GNI (UK) Ltd.

Cluden to Lochfoot Pipeline

Non Technical Summary

AUGUST 2015

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1. NON-TECHNICAL SUMMARY

1.1 Introduction

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 (the 'Interconnector'). 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 Transco pipeline network.

The PCA was duly granted during 2002 and construction of the pipeline was substantially started, and a 29.6km-section between Beattock and the River Cluden (north west of Dumfries) and completed.

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 the construction of the remainder of the pipeline from Cluden to Brighouse Bay with a proposed construction year of 2016. However, whilst the authorisation to construct the pipeline remains in place, GNI has identified the requirement for an alternative route of a small section of the pipeline to the west of Dumfries.

The Scottish Executive has directed that a new and separate PCA for the re-route (hereafter referred to as 'The Project') would be appropriate for which an Environmental Impact Assessment (EIA) has been undertaken.

The proposed route of the pipeline diverges from the authorised pipeline route to the immediate south of the River Cluden, north west of Dumfries (O.S. Grid Ref. NX 932796). The route of the pipeline is shown in Figure 1. From this location the pipeline runs mainly in a south westerly direction for approximately 7.2km, threading its way between tracts of woodland and a mixture of arable and pastoral agricultural land before finishing approximately 0.6km north of Lochfoot (O.S. Grid Ref. NX 898743) where it merges with the authorised pipeline route.

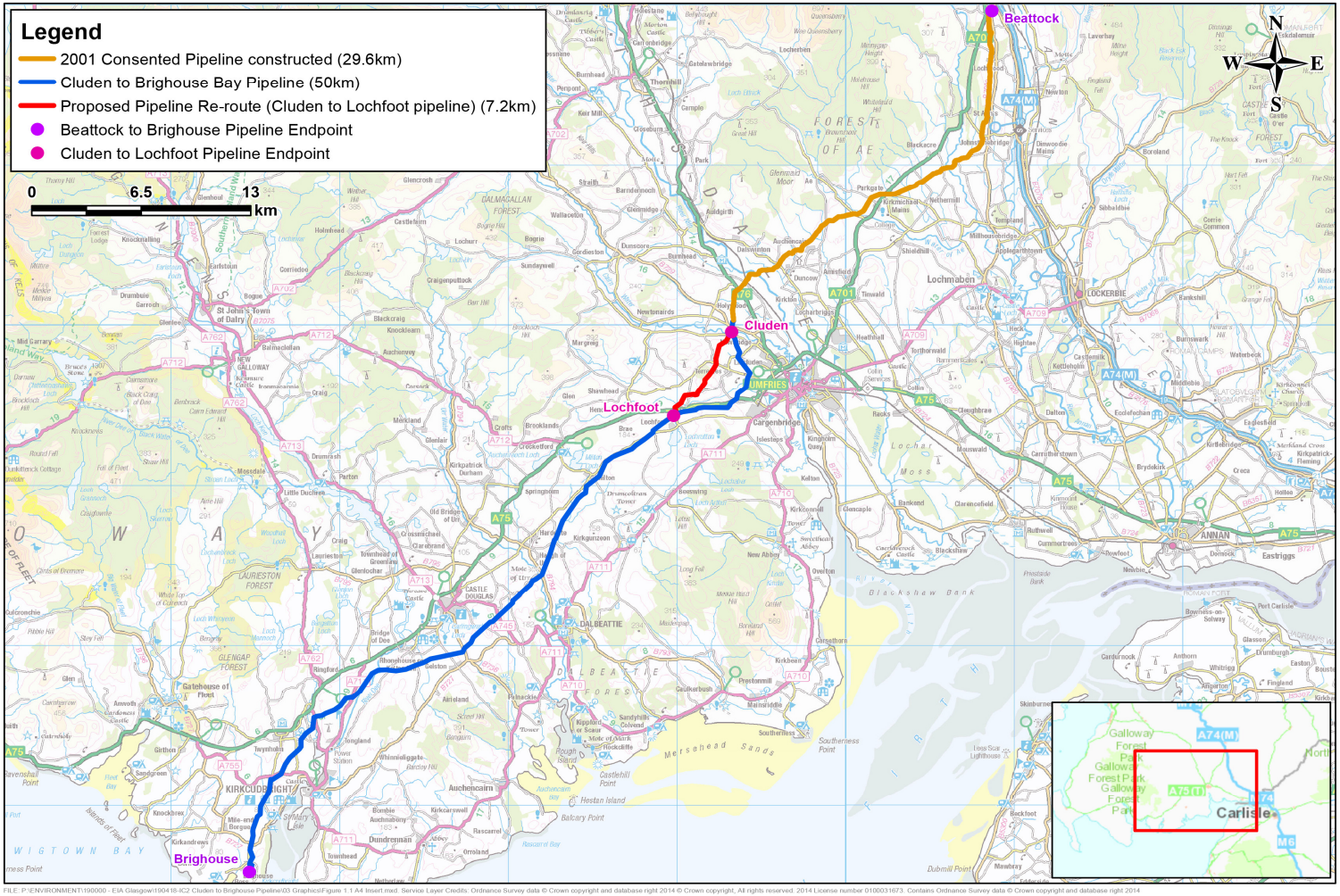
The pipeline will be a 36" (914.4mm) diameter steel pipeline approximately 7.2km long and buried with a minimum depth of cover of 1.2 metres from the underside of topsoil.

Legislation Context

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

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). Whilst no direction has been provided by the Scottish Government in respect of the requirement for an ES to be submitted for this pipeline, GNI have decided to undertake an EIA and provide an environmental statement (ES) in support of its PCA application.

Figure 1 Beattock to Brighouse Pipeline



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

Temporary site-establishment areas containing workshops, stores and offices, and a temporary pipe laydown area will also be required during construction. These temporary features of The Project are not included within the PCA but will be subject to the normal development control processes and will require planning consent under the *Town and Country Planning (Scotland) Act 1997*.

A number of other consents are also required for the construction and operation of the pipeline, such as those required for crossing watercourses and those relating to the protection of plants and animals. These will be applied for, as required.

Programme

For the purposes of this assessment, pipeline construction has been assumed to commence in Spring 2016. Preparatory works will 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. Under this scenario, the main pipeline construction activities will be undertaken during the summer months of 2016 to take advantage of better weather and light conditions and to reduce the risk of excessive damage to soils along the pipeline route. All construction work is planned to be completed by the end of 2017.

1.2 Project Justification, Alternatives and Route Selection

Background

Consideration of all feasible routes, culminating in the selection of a preferred route, is an important part of the EIA process, as it is one of the key mitigating measures for avoiding potential impacts. Consequently, careful selection of a route is of prime importance in minimising adverse environmental effects.

Recognising this, leading up to 2002, BGE (now known as GNI) adopted a systematic route selection process for the original Interconnector, consisting of four broad stages:

- identification of an Area of Search;
- identification of route corridors (1km-wide 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.

The process of route selection for the Interconnector is summarised below.

Interconnector Route 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 Brighouse 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 e.g. centres of population, major roads, overhead cables, rivers, railways, mineral extraction and known areas of landfill, etc. Once the information was collated and mapped, potential pipeline corridors (typically 1km wide) were identified. A preferred pipeline corridor was then selected.

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

Project Route Selection

Since the completion of the Beattock to Cluden Pipeline in 2002, however, a review of environmental constraints along the selected Interconnector route indicated that the status of the Dumfries Aquifer to the west of Dumfries had changed considerably. Due to the increased dependence of Dumfries upon this aquifer for potable water, whilst it was still considered that impacts were unlikely to be significant, GNI and its project team wished to seek an alternative route, which would further minimise the risk to the aquifer.

Based upon previous knowledge of the area, consultations with key authorities, and information collated during desk-based assessments, an alternative route to the west of Dumfries was identified by the development team. The identification of an 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 of the Interconnector).

On this basis an alternative route (re-route) was identified, and is shown in Figure 1 (i.e. The Project).

Pipeline Route

The following provides a description of the route alignment (see Figure 2). The proposed route of the pipeline diverges from the authorised pipeline route to the immediate south of the River Cluden at NX 932796. 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.

1.3 Project Description

The methods and procedures to be used by GNI during construction and operation of the pipeline are well established, and based on established best practice, as outlined in the in the Institution of Gas Engineers' (IGE) Recommendations on Transmission and Distribution Practice – IGE/TD/1: Edition 5, 2014 – for Steel Pipelines for High Pressure Gas Transmission, and British and International Standards and Regulations.

Design

The gas pipeline system will be designed, constructed and operated in accordance with the '*Steel Pipelines for High Pressure Gas Transmission IGE/TD/1 Edition 5*' and will comprise a 36-inch (914.4mm) outside diameter buried steel pipeline with an operating gauge of 86 bar g and a design gauge of 91 bar g. The pipeline will have a total length of 7.2km, starting at NX932796 and ending at NX898743, with 200m limits of deviation either side of the centreline, making a total of 400m.

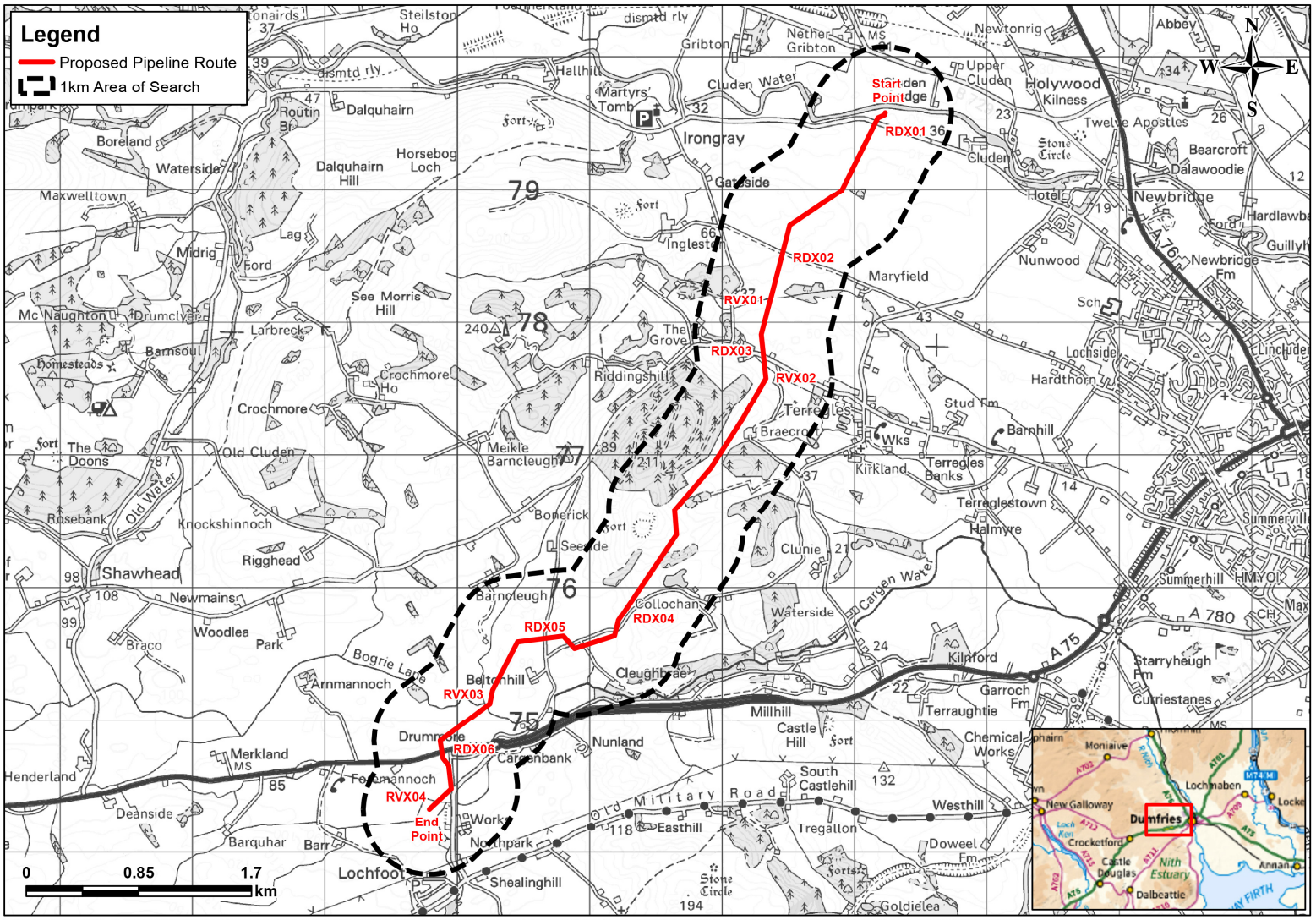
The pipeline will be laid with a minimum depth of cover of 1.2 metres from the underside of topsoil. However, in areas where there is an increased risk of damage or interference by third parties, additional protective measures will be adopted. Heavier wall pipe will be used at road, rail, watercourse, and pipeline crossings. The minimum proximity of the pipeline to normally occupied buildings is defined dependent on pipe size and operating pressure. For The Project, the Building Proximity Distance (BPD) will be up to 91m.

Due to the dry, non-corrosive nature of the natural gas to be transported, no permanent provisions are to be made to protect the pipeline against internal corrosion. External corrosion protection of the pipeline will be provided by fusion-bonded epoxy (FBE) or three layer polyethylene coatings and an impress current cathodic protection system.

Construction Strategy

The design and construction of the pipeline will incorporate the requirements of third parties and the mitigation measures outlined in the ES. During the design phase, a Main Works Contractor (MWC) will be commissioned to construct and commission the pipeline. The MWC will be responsible for the production of Method Statements covering the construction of crossings at watercourses, roads and any archaeologically or ecologically sensitive areas. The MWC will produce an overarching Project Environmental Management Plan, Waste and Water Management, Pollution Prevention and Emergency Response Plans, detailing how the environmental impacts of construction activities and the risk of incidents will be minimised.

Figure 2 Pipeline Location Plan



Pre-construction Works

Ahead of construction, the route will be surveyed and the precise line of the route marked. Where appropriate, pre-construction field drains will be installed within the working width to maintain existing field drainage systems and reduce water flow into the pipeline trench during construction.

Preparation of the Working Width

All construction activities will normally be undertaken within a fenced strip of land, known as the 'working width', which will generally be 40m wide (see Plate 1). A wider working width will be provided at road, watercourse and service crossings to provide access, storage for excavated material from pits, space for equipment and off-road temporary parking space.

The working width will be prepared by fencing it off, and removing vegetation and sections of hedgerow and field boundaries. Rivers and streams will be generally bridged or flumed (by the installation of temporary pipes) to provide an access track for plant and machinery during construction.

Topsoil Stripping

The topsoil will be stripped on a field-by-field basis across the working width by earth-moving equipment, and the soil stored carefully to one side. The topsoil stack will be typically 12m wide and will generally not exceed 3m in height. Gaps will be left in the topsoil stack in floodplains.

Temporary Access Roads

Temporary access roads between public roads and the working width may be required along the proposed pipeline route to aid the movement of machinery and materials, particularly where the ground is soft. Access roads will typically be constructed by laying crushed stone over a geotextile membrane or timber rafts called 'bog mats'.

Pipe Delivery, Stringing and Bending

Pre-coated pipes will be delivered to an appropriate sea port or will be sent by rail to the nearest available station and then taken by lorry to temporary pipe-storage areas (pipe laydown areas) located at strategic locations along the pipeline route.

The pipe will be transported from the temporary storage areas along the working width and laid onto wooden skids adjacent to the trench line (see Plate 2).

Welding, Testing and Coating

The pipeline sections will then be welded together. All the welds will be tested and certified before a coating is applied to protect the welds from corrosion.

Trench Excavation

The pipe trench will be dug either with mechanical excavators straddling or running alongside the pipeline trench or using a specialised trenching machine. The depth will be variable but will allow a minimum depth of 1.2m from the underside of topsoil in agricultural land. The excavated material from the pipe trench will be stored on the opposite side of the working width from the topsoil to prevent mixing of subsoil and topsoil (see Plate 3).

The results of site investigations may reveal areas that cannot be excavated using conventional equipment and where additional measures may be required. For example, controlled blasting may be necessary where very hard rock exists at shallow depth.

Pipe Lowering, Tie-in and Backfilling

Following trench excavation each welded pipe section will be lowered into the trench. The pipe trench will then be filled with the material taken from the trench in the reverse order of how it was excavated. The backfilled trench will then be consolidated by tamping or rolling (see Plate 4).

Reinstatement

After re-grading the working width to reflect the original profile, a replacement drainage scheme will be installed where necessary within the working width to ensure that pre-existing drainage patterns are maintained. The working width will then be cleared, the subsoil loosened using agricultural machinery and stones and debris will be removed before the topsoil is replaced and cultivated (see Plate 5).

All reinstatement measures will be discussed and agreed in advance with landowners, occupiers and statutory and non-statutory consultees before being incorporated into a Reinstatement Plan. This will include details of soil handling, the seed mixes to be used, plant sources and mixes and after-care regimes. Hedgerows and trees will be replanted, and fences and hedgebanks re-built taking account of local styles and materials.

During the reinstatement of boundaries, marker posts, approximately 500mm high, will be installed at field boundaries to indicate the route for future monitoring and line-walking.

Road, River and Service Crossings

Typical methods of crossing roads, watercourses and services can be divided into open-cut (where a trench is excavated) and trenchless techniques, where the pipe is installed by drilling or boring under the feature. Trenchless techniques may, on occasion, require deep excavations on either side of the crossing. Both open-cut and trenchless techniques require additional land to be taken, temporarily, for storage of the extra excavated material and the necessary plant and equipment.

The adopted methods of construction will depend on the results of a borehole survey to determine ground conditions, and on the requirements of the appropriate consenting authorities. However, in broad terms, it is expected that open-cut and trenchless techniques will generally be used as follows:

- major public roads: trenchless crossing technique where practicable;
- minor roads and private tracks: open-cut techniques, subject to consultations with the landowners/occupiers and the appropriate consenting authorities;
- main rivers: trenchless techniques except where this is not possible due to unsuitable ground conditions; and
- small watercourses: dry open-cut techniques, subject to the agreement of SEPA, and other relevant consultees.

Plate 1 Site Preparation

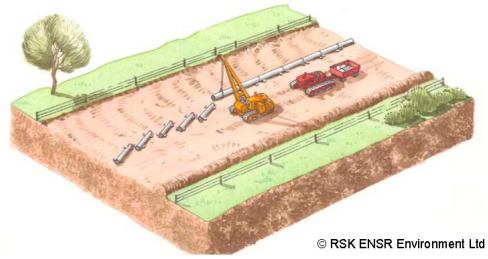


Plate 2 Pipe Stringing

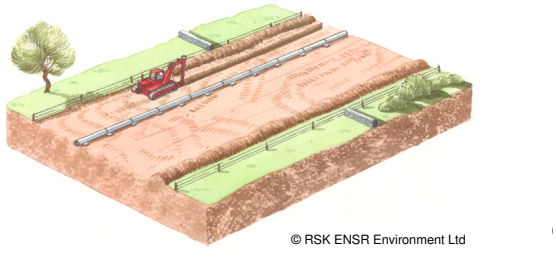


Plate 3 Trench Excavation

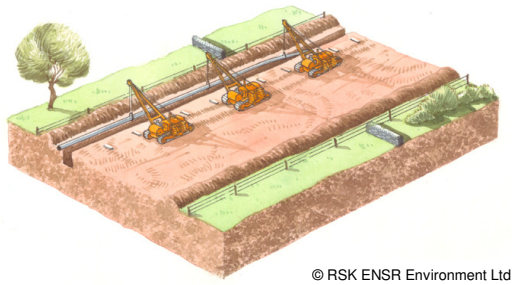


Plate 4 Laying the Pipe

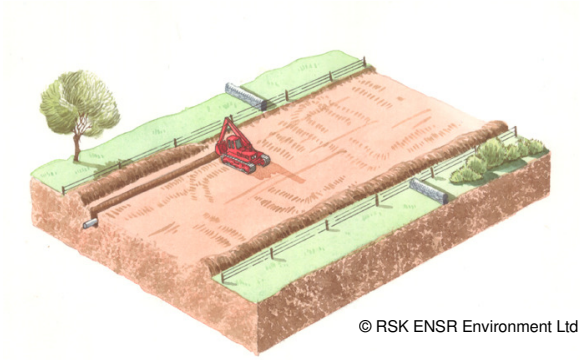


Plate 5 Reinstatement

Testing and Commissioning

On completion of the construction of the pipeline, a hydrostatic test will be carried out to determine fitness for purpose. This involves filling the pipeline completely with water and raising the pressure, to ensure the integrity of the pipeline, before it is dried and filled

with gas. The water will be abstracted and discharged back to rivers, with the approval of SEPA.

Site Establishment Areas and Pipe Laydown Areas

It is likely that temporary Site Establishment Areas (SEAs) will be required for temporary offices, storerooms, delivery and storage areas. In addition, temporary areas to store the lengths of pipe (Pipe Laydown Areas) will be needed.

The location of the SEAs, Pipe Laydown Areas, and access arrangements will be discussed and agreed with the local planning authorities and SEPA as part of a separate planning application. Floodplains and groundwater protection zones will be avoided, where possible. Once sites have been agreed any necessary planning consents will be obtained. The SEAs will either be sited on existing hardstanding or stone over a geotextile membrane.

Operation

The use of a comprehensive corrosion protection system will ensure the integrity of the pipeline and will keep maintenance requirements to a minimum. The internal condition of the pipeline will be monitored periodically using automated internal inspections. Above ground, the pipeline will be regularly inspected by helicopter and by walking the route; any disturbances to the ground will be reported immediately and investigated.

1.4 Planning

The route lies wholly within the Dumfries and Galloway local authority area. In addition the pipeline passes through two of the former districts, Nithsdale and Stewarty, which are still used for Local Planning. Relevant planning policies have been considered when drafting the ES and effort will be made to ensure compliance with these policies during construction and operation of the pipeline.

The proposed pipeline has been routed to avoid large residential areas, No significant existing or planned industrial areas or sites lie within the proposed pipeline corridor.

The pipeline has been routed to avoid areas allocated for residential development in the Local Plans. Details of planning applications and extant planning consents within the pipeline corridor have also been obtained and will be fully taken into account during the routeing and design of the pipeline.

Landtake for construction of the proposed pipeline will be temporary and kept generally within the 40m wide working width. Once the pipe has been laid and the land reinstated, there will be no permanent loss of land along the pipeline route.

1.5 Land Use

The pipeline route passes through mainly agricultural land, the majority of which is used for grazing. There will inevitably be some temporary disruption to farming activities. This occurs principally during the construction phase when there will be a temporary loss of use of agricultural land, possible disruption of services and the removal of sections of established boundaries.

In order to minimise any disruption, mitigation measures, such as temporary drainage systems and access provisions across the working width, will be agreed with affected

landowners and occupiers under formal Pre-Entry Agreements. Following implementation of these mitigation measures the impact anticipated during the construction phase will be slight. All impacts are short term and will cease upon completion of construction.

Extensive measures and best practice will be employed in handling soils, implementing land drainage and in preventing the spread of notifiable scheduled plant and animal diseases and agricultural weeds.

After construction, normal agricultural operations can be resumed, with the working width, including field boundaries, being fully reinstated. Following reinstatement, no further impacts are anticipated.

1.6 Physical Environment

Topography

Pipeline construction will require the excavation of topsoil and subsoil, and disturbance to surface vegetation as a result. Some benching of the land may also be required where side slopes dictate i.e. a levelling of the land to facilitate safe movement of vehicles and plant. No buildings will be directly affected by the construction works, and any large tracts of woodland will be avoided.

As part of the construction process, all subsoil and topsoil will be reinstated and the ground re-profiled to match the surrounding gradient and terrain. Therefore, impacts on topography as a result of construction of the pipeline are not considered to be significant.

Geology

The published geological records provide an indication as to the anticipated geological succession along the route corridor. The actual ground conditions will be confirmed through a detailed site investigation at detailed engineering design stage, comprising boreholes and trial pits.

The impact to the underlying geology will be limited to ground disturbance comprising the removal of topsoil from the working width and the excavation of a trench to a depth of 2.5m. Some disturbance to shallow bedrock may result. No designated sites of geological interest (SGI) or SSSI will be affected. No significant impact to the underlying geology is anticipated.

Soils

Soils along the pipeline route will be disturbed both by the excavation of the pipeline trench and by supporting groundworks such as the creation of access roads. The soils crossed by much of the pipeline route are of agricultural value and as such are considered to be an important resource, albeit only a small proportion of which lies within the most sensitive agricultural land classifications and no long term significant impacts are considered likely.

Hydrology & Hydrogeology

Surface waters will be vulnerable to potential pollution during pipeline construction and will have the potential to be impacted as a result of:

- contamination by sediment laden run-off from the working width following topsoil stripping;
- spillage of fuels, chemicals, lubricants and hazardous materials, giving rise to potential pollution incidents to ground and then into surface waters; and
- sediment release during open-cut crossings of the watercourses.

Main watercourses that could be affected by The Project are classed good to poor quality. There is a fish farm located on the Cargen Water downstream of The Project and the pipeline route is located within the Lower Nithsdale Nitrate Vulnerable Zone.

With respect to groundwater, the pipeline route passes over the Dumfries Aquifer, which supplies a large proportion of the potable water source for Dumfries. A drinking water (source) protection zone has been designated in association with the abstraction borehole of the Dumfries Aquifer at Terregles within which part of the proposed route is located. Whilst the presence of glacial till (primarily clay) close to the route indicates that a natural barrier is likely to exist between the surface and the Dumfries aquifer, the presence of this and other sensitive surface receptors means that, without suitable measures in place during construction significant impacts could arise with respect to hydrology and hydrogeology.

In order to mitigate such potential impacts, risk assessments will be carried out prior to construction by the MWC and, if receptors of high sensitivity and susceptibility are confirmed close the route, enhanced silt control methodologies as described below will be considered:

- excavating a series of grips or channels to divert clean water (originating upgradient of the pipeline route towards existing watercourses or grassed areas) so that it does not collect silt from exposed soil surfaces;
- using straw bales in and around streams to filter large particles from run-off water;
- fluming the surface water over the working width to prevent it picking up sediment/silt;
- installing lagoons or bunds to retain water temporarily; or
- using agricultural sprays to disperse water over a wide area, allowing it to soak into grassed areas of ground.

Before any works are carried out, an application(s) will be submitted to carry out works under the *Water Environment (Controlled Activities) Regulations 2005*. This will include all discharges, abstractions and all river engineering works. No works will commence until all relevant licences are obtained to the satisfaction of SEPA.

1.7 Ecology

A desktop study has been carried out with information collated from statutory and non-statutory bodies relating to nature conservation issues within a 1km route corridor. An extended Phase 1 habitats and protected species survey has also been undertaken on the proposed pipeline route. In addition, a range of protected species surveys have been carried out along the route including badger, water vole, bat and otter surveys.

Watercourses and Waterbodies

It is intended that minor watercourses will be crossed using dry open-cut techniques. However, the requirement to use trenchless techniques for watercourse crossings cannot be discounted until such time as intrusive ground investigations are completed during the detailed design. Where dry open-cut techniques are to be used, this will lead to the temporary removal of habitat associated with the excavation of the trench and the construction of a temporary flumed crossing (or equivalent). There is also the potential for pollution and increased sedimentation to affect downstream habitats.

For trenchless techniques, there is a very low risk of failure that could affect the integrity of the sub-strata of the river bed and the potential for sediment pollution arising from the break-out of drilling mud used during such crossings.

It is unlikely that there will be any direct impacts on ponds and other waterbodies. However, as with watercourses crossed by the proposed pipeline, surface water run off could affect the Collochan Loch if not controlled appropriately.

GNI and their MWC will implement appropriate construction techniques and construction mitigation measures to ensure that pollution incidents are minimised and contained, and that disturbed habitats are reinstated appropriately. Short term impacts may result, however, these are considered unlikely to be significant.

Hedgerows

The impacts on hedgerows crossed by the route will be limited largely to temporary removal of habitat associated with forming the crossing. The rapidity with which a hedgerow section recovers to its original state, following replanting, will depend upon the age, diversity and management history of the individual hedgerow.

There will also be temporary impacts associated with fragmentation of the hedgerow network, which may have temporary, cumulative impacts on its use as a wildlife corridor.

Trees and Woodland

The main impact on trees and woodland will be the removal of vegetation, and topsoil stripping, within the working width. The pipeline has been routed to largely avoid belts of woodland and tree lines and replanting will be undertaken where removal is found to be required.

Medium to long term impacts may occur in relation to these features, however, they are not considered likely to be significant given the small number likely to be affected directly and commitment to replace those lost through replanting.

The pipeline does cross a watercourse which feeds into the wet woodland area at Maryfield Loch. Suitable measures will however, be implemented to minimise impacts upon the watercourse and as a result impacts are considered unlikely to be significant.

Grassland

The main impacts of pipeline installation on grasslands and heathland are associated with vegetation removal and topsoil stripping to form the working width. There is also the potential, in marshy and damp grasslands, for adverse impacts on hydrology.

The proposed pipeline may cross one small area of wet grassland considered to be of site importance. If the pipeline route crosses this area, measures will be taken to minimise

any changes to the hydrological regime of this site. A site-specific method statement will be drawn up, in consultation with SNH and specific seed mixes will be considered to facilitate reinstatement.

Stone Dykes

Stone dykes along the route may provide suitable habitat for hibernating bats, reptiles and invertebrates. In addition, they may house a variety of bryophyte species.

Any sections of stone dykes to be removed along the pipeline route will be removed carefully be hand following a hand search by a qualified ecologist to reduce the chance of reptiles or amphibians being harmed. The sections of stone will be stored at a safe distance from the route until works are complete and then reinstated carefully by hand. The stone dykes will be dismantled only during the spring/summer months to ensure hibernating bats are not present.

Invasive Plant Species

No invasive or injurious species were recorded during the field survey. However, there is a small risk that invasive plant species could still be present and may spread along the pipeline route as a result its linear nature. Other weed species may also set seed or otherwise become established in bare soil created as a result of the works, with the potential for them to spread into neighbouring areas. Further surveys will therefore be conducted prior to construction to confirm the presence or absence of such species. Should such species be present then appropriate measures will be developed to prevent their spread.

Fish

Fish populations downstream of the proposed pipeline may be affected indirectly by pollution incidents and increases in turbidity caused by sediment-laden run-off entering the watercourse and/or disturbance to accumulated sediments and bed material. These impacts would be important if they affected spawning sites or sites of importance for early life stages of important species. Localised disturbance could cause the displacement of individual fish and, more importantly, could interfere with the movement patterns of migratory species. Some fish, particularly salmon, can be impeded from moving upstream to spawn by sediment discharge, vibration and lighting at critical times and in critical locations.

All of these impacts have the potential to be significant if left unmitigated. For this reason, best practice construction techniques and methods will be employed on site including measures relating to storage and handling of fuels and chemicals, temporary construction drainage and sediment containment measures where required, and fish captures and rescues at watercourse crossings.

Detailed electrofishing and aquatic invertebrate surveys will be undertaken in summer 2015 (1 year prior to construction) as well as in 2017 (post-construction) to monitor differences in fish populations and associated water quality.

Birds

Given the relatively limited area affected by the pipeline works in any one location, the direct impacts on nesting and foraging birds is likely to be limited. The removal of hedgerow sections and tree lines will result in the loss of potential nest sites for birds. However, it is likely that other nest sites will exist within each bird territory. Also, the

linear nature of the scheme limits the effect that it has on each habitat feature. The impact resulting from loss of potential nest sites is not anticipated to be significant.

Noise and visual disturbance is likely to cause a reduction in the numbers and assemblage of birds nesting close to the works' area. However, this is also expected to have a relatively insignificant effect in terms of the wider populations of birds.

Bats

Construction of the pipeline will result in the creation of temporary gaps through vegetation along minor watercourses, hedgerows and woodland, which could be important as potential commuting and foraging routes for bats. Such vegetation could also contain sites potentially suitable for roosting bats.

The impact on bat commuting and foraging routes will vary between the species using these routes. Of particular interest would be the slower-flying species such as brown long-eared bats. Loss of potential roost sites could occur if trees identified as being potentially suitable for roosting bats are felled. However, the route of the pipeline will be fine-tuned to avoid trees that may contain bat roosts wherever possible. In addition, where such potential habitat is not avoidable then suitable measures will be developed in consultation with SNH prior to removal.

Overall, an impact of moderate scale is anticipated due to the very high sensitivity of the species, but short-term impacts are likely to result.

Water Voles

The results of the water vole survey indicate that there will be no impact on this species as a result of the works proposed.

Otters

The results of the otter survey indicate that direct impacts on otters are unlikely to occur as no evidence of activity was found within the survey corridor.

Reptiles

Reptile habitats will only be temporarily disturbed and then reinstated. A hand search and watching brief of any works area in suitable reptile habitat will be undertaken to minimise the risk of reptiles being harmed by the works, this will include hedgerows and stone dykes. Any animals found will be located to another suitable area of habitat.

Badgers

Given the relatively limited 'footprint' of the pipeline works in any one area, the temporary loss of foraging habitat will be insignificant to any of the resident Badger social groups.

No Badger setts were found within 30m of the working areas, with the closest being c71 m away from the maximum working width area. Given these distances and the fact that the tunnels extend away from the pipeline route, no damage to tunnels or disturbance to Badgers is expected based on current evidence.

Mitigation measures for badgers will include providing safe exit routes for animals should they fall into the trench overnight, particularly where abundant badger paths were recorded in the original surveys.

Invasive Animal Species

American Signal Crayfish are known to be present in a loch to the south of the proposed route and it is therefore possible that this invasive species may have migrated into some of the watercourses being crossed by the route.

This species is highly invasive and must not be spread from one area to another. Following consultation with SNH and SEPA, it has been agreed that all watercourses crossed by the pipeline will be treated as if they contain American Signal Crayfish. A specific Method Statements for crayfish has been prepared and will be adhered to by the MWC. All machinery and footwear entering or leaving watercourses will be sprayed with an iodine based disinfectant. Construction of the pipeline will progress from Cluden to Lochfoot, i.e. towards rivers known to already to be infested.

1.8 Archaeology and Heritage

A desk based assessment of the proposed route has identified 54 sites, of which 46 are considered to be too far from the route for any significant impact to take place.

The remaining 8 sites will be recorded during a watching brief during construction.

A general archaeological watching brief will be carried out during construction to deal with any unanticipated archaeological remains encountered during topsoil stripping, benching and/or pipeline trenching. The impact on any significant archaeological remains encountered during the watching brief will be minimised where possible by reduction of the working width to a minimum practicable level, the placement of geotextile matting or bog mats and/or careful reinstatement. Archaeological remains which cannot be preserved in situ will be archaeologically excavated and recorded, as appropriate. The techniques to be employed will be discussed and agreed with Dumfries & Galloway Council for each site, and the mitigation strategy will be determined in consultation with the archaeological advisor to Dumfries & Galloway Council.

1.9 Landscape and Visual Impact

Landscape Character, Designated Landscapes and Visual Amenity

The effects on landscape character and designated landscapes are assessed as being temporary, indirect and reversible. Indirect effects on landscape character are caused by those effects directly affecting certain specific landscape elements, which combine to form distinct landscape character, and contribute to the scenic quality of the designated areas.

With development of the reinstatement plan in consultation with the relevant authorities, including the replanting of any trees and hedgerows removed, reconstruction of walls and fencing affected by construction, and the reinstatement of ground flora and habitats, the magnitude of effect caused by the operation of the pipeline on landscape character and designated landscapes is assessed as being small, reducing to Negligible over time.

Visual Effects

Visual effects are assessed as being temporary, direct and reversible. Visual effects are a consequence of those effects directly affecting certain specific landscape elements.

For the majority of its length, the proposed pipeline will only affect the landscape in the short-term i.e. during construction and for a short period afterwards. The proposed route mostly crosses agricultural land. The working width of the pipeline will be visible through the landscape during construction, when sections of field boundaries, other vegetation and topsoil are removed, resulting in the temporary disruption of these features.

Once constructed, the visibility of the proposed pipeline route will be much reduced over time. Along the proposed pipeline route there are few sensitive visual receptors with available views of the route. Those visual receptors that may be affected by The Project consist of a number of scattered farmsteads and residential properties, along with properties within the settlement of Terregles. The sensitivity of these visual receptors affected by the pipeline route may be assessed as being high. Collochan Loch may also be affected during pipeline construction, with its sensitivity also being assessed as high. Users of the local roads may also be affected particularly where the proposed route crosses or passes close to these features, where the sensitivity of such visual receptors may be assessed as being medium.

Sensitive restoration of landscape features will ensure that there are, however, no permanent long-term visual effects during operation of the pipeline. The pipeline will be buried underground and will not be a visible feature within the landscape once construction is completed. For this reason, following the implementation of mitigation measures no significant impacts are anticipated.

1.10 Traffic and Transportation

During construction, a pipeline construction yard will be required. The construction yard will contain site offices for management and supervisory staff relating to the pipeline construction, and storage areas for both equipment and line-pipe. The location of the yard will be determined as an integral part of the overall Interconnector pipeline (of which The Project is part) as part of the detailed design.

Site access will be by public roads utilising wherever possible A and B classified roads. The A75 and A76 trunk roads will form the backbone of the traffic routes to be used. Both of these routes will provide good access onto the local road network within the vicinity of the pipeline route. The greatest impact in terms of traffic flows relates to changes in flows resulting from all construction related HGVs on both the road links. Delivery of pipe to the pipe laydown area is considered likely to have less of an impact. Overall, the predicted increases in traffic flows lies well below the assessment criteria used in the assessment to indicate significant increases. In this regard, whilst it is anticipated that slight to moderate impacts may result from disruption to the road network and traffic flows during construction, such impacts are considered unlikely to be significant.

1.11 Emissions

The majority of potential emissions will occur during the construction phase of the pipeline. Potential impacts arise from waste generation, discharges to watercourses, combustion emissions from plant and vehicles, dust generation, transfer of mud onto public highways, light, and unplanned releases such as spills. In addition, there will be noise emissions from construction plant and activities.

Waste will be regularly collected from the working width and placed in covered skips or similar containers. Special Wastes, including any contaminated soils identified during construction, will be disposed of in accordance with the relevant Regulations.

A comprehensive Waste Management Plan will be produced identifying likely wastes and appropriate handling and disposal methods. Pollution Prevention, Water Management and Emergency Response Plans will be prepared. All plans will be agreed with relevant consultees.

Measures to control ground and surface water during construction and prevent water pollution will be implemented, as outlined above. Fuel and oils needed for construction will be stored in bunded areas at agreed locations that will avoid particularly sensitive areas and strict procedures will be used to minimise the risk of spills during refuelling. Specially trained and equipped teams will be used to deal with any spills.

In order to control the emission of exhaust fumes and smoke all vehicles and items of plant will be correctly adjusted and maintained. Drivers will be instructed to turn off their engines when not in use. In order to prevent dust clouds during very dry conditions, water will be sprayed onto the working width to moisten the surface, if necessary, and vehicle speeds will be restricted along the working width. A high frequency of road sweeping will be used to minimise the accumulation of mud on public roads.

Noise emissions from construction plant and machinery will be controlled in accordance with recognised good practice. Silenced compressors and acoustic covers will be used on plant and machinery. Where residents are in close proximity to the pipeline works, or may be affected by construction noise, they will be contacted in advance and kept informed of operations. The need for any additional mitigation measures, such as acoustic barriers, will be agreed with local Environmental Health Officers, having regard to any particularly noisy operations, such as the use of “peckers” if needed to excavate the pipe trench though areas of surface rock. Particular attention will be paid to those properties closest to the pipeline works.

During commissioning of the pipeline there will be a short period of high noise levels at the test points. Super-silenced equipment will be used to minimise noise generation, and operations causing noise will be limited to a short period. Additional mitigation measures will include the erection of noise barriers if required by local conditions.

1.12 Socio-Economic

It is likely that there will be temporary positive impacts on the local economy arising from construction of the pipeline. Benefits will arise directly from the construction phase of The Project over the course of several months. A moderate short term positive impact on local suppliers of, for example, construction plant, fencing, re-instatement materials, fuel, consumables, aggregates and seed mixes is anticipated to result.

Dumfries and Galloway has a high dependence on tourism. Any impact on tourism is likely to occur during construction works, particularly in the summer months. However, this is likely to be short term and limited in extent with slight negative impacts due to noise levels and potential dust nuisance, moderate negative visual impacts, and slight to moderate impacts on traffic for a limited period.

Agriculture, hunting and forestry provide significant, predominantly rural, employment, which will be impacted during construction works. Farmland that will be crossed by the pipeline will experience short-term temporary adverse effects with the addition of some

minor delays on the roads. However, compensation will be agreed with regard to farmers' claims for crop loss and other matters and impacts are predicted to be slight.

Overall, the economic effects of the proposed pipeline will be largely beneficial with an increase in demand for goods and services. In particular hotels, guest houses and bed and breakfast accommodation will benefit from the contractors working on the pipeline. In the long term there may be limited employment opportunities at the compressor stations. Some impacts upon tourism may be experienced but these are considered unlikely to be significant due to the short term nature of The Project.

1.13 Environmental Management

During the detailed design and construction stages of The Project, the key mechanism to ensure that the mitigation measures identified in the ES are implemented, and that best environmental practices are followed, is the Project Environmental Management Plan (PEMP).

In addition, six subject plans will be produced in support of the PEMP, namely the:

- Waste Management Plan;
- Water Management Plan;
- Traffic Management Plan (TMP);
- Pollution Prevention Plan;
- Emergency Response Plan; and
- Reinstatement Plan.

The PEMP and these plans provide a system against which to monitor and audit environmental performance.

In addition to the above, Method Statements and a variety of detailed site-specific plans will be produced to cover all main construction activities. Where appropriate, these will be discussed and agreed with relevant statutory and non-statutory consultees prior to construction commencing.

A comprehensive programme of staff training and briefing will be carried out and activities will be conducted in such a way that impacts on the environment are kept to a minimum.

1.14 Cumulative Impacts

The construction of the Cluden to Lochfoot 7.2km pipeline is intrinsically linked with the construction of the remaining Phase 2 overall Cluden to Brighouse project.

A review of the residual impacts originally anticipated as part of the Beattock to Brighouse Pipeline against those identified as part of the Cluden to Lochfoot Pipeline found no significant cumulative impacts.