

# Appendix 6-1

## Flood Risk Assessment

**MWP**

## **FLOOD RISK ASSESSMENT**

### **Newtown Transmission Gas Pipeline and Associated Above Ground Infrastructure**

**Gas Networks Ireland**

**November 2025**

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Project No.	Doc. No.	Rev.	Date	Prepared By	Checked By	Approved By	Status
24287	MWP-XX-XX-GE-C-6004-S0	P01	Nov. 2025	BM	MF	MF	Final

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## 1. General

### 1.1 Introduction & Background

MWP Engineering and Environmental Consultants have been commissioned by Fingleton White, on behalf of Gas Networks Ireland to prepare a Flood Risk Assessment for the proposed development of the Newtown Above Ground Installation, Proposed Pipeline Route and the Kilshane Block Valve Extension indicated in **Figure 1-1** below.

The proposed development is located on lands at Kilshane Road, Kilshane, Finglas, Dublin 11. The proposed development is located northwest of the M50 motorway and on the western side of the N2 national road and the R135 regional road. The surrounding area is characterised by agricultural fields and industrial uses such as logistics, power stations, and additional business park operations. Roadstone Huntstown Quarry and Huntstown Power Station are located on lands to the south of the proposed development and the site is located to the east and north of Ballycoolin and Rosemount Industrial Estates. Refer to **Figure 1-1** for site location.

The main hydrological feature in the area is the Huntstown Stream (HUNTSTOWN 08 - EPA Name), which flows c.360m south of the proposed development from west to east.

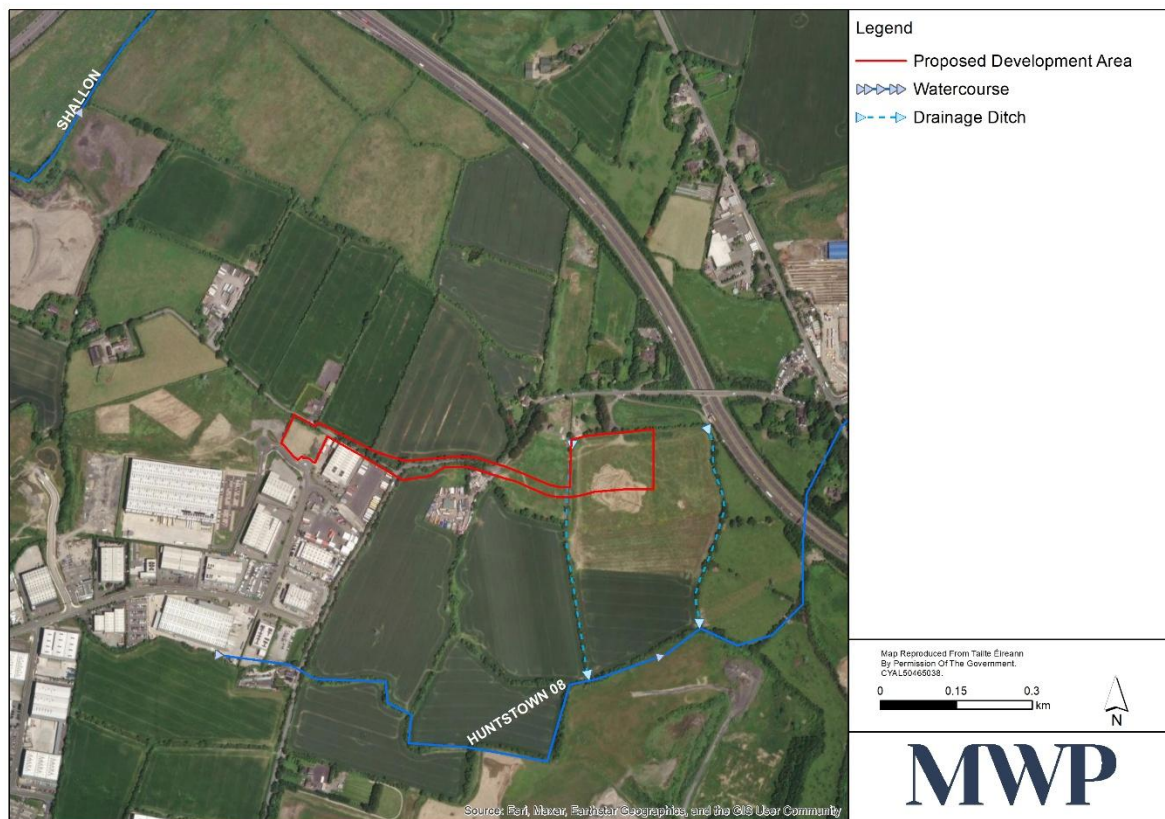


Figure 1-1: Site Location

## 1.2 Overview of Proposed Development

It is proposed that the development will consist of the installation of an underground transmission gas pipeline to connect between the proposed Block Valve (BV) Extension to the existing Kilshane BV station and the proposed AGI. It is proposed to extend Kilshane Block Valve to accommodate the tie in point for the planned GNI139 Newtown Pipeline on to the existing gas transmission line, and to facilitate temporary pig launching facilities. The area of the BV site currently measures 16.6m x 16.6m. The site will have no telemetry requirements and will provide a pipeline isolation valve for GNI139 pipeline. A new access roadway is also required from the Kilshane Avenue roundabout. Kilshane BV site fencing shall be extended north in the direction of Bay Lane into an unused greenfield site, and west into land currently being used as a car park. The new BV site will include a 22.57m x 43.31m x 2.4m high fenced enclosure.

The pipeline will connect into a 400mm Nominal Bore (NB) branch connecting pipe between BGE36 and BGE72 transmission pipelines running through Kilshane BV. A 3m deep excavation will be undertaken to allow the new pipeline tie into the existing pipeline. A new pipework arrangement will then be placed in the trench. The length of the pipeline from Kilshane BV boundary fence to Newtown AGI boundary fence will be approximately 715m. Upon exiting the BV site, the pipeline will continue by means of open-cut excavation for approximately 0.1km through the BV site, crossing an existing hedgerow before turning 90 degrees onto Bay Lane. From there, it will be laid within the road in Bay Lane for approximately 180m. From here, it will be routed within the road using open-cut method. The pipeline will cross 2 No. existing gas pipelines, BGE36 (450mm) and BGE72 (900mm) within Bay Lane. The pipeline will then route for approximately 180m through Bay Lane before reaching a T-junction on to Kilshane Road. The proposed gas pipeline must cross T50 telecom cables twice upon entering Kilshane Road. The pipeline will continue on through L3120 Kilshane Road for approximately 200m, staying to the northern lane of the road to avoid the proposed HV cable on the southern side before entering the Kilshane Gas power station site. The pipeline will follow the proposed internal site road before entering the AGI. The main pipeline will be installed by open cut method. The pipeline will cross the hedgerow into the greenfield site where it will be laid using open-cut method. It will traverse directly across this field to where it will meet a watercourse crossing. This watercourse is a man-made drainage ditch. Upon crossing this and entering the second greenfield site, the pipeline follows the route of the customer's proposed site road to the Newtown AGI site. The pipeline will terminate at a proposed AGI located within the Kilshane Energy Facility site.

The AGI compound comprises an internal access roadway and local surface water drainage system, PIG Trap (launch and receiving point for inspection and maintenance modules), heat exchangers, meters and boilers, regulators & instrument housing, and all ancillary service connections. The compound will be secured by means of security fencing.



### 1.3 Objectives

The purpose of the report is to establish the flood risk associated with the proposed development and, if appropriate, to recommend mitigation measures to prevent any increase in flood risk within the site or externally in the wider area.

The report has been prepared in the context of *The Planning System and Flood Risk Management – Guidelines for Planning Authorities, November 2009*, published by the Office of Public Works and the Department of Environment, Heritage and Local Government. Flood Risk Assessments are carried out at different scales by different organisations. The hierarchy of assessment types are Regional Flood Risk Assessment (RFRA), Strategic Flood Risk Assessment (SFRA) and Site-specific Flood Risk Assessment (FRA). This report is site-specific.

### 1.4 Methodology

The Flood Risk Management Guidelines document outlines three stages in the assessment of flood risk as follows:

**Stage 1 Flood risk identification** – to identify whether there may be any flooding or surface water management issues related to a plan area or proposed development site that may warrant further investigation;

**Stage 2 Initial flood risk assessment** – to confirm sources of flooding that may affect a plan area or proposed development site, to appraise the adequacy of existing information and to determine what surveys and modelling approach is appropriate to match the spatial resolution required and complexity of the flood risk issues. The extent of the risk of flooding should be assessed which may involve preparing indicative flood zone maps. Where existing river or coastal models exist, these should be used broadly to assess the extent of the risk of flooding and potential impact of a development on flooding elsewhere and of the scope of possible mitigation measures; and

**Stage 3 Detailed risk assessment** – to assess flood risk issues in sufficient detail and to provide a quantitative appraisal of potential flood risk to a proposed or existing development, of its potential impact on flood risk elsewhere and of the effectiveness of any proposed mitigation measures. This will typically involve use of an existing or construction of a hydraulic model or a river or coastal cell across a wide enough area to appreciate the catchment wide impacts and hydrological processes involved.

This report has been prepared generally in accordance with these stages.

### 1.5 Flood Risk & Zones

In the Planning System and Flood Risk Management Guidelines document, the likelihood of a flood occurring is established through the identification of Flood Zones which indicate a high, moderate or low risk of flooding from fluvial or tidal sources. **Table 1-1** below includes the definition of Flood Zones as well as the implications for planning.

The flood zone type is determined based on current water surface levels without allowance for climate change and without the benefit of any flood defences.

It is important to note that the Flood Zones do not take into account other sources of flooding, such as groundwater or pluvial, so an assessment of risk arising from such sources should also be made, where appropriate.

**Table 1-1: Definition of Flood Zones**

Flood Zone	Description & Summary of Planning Implications
Zone A High probability of flooding	More than 1% probability (1 in 100) for river flooding and more than 0.5% probability (1 in 200) for coastal flooding. Most types of development would be considered inappropriate in this zone.
Zone B Moderate probability of flooding	0.1% to 1% probability (between 1 in 100 and 1 in 1,000) for river flooding and 0.1% to 0.5% probability (between 1 in 200 and 1 in 1,000) for coastal flooding. Highly vulnerable development, such as hospitals, residential care homes, Garda, fire and ambulance stations, dwelling houses and primary strategic transport and utilities infrastructure, would generally be considered inappropriate in this zone.
Zone C Low probability of flooding	This zone defines areas with a low risk of flooding from rivers and the coast (i.e. less than 0.1% probability or less than 1 in 1,000). Development in this zone is appropriate from a flooding perspective (subject to assessment of flood hazard from sources other than rivers and the coast).

The Guidelines have outlined three Vulnerability Classifications for development based on the proposed land use and type of development. These classifications and particular examples of development types which would be included in each classification are summarised as follows;

- **Highly Vulnerable Development:** This would include emergency services, hospitals, schools, residential institutions, dwelling houses, essential infrastructure, water & sewage treatment, etc.
- **Less Vulnerable Development:** Retail, leisure, commercial, industrial buildings, local transport infrastructure.
- **Water-compatible development:** Docks, marinas and wharves. Amenity and open space, outdoor sports and recreation and essential facilities such as changing rooms.

The proposed development falls under the category of Highly Vulnerable Development, as it comprises of essential infrastructure.

The Guidelines include a matrix that determines the appropriateness of different types of development based on their vulnerability classification and the Flood Zones in which they are located. The matrix is reproduced in **Table 1-2** below.

Where the matrix indicates that a development is not appropriate it may still be justified based on a procedure described as a Justification Test.

**Table 1-2: Vulnerability Matrix**

Vulnerability Classification	Flood Zone A	Flood Zone B	Flood Zone C
Highly Vulnerable Development (Including Essential Infrastructure)	Justification Test	Justification Test	Appropriate
Less Vulnerable Development	Justification Test	Appropriate	Appropriate

Vulnerability Classification	Flood Zone A	Flood Zone B	Flood Zone C
Water-compatible Development	Appropriate	Appropriate	Appropriate

## 2. Flood Risk Identification (Stage 1)

Possible sources of flood risk were identified by;

- Geology & Soils Maps;
- Flood History - Examination of available information on the OPW website ([www.floodinfo.ie](http://www.floodinfo.ie));
- National Indicative Fluvial Mapping (NIFM);
- Fingal Development Plan 2023-2029 Strategic Flood Risk Assessment;
- Previous Flood Studies;
- GSI Winter 2015/2016 Surface Water Flooding;
- Topography;
- Internet Searches; and
- Site Walkover,

### 2.1 Geology & Soil

The geology and soils at the site have been reviewed using the Geological Survey of Ireland database. The proposed site location is predominately underlain by *BminDW - Deep well drained mineral (Mainly Basic)*, with smaller areas of *BminPD – Mineral poorly drained (Mainly Basic)* in the north-western and eastern extents of the proposed development area according to EPA soil data.

The quaternary sediment map indicates that the site is predominantly *Till derived from limestones*. *Bedrock outcrop or subcrop* is also mapped to the south of the proposed development. The bedrock geology in this area is dominated by the Tober Colleen Formation, which is described as *Calcareous shale, limestone conglomerate*.

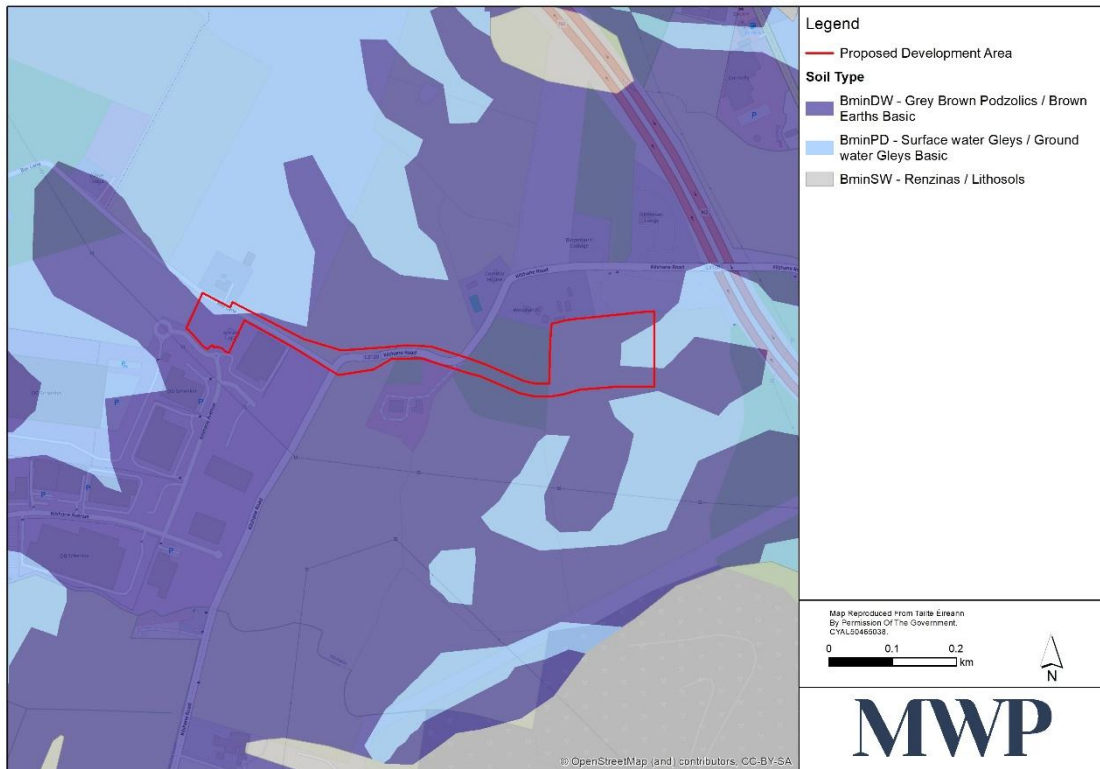


Figure 2-1: EPA Soil Map

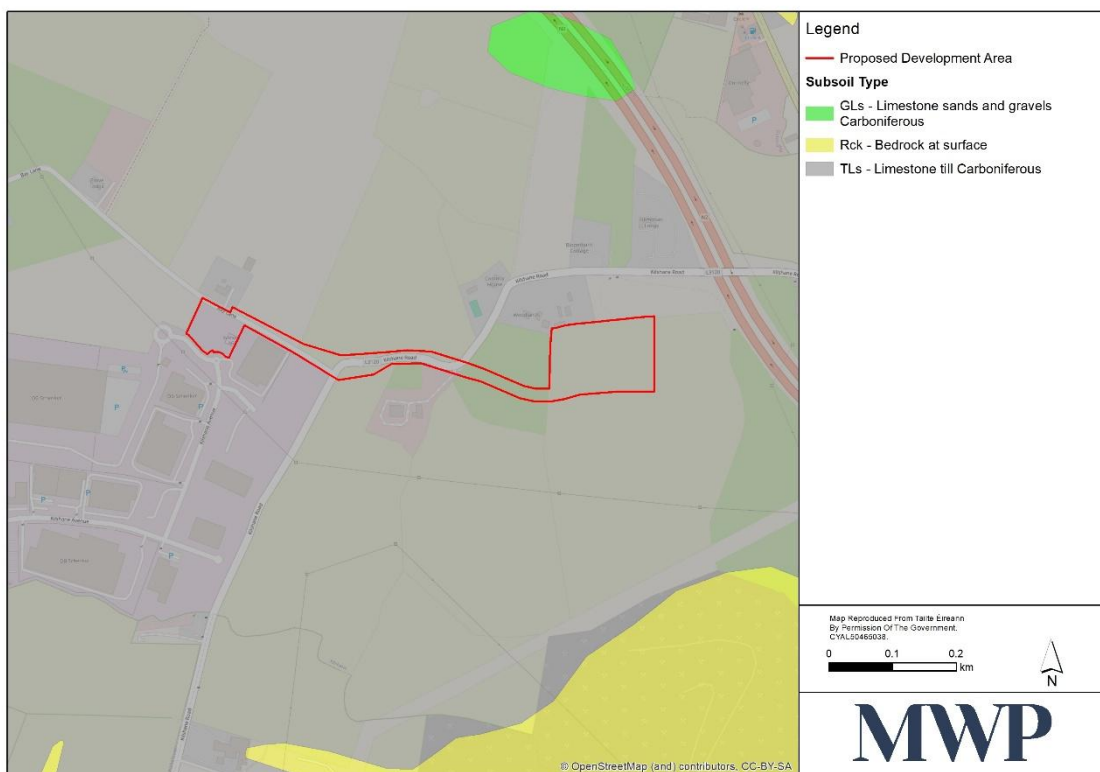


Figure 2-2: Quaternary Sediment Map

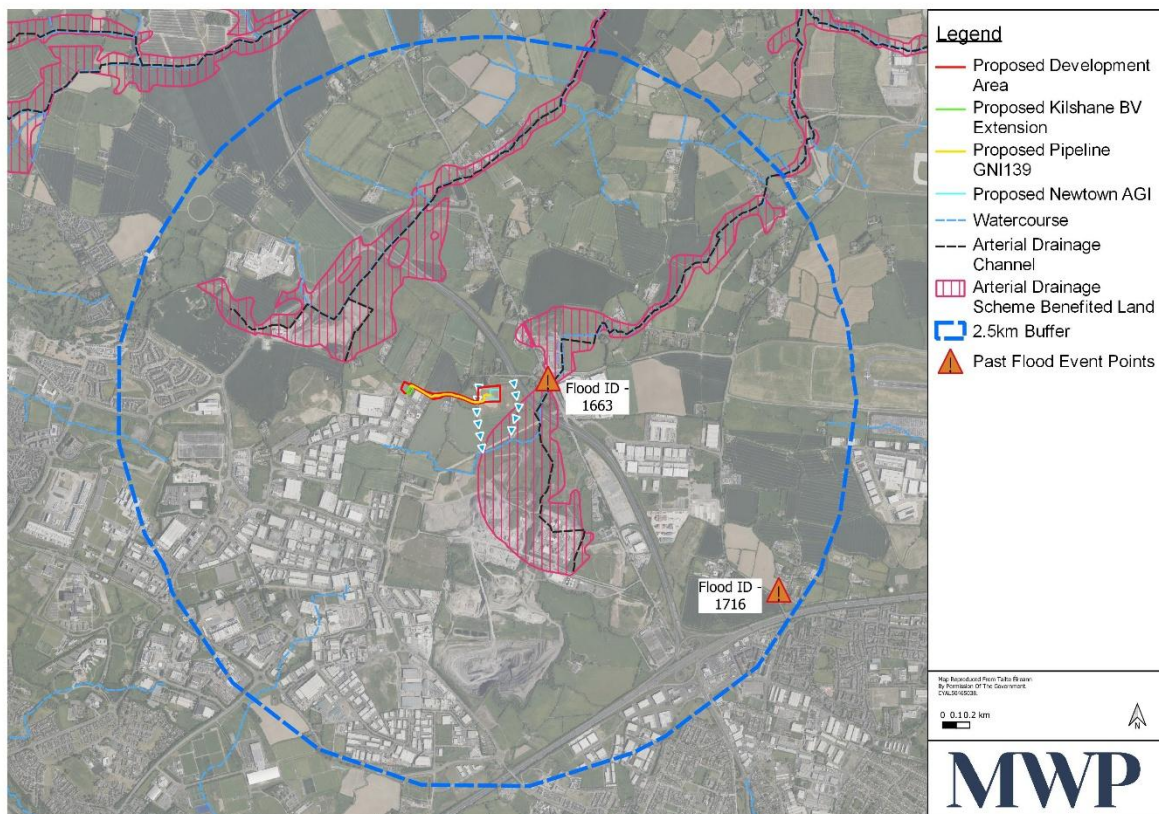
## 2.2 Flood History – OPW Local Area Summary Report

The Past Flood Event Local Area Summary Report which was obtained from the Office of Public Works (OPW) floodinfo.ie website summarises all recorded past flood events within 2.5km of the site. There are two single past flood events which have been reported in the wider general area and are summarised on Error! Reference source not found. and **Figure 2-3** below:

There is no history of flooding in the proposed development site.

**Table 2-1: Floodinfo.ie Summary Table**

Flood ID	Summary
ID-1663	Kilshane Cross Nov 2002 – A total rainfall of 86.8mm fell in the 3 day period 13 <sup>th</sup> – 15 <sup>th</sup> November 2002. N2 at Kilshane Cross – Preliminary investigations indicate that flooding on the N2 arose from surface water run off from adjacent grasslands.
ID-1716	Dubber Cross Meakstown Swords Area Nov 2002 – The pumping station in Dubber Cross was flooded with surface water from a nearby ditch. The S.W. entered the sump via the overflow and flooded the garden and around house with foul sewer. The Drainage Section provided a tanker to remove loads from the sump in an effort to lower the level



**Figure 2-3: Past Flood Event Locations Floodinfo.ie**

## **2.3 National Indicative Fluvial Mapping**

The National Indicative Fluvial Flood Maps have been produced for catchments greater than 5km<sup>2</sup> in areas for which flood maps were not produced under the National Catchment Flood Risk Assessment and Management Programme (CFRAM). The site was not included as part of the Eastern Catchment Flood Risk Assessment and Management Study or Fingal East Meath Flood Risk Assessment and Management Study (FEMFRAMS). The catchment area is less than 5km<sup>2</sup> as there is no National Indicative Fluvial Flood Maps available for the site.

## **2.4 Fingal Development Plan 2023-2029 Strategic Flood Risk Assessment**

The Strategic Flood Risk Assessment (SFRA) was commissioned by Fingal County Council (Fingal CC) as part of the preparation of the Fingal Development Plan 2023-2029. As stated in the Planning and Development (Strategic Environmental Assessment) Regulations 2004 (S.I. No. 436 of 2004), a Strategic Environmental Assessment (SEA) must be prepared as part of any county development plan to assess the likely significant effects of the plan's implementation on the environment. The Planning System and Flood Risk Management Guidelines for Planning Authorities 2009 (the OPW Guidelines) recommend that an SFRA be prepared to support the SEA of a development plan to ensure that flood risk, where identified, is considered as one of the key environmental criteria against which the plan is assessed. The purpose of the SFRA is to provide a high-level assessment of all types of flood risk in Fingal to inform strategic land use planning decisions. The Huntstown Stream was not assessed at the proposed development site location as part of the Fingal Development Plan 2023-2029 Strategic Flood Risk Assessment, therefore, no flood maps exist for the proposed development site.

## **2.5 Previous Flood Studies**

### **2.5.1 Fingal County Council – Planning Reference FW22A/0204**

Waterman Moylan Consulting Engineers Limited were commissioned by Kilshane Energy Ltd to prepare a site-specific flood risk assessment [SSFRA] for lands at Kilshane, Dublin 11. The report has been prepared for submission of a Gas Turbine Power Generation Station in accordance with the requirements of the Planning System and Flood Risk Management Guidelines for Planning Authorities. The proposed development for which this FRA has been prepared is required to connect the aforementioned Kilshane Energy power station to the gas network.

The Flood Risk Assessment carried out by Waterman Moylan Consulting Engineers Limited concluded that there was a low risk of flooding from tidal and fluvial sources, a high to low risk of flooding from pluvial sources and a moderate risk of flooding from groundwater.

## **2.6 GSI Winter 2015/2016 Surface Water Flooding**

The Winter 2015/2016 Surface Water Flooding map shows fluvial (rivers) and pluvial (rain) floods, excluding urban areas, during the winter 2015/2016 flood event. No flooding was indicated within the proposed development site during this flood event.

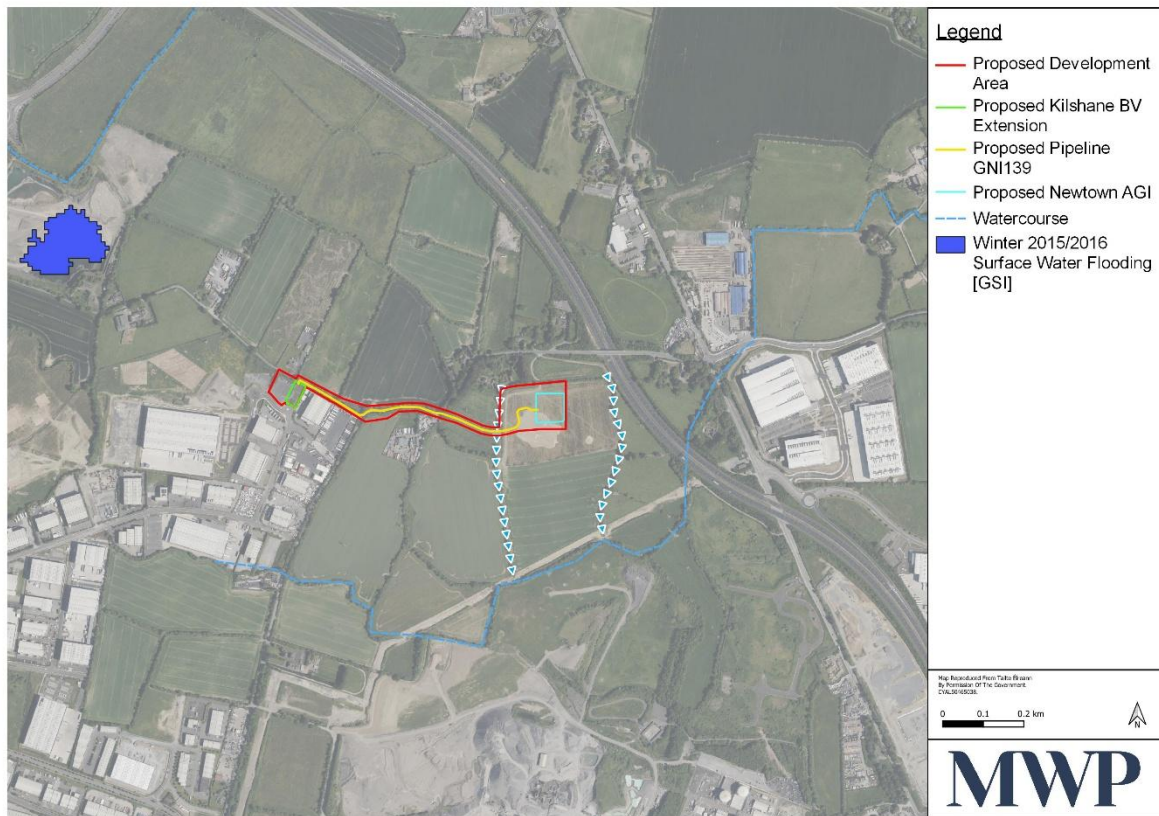


Figure 2-4: GSI Winter 2015/2016 Surface Water Flooding

## 2.7 Topography

The site topography and levels were obtained from publicly available LiDAR data from Transport Infrastructure Ireland. The LiDAR was collected by Fugro-BKS between May 2010 and May 2011. The LiDAR has a resolution of 2m and an accuracy of +/- 150mm. The LiDAR data is limited to a small portion of the site as it was primarily captured for the N2.

According to the LiDAR data, the site generally slopes from north west to south east. Values of approximately 81mOD can be observed in the northwest falling to approximately 79mOD in the southeast.

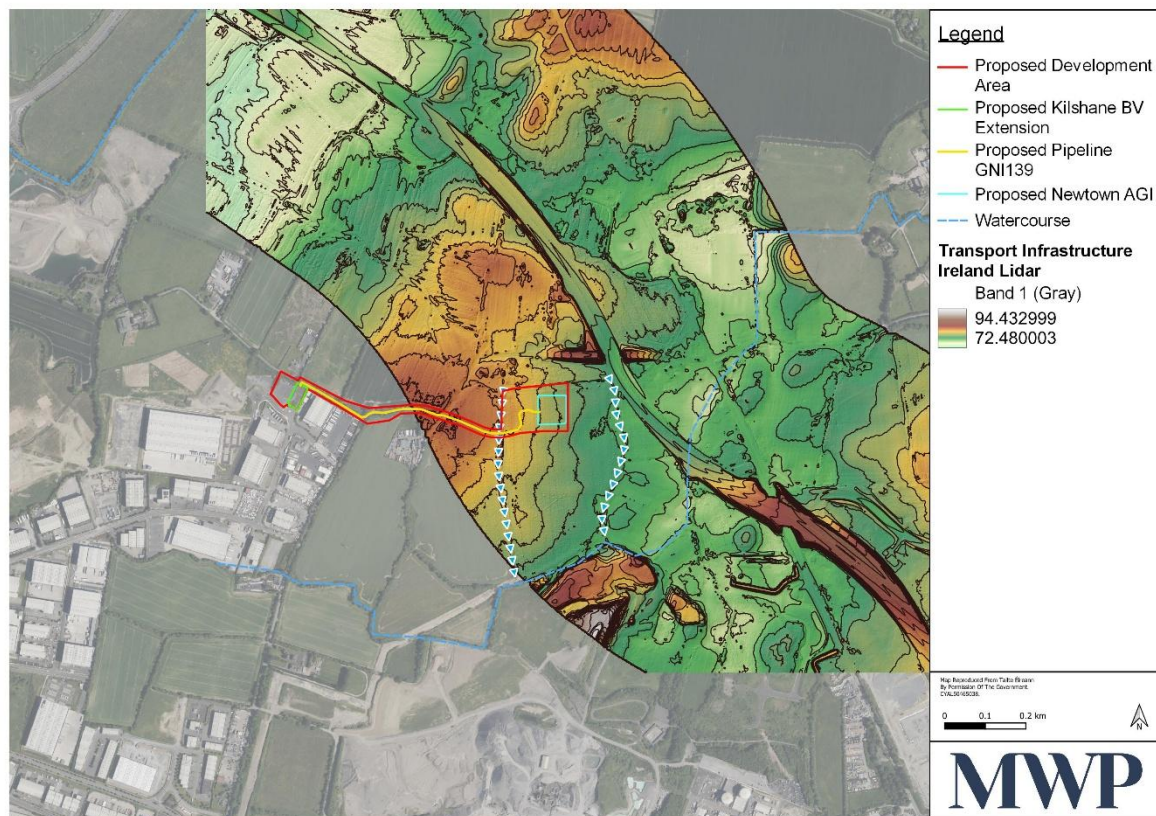


Figure 2-5: Site Topography

## 2.8 Internet Searches

An internet search was conducted to gather information about whether the site was affected by flooding previously. There were no reports of flooding within the site.

## 2.9 Site Walkover

A site walkover was carried out by MWP within the site boundary, upstream & downstream of the site, public footpaths and public roads on the 8<sup>th</sup> April 2024. The main purpose of the site walkover was to identify any features that have not already been identified in the desktop study.

It was noted that there are no hydrological features within close proximity to the Kilshane Block Valve Block Extension or proposed pipeline route.

Two drainage ditches were identified along the western and eastern boundaries of the proposed Newtown AGI site.

The drainage ditch along the eastern boundary was approximately 1.5m (wide) x 1.5m (deep) and was dry for most part of the drainage ditch. The drainage ditch along the eastern boundary was excavated to approximately 2m (wide) x 2m (deep) at the southeastern boundary of the proposed development for a length of approximately 15m.

The drainage ditch along the western boundary was approximately 1.5m (wide) x 1.5m (deep). The drainage ditch along the western boundary was flowing from north to south. The drainage ditch along the western boundary

was excavated to approximately 2m (wide) x 2m (deep) at the southwestern boundary for a length of approximately 15m.

The two drainage ditches discharged into the Huntstown Stream located along the site’s southern boundary. The Huntstown Stream along the site’s southern boundary was dry in parts and was also conveying small flow in some portions. The Huntstown Stream was approximately 2m (wide) x 2m (deep). Refer to **Figure 2-6** and **Plate 1** below. There were no signs of flood debris marks or signs of the Huntstown Stream overflowing its left bank (facing downstream) on the day of the site visit. It should be noted that there was some water ponding along the southern boundary of the site on the day of the site visit. There was no evidence of ponding water at the proposed Newtown AGI location.

Following the site walkover within the Newtown Landholding boundary, a preliminary estimation of  $Q_{100}$  (100-year return period) using the FSU Seven Variable Equation was carried out for the catchment. The catchment area was approximately 3km<sup>2</sup> which indicated a  $Q_{100}$  flow of 0.3m<sup>3</sup>/s (300l/s). Given the minor nature of the watercourse and small peak flows expected, the risk of fluvial flooding from the Huntstown Stream is not significant.

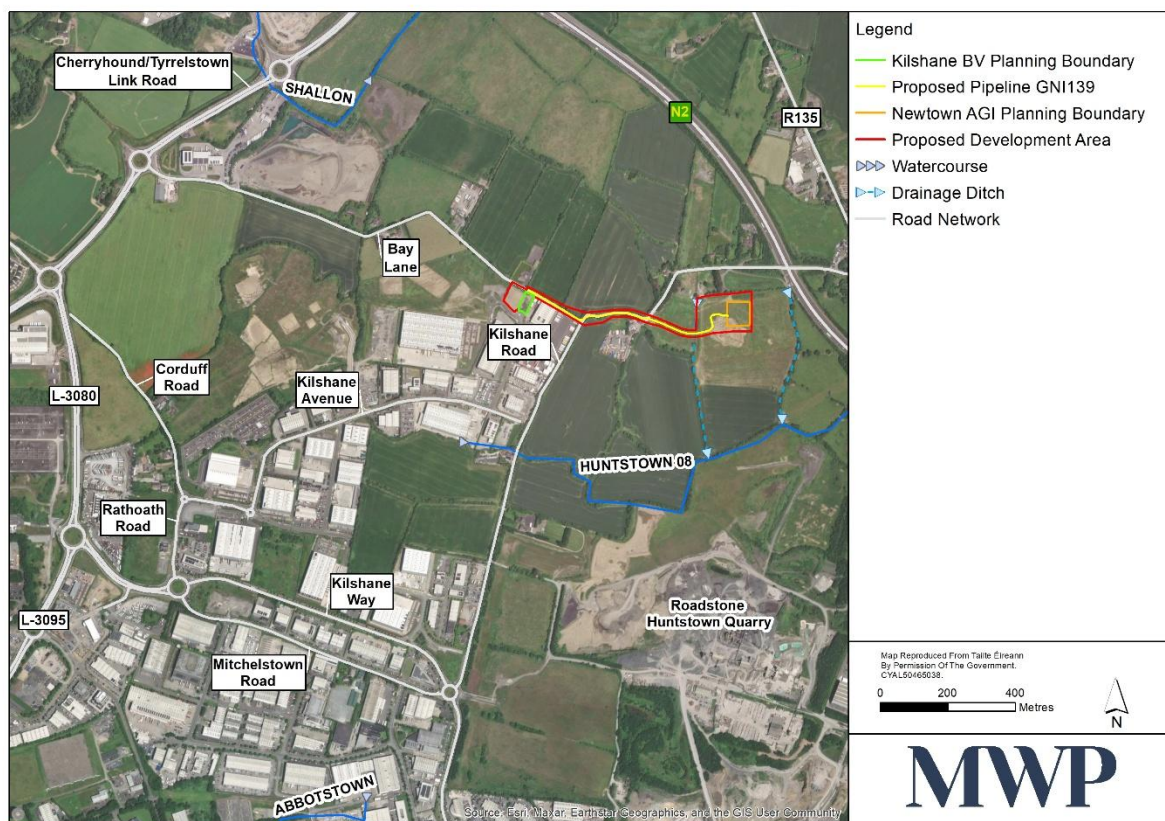


Figure 2-6: Site Walkover Information



Eastern Drainage Ditch – South East Corner of Site  
(Camera Facing South)



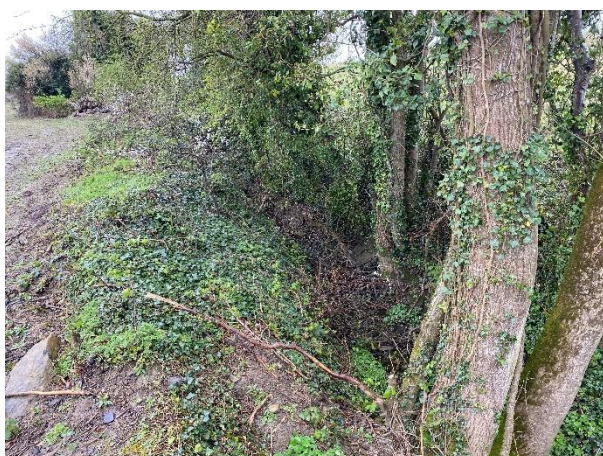
Eastern Drainage Ditch – South East Corner of Site  
(Camera Facing North)



Huntstown Stream – South East Corner of Site  
(Camera Facing West)



Huntstown Stream – Southern Boundary of Site  
(Camera Facing East)



Huntstown Stream – Southern Boundary of Site  
(Camera Facing East)



Huntstown Stream – South West Corner of Site  
(Camera Facing West)



Plate 1: Site Walkover Photographs

## 2.10 Conclusions of Stage 1 FRA

The Stage 1 Flood Risk Assessment (FRA) has determined that the proposed site is not subject to significant flood risk from fluvial, coastal, groundwater or pluvial sources. The assessment also confirms that the site lies within Flood Zone C, as defined in the *Flood Risk Management Guidelines*, and is therefore considered suitable for the proposed development. The proposal includes essential infrastructure classified as Highly Vulnerable Development. In accordance with the *Planning System and Flood Risk Management Guidelines* (DoEHLG, 2009), a Justification Test is not required for developments of this type located within Flood Zone C (refer to **Table 1-2**).

### **3. Summary & Conclusions**

1. This report has been prepared in the context of *The Planning System and Flood Risk Management – Guidelines for Planning Authorities*, November 2009 (PSFRM), published by the Office of Public Works and the Department of Environment, Heritage and Local Government.
2. The aim of the proposed development is the installation of a new gas pipeline and associated Above Ground Installation compound and Block Valve (BV) extension.
3. There is no record of previous flooding occurring at this site.
4. The flood risk assessment has identified that the proposed site is appropriate for development.