



Cluden to Lochfoot Pipeline

Environmental Statement

AUGUST 2015



PROJECT REPORT

RSK General Notes

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ACRONYMS

ADF	Average Daily Flow
ALO	Agricultural Liaison Officer
ALGAE	Association of Local Government Ecologists
AOD	Above Ordnance Datum
APHA	Animal and Plant Health Agency
ASA	Archaeologically Sensitive Area
BAP	Biodiversity Action Plan
BGE	Bord Gáis Eireann
BGS	British Geological Survey
BPD	Building Proximity Distance Boundary-Point Definition
COSHH	Control of Substances Hazardous to Health
CP	Cathodic Protection
CRTN	Calculation of Road Noise
DBA	Desk-Based Assessment
DEFRA	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges
EcIA	Ecological Impact Assessment
EIA	Environmental Impact Assessment
ECDU	Energy Consents and Deployment Unit
EHO	Environmental Health Officer
ERP	Emergency Response Plan
ES	Environmental Statement
FBE	Fusion-Bonded Epoxy
FRS	Field Reconnaissance Survey
GLVIA3	Guidelines for Landscape and Visual Impact Assessment 3 rd Edition
HDD	Horizontal Directional Drilling
HER	Historic Environment Record
HGDL	Historic Gardens and Designed Landscapes
HGV	Heavy Goods Vehicle
IEEM	Chartered Institute of Ecology and Environmental Management
IEMA	Institute of Environmental Management and Assessment
IGS	Institute of Geological Sciences
LBAP	Local Biodiversity Action Plan
LCA	Land Capability for Agriculture
LNR	Local Nature Reserves
LV	Light Vehicle
LWS	Local Wildlife Site
MAPD	Major Accident Prevention Document
MWC	Main Works Contractor
NMR	National Monument Record
NNR	National Nature Reserve

NPF3	National Planning Framework 3
NVZ	Nitrate Vulnerable Zone
PAN	Planning Advice Note
PCA	Pipeline Construction Authorisation
PCI	Project of Common Interest
PEMP	Project Environmental Management Plan
PERMP	Project Environmental Requirements and Management Plan
PIG	Pipeline Integrity Gauge
PPG	Pollution Prevention Guideline
PPP	Pollution Prevention Plan
Q<R	Queen's and Lord Treasurer's Remembrancer
QRA	Quantified Risk Assessments
RBMP	River Basin Management Plan
RCAHMS	Royal Commission on the Ancient and Historic Monuments of Scotland
RP	Reinstatement Plan
RSA	Regional Scenic Area
RTP	Regional Transport Partnership
RTS	Regional Transport Strategy
SAC	Special Areas of Conservation
SAM	Scheduled Ancient Monument
SBL	Scottish Biodiversity List
SEA	Site Establishment Area
SEPA	Scottish Environment Protection Agency
SGI	Site of Geological Interest
SHEP	Scottish Historic Environment Policy
SPA	Special Protection Area
SPP	Scottish Planning Policy
SNCO	Statutory Nature Conservation Organisation
SNH	Scottish Natural Heritage
SSSI	Site of Special Scientific Interest
SWestrans	South West of Scotland Regional Transport Partnership
TMP	Traffic Management Plan
TSEA	Temporary Site Establishment Area
WCML	West Coast Main Line
WEEE	Waste Electrical and Electronic Equipment
WFD	Water Framework Directive
WMP	Waste Management Plan
WTMP	Water Management Plan
ZOI	Zone of Influence

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1 INTRODUCTION

1.1 Background

In 2001, Bord Gáis Eireann (BGE) submitted an application for a Pipeline Construction Authorisation (PCA) for the construction of a new pipeline between Beattock and Brighouse, Dumfries, Scotland as part of the ‘Scotland to Ireland – The Second Gas Interconnector’ gas pipeline project. This project was intended to provide additional capacity to supply Ireland with natural gas from the North Sea and other international gas reserves via the existing National Grid pipeline network.

The PCA was duly granted during 2002, and the main elements of the project included an extension to Beattock Compressor Station, a new pipeline between Beattock and Brighouse, an extension to Brighouse Compressor Station and a new sub-sea pipeline between Brighouse and Gormanston.

Figure 1.1 shows the land pipeline route between Beattock and Brighouse, including the proposed re-route. Following the granting of the authorisation the pipeline construction works were substantially begun, with Phase 1 of the project completed. Phase 1 included a 29.6km section of the pipeline between Beattock and the River Cluden (north west of Dumfries), associated above ground installations, and the landfall pipeline at Brighouse Bay, which were all constructed in 2002.

From April 1st 2015 BGE will be known as GNI (UK) Limited, hereafter referred to as GNI. It is now GNI’s intention to complete Phase 2 of the construction of the onshore pipeline i.e. the remaining 50km of the pipeline and associated above ground installations. A proposed construction period of March 2016 to September 2016 has been assumed, with reinstatement continuing into 2017 if required. Preparatory works would commence before this time including pre-construction surveys, the removal of short sections of hedgerow for pipeline construction access, and installation of pre-construction drainage.

However, whilst the PCA for Phase 2 of the pipeline remains in place, GNI has identified the requirement for a re-route of a small 7.2km section of the Phase 2 pipeline to the west of Dumfries, between Cluden and Lochfoot, the rationale for which is explained in greater detail in Section 2 of this Environmental Statement (ES). The Scottish Government has directed that a new and separate PCA would be appropriate for the re-route between Cluden and Lochfoot (hereafter termed ‘the Project’) for which an Environmental Impact Assessment (EIA) is required.

RSK Environment Ltd (RSK) undertook detailed baseline surveys and data requests for the 7.2km Cluden to Lochfoot re-route in 2007, preparing a detailed Environmental Statement which was never submitted. RSK has now been commissioned to update the ES so that it takes account of changes in Planning Policy, Environmental Legislation, baseline data and best practice guidance documents. This ES reports the findings of that EIA.

1.2 Legislation Context

1.2.1 *Pipeline Construction Authorisation and Environmental Impact Assessment*

The Scottish Government has requested that a PCA be applied for under the terms of Section 1 (1a) of the *Pipe-lines Act 1962* (the 1962 Act) for the purposes of constructing the Project.

Any PCA applied for under the 1962 Act, also falls under the requirements of the *Pipeline Works (Environmental Impact Assessment) Regulations 2000 (Amendment) Regulations 2007* (the 2007 Regulations), which state that:

“3. (1) *The Secretary of State shall not grant a pipe-line construction authorisation in respect of relevant pipe-line works unless:*

- (a) the applicant submits to the Secretary of State an environmental statement in respect of the relevant pipe-line works in question; or*
- (b) the EIA application in question is the subject of a direction given under regulation 4 below.”*

Regulation 4 of the 2007 Regulations details that, where environmental effects are considered unlikely to be significant, the Secretary of State may rule that an ES is not required.

With respect to the Project, whilst no direction has been provided by the Scottish Government regarding the requirement for an ES to be submitted, GNI has decided to undertake an EIA and provide an ES in support of its PCA application.

The project has been also recognised by the European Commission as a ‘Project of Common Interest’ (PCI). The reasoning behind this recognition is that upon completion the twin pipeline section from Cluden to Brighthouse Bay would increase the security of supply to the Republic of Ireland with natural gas from the North Sea and other international gas reserves.

1.2.2 *Planning Permission*

Temporary site establishment areas (TSEA’s) containing workshops, stores and offices, and a temporary pipe storage area (pipe laydown area) will be required during construction. Unless these are located adjacent to the Project, these temporary features are not included within the PCA but will be subject to the normal development control processes and will require temporary planning consent under the Town and Country Planning (Scotland) Act 1997.

Two potential TSEA’s have been identified at:

- The old airfield at Heath Hall Business Park; and
- Coulthards Yard at Twynholm.

1.2.3 *Other Notices, Consents, Licences and Applications*

GNI and Penspen will apply for a number of licences in order to construct the pipeline, in addition to approval of this Environmental Statement.

1.3 Outline Project Description

1.3.1 Project Components

The Project consists wholly of the construction of an underground 36" diameter 7.2km steel pipeline. The pipeline will be buried to an approximate depth of cover of 1.1 metres with full reinstatement of the land affected following completion of the works. There will be no above ground installation constructed in conjunction with the pipeline.

The route of the pipeline is shown in Figure 1.2 and described in more detail in Section 2.3.3.

1.3.2 Programme

Pipeline construction has been assumed to commence in Spring 2016 for the purposes of this assessment. Under this scenario, preparatory works would commence before this time including pre-construction surveys and removal of short sections of hedgerow for pipeline construction access. The main pipeline construction activities would be undertaken during the summer months of 2016 to take advantage of favourable weather and light conditions, with any reinstatement completed in 2017.

1.3.3 Project Management

GNI are the promoter of the proposed pipeline. Penspen Ltd have been commissioned to project manage and engineer the development of pipeline works. It is anticipated that a Main Works Contractor (MWC) will be commissioned under a construction contract, and will be responsible for the installation, construction and commissioning of the pipeline.

RSK Environment Ltd has been commissioned to undertake the EIA of the Project, the results of which are presented in this ES.

1.4 The Pipeline Environmental Impact Assessment Process

1.4.1 Scoping of the Environmental Impact Assessment

For the purposes of this assessment, scoping consultations were sought through scoping meetings and scoping letters. Scoping meetings were held with the following consultees:

- Dumfries and Galloway Council;
- Scottish Environment Protection Agency (SEPA); and
- Scottish Natural Heritage (SNH).

In addition, scoping letters were issued to the following consultees:

- Historic Scotland;
- Dumfries and Galloway Council (re. traffic, noise and archaeology);
- Transport Scotland; and
- Scottish Water.

In addition to these consultations, a review of the authorised pipeline EIA and key issues were undertaken in order to provide a basis for the scope of the assessment. The key issues in relation to the Project were identified as:

- the potential presence of protected species and invasive species;
- the presence of archaeological and cultural heritage sites and features;
- hydrogeological features with particular reference to the Dumfries aquifer to the west of Dumfries;
- surface-water features with particular reference to construction effects on watercourses;
- effects upon landscape character, visual amenity and designated landscape areas; and
- temporary disruption of public amenity due to construction including noise and dust emissions, and increases in traffic flows.

These issues are described and assessed in the relevant sections of the ES.

1.4.2 Consultations

Consultation commenced in 2007. Initial baseline data was sought and consultation meetings were held with Scottish Water, SEPA, SNH, Dumfries and Galloway Council.

In addition to the scoping consultations listed above, key consultees (both statutory and non-statutory) were re-consulted in 2015 in order to update and verify the environmental baseline. The list of organisations contacted is presented below, and a record of these consultations is provided in Appendix A.

- Association for the Protection of Rural Scotland;
- GNI (UK) Limited;
- British Geological Survey;
- BT;
- Cable and Wireless;
- River Dee Trust & Dee District Salmon Fishery Board;
- Dumfries & Galloway Council (planning, contaminated land, transport, biodiversity, and County Archaeologist);
- Forestry Commission Scotland;
- South Scotland Conservancy;
- Railtrack PLC;
- Scottish Environmental Protection Agency (SEPA);
- The Scottish Government Energy and Climate Change Directorate;
- Scottish Natural Heritage (SNH);
- Scottish Badgers;
- Scottish Power;

- Scottish Water;
- TRANSCO;
- Biological Records Centre
- Galloway Fisheries Trust;
- Macaulay Institute;
- RCAHMS;
- RSPB;
- Scottish Wildlife Trust;
- Historic Scotland;
- Nith District Salmon Fisheries Board;
- Urr District Salmon Fisheries Board; and
- Transport Scotland.

Consultation with these bodies will be maintained throughout the assessment, design, construction, reinstatement and commissioning of the Project.

1.4.3 *Desk-based Assessment and Field Surveys*

RSK undertook detailed desk based assessments and field surveys for the Project in 2007, preparing a detailed Environmental Statement (ES) which was never submitted.

A number of studies and surveys were undertaken including:

- ecological surveys;
- an archaeological desk-based assessment and field reconnaissance survey; and
- a landscape and visual assessment.

RSK has now been commissioned to update and verify the ES, and to gather new environmental and engineering information for the Project. For purposes of this ES, only new ecological surveys have been undertaken.

More information on these and other studies is given in the appropriate sections of the ES.

The data collected throughout these assessments and surveys has been used to define the baseline conditions – against which impacts have been measured and predicted, helping to define the mitigation measures required.

1.4.4 *Identification and Assessment of Impacts*

The prediction and evaluation of the likely significant impacts of the Project are the main focus of the Environmental Impact Assessment (EIA). There are two main stages in impact assessment:

- characterisation of the impact: that is, a description of the changes which may arise as a result of the pipeline; and
- assessment of the significance of the impact upon various aspects of the receiving environment, based on the characteristics of the impact and the receptor's sensitivity.

Published best practice guidelines have been used, where available and appropriate, including those published by the Institute of Landscape Architects, Institute of Environmental Management and Assessment, the Institute of Ecology and Environmental Management and the Institute of Field Archaeologists. More information on this guidance is given in the relevant sections.

1.4.5 Identification of Mitigation Measures

Measures to reduce negative impacts (or enhance positive impacts) are termed 'mitigation'. Best practice techniques to minimise the environmental impacts of pipeline design and construction are well developed and are recommended where appropriate. These include for example:

- routing the pipeline to *avoid* or *reduce* impact on sensitive features;
- reducing the working width at hedges, and other sensitive features, to *reduce* impact; and
- *controlling risk* by following published best practice guidelines, such as for the storage of oil and fuels.

In addition, site- and project-specific mitigation measures are identified and recommended where best practice mitigation measures will not reduce negative impacts sufficiently or are not suitable.

1.4.6 Assessment of the Significance of Residual Impacts

Any impact remaining after mitigation is termed the residual impact. An assessment has been made of the significance of residual impacts, based on the characteristics of the impact and the receptors' importance and/or sensitivity, using professional judgement and relevant standards and criteria, where available.

Formal classification of impacts has been used for ecology, landscape and archaeological impacts based on the professional guidance available from the Institute of Ecology and Environmental Management, the Institute of Landscape Architects/Institute of Environmental Management and Assessment and the Institute of Field Archaeologists.

Further details of the criteria used to assess significance are given in the relevant sections.

1.4.7 Limitations of the Environmental Impact Assessment

The EIA has been undertaken in line with the requirements of the 2007 regulations. In line with these requirements, where limitations have been encountered which could materially affect the undertaking of the assessment, these have been highlighted and described within the relevant sections. Where limitations have been encountered, in each case, a description of the assumptions made or measures taken in order to complete the assessment has been provided.

1.4.8 Production of the Environmental Statement

This ES has been prepared having regard to Regulation 2(1) and Schedule 1 of the 2007 Regulations, which specify the information to be contained within the ES as:

- a description of the pipe-line works, including in particular:

- a description of the physical characteristics of the pipe-line works and the pipeline, and the land use requirements during the construction and operational phases;
- a description of the main characteristics of the production processes proposed, for instance, the nature and quality of the materials to be used;
- an estimate, by type and quantity, of expected residues and emissions (including, without limitation, water, air and soil pollution, noise, vibration, light, heat, and radiation) resulting from the pipe-line works and the pipeline when in operation;
- a description of the aspects of the environment likely to be significantly affected by the pipe-line works, including in particular, population, fauna, flora, soil, water, air, climatic factors, material assets, including the architectural and archaeological heritage, landscape and the inter-relationship between the above factors;
- a description of the likely significant effects of the pipe-line works on the environment which may result from:
 - the existence of the pipe-line works or the pipeline;
 - 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;
 - A Non-Technical Summary of the information provided above; and
 - An indication of any difficulties (technical difficulties or lack of know-how) encountered by the applicant in compiling the required information.

1.4.9 Structure of the Report

This ES is divided into 13 sections plus the Non-Technical Summary. The ES is structured as follows:

- Section 1 Introduction;
- Section 2 Route Selection;
- Section 3 Construction;
- Section 4 Planning;
- Section 5 Land Use;
- Section 6 Physical Environment;
- Section 7 Ecology;
- Section 8 Archaeology;
- Section 9 Landscape and Visual Assessment;
- Section 10 Traffic;
- Section 11 Emissions;
- Section 12 Socio Economic;
- Section 13 Environmental Management; and

- Section 14 Cumulative Impacts.

1.5 Assumptions

The EIA has been undertaken during the initial design phase of the project and, therefore, some of the technical aspects of the construction have yet to be determined, such as a detailed timetable, timing of works, and construction plant and equipment to be used on site.

The project-specific aspects of this EIA have drawn upon existing literature, project-specific documentation, personal communications with experts and site-specific surveys and studies, which are assumed to be current and accurate.

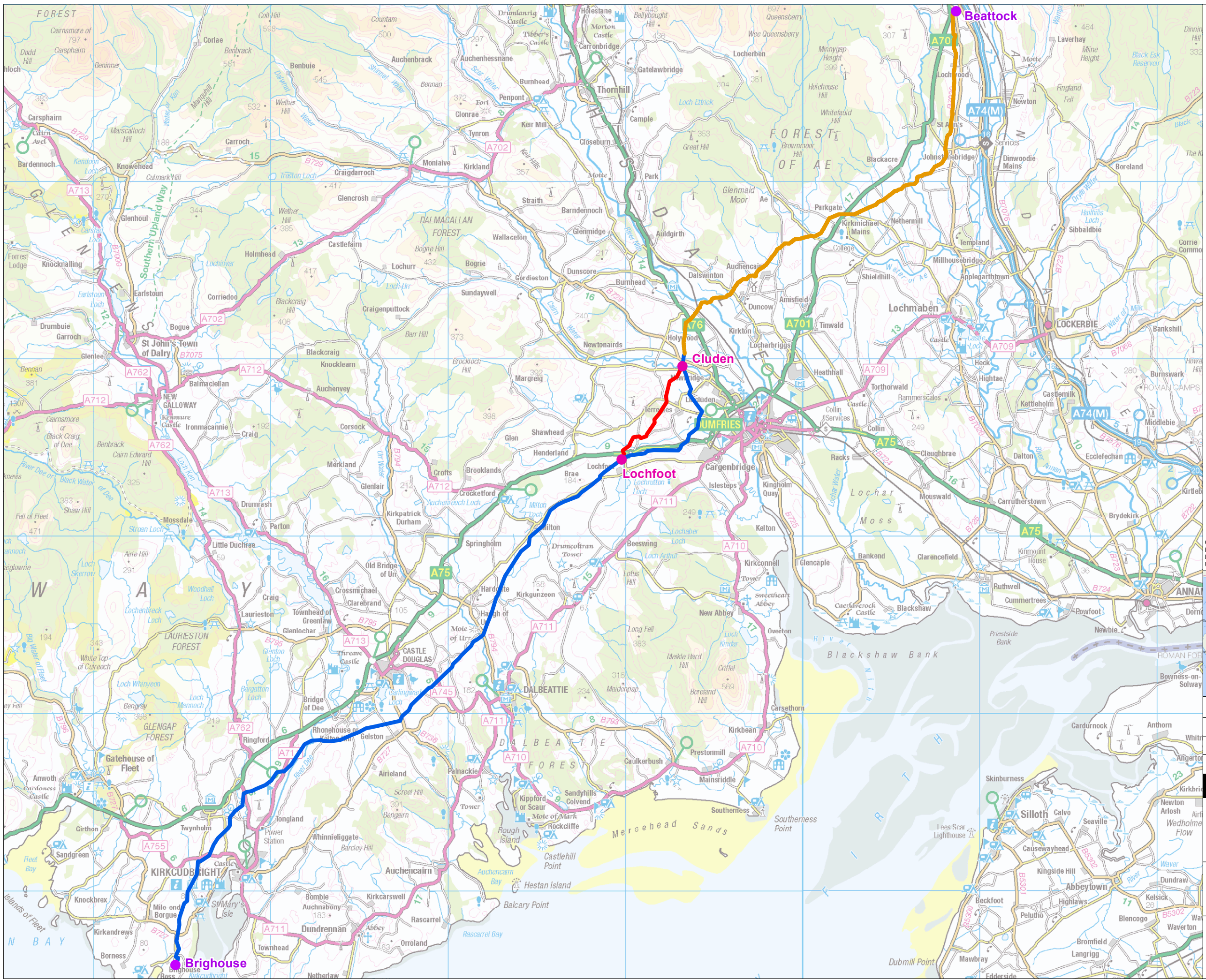
Assumptions adopted in the evaluation of impacts are reported in the relevant sections. However, these assumptions are often implicit, relying on expert judgement. Where technical deficiencies are known, or it has been necessary to make assumptions, these are documented.

Every effort has been made to obtain up to date data concerning the existing environment and to accurately predict the effect of the Project, however, there have been some elements for which data was not forthcoming within the timescale of this EIA.

1.6 Contact Details

For any further information, details of where to purchase copies of the ES, or to obtain free copies of the Non-technical Summary, please contact:

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Tel: 00353 21 453 4857



Legend:

- 2001 Consented Pipeline constructed (29.6km)
- Cluden to Brighthouse Bay Pipeline (50km)
- Proposed Pipeline Re-route (Cluden to Lochfoot pipeline) (7.2km)
- Beattock to Brighthouse Pipeline Endpoint
- Cluden to Lochfoot Pipeline Endpoint

Coordinate System: British National Grid
 Projection: Transverse Mercator
 Datum: OSGB 1936
 Units: Meter



03	06/05/2015	Updated Route	FC	DJ	WH
02	21/04/2015	Updated Logo	FC	DJ	WH
01	17/03/2015	Updated Layout	FC	DJ	WH
Rev	Date	Description	Drn	Chk	App

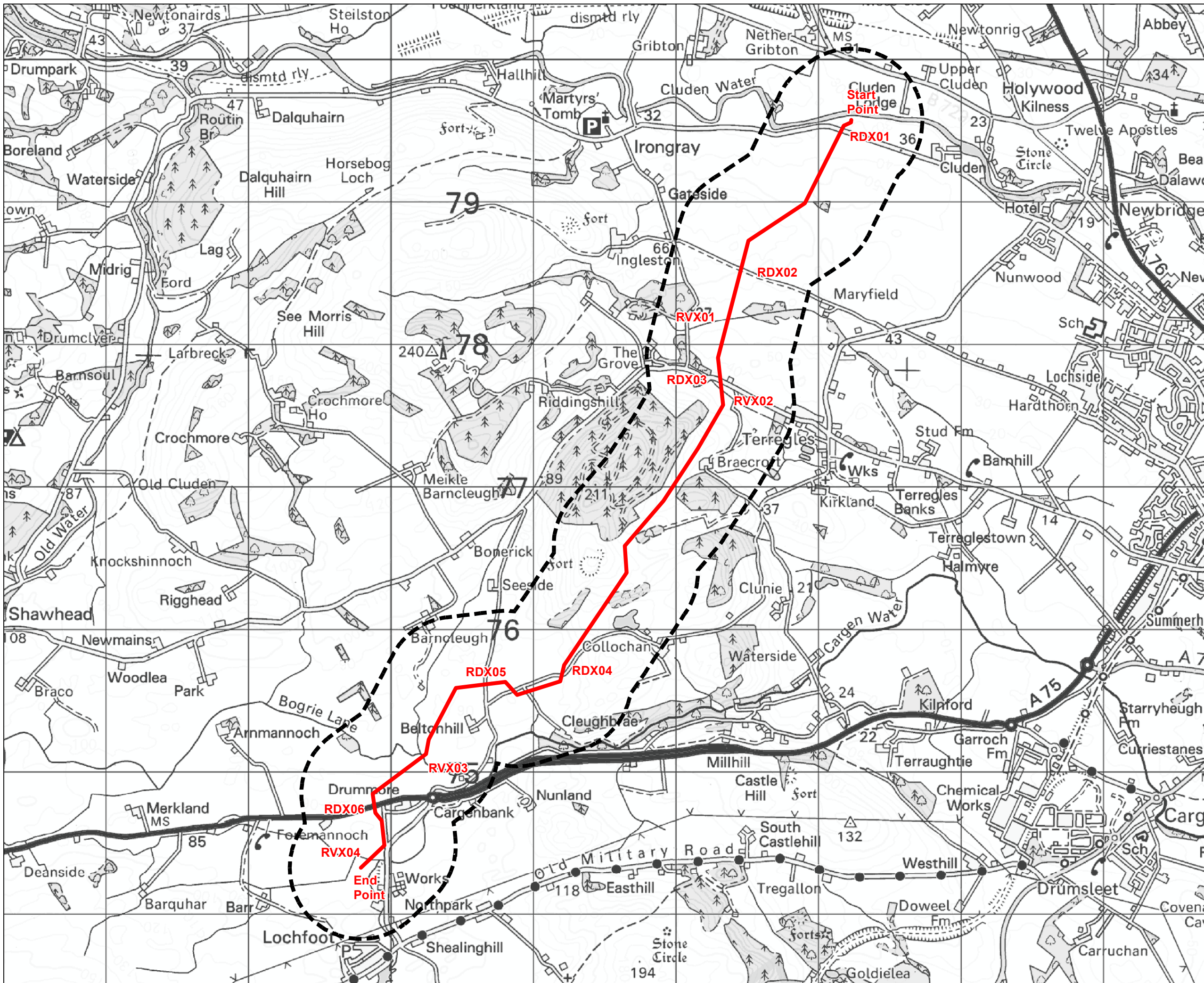
Cluden to Lochfoot Pipeline



TITLE: **Figure 1.1 - Beattock to Brighthouse Pipeline**

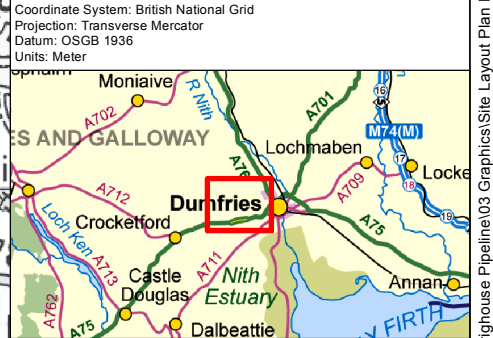
0 4 8
 Kilometres
 SCALE: 1:200,000 @ A3

REV 03



Legend:

- Proposed Pipeline Route
- 1km Area of Search



Rev	Date	Description	Drn	Chk	App
02	06/05/2015	Updated Route	FC	JS	WH
01	14/04/2015	Updated Logo	FC	JS	WH
00	03/03/2015	First Draft	FC	JS	WH

Cluden to Lochfoot Pipeline

TITLE: Figure 1.2 - Location Plan

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Figures

Figure 2.1 Alternatives

2 PROJECT JUSTIFICATION AND ALTERNATIVES

2.1 Introduction

This section describes the rationale behind alternatives to The Project and its justification. The overarching justification for the ‘Scotland to Ireland – The Second Gas Interconnector’ gas pipeline project has been briefly outlined in Section 2.1 – it being ‘*to provide additional capacity to supply Ireland with natural gas from the North Sea and other international gas reserves*’. The project has also been recognised by the European Commission as a ‘Project of Common Interest’ (PCI) as when the twin pipeline section from Cluden to Brighthouse Bay is completed it would increase the security of supply to the Republic of Ireland.

In gaining the PCA for the Scotland onshore pipeline of the Interconnector and now highlighted as a PCI, the principle of the justification for this pipeline has, therefore, been accepted. Whilst this section focuses on the justification and alternatives considered for The Project, it is considered that the alternatives considered and justification for the Second Gas Interconnector as a whole remain relevant and are also summarised below.

2.2 Scotland to Ireland – The Second Gas Interconnector

2.2.1 *Alternative Means of Transporting Gas*

It is possible to transport fuel using other modes i.e. transportation by boat, barge, freight train and lorry. These alternative methods offer some advantages. However, these advantages cannot be compared with those of a welded steel underground pipeline for the purpose of conveying gas from one country to another. Firstly, it is considered highly unlikely that it would be possible to deliver the volumes required by using these other modes of transport/transmission. Secondly, it is likely that, once the pipeline has been laid deep in the ground and the land restored to its normal condition, the pipeline will provide a safe, efficient and environmentally friendlier means of transporting high pressure natural gas across the land with negligible operational impacts. For these two main reasons, alternative means for transporting the gas were discounted at an early stage of the planning and development process.

2.2.2 *Alternative Gas Connections*

BGE (now known as GNI UK Limited) and the Irish Department of Public Enterprise initiated a project called Gas 2025 in November 1997, to plan the possible need for further transmission pipelines to meet forecast growth in demand to the year 2025. In Ireland, at the time the project was initiated, gas was sourced from the Kinsale Head Gas Field off the south east coast, via an existing Interconnector pipeline. The Kinsale Head Gas Field was, however, at that time in final depletion, placing increasing importance on the existing Interconnector pipeline. This first Interconnector pipeline was constructed in 1993 and runs from Beattock in Dumfries and Galloway, through to Loughshinny in Ireland.

Forecasts of demand at that time showed that by 2002 the existing infrastructure would be nearing full capacity, and additional supplies would be required. The Gas 2025 report considered various transmission options to secure additional gas supplies, including:

- reinforcement of existing infrastructure (Reinforcement);
- duplicating the existing Scotland – Ireland Interconnector (UK1);
- interconnector from Moffat – Stranraer – Belfast – Dublin area (UK2);
- interconnector from North Wales to the Dublin area (UK3);
- interconnector from South Wales to the Wexford area (UK4);
- interconnector from Cumbria to the Dublin area (UK5);
- interconnector from Brittany (France) to the Wexford area (FR1); and
- importing Liquefied Natural Gas by ship (LNG Cork and LNG Shannon).

After a full consideration of the feasibility (both environmental and construction) of the above options, and security of supply and cost (both capital and operating), it was recommended that a second Scotland – Ireland Interconnector (UK 1) would provide the optimum gas transport system. This development project would centre on taking high pressure gas from the National Grid National Transmission System (NTS) adjacent to GNI's Beattock compressor station facility through a 36 inch-diameter welded steel underground pipeline to Brighthouse Compressor Station, approximately 81kms long in total. This project would also incorporate four intermediate block valve stations.

2.2.3 Pipeline Route Selection

In common with other types of linear development, the effect that a pipeline may have on the environment largely depends on the route chosen. Consequently, careful selection of a route is of prime importance in minimising adverse environmental effects.

Recognising this, GNI adopted a systematic route selection process for the Interconnector, consisting of four broad stages:

- identification of an Area of Search;
- identification of route corridors within the Area of Search;
- selection of a preferred route corridor and identification of a preliminary route within that corridor; and
- identification of the final route during the conceptual and detail design stages of The Project.

This process is described briefly below.

2.2.3.1 Area of Search Identification and Corridor Selection

The first stage of selecting a pipeline route was to define an Area of Search, based on the proposed start point at the Beattock Compressor Station and the finish point at Brighthouse Bay Compressor Station. The Area of Search aimed to cover all practicable potential routes between these points.

Within the Area of Search published information was then collated and mapped allowing the major environmental features and engineering constraints to be identified. The major constraints and features that were considered to be important at this stage included, but were not limited to:

- centres of population and proposed future development detailed within the appropriate development plans;

- engineering considerations (such as major roads, overhead cables, rivers, railways, and other major pipelines);
- construction issues such as side slopes and difficult ground conditions arising from the geology, hydrology, and soils of the area;
- mineral extraction and known areas of landfill;
- landscape and topography;
- nature conservation; and
- archaeology.

Once the information was collated and mapped, potential pipeline corridors (typically 1km wide) were identified. The following engineering, construction and environmental considerations were taken into account when identifying potential pipeline corridors:

- the start and finish points of the pipeline;
- avoidance of centres of populations as far as possible;
- avoidance of significant environmental features as far as possible;
- avoidance of potentially difficult construction areas, such as steep slopes, peat, complex river crossings; and
- the shortest distance, bearing in mind the above.

A preferred pipeline corridor was then selected.

2.2.3.2 *Pipeline Route Selection and Refinement*

After selection of the preferred pipeline corridor, consultation with the project pipeline design engineers, local planning authorities and other statutory and voluntary organisations were undertaken to define a preliminary pipeline route.

Once a preliminary route for the pipeline was selected, an EIA was carried out, culminating in the publication of an ES. The pipeline route was further refined during this stage to take into account specific engineering and environmental constraints. During the EIA, a range of studies and surveys were undertaken, and consultations carried out, to characterise and establish the baseline environment. The results of these studies and consultations were then used to further refine the route and the required construction methodologies, providing the basis upon which to apply for and secure the PCA.

2.3 **The Project**

2.3.1 *Justification*

As described in Section 2.2 above, the planning and development of the Interconnector pipeline not only considered alternative forms of transporting gas and alternative connections but also alternative pipeline corridors. In addition to this, numerous iterations of the pipeline route were considered in order to minimise impacts on the environment and identify appropriate construction techniques.

It is considered by The Project development team that the pipeline route for which the PCA was secured remains valid. However, since the completion of the first 29.6km from Beattock to Cluden in 2002, a review of environmental constraints along the route indicated that the status of the Dumfries Aquifer (a designated Source Protection Zone) to the west of Dumfries had changed considerably.

Whilst the presence of clay deposits above the aquifer were considered significant enough to prevent any significant pollution incidents with respect to the aquifer, the increased reliance of Scottish Water on this groundwater as a potable source for the town of Dumfries was considered to be an important change in the environmental baseline. Whilst it was still considered that impacts were unlikely to be significant, GNI and their project team wished to seek an alternative route, which would further minimise the potential risk to the aquifer.

2.3.2 *Alternatives*

Based upon previous knowledge of the area, consultations with key authorities (SNH, SEPA, Dumfries & Galloway Council and Scottish Water), and information collated on a desk-based basis, an alternative route to the west of Dumfries was identified by the development team. The identification of the alternative route considered, but was not limited to, the following:

- the desire to minimise the amount of pipeline passing above the aquifer;
- the desire to keep the overall development footprint or pipeline length the same if not smaller than the consented Interconnector i.e. minimise land-take requirements as far as practicable;
- a route further east of the Interconnector at this location would result in the pipeline remaining wholly within the aquifer;
- the town of Dumfries provides a significant barrier to route selection to the east and restricts movement in that direction (bearing in mind the principles adopted for corridor and route selection above, Section 2.2.3.1).

On this basis an alternative was identified; is described below, and is shown in Figure 2.1.

2.3.3 *Pipeline Route*

A detailed description of the environment through which the pipeline route runs is given in each of the technical sections in this ES. The following description provides a description of the route alignment (see Figure 2.1).

The proposed route of the pipeline diverges from the authorised pipeline route to the immediate south of the River Cluden at NX 933296. From this location the pipeline runs for a total of 2.3km, crossing a minor road 1.5km to the north west of Nunwood in a south westerly direction before turning southwards towards Terregles and crossing a minor road. To the west of Terregles the pipeline then heads in a south westerly direction for approximately 2.2km, threading its way between tracts of woodland at Beaconhill, to the east of an iron age settlement (Fort) and then across a minor road approximately 0.5km to the west of Collochan.

From the south of the minor road the pipeline then continues in a predominantly south westerly direction for 1.8km to the north of Beltonhill and Drummore before crossing the A75 and running a further 0.7km, merging with the authorised pipeline route north of Lochfoot at NX 898743.