

# Gas to the West

## Environmental Statement

### Non Technical Summary





# 1 INTRODUCTION

Following an open competitive process, West Transmission Ltd a wholly owned subsidiary of Mutual Energy Limited, and SGN Natural Gas were awarded licences by the Utility Regulator for Northern Ireland to build and operate the high pressure and intermediate pressure gas pipelines which will extend the natural gas network into the west of Northern Ireland. This significant gas network extension is planned to bring the very considerable benefits of natural gas to the towns of Coalisland, Cookstown, Derrylin, Dungannon, Enniskillen, Magherafelt, Omagh and Strabane over the period 2016–2018.

SGN and Mutual Energy are jointly investing in new transmission gas pipelines between Portadown and Enniskillen as well as Maydown (Derry/Londonderry) and Strabane, alongside new pressure reduction sites to supply natural gas into the new areas. This Environmental Statement relates to the project to extend the network, to service the towns of Coalisland, Cookstown, Derrylin, Dungannon, Enniskillen, Magherafelt and Omagh from the existing facilities near Portadown, with an indicative completion date of the end of 2018.

Whilst the licence period to build and operate the HP and IP gas pipelines is forty years, the project partners are committed to the long term development of the gas infrastructure in Northern Ireland which will extend beyond this licence period. A brief synopsis of the expertise and experience of the project partners is provided below.

## 1.1.1 SGN Natural Gas

SGN Natural Gas is a new company formed as part of the SGN Group to supply natural gas in Northern Ireland. SGN is the second largest gas distribution company in the UK. It provides a safe and secure gas supply to 5.8 million customers across Scotland and Southern England. These networks consist of 74,000km of gas pipes, ranging from high pressure transmission lines which transport gas to major towns and cities, down to the low pressure networks which supply gas to local communities. SGN has supported the Northern Ireland gas industry since the introduction of natural gas in 1996.

## 1.1.2 West Transmission

West Transmission is a subsidiary of Mutual Energy which is a company limited by guarantee (often called a mutual company) formed to acquire and hold important energy infrastructure assets for the benefit of the energy consumers of Northern Ireland.

The Group's key assets are:

- The Moyle electricity interconnector linking the electricity grids of Northern Ireland and Scotland through submarine cables.
- The Scotland to Northern Ireland Pipeline (SNIP) subsea pipeline which transports gas to Ballylumford power station. All gas used in Northern Ireland is currently transported from Scotland through the SNIP.
- The Belfast Gas Transmission Pipeline which transports natural gas from Ballylumford to the Greater Belfast and Larne gas markets.

## 1.2 PROJECT OUTLINE

In order to extend the gas network into the west of Northern Ireland, new gas pipelines will be installed to transport the gas from the existing gas network to the targeted towns. This involves the construction of a high pressure (HP) cross country transmission pipeline and a number of key regulator stations to reduce the pressure of the gas and direct a local supply to the target towns via intermediate pressure (IP) pipelines laid mainly in the road carriageway. The construction of the gas infrastructure will be undertaken over an eighteen month build period and for the most part the lands and road affected will be reinstated to their former condition with the exception of the above ground installations (AGIs) including pressure reduction stations (PRS) which are permanent features. Therefore this major gas infrastructure project, which will provide opportunities to use more efficient energy and tangibly boost the local economy, will have only a temporary impact on the environment and will result in short term disruption.

The preferred routes for the HP and IP pipelines are illustrated in Figure 1.1 overleaf.

Some key project information is included below:

- An overall investment of around £250m with a contribution of up to £32m being provided by the Northern Ireland Executive;
- Construction of approximately 185km of pipeline linking the towns to the existing network;
- Up to 40,000 domestic and business customers to be connected to natural gas;
- West Transmission Ltd will own and operate the HP pipeline, which will be constructed by SGN. SGN will thereafter provide maintenance and other services;
- SGN Natural Gas will own and operate the IP pipeline, low pressure (LP) mains, services and meters delivering natural gas within the towns;
- The Project traverses 364 farming/enterprises along the route, totalling 978,000 Hectares of land, whilst the construction corridor will only cover some 234 Hectares;
- After construction, the land apart from those areas occupied by AGIs is fully reinstated and returned to farmers/landowners to carry out normal agricultural activity.
- The HP pipeline will be crossing 85 roads, including the M1 motorway, 56 tracks or laneways, 72 water courses and streams, including the River Blackwater, and numerous ditches.
- The IP line will cross approximately 143 water courses including Upper Lough Erne.





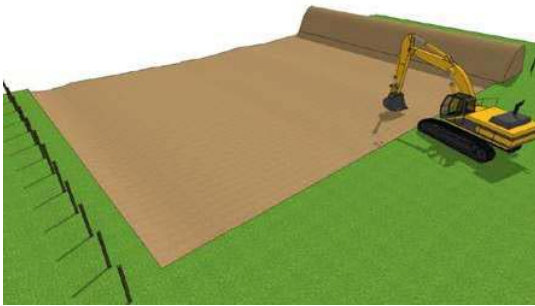
Figure 1.1 Overview of preferred pipeline routes

## 2 PROJECT DESCRIPTION

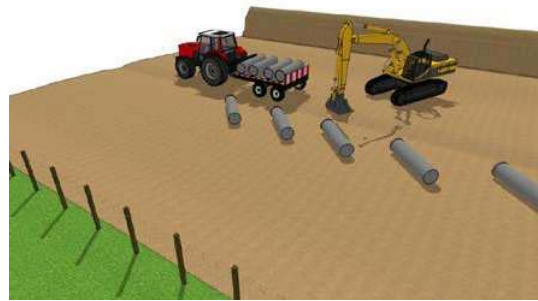
### 2.1 HIGH PRESSURE PIPELINE

The pipeline will be 78km in length and will be laid below ground, generally by open cut and laying the pipe in a mechanically excavated trench. Major road and sensitive river crossings will be completed using trenchless methods such as tunnelling, drilling or other non-open-cut techniques. The HP pipeline diameter will be 400 mm for the Portadown to Dungannon section and 300 mm elsewhere. The pipeline is designed to accommodate operating pressures up to 85 bar and will be constructed with high grade tensile steel pipeline lengths welded together. The main HP transmission pipeline will be laid across open countryside.

For the HP pipelines, the working area will be fenced off in a strip up to 50m wide along the length of the pipeline with appropriate drainage measures installed. The topsoil will be carefully removed and stored separately from the sub-soils within the working width. The steel pipes will then be laid out and welded together onsite with breaks in the pipes for road and river crossings (see Figure 2.1 and Figure 2.2).



**Figure 2.1** Top Soil Stripping

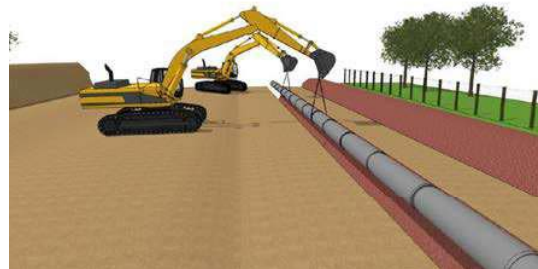


**Figure 2.2** Pipe Stringing

Once each section of pipe is welded and coated, the trench is excavated and the pipe is placed carefully into it (see Figure 2.3 and Figure 2.4). The trench will be left open for the minimum amount of time for safety reasons and to minimise the likelihood of it being affected by adverse weather.



**Figure 2.3** Trench Excavation

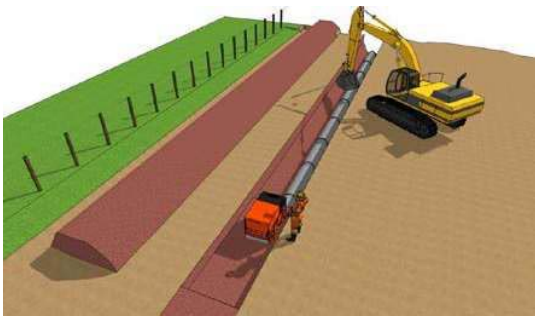


**Figure 2.4** Welded Pipe String Installation

Where the pipeline crosses roads, rivers or railways there are two main methods that can be employed, either open cut or non-open cut. Where engineering or environmental constraints are potentially significant, for example at all major watercourse crossings or crossings of major roads, trenchless technologies may be employed.

The majority of minor road and watercourse crossings will employ open cut methods which may be accompanied by traffic management measures to ensure access is maintained. Non-open cut methods require the excavation of pits either side of the feature to be crossed to enable the pipeline to be bored underneath. For features such as wide rivers, it is likely that Horizontal Directional Drilling (HDD) will be used, while at other shorter crossings alternative techniques such as thrust boring may be employed.

Once the pipeline is successfully installed, the trench is then back filled (Figure 2.5), taking care to restore the soil structure, post-construction drainage will be installed and the land will be fully reinstated to its original condition (Figure 2.6).



**Figure 2.5 Back Filling**



**Figure 2.6 Reinstatement Complete**

### 2.1.1 HP Pipeline Above Ground Installations and Pressure Reduction Stations

In addition to the pipe laying operation, at a small number of locations (7 no.) there will be small permanent installations for pressure reduction and control stations to facilitate onward distribution of gas to towns via the IP pipelines (Pressure Reduction Stations) or to facilitate transmission, maintenance and pipeline integrity checks (Above Ground Installations).

There will be a permanent pipeline inspection facility (Pig-trap) constructed at either end of the 400mm pipeline between Dungannon and Portadown and the 300mm pipeline between the Dungannon Tee and Tullykenneye. These will be housed within the confines of the Pressure Reduction Stations or Above Ground Installations.

#### 2.1.1.1 Pressure Reduction Stations

Pressure reduction/regulator stations (PRS) will be required for the Dungannon, Enniskillen/Derrylin and Omagh IP pipeline offtakes. PRS facilitate distribution of gas from the transmission pipeline by reducing the pressure for onward conveyance to major commercial and residential centres along the route. PRS are also essential for the maintenance and safe operation of the pipeline by providing



inspection and control facilities to assist with the pipeline integrity checks. The PRS comprise prefabricated kiosk type single storey buildings erected around important units such as heat exchangers, regulators and control units. They also include above ground pipework and fittings situated close to ground level.



**Image 2.1** Typical Pressure Reduction Station

#### **2.1.1.2 Above Ground Installations (AGI)**

High pressure gas transmission requires that in line isolation valves (Block Valves) are installed at 16km intervals along the HP pipeline to facilitate maintenance work or pipeline section isolation. The block valve itself will be buried, but will have valve stem extensions to be accessible from above ground. There will be the need for a small kiosk to facilitate the need for remote monitoring / operation of the valves. Block valve sites are required between the Portadown and Dungannon Tee site and the Dungannon Tee site and Tullykenneye PRS.



**Image 2.2** Typical Block Valve

The other AGIs include the Portadown site which facilitates connection to the existing transmission network at Derryhale and onward transport of gas in the Gas to the West pipelines. The Dungannon Tee site also facilitates the transition of the 400mm pipe from Portadown to Dungannon to a 300 mm pipe leading to Tullykenneye PRS. These AGIs comprise predominantly above ground pipework and fittings situated close to ground level such as the filter/metering module and pig trap in addition to prefabricated kiosk type single storey buildings erected around important units such as control units and calorimeter.

## **2.2 INTERMEDIATE PRESSURE PIPELINE**

The intermediate pressure pipelines total 107km. In general these will be laid within the road network alongside the existing utilities. In sections where the road includes a bridge crossing, the pipeline will be accommodated within the deck structure of the bridge, where possible.

Where a bridge crossing is not suitable to safely accommodate the pipeline within the road network, it will be necessary to either divert the pipeline away from the road alignment and to cross the watercourse or other feature by alternate means or remain on the road alignment but constructed the pipeline under the structure by drilling techniques. In this event, for all significant watercourse crossings, a trenchless crossing method will be employed.

### **2.2.1 IP Pipeline Pressure Reduction Installations**

Pressure Reduction Installations (PRIs) reduce the pressure from 7 bar in the intermediate pipeline to the pressure required for the low pressure gas mains in the towns. These PRIs, typically District Pressure Governors (DPG), will be required at the end of the IP lines to facilitate future development of the low pressure network in the licenced towns to be supplied. They can be above ground or below ground. The above ground options are typically located within the road verge or suitable lay-by location and are similar to other street furniture provided by other types of utility, e.g. telecommunications.

## **2.3 LOW PRESSURE (DISTRIBUTION) PIPELINE**

The low pressure network will involve street works. Larger diameter spine mains will be laid on the main arterial routes in each Town. The spine mains will be used to distribute the pressure throughout the town to maintain a suitable and balanced pressure (75mbar to 2 bar). Infill mains are the mains that will feed the domestic and commercial estates. These mains will be smaller diameter pipes operating at either medium pressure (75mbar - 2 bar) or low pressure (0-75mbar).

Domestic and commercial services can be connected onto the spine or infill mains on the carriageway or footpath and into the private property of the customer.

## **2.4 ROUTE SELECTION**

In common with other types of linear development, the effect that a pipeline may have on the environment largely depends on its route. Consequently, careful selection of the route is of prime importance to eliminate or minimise any adverse environmental effects. Recognising this, a

systematic route selection process based on the consideration of environmental, technical and landowner constraints was adopted in defining the preferred route corridor.

The route selection process is based on a well-defined procedure, starting with an 'Area of Search' that is as broad as is technically feasible. This area is then narrowed down through due consideration of technical, environmental and socio-economic issues. The stages of the route selection process can be summarised as follows:

- Preliminary studies were undertaken to collect published data. Consultations with Statutory Organisations were also held to supplement information obtained. An 'Area of Search' was defined within which feasible route corridors were identified;
- The route corridors were further investigated by a route corridor information study which identified physical, technical and environmental constraints. The preferred route corridor was identified by a comparative study of all feasible corridors using a detailed constraints model developed in a Geographic Information System (GIS) which assisted in the identification of the least constrained corridor;
- Further information was obtained and further consultations held to identify constraints within the route corridor to permit the selection of linear pipeline routes within the selected route corridor. Permission to undertake environmental and technical surveys of the preliminary pipeline routes within the corridor was sought and obtained. The alternative pipeline routes were investigated in greater detail and a comparative study was completed to determine the preferred pipeline route;
- The route alignment was refined and optimised. During route refinement landowners and other interested parties along the preferred route were visited and informed of the possibility of the pipeline.; and
- Information obtained from the surveys was utilised to determine the detailed alignment of the proposed pipeline route..

Key factors in determining the pipeline route included:

- Avoidance of environmentally sensitive areas.
- Avoidance of steep side slopes as these are difficult and unsafe to work on during construction whilst also requiring significant earth moving and consequently are difficult to reinstate.
- Avoidance of repeated crossings of other assets, especially motorways and major roads and rivers/canals.
- Avoidance of repeated crossings and parallelisms of overhead cables as crossings are a potential source of danger during constructions and parallelisms can also be dangerous and cause interference with pipeline cathodic protection (CP) systems.
- Avoidance of close proximity to buildings, particularly those capable of accommodating large numbers of people. Pipe of additional wall thicknesses is required in areas of close proximity to normally occupied buildings and major roads.



- Avoidance of areas of hard rock close to the ground surface as this requires more expensive excavation techniques and can render trenchless techniques at major crossings difficult or impossible.
- Avoidance of waterlogged areas and those comprising peat-bogs where anti-flotation measures are required.
- Avoidance of land which may be subject to development in the foreseeable future.

## 3 ENVIRONMENTAL IMPACT ASSESSMENT

### 3.1 SCOPING

The Environmental Impact Assessment (EIA) process is a method of ensuring that the likely effects on the environment of a new development, such as this, are fully understood and taken into account before planning permission is given for the development to proceed. Its primary purpose is to improve the quality of decision making by identifying potential environmental issues early in the project process.

Prior to work commencing on an EIA, it is important that the scope is effectively defined. A scoping exercise was carried out at the outset of this project to determine the issues that needed to be addressed in the ES. The scoping exercise involved the following main elements:

- Preliminary site visits to assess the likely environmental impacts at first hand,
- Preparation of a scoping document and consultation with the principal statutory and non-statutory consultees through the PAD process,
- Public consultation sessions through Public and Community Consultation process,
- A desktop study where information about the strategic study area from a number of sources was examined.

Once the key issues were identified through this process, baseline studies/surveys were carried out. These enabled the prediction of the likely environmental impacts arising from the proposed development. These impacts were then evaluated in terms of their significance and their nature and magnitude.

A fundamental aim of the environmental assessment, as part of the design process, is to ensure that any potentially damaging effects are avoided or minimised and that the beneficial aspects of the project are enhanced. The most satisfactory means of impact mitigation is to avoid it at the source either by site selection or as in this case, where possible, by redesign. Reduction involves lessening the degree of an impact which cannot be entirely avoided. Reduction acknowledges that some degree of adverse impact will arise, but provides means by which the conditions can be improved or compensated for.

### 3.2 CONSULTATION

The consultation phase of an EIA is of utmost importance, as it enables all concerned and interested parties to voice their opinions on the development during the initial stages of the project. This enables changes to be made during the design stage of the development, utilising comments and ideas from the consultation process.

#### 3.2.1 Statutory and Relevant Bodies Consultation

Pre –Application Discussion meetings were held with the principal statutory consultees, which included:

- Chief Executive of each Council
- Environmental Health Department of each Council
- NIEA (Landscape, Water Management Unit, Historic Monuments, Natural Environment, Waste Management)
- Transport NI
- Rivers Agency
- DAERA Inland Fisheries
- HSENI
- NIE
- Systems Operators Northern Ireland (SONI)
- NI Water
- DfE: GSNI
- DfE: Energy Branch
- RSPB
- DAERA: Forest Service
- DAERA: Fisheries
- Council for Nature Conservation And The Countryside
- Loughs Agency
- DAERA Veterinary Division
- DARD Environmental Policy Division
- Northern Ireland Tourist Board
- Northern Ireland Housing Executive

### 3.2.2 Local Interest Groups and Public Consultation

The applicant has undertaken a comprehensive PACC exercise to inform the local community about the development and to obtain views from the community to assist in the development of the scheme.

In line with the statutory requirements that at least one public event should be held within the locality of the project, the PACC strategy made provision for a network of 6 public events reflecting the geographical spread of the project. In addition to the manned public events, further unmanned displays/exhibitions were organised at 13 local centres throughout the project study area, seeking to maximise publicity and awareness of the project, providing additional information and the opportunities to provide feedback and/or find out more about the project.

The public events in both phases of PACC have been well attended with 445 people attending these events. Interest in the project has primarily been from landowners whose lands are potentially affected by the development (88% of attendees). All issues raised through PACC process have been addressed in refinement of the route alignment/design, in the assessments in the EIA and through on-going liaison with landowners.

### 3.2.3 Landowners

Extensive landowner consultation and engagement was undertaken in parallel with the EIA process and valuable information was obtained in relation to environmental constraints and issues within the study area. Dedicated land officers were employed along the entire route and were a dedicated consistent point of contact for all landowners within the strategic study area.

## 3.3 ENVIRONMENTAL IMPACT STATEMENT

The general headings of the topics and issues reported on in the Environmental Statement are as follows:

- Land Use and Socio Economics
- Agriculture
- Geology and Hydrogeology
- Flood Risk & Water Quality

- Fisheries and Aquatic Ecology
- Terrestrial Flora and Fauna
- Noise and Vibration
- Air Quality and Climate
- Landscape and Visual
- Archaeology and Cultural Heritage
- Transportation

### 3.4 LAND USE AND SOCIO ECONOMICS

This Chapter of the ES seeks to provide an assessment of the proposed development in terms of its potential impact upon land use, socio-economics, population, and demography of the project study area. Impacts upon land use, sensitive receptors (and human beings) relating to air quality, noise and vibration, visual amenity and traffic, are considered in detail within the corresponding chapters within the ES.

The Northern Ireland authorities are keen to develop a natural gas market in Northern Ireland - and in particular in the West of Northern Ireland for both environmental benefits of switching to gas via reduced carbon emissions, the increased fuel choice and savings for consumers, the diversification of energy sources and to make the province more attractive investment proposition. The provision of the extended gas network represents an opportunity to help alleviate fuel poverty for residential customers through an increase in fuel choice and a more competitive energy market.

The proposed development has the potential to provide positive impacts in terms of an increase of energy choice for the population to be served, with associated monetary savings which may further benefit the local economy.

The development represents a considerable construction undertaking, with potential positive impacts to the local economy and the wider Northern Ireland construction industry, one of the largest single employment sectors within the region. The construction phase has the potential for positive impacts in terms of demand for materials, equipment, plant hire and labour force. Whilst during the construction phase there will be fluctuations in the level and nature of construction activities and the location of works, it is realistic to consider the programme as a continual construction phase and conclude that there will be a requirement for resources throughout this period. The project is subject to a number of social clauses as a requirement of grant funding; these clauses shall be implemented through the delivery of the construction contract, requiring the delivery of, new entrant trainee opportunities, work experience placements, opportunities for skilled/experienced workers and business in education.

The proposal has further potential positive impacts through the reduction of CO<sub>2</sub> emissions associated with the project, both in financial terms and in a reduction in greenhouse gas emissions through a reduction on coal and oil usage for both businesses and domestic consumers.

### 3.5 AGRICULTURE

Agriculture is one of the most important industries in Northern Ireland with the agri food industry turning over somewhere in the region of £4.5 billion every year.

There are approximately 29,000 active farmers in Northern Ireland producing a wide range of products. The principal enterprises are grass based and namely beef, sheep and dairying. There are also significant pig, poultry and tillage sectors.

The high pressure gas pipeline will be primarily constructed across agricultural lands and will cause a level of disturbance to these farms. The project team have been in discussions with landowners and have, where possible, identified issues and concerns that these landowners may have. Based on these discussions and design constraints the project team have, where practicable, minimised the landtake and degree of severance affecting each farm. It must be remembered the potential impact of this development on farms will, by and large, be temporary. Other potential impacts affecting soil compaction, drainage, noise and dust have been considered and assessed elsewhere and appropriate mitigation measures outlined.

The duration of the impact will generally be less than one year but may extend to two years in certain cases. There are a small number of sites (7 No.) required for above gas installations and the landtake for these sites will be permanent.

There will be a residual impact on lands over which there is an easement for the gas pipeline, but this residual impact is considered minor as it will have little or no effect on mainstream farming activities. Furthermore, there will be an impact associated with the permanent landtake for the above ground installations but again the residual impact of this landtake is also considered minor.

### 3.6 GEOLOGY AND HYDROGEOLOGY

Potential impacts on the geological environment relate to the disturbance of soil profiles, soil quality, the potential for slope stability issues and potential damage to peatlands. These potential impacts have been mitigated against using industry standard mitigation measures, which in particular include the avoidance of disturbance of active peatlands by tunnelling under these locations.

The residual impacts on the geological environment range from slight negative impacts in relation to the alteration of the geological profile due to the reinstatement with foreign materials, to slight positive impacts as a result of improved understanding of the geological environment through the detailed site investigations completed for the purposes of this assessment.

Potential impacts on the hydrogeological environment relate to the potential impact on groundwater quality as a result of accidental spillages, dewatering at deeper excavations, impacts on groundwater flow conditions in areas with a shallow water-table and impact on the hydraulic connection and water quality of groundwater dependant terrestrial ecosystems such as rivers and bogs. During construction, the removal of topsoil and subsoil will result in the underlying aquifer being temporarily more vulnerable to contamination; however the risk of contamination will be limited during this period as the activities within the exposed area will be tightly controlled by the site contractor. These potential impacts have been mitigated against using industry standard mitigation measures.

The residual impact on the hydrogeological environment relate to potential temporary slight negative impacts on shallow groundwater levels and flow due to localised dewatering, the development of a localised preferential flow pathway along the granular material within the trench

and the potential slight increase in groundwater vulnerability in some locations due to the alteration of the subsoil horizon. Positive impacts may arise through the detection and removal of previously undocumented contaminated land or waste material resulting in an improvement in groundwater quality.

### 3.7 FLOOD RISK AND WATER QUALITY

Policy FLD1 of PPS 15 does not permit development within the 1% AEP fluvial floodplain unless the applicant can demonstrate that the proposal constitutes an exception to the policy. Through the project design the locations for the AGIs have been chosen to avoid the known floodplains within the study area and therefore the potential impact of flooding has been addressed through the pipeline routing and AGI location selection. The pipelines are subsurface so have no impact on the floodplains following construction.

The only works that will impact on watercourses is the river crossing for the pipelines and the provision of temporary crossings, in the form of bridges or flumed crossings, for pipeline plant during the construction. In all instances a Schedule 6 application will be made to the appropriate Area Office for each of the river crossings.

Under Policy FLD3, a Drainage Assessment is required for a change of use involving new buildings and/or hard surfacing exceeding 1,000 square metres in area. The AGI sites have a total area of less than this, and therefore a Drainage Assessment is not required. There will be no formal drainage installed as part of the AGI sites and the principal of sustainable urban drainage systems (SuDS) will be applied to the site drainage, with gravel surfacing covering the majority of the site and any drainage from the limited access roads and pathways being directed to these gravel areas to soak away. There will therefore be no formal discharge from the drainage system deployed at the AGI sites.

There will be no permanent modifications to watercourses as part of this project.

In terms of water quality the project has been assessed in the context of the Water Framework Directive (WFD) and the need to achieve the necessary water quality under the objectives of the WFD. The potential significant impact for water quality relate predominantly to the construction phase of the project. The main risks to a waterway during the construction and operational phases are from oil, hydrocarbons, fuel, chemicals, suspended solids, concrete, cement and grout.

Where watercourses have been classified as sensitive due to the protected area status or sensitive biology a non dig pipeline crossing will be undertaken to avoid and direct impact on the water courses and therefore protect water quality. Where a watercourse is crossed using an open trench technique this will be achieved through excavation in the dry through fluming the river reach or by over pumping. All watercourses will be fully reinstated with the bankside and channel bed material after installation of the pipeline.

Standard best practice guidelines will be followed in terms of pollution prevention particularly for suspended solids which are a significant risk in a project of this nature where soil exposure will be required. Additional measures such as preconstruction drainage, provision of buffer zones and water treatment will be undertaken to ensure any silt laden water is minimised and adequately treated before discharging back to the aquatic environment under licence.



Hydrotesting will also be required to test the integrity of the pipeline and therefore an abstraction will be required in order to undertake this procedure. Water will only be abstracted from surface waters with agreement with the NIEA and will be at a rate that will not affect ecology or compromise the water quality in the watercourse.

The permanent AGI sites have been designed on the basis of Sustainable Urban Drainage Systems (SUDs) there will be no formal drainage within these permanent sites and no discharges to surface water. Site drainage will be directed to permeable surfaces within the site boundary from where it will percolate to ground.

With mitigation in place, it is anticipated that no significant effects will occur on the Flood Risk and Water Quality.

### 3.8 FISHERIES AND AQUATIC ECOLOGY

The proposed Gas to the West project was assessed in respect of its potential impacts on the aquatic environment along the route of the proposed pipelines and the locations of the Above Ground Installations.

The approach adopted in the assessment used desk based and field collected data to describe baseline fisheries and aquatic ecology conditions at rivers intersecting the proposed HP pipeline route, and those intersecting the IP pipeline route where engineering issues will result in “off-road” deviations. It also considered the potential risks of the pipeline construction in locations where it will be drilled within the road alignment at river crossings that are considered to be of moderate or high sensitivity for fisheries and aquatic ecology. The assessment considered the potential significance of the effects associated with the construction of the pipelines, and the mitigation needed to address any effects at river intersections.

Detailed baseline surveys were carried out, examining 123 sites across the HP and IP pipeline routes where they intersected with watercourses. Physical habitat surveys were carried out at 85 of these sites to establish the sensitivity of the watercourses in terms of fisheries and aquatic ecology and to establish the potential presence or absence of protected species such as Atlantic salmon, River/Brook/Sea lamprey and crayfish, their preferred habitats and other important species such as eel and trout.

The surveys also included desktop and field searches for Freshwater Pearl Mussel, which is listed as a globally endangered species and is known to occur in only six river systems in Northern Ireland, including the Tempo River which is crossed by the Enniskillen/Derrylin IP pipeline and the Ballinderry River which is crossed by the Cookstown IP pipeline.

On the HP pipeline route, the local sensitivity was assessed as “Very High” at seven of the test sites, “Medium” at 15 sites and “Negligible to Low” at 39 sites. On the IP pipeline routes, the local sensitivity was assessed as “Very High” at eight sites (six ‘off-road’, two ‘in-line’), “High” at seven sites (three ‘off-road’, four ‘in-line’), “Medium” at nine sites (six ‘off-road’, three ‘In-line’), and Negligible to Low at 43 sites (six ‘off-road’, 37 ‘in-line’).

The main source of risk for potential impacts on fish and aquatic ecology is during the construction phase. Risks include:

Potential impacts of sediment release and entrainment from activities such as, trench excavation and backfilling (open-cut only), installation of temporary crossing structures and associated movement of plant machinery, soil and vegetation clearance, bank disturbance caused by plant equipment, run-off from spoil storage, construction of dams to divert flow when soil or sandbags are used to block flow, water over-pumping and discharge of sediment laden water back to the watercourse, removal of flumes/ dams/ crossing culverts and during reinstatement of bank soils and vegetation.

Directional Drilling, whilst preferred over open cut crossings at sensitive areas, poses potential risks of escape to the watercourse of pressurised drilling fluids (bentonite/ mud) through rupture or “break-out” of the underlying bed material or from surface run-off caused by drilling fluid returns at entry and exit points. Trenchless crossings may also generate noise and vibration which may affect aquatic species.

Other potential risks include the removal or compaction of river bed and/or sensitive species, obstruction of fish passage and the release of other pollutants

A range of mitigation measures has been developed for the proposed construction activities. Trenchless crossings will be used at sensitive locations and geotechnical assessments have been carried out to ascertain the feasibility of using particular drilling techniques and accurately quantify the risk of any drilling mud rupture. Methods that do not require the use of drilling mud will be employed where ground investigations have indicated a high risk of mud break-out.

Other mitigation measures include temporary fluming, species rescue and the timing of work, with in-stream works (e.g. fluming) to be carried out only between 1<sup>st</sup> May and 30<sup>th</sup> September to avoid the period of salmonid spawning, egg incubation and fry development.

Buffers, settlement pits and filters will be used to reduce the risk of sediment entrainment and an emergency response plan developed to ensure that accidental spillages can be mitigated.

The reinstatement phase will pay careful attention to the appropriate restoration and replacement of riverbed materials.

Potential effects during the operational phase have been identified as sediment release and entrainment, pipeline exposure on the riverbed and pipeline maintenance. With mitigation, the sediment pollution risk from bank erosion will be significantly reduced and residual effects would be neutral. However, in the event that pipeline maintenance is required, the mitigations recommended as per the construction phase for open-cut crossing would apply.

The recommended mitigation, together with mitigation included in the project design, will ensure that impacts on fisheries and aquatic ecology during the construction and operational phases of Gas to the West will not be significant.

### **3.9 TERRESTRIAL FLORA AND FAUNA**

An Ecological Impact Assessment (EclA) was carried out to identify, quantify and evaluate the potential effects of the project on ecological features. An ecological feature is defined as a species, habitat or ecosystem that has the potential to be affected by a project.

Consultation was undertaken with the Northern Ireland Environment Agency (NIEA) during Pre-Application Discussions with regard to ecological survey methodologies; the influence of ecological survey results on design changes; potential impacts on ecological features; and proposed mitigation measures.

A desk study was undertaken to gather existing information relevant to the project. Information was obtained through ordnance survey maps, aerial photographs, current legislation, internet and database searches, existing literature and reports. The NIEA Digital Datasets (NIEA & LPS/OSNI 2016) were used to identify the location of statutory or non-statutory designated sites of natural heritage importance that have the potential to be affected by the project.

An Extended Phase 1 Habitat Survey was conducted between April 2015 and August 2016 within a 100m corridor centred on the route of the HP pipeline. The survey was extended to include further information on the potential of the habitats identified to support species protected by law or of natural heritage importance. The survey was extended to include further information on the potential for otter along the route of the HP Pipeline. Further Phase 2 Habitat Surveys were also conducted at a number of locations containing wetland habitats. Species-specific surveys were also carried out for Bats, Marsh Fritillary, Badger and Birds (breeding, wintering and wetland).

The surveys identified a total of nine Northern Ireland Priority Habitats (NIPH) along the route of the HP Pipeline. These included hedgerows; lowland fens; lowland heathland; lowland meadows; mixed ashwoods; purple moor grass and rush pasture; reedbeds; traditional orchards and wet woodland.

Bat Roost Surveys identified a total of two confirmed bat roosts and four potential bat roosts along the route of the HP Pipeline. There were no underground otter holts or above ground couches recorded within the planning application area however otter activity was recorded at a number of locations along the route of the HP Pipeline indicating otter presence along watercourses traversed by the route. A total of 16 potential locations on the HP pipeline route were identified with suitable marsh fritillary habitat, however the focused surveys concluded that no marsh fritillary were present. Badger surveys were carried out and, where possible, setts were avoided as part of the detailed pipeline routeing exercise.

Breeding Bird Surveys recorded a total of 62 bird species (8754 individuals) along the route of the HP Pipeline. A total of 11 of these bird species were considered birds of highest conservation concern. A total of 12 land parcels contained sensitive species recorded as either 'confirmed breeding' or 'probable breeding' along the route of the HP Pipeline. Wintering Bird Surveys recorded a total of 63 bird species (16,814 individuals) along the route of the HP Pipeline. A total of 14 of these bird species were considered birds of highest conservation concern. Wetland Bird Surveys recorded a total of 17 bird species (584 individuals) within watercourses and waterbodies along the route of the HP Pipeline. A total of seven of these bird species were considered birds of highest conservation concern. The results of wetland bird surveys indicated that none of the watercourses or waterbodies along the route of the HP Pipeline are considered important for over-wintering waterbirds.

The extended Phase 1 Habitat Survey identified invasive non-native plant species such as giant hogweed, japanese knotweed and Himalayan balsam at a number of locations along the route the HP and IP pipeline routes.

Extended Phase 1 Habitat Surveys were carried out along the off-road sections of the IP Pipeline. The only NIPH recorded was hedgerows. Bat Roost Surveys were conducted at bridges along the route

but no roosts were identified. No otter holts or couches were recorded within the IP planning area although there was evidence of otter activity.

The route of the project has been designed, as far as possible, to avoid designated sites. Significant mitigation measures have been incorporated into the design of the project in order to avoid and/or reduce negative effects on the ecological environment.

An Ecological Clerk of Works (ECoW) will be employed to provide advice both pre-construction and during construction in relation to relevant international and national legislation relating to the protection of ecology; to provide advice on the timing of works and the implementation of mitigation and compensation measures; to apply for relevant derogation licences; to monitor identified works; and to produce site inspection reports.

An Ecological Constraints and Opportunities Plan (ECOP) will be prepared and included within the Construction Environmental Management Plan (CEMP) for the project post planning to provide an overview of all ecological constraints. Method Statements will accompany the ECOP, where necessary, to provide detailed information on the management and eradication of invasive non-native species; on pre-construction vegetation clearance; on the reinstatement of NIPH; and on the permanent closure of badger setts. In sensitive areas efforts will be made to minimise disturbance from construction activities by measures such as fencing them off and avoiding these areas where possible, the use of pressure dissipating mats to reduce soil compression and the avoidance of drainage improvement works in habitats that depend on poor drainage.

Reinstatement of the 30 m working width of the construction corridor will be carried out following completion of construction works. All habitats along the route of the HP Pipeline and at off-road sites along the route of the IP Pipeline will be reinstated back to their original habitat. In sensitive areas this will be achieved by relaying the original sods or replanting with native species whereas intensively farmed grasslands will be reinstated with a seed mix agreed with the landowner.

With mitigation in place, it is anticipated that no significant effects will occur on terrestrial flora and fauna.

### **3.10 NOISE AND VIBRATION**

A noise and vibration assessment was undertaken to determine the potential noise and vibration impact associated with the proposed project. This assessment covered all the potential noise and vibration generating aspects of the proposed development, including the HP pipeline route, the IP pipeline route and the AGI sites. The assessment covered construction and operational phases of the proposed development.

The noise and vibration assessment was completed in accordance with all recognised UK and international noise and vibration guidance documentation related to noise and vibration. An extensive noise monitoring survey was completed to determine the existing baseline noise environment in the vicinity of the pipeline routes and the AGI sites.

During the construction phase of the proposed development, noise levels will be temporarily increased in the vicinity of some of the nearest noise sensitive properties to the application site as pipeline construction activities pass by. Construction activities associated with the pipeline

installation will be very short-term in nature with each stage of the pipeline construction process passing the nearest properties within a few days. Construction activities at the AGI sites will be longer term in nature compared with the pipeline route construction activities.

Subject to the use of noise barriers and a detailed construction plan that has been prepared in collaboration with the three relevant councils, construction noise levels will be maintained below the recommended noise threshold limits included in the Environmental Statement.

The assessment of road traffic noise in the vicinity of the proposed development has revealed that noise impacts from increased traffic resulting from the proposed development will be negligible during both construction and operational phases.

Noise threshold limits have been included in the Environmental Statement, which if adhered to will ensure that there will be no significant plant/equipment noise impacts from the operation of the proposed AGI sites at the nearest noise sensitive properties. There will be no significant cumulative noise impacts associated with the proposed development in tandem with other approved projects.

### **3.11 AIR QUALITY AND CLIMATE**

The air quality & climate chapter has assessed the existing air quality situation in the vicinity of the proposed development and examined the potential impacts the proposed Gas to the West project new development may have both during construction and operational phase. The assessment also proposes mitigation measures to help ameliorate any potential increases in air pollutants (including dust) during the construction phase.

Potential release of pollutants to the atmosphere during the construction phase can be identified as being from emissions from associated machinery & plant and airborne dust from earth movement and general construction activity in the working areas. With respect to emissions from traffic, construction of the pipelines and associated infrastructure would generate vehicle movements on the local road network, which would include contractors' vehicles and Heavy Goods Vehicles (HGVs), diggers, and other diesel-powered vehicles.

The existing background atmospheric pollution levels are below relevant European and UK threshold levels. The increase in traffic associated with the development will have a negligible impact on air quality. The main emphasis throughout this phase will be to minimise the potential dust impacts at source through appropriate site management, control mechanisms and best practice. A dust minimisation plan to manage dust nuisance will be developed within the CEMP as mitigation. With this in place the residual effects arising during the construction phase are considered to be negligible.

Adverse atmospheric impacts from the operational aspects of the gas pipelines and AGIs have also been assessed as negligible.

### **3.12 LANDSCAPE AND VISUAL**

The proposed development has been identified as crossing the following landscape character areas; Upland Landscape; Lowland Drumlin Landscape; Drumlins and Hills Landscape; Estate and Parkland Landscape; Lakeland Landscape and Urban Landscape. The majority of the HP pipeline route is

predominantly located in the lowland drumlin landscape that quickly absorbs new development such as the proposals and greatly limits the extent of influence across this landscape. The proposed Above Ground Installations have been carefully sited in the landscape and are small in scale using green and grey coloured materials. The IP pipeline route follows existing road corridors where it crosses the identified landscapes and when completed will not result in a change in landscape resource. No significant landscape effects have been predicted for the proposed development.

The relevant Area Plans were assessed to establish relevant landscape designations and policy for the proposed development. The proposed development is not located near a designated landscape or protected view. While the proposed IP pipeline route does cross the proposed Erne Lakeland AONB, the proposals will be below ground and along existing roads with no significant impacts.

Visual impact has potential to occur on residential properties along the length of the proposed pipeline routes. Each property with a potential view of the proposals has been assessed to establish the likely significant effects. No properties are predicted to have a significant visual impact as a result of the proposed development. As would be expected, properties located relatively close to the proposed development have the highest predicted effects, however no significant effects have been predicted as the proposed development is well screened and quickly absorbed into the landscape. In total the predicted visual impact on residential properties are: 513 properties with no change; 417 properties with minor impact; 137 properties with minor to moderate impact; and 7 properties with moderate to major impact.

A total of sixteen photomontages have been prepared to assess the visual impact of the AGIs. Only one viewpoint photomontage, Viewpoint 4 from Moss Road, has been predicted to be significant due to the close proximity of the Moss Road AGI to the viewpoint.

A range of projects and developments have been considered together with the proposed development to assess the potential for cumulative landscape and visual impacts including the A5 upgrade, the Enniskillen bypass and the Magherafelt bypass.

Construction stage landscape and visual impacts have been assessed. The proposed construction of the HP pipeline will take place over any giving section of the route over a short period of time and any landscape or visual impacts from construction will be temporary in nature. The construction of the IP pipeline will take place within existing road corridors where such utility works are frequently observed and no significant landscape or visual impacts have been predicted.

Mitigation measures have been proposed to address these impacts and to assist the proposal to blend with its surroundings. Planting will take place around the proposed AGIs with mixtures of shrubs and indigenous tree planting that will resemble the local hedgerows and woodlands. As the planting matures the proposed development will, in general, become blend with the landscape, with reduced landscape and visual impacts on the existing character and visual receptors. The parts of the landscape disturbed during excavations for the HP and the IP will be reinstated.

When the predicted landscape and visual impacts for the proposed HP and IP pipeline routes and related infrastructure are considered this landscape and visual impact assessment has established that the landscape and visual resources that surround the proposed development have the capacity to accommodate the proposal.



### 3.13 ARCHAEOLOGY AND CULTURAL HERITAGE

Northern Ireland has a rich and varied cultural heritage and there is precedence for items of archaeological significance being uncovered in this area during works associated with pipeline construction.

The proposed 100m wide route corridor has been designed to avoid known archaeological monuments (SMR sites) and other cultural heritage features. The route corridor will be located in close proximity to a small number of SMR sites, which have the potential to have associated archaeological features, finds or deposits that have not been previously been recorded.

The impact assessment was carried out via a combination of desk based survey (including a LIDAR review) and fieldwork. A small number of areas were archaeologically tested during which two previously unknown archaeological sites were identified.

The proposed 100m wide HP route corridor does not traverse any Historic Parks, Gardens and Demesnes site or part thereof. There are four Industrial Heritage Record (IHR) sites and one Listed Building situated within the proposed 100m wide route corridor, namely: Eglisish Bridge (IHR 00017:018:00); Rhone Bridge (IHR 05403:000:00); Halftown Bridge (IHR 05490:000:00) and Cleen Bridge (IHR01002:000:00 & HB1204072). At all of these locations trenchless technology will be employed removing the need for open cut trenches, thus avoiding impact on these sites. No direct impact on known cultural heritage is envisaged.

The IP pipeline routes pass over or close to a number of sites on the Industrial Heritage Record - particularly bridges. In many cases the pipeline will go off-line in these areas, using trenchless methods to cross streams and rivers, thus no impact will occur.

Ground works associated with the project, including areas on the IP pipeline where works occur outside the road alignment, have the potential to impact on hitherto unknown archaeological features sub-surface.

An archaeological watching brief will be undertaken during the main topsoil stripping on the HP pipeline and on the IP pipeline advanced archaeological testing or a monitored topsoil strip (watching brief) at construction stage shall be undertaken at locations where the pipeline goes off-line into green fields areas. A watching brief should also be undertaken at the locations of any above ground infrastructure.

The archaeological programme will be undertaken under licence from the Historic Environment Division (HED). A number of potential workarounds may be possible in different areas (taking other constraints into account), which may reduce the impact on archaeology that is identified during the topsoil strip.

An advanced archaeological watching brief will be undertaken in areas deemed of high archaeological potential throughout the scheme that have not been subject to previous archaeological works. Where possible, the archaeological programme will take place well in advance of main construction works in order to allocate adequate time to evaluate and recording any archaeological features that may be revealed.

### 3.14 TRANSPORTATION

The potential traffic impact from the construction and operation of the 'Gas to the West' scheme connecting Portadown to the 7 towns of Dungannon, Cookstown, Magherafelt, Coalisland, Omagh, Enniskillen and Derrylin has been assessed.

A significant amount of transportation-related pre-application discussions were carried out for the scheme, demonstrating the pro-active and positive working relationship between the applicant and the highways authority. These discussions serve as an environmental mitigation measure as they have helped to ensure that the proposed scheme is based on sound, achievable design principles, is proposed in the optimum locations and is future-proofed for future highways schemes to minimise potential environmental disturbance.

For each AGI, the access has been sited and designed in accordance with the latest guidelines and best practise, acceptable sightlines have been provided, sufficient set back distance between the gates and the adopted road has been allowed and the gates will be hung so that they do not open towards the carriageway.

The highest potential impact on the road network for the Gas to the West scheme is from the Construction process.

An outline Construction Traffic Management Plan (oCTMP) has been prepared which incorporates all the traffic management and construction access considerations specific to the Gas to the West scheme as described in the ES Chapter. A detailed Construction Traffic Management Plan (CTMP) will be agreed with Transport NI post consent and following the appointment of the main works Contractor/s.

All works activities and temporary closures will be designed to optimise safety, road space and work efficiency, whilst minimising road user congestion, delay and inconvenience.

Traffic management procedures that will be employed during the Construction process to control, co-ordinate and minimise the impact will include the use of the computerised Northern Ireland Street Works Registration and Notification System (NISRANS)/Symology Street Works Notice and the following proven community measures:

- Advanced signs;
- Visible Message Sign (VMS);
- Letter drops;
- Door knocking;
- Information leaflets;
- Public meetings;
- Advertising in local press.
- Company branding and a contact number displayed at works sites.
- SGN consultation with Transport NI Section office / Traffic Section.

All Traffic Management proposals will be agreed with Transport NI

The measures outlined above will be used to manage traffic during the construction of the HP, IP and LP pipelines. The proposed construction traffic volumes are relatively low and should only have a minimal and temporary impact on the road network. The requirement to provide and agree a

CTMP, including the designation of pre-defined haulage routes as discussed below, will ensure that the construction traffic impact is minimised and controlled.

Once the AGI sites are complete and operational they only require occasional maintenance. During the operational phase traffic movements will be only associated with maintenance vehicles and are anticipated to be 1 vehicle (therefore two trips) every 2 weeks. The volume of traffic associated with the construction and operation of each AGI is small and infrequent and therefore the proposed AGIs will have a negligible impact on the surrounding road network.

The impact on the road network once the Gas to the West scheme is complete and operational has been assessed to be negligible.

The HP pipeline and the IP pipeline both intersect with the proposed A5 Western Transport Corridor (A5WTC). Through pre-application discussions, the alignment and level of the proposed HP and IP pipelines have been agreed with Transport NI at the intersection points with the proposed A5WTC. This ensures that the HP and IP lines are future-proofed to minimise potential environmental disturbance at the A5WTC crossing points.

The proposed HP pipeline crosses the M1 and it is proposed to directionally drill the HP pipeline underneath the M1 to ensure that the construction does not impact the M1 carriageway.

Potential cumulative impacts with other road schemes have been investigated. Potential cumulative impacts were found with the the Enniskillen Southern Bypass and the A6 Randalstown-Toome-Castledawson Dualling schemes. Where is the chance of construction phases overlapping, the construction will be co-ordinated and controlled by Symology and NIRAUC to ensure that there will be minimum disruption to the public.

The proposed IP pipeline will pass through the new Magherafelt Road Roundabout of the Magherafelt Bypass. This issue has been discussed with Transport NI during the pre-application discussions, and it has been agreed in principle that the IP pipeline can be placed around the new roundabout. Therefore there will be no cumulative impact between the Gas to the West scheme and the A31 Magherafelt Bypass.

## 4 CONCLUSION

The Environmental Statement provides a comprehensive assessment of the potential impacts for all the component parts of the project. It sets out proposed mitigation measures to neutralise or reduce their potential adverse impact to an acceptable level.

The ES has been produced by a team of specialists in each of their subjects, grouped into a comprehensive assessment as a result of a programme of close interaction within and between the environmental team, the engineering design team and SGN over an 18 month period.

The approach has resulted in a thorough understanding of the combined effects of the different impacts. Examples include the incorporation of trenchless construction techniques in environmentally sensitive areas and for larger road crossings. This not only reduces the ecological and transportation impacts where its use is proposed, by limiting the amount of surface disturbance, but also significantly reduces the impacts on archaeology, noise, water quality and visual impact.

Regular and invaluable consultation has been held with landowners, the local community, the planning authorities and key Government agencies, which has enabled the project design to be steered towards the most environmentally acceptable solution.