

- timing – of the various project phases to avoid sensitive periods where practical;
- publicising The Project through the Dumfries & Galloway Planning Department;
- discussions with landowners/occupiers to explain pipeline construction and to minimise the effects of short-term disruption; and
- close liaison with local residents and environmental health officers during construction and commissioning with regards to any out-of-hours work or 24-hour working and temporary increases in noise.

## 12.8 Summary of Residual Impacts and Significance

Following the implementation of the mitigation measures above, positive short-term impacts on local businesses are anticipated during construction with no significant impacts experienced during operation.

It is anticipated that short-term, *minor* impacts will be experienced due to loss of tranquillity and visual attractiveness of the area local due to the pipeline construction, which will reduce to *insignificant* following reinstatement. *Slight to moderate*, temporary traffic delays, detailed in Section 10, will also occur due to the increase in construction traffic; however, no impacts will be experienced following completion of construction.

A summary of the impacts, mitigation measures and residual impacts are detailed in Table 12-8.

**Table 12-8 Summary of Impacts and Mitigation Measures**

Aspect	Impact	Proposed Mitigation Measures	Residual Impact
<b>During Construction</b>			
Economy	<p>The economic effects of the proposed pipeline will be largely beneficial with an increase in demand for goods and services. In particular, hotels, guesthouse and bed-and-breakfast accommodation will benefit from the contractors working on the pipeline.</p> <p>Some impacts upon tourism may be experienced but these are considered unlikely to be significant due to the short-term nature of The Project.</p>	No mitigation is proposed.	<i>Slight</i> positive short-term impacts.
Workforce Patterns and Sources of Employment	The majority of the skilled workforce such as welders and inspectors are likely to be sourced from outside the immediate area. Positions such as drivers, plant operators and labourers will be sourced where possible from local contractors and companies. This will result in a slight to moderate temporary positive impact on workforce patterns and sources of employment.	No mitigation is proposed.	<i>Slight</i> positive short-term impacts.
Tourist Accommodation	Given that a high proportion of the workforce will come from outside the local area, there will be a requirement for temporary accommodation. This is likely to have a moderate positive impact on the local economy.	No mitigation is proposed.	<i>Moderate</i> positive short-term impacts.
Sites/Areas of Tourism and	Impact on existing and proposed	Reinstatement of the land through re-	<i>Minor</i> short-term impacts will be

Aspect	Impact	Proposed Mitigation Measures	Residual Impact
Recreation	<p>future areas of tourism as a result of the pipeline construction will not be significant.</p> <p>The landscape of Dumfries and Galloway, and its use for outdoor recreation is, however, generally a significant tourist attraction. Therefore, the visual impact of The Project must be managed through the use of the mitigation measures described in Section 9.</p>	<p>seeding/re-turfing grasslands, and replacement planting of trees and hedgerows will serve to offset any temporary impacts experienced during construction (see Section 9).</p> <p>Potential noise and dust nuisance impacts upon recreational pursuits will be dealt with via the measures described in Section 11.</p>	<p>experienced due to loss of tranquillity and visual attractiveness of the local area.</p>
Core Paths and Cycle Routes	<p>Slight temporary, negative and reversible effects on core paths are anticipated during the construction phase. These effects will arise from the temporary closure of the core path for approximately one to two days while the right of way for the pipeline is established. Users of the core paths may experience some noise, dust and visual amenity effects during the construction phase of The Project.</p>	<p>Core paths crossed by the pipeline route will be subject to temporary closure as the pipeline right of way is established. Core paths would be maintained through the construction phase of The Project, with cautionary signage implemented where appropriate in accordance with Policy CF4 (Dumfries and Galloway Council, 2014).</p>	<p>It is anticipated that short-term, <i>minor</i> impacts will be experienced due to loss of tranquillity and visual attractiveness of the local area, and the temporary closure of core paths.</p>
<b>During Operation</b>			
Economy	<p>In the long term, there may be limited employment opportunities at the compressor stations.</p>	<p>No mitigation is proposed.</p>	<p>No Residual Impacts.</p>
Workforce Patterns and Sources of Employment	<p>Limited employment opportunities</p>	<p>No mitigation is proposed.</p>	<p>No Residual Impacts.</p>

<b>Aspect</b>	<b>Impact</b>	<b>Proposed Mitigation Measures</b>	<b>Residual Impact</b>
Tourist Accommodation	Minimal requirement during the operational phase of The Project.	No mitigation is proposed.	No Residual Impacts.
Sites/Areas of Tourism and Recreation	Impact on existing and proposed future areas of tourism as a result of the pipeline operation will not be significant.	No mitigation is proposed.	Impacts will reduce to <i>insignificant</i> following reinstatement.
Core Paths and Cycle Routes	No long term impacts anticipated.	No mitigation is proposed.	Impacts will reduce to <i>insignificant</i> following reinstatement.

## 12.9 References

Visit Scotland, 2013, Accommodation Occupancy, data accessed at: [http://www.visitscotland.org/research\\_and\\_statistics/tourism\\_sectors/accommodation.aspx](http://www.visitscotland.org/research_and_statistics/tourism_sectors/accommodation.aspx) (17th February 2015).

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Dumfries and Galloway Council, 2014. Local Development Plan Supplementary Guidance, data accessed at: <http://www.dumgal.gov.uk/index.aspx?articleid=11943> (25<sup>th</sup> February 2015).

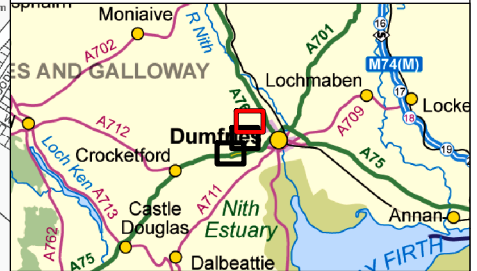
Dumfries and Galloway Council, 2015. Core Paths in Dumfries and Galloway, data accessed at <http://www.dumgal.gov.uk/index.aspx?articleid=3812> (25<sup>th</sup> February 2015).



**Legend:**

- Proposed Pipeline Route
- 1km Area of Search
- Core Path

This map contains data from the following sources:-  
 Dumgal Paths Map, Dumfries and Galloway Council  
 Coordinate System: British National Grid  
 Projection: Transverse Mercator  
 Datum: OSGB 1936  
 Units: Meter

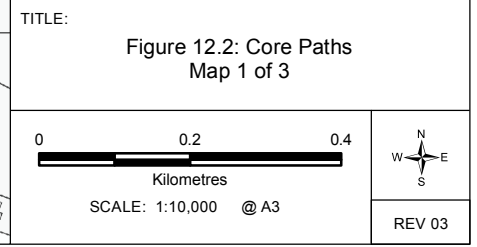


Rev	Date	Description	Drn	Chk	App
03	14/04/2015	Updated Route	FC	DJ	WH
02	14/04/2015	Updated Logo	FC	DJ	WH
01	17/03/2015	Labels Added	FC	DJ	WH

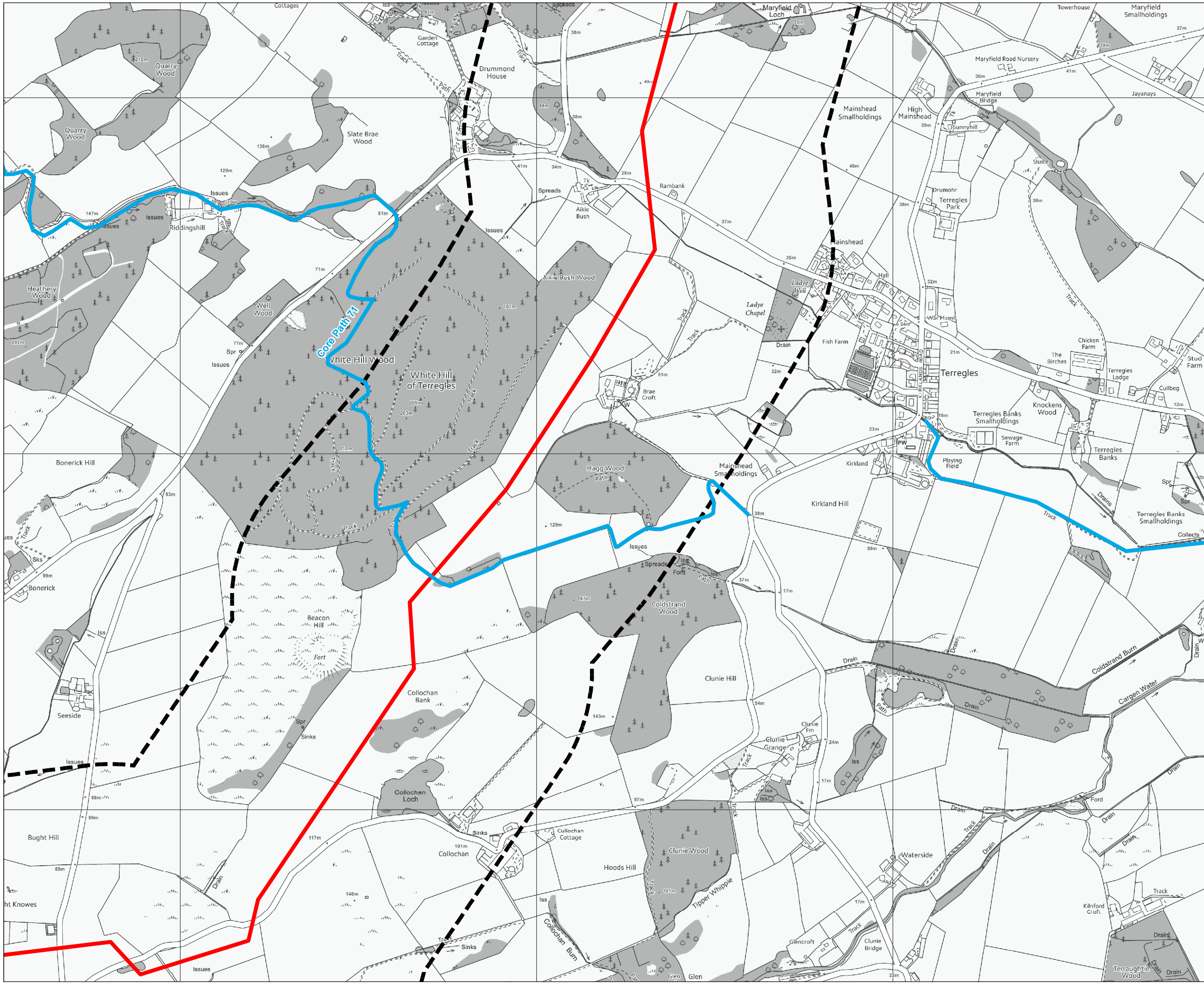
**Cluden to Lochfoot Pipeline**



TITLE: **Figure 12.2: Core Paths Map 1 of 3**







**Legend:**

- Proposed Pipeline Route
- 1km Area of Search
- Core Path

This map contains data from the following sources:-  
 Dumgal Paths Map, Dumfries and Galloway Council  
 Coordinate System: British National Grid  
 Projection: Transverse Mercator  
 Datum: OSGB 1936  
 Units: Meter

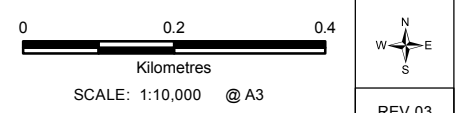


Rev	Date	Description	Drn	Chk	App
03	14/04/2015	Updated Route	FC	DJ	WH
02	14/04/2015	Updated Logo	FC	DJ	WH
01	17/03/2015	Labels Added	FC	DJ	WH

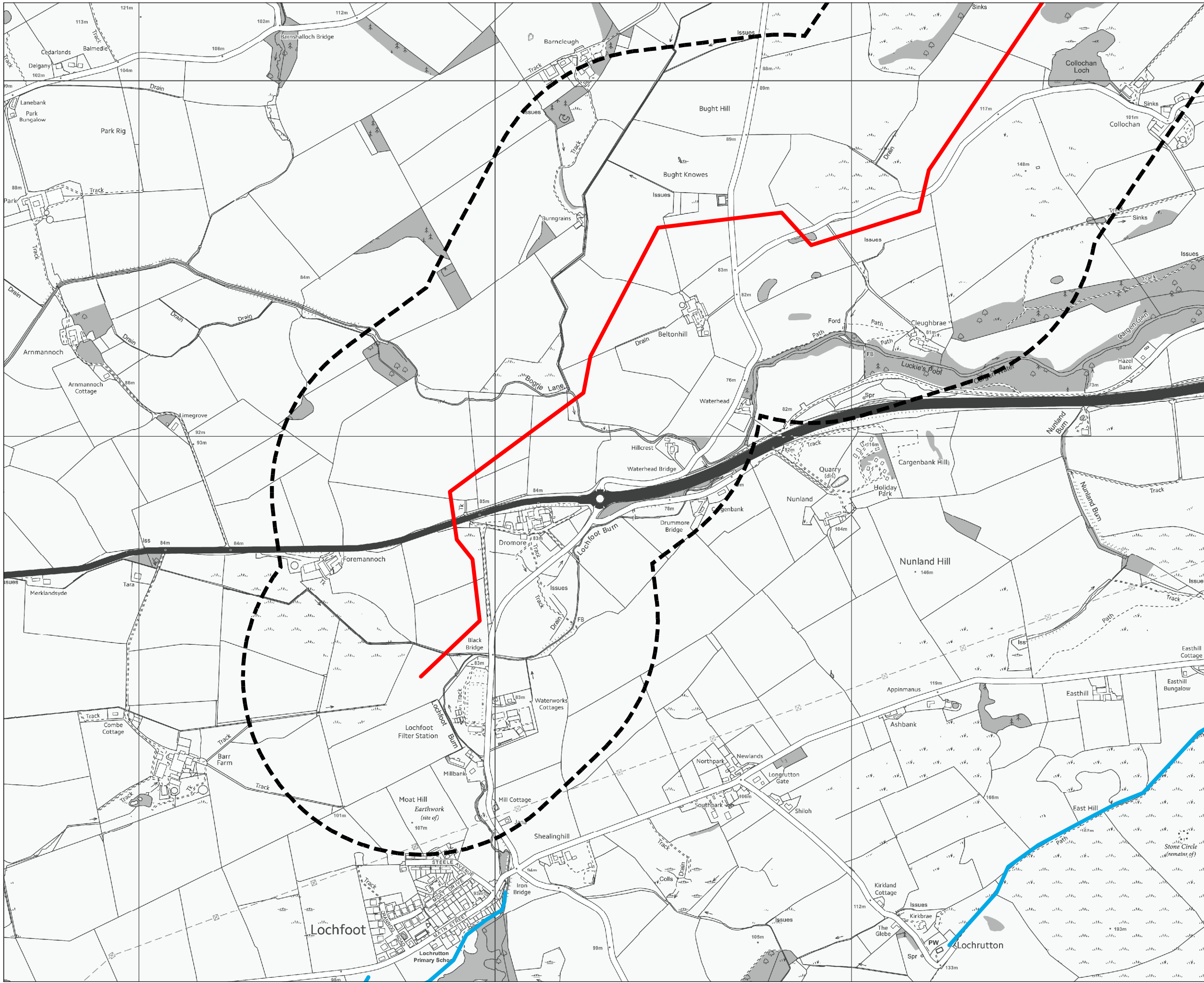
**Cluden to Lochfoot Pipeline**



TITLE: **Figure 12.2: Core Paths  
Map 2 of 3**



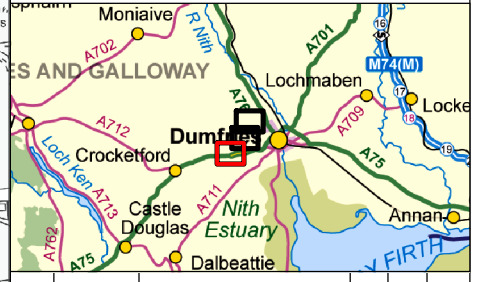




**Legend:**

- Proposed Pipeline Route
- 1km Area of Search
- Core Path

This map contains data from the following sources:-  
 Dumgal Paths Map, Dumfries and Galloway Council  
 Coordinate System: British National Grid  
 Projection: Transverse Mercator  
 Datum: OSGB 1936  
 Units: Meter



Rev	Date	Description	Drn	Chk	App
03	14/04/2015	Updated Route	FC	DJ	WH
02	14/04/2015	Updated Logo	FC	DJ	WH
01	17/03/2015	Labels Added	FC	DJ	WH

**Cluden to Lochfoot Pipeline**



TITLE: **Figure 12.2: Core Paths Map 3 of 3**

0 0.2 0.4  
 Kilometres  
 SCALE: 1:10,000 @ A3

REV 03



<b>13</b>	<b>ENVIRONMENTAL MANAGEMENT .....</b>	<b>13-1</b>
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13.2	Detailed Design.....	13-1
13.2.1	Follow-up Work.....	13-1
13.2.2	Mitigation Measures .....	13-1
13.2.3	Consents and Licences .....	13-1
13.2.4	External Communications.....	13-1
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## Tables

Table 13-1 Mitigation Summary

## 13 ENVIRONMENTAL MANAGEMENT

### 13.1 Introduction

This Environmental Statement (ES) has summarised the Environmental Impact Assessment (EIA) process undertaken to identify the impacts that will arise from pipeline construction and operation and the mitigation measures required to prevent or reduce these. During the detailed design stage further consultations and surveys will be undertaken to refine the design and construction techniques. Further minor changes may also be made to the route, for example to accommodate new badger setts. This process is summarised in this section.

This section describes the arrangements for management of the stages of The Project by GNI to ensure that the mitigation measures described in this ES, legislative and contractual requirements and environmental best practice are implemented, and that best environmental practices are followed.

One of the key mechanisms for environmental management during the design and construction stages is The Project Environmental Management Plan (PEMP) and associated subject plans. These are described in more detail in this Section.

### 13.2 Detailed Design

#### 13.2.1 *Follow-up Work*

Further survey work and consultations will be undertaken during the detailed design stage. These will be undertaken for a variety of purposes, including to: update previous surveys, refine the design and mitigation measures described in this ES and inform the development of detailed construction methods.

Specifications for the surveys will be developed and agreed with the relevant regulatory authorities. These surveys will be used, along with consultations, to refine the design and construction techniques to be employed.

#### 13.2.2 *Mitigation Measures*

The mitigation measures included in Sections 6 to 12 of this ES will form a ‘Schedule of Mitigation’ as part of the PEMP for The Project (see Table 13.1). The PEMP will be the delivery mechanism for the mitigation. The Schedule will be updated regularly as the design proceeds and the results of the further survey work, consultations and investigations become available.

#### 13.2.3 *Consents and Licences*

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

#### 13.2.4 *External Communications*

GNI and their agents have been in contact with all the statutory authorities, and most of the non-statutory groups that may be affected, since the start of the Conceptual Design phase of The Project. The aim has been to establish the likely implications of The Project at the earliest possible stage. Consultations with these groups will continue

throughout The Project to agree the details of routeing, construction practice and reinstatement.

Every attempt will be made to ensure that the reasonable requirements of landowners and occupiers are met. Those directly affected by the pipeline will be kept informed of all relevant activity, and they will be consulted with regard to requirements for access to land and the provision of services such as water for stock.

Residents likely to be affected by pipeline activities will be contacted before the start of construction. Members of the public will also be able to contact GNI for more information or to discuss potential areas of concern.

### **13.3 Project Environmental Management**

#### ***13.3.1 Standards and Company Policy***

GNI have an environmental management system that is certified to ISO 14001. This specifically covers both construction and operation of their facilities. GNI place a high priority on environmental issues. In consequence, they require their contractors to actively promote and administer a robust environmental culture amongst staff, subcontractors and suppliers engaged on the contract.

#### ***13.3.2 The Role of GNI with Respect to Environmental Management***

GNI have ultimate responsibility for the successful environmental performance of this project. This includes:

- definition of environmental standards and requirements for their contractors throughout the contract stages. These are detailed in The Project Environmental Requirements and Management Plan (PERMP) which is then used as the basis for the PEMP;
- setting of annual environmental objectives and targets;
- on-going management of environmental issues as the detailed design and construction of The Project proceeds;
- acting as a point of contact for consultation and feedback with landowners/occupiers, statutory and non-statutory consultees, other interested parties and the public;
- auditing of the performance of Penspen; and
- environmental monitoring and reporting.

GNI will make it a contractual requirement that the activities of their contractors for the detailed design and construction stages are conducted in accordance with the PERMP. In order to monitor this and to ensure compliance, GNI will appoint an Environmental Advisor to monitor and audit the contractors' performance.

#### ***13.3.3 Project Environmental Management Plan***

The purpose of the PEMP is to:

- provide a mechanism for ensuring that measures to mitigate potentially adverse environmental impacts identified in this ES are implemented;

- ensure that good construction practices are adopted throughout the construction of the pipeline;
- provide a framework for mitigating unexpected impacts during construction;
- provide assurance to third parties that their requirements with respect to environmental performance will be met;
- provide a mechanism for ensuring compliance with environmental legislation and statutory consents; and
- provide a framework for compliance auditing and inspection to enable GNI and Penspen to be assured that their aims with respect to environmental performance are being met.

The PEMP is a document that continuously evolves throughout the life of The Project. It will be developed as further consultation and surveys take place, and detailed design and working Method Statements are prepared.

#### **13.3.4 Other Plans**

Six additional plans will be produced in support of the PEMP, these are the:

- Waste Management Plan (WMP);
- Pollution Prevention Plan (PPP);
- Water Management Plan (WTMP);
- Traffic Management Plan (TMP);
- Emergency Response Plan (ERP); and
- Reinstatement Plan (RP).

These plans will provide a system against which to monitor and audit environmental performance. The plans will detail the practical methods required to ensure work is completed in accordance with current best practice, the mitigation measures in this ES and legislative and regulatory requirements. The plans will be agreed with Dumfries & Galloway Council, the Scottish Environment Protection Agency, Scottish Natural Heritage and others, as appropriate.

#### **13.3.5 Method Statements**

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

#### **13.3.6 Environmental Training**

Well-trained and environmentally aware personnel are a key factor in ensuring that all aspects of The Project are executed with minimal impact to the environment and that the highest standards of environmental management are met. Specific crews will be trained to cover on-site environmental duties, pumping operations and emergency response.



A comprehensive programme of training will be implemented as follows:

#### *13.3.6.1 Health, Safety and Environment Passport*

All project personnel will be required to pass a Health, Safety and Environment “passport” based training course before being allowed to work on site. This will help ensure that site personnel are fully aware of key environmental issues and the management and control procedures that are established to mitigate impacts.

#### *13.3.6.2 Site Inductions*

All project personnel will be appropriately briefed about project specific environmental impacts and mitigation measures at an induction before they are allowed onto the site. This briefing will cover such aspects as:

- guidance on the significance and sensitivity of environmental features along and near to the pipeline route;
- the environmental objectives and policies of GNI;
- the potential environmental effects of construction;
- responsibilities for environmental monitoring and reporting; and
- procedures for responding to environmental incidents and emergencies.

#### *13.3.6.3 Method Statement Briefings and Tool-box Talks*

Each crew will be briefed on specific Method Statement requirements before work commences. A series of tool-box talks will also be given to staff during the course of The Project by the nominated Environmental Manager/Officers. These are usually done on site and concentrate on reinforcing practical measures. The programme will be adjusted to suit any site specific issues that may arise. Typical tool-box talk topics are listed below:

- refuelling plant and machinery;
- precautions to prevent sediment laden run-off from entering watercourses;
- disposing of water from excavations;
- waste storage and segregation and the potential planning and waste management licensing implications of re-use; and
- precautions for protected flora and fauna.

In addition, briefings will be given to key teams before commencing work in sensitive and important areas, such as the source protection zone associated with the Dumfries Aquifer.

#### *13.3.6.4 Exercises*

The Emergency Response Plan will be subject to exercises during construction and these will include environmental elements to test staff awareness of environmental incident management. The delivery of incident management will be supported by a site-based Emergency Response Crew.

### **13.3.7 Environmental Labelling**

The MWC will erect notices on site to indicate environmentally important and/or sensitive areas crossed by the working width, including proximity to sensitive sites, footpaths and areas containing protected species.

### **13.3.8 Environmental Monitoring**

Monitoring of the environmental effects of construction enables the effectiveness of environmental mitigation to be evaluated. It also allows environmental problems to be identified and responded to at an early stage.

The MWC will, in particular, implement a programme of monitoring of private water supplies and other ground/surface water abstractions to check that the pipeline has no adverse impacts on flows or water quality. This monitoring will commence 12 months prior to construction and will continue through the construction period and for 12 months afterwards. A programme for monitoring watercourses up and downstream of the pipeline works will also be agreed with SEPA.

Further requirements for monitoring will be identified with consultees as part of the detailed design stage.

Environmental near misses and incidents will be recorded and investigated and appropriate corrective actions put in place. GNI will operate a policy of self reporting of Environmental Incidents.

### **13.3.9 Environmental Auditing**

GNI will undertake a programme of weekly environmental inspections and monthly environmental audits to record performance and identify any corrective actions required.

GNI's Environmental Advisor will also carry out a series of weekly environmental inspections and monthly audits of the MWC's environmental performance.

## **13.4 Environmental Management Post-Construction and Operation**

The pipeline will be maintained and inspected regularly in accordance with GNI's existing procedures.

GNI retain responsibility in perpetuity for reinstatement and drainage if any problems occur that are related to the presence of the pipeline. The MWC will be responsible for the maintenance of all newly planted trees and hedges for a minimum of two years to ensure successful reinstatement. In addition, GNI are committed to after-care and monitoring of sensitive habitats as would be reasonably expected of a developer and in accordance with their stated Environment Policy.

## **13.5 Summary**

It is the intention of GNI to conduct their activities and to ensure that the activities of the MWC are conducted, in such a way that the impact on the environment of the design, construction and operation of the proposed pipeline is kept to a minimum.

The most effective form of mitigation is to design The Project to avoid environmental impacts at source. Many environmental impacts have been avoided by sensitive

routeing and/or by commitment to the use of particular construction techniques and mitigation measures. In addition, pipeline construction and reinstatement techniques, that minimise environmental impacts, are well established.

A summary of the mitigation measures and residual impacts of The Project are detailed in Table 13-1.

**Table 13-1 Mitigation Summary**

Route Summary Environmental Resources and Receptors	Residual Impact	Mitigation
<b>Land Use-Construction</b>		
Development	<i>Slight</i>	See Section 1.1
Traffic Network	<i>None</i>	<p>For plant and pipe delivery, HGVs will be routed carefully in accordance with a Traffic Management Plan.</p> <p>The use of public roads will be minimised; they will be controlled in accordance with the Traffic Management Plan.</p>
Agriculture	<i>Slight</i>	<p>Consultation will take place with landowners/occupiers to discuss how disruption to farming can be minimised. Mitigation measures will be included in the Pre-Entry Agreements.</p> <p>Provision will be made for temporary accesses across the working width, and additional water supplies for animals, as necessary.</p> <p>All land will be reinstated as near as possible to its previous condition.</p> <p>Field boundaries will be fully reinstated as soon as possible.</p> <p>Pre-construction drainage will divert water away from the working width.</p> <p>During post-construction drainage, all field land drains will be reinstated as soon as possible.</p>



		<p>Pipeline construction will be done in accordance with guidance and precautions provided by DEFRA and the Scottish Executive.</p> <p>Disinfectant spray is to be used where bovine tuberculosis is an issue, or where it is required by landowners/occupiers.</p> <p>The situation regarding disease outbreaks in the area will be kept under regular review with the Scottish Executive.</p> <p>Checks for injurious weeds will be made and prompt action taken to control these.</p>
<b>Land Use-Operation</b>		
Development	<i>No Residual Impact</i>	No Mitigation Proposed
Traffic Network	<i>No Residual Impact</i>	No Mitigation Proposed
Agricultural operations	<i>Insignificant</i>	No Mitigation Proposed
<b>Physical Environment -Construction</b>		
Topography	<i>Negligible</i>	Subsoil and topsoil will be reinstated and the ground re-profiled to match the surrounding gradient and terrain.
Geology	<i>Negligible</i>	Minimal impact to the underlying geology is anticipated during the construction of the pipeline, and no mitigation measures are considered necessary
Soils	<i>Slight to Moderate</i>	<p>Careful timing of groundworks to coincide with the driest parts of the year is required to minimise the damage to soils. Groundworks will cease during periods of continuous heavy rainfall and the ground allowed to drain for a suitable period to allow excess water to move from the surface.</p> <p>Immediate sowing when topsoils are replaced should help reduce the effects of erosion on sloping ground.</p>
Ground Contamination	<i>Slight</i>	Whilst it is not anticipated that significant existing ground contamination will be encountered, construction staff will

Route Summary Environmental Resources and Receptors	Residual Impact	Mitigation
		<p>be briefed to ensure that all excavations are regularly inspected for any visible made ground, contamination, or odour, to provide an early indication of unforeseen areas of contamination which, through excavation and movement of materials within or off the site, could spread contamination</p>
Surface Water	<i>Slight</i>	<p>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.</p> <p>Using straw bales in and around streams to filter large particles from run-off water.</p> <p>Fluming the surface water over the working width to prevent it picking up sediment/silt.</p> <p>Installing lagoons or bunds to retain water temporarily.</p> <p>Using agricultural sprays to disperse water over a wide area, allowing it to soak into grassed areas of ground.</p> <p>Control and mitigation measures to be implemented to prevent pollution include:</p> <ul style="list-style-type: none"> <li>• dewatering of all excavations to be subject to a permit from the SEPA and the process proactively managed to meet at least the permit conditions;</li> <li>• no silty water to be pumped directly into any watercourse but to be allowed to settle out (for example, in settlement lagoons) or filtered (for example, using straw bales to filter out coarse particles) prior to discharge, in accordance with permit conditions;</li> </ul>

Route Summary Environmental Resources and Receptors	Residual Impact	Mitigation
		<ul style="list-style-type: none"> <li>• where settlement or filtering is not practicable or effective, alternative disposal options will be considered for example, discharge onto a grassed area (with consent from the landowner and following SEPA consultation), and discharge to foul sewer (with consent from the local sewerage undertaker);</li> <li>• if clean water is discharged into a watercourse, a baffle will be fitted to the discharge point to prevent disturbance of the watercourse bed;</li> <li>• watercourses will be protected from contaminated surface water run-off by using French drains, cut off ditches, grips, silt fences or bunds round the edge of watercourses. Numerous small, passive mitigation measures will be installed in preference to one large treatment system to prevent large-scale water build-up;</li> <li>• existing and new surface water drains will be kept clear of silt or weed buildup;</li> <li>• roads and hard surfaces will be kept clean, to prevent a build-up of mud and sediment that could contaminate surface water; and</li> <li>• implementation of a monitoring schedule to ensure that measures taken to protect watercourses, boreholes and wells are effective in accordance with SEPA.</li> </ul>
Groundwater	<i>Slight</i>	See Surface water mitigation.

Route Summary Environmental Resources and Receptors	Residual Impact	Mitigation
<b>Physical Environment - Operation</b>		
Topography	<i>No Residual Impact</i>	No Mitigation Proposed
Geology		
Soils		
Ground Contamination		
Surface Water		
Groundwater		
<b>Ecology - Construction</b>		
Crossing of Watercourses	<p>Where 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.</p> <p>For non-open-cut techniques, there is a very low risk of failure of these techniques, which could affect the integrity of the sub-strata of the river bed. However, there is also potential for sediment pollution arising from the break-out of drilling mud used during horizontal directional drilling and micro-tunnel crossings.</p>	<p>It is the intention to cross watercourses using open-cut techniques. Depending on the nature conservation value of the watercourse, or for other reasons (for example, navigation and water supply protection) non-open-cut methods may be considered, subject to confirmation of suitable ground conditions.</p> <p>The crossing points will be chosen to minimise impacts and preserve valuable features as far as possible. As much bank-side vegetation and natural bank structure as possible will be retained, with trees and shrubs coppiced rather than grubbed up where this is practicable. Bank and bed materials removed for construction will be stored separately and replaced from where they were removed, to promote re-establishment of the original habitats. Trees and shrubs removed will be replanted and the reinstated banks fenced off, where necessary, to prevent poaching. Geotextile matting will be used, wherever possible, to reinforce banks during reinstatement.</p> <p>Fish rescues at water crossing points will be carried out if</p>



Route Summary Environmental Resources and Receptors	Residual Impact	Mitigation
		<p>required.</p> <p>Detailed method statements will be developed for approval by SNH and SEPA for all the rivers crossed using these open-cut and non-open-cut techniques.</p>
<p>Standing Waterbodies</p>	<p>Following the adoption of the mitigation measures there are not anticipated to be any residual impacts.</p>	<p>The pipeline has been routed to avoid all standing waterbodies. The measures described in Section 11 will protect water quality in nearby waterbodies from sediment release and pollution during construction.</p> <p>Where necessary, pre- and post-construction land drainage will be designed to ensure that pre-existing land drainage patterns are maintained (see Sections 3, 5 and 11). Water-stops will be installed where necessary to minimise any changes in local hydrology.</p>
<p>Broad-leaved woodlands that are either ancient, comprise UK BAP habitats or are otherwise of particular importance</p>	<p>The main impact on trees and woodland will be the removal of vegetation, and topsoil stripping, within the working width.</p> <p>Woodlands crossed will also be fragmented, in the short to medium term, into smaller areas and there may be damage from root severance of retained trees close to the working width.</p> <p>In the case of wet woodlands, there may be adverse impacts on hydrology.</p> <p>Impacts on individual trees, ground flora and associated habitats are likely to be relatively long-term impacts, due to the time that it takes for woodland to reach maturity.</p>	<p>When drawing-up method statements for works close to trees, the MWC will refer to the National Joint Utilities Group Guidelines for the Planning Installation and Maintenance of Utility Services in Proximity to Trees (NJUG 10). Any works carried out on large trees will be undertaken by a suitably qualified tree surgeon and will be subject to the landowners'/occupiers' and consultees' approval and any necessary licence.</p> <p>Particular attention will be given to the likely extent of tree roots. The location of pre- and post-construction land drains will also be adjusted to avoid or minimise damage to tree roots.</p> <p>Large trees will be protected with temporary fencing erected where possible at least 1m beyond the drip-line of the canopy.</p> <p>Mitigation may include bog matting and sand padding to spread the weight of machinery passing over the root area. This will help prevent the soil compaction that has a significant detrimental effect on tree health and survival.</p>

Route Summary Environmental Resources and Receptors	Residual Impact	Mitigation
		Any sections of woodland removed will be replanted. However, large trees will not be planted within 6m of the pipeline to avoid damage of the pipe by tree roots. A range of shrub and understorey species will be used for planting close to and over the pipeline.
Hedgerows	<p>The impacts on hedgerows crossed by the route will be limited largely to temporary removal of habitat associated with forming the crossing.</p> <p>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.</p>	<p>The impact on hedgerows has been minimised, wherever possible, by routeing the pipeline through existing gaps or sections that are of lower conservation value.</p> <p>Any hedge banks or ditches that are disturbed during construction will be re-formed. Re-planting of the hedge will reflect the original species mix and an aftercare programme for newly planted hedgerows will be developed and implemented.</p>
Grasslands	<p>Following re-seeding grasslands are expected to return to their previous condition.</p> <p>Following the adoption of the mitigation measures there are not anticipated to be any residual impacts to the area of wet grassland above and beyond those associated with topsoil stripping.</p>	<p>To protect the quality of the soil, topsoil and subsoil will be excavated and stored separately (as set out in Section 3). Where the route crosses improved grassland, areas will be re-seeded with an appropriate grass mix in consultation with the landowner/occupier.</p> <p>If the pipeline route crosses through the small area of wet grassland toward the southern end of the route, measures will be taken to minimise any changes to the hydrological regime of this site through careful attention to the design of any replacement surface drainage schemes and by inserting barriers in the pipe trench, where necessary to maintain wet areas. If the wetland area cannot be avoided, a site-specific method statement will be drawn up, in consultation with SNH and specific seed mixes will be considered to facilitate reinstatement for the marshy grassland site.</p>
Stone Dykes	The impacts on stone dykes crossed by the route will be limited largely to temporary removal of	Any sections of stone dykes to be removed along the pipeline route will be removed carefully be hand following

Route Summary Environmental Resources and Receptors	Residual Impact	Mitigation
	habitat associated with forming the crossing.	<p>a hand search by a qualified ecologist to reduce the chance of reptiles or amphibians being harmed.</p> <p>The sections of stone will be stored at a safe distance from the route until works are complete and then reinstated carefully by hand.</p> <p>The stone dykes will be dismantled only during the spring/summer months to ensure hibernating bats are not present.</p>
Invasive Plants and Weeds	Following mitigation measures, no further significant impacts are anticipated.	Further surveys will be undertaken in the growing season prior to construction, and all locations of invasive species will be identified and marked where present, so that a schedule can be compiled for use in implementing agreed mitigation measures. These may include the placement of affected topsoil, subsoil and/or excavated material on a geotextile membrane, and the material temporarily fenced off inside quarantine areas. Where this is not possible it may be necessary to dispose of the topsoil and plants as Special Waste at a licensed landfill.
Badgers	<p>Temporary loss of foraging habitat.</p> <p>Potential damage to setts where mitigating action is unavoidable.</p>	<p>Wherever practicable, the pipeline route will be altered to avoid badger setts, and works within 30m of any occupied setts.</p> <p>Where impacts on setts are unavoidable, measures will be taken to minimise impacts on any resident Badgers, and all relevant operations will proceed under licence from SNH once suitable mitigation and compensation measures have been agreed.</p> <p>Other mitigation measures for badgers will include providing safe exit routes for animals should they fall into the trench overnight, particularly where abundant badger</p>

Route Summary Environmental Resources and Receptors	Residual Impact	Mitigation
Bats	Temporary impact on bat commuting and foraging routes.	<p>paths were recorded in the original surveys.</p> <p>Given the potential importance of the hedgerow and woodland network in parts of the route, measures will be developed to maintain links between canopies overnight in order to maintain fly-ways. Hedges will be replanted immediately following construction and will be surrounded by fencing, which will also have the effect of maintaining fly-ways. Consideration will also be given to methods of accelerating the re-establishment of hedges that are important bat commuting routes.</p> <p>In addition, mitigation measures for bats will be included within the site-specific mitigation packages developed for other habitats such as woodlands, where relevant.</p>
Birds	Following mitigation measures, no further significant impacts are anticipated.	<p>Measures will be taken to minimise the likelihood of disturbance or mortality of nesting birds, their eggs or chicks. Wherever possible, this will be achieved by removing vegetation that could be used by nesting birds (particularly sections of hedgerow, scrub, tree lines and woodland) before the bird nesting season (March to August inclusive).</p> <p>Where this is not possible, the use of mechanical devices such as visual scarers and ‘humming tape’ will be considered in high-risk locations, including locations where there is a high risk of ground-nesting birds in order to reduce the likelihood of birds establishing nests within or close to the working width.</p>
Fish	Following mitigation measures, no further significant impacts are anticipated.	There are no water crossings on this pipeline which support substantial fish populations. However, the various measures detailed in Section 11 to protect surface water quality will also help to minimise the potential impacts on

<b>Route Summary</b>		
<b>Environmental Resources and Receptors</b>	<b>Residual Impact</b>	<b>Mitigation</b>
		<p>fish populations.</p> <p>Detailed electrofishing and aquatic invertebrate surveys will be commissioned in 2015 (1 year prior to construction) to establish baseline. Further surveys proposed in 2017 (post construction) to monitor impact.</p>
Otters	Following mitigation measures, no further significant impacts are anticipated.	In the absence of evidence to suggest that Otter populations exist along this section of the pipeline route, no specific mitigation is currently recommended for Otters. However, repeat surveys will be undertaken prior to construction.
Reptiles	Following mitigation measures, no further significant impacts are anticipated.	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.
Invasive Animal Species	Minor	All watercourses to be treated as if containing ASC. All machinery and footwear entering or leaving watercourses to be spayed with an iodine based disinfectant. Construction sequence from Cluden to Lockfoot.
<b>Ecology - Operation</b>		
Flora and Fauna	<p><i>Insignificant</i></p> <p>Following the adoption of the mitigation measures it is considered that all predicted impacts will reduce to a scale considered to be insignificant</p>	<p>The MWC will be responsible for the maintenance of all newly planted trees and hedges for a minimum of two years to ensure successful reinstatement. Thereafter, GNI will retain responsibility in perpetuity for reinstatement and drainage if any problems occur that are related to the presence of the pipeline.</p> <p>In addition, GNI is committed to after-care and monitoring of sensitive habitats as would be reasonably expected of a developer</p>

Route Summary		
Environmental Resources and Receptors	Residual Impact	Mitigation
<b>Archaeology - Construction</b>		
Site Specific	<p><i>Minor</i></p> <p>The vast majority of the known archaeological and cultural heritage features will remain unaffected by the scheme. Sites where a direct impact is currently predicted will be preserved in situ or, if not desirable and feasible, by record.</p>	<p>Prior to construction an earthwork survey will be carried out to make a record of the form and extent of potential earthworks noted as uneven ground during the FRS at site RSKID 39.</p> <p>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.</p> <p>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.</p>
<b>Archaeology - Operation</b>		
<p>Site Specific</p> <p>List Buildings</p> <p>Historic Landscape</p>	<p><i>No Residual Impact</i></p> <p>A phased programme of post-excavation assessment, analysis, reporting and publication will be implemented, as necessary. Any findings shall be recorded and distributed to interested parties</p>	<p>No mitigation measures are proposed</p>
<b>Landscape and Visual - Construction</b>		
Agricultural grasslands	Agricultural grasslands – <i>negligible</i> .	Sensitive routeing
Arable fields	Agricultural grasslands – <i>negligible</i> .	Careful soil handling and reinstatement of soils



<b>Route Summary</b> <b>Environmental Resources and Receptors</b>	<b>Residual Impact</b>	<b>Mitigation</b>
Field boundaries	Dense, tall, mature hedgerows – <i>moderate to minor</i> . Gappy, low, less dense hedgerows – <i>moderate/minor to negligible</i> . Fences and dykes – <i>negligible</i> .	The use of non-open-cut techniques, and horizontal directional drilling, to avoid sensitive features where practicable such as field boundaries, trees, woodland and watercourses.
Trees, woodlands and water-courses	Trees and Woodlands – <i>major/moderate to moderate/minor</i> . Watercourses – <i>moderate to minor</i> .	
Landscape character (including designated land-scapes)	<i>Minor to negligible</i> .	
Visual	During construction – <i>moderate to moderate/minor</i> .	
Cumulative	<i>Minor to negligible</i> . <i>Minor to negligible</i> . During construction – <i>moderate to moderate/minor</i> .	
<b>Landscape and Visual - Operation</b>		
Field boundaries	Dense, tall, mature hedgerows – <i>Minor</i> over time as replacement planting establishes and matures. Gappy, low, less dense hedgerows – <i>Minor</i> over time as replacement planting becomes established, and matures. Provision of replacement planting and compensatory planting would result in a positive and beneficial effect, serving to reinforce and/or enhance the existing landscape elements and character.	Replacement planting with locally prominent species of local provenance where practicable Re-seeding/re-turfing Replacement/or reinstatement of fences in vernacular style
Trees, woodlands and water-courses	Trees and Woodlands – <i>Minor</i> over time as	

Route Summary Environmental Resources and Receptors	Residual Impact	Mitigation
	<p>replacement planting becomes established, and matures.</p> <p>Watercourses –<i>not significant</i> over time as replacement planting establishes and matures.</p>	
Landscape character (including designated landscapes)	<p><i>Not significant</i> over time as replacement planting becomes established, and matures.</p> <p>Provision of replacement planting and compensatory planting would result in a positive and beneficial effect over time, serving to reinforce and/or enhance the existing landscape elements and character.</p>	
Visual	<p><i>Minor</i> post-construction over time as re-seeded/re-turfed grasslands and replacement planting becomes established, and matures.</p>	
Cumulation - perationve	<p><i>Not significant</i> over time as replacement planting becomes established, and matures.</p> <p><i>Not significant</i> over time as replacement planting becomes established, and matures.</p> <p>Provision of replacement planting and compensatory planting would result in a <i>positive and beneficial</i> effect over time, serving to reinforce and/or enhance the existing landscape elements and character.</p> <p><i>Not significant</i> post-construction over time as re-seeded/re-turfed grasslands and replacement planting becomes established, and matures.</p>	
<b>Traffic - Construction</b>		

Route Summary Environmental Resources and Receptors	Residual Impact	Mitigation
Construction Traffic	Development and implementation of the Traffic Management Plan will ensure that any effects of this temporary disruption are minimised further; therefore only <i>slight</i> residual impacts are anticipated. Any potential disruption or hazard created by turning/crossing plant or machinery is considered likely to cause <i>slight</i> residual impacts.	Public roads will be used for moving materials and construction machinery, but where possible, the working width itself will be used to transport materials from the approved site access locations to their final destinations to minimise traffic flows on public highways.  The MWC will also produce a Traffic Management Plan to control and minimise the impacts of construction traffic on roads and other road users.  The Traffic Management Plan will be discussed and agreed with the local highway authority and the emergency services.
Other Construction Impacts	Following the implementation of best practice construction methods and mitigation above, a <i>slight</i> residual impact on users of roads is anticipated.  Damage to the highway network will be minimised through the employment of the requirements of the Traffic Management Plan. In addition, any damage incurred will be monitored and repaired, where required, in agreement with the highways authority. With such measures in place, a <i>slight</i> residual impact is anticipated.	As above, and;  Prior to construction, a survey of the proposed road crossings and the local road network will be undertaken by the MWC to identify those roads that are not suitable for use by heavy construction traffic, thus minimising the chance of road damage further. (This survey will be fed into the Traffic Management Plan.)
<b>Traffic - Operation</b>		

<b>Route Summary</b>		
<b>Environmental Resources and Receptors</b>	<b>Residual Impact</b>	<b>Mitigation</b>
Operational Traffic	<i>No Residual Impact</i>	No mitigation proposed
<b>Emissions - Construction</b>		
Waste Generation (Typical Wastes for Pipeline Construction)	<i>None</i>	Recovery and recycling where practical, subject to waste management licensing and planning consent requirements. Storage and disposal in accordance with legislation and the Duty of Care.
Contaminated Land and Contaminated Groundwater from Contaminated Land	<i>None</i>	Contaminated land will be assessed, treated and/or disposed in accordance with the detailed mitigation measures to be agreed with SEPA.
Silty Trench or Excavation Water	<i>Slight</i>	Discharge of water to land or local soakage trenches under Permit to Pump and in accordance with license conditions.
Run-off to Watercourses or Highway	<i>Slight</i>	Construction of grips/barriers/straw filled ditches across the working width. Risk Assessments and detailed methodologies will be agreed with SEPA to minimise the risk. Risk Assessments and methodologies will be incorporated into a Water Management Plan.
Water Discharge from Hydrostatic Testing	<i>Slight</i>	No dosing of water will be required. Method and location of discharge to be agreed in advance with SEPA. Control rate of discharge and aerate in accordance with SEPA requirements.
Pipe Trench Acting as a Conduit for Groundwater	<i>Slight</i>	Installation of water stops.
Fuel, Oils, Cement Mixtures	<i>Slight</i>	Careful storage in facilities constructed in line with PPG 02.

Route Summary Environmental Resources and Receptors	Residual Impact	Mitigation
		<p>Stringent controls on storage and refuelling.</p> <p>Plant will be regularly checked for leaks and well maintained.</p> <p>Drip trays / plant “nappies” under plant, when not in use.</p> <p>Crews will have spill kits and be inducted in their use.</p> <p>An Emergency Response Plan will be produced in consultation with SEPA.</p> <p>Waste oils will be recycled.</p>
Contaminated air emissions from vehicles and combustion plant	<i>None</i>	<p>Regular maintenance of pumps and plant, checking for leaks, etc.</p> <p>Switching off engines when not in use.</p> <p>Traffic management in accordance with the Traffic Management Plan.</p>
Dust	<i>None</i>	<p>Enforcing 15mph speed limits on the working width for all vehicle.</p> <p>Using water to dampen the running track to reduce dust production in areas where dust is problematic.</p>
Mud	<i>None</i>	<p>Grips, barriers, etc to control sediment run-off.</p> <p>Use of vacuum road sweepers will minimise the risk to other road users.</p>
Light	<i>None</i>	<p>Minimal use of lighting. When it is required it will be suitably located and screened to ensure that it has minimal impact on road users and residents. Shrouds will be used to prevent upward glare and diffusion of light.</p>
Radiation	<i>None</i>	<p>Staff will be inducted to ensure that they are aware of the dangers of radiation.</p>

Route Summary Environmental Resources and Receptors	Residual Impact	Mitigation
		When welds are being x-rayed, an exclusion zone will be set up and a warning siren sounded.  The radiation source will be stored in a suitable locked cage.  See also Pigging During Operation.
Noise During General Pipeline Construction	<i>Slight</i>	Regulate emissions in line with BS5228;  Identify noise sensitive locations, principally dwellings;  Liaise closely with residents and EHOs;  Construction will be confined to 0700-1900 Monday to Friday and 0700-1600 Saturday as far as practicable. Work outside these hours will be agreed in advance with EHOs;  Ensure plant is efficiently maintained.  Use of additional noise attenuation measures e.g. noise barriers if necessary in close proximity to sensitive locations, if overnight work is needed or particularly noisy operations are planned, such as rock “pecking”.
Construction of Special Crossings Piling	<i>Slight</i>	Liaison with EHOs and local residents.  Reduction of need for 24hour working as far as practicable.  Use of additional noise attenuation measures e.g. noise barriers if necessary.
Noise During Testing and Commissioning	<i>Slight</i>	Residents will be notified;  Use of super silenced equipment.  Venting will be carried out (as far as possible) during normal working hours;  Use of additional noise attenuation measures e.g. noise barriers if necessary in close proximity to sensitive



<b>Route Summary</b>		
<b>Environmental Resources and Receptors</b>	<b>Residual Impact</b>	<b>Mitigation</b>
		locations.
Temporary traffic noise increases	<i>None</i>	Very low impact. No mitigation needed.
<b>Emissions - Operation</b>		
Pigging Activities During Operation	<i>Negligible/Slight</i>	Handling in accordance with waste regulations. Disposal of any dust in accordance with the <i>Special Waste Regulations, 1996</i> .
Purging	<i>None</i>	None available.
Unplanned Release During Operation	<i>Negligible/Slight</i>	Pipeline is a completely sealed system with limited valves, pumps and flanges where fugitive losses can occur. Very low risk of a major unplanned release.
<b>Socio Economics - Construction</b>		
Economy	<i>Slight</i> positive short-term impacts.	No mitigation is proposed.
Workforce Patterns and Sources of Employment	<i>Slight</i> positive short-term impacts.	No mitigation is proposed.
Tourist Accommodation	<i>Moderate</i> positive short-term impacts.	No mitigation is proposed.
Sites/Areas of Tourism and Recreation	<i>Minor</i> short-term impacts will be experienced due to loss of tranquillity and visual attractiveness of the local area.	Reinstatement of the land through re-seeding/re-turfing grasslands, and replacement planting of trees and hedgerows will serve to offset any temporary impacts experienced during construction (see Section 9).  Potential noise and dust nuisance impacts upon recreational pursuits will be dealt with via the measures described in

<b>Route Summary</b>		
<b>Environmental Resources and Receptors</b>	<b>Residual Impact</b>	<b>Mitigation</b>
		Section 11.
Core Paths and Cycle Routes	It is anticipated that short-term, <i>minor</i> impacts will be experienced due to loss of tranquillity and visual attractiveness of the local area, and the temporary closure of core paths.	Core paths crossed by the pipeline route will be subject to temporary closure as the pipeline right of way is established. Core paths would be maintained through the construction phase of The Project, with cautionary signage implemented where appropriate in accordance with Policy CF4 (Dumfries and Galloway Council, 2014).
<b>Socio Economics - Operation</b>		
Economy	<i>No Residual Impacts.</i>	No mitigation is proposed.
Workforce Patterns and Sources of Employment	<i>No Residual Impacts.</i>	No mitigation is proposed.
Tourist Accommodation	<i>No Residual Impacts.</i>	No mitigation is proposed.
Sites/Areas of Tourism and Recreation	Impacts will reduce to <i>insignificant</i> following reinstatement.	No mitigation is proposed.
Core Paths and Cycle Routes	Impacts will reduce to <i>insignificant</i> following reinstatement.	No mitigation is proposed.

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<b>14</b>	<b>CUMULATIVE IMPACTS .....</b>	<b>14-2</b>
14.1	Introduction.....	14-2

## Tables

Table 14- 1 Construction Impacts

Table 14-2 Operational Impacts

## 14 CUMULATIVE IMPACTS

### 14.1 Introduction

In 2001, an application for a Pipeline Construction Authorisation (PCA) for the construction of a new 80.9kms long pipeline between Beattock and Brighouse, Dumfries, was submitted and the PCA was duly granted during 2002.

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.

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

It is now GNI's intention to complete Phase 2 of the construction of the onshore pipeline i.e. the remaining 51.3km 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.

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 primarily to minimise impact on the Dumfries Aquifer (a designated Source Protection Zone) to the west of Dumfries which provides Scottish Water a potable source of groundwater for the town of Dumfries

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

A review has therefore been taken of the residual impacts originally anticipated as part of the Beattock and Brighouse Pipeline against those identified a part of the Cluden and Lochfoot Pipeline.

**Table 14- 1 Construction Impacts**

<b>Constraint</b>	<b>Beattock to Brighouse Construction Residual Impacts</b>	<b>Cluden to Lochfoot Construction Residual Impacts</b>	<b>Cumulative Impacts</b>
<b>Landscape</b>	<p><b>MODERATE</b></p> <p>Temporary visual effects of site facilities and work width during construction. (Section 5.61)</p> <p>Short term effect whilst reinstated land and hedgerows grow back. (Section 5.64)</p>	<p><b>MODERATE TO MODERATE/MINOR</b></p> <p>Visual Impact -during construction – moderate to moderate/minor (slightly significant).</p> <p><b>MODERATE TO MINOR</b></p> <p>Field Boundaries: Dense, tall, mature hedgerows – moderate to minor. (slightly significant).</p> <p><b>MAJOR TO MODERATE</b></p> <p>Trees and Woodlands – major/moderate to moderate/minor. (potentially significant).</p>	<b>MODERATE</b>
<b>Geology</b>	<p><b>No Residual Impact</b></p> <p>Bedrock is known to outcrop in places within the study corridor but the pipeline is routed to avoid these outcrops wherever possible.</p> <p>As such the pipeline will have not impose any significant impact on the geological strata</p>	<p><b>NEGLIGIBLE</b></p> <p>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.</p>	<b>NEGLIGIBLE</b>

Constraint	Beattock to Brighthouse Construction Residual Impacts	Cluden to Lochfoot Construction Residual Impacts	Cumulative Impacts
<p><b>Soils and Agriculture</b></p>	<p><b>SIGNIFICANT</b></p> <p>Temporary loss of land during construction period prior to reinstatement. (Section 6.36)</p>	<p><b>SLIGHT TO MODERATE</b></p> <p>Although there may be some short-term loss of fertility, the residual impact on topsoil is considered likely to be <i>slight</i> and not significant.</p> <p>The residual impact on grazing soils is considered likely to be <i>slight</i> and not significant.</p> <p>The residual impact on soil compaction is considered likely to be <i>slight</i> and not significant.</p> <p>Disruption of natural will be temporary – therefore <i>slight</i> to <i>moderate</i> but not significant.</p> <p>The potential for encountering existing ground contamination is considered low. The potential impact of all aspects of contaminated land on the physical environment will be <i>slight</i> and not significant.</p>	<p><b>MODERATE</b></p>
<p><b>Archaeology</b></p>	<p><b>MINOR</b></p> <p>Significant archaeology avoided through routing and mitigation. (Sections 7.34-7.36)</p>	<p><b>MINOR</b></p> <p>The vast majority of the known archaeological and cultural heritage features will remain unaffected by the scheme. Sites where a direct impact is currently predicted will be preserved in situ or, if not desirable and feasible, by record.</p>	<p><b>MINOR</b></p>



<b>Constraint</b>	<b>Beattock to Brighthouse Construction Residual Impacts</b>	<b>Cluden to Lochfoot Construction Residual Impacts</b>	<b>Cumulative Impacts</b>
<b>Surface Water</b>	<p><b>MINOR</b></p> <p>Crossing of minor watercourses using dry open cut techniques affecting normal flow. (Section 8.51)</p>	<p><b>SLIGHT</b></p> <p>Adoption of the mitigation measures will ensure that residual impacts to surface water, rivers and streams from release of silts/sediments, fuels, lubricants and chemicals, will be reduced to <i>slight</i> and will not be significant.</p>	<b>MINOR</b>
<b>Ground Water</b>	<p><b>NEGLIGIBLE</b></p> <p>Extraction and drainage of water from watercourses during construction and testing. (Sections 8.51 and 8.56, and Section 8 Summary)</p>	<p><b>SLIGHT</b></p> <p>Residual impacts on the quality of groundwater from the accidental release of fuels and chemicals and from contaminated land (if present) are <i>slight</i> and not significant.</p>	<b>SLIGHT</b>
<b>Ecology</b>	<p><b>MINOR</b></p> <p>Hedgerows removed during construction. (Section 9.92)</p>	<p><b>NEGLIGIBLE</b></p> <p>Following mitigation measures, no further significant impacts are anticipated</p>	<b>MINOR</b> No cumulative impacts are expected providing mitigation measures are adopted
<b>Socio-Economics</b>	<p><b>BENEFICIAL</b></p> <p>Increase in trade for local suppliers and services over the construction period. Some temporary local labour opportunities. (Section 10.32 and</p>	<p><b>SLIGHT POSITIVE</b></p> <p><i>Slight</i> positive short-term impacts.</p>	<b>SLIGHT POSITIVE</b>

Constraint	Beattock to Brighouse Construction Residual Impacts	Cluden to Lochfoot Construction Residual Impacts	Cumulative Impacts
	<p>10.33)</p> <p><b>NEGLIGIBLE</b></p> <p>Short term temporary effects on recreational users during construction period. (Section 10.35)</p>	<p><b>MINOR</b></p> <p>It is anticipated that short-term, <i>minor</i> impacts will be experienced due to loss of tranquillity and visual attractiveness of the local area, and the temporary closure of core paths during pipeline construction.</p>	<p><b>MINOR</b></p>
<p><b>Emissions of noise, dust, mud and waste</b></p>	<p><b>MODERATE</b></p> <p>Temporary, short-term effects. (Sections 11.14, 11.26 and 11.31)</p>	<p><b>MODERATE/SLIGHT</b></p>	<p><b>MODERATE</b></p>
<p><b>Traffic</b></p>	<p><b>MINOR</b></p> <p>Temporary short-term effects of construction traffic over construction period. (Section 12.18, 12.21 and 12.30)</p> <p>Cumulative temporary noise and disturbance effects along working width.</p>	<p><b>SLIGHT</b></p> <p>Development and implementation of the Traffic Management Plan will ensure that any effects of this temporary disruption are minimised further; therefore only <i>slight</i> residual impacts are anticipated. Any potential disruption or hazard created by turning/crossing plant or machinery is considered likely to cause <i>slight</i> residual impacts.</p> <p><b>SLIGHT</b></p> <p>Following the implementation of best practice construction methods and mitigation, a <i>slight</i> residual impact on users of roads is anticipated.</p> <p>Damage to the highway network will be minimised through the employment of the requirements of the Traffic</p>	<p><b>MINOR</b></p>

Constraint	Beattock to Brighouse Construction Residual Impacts	Cluden to Lochfoot Construction Residual Impacts	Cumulative Impacts
		Management Plan. In addition, any damage incurred will be monitored and repaired, where required, in agreement with the highways authority. With such measures in place, a <i>slight</i> residual impact is anticipated.	

Table 14-2 Operational Impacts

Constraint	Beattock to Brighouse Operational Residual Impacts	Cluden to Lochfoot Operational Residual Impacts	Cumulative Impact
Landscape	<p><b>MINOR</b> Long term minor effect on landscape of block valve sites and aerial markers. (Sections 5.62 and 5.64, and Section 5 Summary)</p>	<p><b>MINOR</b> Visual Impact: Not significant post-construction over time as re-seeded/re-turfed grasslands and replacement planting becomes established, and matures.</p> <p><b>MINOR</b> Field Boundaries: Dense, tall, mature hedgerows –not significant over time as replacement planting establishes and matures</p> <p><b>MINOR</b> Trees and Woodlands – not significant over time as replacement planting becomes established, and matures</p>	<b>MINOR</b>

<b>Constraint</b>	<b>Beattock to Brighouse Operational Residual Impacts</b>	<b>Cluden to Lochfoot Operational Residual Impacts</b>	<b>Cumulative Impact</b>
<b>Geology</b>	<p><b>No Residual Impact</b></p> <p>Bedrock is known to outcrop in places within the study corridor but the pipeline is routed to avoid these outcrops wherever possible.</p> <p>As such the pipeline will have not impose any significant impact on the geological strata</p>	<p><b>No Residual Impact</b></p> <p>Once operational, the pipeline is considered unlikely to significantly impact on the physical environment.</p>	<b>No Residual Impact</b>
<b>Soils and Agriculture</b>	<p><b>MINOR</b></p> <p>Loss of agricultural land at block valve sites. (Section 6.29)</p>	<p><b>No Residual Impact</b></p> <p>Once operational, the pipeline is considered unlikely to significantly impact on the physical environment.</p>	<b>MINOR</b>
<b>Archaeology</b>	<p><b>No Residual Impact.</b></p> <p>Any findings recorded and distributed to interested parties</p>	<p><b>No Residual Impact</b></p> <p>A phased programme of post-excavation assessment, analysis, reporting and publication will be implemented, as necessary. Any findings shall be recorded and distributed to interested parties</p>	<b>No Residual Impact</b>
<b>Surface Water</b>	<b>No Residual Impact</b>	<p><b>No Residual Impact</b></p> <p>Once operational, the pipeline is considered unlikely to significantly impact on the physical environment.</p>	<b>No Residual Impact</b>
<b>Ground Water</b>	<p><b>No Residual Impact</b></p> <p>During normal operations the pipeline will have no effect on groundwater</p>	<p><b>No Residual Impact</b></p> <p>Once operational, the pipeline is considered unlikely to significantly</p>	<b>No Residual Impact</b>

<b>Constraint</b>	<b>Beattock to Brighthouse Operational Residual Impacts</b>	<b>Cluden to Lochfoot Operational Residual Impacts</b>	<b>Cumulative Impact</b>
	sources because it will transport dry gas having no liquid/chemical content.	impact on the physical environment.	
<b>Ecology</b>	<b>NEGLIGIBLE</b> Habitats reinstated following construction.	<b>INSIGNIFICANT</b> Following the adoption of the mitigation measures it is considered that all predicted impacts will reduce to a scale considered to be insignificant.	<b>NEGLIGIBLE</b>
<b>Socio-Economics</b>	<b>NEGLIGIBLE</b> Negligible local effect, though the pipeline is required to maintain and improve the natural gas infrastructure capacity of Ireland. (Section 10.44)	<b>INSIGNIFICANT</b> Impacts associated with sites/areas of tourism and recreation, and core paths and cycle routes will reduce to <i>insignificant</i> following reinstatement.	<b>INSIGNIFICANT</b>
<b>Emissions of noise, dust ,mud and waste</b>	<b>NEGLIGIBLE</b> Only occasional emissions through maintenance. (Sections 11.27, 11.42, 11.43 and 11.44)	<b>NEGLIGIBLE /SLIGHT</b> Pigging activities during operation. Small quantities of waste requiring disposal.  Unplanned release during operation. Release of natural gas to air with global warming potential.	<b>NEGLIGIBLE</b>
<b>Traffic</b>	<b>NEGLIGIBLE</b> No effect during normal operation.	<b>No Residual Impact</b> No significant impacts are anticipated to arise from the operation of the pipeline after it is installed.	<b>NEGLIGIBLE</b>