing and to provide for the future development of community facilities.
<b>D</b>	Institutional	To protect and provide for institutional and related compatible uses.
<b>G</b>	Open Space	To preserve and provide for open spaces including recreational and amenity uses.

Although the AGI site is not located within any of these zoned areas (see Figure 10.1), it is in proximity to a development restricted area as a result of the approaches to Gormanston Aerodrome.

According to the plan *'before a decision is made on any application for permission to carry out development in the vicinity of Gormanston Military Camp, An Roinn Cosanta shall be consulted in respect of:*

- *all development within the solid green line*
- *all development over 10.67 metres high within one mile of the red line'* (see Figure 10.1)

Although the AGI is located within 1 mile of the red line, neither category applies to the development, as the highest elevation at the AGI will be 8.5m high.

## 10.1.3 Gormanston Objectives

The council outlined eight specific objectives (G1 to G8) for the Gormanston development area of which G3 to G6 relate to residential zoning. However, the location of the development of the AGI will not interfere with any of these objectives.



#### 10.1.4 Development Standards

In assessing whether the AGI is in accordance with the proper planning and development of an area, it is necessary apart from the wider policy issues and objectives, to give consideration to a series of specific and detailed planning principles, standards and regulations as provided for in the Planning Acts.

The Meath County Council Draft County Development Plan, 2000 also sets out development standards that new developments will be required to attain by the Council.

Industrial developments shall be required to present a pleasant aspect by good design, landscaping and screening. In case of development of two or more industrial buildings, a uniform design for boundary fences, roof profiles and building lines shall be required. Sources of noise and fumes such as exhausts, compressors or fans etc. shall be sited away from site boundaries, particularly in the vicinity of residential areas.

The design of the AGI is such that it will consist of two small industrial type buildings, the Control Building (15 x 7.5 x 4.5) and the Pressure Control Valve Shelter (18 x 10 x 3). There will be no open storage areas or unobtrusive loading areas but there will be a small car parking area with space for approximately five vehicles. The site is well screened by natural hedging and mature trees on most sides, however, supplementary screen planting will further reduce the degree of visual impact of the development. As the AGI is not located in the vicinity of a residential area, noise and air emissions should not be of concern to the local community or residences. These environmental aspects are discussed in separate reports.

#### 10.1.5 Visual Quality Objectives

According to the Meath County Council Draft County Development Plan, 2000, Gormanston Beach has been classified as a coastal zone of visual quality (see Figure 10.1). The Plan identified this an area of regional amenity importance, which is sensitive to most forms of development including housing, large structures and masts particularly as they interfere with long views along the coast.

However, the AGI site is situated approximately 500m west of Gormanston Beach and will not interfere with the visual quality of the beach due to its low-lying position on the land and the screening provided by the surrounding trees and hedges.

## REFERENCES

Meath County Council (2000); *'East Meath Development Plan'*.

Meath County Council (2000); *'Meath County Draft Development Plan'*,



predicted. The odourising agent will be stored in a protected tank and injected into the natural gas under controlled conditions. Filling of the tank will take place by direct pipeline connection to ensure no losses of vapours during the filling process.

During maintenance procedures, when venting of the pipeline may be required, this could result in an odour being detected in the locality during release of the natural gas. This emission of natural gas would last for only a few minutes and apart from the potential to cause an odour will not have a significant impact on the surrounding air quality. No adverse effect on the health of the local community or damage to the surrounding environment is predicted as a result of these emissions.

### **Noise**

The noise emissions arising during the construction phase of the AGI will be temporary in nature and the absolute levels will be below those which result from passing vehicles. As this will occur during daytime only, there will be no significant adverse impact.

Noise levels from the comparable existing Loughshinny AGI, North Co. Dublin, recorded night-time levels of 36 dB(A), 25 metres from the AGI, against a set criterion value of 35 dB(A). This difference is not considered significant. At Gormanston, the effect of the minimum distance of c. 200 metres to the nearest residences, will ensure that there is no adverse impact as a result of AGI operation. Furthermore, there will be no ground vibration perceptible off-site.

### **Community Effects and Tourism**

In general, the improved gas network brought about by the completion of this development will have significant benefits on a regional level. The supply of gas will bring major benefits to many homes, businesses and industries by providing access to low cost, environmentally friendly Natural Gas.

At a local level, the development will result in short-term negative impacts during the construction phase. However, measures that can be used in the amelioration of these adverse impacts have been identified, for example, traffic control and dust suppression measures. Furthermore, as construction normally takes place during daytime, disturbance to residents is minimised.

No impact is expected on tourist or amenity sites in the general area because no such sites are located nearby, except for Gormanston Beach and Gormanston Railway Station. A Traffic Management Plan will be put in place to minimise the possibility of any disruption along Station Road which provides access to the beach and railway station. Station Road will be used for vehicle access during the operational phase, however, no impact is expected as the site will be unmanned and only visited occasionally by BGÉ operational staff.

### **Landscape**

During the construction phase, the development as a result of elements associated with construction work i.e. site huts, site security hoarding/fencing will have a significant, negative visual impact. However, this impact will be of a temporary nature.

The height of the structures on site, their location and the proposed screen planting around the site will render views into the site visually insignificant. The site is located in an area not frequented regularly by the public. Therefore the proposed development will not have a significant visual impact on the landscape or on the amenity value of the land.

### **Archaeology**

There are no known sites of importance within the Study Area, therefore, no adverse impacts on archaeology in the vicinity of the proposed AGI are expected. However, archaeological monitoring is recommended during both soil stripping and construction, in case archaeological material is uncovered during this period. The operational phase of the AGI will not have any impact on archaeology.



natural environment or human beings. Therefore it is recommended that this AGI development should proceed, provided that appropriate mitigation measures are implemented both during the construction and operational phases of the AGI.



**Maximum Allowable Operation Pressure (MAOP) / Maximum Permissible Operating Pressure (MPOP)**

The maximum pressure at which a pipeline is allowed to transport gas.

**Mitigation**

The purposeful implementation of decisions or activities that are designed to reduce the undesirable impacts of a proposed action on the affected environment.

**Overburden**

Material that exists above the rock/soil interface.

**PCV**

Pressure Control Valve.

**Photomontage**

Computer generated images showing before and after images of the AGI site from various viewpoints.

**PIG**

Pipeline Integrity Gauge – used to clean and to inspect the pipeline for defects prior to commissioning and periodically during operation.

**PNHAs**

Proposed Natural Heritage Areas.

**SACs**

Special Areas of Conservation; habitats which are legally protected.

**Scoping**

An early and open activity to identify the impacts that are most likely to be significant and require investigation during EIA work. Can also be used to

- Identify alternative project designs/sites to be assessed;
- Obtain local knowledge of site and surroundings; and
- Prepare a plan for public involvement

The results of scoping are frequently used to prepare a Term of Reference for the EIA.

**Screening**

Preliminary activity undertaken to classify proposals according to the level of assessment that should occur in order to discuss alternative routes particularly with respect to environmental constraints.

**SMRs**

Archaeological Sites, Monuments and Records.

**SPAs**

Special Protection Areas for birds; legally protected.

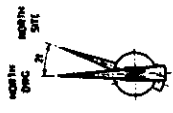
**Statutory Consultees**

Organisations and authorities stipulated by legislation to be notified by a competent authority if an application is made which might give that organisation a cause for concern.

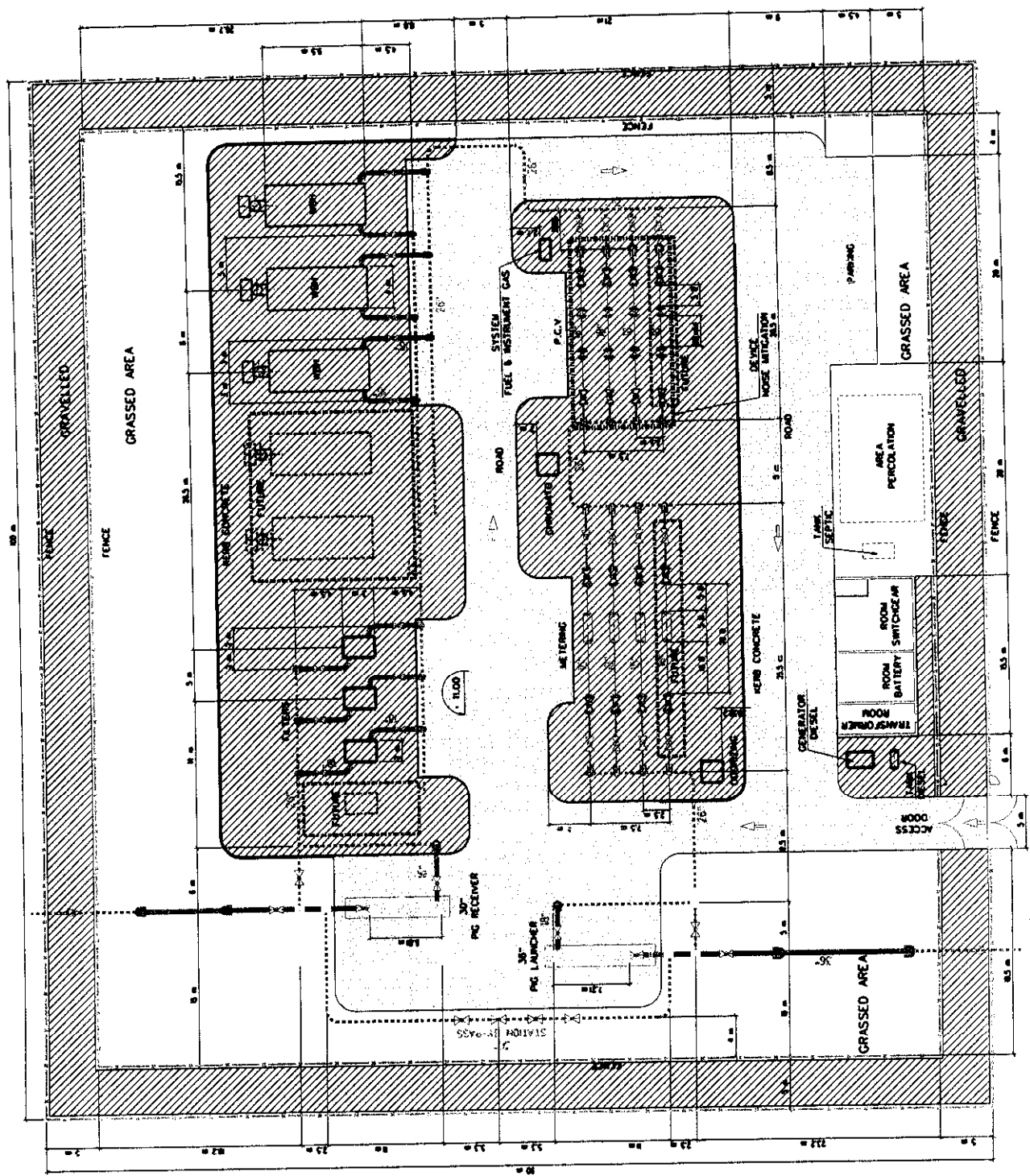
**Scmh<sup>-1</sup>**

Standard cubic meter per hour.





- LEGEND**
- ABOVE GROUND PIPES
  - - - UNDERGROUND PIPES
  - ▨ GRAVELLED AREA
  - COATED MASONRY
  - ▤ REINFORCED CONCRETE PAVEMENT
  - 11.00
  - SITE FORMATION LEVEL (M)



NO.	DESCRIPTION	QTY	UNIT	AMOUNT
1	REINFORCED CONCRETE PAVEMENT	100	SQ. M.	100
2	GRAVELLED AREA	100	SQ. M.	100
3	COATED MASONRY	100	SQ. M.	100
4	ABOVE GROUND PIPES	100	M.	100
5	UNDERGROUND PIPES	100	M.	100
6	REINFORCED CONCRETE PAVEMENT	100	SQ. M.	100
7	GRAVELLED AREA	100	SQ. M.	100
8	COATED MASONRY	100	SQ. M.	100
9	ABOVE GROUND PIPES	100	M.	100
10	UNDERGROUND PIPES	100	M.	100
11	REINFORCED CONCRETE PAVEMENT	100	SQ. M.	100
12	GRAVELLED AREA	100	SQ. M.	100
13	COATED MASONRY	100	SQ. M.	100
14	ABOVE GROUND PIPES	100	M.	100
15	UNDERGROUND PIPES	100	M.	100
16	REINFORCED CONCRETE PAVEMENT	100	SQ. M.	100
17	GRAVELLED AREA	100	SQ. M.	100
18	COATED MASONRY	100	SQ. M.	100
19	ABOVE GROUND PIPES	100	M.	100
20	UNDERGROUND PIPES	100	M.	100

**COMUSSTON AQ**  
**GENERAL PLOT PLAN**

PROJECT: CAS 2025

DATE: 10/10/2025

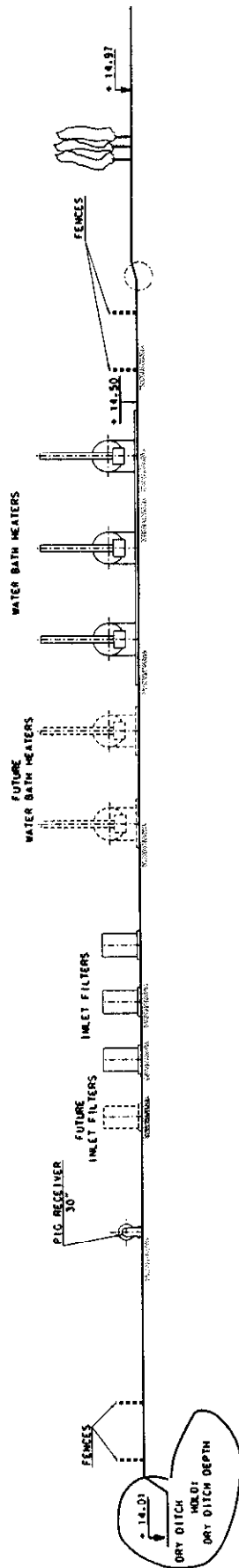
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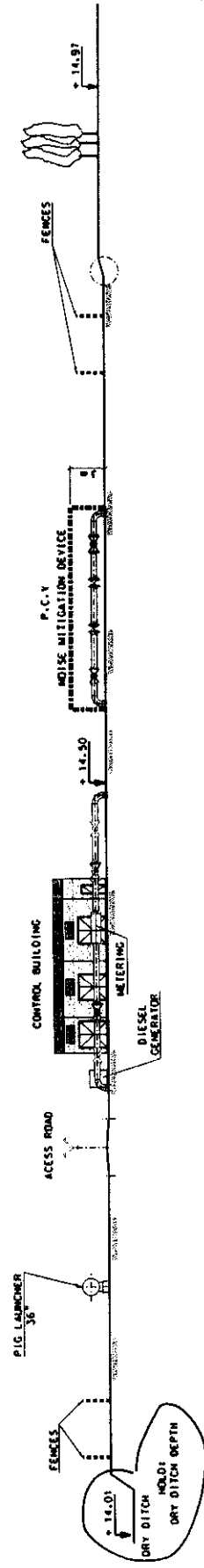
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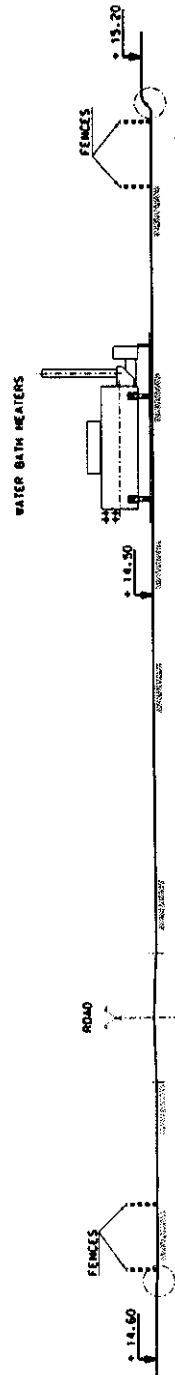
CROSS SECTION (1) WEST - EAST



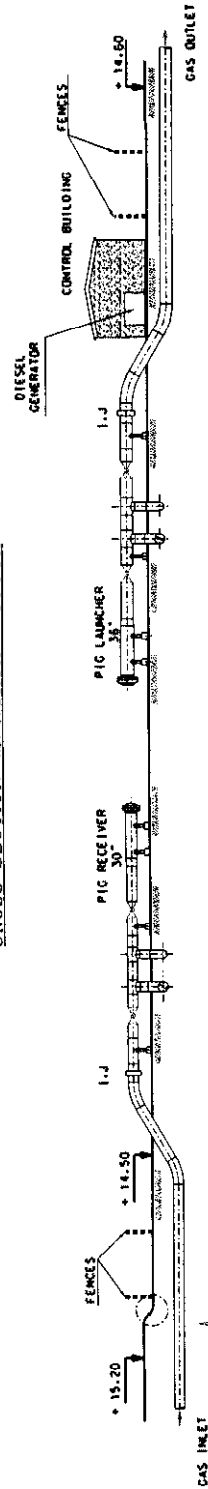
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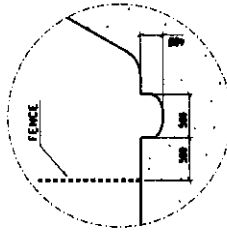
CROSS SECTION (1) SOUTH - NORTH



CROSS SECTION (2) NORTH - SOUTH



DETAIL



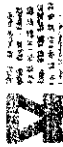
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100	1" PIG LAUNCHER	1	EA	1.00

CONSTRUCTION ADI  
CROSS SECTIONS

PROJECT: CAS 2025

BORD GARS

REVISIONS



DATE: 10/10/2024  
BY: [Signature]  
CHECKED: [Signature]  
APPROVED: [Signature]



**TPO**

Tree Preservation Order.

**UPS**

Uninterruptable power supply.

**ZVI - Zone of Visual Influence**

The area within which a particular development can be seen.



## GLOSSARY

### **Alternative**

A possible course of action, in place of another that would meet the same purpose and need of the proposal.

### **Aquifer**

A body of rock that contains water and releases it in significant quantities for use.

### **Baseline Studies**

Work done to collect and interpret information on the condition/trends of the existing environment.

### **Code of Practice**

A working document regulating gas pipeline construction and operation in Ireland, produced by BGÉ in association with the IFA and ICMSA.

### **Decibel (dB)**

Unit for measuring the loudness of sound.

### **Environmental Impact Assessment (EIA)**

The systematic, reproducible and interdisciplinary identification, prediction and evaluation, mitigation and management of impacts from a proposed development and its reasonable alternatives. Sometimes known as Environmental Assessment.

### **Environmental Impact Statement (EIS)**

Document in which the results of an EIA are presented to decision-makers and usually the public.

### **Fauna**

The animal life of a particular area/region.

### **Flora**

The plants of a particular area/region.

### **Greywacke**

A very hard, dark grey or greenish grey, coarse grained sandstone characterised by angular particles of quartz, feldspar and rock fragments embedded in a clayey matrix that forms more than 15% rock.

### **Hydrocarbon**

A class of organic compounds consisting of carbon and hydrogen only.

### **Inlier**

An irregular area of rock surrounded by younger strata.

### **IS 328**

Irish Standard for Gas Transmission Pipelines and Pipeline Installations.

### **Lower Flammable Limit (LFL)**

A distance considered when the venting of natural gas occurs.

### **Liquefied Natural Gas (LNG)**

Another form of natural gas. LNG has much more energy for the amount of space it takes up. Liquefied natural gas is made by refrigerating natural gas to condense it into a liquid.



### **Terrestrial Ecology**

The Gormanston site consists of farmland mostly given over to vegetable growing. It contains flora and fauna typical of cultivation on the Dublin/Meath border with no features of value in the county context.

The hedge along the northern road, Cock Lane, and the grassland at its base, close to the railway bridge, are relatively rich in species but will not be affected by the AGI in its present position.

The operation of the AGI will not have a significant effect on flora and fauna and the subsequent management of the site will largely control this.

### **Geology & Hydrogeology**

Impacts during the construction phase are considered to be moderate. There is potential to contaminate the groundwater or soil, disturbance of ground could lead to trench collapses, and the potential exists to intercept groundwater which could result in dewatering. Impacts during the operational phase are slight. However, measures recommended will reduce the significance of all of these impacts.

### **Planning Policy**

Examination of the '*Meath County Development Plan, (Draft 2000)*' and the '*East Meath Development Plan, (2000)*' confirmed that the AGI development was not conflicting with any current or future development plans. However, the '*Meath County Development Plan (Draft 2000)*' outlines specific development standards that the AGI will be required to attain in relation to siting, screening, aesthetics etc.

## **11.2 CONCLUSION**

In conclusion, it can be stated that, having undertaken an assessment and evaluation of all the possible impacts summarised above, the Gormanston AGI development will not have a significant impact on the environment.

The most significant impacts will occur during the construction phase of the development, which is expected to last 9 months. Therefore, these impacts can be considered transient and of a short-term nature. Given the rural nature of the site and the fact that a major road (old N1) runs close by, impacts are not expected to affect the local community in a significant way.

The most significant of the impacts during the operational phase will relate to gaseous emissions as it will be necessary for gas to be vented from the AGI on an infrequent basis. However, this will only occur over a matter of minutes and although the gas may be detectable, residents should not experience any adverse impacts and certainly gaseous emissions will not affect community health or damage crops.

The visual impact of the site is described as slight but neutral as the structure is a utility development in an agricultural and rural based environment but in the overall context of the existing environment the impact will be neutral. This is because the relatively low AGI structures, their location and the proposed screen planting around the site will render views into the site visually insignificant. Furthermore, the site is located in an area not frequented regularly by the public. For similar reasons noise emissions are not expected to be significant.

Having conducted a comprehensive Environmental Impact Study, the results of which are described in detail within this Environmental Impact Statement, it can be concluded that the development of Gormanston AGI in Co. Meath will not have a significant impact on either the



## 11.0 CONCLUSIONS

### 11.1 SUMMARY OF IMPACTS & MITIGATION MEASURES

An additional sub-sea interconnector is an important development for the provision of a secure supply of natural gas to Ireland to increase the capacity of the existing BGÉ Natural Gas Transmission Network and for future supply. The Gormanston Above Ground Installation (AGI) is an essential element in the operation of a second sub-sea interconnector from Scotland to Ireland. Its primary objective is to reduce the pressure of gas from 147bar, at which the sub-sea interconnector will operate, to a maximum of 85bar at which the onshore Irish element of the pipeline will operate.

Having examined the prospect of possible alternatives, the AGI is deemed to be located in the most environmentally acceptable site available, considering the restrictions imposed by the location of the landfall for the sub-sea pipeline.

The most modern AGI design will be carried out, incorporating the most up to date technology available worldwide, thereby ensuring a safe working environment and assisting in the reduction of any environmental effects on the Gormanston area.

The conclusions from the Environmental Impact Study are summarised below.

#### **Agriculture & Landuse**

The agricultural practices carried out in the fields where the proposed development will be sited consist of grassland and various crops. The construction and operation of the Gormanston AGI has potential slight negative impacts upon aspects of the agricultural environment. However, good communication with landowners during the construction phase of the project will help to minimise impacts and difficulties, where a compromise may be reached. Also, the use of some of the suggested mitigation measures will ensure that impacts on agricultural activity on the AGI site are kept to a minimum. To conclude, it is likely that the impact of the development of the AGI on the proposed site will be no greater than any alternative site chosen.

#### **Material Assets**

The land acquisition for the AGI comprises agricultural land only and compensation for the associated loss of land will be agreed between BGÉ and the relevant landowner. The nearest house is approx. 200m from the site therefore no residential or commercial property will be acquired. Taking these factors into consideration it can be concluded that there would be a slight negative impact on the retained lands.

#### **Traffic**

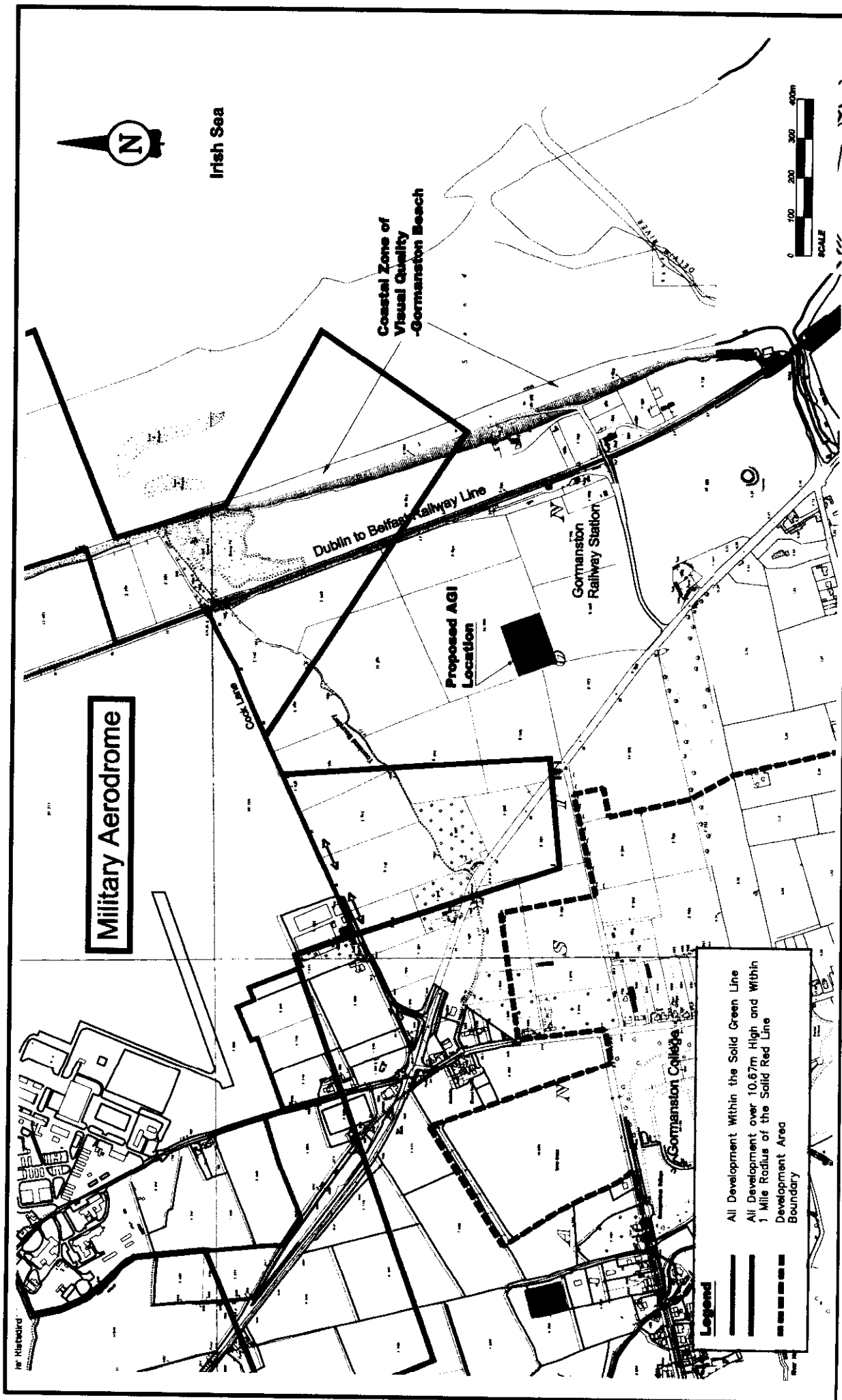
The increased levels of traffic during construction are estimated to be minor compared to existing traffic levels. These additional levels are insignificant in themselves and their impact on present day traffic levels along the old N1 will be unnoticeable as far as traffic operation is concerned.

#### **Air**

The location of the AGI site is remote and removed from nearby housing. During the construction phase the proposed AGI development will have a minor to moderate impact on air quality. This will arise from dust and particulate emissions generated due to the site construction, pipe laying and movement of construction traffic along the access road. The site will be sprayed with water during dry dust periods. Therefore, the impact of dust generated from the road surface during by construction traffic is restricted to a short-term moderate impact on ambient dust and particulate levels in the area.

When the AGI is completed, emissions of nitrogen oxides and hydrocarbons during normal operation will be minor or not significant and no adverse impact on the local air quality is





**Fig. No.**  
**10.1**

Prepared: P. Higgins  
Checked: J. Shalloo  
Scale: N.T.S.  
Date: Feb. 2001  
File Ref: PL 10.1.dwg

## Gormanston AGI EIS

*Development Restrictions in the  
Vicinity of Gormanston  
(Source: East Meath Draft Dev. Plan 1999)*

Job

Title

**BORD GÁIS**  
TRANSMISSION BUSINESS UNIT

**MOES**



## 10.0 OTHER IMPACTS

### 10.1 PLANNING POLICY

During the scoping phase of the EIA, consultation with Meath County Council took place to discuss the proposed development. They advised that reference should be made to the Draft County Development Plan, 2000, and in particular to the East Meath Development Plan, 2000, to ensure that the proposed AGI is not conflicting with any current or future development plans.

Meath County Council has a number of policies for the development and conservation of the East Meath Sub-Region as outlined in the East Meath Development Plan, 2000. These relate to the following issues:

- Residential development,
- Industrial,
- Commercial,
- Education,
- Sanitary services,
- Transportation and communications,
- Tourism,
- Conservation and amenity.

However, there are several development areas within the East Meath Sub-Region, each with their own specific objectives. The following sections outline the council's objectives for the Gormanston area and discuss the environmental and development aspects of those policies, which are important to the proposed development. These mainly relate to conservation/amenity issues and zoning.

#### 10.1.1 Conservation/Amenity

##### **Protected Structures**

Due to their exceptional artistic, architectural or historic qualities, the Council deemed it appropriate to list particular buildings and structures for preservation and protection. However, Gormanston Castle is the only listed building in the Gormanston area and is located approx. 1.5km from the proposed AGI site. Therefore, the AGI will not impact on the structure.

##### **Preservation of Views & Vistas**

It is the policy of the council to ensure that development, which would erode the amenity value of the views and prospects listed in the local plans, shall be restricted. However, the plan for the Gormanston area does not identify any views or vistas.

##### **Archaeology**

It is the policy of the council to ensure that, where relevant, all planning applications for new development or refurbishment/restoration works, within the 'Zones of Archaeological Potential' are referred to Dúchas and will take into consideration their observations regarding same. Although, the Gormanston AGI is not located within a 'Zone of Archaeological Potential', there is still a possibility of finding remnants of archaeological interest, and this is discussed in a separate report on Archaeology undertaken by Margaret Gowen & Co. Ltd.



## NATURAL ENVIRONMENT

### 9.8 ARCHAEOLOGY

There are no known monuments in the immediate vicinity of the proposed Gormanston AGI. However, archaeological monitoring is recommended during soil stripping and construction as the Gormanston area has indicated prehistory importance due to the presence of megalithic tombs to the south of the site and a Bronze Age burial site to the north.

### 9.9 TERRESTRIAL FLORA AND FAUNA

New planting of woody species in the vicinity of the AGI will mirror those found in the northern hedge and concentrate on native types able to withstand the exposure. Blackthorn, gorse and hawthorn are probably the most suitable. Reference should also be made to Section 9.7 (Mitigation Measures for Landscape/Visual Assessment) in this regard.

### 9.10 GEOLOGY & HYDROGEOLOGY

Table 9.1 outlines the potential effects on the soil and water environment due to the construction and operational phases of the AGI and details measures that could be taken to mitigate against these potential effects:

**Table 9.1: Potential Impacts & Proposed Mitigation Measures during Construction Phase**

Potential impacts on Soil and Water Environment	Proposed Mitigation Measures
Removal of topsoil	The topsoil strip should cover as small an area as possible. Topsoil should be stored on site and used to landscape disturbed ground after construction of the AGI is complete. Landscaped ground should be seeded.
Site traffic	Site traffic should be restricted to temporary roads or solid ground to prevent excessive rutting and disturbance of the soil. Areas disturbed by site traffic should be landscaped and seeded after the construction phase.
Site compound	The site compound should be located on solid ground or on temporary rolled fill. Areas disturbed by site compound should be landscaped and seeded after the construction phase.
Trench Collapse	Trenches should be supported to prevent collapse and ground failure.
Hydrocarbon spills or leaks during construction phase	Diesel should be stored in suitable double skinned diesel tanks. Spill kits should be stored on site to clean up minor spills of diesel. Any major diesel spills noted during the construction phase of the project should be reported and investigated. Remediation of major diesel spills should be designed by experienced consultants and completed by suitably experienced contractors. Lubricating oils and hydraulic oils are likely to be stored on site during the construction phase. These materials should be stored in cabinets containing spill trays to prevent direct migration to the soil and water environment if minor



## **9.3 TRAFFIC**

Appropriate traffic management measures, at/near the access point to the old N1, will be formulated to ensure road users are made aware of the construction site and its related traffic. Measures to be implemented will be discussed and agreed with Meath County Council prior to commencement of construction. Restrictions on truck movements to and from the site can be implemented if needed.

## **9.4 AIR**

### **9.4.1 Construction Phase**

The following mitigation measures are proposed:

- The site will be sprayed with water during dry dust periods.
- Mud or silt deposited on the road near the junction with Cock Lane and the N1 as a result of drag-out by the tyres of vehicles, or spillage of materials should be promptly removed.
- Loose, fine aggregates that can be easily resuspended by the wind should not be stored in uncovered stockpiles at the construction compound of the AGI, so as to reduce and control fugitive dust emissions from the construction site.
- Diesel engines in the trucks and heavy plant machinery should be regularly maintained to prevent excessive exhaust emissions of particulates and other pollutants during operation.
- Truck speeds should be controlled to prevent high levels of dust being resuspended from the surface of the access road to the AGI construction site.

### **9.4.2 Operational Phase**

The gas preparation process systems within the AGI will operate in accordance with standard procedures. Control measures during the installation and maintenance of the different systems will ensure that International Operating Standards are met to control and minimise air emissions.

## **9.5 NOISE**

### **9.5.1 Construction Phase**

British Standard BS 5228: 1997 on Noise Control on construction and demolition sites provides guidance on the methods available to control noise from construction work and is used on road and other large scale construction projects.

The noise from the construction of the AGI will be temporary in nature and the absolute levels will be below that due to passing vehicles. As this will occur during daytime only there will be no significant adverse impact.



### **8.10.1 Construction Phase**

Possible impacts include:

- Trench excavations may result in soil collapse and unstable ground.
- Excavations at the site may intercept shallow groundwater and if de-watering is required then this may impact on the soil and water environment.
- Diesel and others hydrocarbons are likely to be stored on site for construction plant and any spills or leaks could lead to the contamination of the soil or groundwater.
- There is the possibility of a negative visual impact on the soil environment at the site due to disturbance of the ground outside the proposed AGI structure, by site traffic and storage compounds.

The solid geology at the site is unlikely to be affected by the construction of the AGI due to the estimated depth to bedrock.

### **8.10.2 Operational Phase**

Activity on site during the operational phase is unlikely to have any effect on the quantity of groundwater resources or the bedrock geology at the site. The bedrock geology at the site is also unlikely to be affected during the operational phase of the AGI.

However, if hydrocarbons or any other chemicals are used during maintenance of the AGI then there is potential for hydrocarbon spills and leaks, and possible contamination of the soil and groundwater environment. Mitigation measures are discussed in Section 9.10.



number of people at any pubs, bed & breakfasts, bars, restaurants etc. in the area. The local inhabitants may view this as either a positive or a negative effect.

Other areas likely to benefit from the construction of the proposed AGI will be the plant hire, haulage office supplies/cleaning, waste disposal, timber yards, sand and stone quarries.

During the construction phase, there can be occasional disruptions to water and electricity services. There can also be interruptions to electricity supplies if connections have to be made for power supply to permanent buildings/structures associated with the development. Construction activities can also result in the temporary disruption of access to properties.

#### **8.6.2.2 Tourism & Amenity Attractions**

The impact of the development on tourism in the area will be slight and of a short-term nature due to the distance separating the site and the local tourist/amenity attractions. Although the beach is situated approximately 500m east of the site, the surrounding landscape provides suitable screening against any visual impacts.

## **8.7 LANDSCAPE & VISUAL IMPACT ASSESSMENT**

### **8.7.1 Construction Phase**

During the construction stage the development will have a significant and negative impact. The visual impact will be caused by the following elements associated with construction work:

- Dust
- Construction traffic, plant and equipment
- Site Huts
- Site Fencing

### **8.7.2 Operation Phase**

The impact of the development on the landscape will be slight and negative as the existing land use of the site area will be changed from that of agriculture to use for an Above Ground Gas Installation site. In the overall context of the surrounding agricultural landscape the portion of land that will be taken up by the new development is comparatively small and will have no significant visual impact on the amenity value of the land.

The relatively low structures proposed for the site (the highest being 8.5 m over ground level) together with the existing hedgerow structure and proposed woodland screen planting around the site will restrict views in from the public domain. In addition, efforts will be made to lower the platform level of the AGI below existing ground level. The degree of submergence will depend on local ground conditions which will be assessed following the geotechnical site investigation.

The development will have a slight and neutral impact on views from the following locations as shown on Figure 5, Appendix E.

- Along the railway line
- Along Station Road to the south of the site
- Isolated glimpses along the Balbriggan Road.



Gas from the pipeline may be vented during infrequent maintenance procedures where each element of the system, the filters, water bath heaters and pressure regulator/metering systems are vented one after the other. There will be short-term emissions of natural gas to the atmosphere during this controlled venting procedure at the AGI. However, these emissions will last for only a few minutes and although an odour from the gas may be detectable in the locality, during low wind speed weather conditions, no adverse impact in terms of likely effects on the health of the local community or damage to crops in the nearby fields is predicted.

A small quantity of gas is continuously vented to the atmosphere from the PCV motorisation stage of the AGI. Natural gas is released at a rate of  $1\text{Nm}^3/\text{h}$  from the PCV housing. A computer model of the Lower Flammable Limit (LFL) distance of natural gas from its source (PCV's) was carried out using the PHAST Professional software. The LFL distances from vent release were found to be negligible and do not warrant any mitigation.

## 8.5 NOISE

### 8.5.1 Construction Phase

For a limited period during the construction of the AGI, noise levels may exceed the operating criteria. As construction work is of a temporary nature and will occur during daytime only, the resulting higher noise levels are usually acceptable as the absolute levels will be below that of passing vehicles resulting in no significant adverse impact.

### 8.5.2 Operation Phase

The greatest potential for noise disturbance from the AGI will be at night when background levels are lowest. Night time levels were measured 25 metres from an existing AGI at Loughshinny and the results were as follows:

**Table 8.2 Night Time Noise Levels Measured 25m from Existing Loughshinny AGI on 27/6/00**

Time	L <sub>Aeq,T</sub>	L <sub>A01,T</sub>	L <sub>A10,T</sub>	L <sub>A90,T</sub>	T=15min
0:50	36	39	37	34	dB
01:05	37	47	37	34	dB

It was concluded that the noise environment was principally controlled by noise emissions from the AGI with a contribution from traffic on the N1/M1. The sound pressure level was also analysed into octave bands with the conclusion that there was a low level 'hiss' or vent noise characteristic from the AGI but the source would not be described as having strong tones. Furthermore, there was no ground vibration perceptible off-site.

Although there are no statutory limits for environmental noise emissions for this type of plant or industry, in general, the criteria for industrial noise lie in the range of 35-45dB (A) at night and 45-55dB (A) by day. The lower values are normally applicable to rural areas and zones of hospitals, and the higher values are sometimes applicable to city centre areas or special cases such as mining or quarrying.



Estimated traffic levels on the old N1 are anticipated to be significantly lower than 1997 levels (14,983) and should be confined to local traffic only. All non-local traffic will most likely use the Balbriggan Bypass.

### **8.3.2 Operational Phase**

Traffic movements are expected to have very little or no impact, as the site will be unmanned with intermittent traffic visiting the site for inspection purposes only.

## **8.4 AIR**

### **8.4.1 Construction Phase**

There is potential for dust emissions to be generated during the preparation of the site. Movements of trucks and other vehicles can generate significant dust emissions unless adequate control measures are implemented. In addition, air emissions from the exhausts of plant construction machinery and trucks may also impact on the local air quality. The potential for dust emissions during the construction phase will be largely related to local wind conditions, coupled with the frequency and duration of rainfall. During dry weather conditions, the wind may cause re-suspension of dust from areas of construction activity, such as trucks entering/departing the site area.

The overburden/topsoil during the construction of the foundations of the installation is likely to be deposited on the surrounding land and so it is not expected that material will be taken off-site for disposal. Once the pipeline has been laid into and out of the AGI, the material from the trench will be replaced and compacted. Therefore, the volume of material taken off-site and transported via Gormanston for disposal is likely to be minor.

Concrete, pipeline grouting mix and building aggregates will be delivered directly to the site as ready-mix or in sealed bags. The pipes and ancillary equipment will be delivered by truck. The volume of building materials is relatively small, compared to the construction of an industrial unit. Use of the aggregates and other fine-sized materials will not have a significant impact beyond the immediate site boundary.

Air emissions from the exhausts of the construction vehicles and plant machinery will comprise mainly nitrogen oxides, hydrocarbons and particulate emissions from the diesel engine exhausts. The impact of emissions from the operation of plant machinery during the construction phase will not have a significant impact on the ambient air quality of the area due to the scale and duration of the site preparation phase.

The overall impact on the surrounding air quality near the site boundary adjoining the AGI site is predicted to be a moderate negative impact as a result of dust emissions. These impacts in relation to local air quality will be short to medium term depending on the amount of site preparation work required prior to laying the foundations of the site. The impact of dust emissions on the surrounding land should be effectively controlled through proper site management.

The impact on air quality, in terms of dust and particulate emissions, at the nearest houses to the site will be due primarily to truck movements to and from the site. The impact of emissions from construction traffic is predicted to have a short-term moderate impact. Once the main plant equipment is on-site then the impact at the nearest houses will be due only to employee cars and traffic delivering materials to the site. The impact of emissions from the AGI construction site at



## **8.0 ENVIRONMENTAL IMPACTS**

### **HUMAN BEINGS**

#### **8.1 AGRICULTURE & LAND USE**

##### **8.1.1 Construction Phase**

The main impacts on agricultural activity during the construction phase of the gas pipeline will include:

- Noise
- Dust
- Disturbance of Drainage Works.

##### **Noise**

The activity of earth moving machinery, transport lorries and other ancillary vehicles will generate significant noise in the immediate vicinity of the AGI during the construction phase. This has a certain associated nuisance value but in relation to its impacts on livestock, impacts will be negligible due to the absence of domestic animals on the lands concerned. However, noise may impact upon livestock in adjacent fields and in particular on in-calf cows and horses, potentially causing stressful conditions and difficulties in animal husbandry practices locally.

##### **Dust**

The proliferation of dust during construction has a nuisance value. Livestock in surrounding lands are at risk of eye irritations from high levels of wind blown dust particles. The stress incurred may reduce productivity and increase management difficulties in livestock systems. Large amounts of dust may also impact upon tillage operations, covering crops and thereby reducing their ability to photosynthesize, thus resulting in decreased yields.

##### **Disturbance of Drainage Works**

It is to be expected that field drainage systems currently in situ will be disturbed and in places destroyed by the proposed construction works for the Gormanston AGI. These systems will be restored but there may be impaired drainage during the time between the initial disturbance and final reinstatement of such drainage works. This damage could lead to wet or flooded fields during spells of wet weather and farm productivity may be reduced in adjacent fields if this occurs when animals would otherwise be grazing or when tillage machinery is needed to work the soil. These impacts will be reduced if the construction occurs during the winter months when animals are housed and tillage operations are at a minimum. However, prolonged flooding will kill grass swards and these will then require replacement.

##### **8.1.2 Operational Phase**

In terms of impacts on the agricultural environment as a result of this development, the effects will be relatively slight and will include impacts such as:

- Visual Impacts
- Loss of Agricultural Land
- Traffic Impacts



The 2 fields of the AGI site are in pasture and have an almost uniform vegetation of *Lolium perenne* (ryegrass) and *Trifolium repens* (white clover) which has obviously been established fairly recently. There is a little *Rumex obtusifolius* (broad-leaved dock) and *Stellaria media* (chickweed) in places but otherwise no additional species away from the hedge banks on the perimeter.

The hedges that remain lie along the western and southern boundaries of each field while a fence with some bushes separate the arable land to the east. The predominant woody species is *Crataegus monogyna* (hawthorn) with some *Fraxinus excelsior* (ash, suffering from wind exposure), *Prunus spinosa* (blackthorn), *Rosa canina* (wild rose) and *Rubus fruticosus* (bramble) on the western side. The base of the hedge is generally grazed so that the plants are dwarfed and often of weedy species. *Cirsium vulgare* (spear thistle), *C. arvense* (creeping thistle), *Elytrigia repens* (scutch grass), *Cerastium fontanum* (mouse-ear), *Stellaria media* (chickweed) and *Anthoxanthum odoratum* (sweet vernal grass) characterise these areas.

All ditches are seasonal however the western side of the site has a few hollows that are wet enough for aquatic plants to grow, especially *Lemna minor* (duckweed) and *Nasturtium officinale* (watercress). Otherwise it is filled by *Urtica dioica* (nettle), *Ranunculus repens* (creeping buttercup) and *Rumex crispus* (curled dock) beneath the trailing stems of brambles.

The disused gravel pit to the north-east is the most distinctive feature locally. It has a considerable amount of bare ground and is used by motorbikes. An open vegetation of grasses and arable weeds occurs in which. *Reseda luteola* (dyer's rocket), *Senecio jacobaea* (ragwort), *Tussilago farfara* (coltsfoot) and *Tripleurospermum inodorum* (scentless mayweed) are conspicuous. There is also a little *Avenula pubescens* (hairy oat), *Echium vulgare* (viper's bugloss) and *Blackstonia perfoliata* (yellow wort). The north-western corner carries a heavy growth of *Sambucus nigra* (elder) and *Prunus spinosa* (blackthorn) forming a wind-moulded bank.

A small triangular site just inside the railway is based on similar well-drained material. It is covered by short grassland closely grazed by rabbits and illustrates a more natural and stable type of coastal vegetation. A rich variety of herbaceous plants grow at the base of the hedge here including *Ononis repens* (rest harrow). The hedge itself (along Cock Lane) is varied in composition, adding several woody and herbaceous species to those in the hedges around the site. *Malus cf sylvestris* (crab apple), *Prunus domestica* (wild damson), *Ulex europaeus* (gorse) and *Ligustrum vulgare* (privet) make up a compact structure which is clipped occasionally.

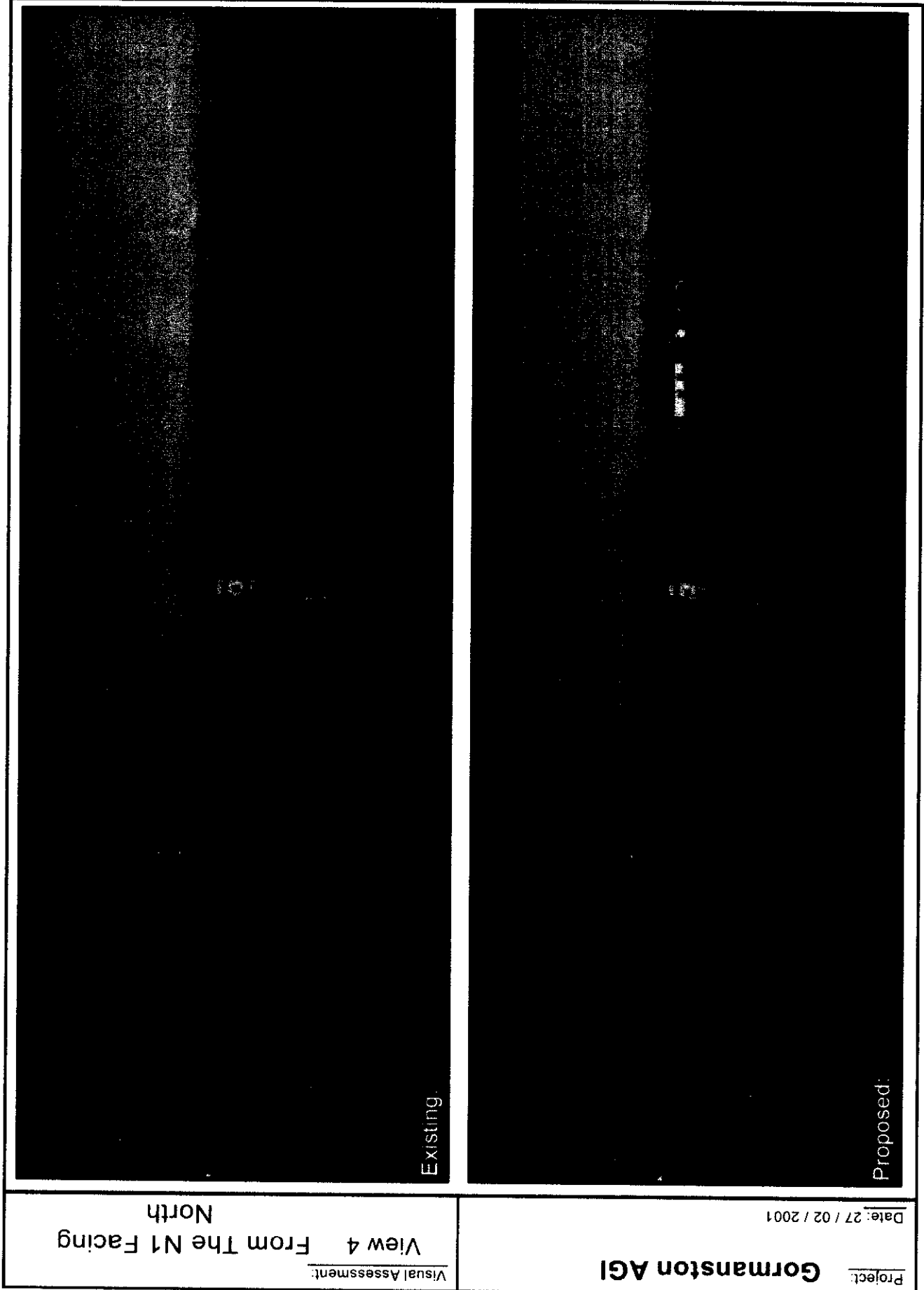
Vegetable crops are grown in the surrounding arable fields - broccoli, potatoes, cabbage and parsnips. Each crop has a particular selection of weed species produced by the growing methods and timing. *Urtica urens* (small nettle) is abundant and there is considerable variety in the *Lamium* (deadnettle) species, with *L. purpureum*, *L. hybridum* and *L. mollucellifolium*.

## 7.9.2 Fauna

The chief fauna in the area are rabbit and brown rat, both of which were seen. There are also likely to be field mouse with visiting fox and hare. No signs of badger were encountered and they are unlikely to occur since tillage crops are not widely used for feeding. The site does not offer good habitat either for bats because the hedges are low and in places discontinuous.

The birds on site in autumn consisted of a few meadow pipits (3), skylark (2), goldfinch (2), magpie and woodpigeon. Hedge species along the western side were blackbird, dunnock and robin. On the adjacent tilled land a flock of linnets (80) were feeding on weed seeds within and around the crops. These and other finches would be present as long as the ground remains unploughed and would probably include chaffinch and yellowhammer later in the autumn. Skylark





Visual Assessment  
View 4 From The N1 Facing North

Gormanston AGI  
Project: \_\_\_\_\_  
Date: 27 / 02 / 2001



500m), see Plate 7 below. There is also a public house and a nursing home situated on the N1 within 1.5km of the site.

**Plate 7**



**Motorbike Track at Landfall Site**

The old national primary route, N1, lies close to the proposed site. Since the recent construction of the Balbriggan by-pass this road accommodates only local traffic at a moderate level. Gormanston Railway Station is served by the Dublin-Newry Service and accommodates primarily Dublin City commuters and also freights. The Enterprise Railway Service for Dublin-Belfast commuters also passes through here but does not stop. Bus Éireann do not operate a bus service along the N1 with the opening of the M1 Motorway recently. However, privately owned buses may operate along N1.

The AGI site is located in a large, flat field. High hedges and trees surround the site on the N1 providing good screening. The surrounding hinterland is agricultural in nature with arable farming and market gardening characterising this fertile area.

The 1:50,000 Ordnance Survey Discovery Series map (No. 43) was examined to identify any surrounding features of tourism/amenity potential within the vicinity of the proposed site, which was supplemented by information and statistics from the Dublin and Meath Tourist Boards.

- **Gormanston Beach:** This long sandy beach is a popular place for families particularly during the summer months and provides a constant attraction to ornithologists and walkers all year round.
- **Angling:** The River Delvin is controlled by the Gormanston Angling Association and is often fished for sea trout along its lower stretches. Sea anglers sometimes fish at Gormanston



There are no existing National Air Quality Standards for aerosols or PM<sub>10</sub> (particles less than 10 µm aerodynamic diameter). The 1999 EU Air Quality Directive specifies a daily limit value of 50 µg/m<sup>3</sup>, not to be exceeded more than 35 times in a year, with a corresponding annual limit value of 40 µg/m<sup>3</sup>. These limit values are to be met in 2005. Given the relatively remote location, levels would be well below these ambient limits and typically less than 20 µg/m<sup>3</sup>. The main source of particulates will be from local road traffic and also natural sources such as soil, silt from road verges and marine aerosols.

Air pollutants associated with road transport such as carbon monoxide and hydrocarbons will be very low and typical of those found over 100m from main roads. The ambient concentrations would be less than 10% of the proposed air quality limit values specified in the 1998 EU Draft Directive.

A detailed report is included as Appendix C within Volume 3 of this EIS.

## 7.5 NOISE

The existing noise environment is principally controlled by local activity and traffic on the M1/N1. Daytime and night-time noise measurements were made at the nearest residences south-east of the site and night-time measurements were made at the residences south and west of the site, all being made under good weather conditions with light winds. The locations of the houses and monitoring locations are shown on Figure 7.4 (monitoring locations marked A, B and C). The principal sources of noise at location A were domestic and agricultural activity and more distant traffic. The principle night-time sources at locations B and C were road traffic both on the nearby N1 and the more distant M1. The minimum recorded night-time level was an L<sub>A90, 15min</sub> value of 23dB and a minimum L<sub>Aeq, 15min</sub> value of 36dB. L<sub>A90, 15min</sub> is the sound level equalled or exceeded for 90% of the measurement period. The level is sometimes taken to represent the background noise level. On the other hand, the L<sub>Aeq, T</sub> is the equivalent continuous noise level for the measurement period. T represents the time period over which the measurement was taken. This parameter is very sensitive to local high level short time sources, e.g. local traffic etc.

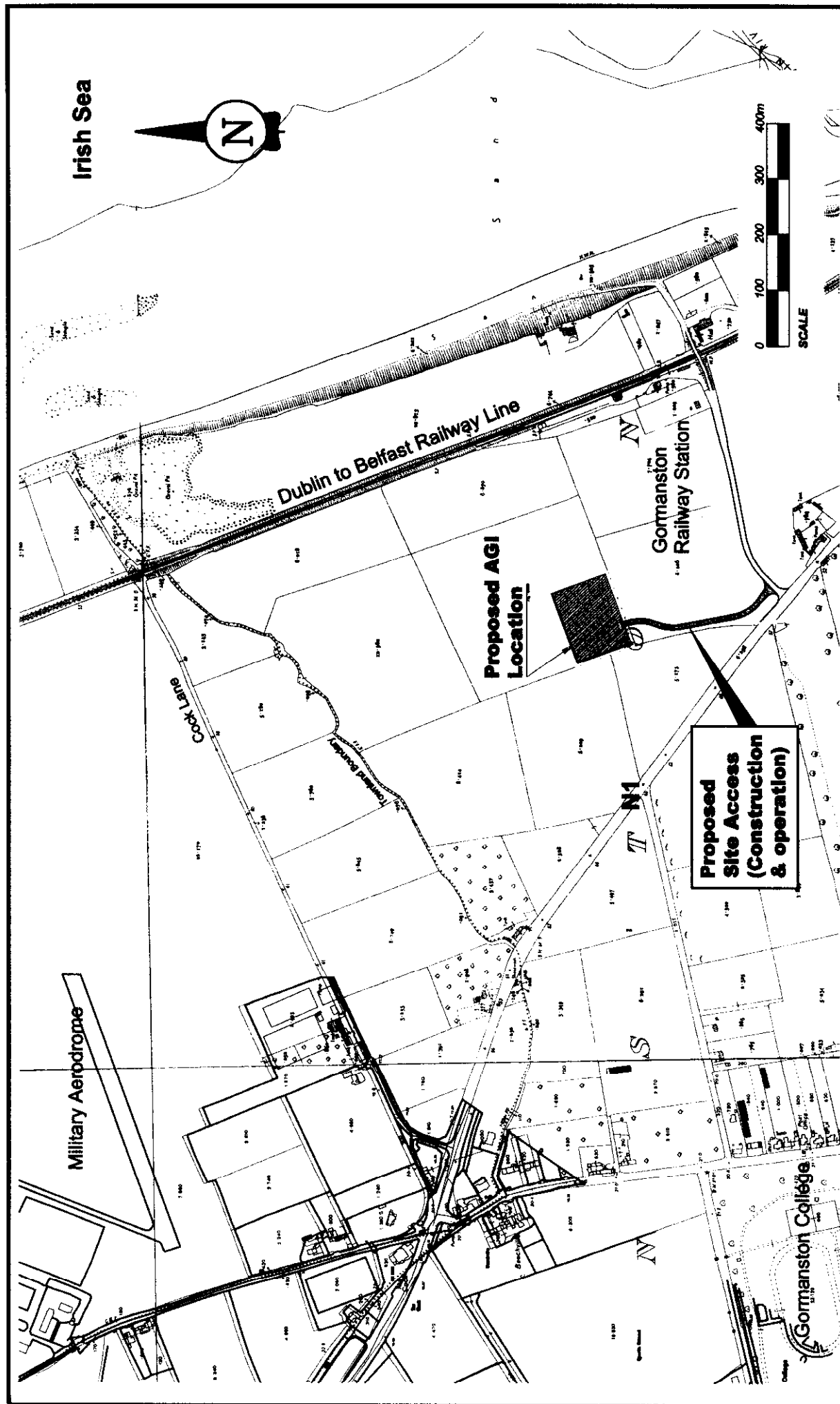
A detailed report is included as Appendix D within Volume 3 of this EIS.

## 7.6 COMMUNITY EFFECTS

This section examines the community within the vicinity of the AGI site. In general, the greatest concentration of commercial and community/amenity facilities i.e. schools, hospitals, churches, post offices, libraries, golf courses, playing pitches etc. occur in towns and villages. However, the nearest large population centre, Balbriggan town is 3.5km south of the site. The actual AGI site is located within the townlands of Gormanston. Gormanston village is located 1km to the west of the site and has a population of 435 (CSO, 1996). The most notable facility in the village is Gormanston Demesne, which is now a large secondary boarding school known as Gormanston College.

There are a number of scattered dwellings along the minor roads directly north and south of the site and along the N1 directly west of the site. The nearest dwelling to the site is located on Station Road approximately 200m SE of the site. As the AGI site is located in predominantly rural countryside the only notable facilities in close proximity to the proposed development site are Gormanston Beach, (approx. 500m), Gormanston Military Aerodrome (approx. 1km), Gormanston Railway Station (approx. 200m) and an old quarry that is now used as a motorbike track (approx.





**Fig. No.**  
**7.2**

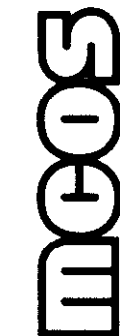
Prepared: P. Higgins
Checked: J. Shalloo
Scale: N.T.S.
Date: Feb. 2001
File Ref: PG.7.2.dwg

## Gormanston AGI EIS

### Access Roads

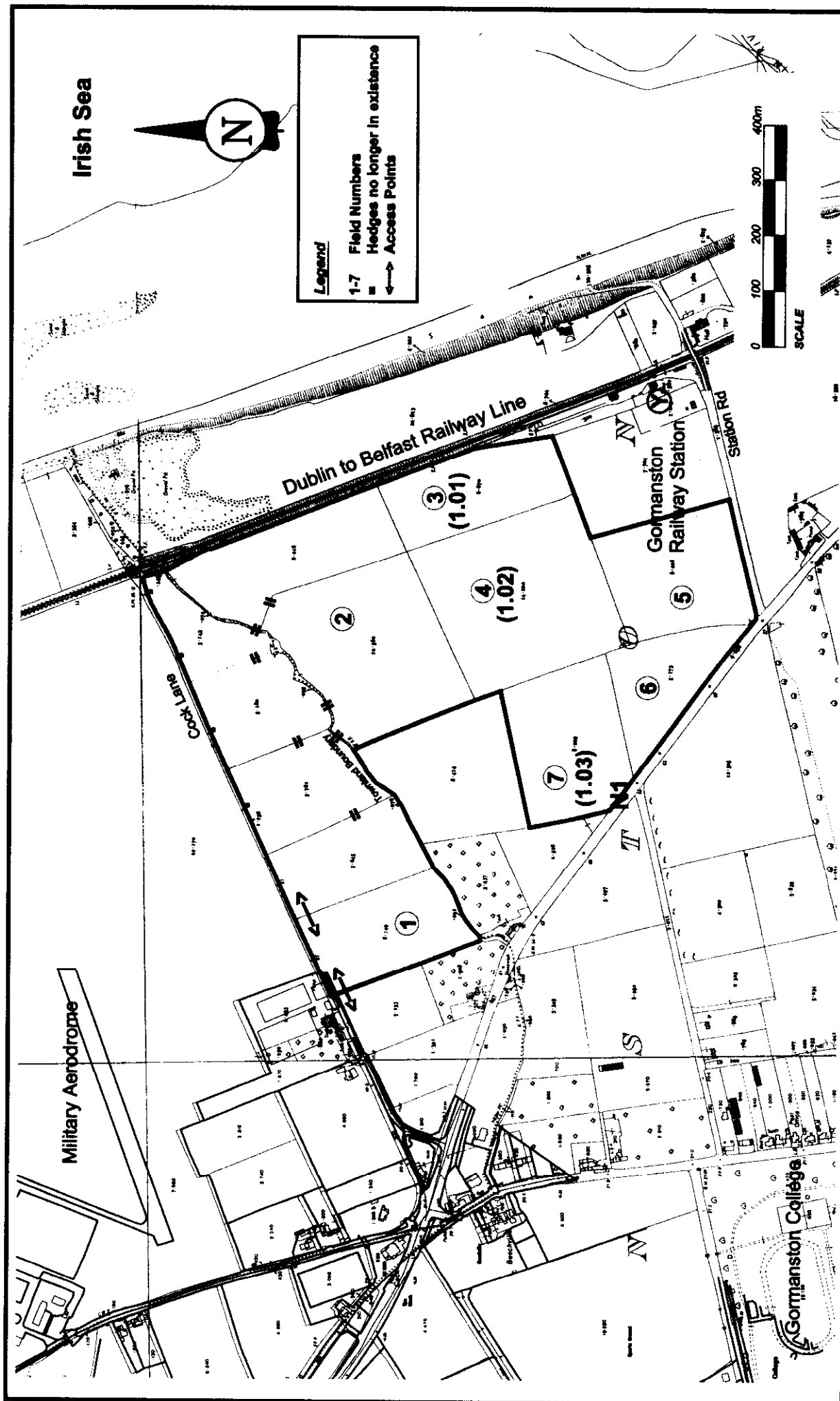
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**BORD GÁIS**  
TRANSMISSION BUSINESS UNIT





<b>BORD GÁIS</b> TRANSMISSION BUSINESS UNIT	<b>Gormanston AGI EIS</b> <i>Agricultural Use in the Vicinity of the AGI</i>		<b>Fig. No. 7.1</b>	
	Job:	Prepared: P. Higgins Checked: J. Shalloo Scale: N.T.S. Date: Feb. 2001 File Ref: Pn.31.0mg		



### **Total cover**

This option involves the total covering of the PCV lines in a noise reduction building, which will allow for greater shelter during periods of maintenance (Plate 6). However the person(s) carrying out the maintenance would be subjected to greater levels of noise. Use of the appropriate personal protection equipment (PPE) should prevent the element of risk associated with being subjected to these levels of noise.

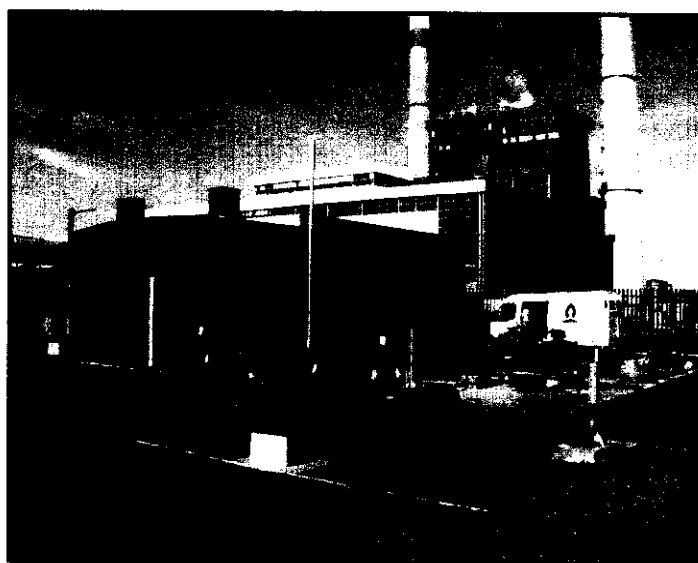
The shelter to be used in the Gormanston AGI is a compromise between both options. The shelter will cover all of the PCV lines but will be fitted on rails which will allow the shelter to be moved to gain access when necessary.

In addition, in order to reduce the level of noise emission to the surrounding environment, special low-level noise valves are to be used in the AGI.

**Plate 6**

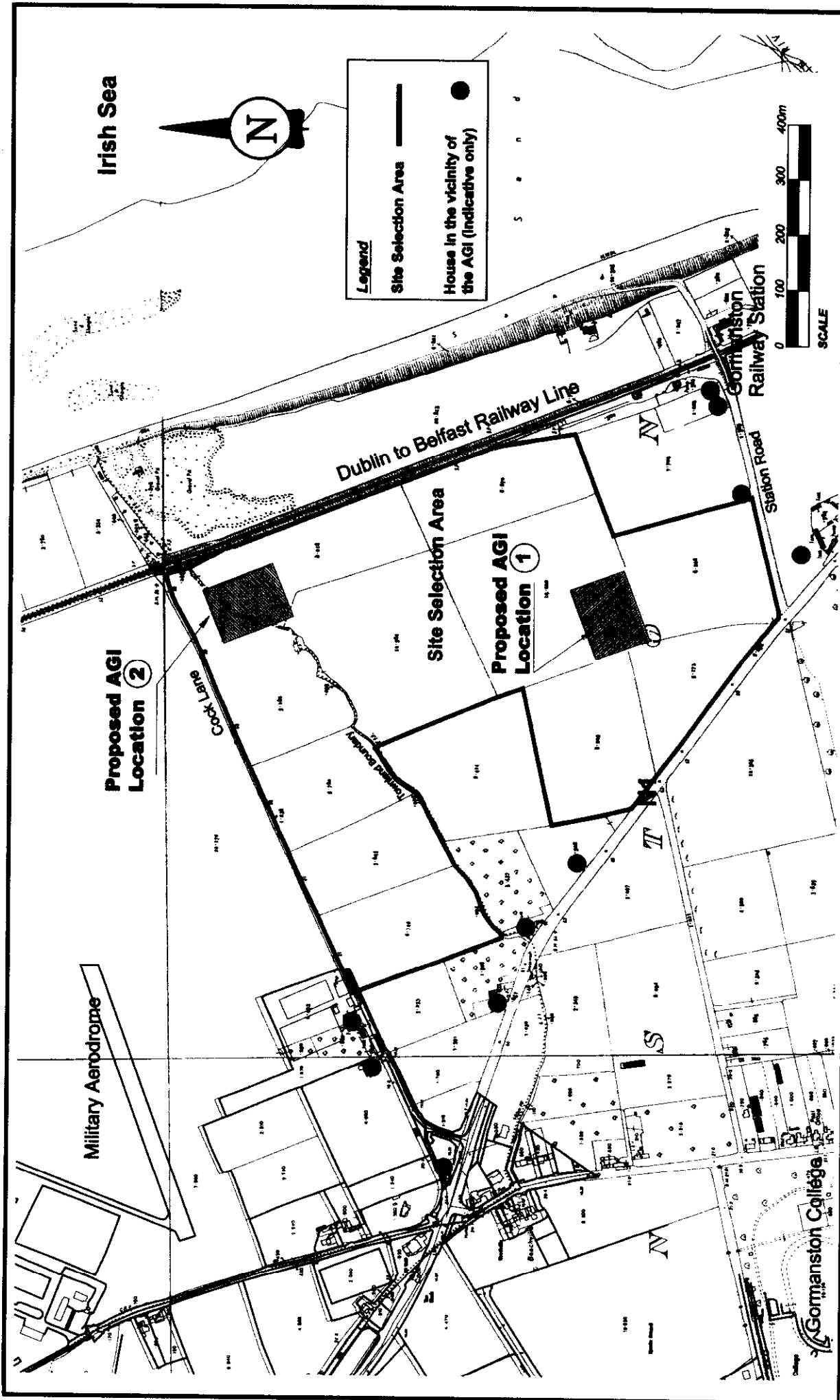


**Individual Cover PCV Shelter**



**Total Cover PCV Shelter (Poolbeg AGI)**





**Fig. No.**  
**6.1**

Prepared:	P. Higgins
Checked:	J. Shalloo
Scale:	N.T.S.
Date:	Feb. 2001
File Ref:	PL6.1.dwg

## Gormanston AGI EIS

### Proposed Site Location Options

Job

Title

**BORD GÁIS**  
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**MOOS**



The study found that although a number of the options were technically feasible, the associated costs of developing the infrastructure were prohibitive. Furthermore, some options did not provide the desired security of supply. It concluded that the most technically and economically viable option was to duplicate the existing Scotland to Ireland interconnector.

## 6.4 ALTERNATIVE LANDFALL LOCATION

The general location of the AGI is determined by the position of the landfall site. This aspect is discussed in detail in the EIS for the sub-sea interconnector but as the landfall site is influential in the positioning of the AGI site it has also been addressed in this EIS.

Three Irish landfall locations for the sub-sea interconnector were evaluated in Ireland as follows:

- Gormanston, Co. Meath
- Donabate, Co. Dublin (two sites)
- South Co. Dublin

The suitability of each of the above options was examined in terms of technical feasibility, access to the site, length of offshore pipeline, impact on amenities and existing onshore infrastructure and environmental concerns.

Gormanston was selected as the most suitable landfall location for the following reasons:

- Landfall site is readily accessible
- Flat, sandy beach (Plate 5)
- Shortest marine route for the interconnector from Scotland
- No existing nature conservation areas
- Relatively easy egress and route for the onshore pipeline to Ballough

Disadvantages with the Gormanston landfall site are that there is a military aerodrome and firing range in the vicinity and that the Dublin to Belfast railway will require to be crossed by the pipeline in order to reach the AGI. These aspects were addressed in the design of both the landfall and AGI and risk assessments have been conducted to ensure that the safety of the pipeline and AGI will not be compromised.

## 6.5 ALTERNATIVE SITE LOCATION

A large study area in the vicinity of the landfall for the sub-sea pipeline was assessed for potential AGI sites. Two sites in particular were assessed and are indicated in Fig. 6.1. Of the two sites examined it was considered that site location 1 is the most appropriate location for the proposed AGI.

Site location 1 is situated in the south west of the study area, approximately 120m east of the N1 and approximately 200m north of Station Road. Gormanston Railway Station lies approximately 200m to the southeast. The site is situated in a large, flat field consisting of pasture land. The surrounding hinterland is agricultural in nature with arable farming and market gardening prevailing. High hedges and trees surround the site to the west providing good screening from the N1 and any dwellings located in this area. It is expected that the proposed AGI will be visible from the immediate area to the east and south of the site, in particular from dwellings along Station Road. However, with the incorporation of woodland screen planting and the



## 6.0 ALTERNATIVES

### 6.1 GENERAL

Alternatives can take various forms, all of which will be examined as presented in the Table 5.1 below. A number of broad types of alternatives can be considered: 'Do Nothing' option, alternative locations, alternative scales of project, alternative processes or equipment, alternative site layouts, alternative operating condition, alternative ways of dealing with environmental impacts. The relevance in considering many of these alternatives is dependent on the type of project. Many of the alternatives can be eliminated, on economic, technical or regulatory grounds.

The 1999 EIA Regulations (S.I. No. 93 of 1999) states that 'an outline of the main alternatives studied by the developer and an indication of the main reasons for the developer's choice, taking into account the environmental effects' is required in an EIS.

The following checklist is helpful in identifying the types of alternatives that may be relevant for a particular type of project:

**Table 6.1: Checklist for identifying types of alternatives relevant for particular project:**

<ul style="list-style-type: none"> <li>• Demand management/conservation alternatives</li> <li>• Approaches to meeting demand</li> <li>• Locations</li> <li>• Processes/technologies</li> <li>• Site plans and layouts</li> <li>• Design of structures</li> <li>• Types and sources of raw materials</li> <li>• Product specifications</li> <li>• Timing</li> <li>• Programme for implementation</li> <li>• Size</li> </ul>	<ul style="list-style-type: none"> <li>• Responsibilities for implementation</li> <li>• Pollution controls</li> <li>• Waste disposal arrangements - recycling/recovery/re-use</li> <li>• Access arrangements</li> <li>• Ancillary facilities</li> <li>• Management methods and systems</li> <li>• Environmental management responsibilities</li> <li>• Employment and staff training</li> <li>• Monitoring and contingency plans</li> <li>• Decommissioning arrangements and site restoration and after use</li> </ul>
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*Source: European Commission, 1996*

The main alternatives examined in the validation of this project's feasibility are:

- Implication of 'Do Nothing' Strategy
- Alternative Gas Import Options
- Alternative Landfall Location
- Alternative Site Location
- Alternative AGI Design



and co-ordination of health and safety on construction sites and require that safety, health and welfare is;

- taken into account during the design and tendering phases of the project
- managed and co-ordinated on site using the Health and Safety Plan (especially where there are sub-contractors and many different activities taking place)
- passed on, in the Safety File (to allow subsequent safe maintenance and repair)

Responsibilities are placed in particular on BGÉ (Client), Sofregaz (Designers) and the Contractor.

BGÉ are required to appoint a competent person as *Project Supervisor* for both the design stage and the construction stage. The same person can be both Project Supervisor (Design) and Project Supervisor (Construction). The appointments are made in writing and must be formally accepted by those appointed.

The Project Supervisor (Design) must see that health and safety is taken into account in the design of the AGI in order to reduce potential health and safety problems arising during subsequent construction or maintenance. The Project Supervisor (Construction) co-ordinates the health and safety aspects of the construction stage and is required to prepare a *Health & Safety Plan* and liaise with the HSA. The safety plan shall be based on the *Preliminary Health & Safety Plan* prepared by the Project Supervisor (Design).

The objectives of the Health & Safety Plan are as follows:

- To ensure safe work practices in a safe environment.
- To ensure all personnel are adequately trained to work safely and to recognise hazardous situations.
- To provide the equipment and facilities consistent with Health, Safety and Welfare.
- To encourage and provide a framework for communication and consultation on all health and safety matters.
- To monitor and evaluate the implementation of the Safety & Health plan and to take any corrective action necessary.

## 5.5 ENVIRONMENTAL MANAGEMENT

It is a requirement of the contractor to establish an Environmental Management Plan. This plan will aim to control and monitor the environmental performance of the contractor.

## 5.6 COMMISSIONING & DE-COMMISSIONING

After the completion of the construction phase of the project the commissioning of the AGI will commence. This will involve a range of testing operations on various aspects of the AGI as follows:

- *Hydrostatic pressure testing* – pipework
- *Electrical testing* – equipment, cables and wiring
- *Instrument testing* – verification of calibrated instruments



**Plate 4**



**View of Station Road looking East towards the Railway Station**



**View of the N1 from Station Road**



The venting process will involve the release of small quantities of natural gas from time to time such as, during pigging operations. A permanent controlled amount of gas is released at approximately  $1\text{Nm}^3/\text{h}$  in the PCV motorisation stage (to be confirmed during detailed design) of the AGI.

Venting of larger quantities of gas would occur during emergency procedures. Each process system (filters, heaters, PCV, metering) would be vented one after the other. Gas release is approximately 2200 kg for each system (to be confirmed during detailed design). However, this is a very infrequent occurrence.

### 4.3.3 Site Access and Security

During both the construction and operation of the AGI site access will be provided from Station Road. This is the road leading from the N1 to Gormanston Railway Station. A permanent access to the AGI will be constructed off Station Road.

The entrance to the AGI will be located approximately 78m, along Station Road, from the N1. It will consist of a 7m wide access road leading approximately 200m north to the AGI site. See Plate 4 (also indicated in Fig. 7.2).

The site perimeter will be secured by the provision of double fencing. The inner and outer fencing will be separated by 5m.

### 4.3.4 Gas Infrastructure and Utilities

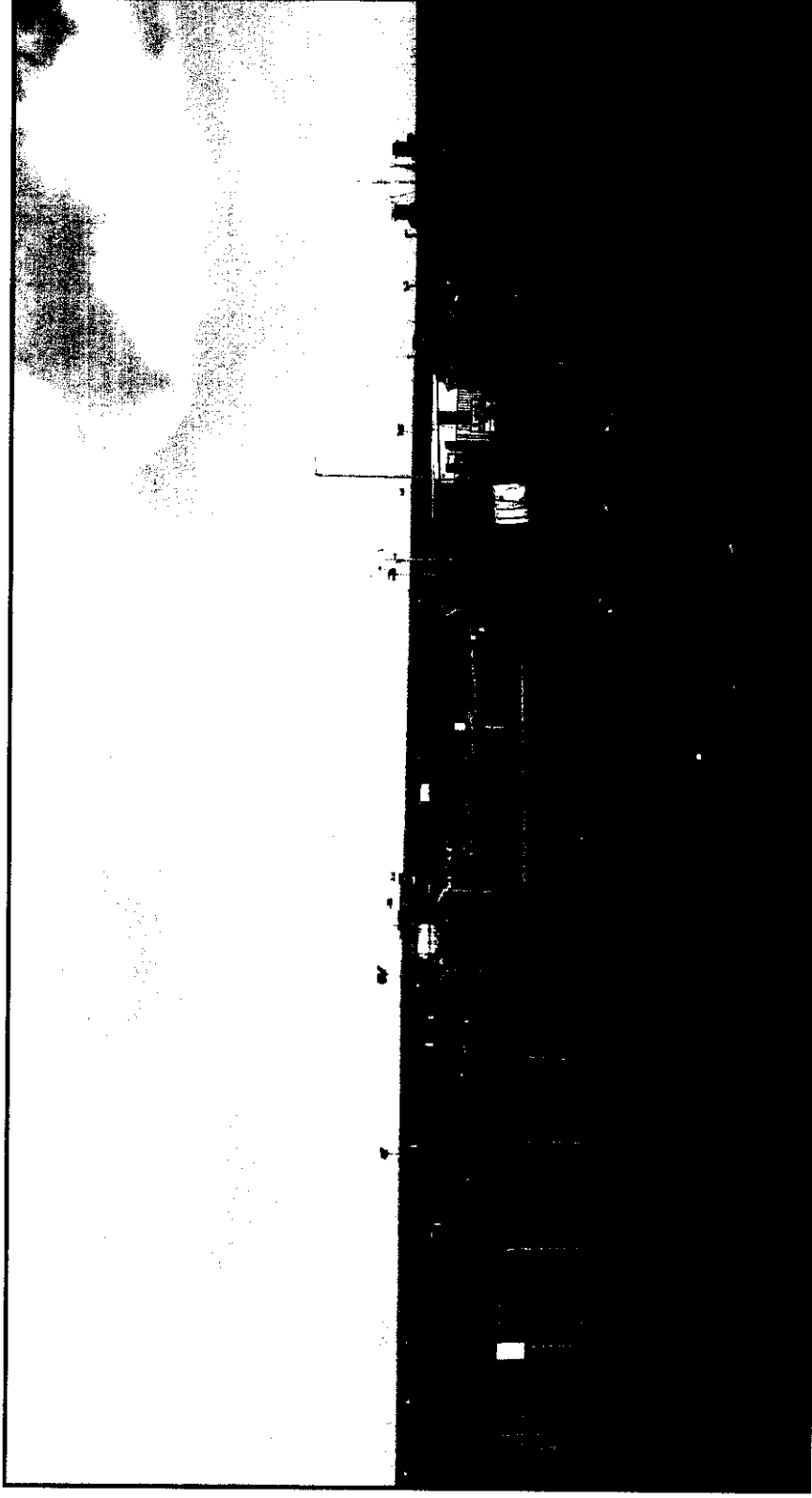
The closest gas transmission pipeline network, the North Eastern Pipeline, which runs from Dublin to Dundalk, is situated approximately 6 km to the West of the landfall site (see Figure 1.1). This is the most Northerly section of the Irish gas network supplying the towns of Drogheda, Dundalk, Ardee, Virginia and Navan.

Site services and utilities (electricity, water, drainage, etc.) will be assessed during detailed design. However, a brief description of the likely sources is given below:

- *Electricity*  
Electricity supply will be taken from the local ESB network, which supplies Gormanston Railway Station and the dwellings along Station Road and the N1.
- *Water Supply*  
Water supply will be taken from the public network. There is an existing network on Station Road extending as far as the railway station. An extension from Station Road will be put in place to service the AGI.
- *Surface Water*  
Surface water run-off will pass through an oil interceptor to remove any harmful impurities before being disposed of in soakaways which will allow the water to percolate into adjoining soil. The percolation areas will be designed based on the results of soil investigations.
- *Foul Water*  
Foul water will be treated by a septic tank with a percolation area of approximately  $100\text{ m}^2$  contained entirely within the AGI site.



Plate 3



Completed AGI at Loughshinny, Co. Dublin (shore station for the 1<sup>st</sup> Interconnector)



- *Water Bath Heaters*  
The gas pressure must be reduced for transmission within BGÉ's network. The first step in this process is gas heating which, is generally performed using water-bath heaters (see Plate 2). Gas heating is required as the sharp drop in temperature, which occurs during pressure reduction could lead to freezing of condensation on pipework and condensing of elements contained in the gas. These heaters will be fuelled by natural gas with an estimated consumption of approximately 480 kg/h.
- *Pressure Control Valves (PCV)*  
The pressure of the outgoing gas is regulated using pressure control valves (also referred to as regulators). This process is the main source of noise from the AGI. Noise from the pressure control system will be minimised to acceptable limits, either by the incorporation of acoustic hoods over each stream or by enclosing pressure reduction streams in a specially constructed acoustic building (shown in Plate 2).
- *Metering*  
In order to monitor the flow rate of gas into the Irish Transmission System, and to provide a means of detecting any losses in the sub-sea pipeline, the gas is metered after passing through the water bath heaters and pressure regulators.
- *Odour Injection*  
There is an odouring system in the AGI which is made up of a 1m<sup>3</sup>, double skin, protected storage tank and volumetric pumps which will inject odouring fluid into the gas. Odour injection is performed after the metering stage of the process on the main station outlet header. The odorant will be 78% Tertiary Butyl Mercaptan (TBM) and 22% Di-Methyl Sulphide (DMS) with a concentration of 2ppm (6mg/m<sup>3</sup>) and an injection rate of 7.2 ml/kcm.
- *Pig Traps*  
The pipeline is gauged and cleaned using devices referred to as pigs (Plate 2). Specialised Pipeline Inspection Vehicles referred to as 'Intelligent' pigs are larger devices and are used to obtain detailed information about the integrity of the constructed pipeline. The pig receiver consists of a chamber fitted with a manually operated hinged closure door and its function is to receive pigs of various configurations from the sub-sea pipeline.  
  
The pig launching facility is of similar configuration to the pig receiver and its function is to launch pigs into the onshore pipeline.
- *Station Bypass*  
A permanent station bypass is provided to ensure that a supply of gas can be maintained to the downstream pipeline in the event that the station is not operational. This takes into consideration that adequate provision is made to ensure that the downstream system is protected against over-pressure by means of a manually operated pressure control valve.
- *Diesel Generator*  
A back-up diesel power generator and diesel storage tank will also be contained within the site.



## REFERENCES:

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DoELG (2000); '*Development and Planning*', Department of the Environment and Local Government, <http://www.environ.ie/devindex.html>

EPA (1995); '*Advice Notes on Current Practice in the preparation of Environmental Impact Statements*'; Environmental Protection Agency, Wexford

EPA (1995); '*Draft Guidelines on the Information to be contained in Environmental Impact Statements*'; Environmental Protection Agency, Wexford

EPA (1996); '*Integrated Pollution Control Licensing – Guide to the Implementation & Enforcement in Ireland*'; Environmental Protection Agency, Wexford

European Commission (1996); '*Environmental Impact Assessment - Guidance on Scoping*'; ENF 55562; Office for Official Publications of the European Communities, Luxembourg

Glasson J., R.Therivel & A. Chadwick (1999); '*Introduction to Environmental Impact Assessment*'; 2<sup>nd</sup> Edition, London UCL

Glasson J., R.Therivel & A. Chadwick (1999); '*Introduction to Environmental Impact Assessment*'; 2<sup>nd</sup> Edition, London UCL

Grist, B (1999); '*An Introduction to Irish Planning Law*'; Institute of Public Administration

Grist, B (1999); '*An Introduction to Irish Planning Law*'; Institute of Public Administration

I.S. 328:2000; '*Code of Practice for Gas Transmission Pipelines and pipeline Installations*'; 3<sup>rd</sup> Ed.

IDA (1991); '*A guide for Business and Industry to Environmental Law in Ireland*'; Industrial Development Authority of Ireland

Singleton R., P. Castle & D. Short (1999); '*Environmental Assessment*'; London, Thomas Telford

Singleton R., P. Castle & D. Short (1999); '*Environmental Assessment*'; London, Thomas Telford

UNEP (1995); '*Environmental Impact Assessment Training Resource Manual*'; <http://www.environment.gov.au/epg/eianet/manual/manual/title.htm>

University of Manchester (1995); '*Consultation and Public Participation within EIA*'; Leaflet 10, EIA Leaflet Series, <http://www.art.man.ac.uk/eia/leaflets.htm>



The relevant Local Authority, Meath County Council was written to in this regard for whom a reply was received. Meetings were also held with the relevant planning and environmental officers. Furthermore, in order to increase the level of participation, several other consultees were liaised with including Dúchas and the Eastern Regional Fisheries Boards, amongst others.

## **2. Non-Statutory Consultees**

While developers are under no obligation to publicise their proposals before submitting a planning application, consultation with non-statutory consultees e.g. local interest groups who may have a vested interest in the proposed development, can be useful in identifying key environmental issues. These bodies will often possess information, which is useful in preparing the EIS report, for example, in relation to the ecology of the existing environment. They can also comment on specific aspects of the development proposals and suggest when these are unacceptable to them or need to be modified (Singleton et al, 1999). In this regard A 'Public Information Evening' was held in September 2000 (see section 3.2.1) at Gormanston College to provide the developer and any local interest groups with an opportunity to discuss any relevant matters concerning the development.

## **3. The Public**

Article 6(2)(3) of the EIA Directive (as amended by Directive 97/11/EC) stipulates that the public shall be consulted on the request for development consent and that this request and the information gathered by the developer shall be '*...made available to the public within a reasonable time in order to give the public concerned the opportunity to express an opinion before the development consent is granted*'.

However, it is important to involve the public, who may act either individually or as part of a non-statutory consultee, in the initial stages of the environmental assessment. The advantages of early consultation with the public are that BGÉ can accurately inform each community of the details of the project, listen to their concerns and take them into account in the environmental assessment. Discussions with the public enables access to the expertise and knowledge of certain local conditions that otherwise may not be identified (Singleton et al, 1999).

Consultations with the majority of the consultees began prior to initiation of the EIS and continued throughout the EIA Process. The objective of the consultation exercise was to focus on providing the consultees with the opportunity to identify to the project team those issues pertaining to the proposed scheme that they consider important and warrant investigation and inclusion in the EIS.

Article 8 of the EIA Directive as amended, stipulates that the results of the above consultations and the result of the Environmental Impact Assessment must be taken into account in the decision-making process.

### **3.2.1 Public Information Evening**

On the 26<sup>th</sup> September 2000 a 'Public Information Evening' was held at Gormanston College (approximately 1km from the proposed site) to give all interested parties an opportunity to review the proposed developments, ask questions or air any concerns. During the week prior to this advertisements were placed in local newspapers and radio advertisements were run announcing the information evening and inviting all interested parties to attend.

The session commenced at 3pm and finished at 9pm. This time frame was deemed most suitable in order to accommodate a good cross section of the community, for example farmers



### 3.1.9 Monitoring/Auditing

Monitoring involves the measuring and recording of physical, social and economic variables associated with development impacts (e.g. traffic flows, air quality, noise). It can be used as an early warning system to identify harmful trends in a locality before it is too late to take remedial action. It can help to identify and correct unanticipated impacts. Monitoring is also essential for successful environmental impact auditing and can be one of the most effective guarantees of commitment to mitigation measures. Environmental impact auditing involves comparing the impacts predicted in the EIS with those that actually occur after implementation, in order to assess whether the impact prediction performs satisfactorily. This could be restricted to the construction phase or to the operational phase, depending on which phase has been identified to be of most concern where environmental impacts may be most pronounced.

Monitoring and auditing of outcomes can contribute to an improvement in all aspects of the EIA process, from understanding baseline conditions to the framing of effective mitigating measures (Glasson et al, 1999). However, the EIA Directive does not include a mandatory monitoring requirement.

## 3.2 CONSULTATION PROCESS

Consultation is an essential and vital aspect in the undertaking of an environmental impact assessment and without the involvement of consultees the effectiveness of the assessment process and the results of the exercise can be compromised. It also helps to ensure the quality and comprehensiveness of the EIS as well as ensuring that the various groups' or individuals' views are adequately taken into consideration in the decision-making process (Singleton et al, 1999).

The aim of consultation in the EIA process is to allow the following:

- the early identification and mitigation of impacts
- the prevention of environmentally unacceptable development
- the avoidance of public controversy, confrontation and delay (University of Manchester, 1995).

The advantages of early consultation with the public are that the developer can accurately inform the community of the details of the project, listen to their concerns and apply suitable weight to them in the environmental assessment. Discussions with consultees will enable access to the expertise and knowledge of certain local conditions that otherwise may not be identified (Singleton et al, 1999). Figure 3.4 shown overleaf outlines the role of consultation in the EIA process.

In terms of best practice for this EIS, the consultees were consulted both prior to and during the scoping phase. Consultation and public participation is deemed most effective when copies of the appropriate EIA documents e.g. Scoping Report, are made public at each stage of the EIA process (Glasson et al, 1999). In this regard many consultees were forwarded the Scoping Report for comment. The three main groupings of consultees are:

#### 1. Statutory Consultees

Statutory consultees may be liaised with directly or indirectly depending on the type of development being assessed. Planning applications for Above Ground Installations must be submitted to the relevant local authorities. Statutory consultees comprise local authorities and government agencies identified in the relevant EIA and planning legislation.



### **3.1.3 Description of the Development and the consideration of alternatives**

The EIS describes the construction and operational stages and associated activities of the AGI development. Information about the site and the design and scale of the development has allowed the identification and assessment of the main effects which the development is likely to have on the environment.

### **3.1.4 Description of the Environmental Baseline**

The collection of data reflecting the existing environment or ambient conditions at a site is an essential component of environmental assessment as it represents the baseline conditions from which the subsequent impact assessment is undertaken. The collection of baseline data for this EIS was undertaken following the completion of the EIS scoping study. The scoping study identified data that is important and critical to the assessment (Singleton, Castle & Short, 1999).

### **3.1.5 Impact Identification**

Impact identification brings together project characteristics and baseline environmental characteristics with the aim of ensuring that all potentially significant environmental impacts (adverse or favourable) are identified in the EIA process (Glasson et al, 1999).

The types of impacts that will occur as a result of a particular development depend upon:

- the type of development
- the location of the proposed development
- the characteristics of the site and the surrounding environment
- methodologies to be utilised during the construction phase
- the nature of activities taking place during operation of the facility.

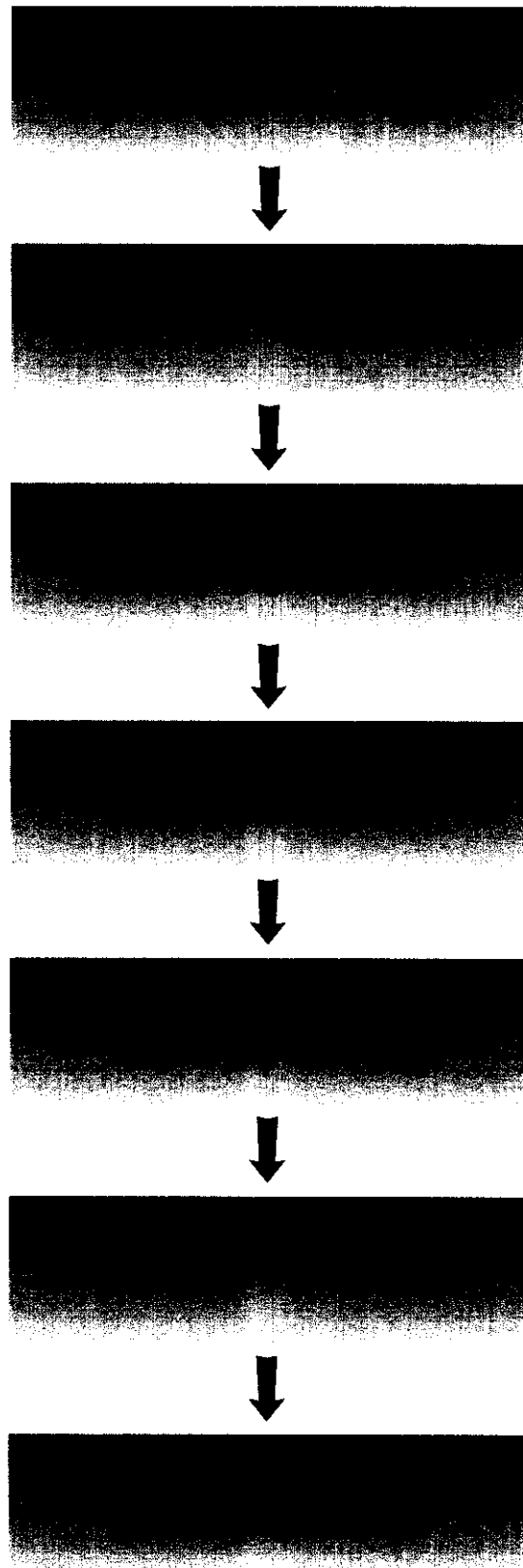
In this EIS the impacts are described in terms of whether they are direct or indirect (negative, positive, neutral, significant, slight, etc), whether the identified impacts are of short, medium or long term and whether they are of beneficial or adverse nature (Singleton et al, 1999). Impacts for this EIS are described for the construction and operational phases of the development.

### **3.1.6 The Assessing Phase (Impact Prediction/Evaluation)**

The screening phase of the EIA determines whether or not an EIA is required for a particular development and the scoping phase identifies the issues that are the most important to investigate in detail. The 'assessing' phase of EIA is the time when most of the work involved in impact assessment is carried out. Assessment usually involves three main tasks:

- further and more detailed work on impact identification refining the understanding of the nature of the impacts, identifying indirect, cumulative and other impacts and ensuring identification of the likely causes of the impacts
- detailed analysis of the impacts to determine their nature, magnitude, extent and effect
- judgement of the significance of the impacts i.e. whether they matter and whether something needs to be done to mitigate them (UNEP, 1996).





(Source: European Commission - Guidance on Scoping, May 1996)



which exceeds the 40km threshold, when considered as part of the entire pipeline project from Scotland to Ireland. However, the sub-sea interconnector, the Gormanston to Ballough pipeline and the Gormanston landfall are each subject to separate EISs undertaken by other consultants and refer to very discreet sections of the project. Figure 3.2 illustrates the Screening Threshold System for determining the need for an EIS.

### 3.1.2 Scoping

Scoping was carried out once a decision had been made that an EIS was required. The techniques and procedures for screening and scoping have marked similarities, and the information resulting from screening provided the basis for scoping (UNEP, 1996). For example in the case of Gormanston, screening identified that the 1999 EIS Regulations (S.I. No. 93 of 1999) contained several new stipulations such as the specific inclusion, of main alternatives studied by the developer, in the EIS. The main aim of scoping was to identify matters, which should be covered in the Environmental Impact Statement (EIS).

The process of scoping involved assessing the project's possible impacts and the alternatives that could be addressed, and deciding which impacts were significant. An initial scoping of possible impacts identified those impacts thought to be potentially significant, those thought to be not significant and those, whose significance was unclear. Those considered to be not significant were eliminated; those in the uncertain category were added to the initial category of other potentially significant impacts. This refining of focus onto the most significant impacts continues throughout the EIA process (Glasson et al, 1999).

It must however be emphasised that Scoping for this EIS is an on-going process, which commenced prior to initiation of the EIA and which will continue throughout the EIA as well as design and construction phases. This allows the flexibility to adapt to any new issues, for example the discovery of additional impacts arising from detailed baseline studies resulting in the investigation of new impacts, alternatives and mitigation measures as necessary.

Scoping was generally carried out in discussions between the Developer (BGÉ), the competent authority (Meath County Council), other relevant agencies (statutory, non-statutory and national governmental organisations) and the public. The 1999 Regulations (S.I. No. 93 of 1999) introduced the option for a developer, required to submit an environmental impact assessment for a proposed project, applying in advance to the relevant competent authorities, or Minister, for a written opinion on the information to be contained in the Statement. Scoping began with the identification of individuals, communities, local authorities and statutory/non-statutory consultees likely to be affected by the project. The result of this process of information collection and negotiation was the identification of the chief issues and impacts to be contained in the EIS (Glasson et al, 1999).

Figure 3.1 identifies the order of Scoping within the EIS process and Figure 3.3 expands on the many different stages entailed in the Scoping procedure.

#### 3.1.2.1 Guidance on stages in Scoping

An EIS Scoping Report was produced for the AGI at an early stage in the project. This Scoping Report was a culmination of the steps described below.



## 3.0 EIA PROCESS & METHODOLOGY

The chapter discusses the various stages of the EIA process and the procedures that were used in the production of this EIS. As consultation is an important aspect of the EIA it is discussed separately in section 3.2.

### 3.1 STEPS IN THE EIA PROCESS

The EIA for the Gormanston AGI has followed the typical steps outlined in the Environmental Protection Agency's *Draft Guidelines on the Information to be contained in Environmental Impact Statements* and the EIA 1999 Regulations (S.I. No. 93 of 1999).

Several interacting steps typify the early stages of an EIA process, which culminates in the production of an EIS (see Figure 3.1). These steps include deciding whether an EIA is needed (screening), consulting with the various parties involved to produce an initial focus on some of the chief impacts (scoping), and an outline of possible alternative approaches to the project. Following on from scoping, central steps of the EIA process include baseline assessment to determine the status of the existing environment, impact prediction, evaluation and mitigation. Prediction is needed at the earliest stages, when a project including its alternatives, is being planned and designed, and it continues through to mitigation. Evaluation follows from prediction and involves the assessment of the relative significance of the impacts and mitigation involves measures to avoid, reduce, remedy or compensate for the various impacts associated with projects. Active public participation, thorough consultation with relevant consultees, and good presentation are important aspects of a successful EIA process. Finally, once a decision approving the development has been granted, a monitoring and auditing programme of the development's actual impacts is undertaken (UNEP, 1996). The following sections describe the stages of the EIA process.

#### 3.1.1 Screening

Screening was required to determine the need for a formal Environmental Impact Statement (EIS) for the site. Figure 3.1. illustrates the entire EIS procedure, which includes *Screening* as an integral part of the process. It involved judging whether or not the expected impacts of the proposal (AGI) on the environment were likely to be of significance. Screening occurred as early as possible in the development so that proponents were aware of their obligations.

Council Directives 85/337/EEC and 97/11/EC (amending the former) require under Article 4(1) that Environmental Impact Assessment reports must be made for certain development projects. Such projects are listed in Part I of the First Schedule of S.I No. 93. Article 4(2) of the Directive states that '*other projects*' may require the completion of an Environmental Impact Statement. Whether in the case of '*other projects*' such a report is necessary or not is decided on a case by case basis or on thresholds set by the Member States. In the case of Ireland, S.I. No. 93 of 1999 sets thresholds which determine the need for an EIS. Classes of '*other projects*' are listed in Part II of S.I No. 93 of 1999 which includes '*gas pipelines and associated installations not included in Part I of this Schedule, where the design pressure would exceed 16 bar and the length of new pipeline would exceed 40 kilometres*'.

Therefore, under Part II the proposed Gormanston AGI is subject to an EIS as the development will exceed the 16 bar threshold and is associated with the development of a proposed pipeline



## 2.7 HEALTH AND SAFETY LEGISLATION

A considerable body of legislation relating to health and safety in the workplace exists in Ireland. The bulk of this stems from the Safety, Health and Welfare at Work Act, 1989, with many regulations in place as statutory instruments. The construction of an AGI station involves large numbers of people and items of plant. It also involves a considerable amount of excavation, heavy lifting and requires a high level of coordination between members of the construction crew. Therefore the contractor involved will need to pay particular attention to safety aspects on the project by complying with the Act and its regulations.

Section 12 of the Act requires that every employer must prepare a safety statement to state in some detail the manner in which the safety, health and welfare of persons employed by an employer shall be secured at work. A safety file must also be maintained by the Project Supervisor during construction and kept available for inspection by the relevant Health and Safety Inspector. Under Section 28, the Minister may make regulations in order to give effect to the Act and the most relevant of these to the construction of gas associated installations are listed in the Table 2.4 below. Several other regulations apply to the use of dangerous machines, processes, substances etc. and should be consulted as part of the preparation of the safety statement.

Safety appears as an issue in Section 38 of the Gas Act where it is stated that safety regulations may be made by the Minister following consultation with the Minister for the Environment and Local Government and the Board in order to secure that:

*'...the public and land or other property are, as far as practicable, protected from injury, fire, explosion or other danger arising from the transmission of natural or other gas by the Board....'*

In addition safety requirements for AGIs are embedded in IS 328 'Code of Practice for Gas Transmission Pipelines and Pipeline Installations'. It specifies that pipeline installations must comply with the requirements of the Safety, Health and Welfare at Work Act, 1989 (S.I. No. 7 of 1989) and all relevant other legislation.



**Table 2.3: Environmental Legislation**

<b>Document</b>	<b>Title</b>
<b>Act</b>	Environmental Protection Agency Act, 1992
<b>Act</b>	Wildlife Act, 1976
<b>Act</b>	Wildlife (Amendment) Act, 2000
<b>Act</b>	Heritage Act, 1995
<b>Act</b>	National Monuments Act, 1930 and its Amendments (1954, 1987, 1994)
<b>Act</b>	Architectural Heritage (National Inventory) and Historic Monuments (miscellaneous Provisions) Act, 1999
<b>Act</b>	Local Government (Water Pollution) Act, 1977
<b>Act</b>	Air Pollution Act, 1987
<b>Act</b>	Sea Pollution Act, 1991
<b>Act</b>	The Fisheries (Consolidation) Act, 1959 (No. 14 of 1959) as amended by Fisheries (Amendment) Act, 1962 (No. 31 of 1962) and by the Fisheries Act, 1980 (No. 1 of 1980) and by the Fisheries (Amendment) Act, 1999
<b>92/43/EEC</b>	Council Directive on the Conservation of Natural Habitats and of Wild Flora and Fauna ('Habitats Directive')
<b>79/409/EEC</b>	Council Directive on the Conservation of Wild Birds
<b>78/659/EEC</b>	Council Directive on the Quality of Fresh Waters needing Protection or Improvement in Order to Support Fish Life
<b>76/160/EEC</b>	Council Directive on the Quality of Bathing Waters, implemented by European Communities (Quality of Bathing Waters) Regulations 1992-1998
<b>1999/30/EC</b>	Council Directive relating to limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air
<b>82/501/EEC</b>	Council Directive on the major-accident hazards of certain industrial activities (commonly known as the Seveso Directive)
<b>S.I. No. 320 of 1988</b>	European Communities (Construction Plant and Equipment)(Permissible Noise Levels) Regulations, 1988
<b>S.I. No. 419 of 1994</b>	EPA Act 1992 (Urban Waste Water Treatment) Regulations 1994
<b>S.I. No 94 of 1997</b>	European Communities (Natural Habitats) Regulations, 1997
<b>S.I. No. 293 of 1988</b>	European Communities (Quality of Salmonid Waters) Regulations, 1988
<b>S.I. No. 200 of 1994</b>	Quality of Shellfish Waters Regulations, 1994
<b>S.I. No. 271 of 1992</b>	Local Government (Water Pollution) Regulations, 1992
<b>S.I. No. 155 of 1992</b>	Quality of Bathing Waters, 1992
<b>S.I. No. 145 of 1994</b>	Quality of Bathing Waters (Amendment) Regulations, 1994
<b>S.I. No. 244 of 1987</b>	Air Pollution Act, 1987 (Air Quality Standards) Regulations, 1987.
<b>Guidelines</b>	EPA Draft Guidelines on the Information to be contained in Environmental Impact Statements (To be introduced in June 1997), 1995
<b>Advice Notes</b>	EPA Advice Notes on Current Practice (in the preparation of Environmental Impact Statement), 1995



## 2.5 OTHER ENVIRONMENTAL LEGISLATION

Environmental legislation has become increasingly comprehensive in the recent past due to EU regulation and the expanding economy's greater potential to damage the environment. Much of Irish environmental legislation originates in Europe where these impacts are even greater and where the European Commission has been focusing on reducing environmental impacts from a wide variety of sources. Apart from the EIA regulations, there are many other articles of legislation which also have relevance to the proposed development e.g. legislation relating to heritage, wildlife and water quality. The following paragraphs discuss some of these Acts briefly.

The Heritage Act, 1995 established the Heritage Council as a body with the functions of proposing policies and priorities for the identification, protection, preservation and enhancement of the national heritage. The Council also has the functions of promoting public knowledge, awareness and interest in our national heritage (Section 6 of the Act). According to the Act, our national heritage includes:

*'Monuments, archaeological objects, heritage objects, architectural heritage, flora, fauna, wildlife habitats, landscapes, seascapes, wrecks, geology, heritage gardens and parks and inland waterways'.*

Although the site selection for this development will have been made based on the best archaeological and environmental information available, there is always the possibility that new finds will be made during the course of construction. The National Monuments Act, 1930 provides for the protection and preservation of National Monuments and archaeological objects and was amended in 1954, 1987, and 1994 so as to further protect and preserve our archaeological heritage. In particular, Section 23 of the Act, was amended in Section 19 of the 1994 amendment to the Act. This states that any person who finds any archaeological object has a duty to report the find to the Director of the National Museum or the designated person as stated in Section 8 of the 1994 amendment to the Act. This must be done within 96 hours of making the find.

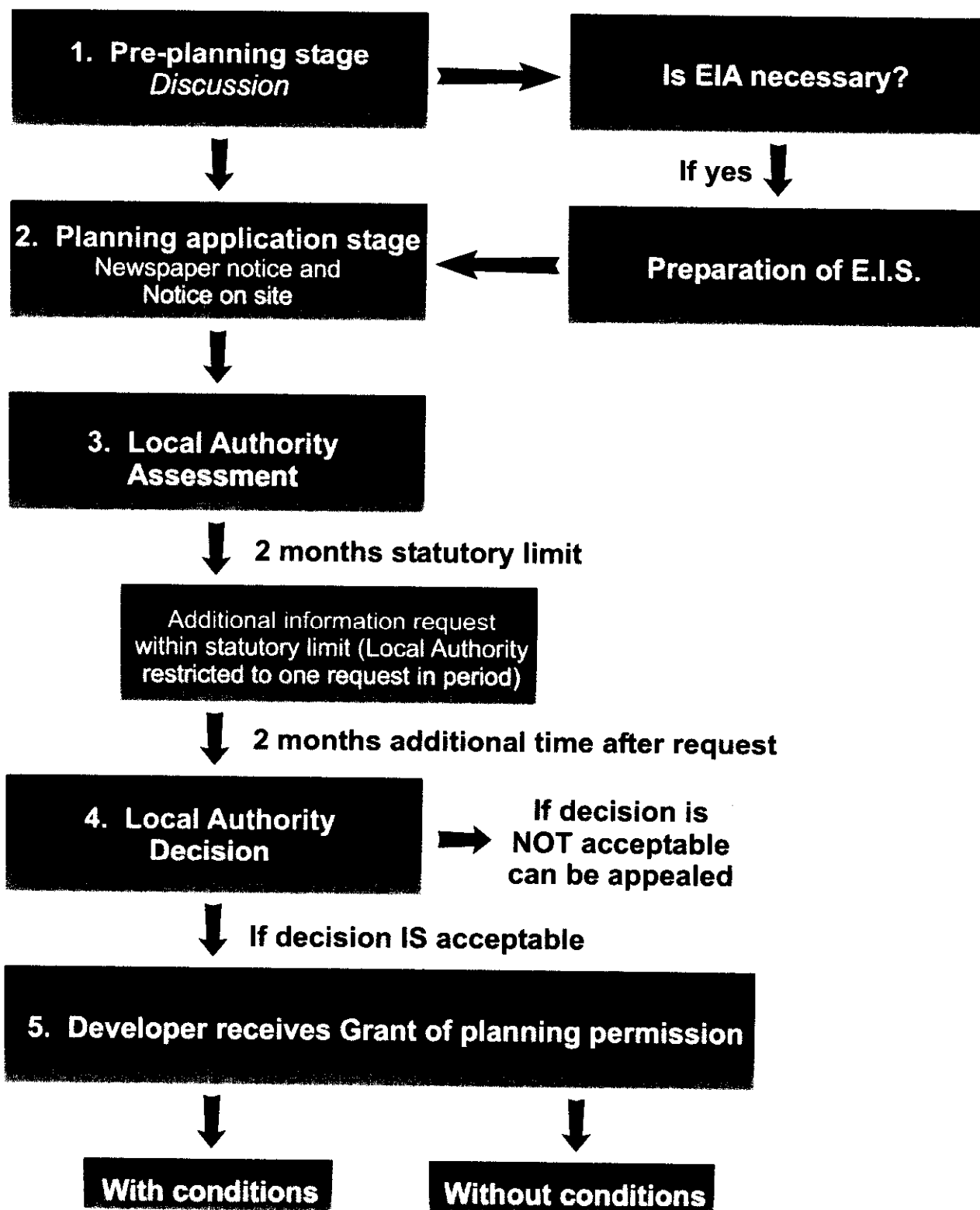
The Wildlife Act, 1976 is the main Irish legislative article which is designed to protect wildlife i.e. flora and fauna, and activities which affect it. The Act which came into operation on 1<sup>st</sup> June 1977 seeks to preserve important ecosystems but is principally concerned with hunting activities and wildlife dealing. However, under Sections 15 and 16 of this Act, Nature Reserves are discussed and in Section 17, Refuges for Fauna are described. Under the Act the Minister responsible for nature conservation may afford protection to all species of flora and fauna. The Wildlife Amendment Bill, 1999 amends many of the provisions of the Wildlife Act, 1976 and is due to be passed in the near future. This will provide for the establishment of a national network of protected areas of both wildlife and geological importance i.e. Natural Heritage Areas.


The Birds Directive (Council Directive 79/409/EEC on the Conservation of Wild Birds) requires the designation of Special Protection Areas (SPA) to protect those bird species, which require habitat conservation because of their rarity or vulnerability to habitat change. This Directive was implemented in Ireland through the Conservation of Wild Birds Regulations (S.I. 291 of 1985). The Habitats Directive (Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora) supersedes both the Birds Directive (79/409/EEC) and the conservation of Wild Birds Regulations (S.I. 291 of 1985).

The main aim of the Directive is:

*'...to contribute towards ensuring biodiversity through the conservation of natural habitats and of wild fauna and flora in the European territory of the Member States to which the Treaty applies.'*





	Job.	<b>Gormanston AGI E.I.S.</b>		Prepared <i>P. Healy</i>	<b>Fig. No. 2.1</b>
	Title	<b>The Planning Process</b> <i>Source: A Guide for Beginners &amp; Industry Environmental Law in Ireland 1991</i>	Checked <i>J. Shalloe</i>	Scale	
			Date <b>Feb. 2001</b>	File Ref. <i>Fig_2-1.cdr</i>	



## 2.4 PLANNING PERMISSION

Ireland's planning system is based on the *Local Government (Planning and Development) Act, 1963*. This legislation came into effect on the 1<sup>st</sup> October 1964 and introduced for the first time a statutory development control system. The basic concept underpinning this legislation is that permission must be obtained from the planning authority before commencing development (DoELG, 2000). Development in this Act is defined as 'the carrying out of any works on, in or under land or the making of any material change in the use of any structures or other land'. Under section 24(1)(a) of Part IV<sup>1</sup> of the said Act, permission shall be required 'in respect of any development of land'.

EIA is most often carried out in the context of applications for planning permissions made under Part IV of the *Local Government (Planning and Development) Act 1963*. As outlined in section 2.3 certain developments must be assessed by means of an EIA for likely environmental effects before planning permission can be granted. When submitting a planning application for such a development, the applicant must also submit the EIS at the same time. However, planning authorities can, under article 26 of the *Local Government (Planning and Development) Regulations, 1994*, request an EIS even where the threshold limits in the Regulations are not exceeded, but where the authority considers that the proposed development may have significant environmental effects (DoELG, 2000).

As well as changes that have been made to the EIA Regulations through S.I. No. 93 of 1999, other changes relevant to the proposed development were made through the *Local Government (Planning and Development) (S.I. No. 92 of 1999) Regulations, 1999* to reflect the provisions of Directive 97/11/EC on EIA (Comerford & Fogarty, 1999). Part II of these particular regulations refer to the scoping of EISs and states under Article 4:

*A request by an applicant or a person intending to apply for permission under Part IV of the Act of 1963 to a planning authority for a written opinion on the information to be contained in an Environmental Impact Statement shall state:-*

- *'the name, address and telephone number of the person making the request*
- *location of the land to which the request relates*
- *a brief description of the nature of the proposed development and of its possible effects on the environment*
- *if the proposed development comprises or is for the purpose of an activity in relation to which a licence under Part IV<sup>2</sup> of the Environment Protection Agency Act, 1992 (No. 7 of 1992) or a licence under Part V<sup>3</sup> of the Waste Management Act, 1996 (No. 10 of 1996), is required, this fact'.*

Article 5 states:

*'Where a planning authority, having received a request for a written opinion, considers that it has insufficient information to enable it to give the written opinion concerned, it shall require the person making the request to provide such further information or documentation as it considers necessary'.*

Article 6(1) states:

<sup>1</sup> Control of Development and or Retention of Certain Structures, etc

<sup>2</sup> Integrated Pollution Control

<sup>3</sup> Recovery and Disposal of Waste



exceed 16 bar and is associated with the development of a proposed pipeline which exceeds the 40km threshold, when considered as part of the entire pipeline from Scotland to Ireland. The sub-sea interconnector and the Gormanston to Ballough Pipeline are subject to separate EISs.

Council Directive 85/337/EEC was brought into Irish law under S.I. 349 of 1989, European Communities (Environmental Impact Assessment) Regulations 1989. Several amendments to these regulations were made with the latest, S.I. 93 of 1999, European Communities (Environmental Impact Assessment) (Amendment) Regulations 1999 bringing 97/11/EC into effect. The relevant EIA legislation is outlined in Table 2.2.

**Table 2.2: EIA Legislation.**

Document	Title
85/337/EEC	Council Directive on the Assessment of the Effects of Certain Public and Private Projects on the Environment (Environmental Impact Assessment Directive)
97/11/EC	Council Directive on the Assessment of the Effects of Certain Public and Private Projects on the Environment (Environmental Impact Assessment Directive)
S.I. No. 349 of 1989	European Communities (Environmental Impact Assessment) Regulations, 1989
S.I. No. 84 of 1994	European Communities (Environmental Impact Assessment) (Amendment) Regulations, 1994
S.I. No. 101 of 1996	European Communities (Environmental Impact Assessment) (Amendment) Regulations 1996
S.I. No 351 of 1998	European Communities (Environmental Impact Assessment) (Amendment) Regulations, 1998
S.I. No 93 of 1999	European Communities (Environmental Impact Assessment) (Amendment) Regulations, 1999

Council Directive 97/11 EC made a number of principal changes to Directive 85/337 EC which can be summarised as follows:

- An increase in the overall number of project classes which require an EIA.
- Information to be contained in an environmental impact statement has been slightly revised whereby an outline of the main alternatives studied by a developer must be provided in all cases, under Article 5 (refer to Section 1.4).
- Information on the interaction between impacts on material assets and other impacts must also be provided, under Article 3.
- Developers who are required to prepare an EIS have the option of requesting the planning authority for an opinion on the information to be contained in the EIS before the EIS is submitted, under Article 5 (refer to Section 1.5).

The information to be contained in an EIS is specified in the Second Schedule of the EIS Regulations (S.I. No. 93 of 1999), and is as follows:

- A description of the proposed development comprising information on the site, design and size of the proposed development.
- A description of the measures envisaged in order to avoid, reduce and, if possible, remedy significant adverse affects.
- The data required to identify and assess the main effects, which the proposed development is likely to have on the environment.
- An outline of the main alternatives studied by the developer and an indication of the main reasons for his choice, taking into account the environmental effects.



## 2.0 LEGISLATIVE REQUIREMENTS

### 2.1 INTRODUCTION

This section contains an overview of legislation, which is relevant to the authorisation, construction and operation of an AGI in Ireland with particular emphasis on legislation pertaining to the requirements for environmental impact assessments and planning permission for such a facility. An AGI differs from a pipeline in that Planning Permission is required for construction of an AGI whereas Section 8 approval (i.e. Gas Act Section 8 as described below) is sufficient for pipeline development, as granted by the Department of Public Enterprise. Meath County Council are the relevant planning authority in this case.

The following sub-sections discuss the relevant legislation with regard to the proposed AGI development, under the following headings:

1. The Gas Act
2. EIA Regulations
3. Planning Legislation
4. Other Relevant Environmental Legislation
5. Safety Legislation.

### 2.2 THE GAS ACT, 1976

The Gas Act established Bord Gáis Éireann (The Gas Board) as the single statutory body responsible for the acquisition, transmission and distribution of natural gas in Ireland. The Gas Act was amended in 1982, 1987 and 1993. The functions of the Board are given in Section 8 of the Act as follows:

*'It shall be the duty of the Board to develop and maintain a system for the supply of natural gas being a system which is both economical and efficient and which appears to the Board to be requisite for the time being'.*

Section 8 (3) of The Gas Act is of particular relevance to the construction of AGIs as under this section the board may *'provide operate or maintain...pressure reducing stations...as or necessary or expedient in relation to, or ancillary to, the provision, development or maintenance of a system of gas supply'.*

According to section 8(8):

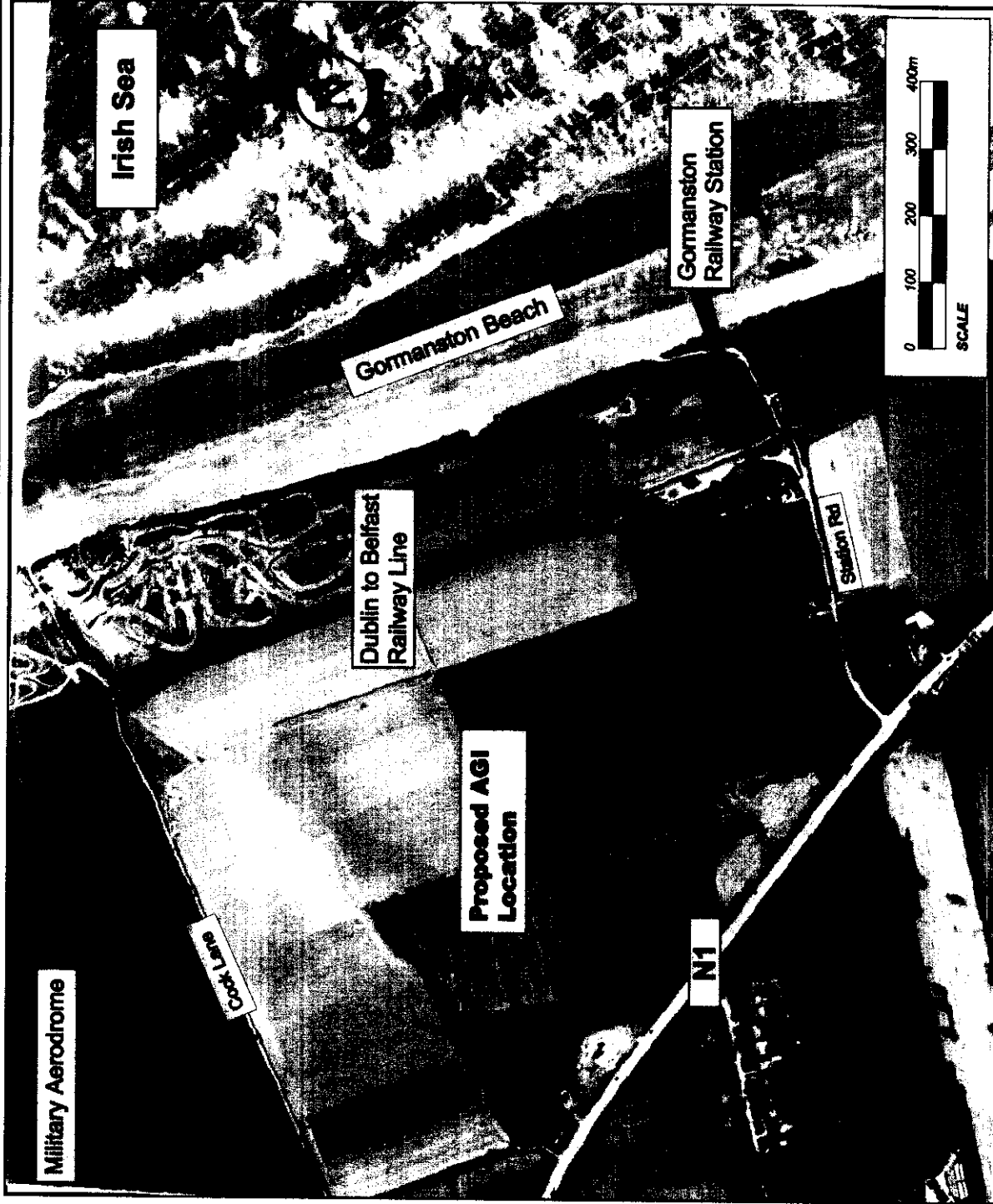
*'...the Board shall take all reasonable measures to protect the natural environment and to avoid injuring the amenities of the area....'*

and

Section 8(9) requires that the Board:

*'...take all reasonable steps to prevent injury to any building, site, flora, fauna, feature or other thing which is of particular architectural, historic, archaeological, geological or natural interest....'*





Job



**BORD GÁIS**  
TRANSMISSION BUSINESS UNIT

## Gormanston AGI EIS

*Aerial View of Site*

Title

Prepared: P. Higgins	Checked: J. Shaloe	Scale: N.T.S.	Date: Feb. 2001	File Ref: Fig. 1.4.dwg
----------------------	--------------------	---------------	-----------------	------------------------

**Fig. No.**  
**1.4**



Bord Gáis currently supplies natural gas to over 326,000 homes and is continually extending the network to make gas available to more homes and industries throughout the country.

## 1.5 THE NEED FOR THE PROJECT

Ireland is currently supplied by two gas sources: the Kinsale gas field and the sub-sea interconnector. Whereas demand for natural gas has been growing at a significant rate over the past decade, indigenous supply has been declining owing to the depletion of the Kinsale gas field. Now most of the gas used in Ireland is sourced in the North Sea and imported via the existing sub-sea pipeline.

The need for a second Scotland to Ireland sub-sea interconnector can therefore be summarised as follows:

- The Kinsale Gas Field is nearing depletion – estimated year of depletion 2004.
- To meet the expected shortfall in supply in winter 2002.
- The existing sub-sea pipeline does not have the capacity to meet growing demand for gas in Ireland.
- To provide security of supply to Ireland to match European Gas Industry practices.

## 1.6 PROPOSED AGI SITE

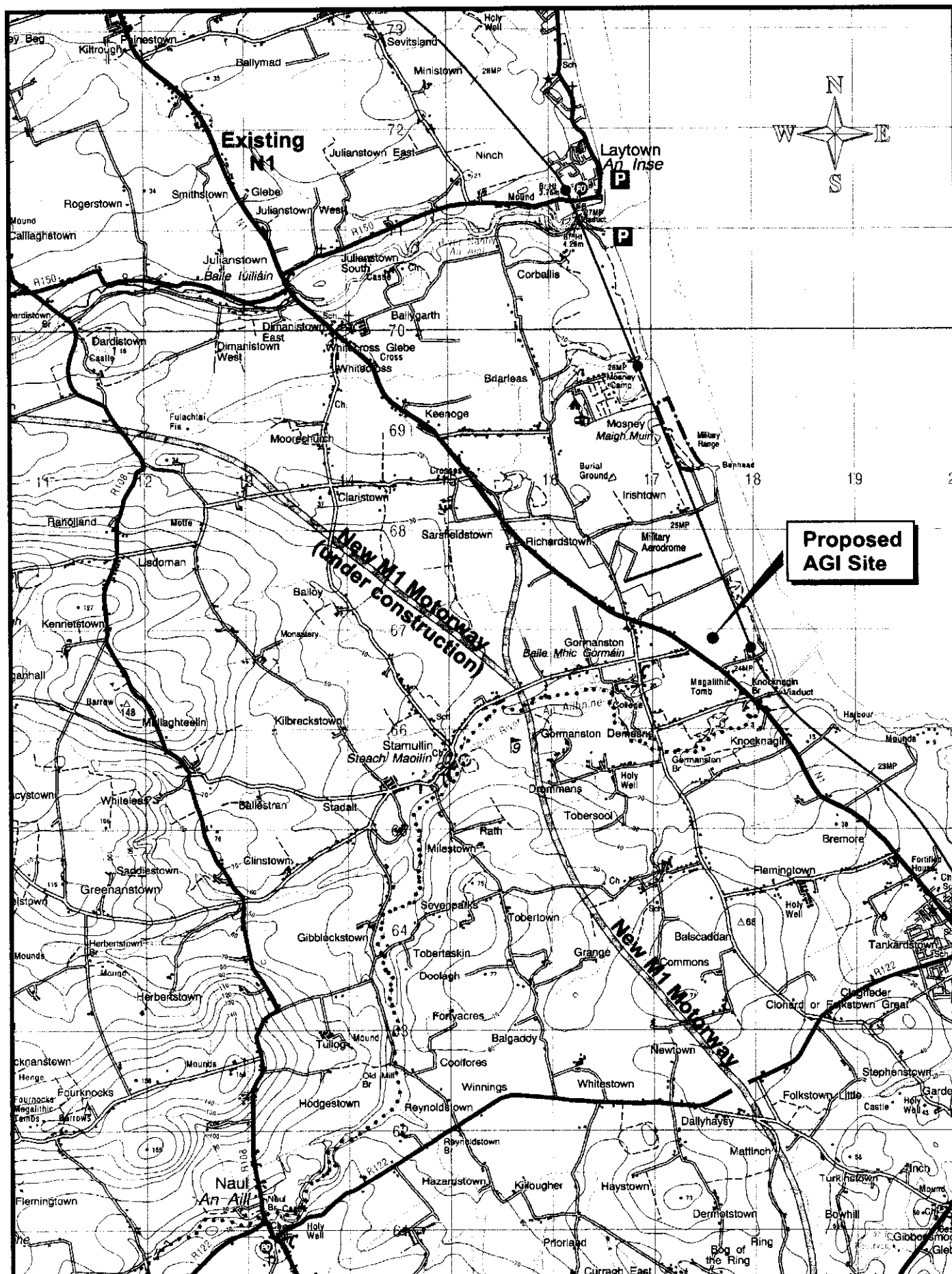
The proposed AGI site is located in the townland of Gormanston, approximately 1km East of the village of Gormanston. Gormanston railway station is located approximately 200m to the south east of the site on the Dublin to Belfast railway line. This railway station is predominantly used by Dublin City commuters. The 'old N1' National Primary route also lies close to the proposed site, approximately 120m to the west. Since the recent construction of the Balbriggan by-pass this road has been downgraded to local road status and accommodates only local traffic at a moderate level.

The Irish Defence Forces operate a military aerodrome and training centre, which is located approximately 1km to the North of the site in Gormanston. Figures 1.3 & 1.4 indicate the location of the above landmarks in relation to the site.

The proposed site is located in a large, flat field in pasture grazed by livestock. Surrounding land is in agricultural use dominated by tillage and market gardening. A small number of inhabited dwellings lie within approximately 300m of the AGI.

The surrounding hinterland is also agricultural in nature with arable farming and market gardening characterising this fertile area. High hedges and trees surround the site on the roadside (N1) providing good screening.





	Job.	<b>Gormanston AGI E.I.S.</b>	Prepared <b>P. Healy</b>	<b>Fig. No.</b>  <b>1.2</b>
	Title	<b>AGI Site Location Plan</b>	Checked <b>J. Shalloo</b>	
			Scale <b>1:50,000</b>	
			Date <b>Feb. 2001</b>	
			File Ref. <b>Fig 2 odr</b>	



Chapter 4 is concerned with the site description and outlines the processes, site layout, infrastructure and operation of the AGI.

Chapter 5 deals specifically with the alternatives that were examined for the project including site locations and designs, as well as the 'No Development' option.

Chapter 6 deals with the construction phase of the project and examines issues such as construction traffic, health & safety, working hours etc.

Chapters 7 to 9 present the environmental aspects of the project, with each topic falling under the category of either Human Beings or Natural Environment as follows:

*Human Beings*

- Agriculture, Land Use & Soils
- Material Assets
- Traffic
- Air
- Noise
- Community Effects & Tourism
- Landscape & Visual Impact Assessment

*Natural Environment*

- Archaeology
- Terrestrial Flora and Fauna
- Geology, Hydrogeology & Overburden

Chapter 7 addresses the Existing Situation with an outline of the baseline studies conducted, Chapter 8 presents the potential impacts of the development and Chapter 9 highlights the mitigation measures that may be used to minimise negative impacts of the development.

Chapter 10 deals with other possible impacts and issues of concern i.e. safety and planning policies contained in the relevant County Development Plans.

Chapter 11 details the conclusions of this EIS. Each environmental discipline is addressed and the major impacts highlighted.

Volume 3 – Technical Appendices, contains the individual specialist EIS reports that were undertaken by external sub-consultants. As explained above the main issues arising from these reports have been described in Chapters 7 to 9 of this Report (Volume 2). Each sub-consultant and their particular discipline is identified below.

• Appendix A	Philip Farrelly & Co.	Agriculture Impact Study
• Appendix B	GVA Donal O Buachalla	Material Assets
• Appendix C	Envirocon Ltd.	Air Assessment
• Appendix D	Enterprise Ireland	Noise Aspects
• Appendix E	Gerry Mitchell & Associates	Landscape and Visual Assessment
• Appendix F	Margaret Gowen & C. Ltd.	Archaeology and Cultural Heritage
• Appendix G	Roger Goodwillie & Associates	Flora and Fauna
• Appendix H	B.J. Murphy & Associates (BMA)	Geology & Hydrogeology



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## DOCUMENT CONTROL SHEET

Client	Sofregaz					
Project Title	Scotland to Ireland Second Gas Interconnector Project Gormanston AGI					
Document Title	Environmental Impact Statement – Technical Appendices					
Document No.	MCOS/069-504-001 Rp005d					
This Document Comprises	DCS	TOC	Text	List of Tables	List of Figures	No. of Appendices
	Yes	Yes	69	1	2	8

Revision	Status	Author(s)	Reviewed By	Approved By	Issue Date
A	Issue for Client Approval	Una Phelan Marc Walshe Cathriona Cahill	John Shalloe	John Shalloe	20/11/00
F	Final Issue	Brendan Brice Cathriona Cahill Marc Walshe	John Shalloe Brendan Brice	John Shalloe	28/02/01



**Environmental Impact Statement**

**for**

**Gormanston Above Ground Installation (AGI)**

**Gormanston, Co. Meath**

**Volume 1 Non-Technical Summary**

**Volume 2 Main Report**

**Volume 3 Technical Appendices**



## **APPENDIX A**

### **AGRICULTURAL IMPACT STUDY**

**PHILIP FARRELLY & CO.**

**AGRICULTURAL CONSULTANTS**



**GORMANSTON**

**AGI SITE**

**AGRICULTURAL IMPACT  
STUDY**

**PHILIP FARRELLY & CO.,  
AGRICULTURAL  
CONSULTANTS, NAVAN, CO.  
MEATH**



## **1.0 Summary**

Philip Farrelly & Co., were appointed by M.C. O'Sullivan, consulting Engineers, to complete an Agricultural Impact Assessment of the lands found on the proposed Bord Gais Gormanston AGI site in County Meath. A consultant visited each of the fields found on the proposed AGI site to deduce the potential impacts which the construction and operational phases of the AGI site may have. Professional recommendations were then formulated to mitigate any potentially significant adverse impacts.

The following report describes the current conditions on the proposed site; identifies agricultural impacts of the site both during its construction and operation and provides mitigation measures for the minimization of any potentially significant negative impacts.

## **2.0 Existing Conditions**

The land block proposed for use for the Gormanston AGI is made up of seven separate fields. Fields 1 - 3 are sown for vegetables, fields 4 and 5 are grass fields and fields 6 and 7 appear to be tillage or perhaps rough grass. The method of growing vegetables in this region is to sow a crop of potatoes early in the Spring and after these are harvested, crops such as cabbage, cauliflower etc. are sown. Field 2, which is 13.87 hectares, is the largest field on the block, this consists of different plots of vegetables.

The land proposed for the AGI station is between the Dublin to Belfast Railway line and the N1, placed in field 4. A 7-m access road to the station is now proposed to significantly sever field 5. The area marked 'Y' shows the Gormanston Railway Station.



otherwise be grazing or when tillage machinery is needed to work the soil. These impacts will be reduced if the construction occurs during the winter months when animals are housed and tillage operations are at a minimum. However, prolonged flooding will kill grass swards and these will then require replacement.

### **3.3 Impact During Operation**

In terms of impacts on the agricultural environment as a result of this development, the effects will be relatively slight and will include impacts such as:

- ☐ Visual Impacts
- ☐ Traffic Impacts
- ☐ Loss of Agricultural Land

#### **Visual Impacts**

The station itself will obviously be a new addition to the surrounding agricultural landscape and therefore, every effort will be made to minimize its impact on the visual aspects of the local rustic environment.

#### **Traffic Impacts**

The AGI site will be automatic in function and therefore unmanned with the result of very little increase in traffic.

#### **Loss of Agricultural Land**

The development of the AGI site and its corresponding 7-m access road will obviously result in the loss of productive agricultural land in the local area and the corresponding loss to landowner's incomes.



## 5.0 Conclusion

The construction and operation of the Gormanston AGI has potential slight negative impacts upon aspects of the agricultural environment as discussed. However, good communication with landowners during the construction phase of the project will help to minimise impacts and difficulties where a compromise may be reached. Also, the use of some of the suggested mitigation measures will ensure that impacts on agricultural activity on the AGI site are kept to a minimum.


The agricultural practices carried out in the fields where the proposed development will be sited consist of grassland and various crops and since we are unable to speak with the landowner for this block of land, it is difficult to ascertain the overall impact of the development on his property.

To conclude, it is likely that the impact of the development of the AGI on the proposed site will be no greater than any alternative site chosen and it is therefore our recommendation that the development proceed.





ALBERT EINSTEIN 1879-1955

 ALBERT EINSTEIN



Military Aerodrome

Irish Sea

Cook Lane

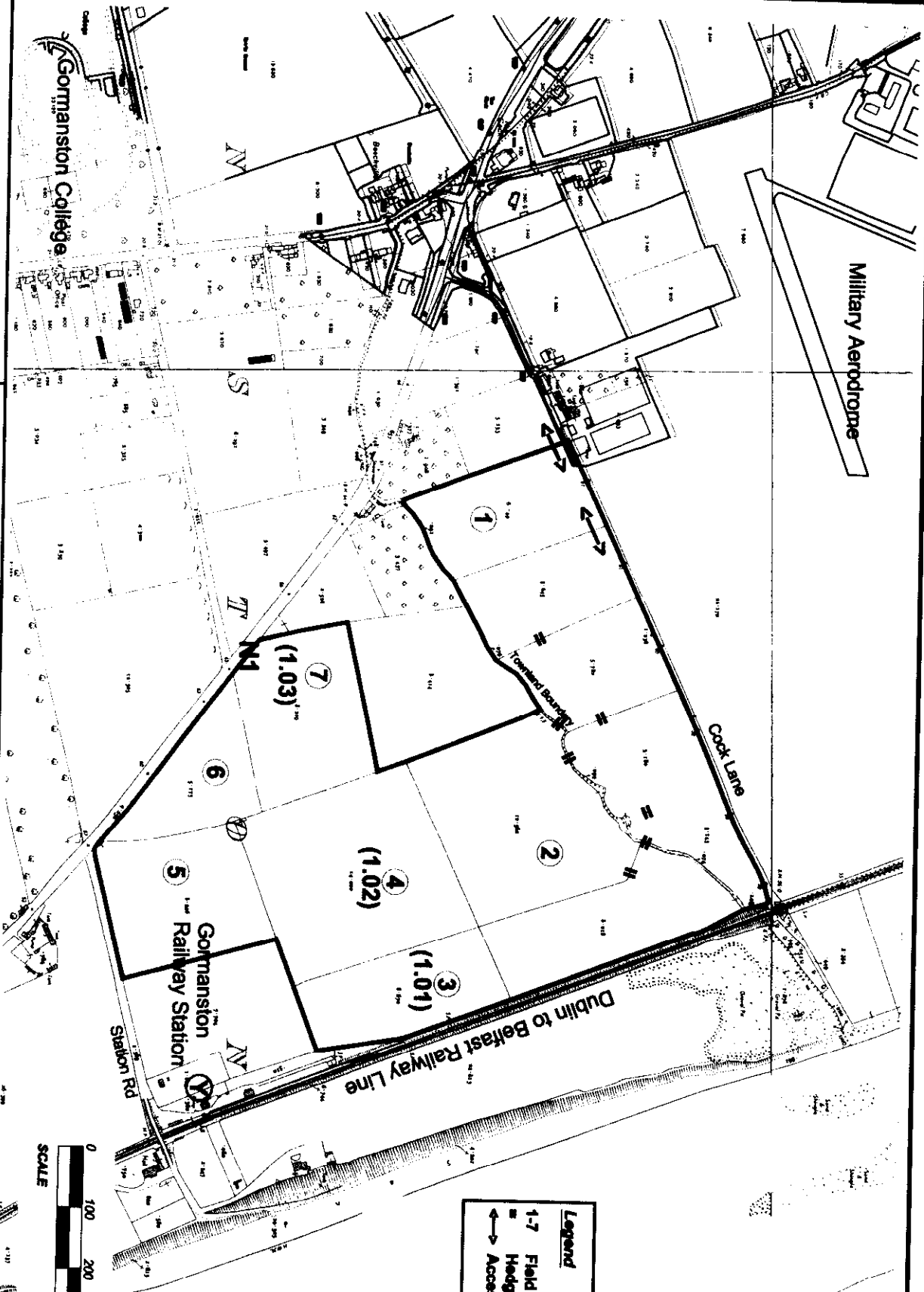
Dublin to Belfast Railway Line

Gormanston Railway Station

Gormanston College

**Legend**  
1-7 Field Numbers  
Hedges no longer in existence  
Access Points

0 100 200 300 400m  
SCALE



**BORD GÁIS**  
TRANSMISSION BUSINESS UNIT

**DOGS**

**Gormanston AGI EIS**  
*The Agricultural Use in the Vicinity of the AGI*

Prepared: P. Higgins  
Checked: J. Stratton  
Scale: N.T.S.  
Date: Sep. 2000  
File Ref: TEL 71.049g

**Fig. No.**  
**1**



## **APPENDIX B**

### **MATERIAL ASSETS**

**DÓNAL Ó BUACHALLA GVA**



E.I.S.

Gormanston AGI

Material Assets

February 2001



## **1 INTRODUCTION**

- 1.1** The following report sets out the impact on material assets as a result of the proposed construction of an AGI at Gormanston, Co. Meath.
- 1.2** The results and conclusions are based on the information gained from an inspection of the study area, examination of maps and from discussions with M.C. O'Sullivan Consulting Engineers.
- 1.3** The survey of the relevant area was carried in February 2001.

## **2 EXISTING CONDITIONS**

### **2.1 Location - General**

- 2.1.1** The study area is bounded to the north by Cock Lane, to the east by the Dublin/Belfast railway line, partially to the west by the N1 and partially to the south by Station Road, the remaining boundaries are formed by either agricultural lands or residential properties.
- 2.1.2** Gormanston Railway Station is located nearby to the south of the study area and Gormanston Military Camp is located to the north.
- 2.1.3** There are no residential properties or other buildings within the study area. (although there are 4 residences in close proximity to the south of the study area)
- 2.1.4** Access to the land is across a field, which is accessed from a gateway on Station Road a short distance from the N1. Since the opening of the M1 Balbriggan By-Pass the N1 at this location accommodates local traffic only.

### **2.2 Land-Use**

- 2.2.1** The entire study area comprises land in agricultural use (tillage / market gardening / grass).

### **2.3 Planning**

- 2.3.1** The land is unzoned in the East Meath Development Plan 2000.
- 2.3.2** It should be noted that there are development restrictions in the vicinity of Gormanston Military Camp set out in the East Meath Development Plan 2000, however the proposed location of the AGI is outside these restrictive zones.
- 2.3.3** We enclose in Appendix 1 the extract from the East Meath Development Plan 2000 together with the relevant map extracts.



**4.2    *Period of Construction***

4.2.1    We understand construction will take approx. 15 months.

**4.3    *Disruption***

4.3.1    There will be disruption to the landowner as a result of construction traffic traversing his lands and occupying the temporary acquisition during the construction phase.

4.3.2    There will be some disruption to the residence on Station Road close to the site entrance and the landowners residence to the east of the development as a result of the noise, dust etc. These issues are discussed in separate specialist EIS reports.

**5       *OPERATION PHASE***

5.1       No significant impact, although a portion of the southern field will be severed by the AGI access road.

**6       *MITIGATION MEASURES***

6.1       Compensation payments for loss of land, injurious affection and disturbance will be agreed with the relevant property owner affected by land taken for the AGI, access road and temporary working area.

**7       *CONCLUSION***

7.1       The AGI will be located in a rural area, the acquisition comprises agricultural land only, and no residential or commercial property will be acquired. The nearest house is approx. 200m from the AGI. Having regard to the above it is considered that there will be a slight impact on the retained lands.



## APPENDIX 1. – EAST MEATH DEVELOPMENT PLAN



**6.8 DEVELOPMENT IN THE VICINITY OF GORMANSTOWN MILITARY CAMP**

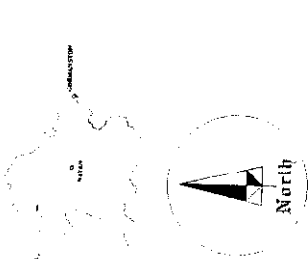
Before a decision is made on any application for permission to carry out development in the vicinity of Gormanston Military Camp, An Roinn Cosanta shall be consulted in respect of:

- (a) All development within the solid line indicated on Map No. 7.
- (b) All development over 10.67 metres high within one mile of the dashed black line indicated on Map No. 7.



# EAST MEATH DRAFT DEVELOPMENT PLAN 1999.

Map No. 7.  
Gormanston  
Amendments



## LAND USE ZONING OBJECTIVES

**A1**  
To provide for new residential development and the associated infrastructure and services of the immediate area.

## SPECIFIC OBJECTIVES

DEVELOPMENT AREA  
BOUNDARY.



DEVELOPMENT RESTRICTIONS.

TREES TO BE PROTECTED.

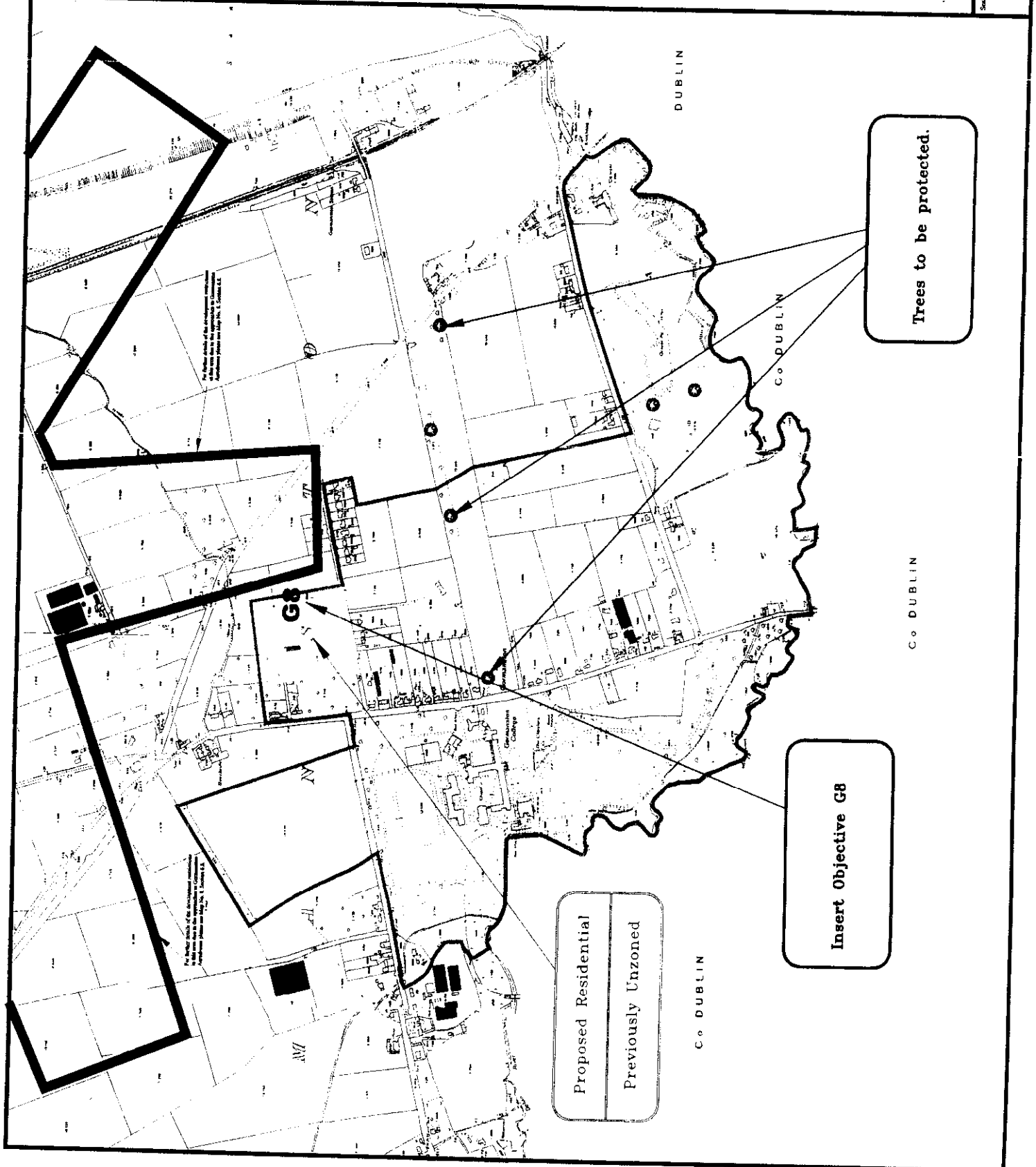


North County Council  
Planning Department  
100, Main Street  
DUBLIN 15

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AutoCAD Reference No.  
G:\D:\East Meath\Comm\Comm1\Feb11\_1999.dwg

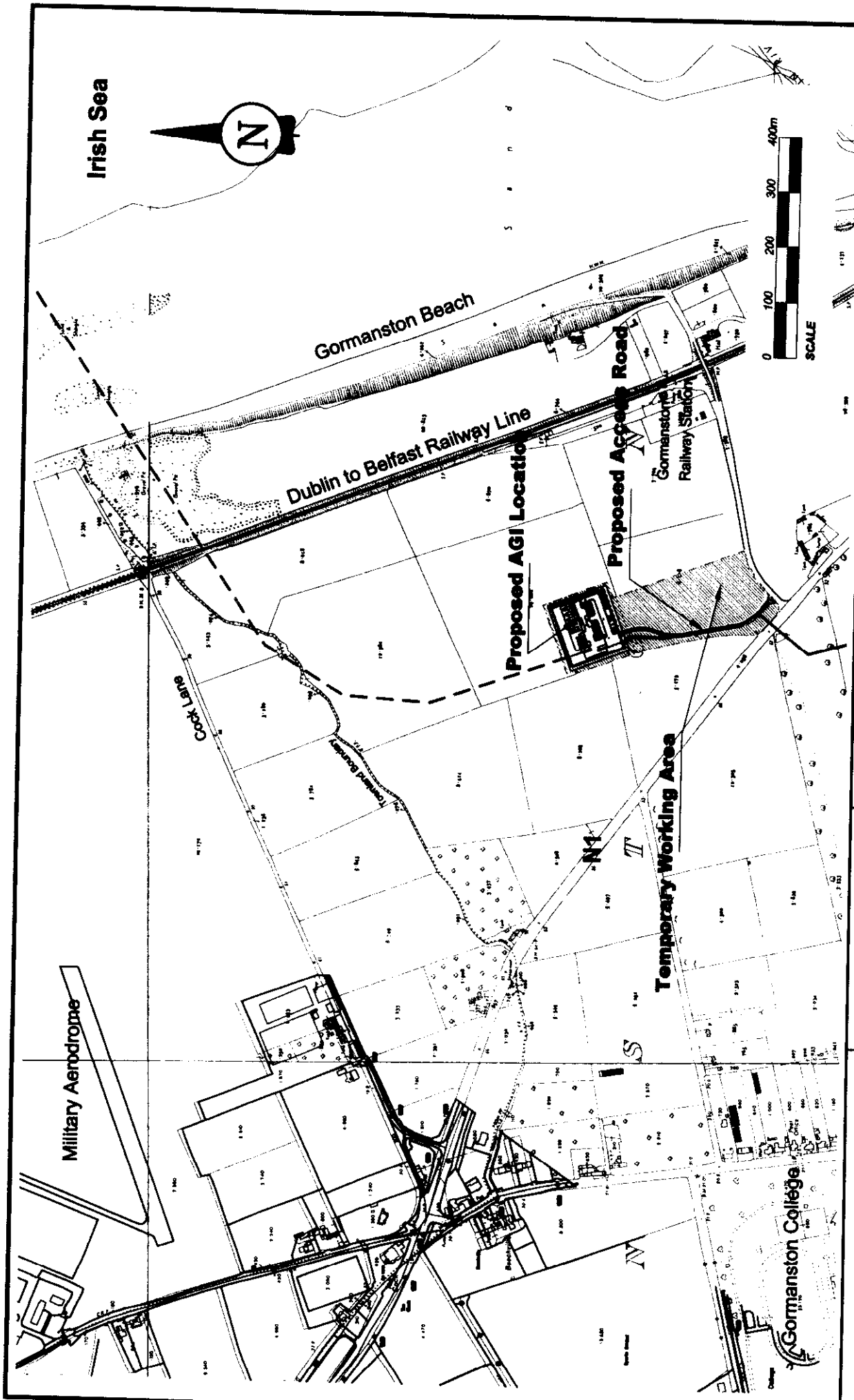
N.T.S.





**APPENDIX 2. – MAP OF PROPOSED AGI, TEMPORARY WORKING AREA  
AND ACCESS ROAD**





**Fig. No.**  
**1**

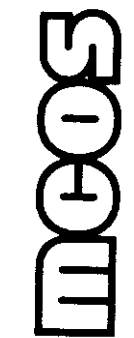
Prepared: P. Higgins  
 Checked: J. Shalloo  
 Scale: N.T.S.  
 Date: Feb. 2001  
 File Ref: Fig. 1.dwg

**Gormanston AGI EIS**

**Detailed Site Location**

Job

Title



**BORD GÁIS**  
 TRANSMISSION BUSINESS UNIT



## **APPENDIX C**

### **AIR ASSESSMENT**

**ENVIROCON LTD.**

**AIR POLLUTION & ENVIRONMENTAL CONSULTANCY**



W. L. Bailey



### **3.0 PROPOSED DEVELOPMENT**

The AGI is to be constructed on a gently sloping, greenfield location of approximately 9000m<sup>2</sup>. The construction phase will last for about 15 months, with the construction plant equipment accessing the site along a new road leading from Station Road, near the junction with the N1. The construction of the site will involve the excavation of the pipeline route into and out of the AGI, installation of the odorising system, gas heating system, pipeline regulators, pigging station, metering. On completion of the construction of the AGI the land, surrounding the installation will be returned to agricultural use.

### **4.0 IMPACT OF DEVELOPMENT**

#### **4.1 Construction Phase**

There is a potential for dust emissions to be generated during the preparation of the site. Movements of trucks and other vehicles can generate significant dust emissions unless adequate control measures are implemented. In addition, air emissions from the exhausts of plant construction machinery and trucks may also impact on the local air quality. The potential for dust emissions during the construction phase will be largely related to local wind conditions, coupled with the frequency and duration of rainfall. During dry weather conditions, the wind may cause re-suspension of dust from areas of construction activity, such as trucks entering/departing the site area.

The overburden/top-soil during the construction of the foundations of the installation is likely to be deposited on the surrounding land and so it is not expected that material will be taken off-site for disposal. Once the pipeline into and out of the AGI has been laid, the material from the trench will be replaced and compacted. Therefore, the volume of material taken off- for disposal is likely to be minor.

Concrete, pipeline grouting mix and building aggregates will be delivered directly to the site as ready-mix or in sealed bags. The pipes and ancillary equipment will be delivered by truck. The volume of building materials is relatively small, compared to the construction of an industrial unit. Use of the aggregates and other fine-sized materials will not have a significant impact beyond the immediate site boundary.

Air emissions from the exhausts of the construction vehicles and plant machinery will comprise mainly of nitrogen oxides, hydrocarbons and particulate emissions from the diesel engine exhausts. The impact of the emissions from the operation of plant machinery during the construction phase will not have a significant impact on the ambient air quality of the area due to the scale and duration of the site preparation phase.

The overall impact on the surrounding air quality near the site boundary adjoining the AGI site is predicted to be a moderate negative impact, as a result of dust emissions. These impacts will be short to medium term depending on the amount of site preparation work required prior to laying the foundations of the site. Dust emissions will be effectively controlled through proper site management. The impact of dust and



pipeline is very small and is at a rate of about  $7 \times 10^{-6} \text{ m}^3$  per  $10^3 \text{ m}^3$  of natural gas. The odorising agent will be supplied directly to the AGI in sealed drums and the contents will be transferred to the storage tank via an airtight connection to prevent vapour losses to atmosphere during filling.

Under normal operating conditions at the AGI, emissions of gaseous or particulate compounds will not be significant and no odour will be detected beyond a few metres from the perimeter fence. Emissions from the water-bath heaters, which are heated by natural gas, will be mainly nitrogen oxides and will typically be less than 2.5 g/h. This emission estimate is based on a natural gas consumption rate of 500 kg/h and a rate of 5 g/tonne for nitrogen oxides, from this type of heating system. This volume of nitrogen oxides emissions is minor or insignificant. No adverse impact on the local air quality is predicted due to these emissions.

Gas from the pipeline will be vented during emergency procedures, where a leak in the underground line has been detected and the section would need to be isolated, vented and repaired. Each process system, the filters, bath heaters and pressure regulator/metering systems are vented one after the other. Short-term emissions of natural gas to the atmosphere during this controlled venting procedure will be significant at the AGI. However, these emissions will last for only a few minutes and although an odour from the gas may be detectable in the locality, no adverse impact in terms of likely effects on the health of the local community, damage to crops or vegetation in the nearby fields is predicted.

## **5.0 MITIGATION MEASURES**

### **5.1 Construction Phase**

- Mud or silt deposited on the road near the site entrance, as a result of drag-out by the tyres of vehicles, or spillage of materials should be promptly removed.
- Loose, fine aggregates that can be easily resuspended by the wind should not be stored in uncovered stockpiles at the construction compound of the AGI, so as to reduce and control fugitive dust emissions from the construction site.
- Diesel engines in the trucks and heavy plant machinery should be regularly maintained to prevent excessive exhaust emissions of particulates and other pollutants during operation.
- Truck speeds should be controlled to prevent high levels of dust being resuspended from the surface of the access road to the AGI construction site.

### **5.2 Operation Phase**

- The gas preparation process systems within the AGI will operate in accordance with standard procedures. Control measures during the installation and maintenance of the different systems will ensure that International Operating Standards are met to control and minimise air emissions.



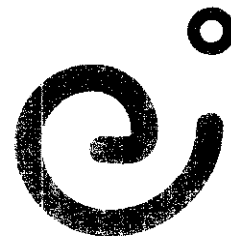
**APPENDIX D**

**NOISE ASPECTS**

**ENTERPRISE IRELAND**



ENVIRONMENTAL SERVICES



**ENTERPRISE  
IRELAND**

Glasnevin Dublin 9  
Ireland

## CONFIDENTIAL REPORT

---

**Client**

**M.C. O'Sullivan  
Consulting Engineers  
Ashurst  
Mount Merrion Avenue  
Blackrock  
Co. Dublin**

**Title**

**Proposed Gormanston AGI EIS  
NOISE ASPECTS**

---

Report Ref. 102692

File No. R6/01696K

Order 069-504 001-C020

Report by: Larry Kenny

Approved by: Martin Reilly

Date: 5 February 2001

---

ENVIRONMENTAL SERVICES Fax: 01-808 2259

Tel: +353 (0)1 857 0000 / 808 2000  
Fax: +353 (0)1 808 2020  
Web: [www.enterprise-ireland.com](http://www.enterprise-ireland.com)



## 1 INTRODUCTION

- 1.1 This report was undertaken at the request of M.C. O'Sullivan, Consulting Engineers to BGE on the proposed AGI at Gormanston. The object of this report is to present the noise and vibration aspects of the Environmental Impact Study.
- 1.2 The major noise emitting elements of the proposed AGI installation are the regulators and boilers. A Site Plan is shown in figure 1 and the nearest residence is c.250 metres south of the site. Baseline noise measurements were made at three locations near residences in the vicinity of the site, designated A to C in figure 1. Environmental noise measurements were also made at an existing AGI at Loughshinny which is similar to the proposed installation.
- 1.3 Sound levels are measured with a meter in units called decibels (dB), and noise has often been defined as unwanted sound. Environmental noise levels are usually assessed in terms of A-weighted decibels, the dB(A). The A-weighting approximates to the response of the human ear. Industrial, occupational and environmental noise is usually expressed in equivalent continuous levels,  $L_{Aeq,T}$ . This is based on the energy average level over the relevant time interval. Environmental noise may be corrected for tonal or impulsive characteristics and the unit is the rating level,  $L_{Ar,T}$ . Statistical parameters are also used as noise descriptors.



### 3. EXISTING ENVIRONMENT

3.1. The site at Gormanston is situated between the N1 and the Dublin-Belfast railway line. There are a number of houses on the link road between the Gormanston Station and the N1, and on the N1 itself. The existing noise environment is principally controlled by local activity and traffic on the M1/N1.

3.2 Daytime and night-time noise measurements were made at the nearest residences south-east of the site and night-time measurements were made at the residences south and west of the site, all being made under good weather conditions with light winds. The locations are marked A, B and C respectively in figure 1. The microphone height was 1.7 metres above ground level. The instrumentation consisted of Larson Davis Environmental Noise Analyser and a Bruel & Kjaer type 2231 Precision Sound Level Meter, with calibration checks being made with a B&K type 4230 sound level calibrator. The following parameters were measured:

$L_{Aeq,T}$  the equivalent continuous noise level for the measurement period. This parameter is very sensitive to local high-level short time sources, e.g. local traffic, etc.

$L_{A01,T}$  the sound level equalled or exceeded for 1% of the measurement period, the maximum levels.

$L_{A10,T}$  the sound level equalled or exceeded for 10% of the measurement period, a parameter usually used for traffic noise assessment.

$L_{A90,T}$  the sound level equalled or exceeded for 90% of the measurement period. This level is sometimes taken to represent the "background" noise level.

3.3 The principal sources of noise at location A were domestic and agricultural activity and more distant traffic. The principal night-time sources at locations B and C were road traffic both on the nearby N1 and the more distant M1. The results are shown overleaf. The minimum recorded night-time level was an  $L_{A90, 15min}$  value of 23dB and the daytime minimum  $L_{Aeq, 15min}$  value was 36 dB. The sound pressure level at location A was analysed into octave bands with the following results:

Time	Octave bands Sound Pressure Levels								
	31.5	63	125	250	500	1000	2000	4000	Hz
27/6/00 01:45	48	46	32	24	26	22	17	14	dB



#### 4. NOISE EMISSIONS

- 4.1 The AGI will operate continuously and the greatest potential for disturbance occurs at night when background levels are low. Night-time noise levels measured 25 metres from the existing Loughshinny AGI were as follows:

	Time	L <sub>Aeq,T</sub>	L <sub>A01,T</sub>	L <sub>A10,T</sub>	L <sub>A90,T</sub>	T = 15 min
27/6/00	00:50	36	39	37	34	dB
	01:05	37	47	37	34	dB
						dB

The noise environment was principally controlled by the noise emission from the AGI with a contribution from traffic on the N1/M1.

- 4.2 The sound pressure level was analysed into octave bands with the following results:

27/6/00	Octave bands Sound Pressure Levels								
	31.5	63	125	250	500	1000	2000	4000	Hz
01:00	66	58	49	30	21	23	22	24	dB

There was a low level 'hiss' or vent noise characteristic from AGI but the source would not be described as having strong tones.

- 4.3 There was no ground vibration perceptible off-site.



## **6. CONSTRUCTION**

- 6.1 For a limited period during the construction of the plant noise levels may exceed the operating criteria. As construction work is of a temporary nature, the resulting higher noise levels are usually acceptable.
- 6.2 British Standard BS 5228: 1997 on Noise Control on construction and demolition sites provides guidance on the methods available to control noise from construction work and is used on road and other large scale construction projects.

## **7. ASSESSMENT**

- 7.1 The noise from the Loughshinny AGI is used as a model for the new plant. The measured levels 25 metres from the site gave a night-time level of 36 dB(A) against a criterion value of 35 dB(A). This difference is not significant.
- 7.2 The effect of the minimum distance of c. 250 metres to the nearest residence will significantly decrease the noise emission level and ensure that there is no adverse impact due to the operation of the AGI. Comparison of the octave band levels at the measurement location and at the AGI at Loughshinny shows the higher frequency 'hiss' from the regulators. This component has the potential for disturbance but due to the distances involved will require no amelioration measures. However cognisance must be taken of noise emissions in the design and operation of the facility. There will be no ground vibration perceptible off-site.
- 7.3 The noise from the construction of the AGI will be temporary in nature and the absolute levels will be below that due to passing vehicles. As this will occur during daytime only there will be no significant adverse impact.



**APPENDIX E**

**LANDSCAPE & VISUAL IMPACT ASSESSMENT**

**GERRY MITCHELL & ASSOCIATES**



## **LANDSCAPE / VISUAL**

### **1.0 Introduction:**

The visual / landscape assessment was carried out in September / October 2000. Information for the assessment was gathered from O.S. maps, a site topographical plan, aerial photographs and on site observations. No particular difficulties were encountered in the compiling of this report.

The assessment refers to 'The study area' and 'The site area'. The former is an extended area around the site area which forms the overall character of the surrounding landscape. The site area is the portion of land on which the Above Ground Installation will be located.

### **1.1 Site Description**

The study area is located to the east of the Village of Gormanston and approximately 4.5 km north of the town of Balbriggan in Co. Meath.

It is at present in agricultural production and presents as a visually unremarkable sub-section of a much larger landscape.

The Belfast to Dublin railway line bounds the study area to the east, while to the north there is a military aerodrome. To the west there are a number of fields in agricultural production between the study area and the Balbriggan Road (N1). The agricultural land extends to the south and the railway station is located in this area to the south-east.

The site for Above Ground Installation is located to the north west of the railway station in the south west corner of one of the agricultural fields in the study area.



*Malus sylvestris*

The subject site area has an existing hedgerow to the west and south, which forms part of the field pattern in the overall study area.

### **1.5 Land Use**

The land-use on the study area is agricultural in the form of pasture and tillage, with the subject site area currently in pasture. The study area has a coastal location and is bounded to the north by a military aerodrome. There is an area of open grassland, approximately 300 metres wide, between the study area and the runway of the aerodrome.

Between the aerodrome and the study area is a laneway known as Cock Lane which is in poor repair and runs from the N1 Roadway to the coast, to the site of a former quarry. This quarry is now used for stock car racing and military training purposes. There are three residential units located along Cock Lane. To the east is the Belfast to Dublin railway line, which forms a strong visual edge along the eastern boundary of the study area. Located to the east of the railway line is the former quarry and to the south of the quarry there is a narrow strip of agricultural land.

To the south of the study area there is Station Road which stretches from the Balbriggan Road ( N1) eastwards to the railway station and the coast. There are 4 residential units located along Station Road.

To the west, between the Balbriggan Road (N1) and the study area there are a number of fields in agricultural production. Located adjacent to the Balbriggan Road are four residential units. Further to the west, beyond the N1 Roadway, there is a mixture of residential and agricultural land-uses, with the



## **2.0 Proposed Development**

The proposed scheme consists of the construction of an 'Above Ground Installation' for An Bord Gais Eireann.

This installation will include the following components: -

- Gas filter system
- Gas heater system ( water bath heaters )
- Pressure control valves
- Specialised pipeline inspection system ( pig traps )
- Control building
- Station by-pass
- Car parking facilities, access roads, site lighting
- Security fencing
- Metering system

The tallest structures on site will be the three water bath heaters (gas heaters) which will be parallel to each other and have a height of approximately 8.5 m.

These will consist of three tanks approximately 13m long, 3m in diameter and 5m in height with a funnel extruding from each to a height of approximately 8.5m over ground level.

The control building will be approximately 15.5m long, 7.5m wide and 4.6m high.

The top of the overground pipework on site will be approximately 1.8 m over ground level.

Car parking will be provided for 10 no. car park spaces located in the south-east corner of the site.

Permanent access to the proposed development will be provided along an access road taken off Station Road to the south of the study area.



**Temporary Impact**

*Impact lasting for one year or less*

**Short Term Impact**

*Impact lasting for one to seven years*

**Medium Term Impact**

*Impact lasting for seven to twenty years*

**Long Term Impact**

*Impact lasting twenty to fifty years*

**Permanent impact**

*Impact lasting over fifty years*

**3.1 Impact - Construction Phase**

During the construction stage the development will have a significant and negative impact. This impact will be a temporary.

The visual impact will be caused by the following elements associated with construction work :-

- Dust
- Construction traffic
- Site huts
- Site security hoarding / fencing

**3.2 Impact - Operation Phase**

The impact of the development on the landscape will be slight and neutral.



Pinus sylvestris	Scots pine
Quercus petraea	Penunculate Oak
Quercus robur	Sessile Oak

- The reinforcing of the existing hedgerow planting around the site with additional woodland planting where necessary

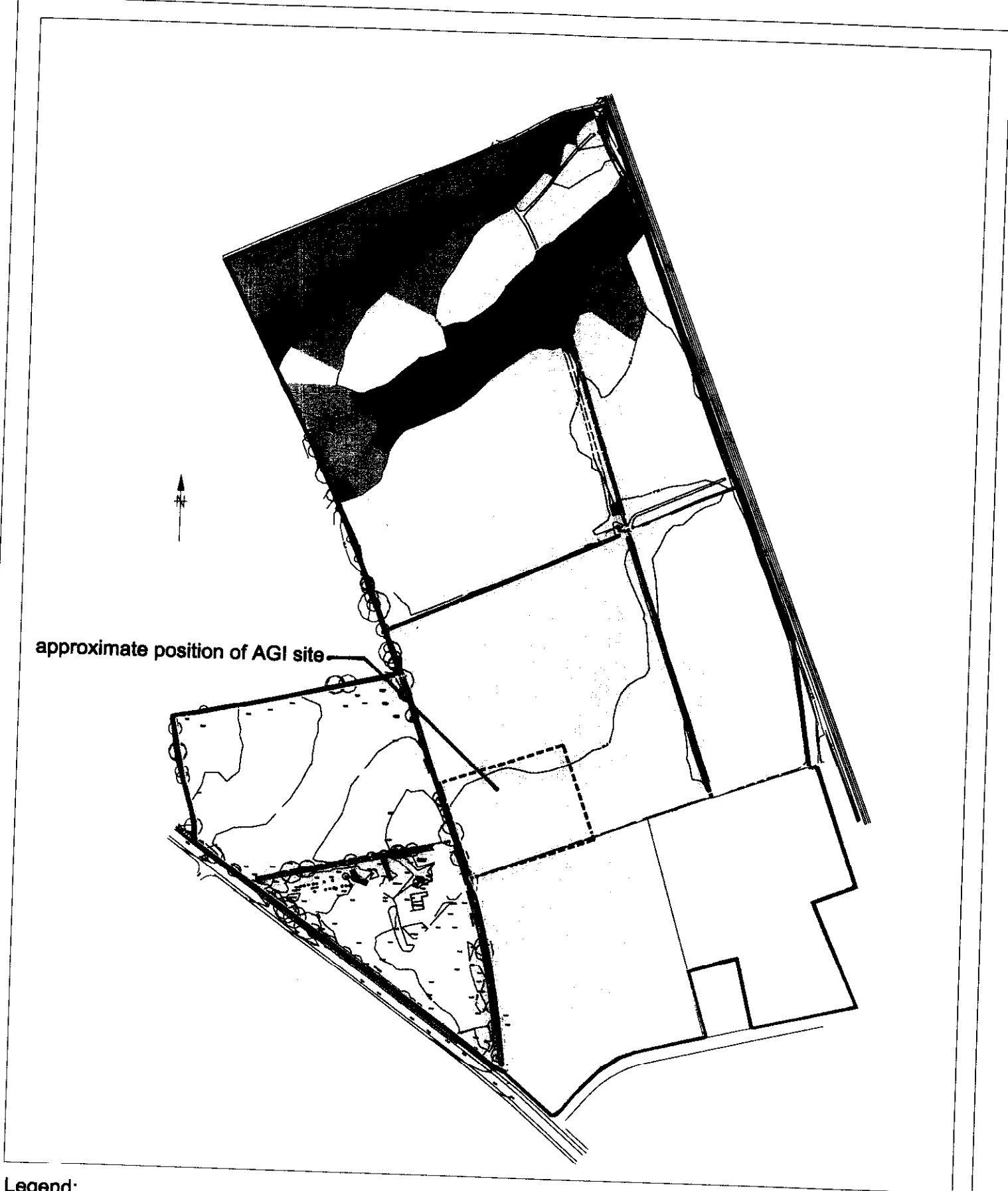
## **5.0 Summary**

The relatively low structures on site, their location and the proposed screen planting around the site will render views into the site visually insignificant.

The location of the site is in an area not frequented regularly by the public neither is it located in a designated area.

Therefore the proposed development will not have a significant visual impact on the landscape or on the amenity value of the land.





Legend:

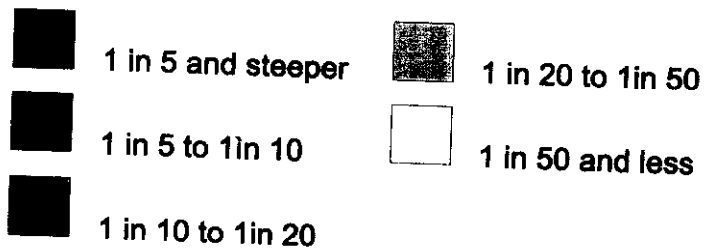
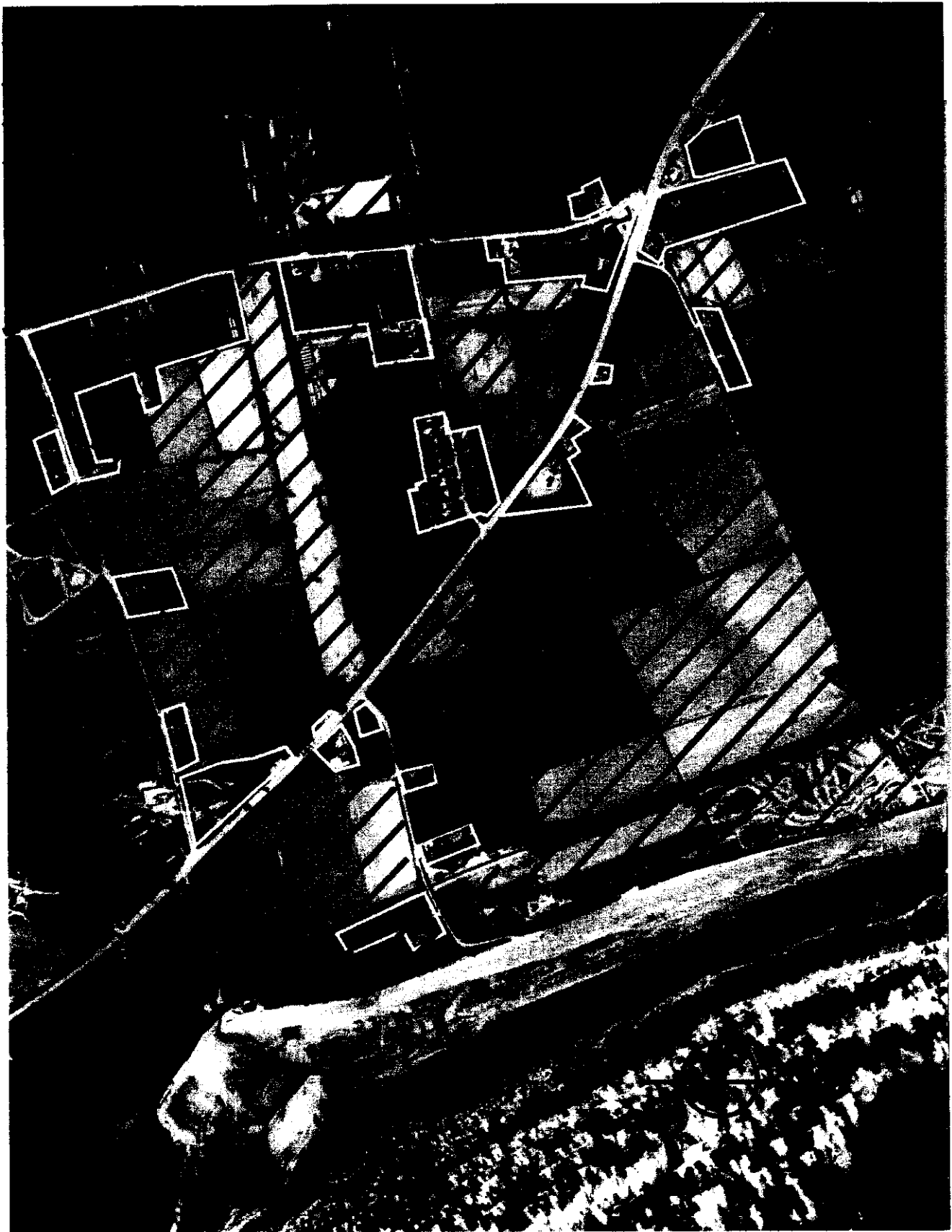


FIG. 2 SLOPE MAP





Legend:



Institutional



Agriculture



Military zone

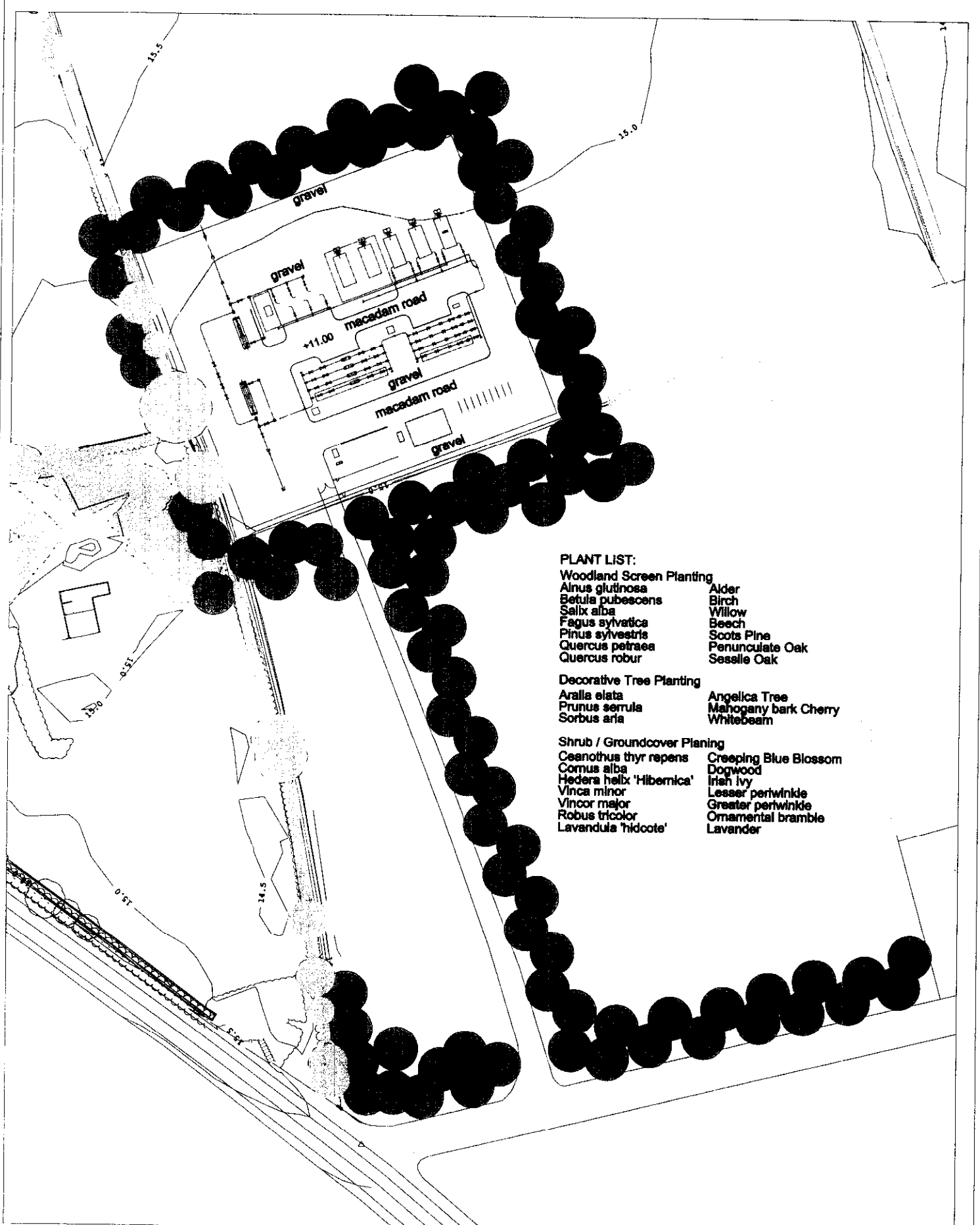


Study area

Residential

Fig.4 LAND USE MAP





#### PLANT LIST:

##### Woodland Screen Planting

<i>Ainus glutinosa</i>	Alder
<i>Betula pubescens</i>	Birch
<i>Salix alba</i>	Willow
<i>Fagus sylvatica</i>	Beech
<i>Pinus sylvestris</i>	Scots Pine
<i>Quercus petraea</i>	Penunculate Oak
<i>Quercus robur</i>	Sessile Oak

##### Decorative Tree Planting

<i>Aralia elata</i>	Angelica Tree
<i>Prunus serrula</i>	Mahogany bark Cherry
<i>Sorbus aria</i>	Whitebeam

##### Shrub / Groundcover Planting

<i>Ceanothus thyrs repens</i>	Creeping Blue Blossom
<i>Cornus alba</i>	Dogwood
<i>Hedera helix 'Hibernica'</i>	Irish Ivy
<i>Vinca minor</i>	Lesser periwinkle
<i>Vincor major</i>	Greater periwinkle
<i>Robus tricolor</i>	Ornamental bramble
<i>Lavandula 'hidcote'</i>	Lavender

#### Legend:

- |   |  |
|---|--|
|  grass                      |  existing hedge |
|  woodland / screen planting |  existing trees |

FIG. 6 LANDSCAPE MASTERPLAN





View looking north east into site from the junction at the lane to the south and the Balbriggan Road



View into site looking north from the lane to the south  
**PLATE 2**



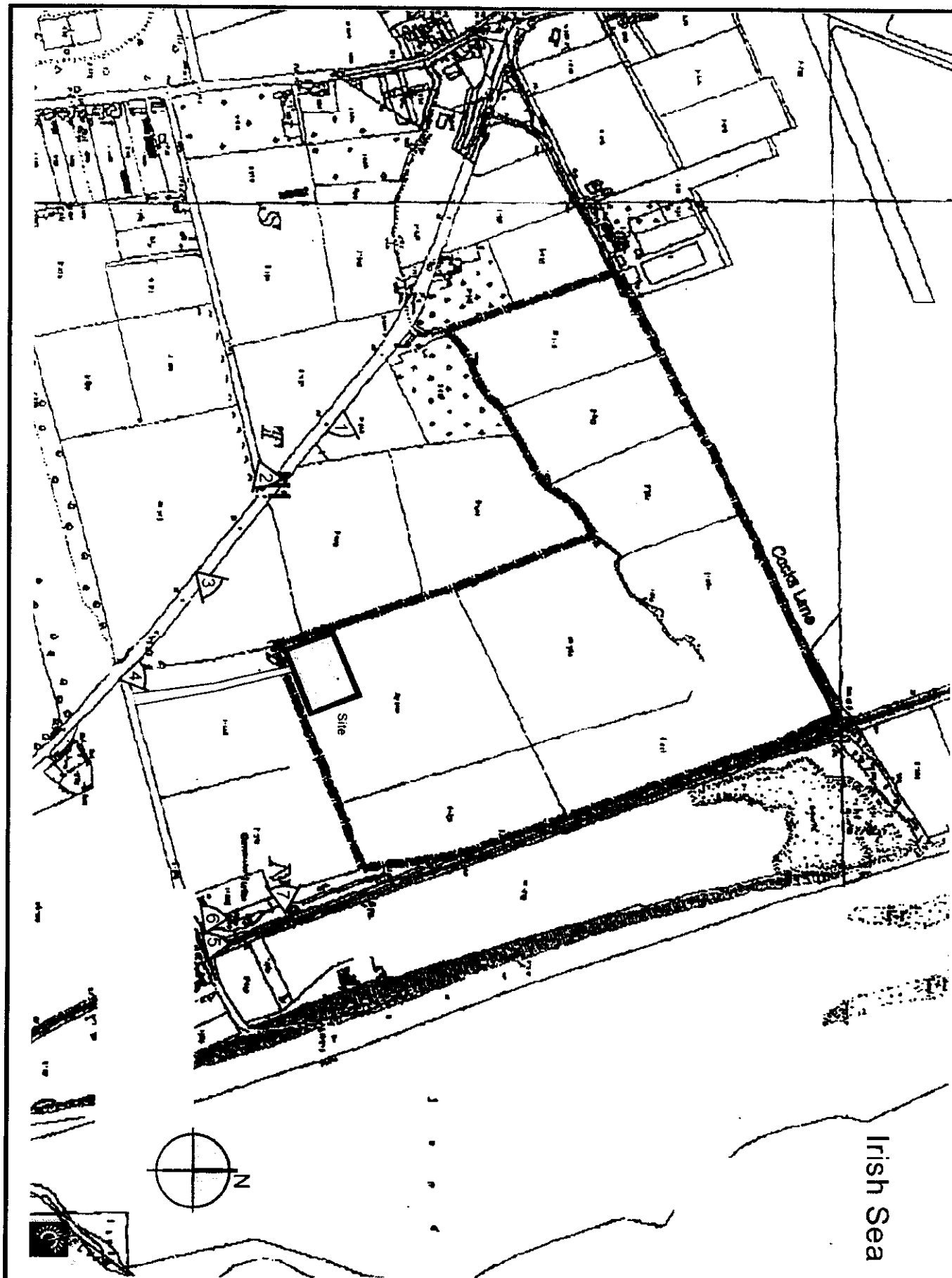
Project:

**Gormanston AGI**

Visual Assessment:

View Location Map

Date: 28 / 02 / 2001





Project:

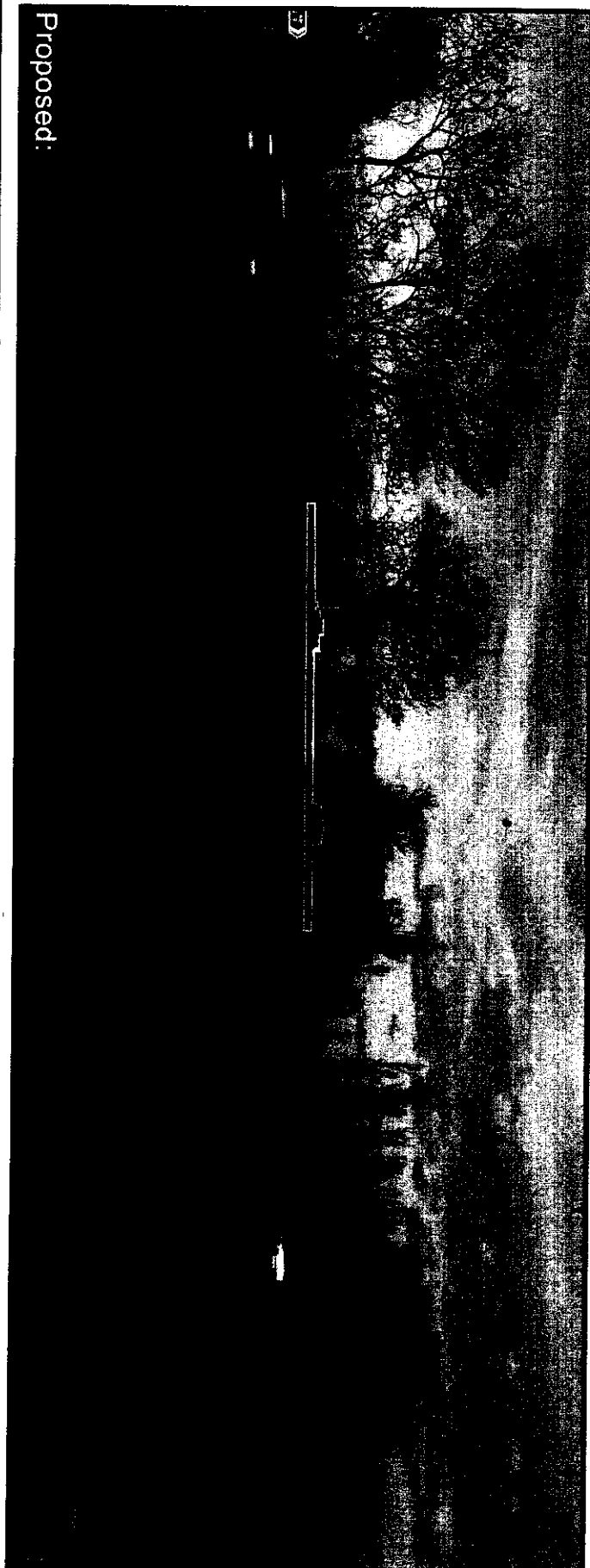
**Gormanston AGI**

Visual Assessment:

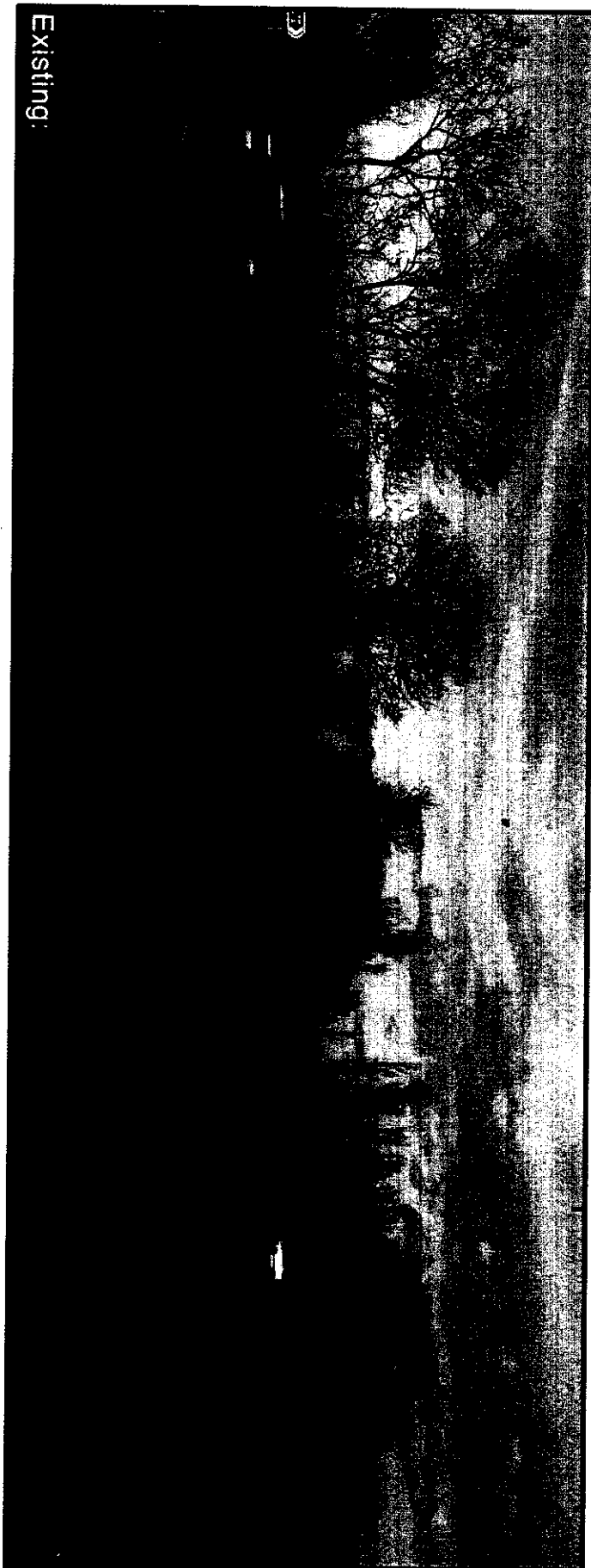
**View 2      Off The N1 Facing  
East**

Date: 27 / 02 / 2001

**Proposed:**



**Existing:**





Project:

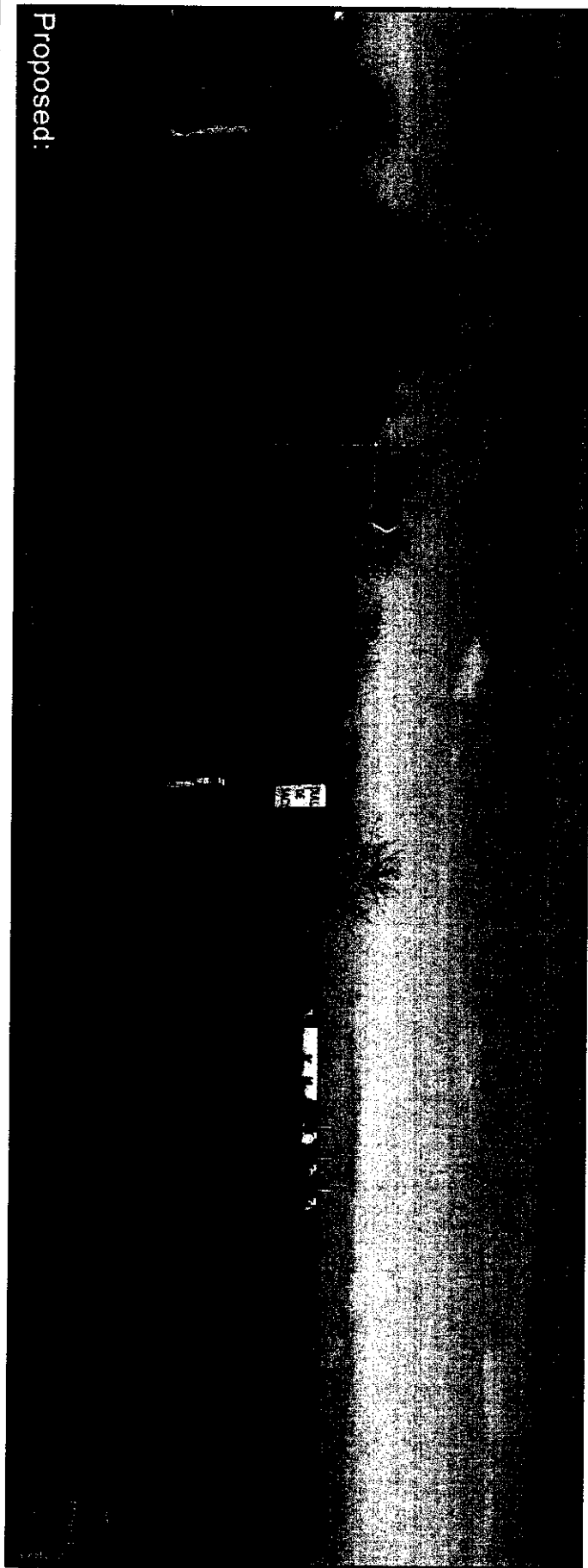
**Gormanston AGI**

Visual Assessment:

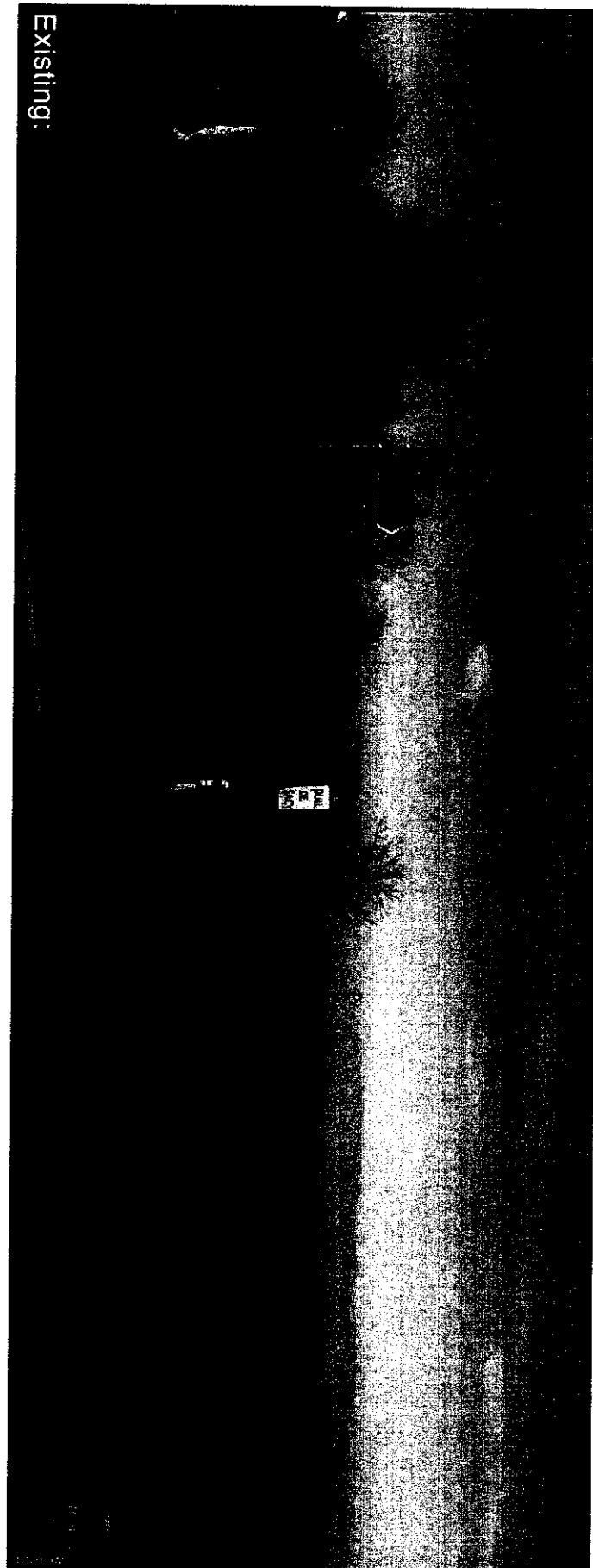
**View 4 From The N1 Facing  
North**

Date: 27 / 02 / 2001

**Proposed:**



**Existing:**





Project:

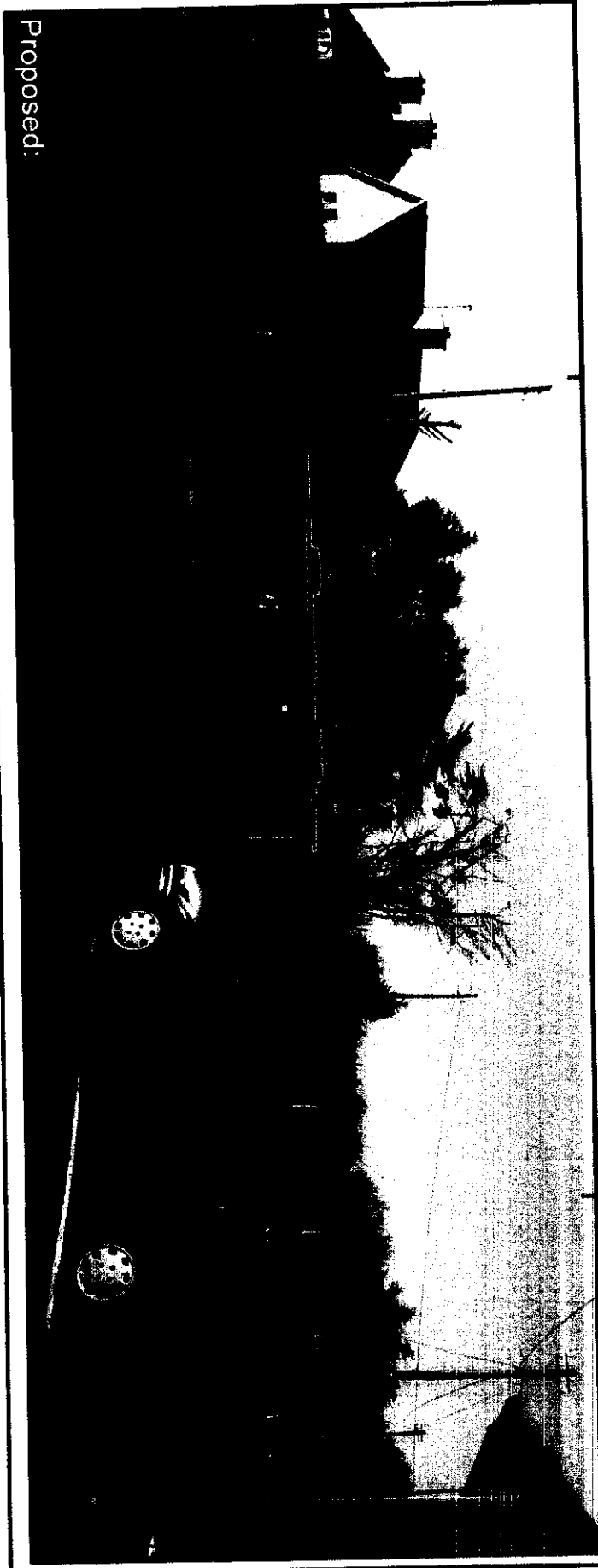
**Gormanston AGI**

Visual Assessment:

**View 6 From Gormanston Railway  
Station Facing West**

Date: 27 / 02 / 2001

**Proposed:**



**Existing:**





## **APPENDIX F**

### **ARCHAEOLOGY & CULTURAL HERITAGE**

**MARGARET GOWEN & CO. LTD.**



**Gormanston AGI  
Gormanston, Co. Meath**

**Archaeology EIS**

**Dr Annaba Kilfeather  
Margaret Gowen & Co. Ltd.**

**For  
MC O'Sullivan Consulting Engineers**

**February 10, 2001**



## 1 Introduction

- 1.1 This report is an assessment of the archaeological and historical importance of the proposed site (Figure 1) for the Gormanston AGI. The AGI (above ground installation) regulates the flow of gas between a proposed interconnector, which will come ashore from Scotland near here, and the proposed gas pipeline which will run from Gormanston, Co. Meath to Ballough, Co. Dublin. The purpose of the study was to evaluate the impact of the AGI project on the receiving archaeological environment and to propose measures to safeguard any monuments, features or finds of antiquity. It has been carried out on behalf of MC O'Sullivan Consulting Engineers, for *Bord Gáis Éireann*.
- 1.2 The study is based on the Sites and Monuments Record (SMR) of *Dúchas* (the Heritage Service of the Department of Arts, Culture, Gaeltacht and the Islands), several field reports, and a number of published and unpublished sources that are detailed at the end of the report.
- 1.3 The appendices deal with the Architectural Heritage Act and the National Monuments Act.



county between Castleknock and Drogheda (Smyth 1992). Richard Stanyhurst, in his *Description of Ireland*, refers to Fingal as an important part of the Pale, the region having a reputation for good agricultural practice. In the seventeenth century, according to the author of *A Geographical Description of the Kingdom of Ireland*, the name Fingal was associated with the more arable portion of the lands north of Dublin (Ball 1920).



#### 4 Archaeological Background

- 4.1 The earliest evidence for settlement in this area is in the form of flint scatters and raised beaches along the coastline of north County Dublin, which indicate that this area is among the earliest human settlements in Ireland. There is evidence for very early occupation at Sutton, where excavation revealed four pits and a hearth under a shell midden that dated to the Later Mesolithic period (c. 10,000–4000 BC; Mitchell 1956, 1972). Evidence for Neolithic activity has also been found at Sutton as well as further north on Lambay Island. At Lambay, recent investigations by Cooney (1993) have produced evidence for the use of local porphyry in the manufacture of polished stone axes.
- 4.2 The two passage tombs at Gormanston are probably the last survivors of a much larger cemetery, the rest of which has tumbled into the sea due to erosion of the cliffs. Two other monuments, an existing cairn and the site of another cairn, are recorded in the townland of Barnageeragh, near Balbriggan, which may also be of the passage-tomb tradition. These cairns may be related to the passage-tomb cemetery in the townland of Bremore (see Plate 4), two miles north of Balbriggan, with a now destroyed outlier at Knocknagin. Only the seaward Gormanston mound is marked on the first edition of the Ordnance Survey (1837) and neither is marked on the 1937 edition, although the larger inland tomb is marked on the twenty-five-inch map. These tombs were partly excavated in the mid-nineteenth century, and produced a stone basin, similar to those in the Boyne-valley passage tombs, cremated bone and a number of small bone objects (Herity 1973).
- 4.3 A boulder bearing possible passage-tomb art, which may also be related to the cemetery at Bremore, was discovered on the beach at Hampton Cove in 1991 (Buckley and Cumming 1992). It is possible that a passage tomb, of which this stone was a component, which was located on the top of the 20-m-high cliff during the Neolithic period (c. 3000–2500 BC), had been removed by the constant coastal erosion and had fallen into the sea. This coastal erosion is estimated at 12 mm per year (up to 70 m since the Neolithic period).
- 4.4 The area around Balbriggan has been the focus of an intensive collection of surface flints in the 1950s and 1960s (Stackpoole), and in the 1970s, which was further developed between 1990 and 1992 in a programme of systematic field walking and collection by Guinan. It is thought that, rather than coming from archaeological features, these flints were deposited on old ground surfaces, which have been buried through soil formation,



## **5 Stray Finds in the Vicinity of the AGI Site**

- 5.1 There is a limited number of artefacts in the National Museum of Ireland (NMI) from the area around the proposed AGI site, all of which are Neolithic in date.
- 5.2 The artefacts include a number of flint tools and flakes, many of which have turned up in plough soil from the area around the Gormanston and Knocknagin passage tombs. Flint scatters, as has been noted above, are relatively common in north County Dublin. A worked flint nodule (NMI ref. 1958:148) was discovered in the vicinity of the destroyed passage tomb at Knocknagin. At Gormanston itself, a worked white flint flake and four waste flakes (NMI ref. 1978:62–68) were discovered in the disturbed topsoil outside one of the passage-tomb kerbs.



## 7 Monuments Located near the Gormanston AGI

- 7.1 The monuments below are those recorded within the immediate vicinity of the AGI site at Gormanston, Co. Meath (Figure 3).

### Irishtown

ME028:018	Burial	Not indicated	31767	266819
-----------	--------	---------------	-------	--------

An Early Bronze Age crouched burial, which had been placed in a pit and covered with a large slab. Situated in the sand dunes c. 100m north of the AGI site.

### Gormanston

ME028:021	Passage Tomb	Not indicated	318190	266540
-----------	--------------	---------------	--------	--------

Fragmentary remains of a passage-tomb cairn, which was excavated in the nineteenth century. Situated at the edge of a sea cliff, c. 1000m southeast of the AGI.

### Gormanston

ME028:020	Passage Tomb	Not indicated	317900	266500
-----------	--------------	---------------	--------	--------

The denuded remains of a passage-tomb cairn (diam. 37 m; height c. 1 m), situated c. 150 m from the seashore and c. 1000m south of the AGI (Plate 1).

### Gormanston

ME028:019	Church (site)	'The Cloisters'	311675	266631
-----------	---------------	-----------------	--------	--------

Bence Jones (1979, 142) mentions that the church here had a Jansenist cross, and a date-stone (1687) over the door. It has since been destroyed. It was situated approximately 1500m southwest of the proposed AGI site. It is marked on the first edition OS six-inch map as 'The Chapel'.



## 9 Summary and Recommendations

- 9.1 There are no known monuments in the immediate vicinity of the proposed AGI site at Gormanston, Co. Meath. However, the presence nearby of two megalithic tombs, to the south, and a Bronze Age burial, to the north, indicates the importance of this area in prehistory, and indicates that the dunes and foreshore may produce further evidence of this period when soil and sand are stripped. The area has, however, been disturbed by the construction of the railway in the nineteenth century, and by the extraction of sand from a pit in the area now occupied by the cycle track, and it is unlikely that this area has extensive *in situ* remains.
- 9.2 Because of the presence of archaeological material in the general vicinity, however, archaeological monitoring is recommended during soil stripping and construction in the area.

Dr Annaba Kilfeather

February 10, 2001



## Appendix 1 National Monuments Legislation

All archaeological sites have the full protection of the national monuments legislation (Principal Act 1930; Amendments 1954, 1987 and 1994).

In the 1987 Amendment of Section 2 of the Principal Act (1930), the definition of a national monument is specified as:

any artificial or partly artificial building, structure or erection or group of such buildings, structures or erections,

any artificial cave, stone or natural product, whether forming part of the ground, that has been artificially carved, sculptured or worked upon or which (where it does not form part of the place where it is) appears to have been purposely put or arranged in position,

any, or any part of any, prehistoric or ancient

(i) tomb, grave or burial deposit, or

(ii) ritual, industrial or habitation site,

and

any place comprising the remains or traces of any such building, structure or erection, any cave, stone or natural product or any such tomb, grave, burial deposit or ritual, industrial or habitation site...

Under Section 14 of the Principal Act (1930):

It shall be unlawful...

to demolish or remove wholly or in part or to disfigure, deface, alter, or in any manner injure or interfere with any such national monument without or otherwise than in accordance with the consent hereinafter mentioned (a licence issued by the Office of Public Works National Monuments Branch),

or

to excavate, dig, plough or otherwise disturb the ground within, around, or in the proximity to any such national monument without or otherwise than in accordance...

Under Amendment to Section 23 of the Principal Act (1930),

A person who finds an archaeological object shall, within four days after the finding, make a report of it to a member of the Garda Síochána...or the Director of the National Museum...

The latter is of relevance to any finds made during a watching brief.

In the 1994 Amendment of Section 12 of the Principal Act (1930), all the sites and 'places' recorded by the Sites and Monuments Record of the Office of Public Works are provided with a new status in



## **Appendix 2 Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act, 1999**

This Act provides for the establishment of a national inventory of architectural heritage and historic monuments.

Section 1 of the Act defines “architectural heritage” as:

- (a) all structures and buildings together with their settings and attendant grounds, fixtures and fittings,
- (b) groups of such structures and buildings, and,
- (c) sites

which are of architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest

Section 2 of the Act states that the Minister (for Arts, Heritage, Gaeltacht and the Islands) shall establish the National Inventory of Architectural Heritage, determining its form and content, defining the categories of architectural heritage, and specifying to which category each entry belongs. The information contained within the inventory will be made available to planning authorities, having regard to the security and privacy of both property and persons involved.

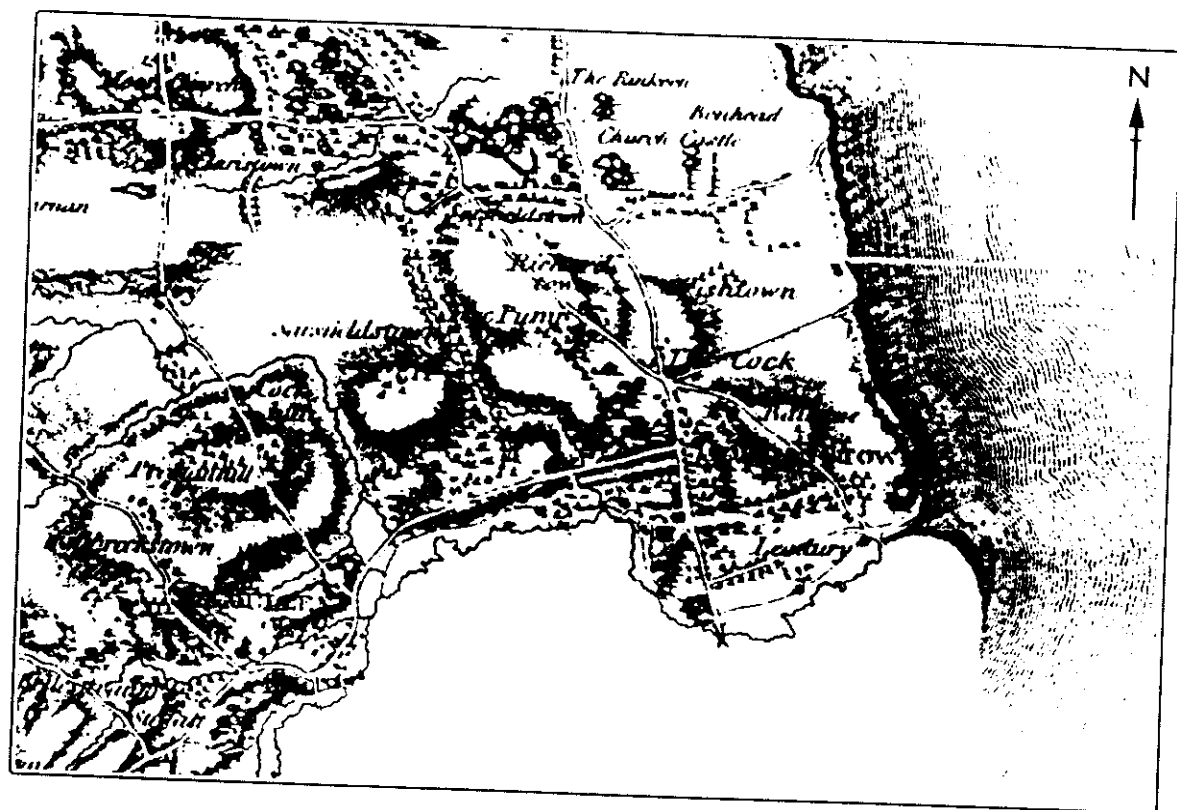
Section 3 of the Act states that the minister may appoint officers, who may in turn request access to premises listed in the inventory from the occupiers of these buildings. The officer is required to inform the occupier of the building why entry is necessary, and in the event of a refusal, can apply for a warrant to enter the premises.

Section 4 of the Act states that obstruction of an officer or a refusal to comply with requirements of entry will result in the owner or occupier being guilty of an offence.

Section 5 of the Act states that sanitary authorities who carry out works on a monument covered by this Act will as far as possible preserve the monument with the proviso that its condition is not a danger to any person or property, and that the sanitation authority will inform the Minister that the works have been carried out.

The provisions in the Act are in addition to and not a substitution for provisions of the National Monument Act (1930–1994), and the protection of monuments in the National Monuments Act is extended to the monuments covered by the Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act (1999).





Job Gormanston AGI, Co. Meath  
 Ref. 00136  
 Date 19.10.00  
 Client MC O'Sullivan & Co.  
 Scale Not applicable  
 Fig. 2 Larkin, 1817



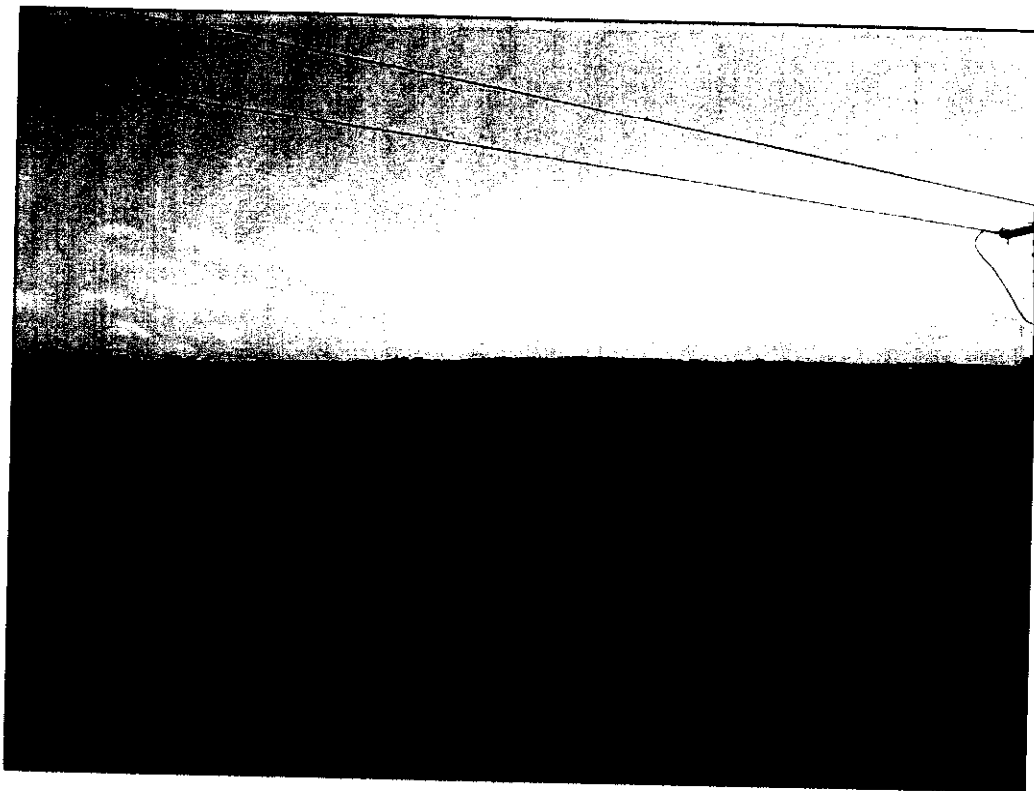


Plate 1 Gormanston passage tomb from the northeast

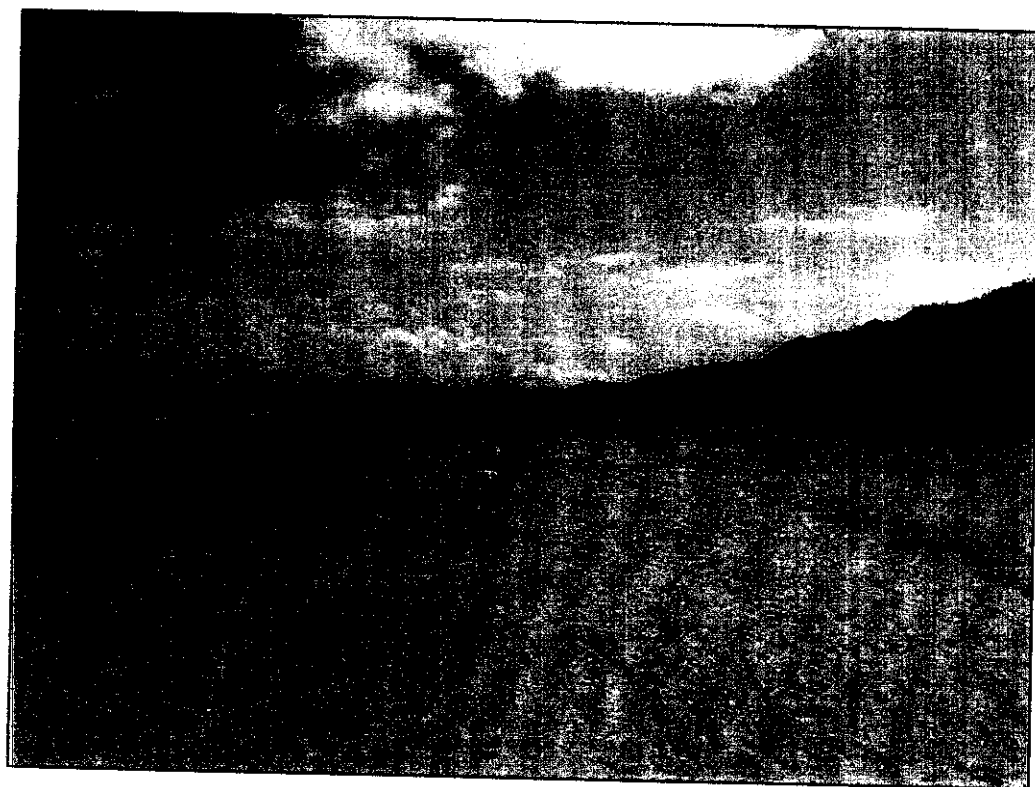


Plate 2 Gormanston landfall site looking south



**APPENDIX G**

**FLORA & FAUNA**

**ROGER GOODWILLIE & ASSOCIATES**



Proposed AGI station at  
Gormanston, Co Meath

**Flora & Fauna EIS**

Report prepared for  
M.C. O'Sullivan & Co.

January 2001

Roger Goodwillie & Associates  
Lavistown House  
Kilkenny  
Tel 056-65145



## 1. INTRODUCTION

The study area comprises agricultural land close to the coast in Irishtown and Gormanston and just inside the railway. It was examined in September 2000 in order to describe and evaluate its ecology and to assess the potential impacts of the AGI station.

The field method was a walkover survey corresponding to a Phase I habitat survey (JNCC 1991) but using nomenclature from a recent habitat classification for Ireland (Fossitt, 2000). Fieldwork at this season gives a good idea of habitat value and species content though it obviously does not include actual information on breeding birds. However previous experience of agricultural land in the area allows this to be inferred.

## 2. HABITATS

The AGI station and its road access route are situated in fields of pasture, grazed by cattle. They form part of a mixed farming area of tillage and pasture and adjoin tillage fields on one side and further grassland to the west. Hedges or fences surround the fields with the largest structure on the western side above a seasonal ditch. There is now no sign of the SW-NE stream marked on the O.S. maps to the north and it is presumably piped.

### 2.1 Improved agricultural grassland

The two fields are in pasture and have an almost uniform vegetation of *Lolium perenne* (ryegrass) and *Trifolium repens* (white clover) which has obviously been established fairly recently. There is a little *Rumex obtusifolius* (broad-leaved dock) and *Stellaria media* (chickweed) in places but otherwise no additional species away from the hedge banks on the perimeter.

### 2.2 Hedgerows

The hedges that remain lie along the western and southern boundaries of each field while a fence with some bushes separates the arable land to the east. The predominant woody species is *Crataegus monogyna* (hawthorn) with some *Fraxinus excelsior* (ash, suffering from wind exposure), *Prunus spinosa* (blackthorn), *Rosa canina* (wild rose) and *Rubus fruticosus* (bramble) on the western side. The base of the hedge is generally grazed so that the plants are dwarfed and often of weedy species. *Cirsium vulgare* (spear thistle), *C. arvense* (creeping thistle), *Elytrigia repens* (scutch grass), *Cerastium fontanum* (mouse-ear), *Stellaria media* (chickweed) and *Anthoxanthum odoratum* (sweet vernal grass) characterise these areas.



dunnoek and robin. On the adjacent tilled land a flock of linnets (80) were feeding on weed seeds within and around the crops. These and other finches would be present as long as the ground remains unploughed and would probably include chaffinch and yellowhammer later in the autumn. Skylark and meadow pipit also form larger flocks in winter and would feed sporadically here and on other farmland. Coastal regions are often important to migrating small birds and the bushy cover in the gravel pit (off-site) may be valuable to them.

The habitat is not suitable for waders which prefer damp grassy fields or mudflats. However a few lapwing and curlew may be found in winter especially after ploughing - which would also attract black-headed gulls.

In summer swallow and sand martin are likely to be present with occasional willowwarbler and whitethroat.

## **4. EVALUATION**

The site itself contains typical habitats for the Meath/Dublin border and has no features of ecological value. Adjacent habitats are more interesting but only in a local context.

The fauna is characteristic of this type of farmland and is therefore widespread in distribution.

### **4.1 Designations**

The site is not included in any designated area (Natural Heritage Area, Special Area of Conservation etc.) and is unlikely to be so in the future. Also it does not contain habitats or species listed by the EU Habitats or Birds Directives (92/43/EEC, 79/409/EEC) or by the Flora Protection Order 1999.

## **5. IMPACT OF DEVELOPMENT**

The AGI station will occupy a small area of the site in the largest grassland field with an access from the Station Road to the south.

It will have no real impact on the flora and fauna of the area though there will be local changes due to the fact that some intensive grassland will be removed and additional shrubs planted.

Long term changes to the flora and fauna will be dependant on the forms of land use in the surrounding area.



## **APPENDIX H**

### **GEOLOGY & HYDROGEOLOGY**

**B. J. MURPHY & ASSOCIATES (BMA)**



# ***B. J. Murphy & Associates***

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**Environmental Impact Study  
on the  
Geology and Hydrogeology**

**for the**

**Gormanston AGI**

**Produced by  
*B. J. Murphy & Associates***

**On behalf of  
Bord Gais Eireann**

**January 2001**

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STRWHALL BUSINESS PARK,  
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## EXECUTIVE SUMMARY

<b>General Project Description</b>	Bord Gáis Éireann (BGE) propose to construct an above ground installation (AGI) at Gormanston, Co. Meath, to which this EIS refers. In association to the AGI, BGE propose to construct a gas transmission pipeline between Ballough, Co. Dublin and Gormanston which will involve the construction of 12km's of 900mm diameter trench steel coated pipeline. This AGI/pipeline will facilitate the connection of the proposed interconnector pipeline between Ireland and Scotland to the existing Irish Gas Transmission network.
<b>Site Location/Description and Current Site Status</b>	The site for the proposed AGI is located approximately 1km east of Gormanston and 300m from the coast. The site is currently used as agricultural land.
<b>Geology</b>	The geology at the proposed site comprises Clayey/silty Gravel, underlain by the Denhamstown Formation, which forms part of the Balbriggan Inlier. The thickness of the overburden at the site is likely to vary between 1-3m. Field observations show that the overburden material close to the site is derived from sandstones, siltstones and limestones.
<b>Hydrogeology</b>	The Denhamstown Formation is classed as a poor aquifer, generally unproductive (Pu). The site is located 300m from the coastline and therefore it is likely that groundwater in the deeper bedrock aquifer is brackish to saline and would have no resource potential for potable water supplies. Water levels within the deeper bedrock aquifer are likely to fluctuate slightly in response to tidal variations in sea level. It is likely that groundwater flows to the east across the site towards the sea. There may be perched water tables within the overburden due to the presence of the clay and silt in the gravel deposits. It is unlikely that minor perched water sources would be suitable or viable potable water abstraction resources. There is a locally important sand and gravel aquifer to the north of the site.
<b>Potential Environmental Impacts – Construction stage</b>	<ul style="list-style-type: none"> <li>• Removal of topsoil</li> <li>• Site Traffic</li> <li>• Site Compound</li> <li>• Trench Collapse</li> <li>• Hydrocarbon spills and leaks</li> <li>• Excavation de-watering</li> </ul>
<b>Potential Environmental Impacts – Operation stage</b>	<ul style="list-style-type: none"> <li>• Hydrocarbon or chemical spills and leaks</li> </ul>
<b>Proposed Mitigation Measures – Construction Phase</b>	<ul style="list-style-type: none"> <li>• Landscaping and seeded of disturbed ground</li> <li>• Trenches should be supported</li> <li>• Diesel should be stored in double skinned tanks.</li> <li>• Spill kits should be stored on site to deal with minor hydrocarbon spills and leaks.</li> <li>• Lubricating oils and hydraulic oils should be stored in suitable cabinets containing spill trays.</li> <li>• Pumped water should be discharged to a watercourse or the sea via a temporary pollution interceptor. Recharge pits could also be considered.</li> </ul>
<b>Proposed Mitigation Measures – Operation Phase</b>	<ul style="list-style-type: none"> <li>• Spill kits should be stored on site to deal with minor hydrocarbon spills and leaks.</li> <li>• Lubricating oils and hydraulic oils and chemicals should be stored in suitable cabinets containing spill trays.</li> </ul>



## Gormanston AGI

### Environmental Impact Study - Geology and Hydrogeology

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## 1. INTRODUCTION

### 1.1 General

Bord Gáis Éireann (BGÉ) propose to construct an above ground installation (AGI) at Gormanston, Co. Meath. In association to the AGI, BGÉ propose to construct a gas transmission pipeline between Ballough, Co. Dublin and Gormanston which will involve the construction of 12km of 900mm diameter trench steel coated pipeline. This AGI/pipeline will facilitate the connection of the proposed interconnector pipeline between Ireland and Scotland to the existing Irish Gas Transmission network.

B.J.Murphy and Associates (BMA) was commissioned by M. C. O'Sullivan & Co. Ltd (MCOS), Consulting Engineers to BGÉ to carry out an EIS on the geology and hydrogeology of the proposed site for the AGI to which this report refers.

The EIS's for the two pipelines, re. Gormanston to Ballough and the interconnector pipeline are contained in separate reports.

### 1.2 Scope of Work

This report has been compiled by collating published information, and assessing recent investigations carried out on the geology and hydrogeology at the proposed site for the AGI. The topography, soil and groundwater conditions within the study area have been summarised. The EIS for the Ballough to Gormanston pipeline has been addressed in a separate report (BMA (k), 2000).

The impact that the proposed development will have on the geology and hydrology during the construction and operational phases of the project is discussed. Vulnerable areas likely to be affected have been initially identified. Measures to limit detrimental effects to the soil and water environment at the site for the construction phase and the operation phase of the AGI are recommended.



## **2. SOURCES OF INFORMATION**

### **2.1 General**

The following sources of information has been used for this report:

- Route Maps: Ballough to Gormanston Drawings No.s: BGE/80/50//R/01 to 18 Rev 01, (MCOS, September 2000)
- Route Maps: Gormanston AGI, Drawing No: RC348, (MCOS September 2000)
- Route Maps: Gormanston AGI, Drawing No's: 2514-a, 2514-b, 2514-c, 2514-d, (MCOS September 2000)
- Chevron/GSI 1:100,000 scale Bedrock Geological Maps
- GSI 1:10560 scale Fieldsheet Maps
- O S 1:10560 scale Maps
- EPA 'The Quality of Drinking Water in Ireland – 1998'
- GSI Groundwater Protection Scheme for County Meath

### **2.2 Preliminary Site Investigation**

The Preliminary Site Assessment Study was carried out as a desk and field study and consisted of:

- Desk study
- Geomorphological survey, from the interpretation of aerial photographs
- Site walkover survey



saline and would have no resource potential for potable water supplies. Water levels within the deeper bedrock aquifer are likely to fluctuate slightly in response to tidal variations in sea level. It is likely that groundwater flows to the east across the site towards the sea.

The overburden at the site is likely to be shallow and is known to consist of sub-rounded clayey/silty gravel with some cobbles. There may be perched water tables within the overburden due to the presence of the clay and silt in the gravel deposits. It is unlikely that small perched water sources would be suitable or viable potable water abstraction resources.

Due to the shallow overburden cover and the high permeability of the gravel deposits the groundwater vulnerability for the area is classed as high to extreme.

There is a locally important sand and gravel aquifer to the north of the site. It is unlikely that activity on site during the construction phase or operation phase will have any effect on this locally important aquifer.



prevent possible impacts to the soil and water environment should be implemented as outlined in Section 5.2.

Diesel and others hydrocarbons are likely to be stored on site during the construction phase for construction plant. Mitigation measures to prevent hydrocarbon spills and leaks, and possible contamination of the soil and groundwater, should be implemented as outlined in section 5.2.

#### **4.2.2 Operation Phase**

Activity on site during the operation phase is unlikely to have any effect on the quantity of groundwater resources at the site.

The bedrock geology at the site is unlikely to be affected during the operation phase of the AGI.

If hydrocarbons or any other chemicals are used during maintenance of the AGI then mitigation measures to prevent hydrocarbon spills and leaks, and possible contamination of the soil and groundwater environment, should be implemented as outlined in section 5.2.



	<p>during the construction phase of the project should be reported and investigated. Remediation of major diesel spills should be designed by experienced consultants and completed by suitably experienced contractors.</p> <p>Lubricating oils and hydraulic oils are likely to be stored on site during the construction phase. These materials should be stored in cabinets containing spill trays to prevent direct migration to the soil and water environment if minor spills/leaks occur.</p>
Excavation de-watering during the construction phase	<p>If de-watering of trenches is required during the construction phase, then pumped water should be discharged to a watercourse or the sea via a temporary pollution interceptor. A recharge pit could also be used to allow pumped water to percolate back into the aquifer. The recharge pit would have to be located down gradient of the proposed AGI to prevent recirculation of pumped water. If major hydrocarbon or diesel spills are reported then de-watering of excavations on site should cease until remediation is complete.</p>
Hydrocarbon or chemical spills or leaks during operation phase	<p>If a permanent store of diesel is required on site then it should be stored in suitable double skinned diesel tank. Spill kits should be stored permanently on site to clean up minor spills of diesel.</p> <p>If Lubricating oils or hydraulic oils or chemicals are required to be stored on site during the operation phase then they should be stored in suitable cabinets containing spill trays. The concrete floor of the AGI should prevent any direct migration of hydrocarbon or chemical spills to the soil or water environment.</p>

**Table 5.1 Potential Impacts and proposed mitigation measures.**



## REFERENCES

- BMA, 2000 (j), Environmental Impact Statement – Gas Pipeline to the West, Ballough to Goatisland.
- BMA, 2000 (k), Environmental Impact Statement – Gas Pipeline, Ballough to Gormanston.
- EPA, 1995, Advice Notes on Current Practice (in the preparation of Environmental Impact Statements), Wexford.
- EPA, 1996, Draft Guidelines on the Information to be Contained in Environmental Impact Statements, Wexford.
- EPA, 1999, The Quality of Drinking Water in Ireland; A Report for the year 1998 with a review of the period 1996 – 1998.
- GSI, 1999, Bedrock Map Series, Scale 1:100,000, Sheet 17, Dublin
- Chevron/GSI, 1992, Bedrock Map Series, Scale 1:100,000, Sheet 16, Meath.
- GSI, 1996, Groundwater Protection Scheme for County Meath, Dublin



## **Appendix A - Maps**







## 6.0 CONCLUSIONS

- The geomorphology of the proposed AGI site is gently sloping and well drained.
- The overburden cover consists of clayey/silty gravel, and is likely to be 2-3m thick.
- The site is underlain by the Denhamstown Formation. This consists of greywackes, siltstones and sandstones.
- The water table is likely to be 2-3m below existing ground level. Some perched water tables could exist in the overburden due to the clayey nature of the gravel.
- The Denhamstown Formation is categorised as a poor – generally unproductive aquifer. Due to the shallow overburden cover and the high permeability of the gravel deposits the groundwater vulnerability classification for the site is high to extreme.
- Possible impacts on the geology and hydrogeology during the construction phase and the operation phase of the AGI are outlined in Chapter 4 and proposed mitigation measures to are summarised in Table 5.1.



## 5. MITIGATION MEASURES

### 5.1 General

Potential effects on the soil and water environments due to the construction and operation of the proposed AGI at Gormanston have been identified in Chapter 4. This Chapter outlines mitigation measures that should be implemented during the construction phase and the operation phase to reduce impacts on the soil and water environment at the site.

### 5.2 Summary of Mitigation Measures

Table 5.1 outlines the potential effects on the soil and water environment due to the proposed construction of the AGI at Gormanston. Table 5.1 also details measures that could be taken to mitigate against these potential effects:

Potential effects to the Soil and Water Environment	Proposed Mitigation Measures
Removal of topsoil	The topsoil strip should cover as small an area as possible. Topsoil should be stored on site and used to landscape disturbed ground after construction of the AGI is complete. Landscape ground should be seeded.
Site traffic	Site traffic should be restricted to temporary roads or solid ground to prevent excessive rutting and disturbance of the soil. Areas disturbed by site traffic should be landscaped and seeded after the construction phase.
Site compound	The site compound should be located on solid ground or on temporary rolled fill. Areas disturbed by site compound should be landscaped and seeded after the construction phase.
Trench Collapse	Trenches should be supported to prevent collapse and ground failure.
Hydrocarbon spills or leaks during construction phase	Diesel should be stored in suitable double skinned diesel tanks. Spill kits should be stored on site to clean up minor spills of diesel. Any major diesel spills noted



## **4. IMPACT OF PROJECT ON GEOLOGY AND HYDROGEOLOGY**

### **4.1 General**

The impact that the proposed development will have on the geological and hydrological environment during the construction and operational phases of the project depends to a large extent on the design and on the construction methods chosen.

It is understood that the proposed AGI site will involve some cut and fill operations with a finished ground level of 11m OD. The buried pipeline approaching and leaving the AGI will involve the construction of trenches, typically 2 to 3m deep. A minimum cover 1.2m backfill to the pipeline will be required.

### **4.2 Impacts on Geology and Hydrogeology**

#### **4.2.1 Construction Phase**

During construction of the AGI the topsoil at the site is likely to be excavated and stockpiled and the site will be levelled. A layer of drainage stone is likely to be placed, before the pad foundation is cast, and the site is likely to be rolled and compacted to prevent settlement.

Trench excavations at the site should be supported to prevent unstable ground and soil collapse.

Ground that is likely to be disturbed outside the proposed AGI structure, by site traffic and storage compounds, should be landscaped and seeded to prevent any negative visual impact on the soil environment at the site.

Depending on the depth to bedrock the solid geology at the site is unlikely to be affected by the construction of the AGI.

Excavations at the site may intercept shallow groundwater. At this stage no groundwater observations have been made at the site and the amplitude of tidal fluctuations of the groundwater at the site are unknown. If de-watering is required then mitigation measures to



### **3.0 GEOLOGY AND HYDROGEOLOGY IN THE EXISTING ENVIRONMENT**

#### **3.1 General**

The geology and hydrogeology at the proposed AGI site has been summarised using all sources of information available at the time of writing this report.

#### **3.2 Summary of the Geology and Hydrogeology at the proposed AGI site**

The geomorphology of the site is gently sloping and well drained. The site is located 300m from the coastline. There is a 7-9m high cliff 300m east of the site between the site and the beach. The beach consists of sand dunes and sand and shingle deposits.

The OS 1:10,650 map for the area (Meath OS Sheet No. 28) indicates that there are a number of old disused shallow sand and gravel quarries in the area. Field investigations to the south of the site indicate that the overburden there is 2-3m thick and consists of rounded to sub-rounded clayey/silty gravel with some cobbles. The overburden cover at the site is likely to consist of similar rounded to sub-rounded clayey/silty gravel with occasional cobbles. The thickness of the overburden at the site is likely to vary between 1-3m but has not been confirmed by drilling. GSI (1:10,650) fieldsheet No: Meath 28/4a, indicates that the cliffs to the east of the site consist of limestone drift deposits and field observations in the area during the preliminary site investigation show that the overburden material close to the site was formed from a sandstone, siltstone and limestone genesis.

According to the Chevron/GSI geology map (Sheet No.13) of the area the site is underlain by pre-carboniferous metasedimentary and metavolcanic bedrock (Ref: Drawing 638a\_001, Appendix A). The geology of the area is shown in greater detail on the Groundwater Protection Scheme maps for Co. Meath (Map No.2E). This indicates that the site is underlain by the Denhamstown Formation, which consists of greywackes, sandstones and siltstones. The Denhamstown Formation forms part of the Ballbriggan Inlier.

The Denhamstown Formation is classed as a poor aquifer, generally unproductive (Pu) by the GSI Groundwater Protection Scheme for Co. Meath (GSI, 1996). The site is located 300m from the coastline and therefore it is likely that groundwater in the deeper bedrock aquifer is



### **1.3 Site Description**

The proposed AGI is to be located at Gormanston Co. Meath, approximately 1km east of Gormanston and 300m from the coastline as shown on Drawing 638a\_001 (Appendix A). The proposed site is bound to the east by the Dublin to Belfast railway line and to the north by Cock Lane.

### **1.4 Proposed Development**

The proposed AGI consists of structure 115m\*90m (10,350m<sup>2</sup>) in area. The structure will be mounted on pad foundations underlain by bedrock or back filled structural material to the Engineers specification. External pipelines will require a minimum ground clearance of 1.2m below existing ground level.



## 6. MITIGATION

New planting of woody species in the vicinity will mirror those found in the northern hedge and concentrate on native types able to withstand the exposure. Blackthorn, gorse and hawthorn are probably the most suitable.

### References

Fossitt, J.A. 2000 *A guide to habitats in Ireland*. Heritage Council.

JNCC (Joint Nature Conservation Committee) 1990 *Handbook for Phase I habitat survey - a technique for environmental audit*. Peterborough.

### NON-TECHNICAL SUMMARY

The Gormanston site consists of pastures occurring in a mixed grassland and arable area. It contains flora and fauna typical of the Dublin/Meath border with no features of value in the county context.

The development in construction and operation will not have a significant effect on flora and fauna and the subsequent management of the site will largely control this.



## 2.3 Ditch

All ditches are seasonal but that down the western side of the site has a few hollows that are wet enough for aquatic plants to grow, especially *Lemna minor* (duckweed) and *Nasturtium officinale* (watercress). Otherwise it is filled by *Urtica dioica* (nettle), *Ranunculus repens* (creeping buttercup) and *Rumex crispus* (curled dock) beneath the trailing stems of brambles.

## 2.4 Adjacent habitats

The disused gravel pit to the north-east is the most distinctive feature locally. It has a considerable amount of bare ground and is used by stock cars (Moto Park). An open vegetation of grasses and arable weeds occurs in which. *Reseda luteola* (dyer's rocket), *Senecio jacobaea* (ragwort), *Tussilago farfara* (coltsfoot) and *Tripleurospermum inodorum* (scentless mayweed) are conspicuous. There is also a little *Avenula pubescens* (hairy oat), *Echium vulgare* (viper's bugloss) and *Blackstonia perfoliata* (yellow wort). The north-western corner carries a heavy growth of *Sambucus nigra* (elder) and *Prunus spinosa* (blackthorn) forming a wind-moulded bank.

A small triangular site just inside the railway is based on similar well-drained material. It is covered by short grassland closely grazed by rabbits and illustrates a more natural and stable type of coastal vegetation. A rich variety of herbaceous plants grow at the base of the hedge here including *Ononis repens* (rest harrow). The hedge itself (along Cock Lane) is varied in composition, adding several woody and herbaceous species to those in the hedges around the site. *Malus cf sylvestris* (crab apple), *Prunus domestica* (wild damson), *Ulex europaeus* (gorse) and *Ligustrum vulgare* (privet) make up a compact structure which is clipped occasionally.

Vegetable crops are grown in the surrounding arable fields - broccoli, potatoes, cabbage and parsnips. Each crop has a particular selection of weed species produced by the growing methods and timing. *Urtica urens* (small nettle) is abundant and there is considerable variety in the *Lamium* (deadnettle) species, with *L.purpureum*, *L.hybridum* and *L.mollucellifolium*.

## 3. FAUNA

The chief mammals in the area are rabbit and brown rat, both of which were seen. There are also likely to be field mouse with visiting fox and hare. No signs of badger were encountered and they are unlikely to occur since tillage crops are not widely used for feeding. The site does not offer good habitat either for bats because the hedges are low and in places discontinuous.

The birds on site in autumn consisted of a few meadow pipits (3), skylark (2), goldfinch (2), magpie and woodpigeon. Hedge species along the western side were blackbird,







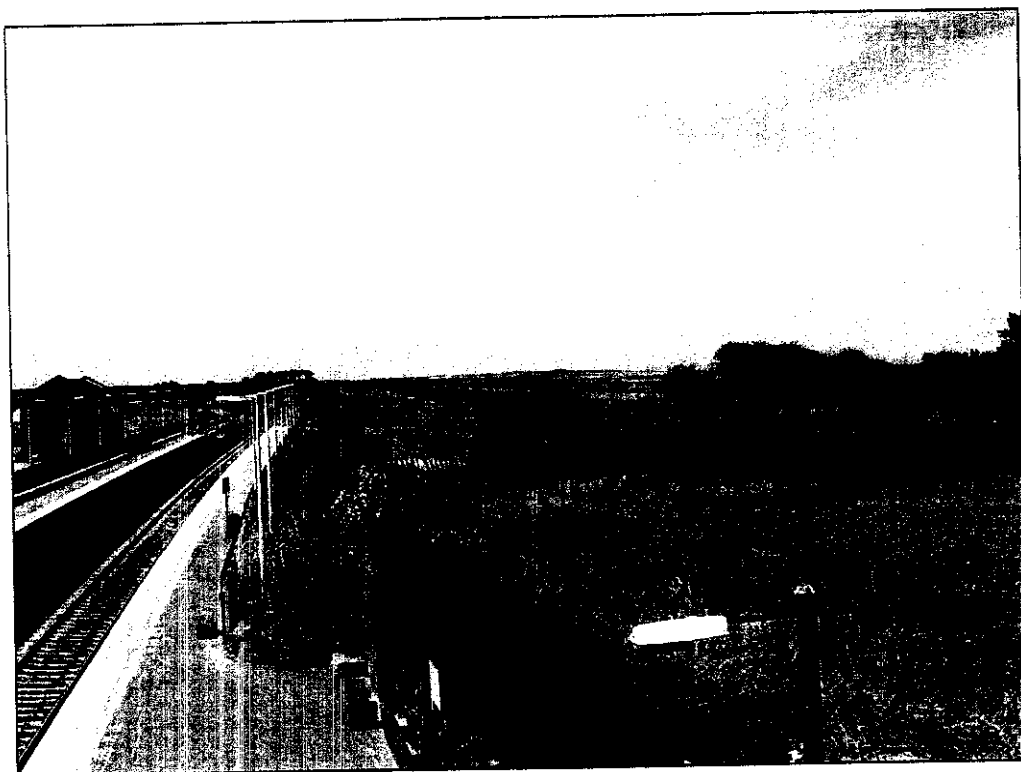
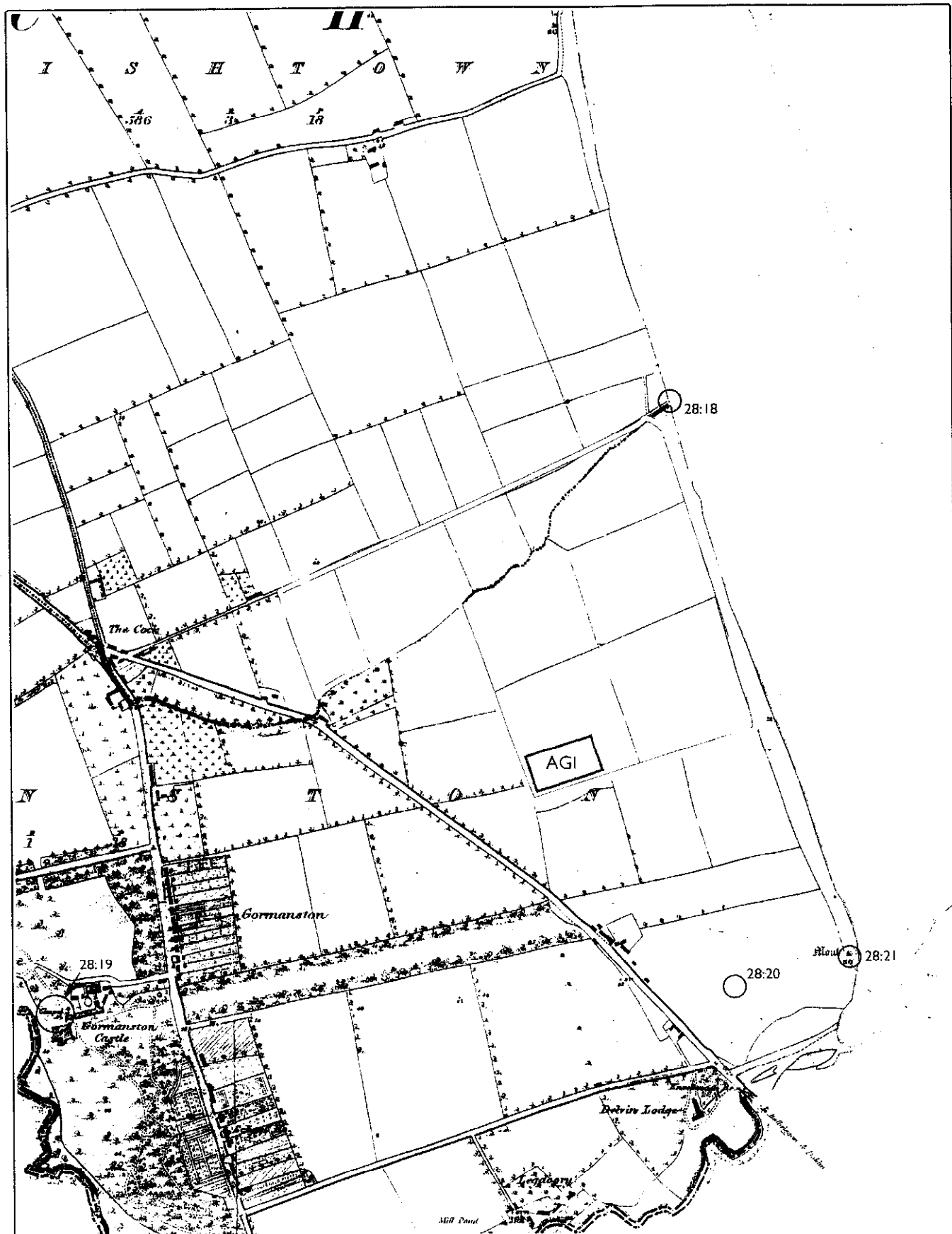


Plate 3 Gormanston landfall site looking north from the railway bridge



Plate 4 Gormanston beach looking south towards the Bremore passage tombs

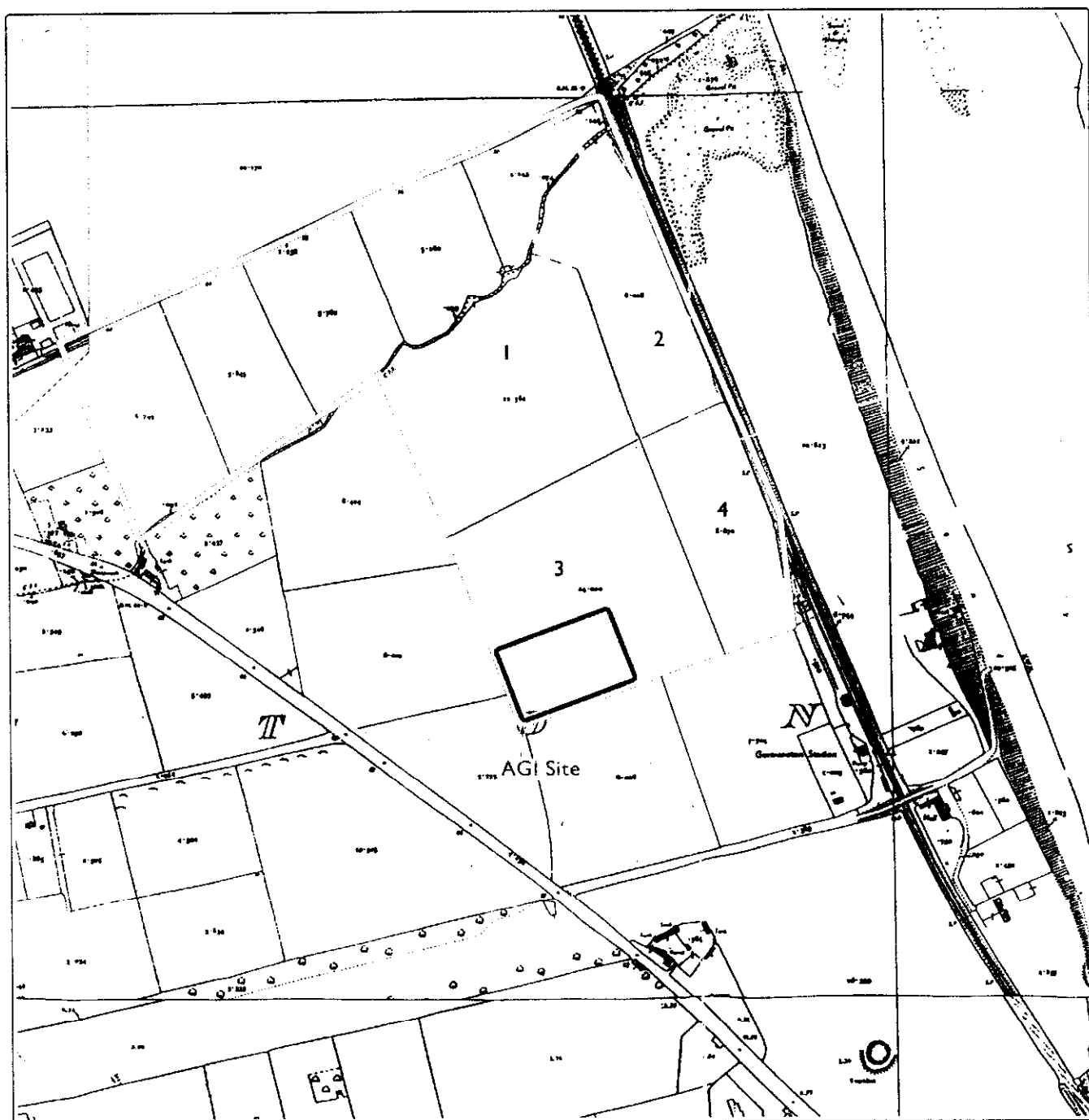





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Job Gormanston AGI, Co. Meath  
 Ref. 00136  
 Date 19.10.00  
 Client MC O'Sullivan & Co.  
 Scale Not applicable  
 Fig. 3 SMR sites





**Job** Gormanston AGI, Co. Meath  
**Ref.** 00136  
**Date** 19.10.00  
**Client** MC O'Sullivan & Co.  
**Scale** Not applicable  
**Fig. 1** AGI site



law. This new status provides a level of protection to the listed sites that is equivalent to that accorded to 'registered' sites (Section 8(1), National Monuments Amendment Act 1954), as follows:

The Commissioners shall establish and maintain a record of monuments and places where they believe there are monuments and the record shall be comprised of a list of monuments and such places and a map or maps showing each monument and such place in respect of each county in the State.

The Commissioners shall cause to be exhibited in a prescribed manner in each county the list and map or maps of the county drawn up and publish in a prescribed manner information about when and where the lists and maps may be consulted.

In addition, when the owner or occupier (not being the Commissioners) of a monument or place which has been recorded, or any person proposes to carry out, or to cause or permit the carrying out of, any work at or in relation to such monument or place, he shall give notice in writing of his proposal to carry out the work to the Commissioners and shall not, except in the case of urgent necessity and with the consent of the Commissioners, commence the work for a period of two months after having given the notice.



## References

- Ball, F. E. (1920) *A History of the County Dublin*, Dublin
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- Smyth, W.J. (1992) 'Exploring the social and cultural topographies of sixteenth and seventeenth-century county Dublin' in *Dublin City and County: From Prehistory to Present*, ed. Aalen, F.H.A. and Whelan, K., Geography Publications, Dublin
- Stackpoole, G. (1963) 'The Larnians of Dublin', *Dublin Historical Record* xviii, 43



## 8 Field Report

- 8.1 The proposed AGI site is situated in Gormanston, Co. Meath, in the vicinity of the landfall to the northwest of Gormanston Station. The line will cross the high dunes that overlook the beach (Figure 1; Plates 2 and 4), crossing an area of scrubby pasture, part of which has been ploughed. The line crosses the railway line and into the four fields described below. The fields in the area are all level or gently undulating, bordered with natural hedgerows, and some have additional internal post and wire divisions. The AGI is situated in the southwestern corner of the site described below.
- 8.2 The site is directly to the north of one of the Gormanston passage tombs (Plate 1). The flatness of the terrain and the presence of high field boundaries, the railway bridge and mature trees mean that the Gormanston passage tomb is not visible from the AGI site, although the passage-tomb cemetery would have been clearly visible in a more open landscape, such as that which probably existed in prehistory.
- 8.3 The AGI site was visited on 20 July 2000, in bright, sunny conditions, by Annaba Kilfeather and Eileen Reilly. The dunes are steep and largely intact, except for one area, near where the pipeline was to cross, where it appears that the top had been bulldozed or otherwise disturbed. The area between the dune top and the railway line was densely overgrown in places, but consisted of a ploughed area, pasture, and the overgrown margins of the railway track (Plate 3).
- 8.4 Four fields between the N1 and the railway line, to the west of Gormanston Station were visited on 10 July 2000, in bright, blustery conditions, by Annaba Kilfeather and Eileen Reilly. The four fields in question were all in grass. The field adjacent to the large, northeastern field had been ploughed, and no flint flakes or other material were noted in the ploughed field. The large field to the southeast was grazed by cattle, and was completely flat and level. The field to the northwest was fallow, with long grass and weeds. The triangular field to the southwest was heavily overgrown, and the ground had been extensively disturbed. The foundations of a house were built and a windbreak of conifers had been planted, both probably within the last twenty years, but the field had since been abandoned.
- 8.5 No archaeological features were noted in this area, nor were any visible on the aerial photographs. The landowners were not aware of any archaeological material ever having turned up in the immediate area.



## 6 Townland Names

- 6.1 The townland names of this area are, as one might expect, largely dominated by names derived from the English language, although there are some names with Irish elements. Names have been largely translated rather than anglicised, indicating the presence of English speakers in the area when the names were taken down by the Ordnance Survey in the 1830s. Many townland names have been distorted over time, and the etymology of several of them is uncertain. Names such as Gormanston, Richardstown and Sarsfieldstown preserve personal names.
- 6.2 Most of the Irish names describe the topography of the area, although there are also references to land use and to buildings. Balscaddan, to the west of Balbriggan, may be a reference to herrings (*scaddáin*), possibly referring to the fishing tradition in the area. Knocknagin, immediately south of Gormanston on the Dublin side of the border, contains *cnoc*, or hill, but the rest of the word is somewhat obscure; it may be derived from *cnoc na gcon*, the hill of the hounds, although local folk etymology defines it as *cnoc na gcinn*, the hill of the heads.



and that this soil and the artefacts within it were turned over during ploughing. The artefacts collected from the surface are not associated with any known archaeological features. Other such material has been collected from along the coast between Sutton and Portmarnock by Mitchell (1990, 49) and Purcell (1999).

- 4.5 The Bronze Age (c. 2300 to 500 BC) is represented in this area by a burial found approximately 1 km north of the AGI site at Gormanston. This burial was simply placed in a pit in the dunes, although Bronze Age burials can also occur in mounds or barrows, or in other natural rises, such as drumlins or sandhills. There are several other Bronze Age or Iron Age (c. 500 BC to c. AD 500) burial monuments in north county Dublin, including a group on the hill at Kitchenstown and Knockbrack, which is encircled by what appears to be an Iron Age hillfort, probably post-dating the burial monuments.
- 4.6 A fulacht fiadh was identified near Balbriggan, at Barnageeragh, by Guinan, which suggests that the flint scatters in the area may represent a population that continued from the Neolithic into the Bronze Age. Fulachta fiadh are ancient cooking places that are usually dated to the Bronze Age. They consist of a trough, cut into damp or waterlogged ground, in which heated stones were used to boil water. The stones, when fire-cracked beyond use, were discarded and usually formed a kidney-shaped mound around the trough. The monuments are usually identified in the field by this characteristic mound, but sometimes, when ploughing has occurred, they are visible as spreads of burnt stone on the field's surface.
- 4.7 The area was somewhat sparsely settled in the Early Christian period. Ringforts, which are among the most common archaeological monuments in Ireland, are circular areas enclosed by a bank and an external ditch, which would have accommodated the extended family and their livestock. There are relatively few ringforts in Dublin and southeastern Meath, possibly due to the fact that they tend to favour south-facing slopes and the landscape here is quite flat. This, in turn, is reflected in the relative dearth of Early Christian ecclesiastical sites, although those that are in this part of the country, such as those at Finglas, Swords and Lusk, are important foundations. There was a church, which was at least seventeenth century in date (known as 'the Cloisters'), at Gormanston College, although it was demolished some time in the early 1980s. There is also a holy well at Tobersool, approximately 2 km southwest of the AGI site.



### 3 Cartographic Sources

- 3.1 John Rocque's map of the city and County of Dublin, published in 1756, shows north County Dublin much as it is today, that is, as a largely open, rural landscape, punctuated by low hills and small villages. His map has a rather odd error, however, as it appears to confuse the hill between the townlands of Dermotstown and Haystown, which he names Gormanston, showing a substantial village at the top of the hill.
- 3.2 Another settlement in the vicinity that has survived since the eighteenth century is Balcaddan, which Rocque also shows as a considerable village, with the church, unusually for Rocque, who rarely shows antiquities, marked as 'Church in Ruins', at the western end of the village. Knocknagin is also shown, although there does not appear to have been a bridge over the river at this point, with the furthest bridge downstream being that at Gormanston. Just over the river that forms the border with Meath, part of Gormanston Demesne is shown as having extensive formal gardens.
- 3.3 William Larkin's 1817 map of Meath (Figure 2) shows the Cock crossroads, which is also named as such on the Ordnance Survey maps. The map also shows the extensive formal planting and woodlands around Gormanston Castle. It also appears to show the tumulus at Gormanston.
- 3.4 The first edition Ordnance Survey six-inch map (Figure 3) shows the now largely collapsed passage tomb (marked 'Moat') on the edge of the cliffs at Gormanston, but, like the later OS six-inch map editions, it does not show the larger passage tomb in the field to the south of the proposed AGI. The field layout is virtually identical to that found today. The gardens around Gormanston are shown in some detail, and many houses appear to have had formal gardens, possibly as a result of the influence of the castle at the other side of the road.



## 2 Historical Background

- 2.1 The proposed AGI is situated to the north of the River Delvin, immediately to the north of north County Dublin, which is known as Fingal. According to Ball (1920), the name Fingal is used to denote that part of north County Dublin that was under direct Viking influence. In the ninth century, a colony of Ostmen, or Northmen, was established in Dublin, ultimately settling in the area lying to the north along the coast, which became known as *Fine Gall*, or the territory of the *gall*, or strangers. According to the poet John O'Dugan, Fingal came under the rule of Mac Gillamocholmog, who controlled the lands south of Dublin before the arrival of the Anglo-Normans in the late twelfth century. Before the battle of Clontarf, Brian Ború is said to have burned Fingal and the district of Howth. Some years later, during a raiding excursion into Fingal, the region is said to have been burned from Dublin to the River Delvin, the river that forms the border with County Meath at Gormanston (Ball 1920).
- 2.2 Viking rule and settlement influenced the region for over two hundred and fifty years, from the ninth to the twelfth century. Bradley suggests that Viking Dublin should be looked upon as part of what he terms the rurally settled area of the Dublin Scandinavians, rather than simply as a number of isolated trading settlements, strategically located along the coast (in Simms and Fagan 1992). The Vikings used Baldoyle as a harbour base, and the name would appear to be derived from *Baile Dubh Gaill*, a reference to the Danes, who were apparently darker-haired than the Norwegians. The early Viking settlement was located further inland than the present-day village, as the seashore was at a higher level than it is today (Hurley 1983).
- 2.3 From the twelfth century, the Anglo-Normans, whose priority on arrival was the accession of good agricultural land, imposed the manorial system of landholding, which they had developed in England and Wales, onto their new territory in Fingal. The majority of Anglo-Norman manors were on, or close to, rivers and, preferring established sites with an existing infrastructure, the new settlers also took over established ecclesiastical sites. Portmarnock was one such pre-Norman ecclesiastical site, which became a manorial village when taken over by the Anglo-Normans in the twelfth century. While not of ecclesiastical origin, Baldoyle also subsequently developed into a manorial village after the arrival of the Anglo-Normans.
- 2.4 Fingal emerged as a distinct cultural zone and its strategic importance to the new English-dominated city was exploited by Eoghan O'Neill, who, in 1641, burned and plundered the



## **Illustrations**

### **Figures**

- Figure 1    The area proposed for the AGI site at Gormanston, Co. Meath.
- Figure 2    Detail from Larkin's map of County Meath (1817)
- Figure 3    First edition OS six-inch map of Gormanston, showing the locations of SMR sites in the vicinity

### **Plates**

- Plate 1    Gormanston passage tomb, from the northeast
- Plate 2    Gormanston landfall site, looking south
- Plate 3    Gormanston AGI site, looking north from the railway bridge
- Plate 4    Gormanston beach, looking south towards the Bremore passage tombs



Project:

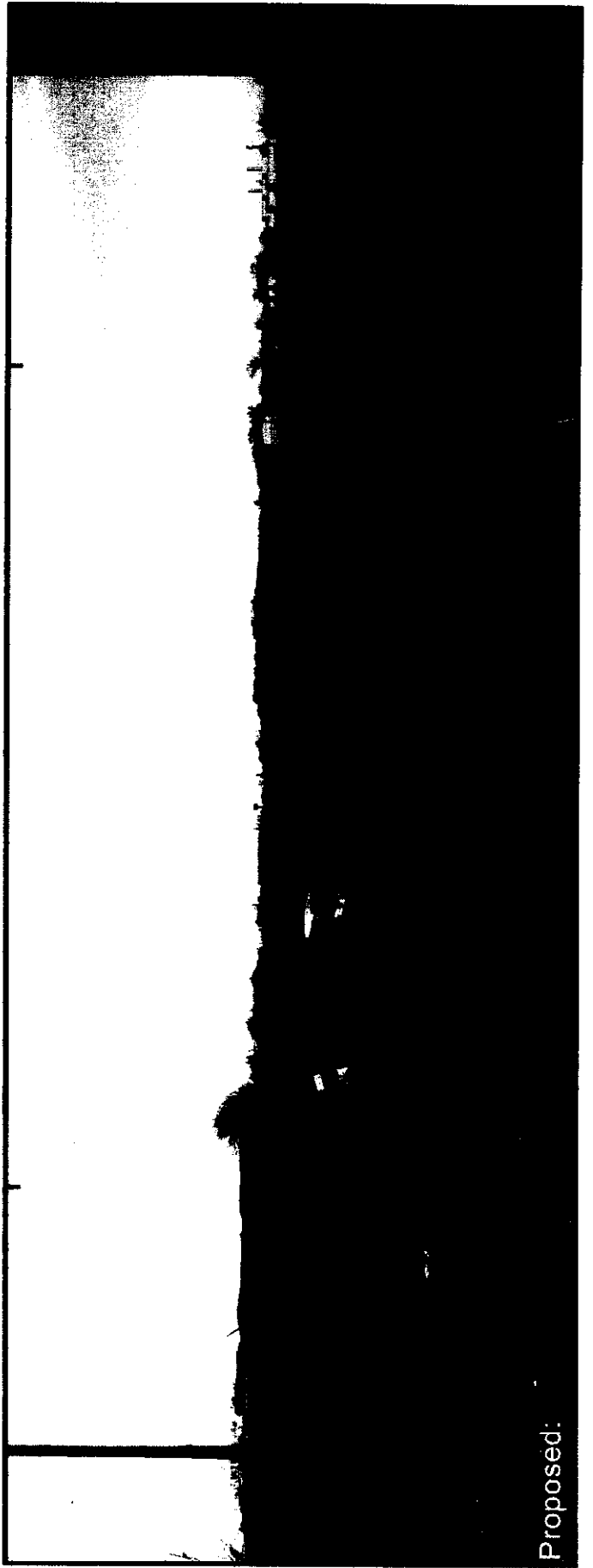
**Gormanston AGI**

Date: 27 / 02 / 2001

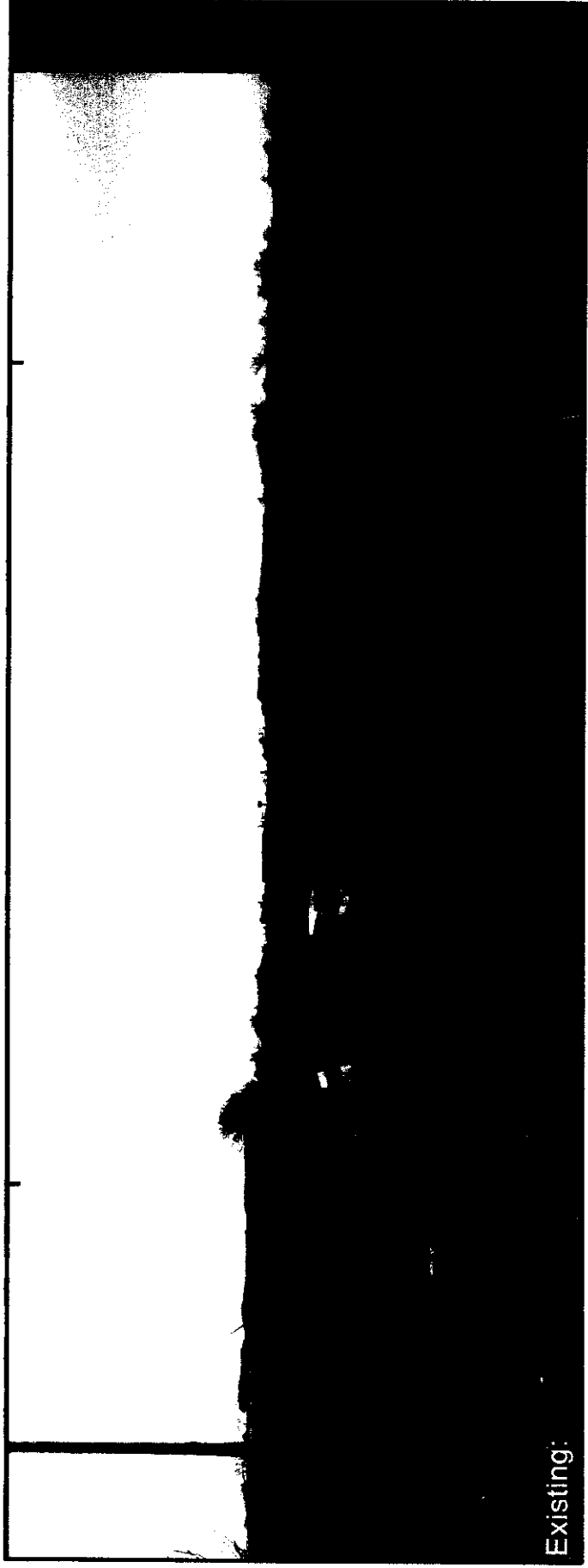
Visual Assessment:

**View 7 From Adjacent to Gormanston  
Railway Station Facing West**

Proposed:



Existing:





Project:

**Gormanston AGI**

Visual Assessment:

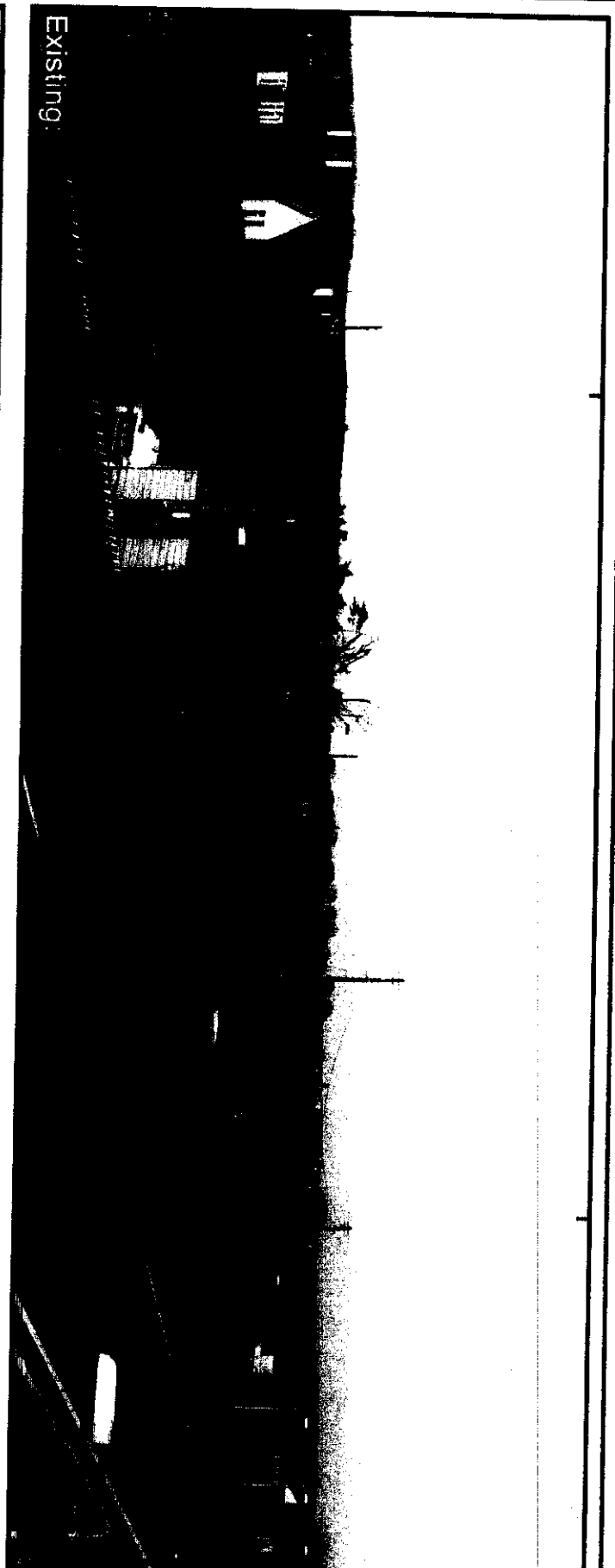
**View 5** From Gormanston Railway  
Bridge Facing West

Date: 27 / 02 / 2001

Proposed



Existing





Project:

**Gormanston AGI**

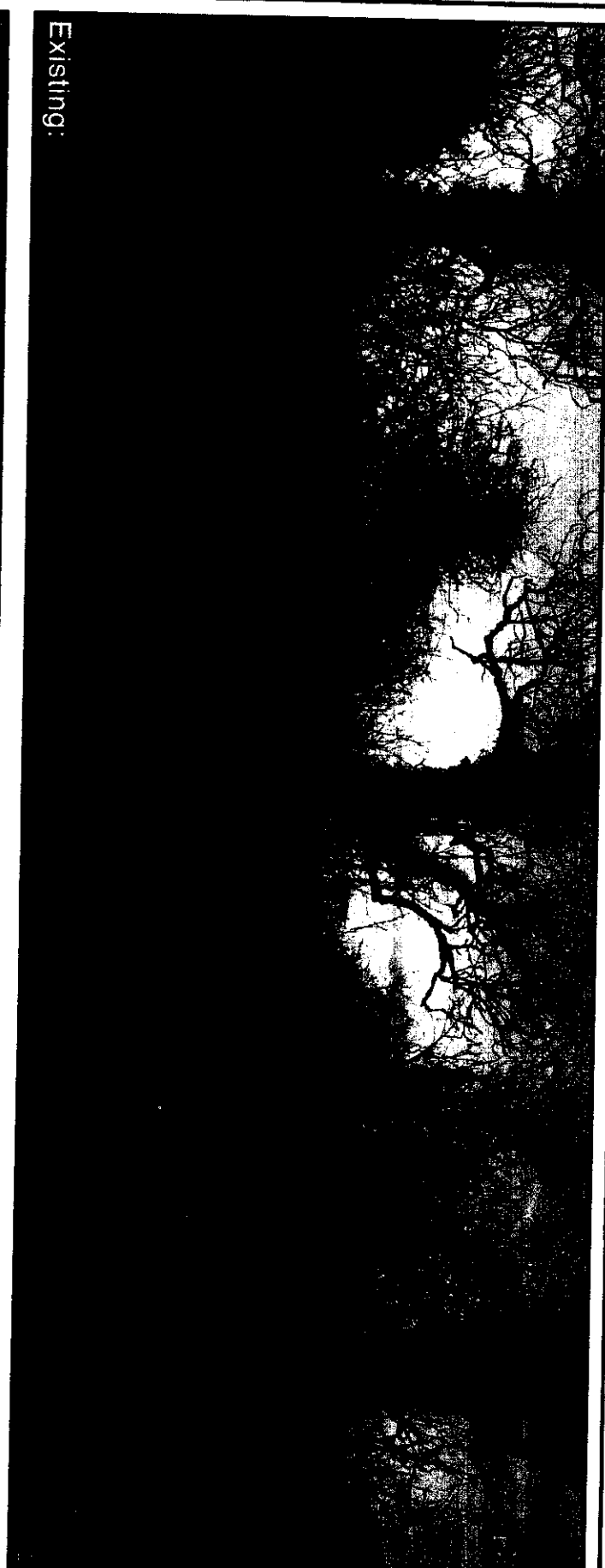
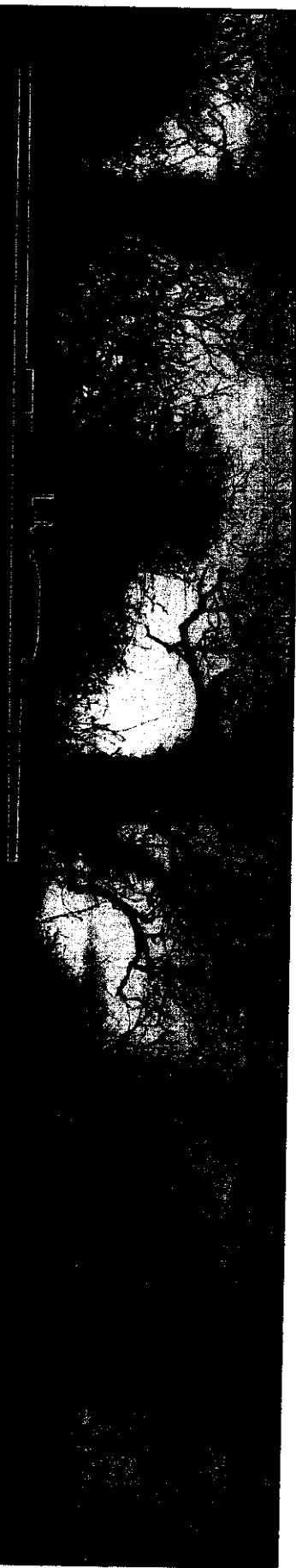
Visual Assessment:

**View 3 From The N1 Facing  
North East**

Date: 27 / 02 / 2001

**Proposed:**

**Existing:**





Project:

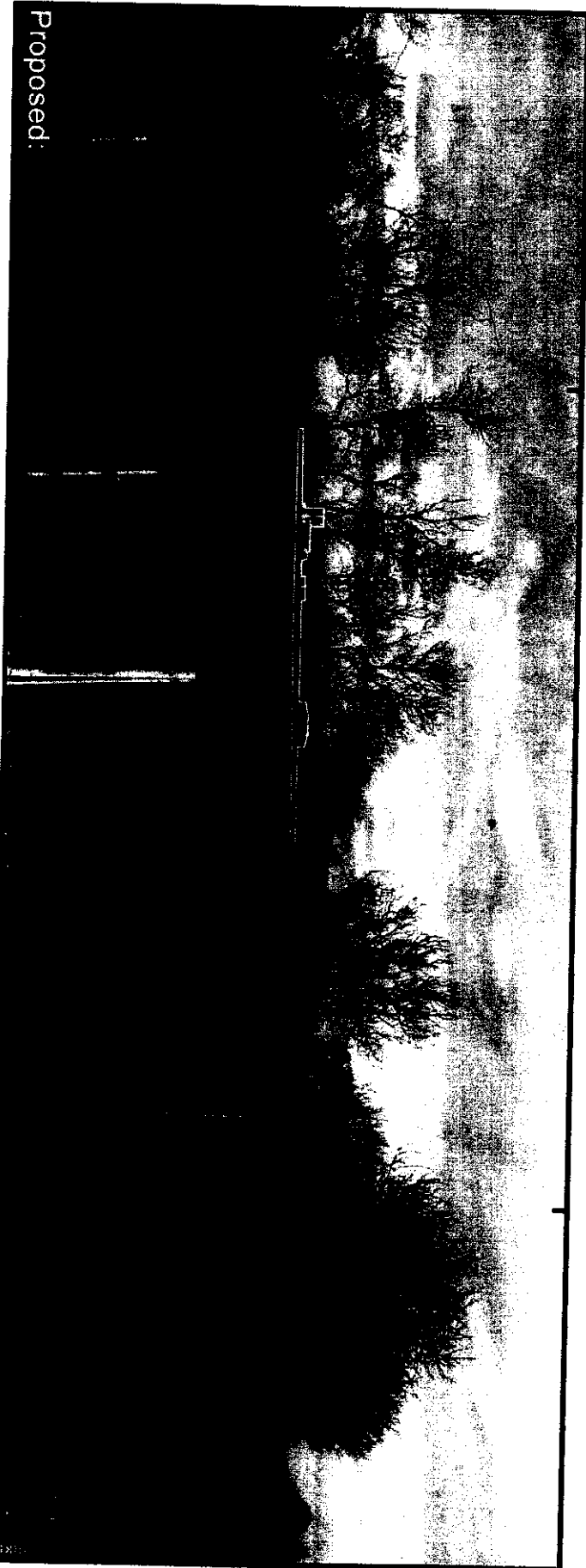
**Gormanston AGI**

Visual Assessment:

**View 1 From The N1 Facing  
South East**

Date: 27 / 02 / 2001

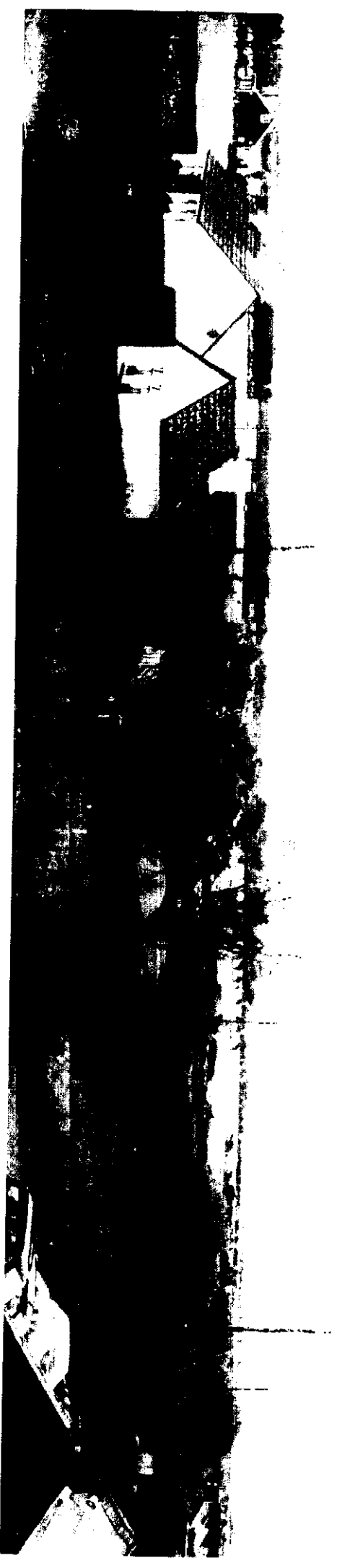
**Proposed:**



**Existing:**







View into site looking north from bridge over railway line



Views showing hedgerow as visual buffer along Balbriggan Road

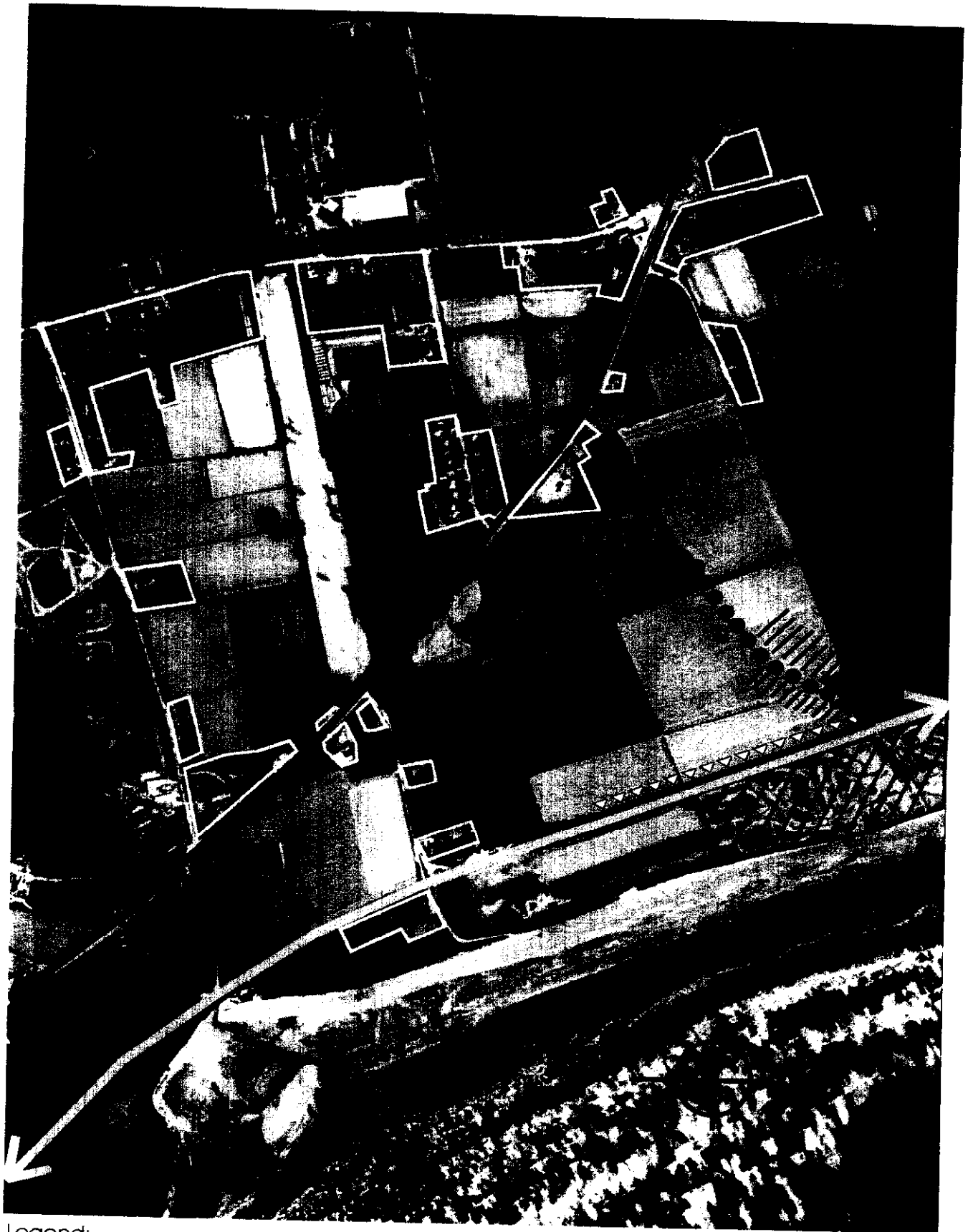
View looking south along Balbriggan Road



View looking north along Balbriggan Road







Legend:










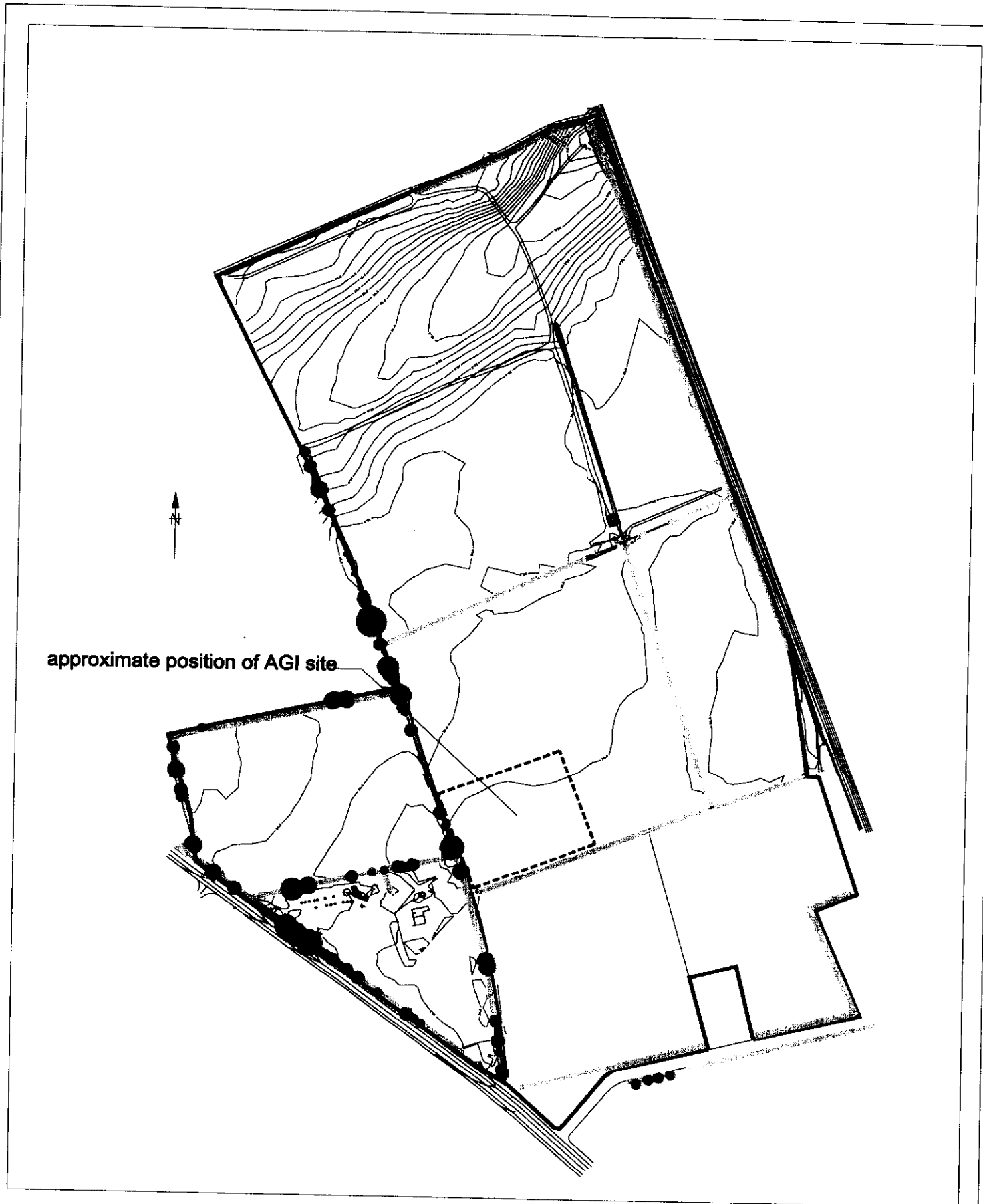
- |  |  |  |
|--|--|--|
|  Residential groupings   |  Strong edge  |  Views out  |
|  Main vehicular movement |  Valley       |  Study area |
|  Disturbed ground        |  Views in     |  |
|  |  Steep slopes |  |

Fig.5 VISUAL ANALYSIS





Legend:



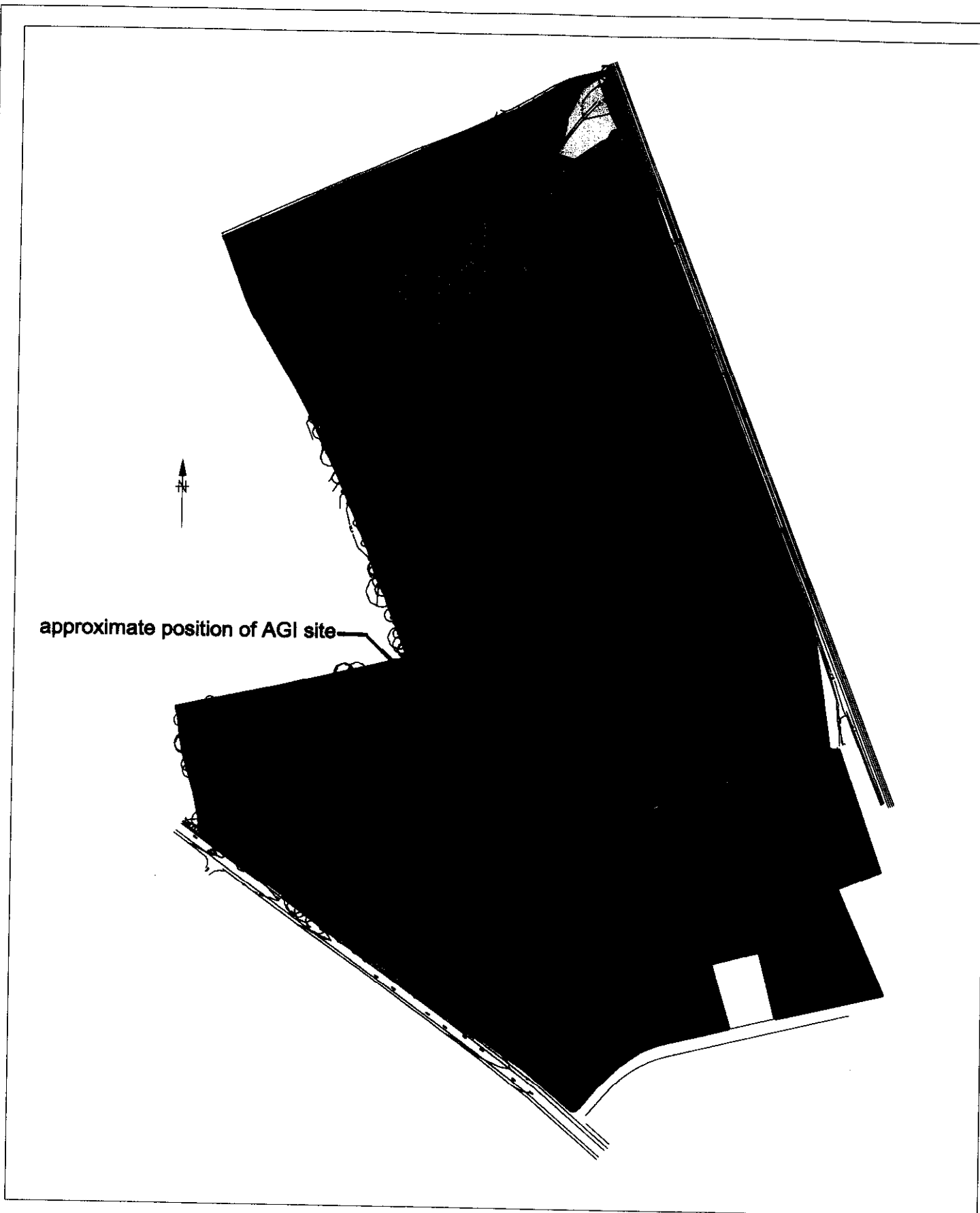
existing trees



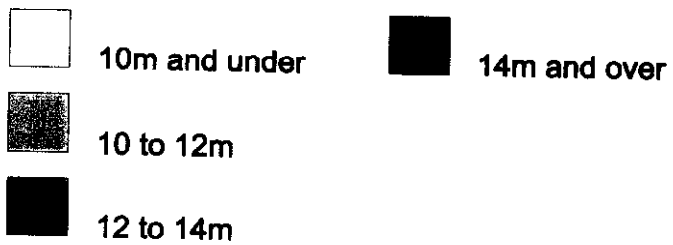
existing hedgerow

FIG. 3 EXISTING VEGETATION MAP





**Legend:**



**FIG. 1 TOPOGRAPHY MAP**



The existing land use of the site area will be changed from that of agriculture to use for an Above Ground Gas Installation site.

The site will have a dimension of approximately 90m wide by 100m long. In the overall context of the surrounding agricultural landscape the portion of land that will be taken up by the new development is comparatively small and will have no significant visual impact on the amenity value of the land.

The relatively low structures proposed for the site ( the highest being 8.5 m over ground level ) together with the existing hedgerow structure and proposed woodland screen planting around the site will restrict views in from the public domain.

The development will have a slight and neutral impact on views from the following locations:-

- Along the railway line
- Along Station Road to the south
- Isolated glimpses along the Balbriggan Road and Cock Lane

#### **4.0 Mitigation Measures**

Mitigation will be provided by the following measures being put in place:-

- Woodland screen planting around the development to create a visual barrier from the public domain.

The screen planting will consist of the following species:

<i>Alnus glutinosa</i>	Alder
<i>Betula pubescens</i>	Birch
<i>Salix alba</i>	Willow
<i>Fagus sylvatica</i>	Beech



### **3.0 Forecasting Methods**

The structure used for assessing the visual / landscape impact of the development is based on draft guidelines prepared by the Environmental protection Agency ( EPA ). In the case of both impact on character and visual impact the following scale is used to assess and describe its Degree of Impact.

#### **Imperceptible**

*An impact capable of measurement but without noticable consequences*

#### **Slight**

*An impact which causes changes in the character of the environment which are not significant or profound*

#### **Significant**

*An impact which, by its magnitude, duration or intensity alters an important aspect of the environment.*

#### **Profound**

*An impact which obliterates all previous characteristics.*

And the nature of the impact may be described as:

#### **Neutral**

*Represents a change which does not affect the quality of the environment*

#### **Positive**

*Represents change which improves the quality of the environment.*

#### **Negative**

*Represents a change which reduces the quality of the existing environment*



majority of the land being in agricultural production. The majority of residential units are located along Gormanston Road.

The subject site is located in the south-west corner of one of the agricultural fields and is currently in pasture. It is bounded on all sides by fields in agricultural production ( see Fig. 4)

## **1.6 Visual Analysis**

In visual terms the site area has little or no amenity value except that it forms part of the larger agricultural landscape.

The railway line to the east forms a strong edge to the study area as well as a visual barrier from views in from the east.

The residential units located along Station Road to the south have direct views into the site, with the nearest residence being approximately 220m to the south east.

The presence of the existing hedgerow planting in the surrounding area restricts views in to the site from the N1 Roadway and along Cock Lane to isolated glimpses.

There are no long distance views into the site due to the topography of the land together with the existing hedgerow structure.

Views out from the site are restricted to long-distance views towards the south west. ( see Fig. 5 )



## **1.2 Topography**

The majority of the land in the study area is at a height of between 14.0 m O. D. and 17.0 m O.D. The highest point of the study area is located along the boundary to the west, having a high point of approximately 17 m O.D. The proposed site area is located to the east of this high point where the land is approximately two metres lower at 15 m O. D.

To the north of the study area the land forms a valley where there is a low point of approximately 8m O.D. at the eastern end of the valley. ( see Fig. 1 )

## **1.3 Slopes**

The steepest slopes are on the sides of the valley where the slope regime is in the region of 1 in 5 and 1 in 20. The majority of the study area to the south of this valley is on level ground with a slope regime of 1 in 50 and less. The proposed development will be located in this part of the study area. The slope regime of the site area is less than 1 in 50 with the land rising gradually to the west.

## **1.4 Vegetation**

The vegetation of the study area consists of agricultural crops, grasses, and hedgerow planting. ( see Flora and Fauna section ). Hedgerow species are typical of the area with the main species being :-

*Crataegus monogyna*

*Prunus spinosa*

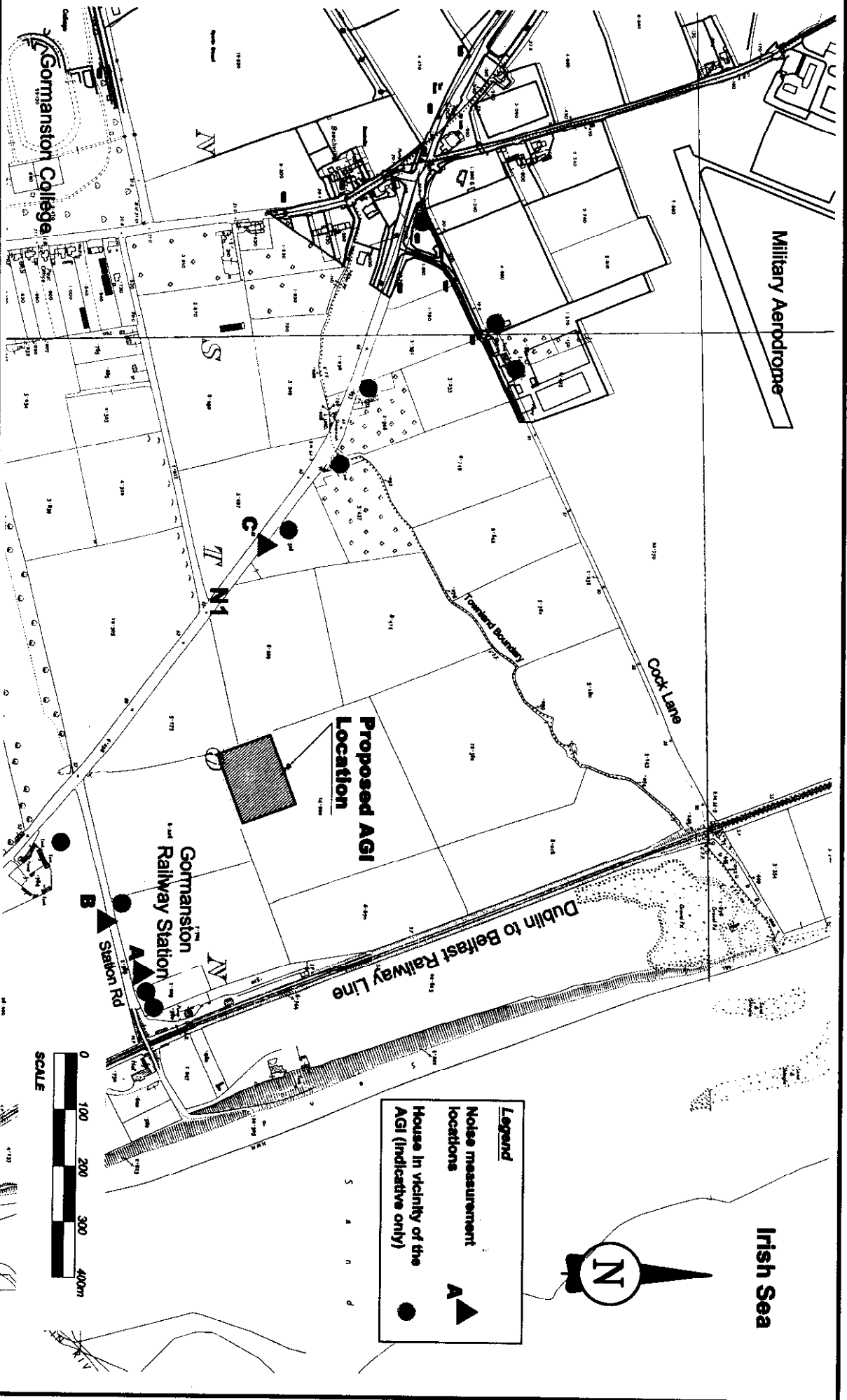
*Acer pseudoplatanus*

*Ilex aquifolium*









**BORD GÁIS**  
TRANSMISSION BUSINESS UNIT

**IGOS**

Job:

**Gormanston AGI EIS**

Title:

**Noise Monitoring Locations**

Prepared: P. Higgins

Checked: J. Shalloe

Scale: N.T.S.

Date: Sep. 2000

File Ref: PGL/Admg

**Fig. No.**

**1**



## 5 CRITERIA

- 5.1 Due to the continuous nature of the plant operation the night-time operation is of major importance as this requires a lower limit than daytime. There are no statutory limits for environmental noise emissions for this type of plant, or industry in general, in this country.
- 5.2 In general, noise is likely to provoke complaints when its level exceeds the level of the background noise level by a certain margin or when certain absolute levels are attained. The criteria for industrial noise generally lie in the range 35-45 dB (A) at night and 45-55 dB(A) by day. The lower values are normally applicable to rural areas and zones of hospitals, and the higher values are sometimes applicable to city centre areas or special cases such as mining or quarrying.
- 5.3 Selection of the appropriate noise criteria values within the range of values above depends on the pre-existing noise levels, the character of the area and the nature of the development. Taking the above into account and the relatively low level of existing "background" noise at the Gormanston we propose the following criteria as being appropriate for minimal impact on the noise environment:
- At any existing residence:
- |       |   |                          |
|-------|---|--------------------------|
| Night | : | 35 dB $L_{Aeq}$ (15 min) |
| Day   | : | 50 dB $L_{Aeq}$ (30 min) |
- 5.4 These are limit values for the noise from the proposed plant measured outside any dwelling. There should be no significant pure tones or impulsive elements in the noise spectrum of the emissions from the plant.



### Baseline Noise Levels.

#### Daytime

<b>Location A</b> 28/6/00	<b>Time</b>	<b>L<sub>Aeq,T</sub></b>	<b>L<sub>A01,T</sub></b>	<b>L<sub>A10,T</sub></b>	<b>L<sub>A90,T</sub></b>	<b>T = 30 min</b>
	11:00	45	58	46	34	dB
	11:30	48	61	49	34	dB
	12:00	49	61	52	35	dB
	12:30	54	68	55	36	dB

#### Night-time

<b>Location A</b> 28/6/00	<b>Time</b>	<b>L<sub>Aeq,T</sub></b>	<b>L<sub>A01,T</sub></b>	<b>L<sub>A10,T</sub></b>	<b>L<sub>A90,T</sub></b>	<b>T = 15 min</b>
	01:00	44	55	47	24	dB
	01:15	40	53	39	23	dB
	01:30	40	51	46	24	dB
	01:45	37	50	40	23	dB
	02:00	42	55	45	25	dB
	02:15	36	50	31	25	dB
	02:30	45	59	45	25	dB
	02:45	40	55	38	27	dB
	03:00	37	52	34	26	dB

<b>Location B</b> 2/2/01	01:55	53	68	53	30	dB
	02:10	41	53	42	31	dB

<b>Location C</b> 2/2/01	02:35	57	65	39	30	dB
	02:50	63	73	48	29	dB



## **2. SUMMARY**

- 2.1 The construction and operation of the AGI can be undertaken without undue impact on the noise environment. There will be no vibration perceptible off-site.*
- 2.2 The noise impact of the operation of the AGI can be defined as "no impact".*
- 2.3 The noise from the construction of the AGI can be defined as temporary "slight impact".*



## **CONTENTS**

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<b>2.</b>	<b>SUMMARY</b>	<b>4</b>
<b>3.</b>	<b>EXISTING ENVIRONMENT</b>	<b>5</b>
<b>4.</b>	<b>NOISE EMISSIONS</b>	<b>6</b>
<b>5.</b>	<b>CRITERIA</b>	<b>7</b>
<b>6.</b>	<b>CONSTRUCTION</b>	<b>8</b>
<b>7.</b>	<b>ASSESSMENT</b>	<b>9</b>

## **FIGURE 1 SITE PLAN**



## **6.0 CONCLUSION**

The impact of the proposed AGI development at Gormanston will have a minor to moderate impact on air quality during the construction phase. This will be from dust and particulate emissions generated from the site construction, pipeline laying and movement of construction traffic along the access road. The impact from dust generated from the road surface by construction traffic is likely to have a short-term moderate impact on ambient dust and particulate levels at properties close to the site entrance.

When the AGI is completed, emissions of nitrogen oxides and hydrocarbons during normal operation will be minor or not significant and no adverse impact on the local air quality is predicted.

The odourising agent will be stored in a sealed tank and injected into the natural gas under controlled conditions. Filling of the tank will take place by direct pipeline connection to ensure no losses of vapours during the filling process.

During emergency conditions, when venting of the pipeline may be required, this could result in an odour being detected in the locality during release of the natural gas. This emission of natural gas would last for only a few minutes and apart from the potential to cause an odour will not have a significant impact on the surrounding air quality. No adverse effect on the health of the local community or damage to the surrounding environment is predicted under this emission release scenario.



particulate emissions, at the nearest houses will be due primarily to truck movements to and from the site. The impact of emissions from construction traffic is predicted to be short-term.

Once the main plant equipment is on-site then the impact at the nearest houses will be due only to employee cars and traffic delivering materials to the site. Due to the separation distance of over 200m, between the nearest houses and the AGI construction site, the impact of dust emissions near these dwellings will be minor. With the implementation of the proposed mitigation measures, outlined in Section 5, no adverse impact should occur at the nearest private properties.

## 4.2 Operation Phase

The procedures carried out at the AGI involve the preparation of the gas arriving from the sub-marine pipeline for distribution to the land network. This involves filtration to remove particulates and heating the gas using water-bath heaters. The gas passes through a pressure regulator and an odourising agent is then added to the gas to give it the characteristic odour. Finally, the gas is passed through a metering system before entering the main outlet pipeline. The AGI also serves as a location within the gas pipeline network to introduce the pipeline monitor, known as a Pig, which examines the conditions of the pipe, presence of cracks or deterioration in joints. An important feature of the AGI is the pig launcher/receiver station, which is above ground.

Table 4.1 gives the typical composition of natural gas and it is evident that 92% of the gas (by volume) is methane, with the remainder comprising nitrogen, carbon dioxide and non-methane hydrocarbons. The amount of sulphur in natural gas is negligible, typically less than 0.002%. The non-methane hydrocarbons present in natural gas are mainly ethane and propane with a number of trace hydrocarbons also present.

**Table 4.1**  
**Typical composition of natural gas**

Species	% vol
Methane	92.5
Nitrogen	2.5
Carbon Dioxide	0.5
Ethane	2.9
Propane	0.9
Butane	0.2
2-methylpropane	0.2
Pentane	0.1
2-methylbutne	0.1
2,2 dimethylpropane	0.1
Total	100.0

*Source: EEA Corinair Emission Inventory Handbook 2<sup>nd</sup> ed 1999*

The odourising process takes place after the pressure reduction phase and the agent is stored in a double-skinned storage tank. The agent is a combination of Tertiary-Butyl-Mercaptan and Dimethyl Sulphide, both of which have very low odour detection levels. The amount of these compounds added by injection into the gas flow in the



## 1.0 INTRODUCTION

It is proposed to construct an AGI (Above Ground Installation) on a site at Gormanston at the landfall of the undersea pipeline from the U.K. As part of the evaluation of the environmental impact of this proposed development, an assessment of the impact on air quality was undertaken by Envirocon Ltd.

## 2.0 EXISTING ENVIRONMENT

The proposed site lies 1km E of Gormanston village, within about 200m of the N1. The air quality of the proposed location is good and there are no significant industrial activities located nearby. Access to the site will be via a new road off Station Road, which runs eastwards from the N1 to the Railway Station. There is a military airfield about 1km to the north of the site, with vegetable growing and livestock grazing the main activity on adjacent fields. With the opening of the M1 motorway to the west of Gormanston the volume of traffic along the N1 is relatively low and is mainly due to local traffic. The Dublin to Belfast rail-line runs within about 250m to the east of the proposed AGI site boundary. The amount of diesel rail traffic is relatively low over the day and so the volume of emissions will be minor. The primary source of gaseous and particulate concentrations in the air adjacent to the proposed site will be from the local road traffic, agricultural activities and from marine sources.

The levels of common air pollutants, such as smoke, sulphur dioxide and nitrogen dioxide will be very low and typical of background levels for Co. Fingal. Ambient concentrations would be less than 10% of the limit values specified in the National Air Quality Standards legislation (SI No 244 of 1987). Annual concentrations of nitrogen dioxide would typically be in the range of 5-10  $\mu\text{g}/\text{m}^3$ . These levels are well below the annual limit value specified in the E.U. 1999 Air Quality Directive (1999/30/EC) which specifies an annual limit value for nitrogen dioxide of 40  $\mu\text{g}/\text{m}^3$ , to be met by 2010. This Air Quality Directive gives air quality limit values for sulphur dioxide, nitrogen dioxide and particulate pollutants and will shortly replace the existing National Air Quality Standards.

There are no existing National Air Quality Standards for aerosols or  $\text{PM}_{10}$  (particles less than 10  $\mu\text{m}$  aerodynamic diameter). The 1999 E.U. Air Quality Directive specifies a daily limit value of 50  $\mu\text{g}/\text{m}^3$ , not to be exceeded more than 35 times in a year, with a corresponding annual limit value of 40  $\mu\text{g}/\text{m}^3$ . These limit values are to be met in 2005. Given the relatively remote location, levels would be well below these ambient limits and typically less than 20  $\mu\text{g}/\text{m}^3$ . The main source of particulates will be from local road traffic and also natural sources such as soil, silt from road verges and marine aerosols.

Air pollutants associated with road transport such as carbon monoxide and hydrocarbons will be very low and typical of those found over 100m from main roads. The ambient concentrations would be less than 10% of the proposed air quality limit values specified in the 1998 E.U. Draft Directive.

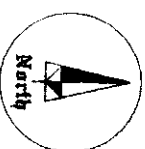


# EAST MEATH DRAFT DEVELOPMENT PLAN

1999.

Map No. 7.

Gormanston



## LAND USE ZONING OBJECTIVES

- A1** To provide for the development of residential and the associated uses in the vicinity of the Dublin Airport.
- A2** To provide for the development of residential and the associated uses in the vicinity of the Dublin Airport.
- C** To provide for the development of commercial, industrial and office uses.
- D** To provide for the development of residential and the associated uses in the vicinity of the Dublin Airport.
- G** To provide for the development of residential and the associated uses in the vicinity of the Dublin Airport.

## LAND USE ZONING OBJECTIVES

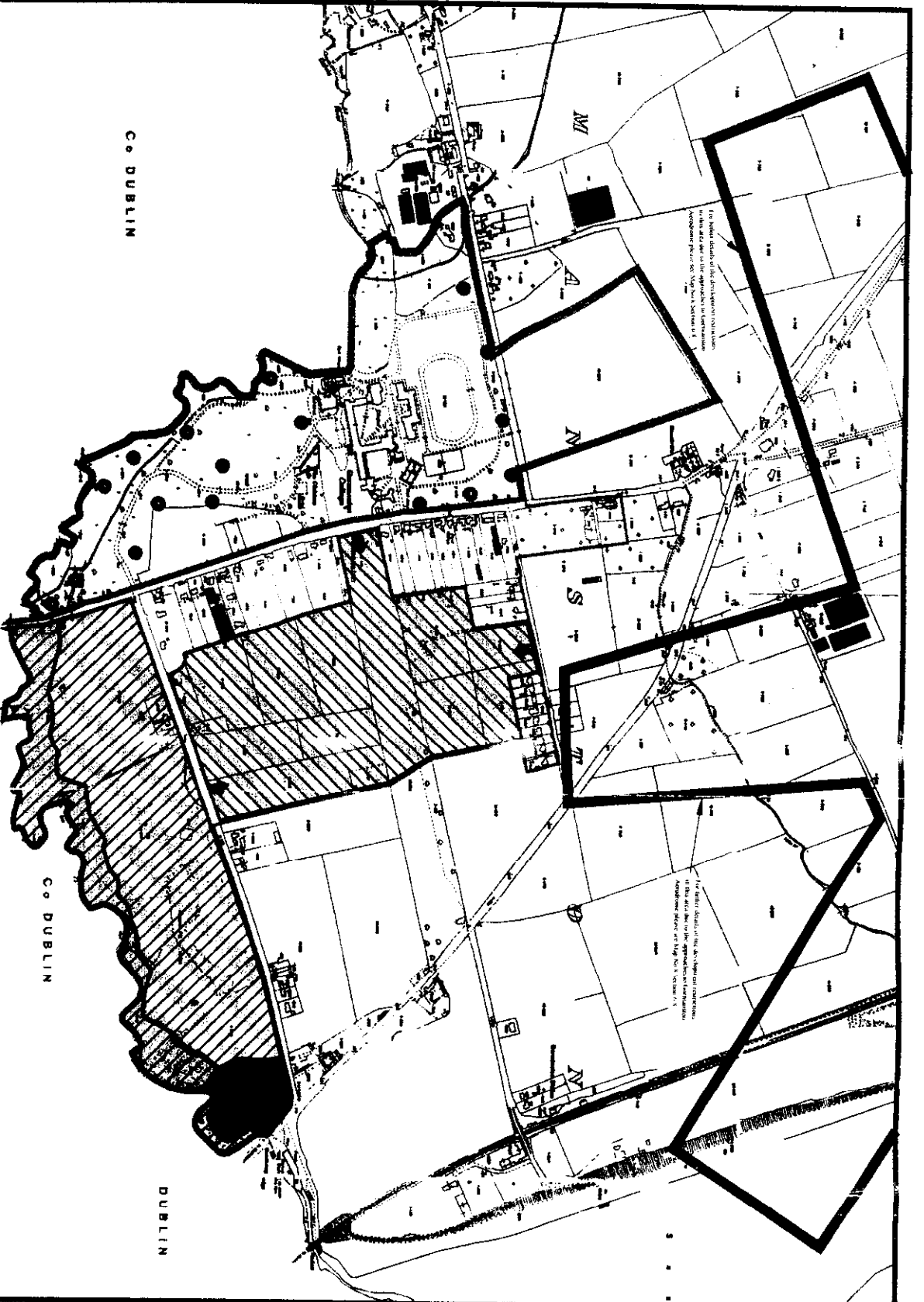
- G 1-7** OBJECTIVES (see text)
- ACCESS POINTS**
- LISTED BUILDINGS**
- TREES TO BE PROTECTED**
- DEVELOPMENT AREA**
- BOUNDARY**
- EXTENT OF G4 OBJECTIVE**
- EXTENT OF G6 OBJECTIVE**
- DEVELOPMENT RESTRICTIONS**



North Arrow  
Scale  
1:10,000  
1:10,000  
1:10,000

NTS

Scale 1:10,000  
1:10,000  
1:10,000



Co DUBLIN

Co DUBLIN

DUBLIN





ALSO: THERN ROSTE

00:14:00

1.10.00 APPROX

1.10.00

BKS SURVEYS LTD 00:10

 BORD GIS



[illegible]



#### **4.0 Mitigation Measures**

Adhering to the following recommendations will reduce the impact on agricultural activities during the construction phase of the Gormanston AGI.

##### **Noise & Dust**

Good communication with farmers in the proximity of construction will facilitate them in organising their agricultural activities so that vulnerable livestock are kept as far away as possible from the construction work at critical times.

##### **Provision of Access**

As in the case of mitigation measures against noise and dust, good communication between individual landowners and the construction authorities will minimize difficulties caused by the restriction of access to land parcels. Such communication should produce a workable arrangement that will allow all parties to continue their work.

Any removal of field access will be restored at a cost to the developer.

##### **Drainage Disturbance**

In cases where impeded drainage during construction will cause obvious difficulty to a particular landowner, temporary measures should be taken to allow waters to drain less critical areas and so minimise impact.

Any impacts as a result of the daily operation of the AGI station will be minimised by landscaping to reduce any visual intrusion which the station may have on the surrounding rustic landscape. Additional traffic will have a negligible impact on surrounding roadways.



### **3.0 Impact During Construction**

The main impacts on agricultural activity during the construction phase of the gas pipeline will include:

- ❑ Noise
- ❑ Dust
- ❑ Disturbance of Drainage Works

#### **Noise**

The activity of earth moving machinery, transport lorries and other ancillary vehicles will generate significant noise in the immediate vicinity of the AGI construction. This has a certain associated nuisance value but in relation, to its impacts on livestock, impacts will be negligible due to the absence of domestic animals on the lands concerned. However noise may impact upon livestock in adjacent fields and in particular on in-calf cows and horses, potentially causing stressful conditions and difficulties in animal husbandry practices locally.

#### **Dust**

The proliferation of dust during construction has a nuisance value. Livestock in surrounding lands are at risk of eye irritations from high levels of wind blown dust particles. The stress incurred may reduce productivity and increase management difficulties in livestock systems.

Large amounts of dust may also impact upon tillage operations, covering crops and thereby reducing their ability to photosynthesize, thus resulting in decreased yields.

#### **Disturbance of Drainage Works**

It is to be expected that field drainage systems currently in situ will be disturbed and in places destroyed by the proposed construction works for the Gormanston AGI. These systems will be restored but there may be impaired drainage between the initial disturbance and final reinstatement of such drainage works.

This damage will lead to wet or flooded fields during spells of wet weather and farm productivity may be reduced in adjacent fields if this occurs when animals would



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**Appendix**

**Maps**