TOBIN

# Adare Rationalisation

# Route Selection Report

WARD & BURKE

Uisce Éireann
Irish Water

BUILT ON KNOWLEDGE

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# 1. INTRODUCTION

This report sets out the basis for the route selection associated with the proposed Rationalisation of the Adare Water Network, in Co. Limerick.

The project is being delivered as a Regional Call-Off Contract from 21-050 Multi Supplier Framework for the Provision of Water and Wastewater Network Services and Works to Irish Water. The Maximo Project ID is Pno29174668.

## 1.1 PROJECT OBJECTIVES

Adare is a designated heritage town in west Co. Limerick, situated on the River Maigue, approximately 25km southwest of Limerick City Centre. The town and surrounding area has a local population of approximately 2,341, and the local economy relies heavily on tourism generated by its heritage status, luxury hotels and world famous golf course.

The town is served by the Adare WTP, which has a production capacity of 1.8ML/d. Water is abstracted from the River Maigue, and undergoes physical treatment at the WTP, prior to being disinfected and pumped to the Adare reservoir through a 4km rising main. From this reservoir, water is distributed to the town and surrounding area by gravity.

The Adare WTP plant was constructed in the 1970's, and has reached its end of life. The plant has suffered from considerable deterioration and cannot be relied upon to produce water to current standards on an ongoing basis. An EPA in Q1 2024 observed risks to interruption to supply, water quality and pollution of the environment.

The Adare WTP has a theoretical design capacity of 1.8ML/d, and currently produces an average of between 1.2 – 1.4ML/d, serving a resident population of approximately 2,341. Recent completions of an Uisce Eireann Drinking Water Safety Plan (DWSP) risk assessment, as well as an EPA Audit in May 2024, have brought these issues into sharp focus. There is concern that the scheme could be placed on the Remedial Action List (RAL) upon issue of the EPA audit report.

In addition to concerns at the plant, the 4km rising main to the reservoir is in very poor condition, with bursts now occurring on average 6 – 8 times per year. In September 2027, Adare Manor will host the Ryder Cup, an event which will place a significant additional demand on both the plant and this rising main.

The works relating to this report are part of a larger project known as Adare Rationalisation. The Adare Rationalisation project will supply water to Adare from the Castletroy Newcastle Towers in Limerick city.


Figure 1-1 Site Location

## 1.2 PROJECT REQUIREMENTS

This project seeks to identify the infrastructure upgrades required to meet the demand of Adare Village.

The Adare Rationalisation project will supply water to Adare from the Castletroy Newcastle Towers in Limerick city via a 350mm Ductile Iron pipe.

## 1.3 GUIDANCE DOCUMENT

The Uisce Éireann "A Guide to Route and Site Section" document number IW-AD-PD-GL-008 Revision 3.00 was used in the preparation of this report.

The "A Guide to Route and Site Section" document outlines the process by which a preferred route or site should be identified and selected for an Uisce Éireann project. The guidelines seek to establish a consistent methodology, ensure mandatory criteria are considered and decisions are recorded.

This project involves extensions or upgrades to existing Uisce Éireann assets and therefore intensification of the Uisce Éireann owned assets will be prioritised where feasible.

## 2. ROUTE & SITE SELECTION METHODOLOGY

The route and site selection methodology adopted is shown in Figure 2-1.

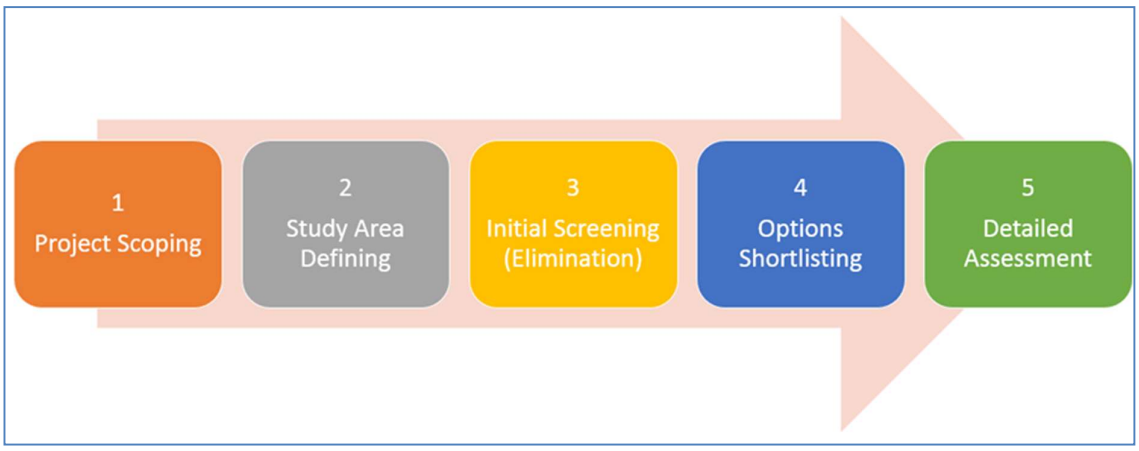


Figure 2-1 Uisce Éireann Recommended Route Selection Process[1]

The five steps in the route and site selection methodology are described in the following Sections of this report:

- Step 1 Project Scoping in Section 3
- Step 2 Study Area Defining in Section 0
- Step 3 Initial Screening (Elimination) in Section 4
- Step 4 Option Shortlisting in Section 5
- Step 5 Detailed Assessment in Section 6

[1] Source - "A Guide to Route and Site Section" document number IW-AD-PD-GL-008 Revision 3.00

# 3. STEP 1 PROJECT SCOPING

## 3.1 PROJECT NEED

The Project Need stems from the existing Water Treatment Plant in Adare approaching its end of life, and Uisce Eireann's wish to extend the water supply from Castletroy Newcastle Towers in Limerick to Adare Reservoir.

The aim of this report is to consider all available route options for the extension of the water supply and select the most feasible option based on a technical, environmental, and planning assessment using the matrix format outlined within the UÉ Site & Route Selection Guidelines.

## 3.2 TECHNICAL PROJECT REQUIREMENTS

This project is linear involving a new trunk main installation to facilitate the decommission of the existing Water Treatment Plant in Adare.

The technical project requirements are set out in Table 3-1.

**Table 3-1 Technical Project Requirements**

| Project Requirements | Details Covered in the Route Selection |
|---|---|
| The initial water trunk main extension from Croom Tie-in t Adare Reservoir to serve Adare include:<br>• Installation of 350mm Ductile iron | Route Selection for the trunk main |
| Wayleave Requirements | Wayleave requirements will be identified based on the emerging preferred route for the Trunk main. |
| Route Corridor | Route Selection for Trunk Main |

## 3.3 CONNECTION POINTS FOR TRUNK MAIN

There are two connection points applicable to this project, which are defined in Table 3-2.

**Table 3-2 Connection Points**

| Connection Point | Details |
|---|---|
| Croom Tie-in point | Recently installed 450mm Ductile Iron connection point in N20 south bound hard shoulder. |
| Adare reservoir | 350mm Ductile Iron pipe terminating into Adare Reservoir |


Figure 3-1 Connection points for Trunk Main 2 Defining the Study Area

## 3.4 EXISTING UISCE ÉIREANN ASSETS

### 3.4.1 Existing Wastewater Assets Overview

The study area is defined by the existing Uisce Éireann water assets in the area, namely Adare Reservoir and the tie-in connection at Croom. Figure 3-2 shows a general overview of the area.

There are two distinct areas where water main upgrades are required as follows:

- Section 1: Croom Tie-in point (East of the River Maigue)
- Section 2: Adare Reservoir (West of the River Maigure)

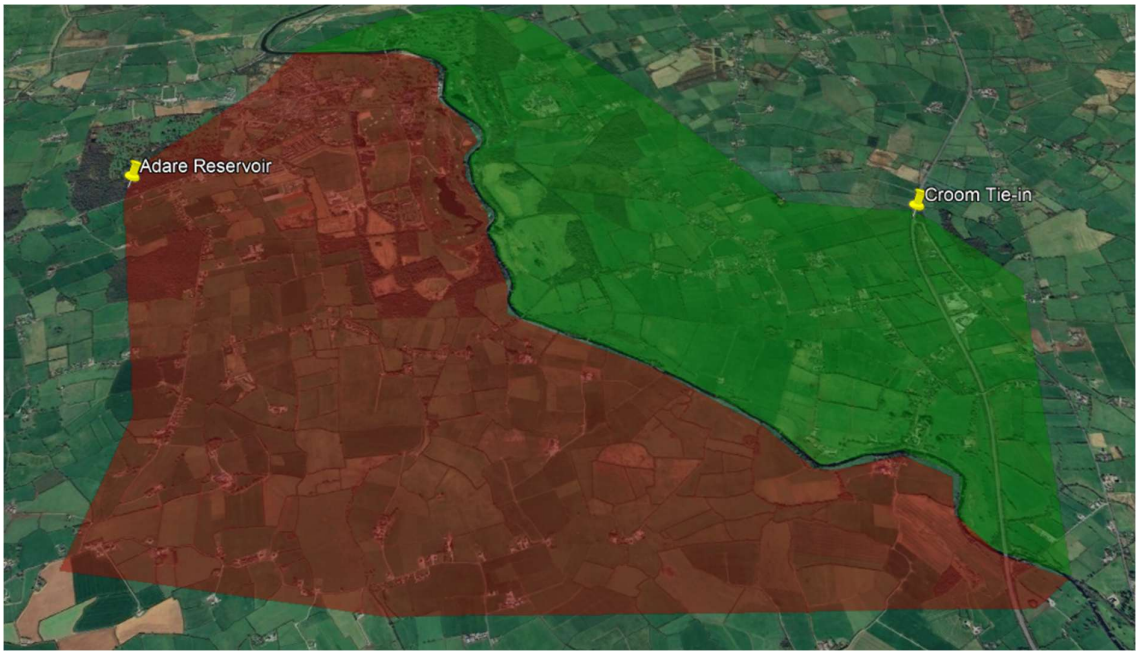


Figure 3-2 Proposed Routes within the Study Area

### 3.4.2 Section 1 Defined Study Area

Figure 3-3 shows Highlighted in green the defined study area for the Section 1 Trunk main between The Croom Tie-in point and the River Maigue.

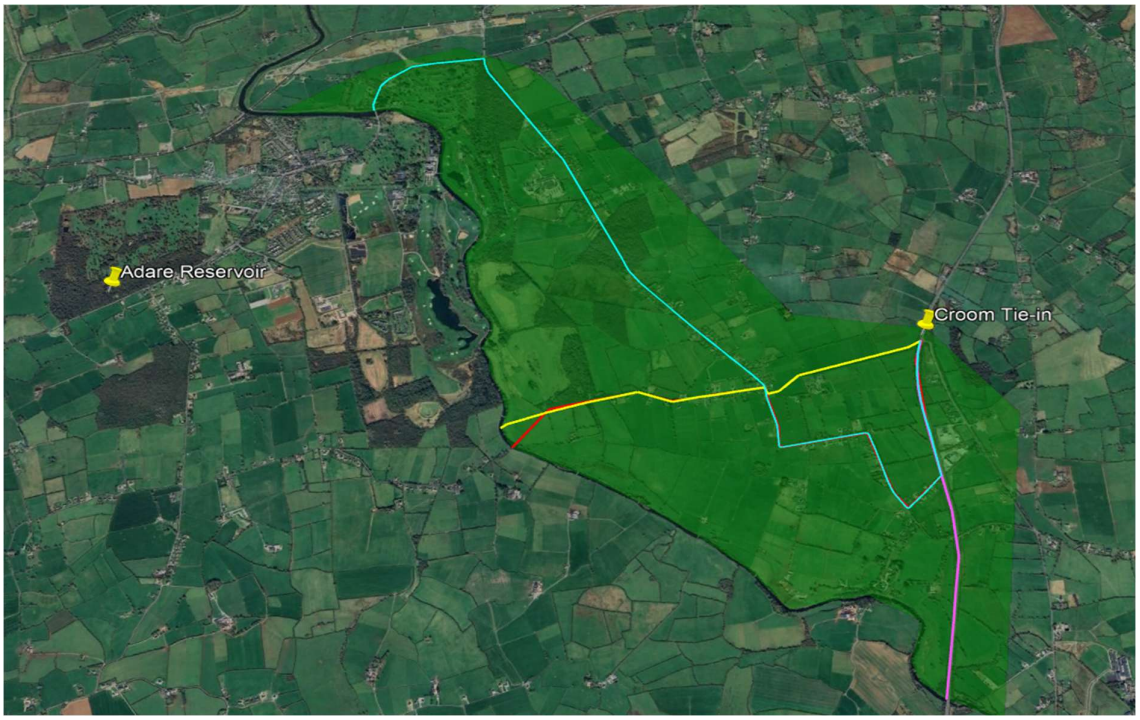


Figure 3-3 Study Area for Section 1 (Highted in Green)

### 3.4.3 Section 2 Defined Study Area

Figure 3-4 shows outlined in red the defined study area for the Section 2 between the River Maigue and Adare Reservoir which is the termination point of the project.

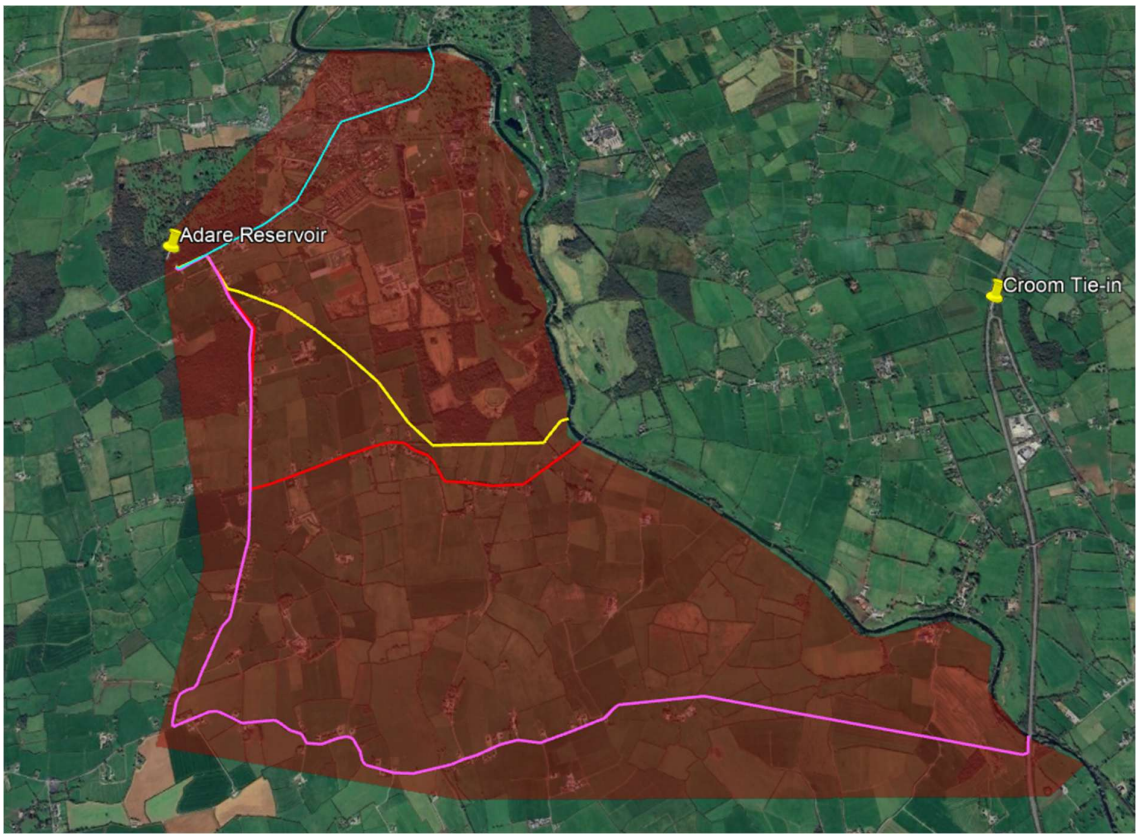


Figure 3-4 Study Area for Section 2 (Highlighted in Red)

## 3.5 DEFINED STUDY AREA

Two study areas have been defined in Section and in Section as shown in Figure 3-3 and Figure 3-4. It is proposed to progress these two defined areas further through the initial screening in Section 4.

# 4. STEP 3 INITIAL SCREENING (ELIMINATION)

## 4.1 PRIMARY CONSTRAINTS

The primary constraints identified within the study areas are described in the following sections.

The Biodiversity Guidelines UÉ-AMT-GL-021 Section 5.2 has been consulted in relation to environmental assessment for the route selection process. The aim is to ensure no net loss of biodiversity with a hierarchy of avoiding impacts in the first instance.

UÉ-AD-PD-GL-008 'A Guide to Route and Site Selection' and UÉ-AMT-GL-021 Section 5.2 set out how primary and secondary constraints must be identified that are project specific. The mitigation hierarchy as set out in UÉ-AMT-GL-021 Section 5.2 is to identify the least ecologically constrained options.

UÉ-AMT-GL-021 Section 5.2 recommends that opportunities for biodiversity benefit are considered under the biodiversity criteria. In the first place the aim will be to avoid designations, sensitive habitats, high value habitats which would be viewed as primary constraints. In addition, avoidance of removal of trees is covered under secondary constraints.

Opportunities to create and enhance biodiversity on linear pipelines in urban areas is extremely limited and the objective therefore will be to avoid impact on the habitats.

### 4.1.1 Protected Areas

As per UÉ guidelines, including the Biodiversity Guidelines, the objective would to be to avoid designations, sensitive habitats and value habitats.

There are no protected areas within the study areas for the proposed trunk main as shown in Figure 4-1. Therefore, there are no constraints in respect of protected areas to be considered in route selection within the study areas.

There are 4 no proposed Natural Heritage Areas within the study area for the proposed trunk main as shown in Figure 4-1. These areas will be taken into consideration in the route selection within the study areas.

As per Figure 4-1 the River Maigue is located in a designated SAC (SAC: 002165 – Lower Shannon SAC) on the northern side of the bridge in Adare but the study areas do not encroach on the defined SAC boundary.

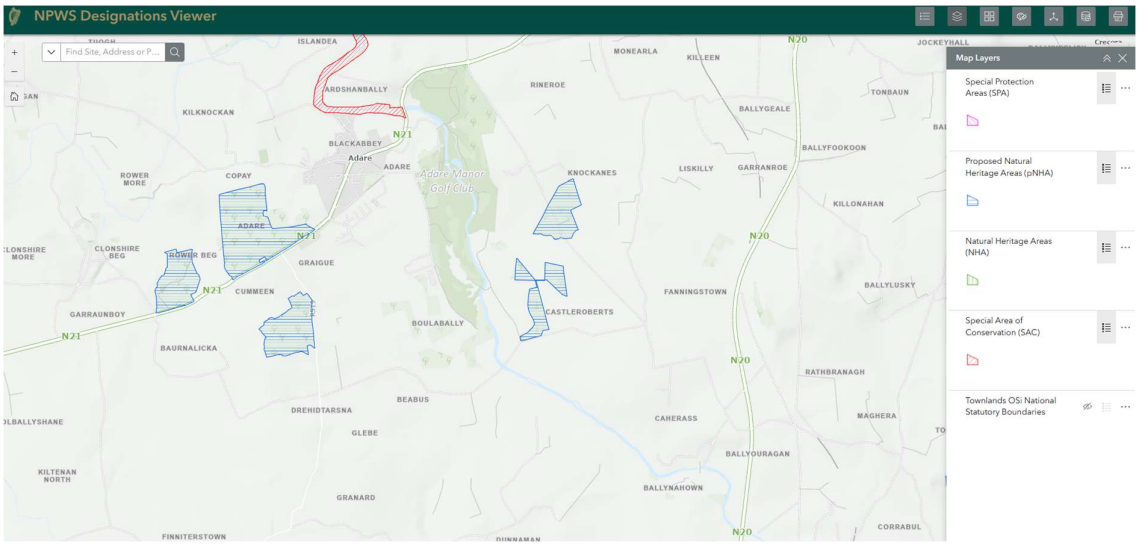


Figure 4-1 Designated Sites Overview & Study Area

### 4.1.2 Flooding

To assess if the study areas are subject to flooding risk, an assessment has been carried out based on the information displayed on Floodinfo.ie.

Figure 4-2 shows the extent of predicted flooding of the River Maigue.

The Section 1 study area is shows areas within the flood extents of the river Maigue with a Medium Probability of Flooding. Medium Probability flood events have approximately a 1-in-a-100 chance of occurring or being exceeded in any given year. This is also referred to as an Annual Exceedance Probability (AEP) of 1%.

The Section 2 study area is shows areas within the flood extents of the river Maigue with a Medium Probability of Flooding. Medium Probability flood events have approximately a 1-in-a-100 chance of occurring or being exceeded in any given year. This is also referred to as an Annual Exceedance Probability (AEP) of 1%.

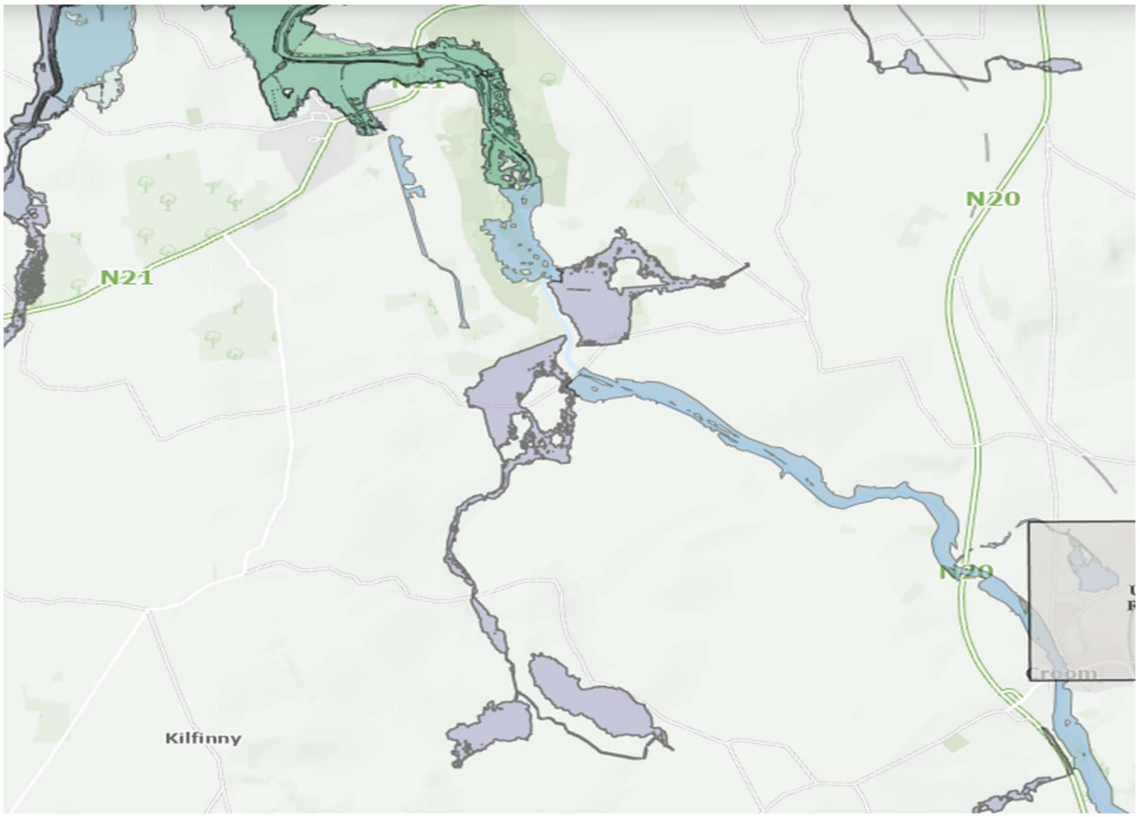


Figure 4-2 River Flooding Extents – Adare

### 4.1.3 Physical Infrastructure

Within the Section 1 study area there are no significant physical infrastructure that would eliminate any areas of the defined study area. The N20 and N21 (option 4 ) are notable physical infrastructure.

In Section 2 study area there are no significant physical infrastructure that would eliminate any areas of the defined study area. The N20 and N21 are notable physical infrastructure.


Figure 4-3 Physical Infrastructure Section 1

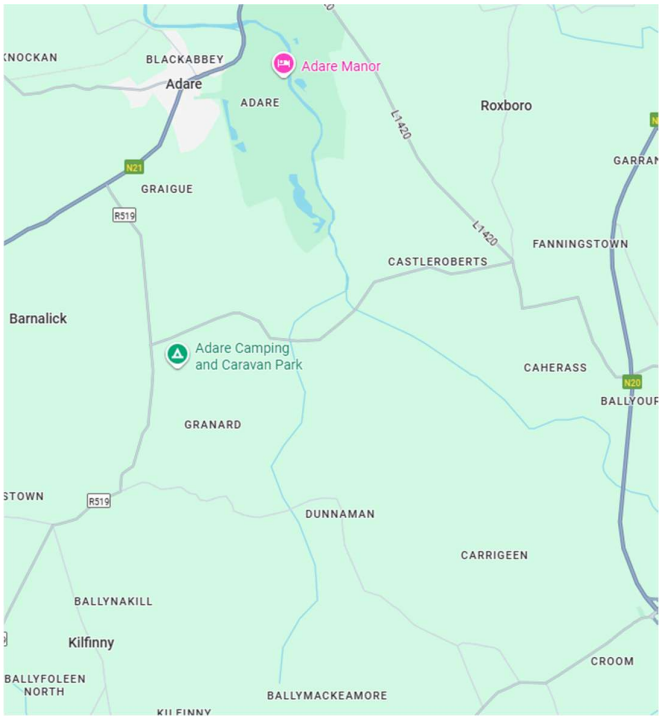


Figure 4-4 Physical Infrastructure Section 2

## 4.2 SECONDARY CONSTRAINTS

The secondary constraints assessed within the study area are as follows:

- Protected trees
- Future Infrastructure Plans
- Gas Networks

### 4.2.1 Protected Trees

There is 1 no tree within the study area 1 that are registered heritage trees by the Tree Council of Ireland. There are 6 no trees within study area 2 that are registered heritage trees by the Tree Council of Ireland. Table 3 outline the trees and there location. Figure 6-6 shows the location within the study area.

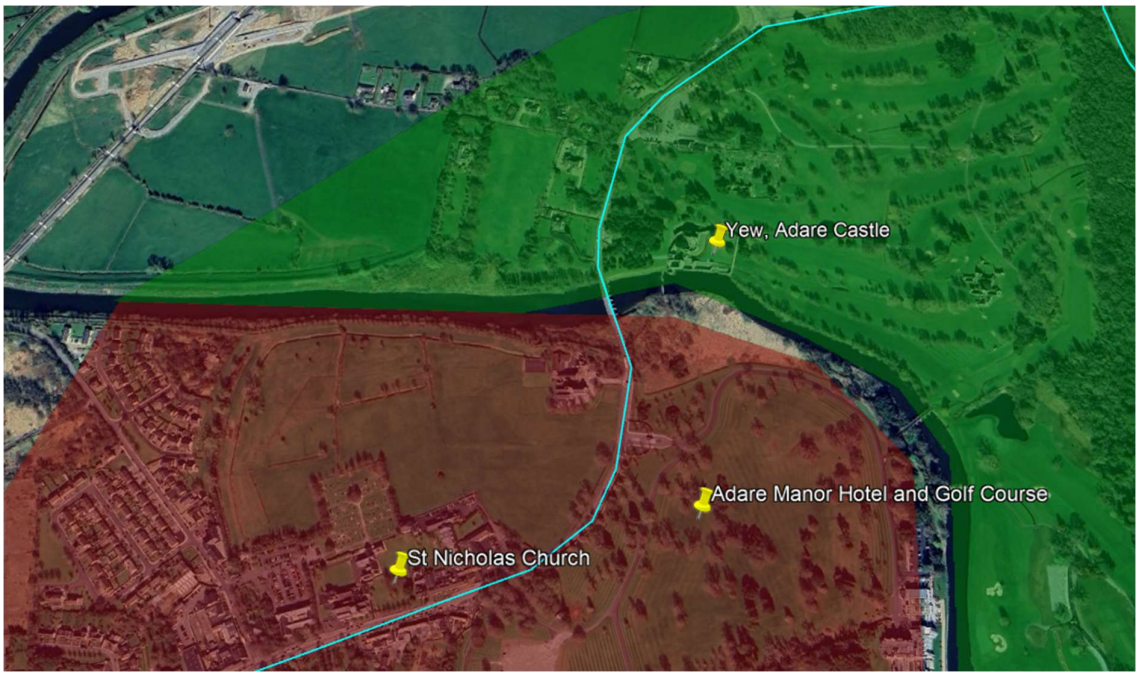


Figure 4-5 Protected Tree Location

As per UÉ-AMT-GL-021 Section 5.2 the objective would be to avoid removal of any trees/shrubs/hedgerow. As shown in Figure 4-6 and Figure 4-7 the study areas have locations that are planted with trees and some impact on existing mature trees is likely to facilitate the proposed wastewater infrastructure works.

Table 3 Protected Trees

| Tree Name | Location | Study Area |
|---|---|---|
| Yew | Adare Castle | 1 |
| Religious hungry tree | St Nicholas Church | 2 |

| | | |
|---|---|---|
| Yew | St Nicholas Church | 2 |
| Champion Cedar | Adare Manor Hotel and Golf Course | 2 |
| Ginkgo/Maidenhair | Adare Manor Hotel and Golf Course | 2 |
| Sweet Gum | Adare Manor Hotel and Golf Course | 2 |
| Yew | Adare Manor Hotel and Golf Course | 2 |


Figure 4-6 Extent of Trees in Section 1 Study Area


Figure 4-7 Extent of Trees in Section 2 Study Area

### 4.2.2 Future Infrastructure Plans

There are no significant infrastructure plans identified in the County Development Plan for the study areas with Adare. It is noted that the Adare Bypass Road Project is under construction just outside the study area.

### 4.2.3 Gas Networks

There are no high pressure gas mains in the study areas.

The are medium and low pressure gas mains in the study areas. These medium and low pressure gas mains would not be deemed to be a significant constraint to the routing of the trunk main through the urban area of Adare and would therefore not eliminate any areas within the overall study areas. Gas mains are considered further in Section 8 in the detailed assessment of the route options.

## 4.3 Outputs From Step 3

In line with UÉ-AMT-GL-021 on Biodiversity the objective of Step 3 was to identify those options that would potentially impact on designations, sensitive habitats, high value habitats and trees and to eliminate them where other viable options remain.

The output from Step 3 is that study areas for the water main are not impacted by the primary constraint of protected areas as they are not located in designated environmental areas and thus no parts of the identified study areas are eliminated at Step 3 associated with protected areas.

Flooding is a primary constraint, and the identified study areas are subject to flooding from the River Maigue, however the flooded areas cannot be avoided and at detailed design stage flood protection measures will need to be design for the water mains irrespective of the emerging preferred route within each sectional study area.

There is no significant physical infrastructure within the study areas that would result in any part of the study areas being eliminated at Step 3 other than areas already developed, particularly housing estates.

The main secondary constraint is trees, however, the trees within the study areas that are protected do not encroach on the proposed pipeline routes and thus no parts of the identified study areas are eliminated at Step 3 associated with secondary constraints.

# 5. STEP 4 OPTIONS SHORTLISTING

Following Step 3 the entire of the study areas identified at Step 2 have passed the elimination process due to primary and secondary constraints and thus have moved forward to Step 4 Options Shortlisting. Thus, this section identified route options within the study area for the pipeline corridor associated with the water trunk main.

## 5.1 ROUTE OPTIONS FOR SECTION 1

The Section 1 Water main extends from the tie-in point to on the N20 to the physical boundary of the River Maigue defined in Fig 5-1

There are four options within this study area:

Section 1 Option 1(Purple) – Continue along the N20 to the River Maigue. The river Crossing is proposed to be located parallel on private lands on the western side of the bridge.


Figure 5-1 Section Option 1

Section1 Option 2 (Yellow) – Cross westwards across 5no landowners and L8022 to the River Maigue. The river crossing is proposed through private lands North of the Castleroberts Bridge.


Figure 5-2 Section1 Option 2

Section1 option 3 (Red) – continue along N20, utilising public roads L8022 and L1402. The river crossing is proposed to be located on private lands on the eastern side of the bridge.

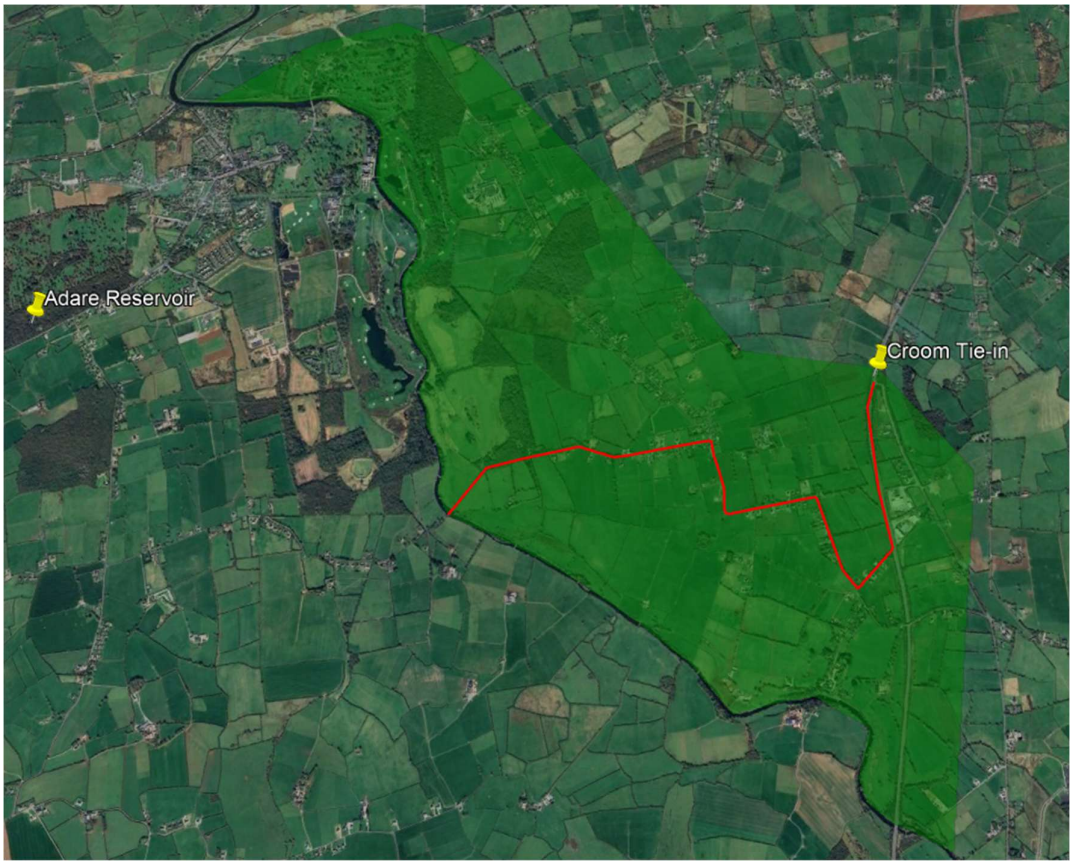


Figure 5-3 Section1 Option 3

Section 1 option 4 (blue) – Continue along N20, L14022 and N21. The river crossing is proposed to be located on private lands on the eastern side of the bridge.

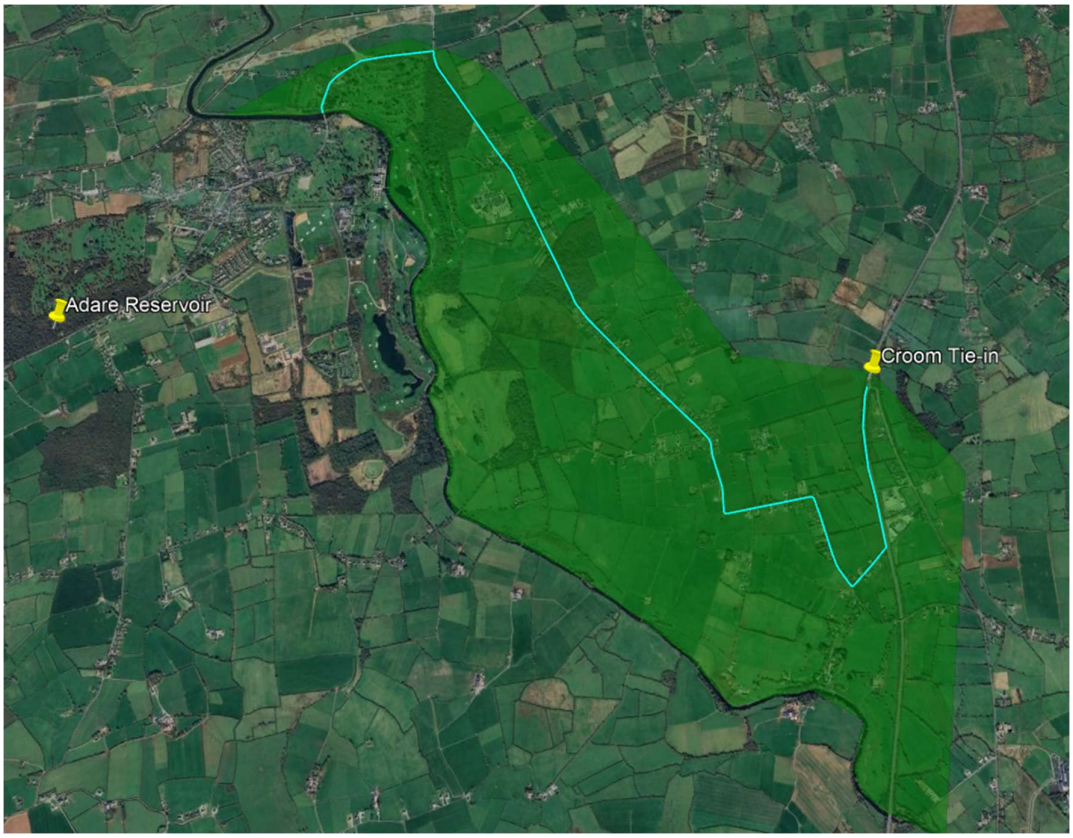


Figure 5-4 Section 1 Option 4

These four route options are brought forward to Step 5 Detailed Assessment in Section 6.

## 5.2 Route Options for Section 2

The Section 1 Water main extends from the physical boundary of the River Maigue to the Adare Reservoir defined in Fig 5-5.

There are four options within this study area

Section 2 Option 1(Purple) – After the river crossing, this route will pass through 5 no Landowners before being routed along public roads L8021, R519 and N21.The route terminates at Adare Reservoir.

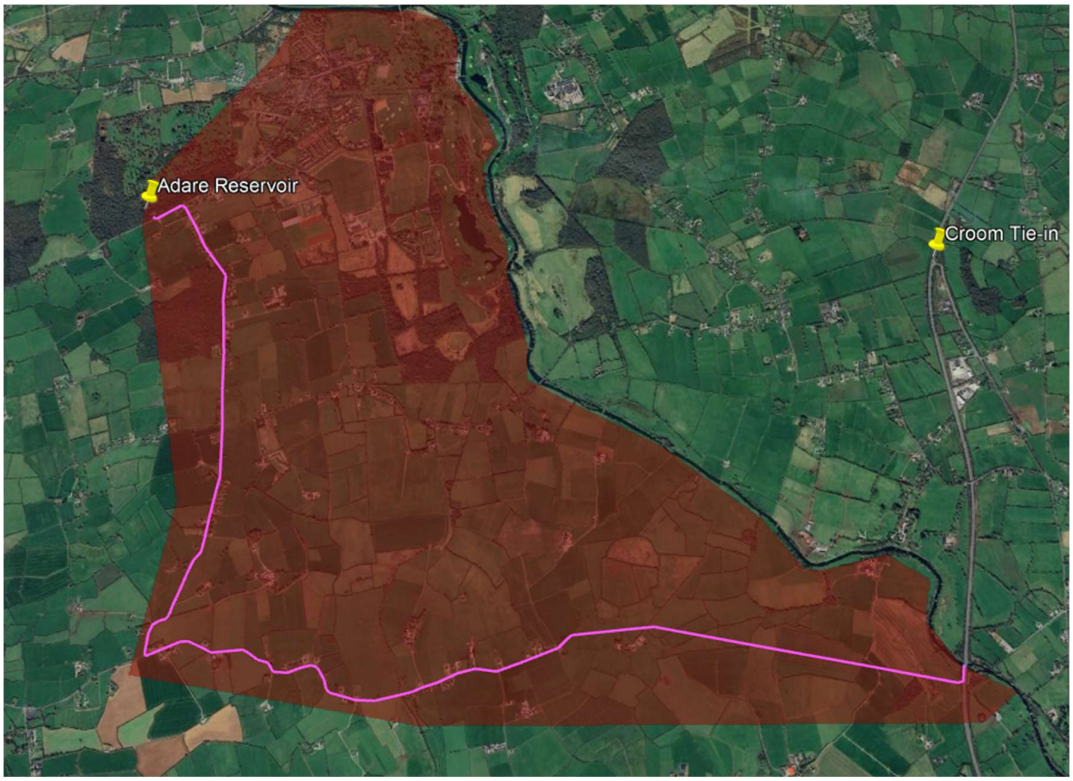


Figure 5-5 Section 2 Option 1

Section 2 Option 2 (Yellow) – From the River crossing the route will Cross westwards across 7no landowners. The route joins three public roads of R519 and N21 before terminating at Adare Reservoir.

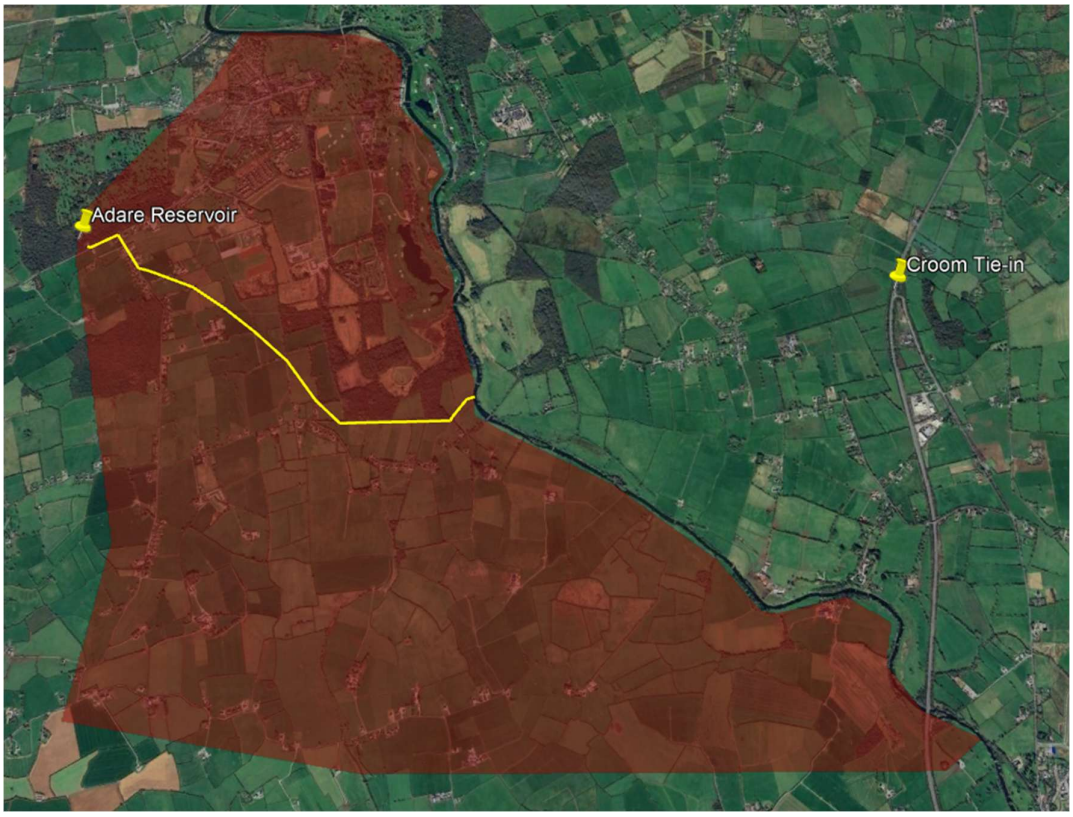


Figure 5-6 Section 2 Option 2

Section 2 Option 3 (Red) – After the river crossing, the route follows the public roads L8022, R519 and N21 before terminating at the reservoir.

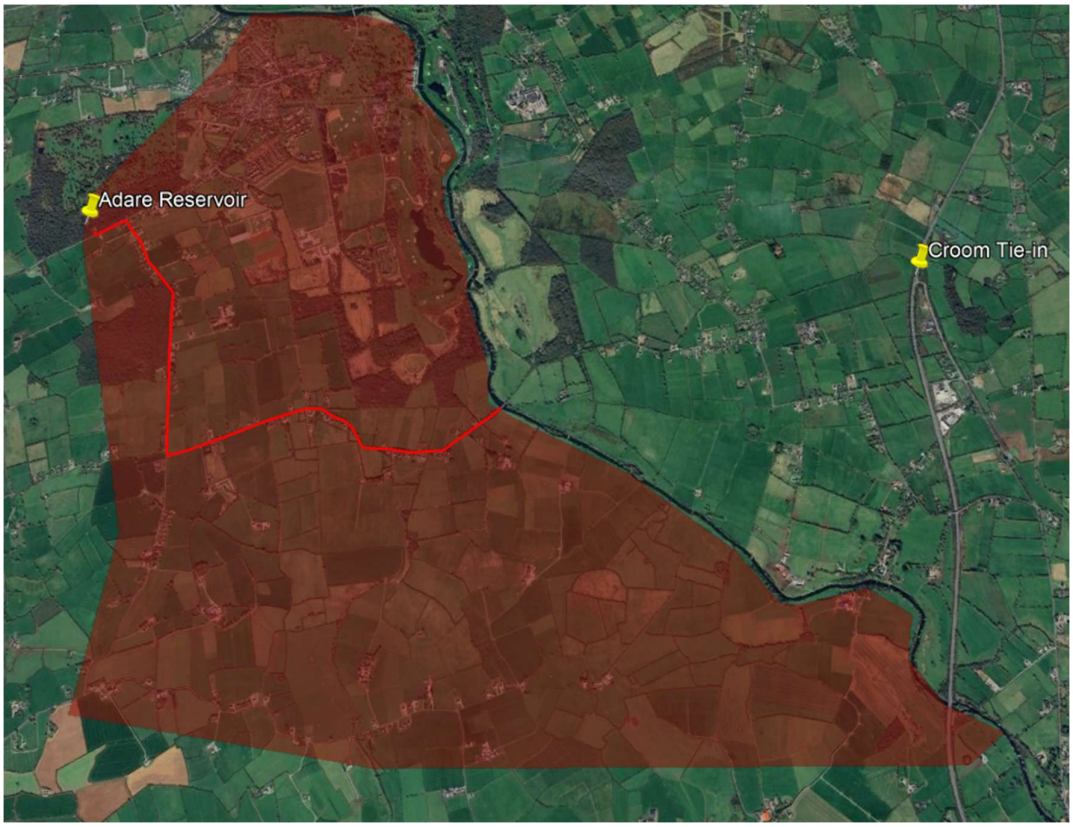


Figure 5-7 Section 2 Option 3

Section 2 Option 4 (blue) – After the river crossing, the route follows the N21 through the village of Adare before terminating at Adare Reservoir.

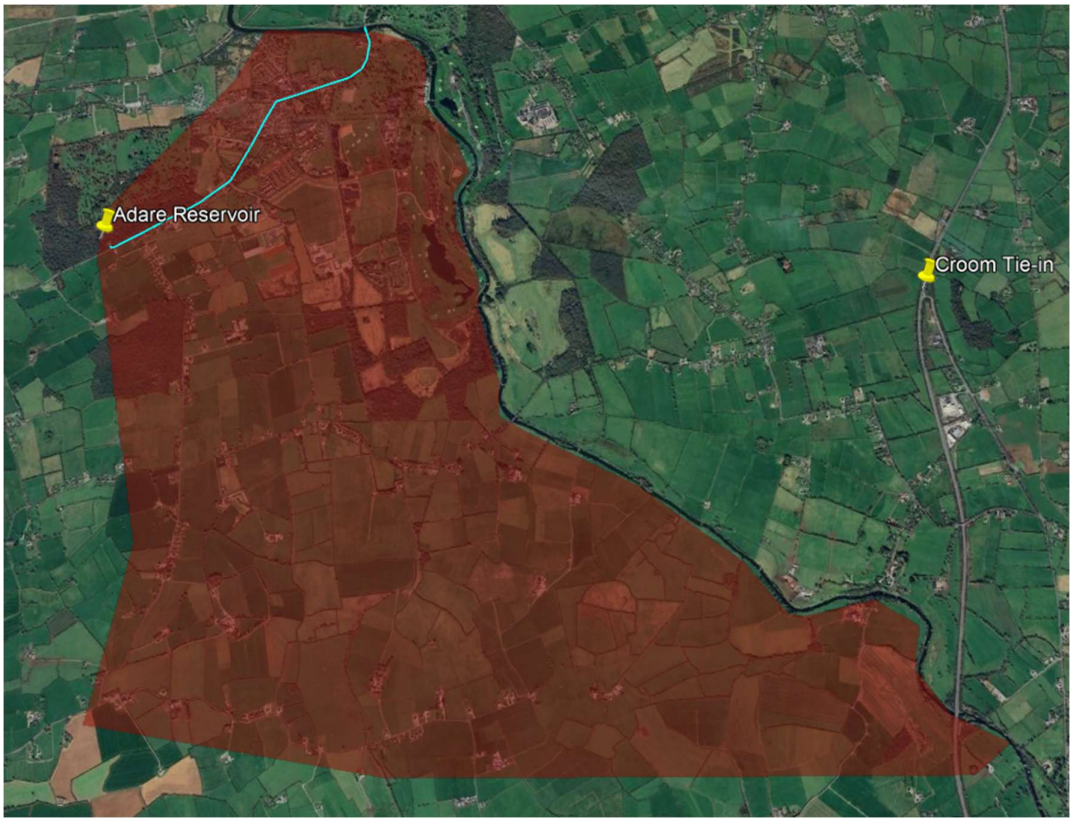


Figure 5-8 Section 2 Option 4

The route options are brought forward to Step 5 Detailed Assessment in Section 6.

# 6. STEP 5 DETAILED ASSESSMENT

Step 5 Detailed Assessment evaluates and compares the shortlisted options and associated infrastructure, taking account of a range of technical and economic, environmental, landowner and planning criteria with a view to identifying the least constrained options (the emerging preferred options).

Qualitative evaluation, based on available information, without implying whether one criterion is of greater or lesser importance than another (i.e., no weighting of criteria) is used in Step 5. The approach records whether, in respect of a particular criterion, an option is 'Advantageous / More Preferred / More Favourable', 'Neutral' or 'Less Advantageous / Less Preferred / Less Favourable'.

## 6.1 TECHNICAL / ECONOMIC - PIPELINES

### 6.1.1 Uisce Éireann Design Standards

The Uisce Éireann Design Standards which apply to the project are as follows:

- IW-TEC-300-01 General Civil Engineering Specification;
- IW-TEC-300-02 General Civil Engineering Specification Notes for Guidance;
- IW-TEC-1000-01 Water Pipeline Standard;

These designs standards have been considered in the technical assessment of each option as described in the relevant sub-sections following. The same design principals will apply to all shortlisted options as applicable for Watermain design.

### 6.1.2 Pipeline Corridors

Pipeline Corridors are available for all route options via the public road network or off public road. Constraints within the available corridors are identified and used in the evaluation of the options.

In terms of pipeline corridors, the preference is to route the pipeline along public roads. As such Route section 1 option 2, Route section 2 option 1 and option 2 are less favourable than the others.

## 6.1.3 Pipeline Details

### *6.1.3.1 Pipeline Lengths*

The lengths of the water main for the options varies and Table 6-1 summarises the lengths.

**Table 6-1 Approximate Length of Each Pipeline Corridor**

| Route Option | Approximate length (km) |
|---|---|
| **Section 1** | |
| Section 1 Option 1 | 2.70km |
| Section 1 Option 2 | 2.89km |
| Section 1 Option 3 | 4.84km |
| Section 1 Option 4 | 7.64km |
| **Section 2** | |
| Section 2 Option 1 | 8.85km |
| Section 2 Option 2 | 3.19km |
| Section 2 Option 3 | 4.23km |
| Section 2 Option 4 | 2.55km |

The combination of Route Section 1 Option 2 and Route option2 section 2 is the most favourable in respect of length.

The combination of Route Section 1 Option 1 and Route section 2 option 1 is the least favourable in respect to length.

### *6.1.3.2 Pipeline Diameters*

The pipeline diameters associated with each Section will be the same irrespective of the route options and thus all are neutral.

### *6.1.3.3 Pipeline Materials*

The quantity of pipeline material required for each optional route is linked to the pipeline length as described in Section 6.1.3.1.

The combination of Route Section 1 Option 2 and Route option2 section 2 is the most favourable in respect of pipeline materials.

The combination of Route Section 1 Option 1 and Route section 2 option 2 is the least favourable in respect to pipeline materials.

#### *6.1.3.4 Trench Widths*

The trench widths are linked to the pipeline diameters and as per Section 6.1.3.2 the options are neutral for both sections.

### 6.1.4 Physical Obstructions and Crossings Along Pipelines

The main physical obstructions and crossing identified along each of the routes are listed in Table 6-2. These do not include utilities which are discussed in Section 6.1.8.

**Table 6-2 Main Physical Obstructions and Crossings**

| Route Option | Main Physical Obstructions and Crossings |
|---|---|
| **Section 1** | |
| Section 1 Option 1 | N20 |
| Section 1 Option 2 | L8022<br>N20<br>Private Lands |
| Section 1 Option 3 | N20<br>L8022<br>L1420 |
| Section 1 Option 4 | N20<br>L1420<br>N21 |
| **Section 2** | |
| Section 2 Option 1 | Watercourse Crossing<br>Private Lands<br>L8021<br>R519<br>N21 |
| Section 2 Option 2 | Watercourse Crossing<br>Private Lands<br>R519<br>N21 |
| Section 2 Option 3 | Watercourse Crossing<br>Private Lands<br>L8021<br>R519<br>N21 |

| Route Option | Main Physical Obstructions and Crossings |
|---|---|
| Section 2 Option 4 | Watercourse Crossing<br>N21 |

### 6.1.5 Constructability

#### *6.1.5.1 Route options for section 1*

All options within this section are constructable.

Route options 1 and 3 involve traffic management on the N20. While options 2 and 3 involve traffic management on local roads.

Option 2 involves crossing private lands landowners and would require liaison with multiple landowners.

Route option4 is the least favourable. This option will require Traffic management and possible night works due to the traffic volumes along the N21 in close proximity to Adare Village.

#### *6.1.5.2 Route options for section 2*

All options within this section are constructable.

All options within this route would require Traffic management on the N21. Although route 4 would require a greater amount as it would run through Adare village.

Option 1 and 2 involves crossing private lands landowners and would require liaison with multiple landowners.

### 6.1.6 Topography

The topography of the pipeline corridors for both Section 1 and Section 2 are deemed neutral for all options as there is no significant elevation difference between options.

The exemption to this route section 2 option 1 which has a greater elevation than the TWL of Adare Reservoir. Thus this option is less favourable.

### 6.1.7 River Maigue

All options will have to cross the River Maigue. An offline solution utilising Horizontal Directional Drilling construction methodology would be required for each route option. As such, all options are deemed neutral.

### 6.1.8 Utilities

Records of existing utilities within the study area were requested from utility providers. The data received is summarised in the following sub-sections.

#### *6.1.8.1 Water Network*

In both Section 1 and 2 there are distribution networks located in the road with the DMAs MA02134, MA02133 and MA02135.

This interact with all options and thus all three options are deemed neutral.

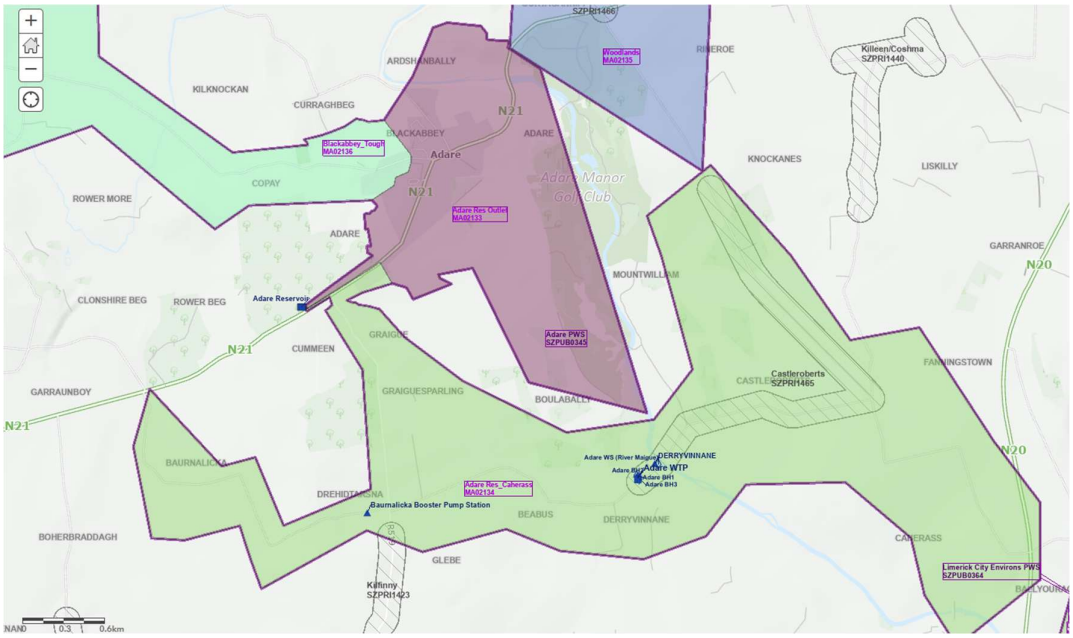


Figure 6-1 Water Distribution Network

### 6.1.8.2 *Wastewater System*

Due to the rural nature of the project. All wastewater utilities are located within the village of Adare which is located in Rooute section 2.

As a results Section 2 option 4 is less favourable.

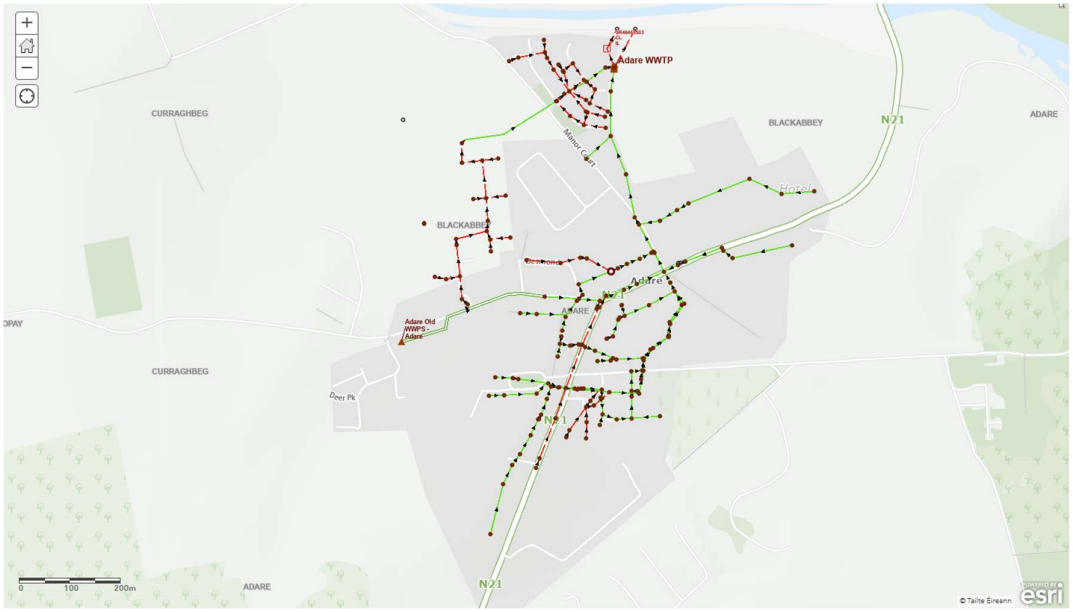


Figure 6-2 Wastewater Utilities

#### 6.1.8.3 Stormwater Systems

There are no available records of the stormwater system in Adare.

It is likely that there are stormwater systems in Adare however comparison of options is not possible.

#### 6.1.8.4 Gas

There is an Aurora telecom inserted gas main within the village of Adare. Option4 in both sections 1 and 2 interact with this network.

All other options do not interact with this network and are therefore deemed neutral.


Figure 6-3 Gas Network

#### 6.1.8.5 Electricity

There are overhead and underground electrical cables within the study areas, but none present significant challenges. All routes are deemed neutral in respect of electricity.

## 6.2 ENVIRONMENTAL

None of the route options are located in designations, sensitive habitats and high value habitats.

The consideration of environmental constraints falls under several evaluation criteria, and these are set out under the following sub-sections.

### 6.2.1 Ecologically Sensitive Areas

There are no ecologically sensitive areas affected by any of the route options and all are therefore deemed neutral.

### 6.2.2 National Monuments

There is one no known national monument within the study areas, Desmond Castle LI021-032002 is located in Adare and within 100m of Study 1 option 4. This option is therefore less favourable.

As there are no known monuments with the other study area options, all other options are therefore deemed neutral.

### 6.2.3 Archaeology

The Sites and Monuments Records (SMR) and National Inventory of Architecture (NIAH) associated with Section 1 are shown in Figure 7-4 to Figure 7-8.

Route option 4 within section 1 is within SMR zone for a number of RMPs and is therefore less favourable.

Castleroberts Bridge is in close proximity to the Route option 3. However, the route will take an offline option within private lands at this location.

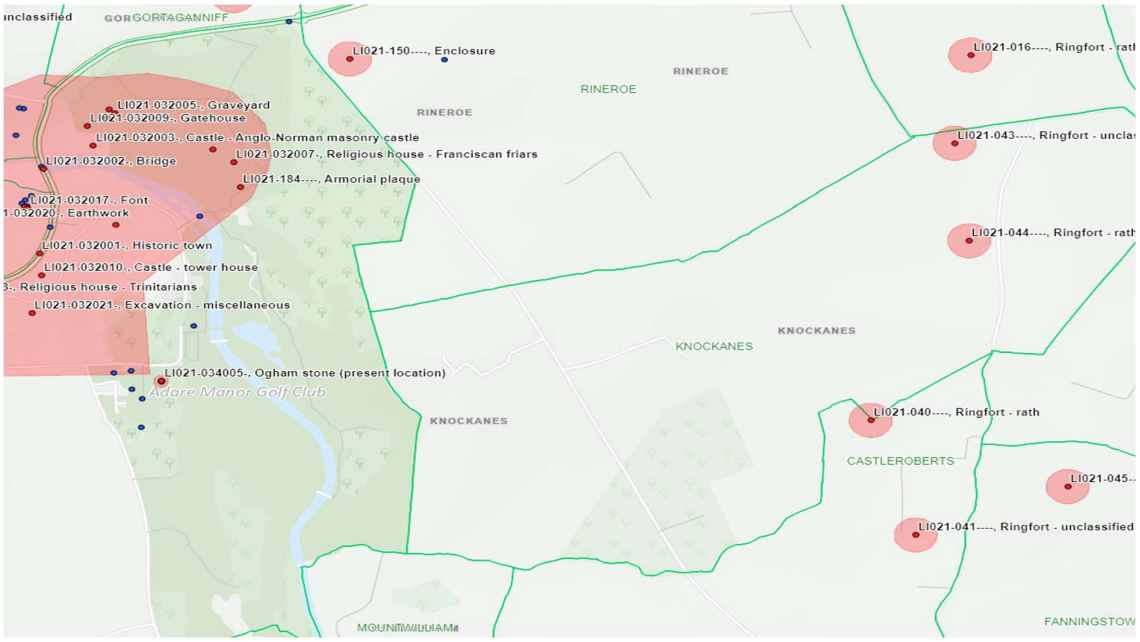


Figure 6-4 SMR and NIAH Locations Section 1(1)

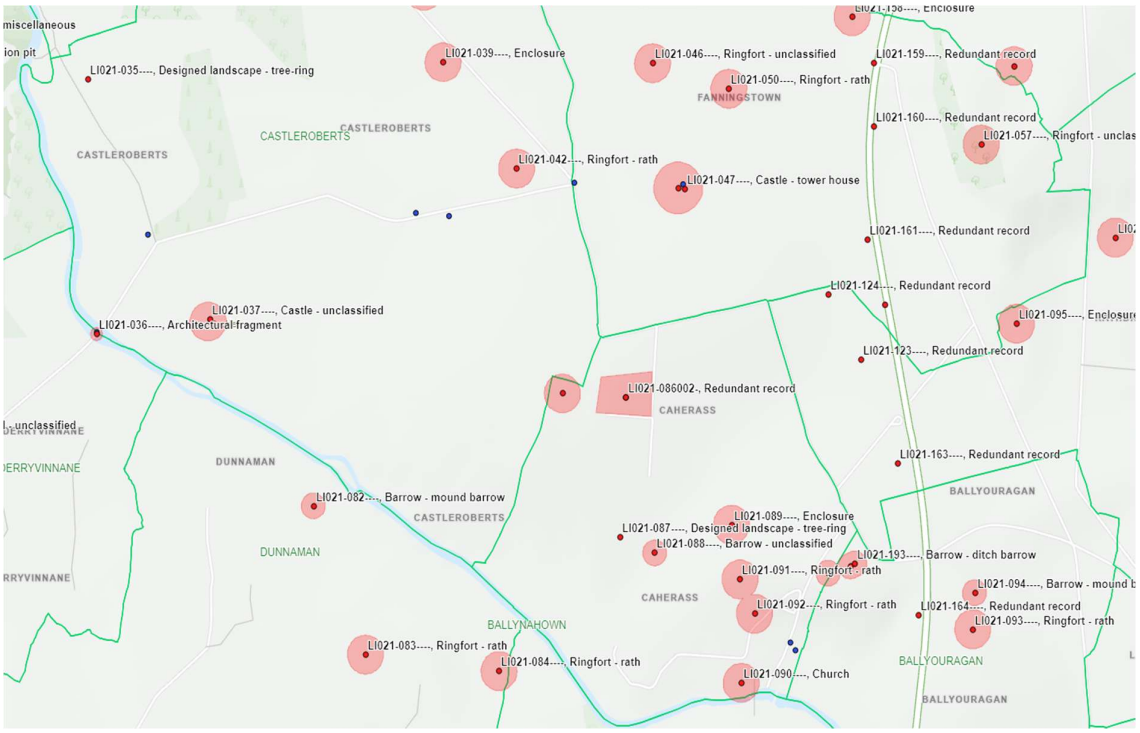


Figure 6-5 SMR and NIAH Locations Section 1 (2)

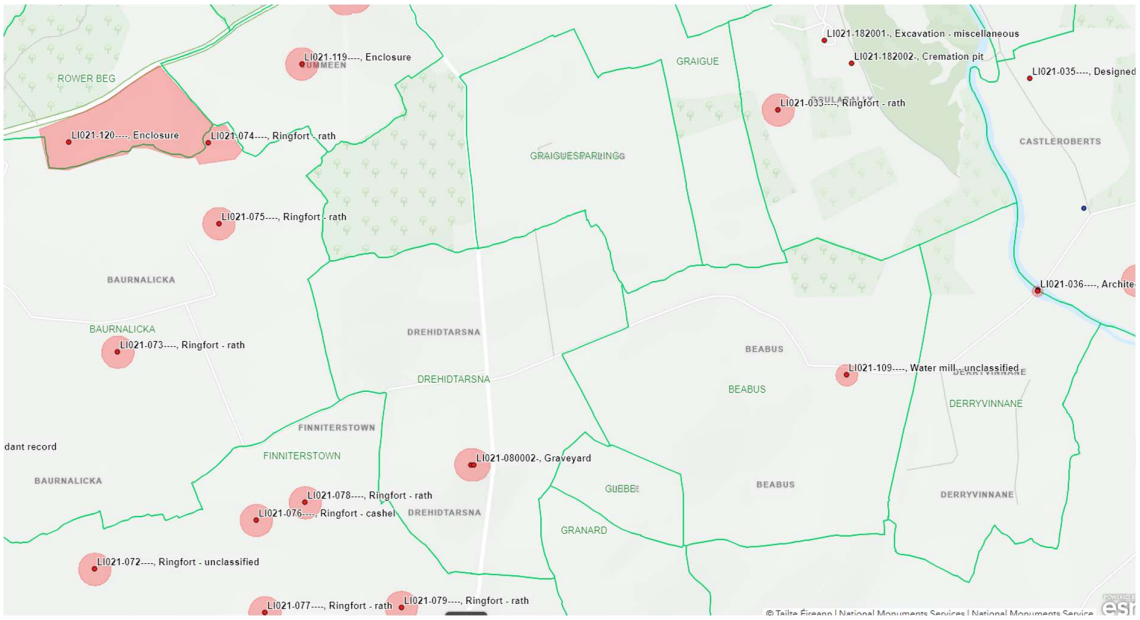


Figure 6-6 SMR and NIAH Locations Section 2 (1)

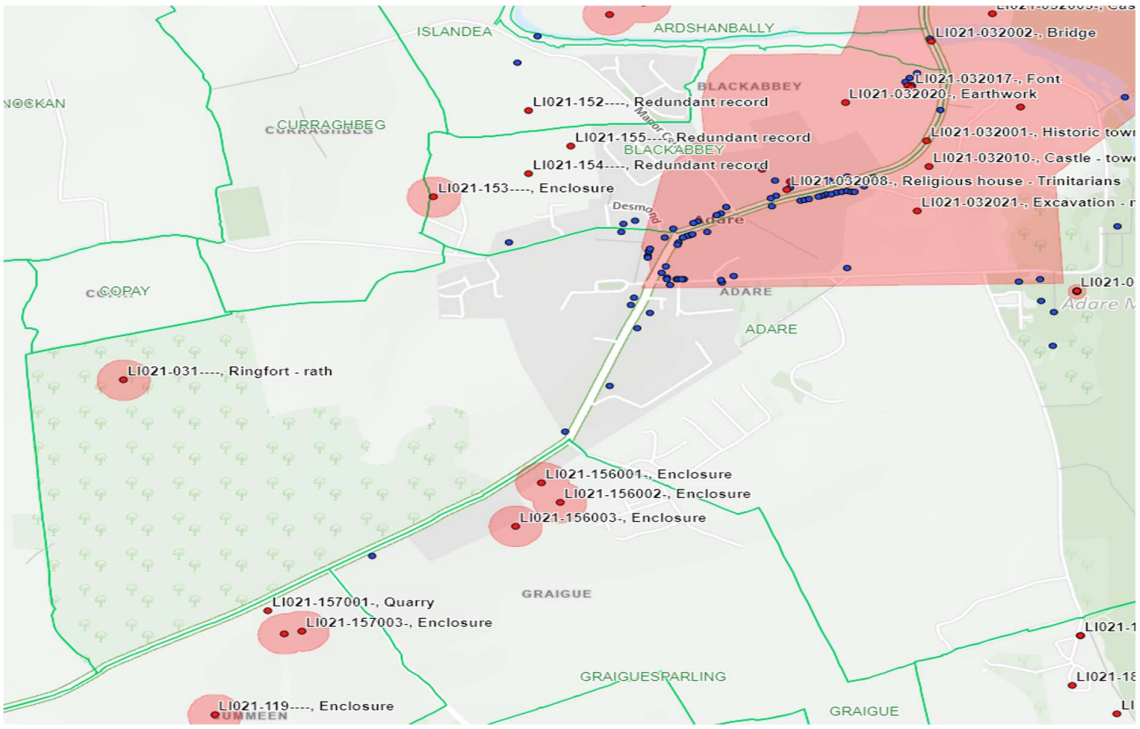


Figure 6-7 SMR and NIAH Locations Section 2 (2)

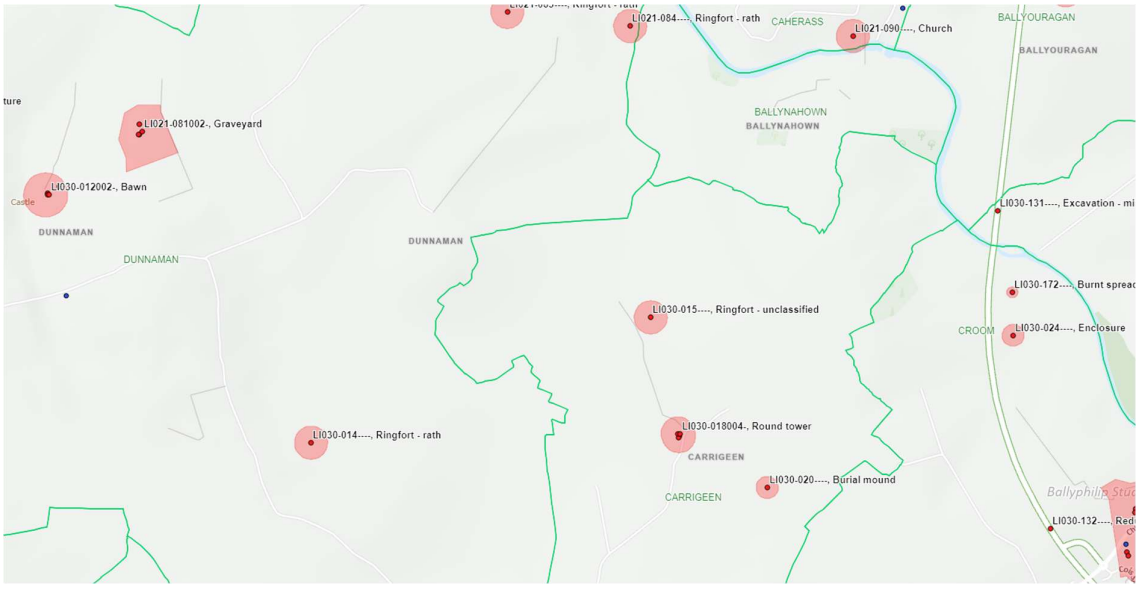


Figure 6-8 SMR and NIAH Locations Section 2 (3)

### *6.2.3.1 Protected Structures*

There are 105 protected structures within the study areas. These are located within the village of Adare. Route options 4 within study area 1 and 2 are therefore less favourable.

All other options associated with Section 1 and Section 2 are deemed to be favourable under this criterion.

### *6.2.3.2 Architectural Conservation Areas*

The Adare Conservation Area is shown in Fig 6-9.

There is no architectural conservation area associated with Section 1 Option 1 and 3.

The conservation area is associated with parts of Section 1 Option 2 and 4.

Section 1 Option 1 and 3 are the more favourable route.

There is no architectural conservation area associated with Section 2 Option 1 and 3.

The conservation area is associated with parts of Section 2 Option 2 and 4.

Section 2 Option 1 and 3 are the more favourable route.

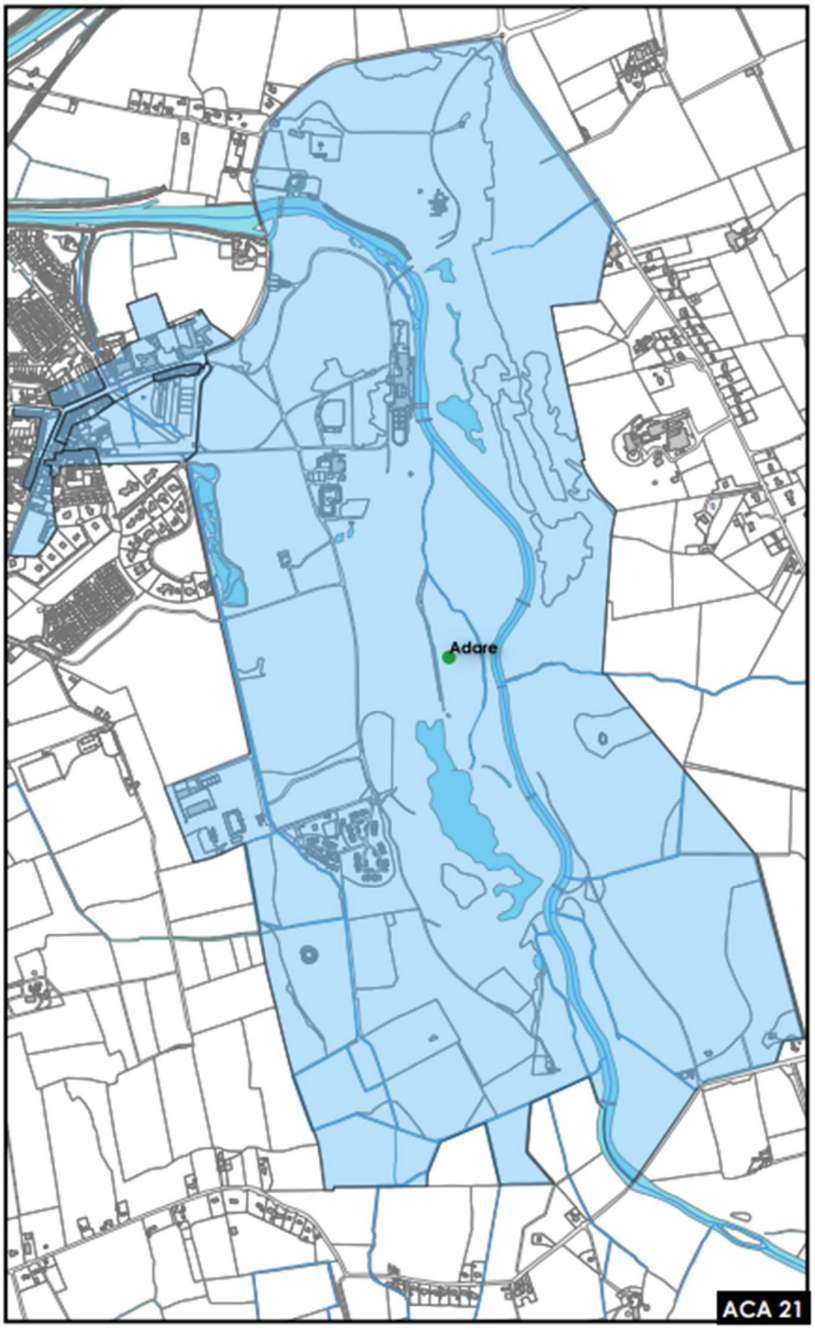


Figure 6-9 Adare Architectural Conservation Areas

### 6.2.4 High Value Landscapes

There are no high value landscapes impacted within the two study areas and all options are neutral.

### 6.2.5 Water Bodies

There are no water bodies within the Section 1 and 2 of the study areas.

All route options will involve a single crossing of the River Maigue and all route options are deemed neutral.

### 6.2.6 Alien Invasive Species

An alien invasive species survey will be undertaken at detailed design stage and if encountered along any of the routes a mitigation plan will be developed in line with UÉ requirements.

## 6.3 LANDOWNERS

### 6.3.1 Land Requirements - Wayleaves

Within Section 1 the following options are described below.

For Route Option 1 there are no land folios associated with this option.

For route Option 2 there are five land folios associated; LK12771F, LK5988F, LK32671, LK43999F, LK22012F.

For Route Option 3 there is one land folio associated with the river crossing; LK 14714.

For Route option 4 there is one land folio associated with the river crossing; LK17768F.

In respect of wayleaves route Section 1 Options 1, 3 and 4 would be more favourable for acquiring new wayleaves. Route Section 1 Option 2 would be less favourable.

Within Section 2 the following Options are described below..

For Route Option 1 there are five land folios associated; LK64621F, LK2808F, LK15954, LK3138, LK6858F.

For route Option 2 there are eight land folios associated; LK32150F, LK66499F, LK3776F, LK3576, LK3163, LK3164, LK3161, LK48599F.

For Route Option 3 there is one land folio associated with the river crossing; LK 36766F.

For Route option 4 there is no registered land folio associated with the river crossing, this is a national school, church and Friary located on this parcel.

In respect of wayleaves route Section 2 Options 3 would be more favourable for acquiring new wayleaves. Route Section 1 Option 1 and 2 would be less favourable.

### 6.3.2 Land Requirements – Land Acquisition

There is no land acquisitions required for the linear route options in both Section 1 or Section 2.

### 6.3.3 Land Zoning

Fig 6-10 shows the land zoning map for the relevant part of Adare that forms part of the current Limerick County Development Plan.

Section 2 Option 4 is routed through lands that are zoned Utility and Infrastructure. The routing of a water main through these zoned lands would be deemed compatible with the objectives of the development plan. All options are therefore deemed as neutral.

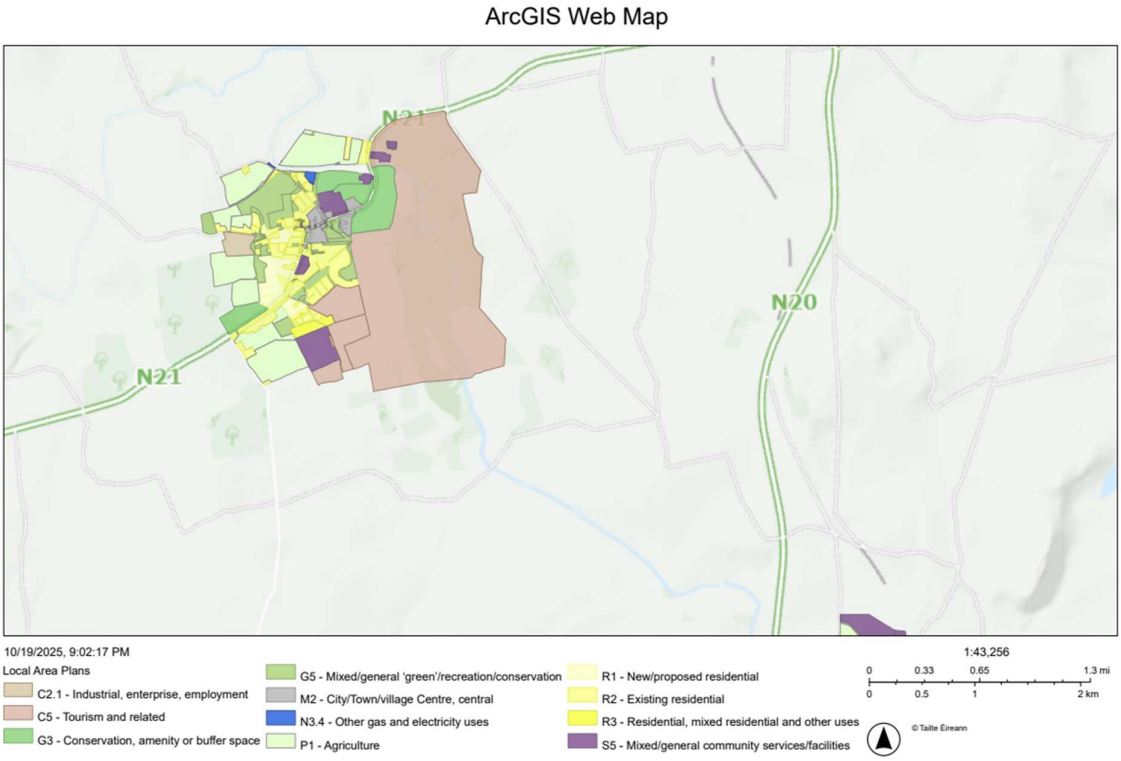


Figure 6-10 Adare Land Zoning

### 6.3.4 Road Opening Licence

Road opening licences will be required for all route options in both Section 1 and Section 2.

### 6.3.5 Reinstatement Requirements / Costs

It would be proposed to carry out all reinstatement of trenches on the urban and rural roads in according to the requirements of the Guidelines for Managing Openings in Public Roads, published by the Department of Transport, Tourism and Sport unless requested otherwise by the Roads Authority and as agreed with Uisce Éireann.

In Section 1 option 2 has the lowest reinstatement costs in consideration of the fact that the lands through which it is partially routed are on agricultural land.

In terms of length, option1 is the shortest route, followed by option 3.

In Section 2 the shortest route on road is Option 2 and is viewed as potentially the lowest reinstatement costs in consideration of the fact that the lands through which it is partially routed are on agricultural land.

Section 2 Option 4 is the shortest route in length however as this route takes place within the village of Adare, additional costs associated night works would be anticipated.

Section Option 3 has the second shortest route and therefore the most favourable route after Option 2.

Both Section 2 Option 1 and 4 are deemed less favourable to Option 2 and 3.

### 6.3.6 Co-location with other utilities or proximate to existing wayleaves

There is an opportunity to rehabilitate the existing the distribution main from Adare Reservoir to Adare WTP while the works are rationalisation works are being undertaken. There is the potential to rehabilitate other distribution mains located in the road also.

For this reason in Section 1 Option 3 and 4 are seen as the most favourable.

For the reason above Section 2 Option 3 is the most favourable.

### 6.3.7 Traffic Management and Road Safety

Traffic management for any water infrastructure installation on public roads is an important consideration. In this respect the main considerations are as follows:

- Road designation
- Traffic volumes
- Width of road (will a closure be required)
- Public transport routes
- Number of junctions

In Section 1 all options present significant traffic management and road safety challenges.

Section 1 Option 1 involves works on the N20.

Section 1 Option 2 involves works on the L8022 road for a small section.

Section 1 option 3 involves works on the N20, L1420 and L8022.

Section 1 option 1 involves works on the N20, L1420 and N21.

While Section 1 Option 2 has minimal traffic management due to the route being located in private lands. Options 1 and 3 have similar traffic management needs on the N20.

Option 4 is the least favourable option with significant traffic management challenges along N21 and proximity to Adare Village.

In Section 2 Option 4 is the least favourable option with significant traffic management challenges along N21 and proximity to Adare Village.

Option 1, 2 and 3 all have similar routes along the N21 and a portion of the R519.

## 6.4 PLANNING

In respect to planning, planning is exempt under Class 58(b) the installation of (i) underground pipes, cables, water mains, sewers, including associated accessories, service connections, boundary boxes and meters.

There are some instances where planning may be required involving activities which, consist of the excavation, alteration or demolition of places, caves, sites, features or other objects of archaeological, geological, historical, scientific or ecological interest, the preservation, conservation or protection of which is an objective of a Development Plan.

In Section 1, Planning would not be deemed necessary therefore all options would be deemed neutral.

In section 2, Option 4 may trigger planning as this option is routed through Adare village and Friary at the river crossing.

All other options within Section 2 are deemed neutral.

## 6.5 CAPITAL COSTS

A detailed capital cost is not possible for the different options at route selection stage as the design is not advanced to a level of detail necessary for such. It is however possible to compare the options in respect of likely relative costs as set out in Table 6-3.

Table 6-3 Ranking of Options in Respect of Capital Costs

| Route Option | Approximate length (km) | Relative Costs Ranking |
|---|---|---|
| **Section 1** | | |
| Section 1 Option 1 | 2.70km | Favourable |
| Section 1 Option 2 | 2.89km | Favourable |
| Section 1 Option 3 | 4.84km | Favourable |
| Section 1 Option 4 | 7.64km | Less Favourable |
| **Section 2** | | |
| Section 2 Option 1 | 8.85km | Less Favourable |
| Section 2 Option 2 | 3.19km | Favourable |
| Section 2 Option 3 | 4.23km | Favourable |
| Section 2 Option 4 | 2.55km | Favourable |

## 6.6 Operational Costs

The operational costs for the gravity watermains will likely be the same for all options in both sections.

## 6.7 Carbon Footprint

The carbon footprint is linked to the capital costs of the watermain, and the ranking of the options would be as per Table 6-3.

### 6.7.1 Sustainability

Uisce Éireann is committed to sustainability by ensuring that environmental, ethical and social principles are at the core of their business decisions and their strategy and is working to ensure that sustainable practices are embedded into the business into everyday activities and is aligned to the UN Sustainable Development Goals.

The sustainability framework of Uisce Éireann has four strategic goals:

1. Environmental pillar: enabling a low carbon sustainable resilient water service to protect and enhance the natural environment
2. Social pillar: empowering our people, enriching our communities, serving our public
3. Economic pillar: supporting future economic growth and resilience through sustainable investment
4. Partnership pillar: committing to sustainable partnerships to support the delivery of mutually beneficial outcomes

The project entails a gravity water main solution and overall, the project enables a low carbon sustainable resilient wastewater service to protect and enhance the natural environment. The project also services the public under the social pillar and economic pillar.

Regarding the Section 1 Options 1, 2 and 3 have potentially the lowest capital costs and thus has the lowest overall carbon inputs and the most favourable option with respect to sustainability in comparison with the other Section 1 Option 4.

Section 2 Options 2, 3 and 4 would have potentially the lowest capital costs and thus has the lowest overall carbon inputs and the most favourable option with respect to sustainability in comparison with Section 2 Option 1.

### 6.7.2 Waste Management

Uisce Éireann is committed to reducing their waste to landfill and has committed to zero waste to landfill by 2030.

All options will produce waste material associated with trench excavations.

In section 1, option 2 would have generate the least amount of waste material associated with trench excavations as the majority of the route is in agricultural land. All other options would follow the public road. The use of recycled material on the public road routes would reduce the waste produced.

Options 1 and 3 have similar lengths and would be a favourable option if land access became a constraint.

In Section 2, option 2 would have generate the least amount of waste material associated with trench excavations as the majority of the route is on grassland. While option 1 route crosses a lot of agricultural land it is the longest route overall in this section. Option 3 is the shortest route which does not cross agricultural land. Option 2 and 3 are the more favourable routes and all options are less favourable.

### 6.7.3 Biodiversity Enhancement

Uisce Éireann is committed to protecting biodiversity and striving for net positive impact on biodiversity.

Previous sections addressed biodiversity in the context of IW-AMT-GL-021.

In Section 1 options 1, 3 and 4 would be deemed neutral in respect of impact on biodiversity as both routes are routed along surfaced areas. These routes do not present opportunity for biodiversity enhancement.

Option 2 would involve some tree felling/trimming and excavation around hedgerows.

In Section 2 the Option 1 and 2 would involve some tree felling/trimming and excavation around hedgerows.

Options 3 and 4 would be deemed neutral in respect of impact on biodiversity as both routes are routed along surfaced areas. These routes do not present opportunity for biodiversity enhancement.

Overall, in respect of biodiversity enhancement the route options in Section 1 and 2 have limited opportunity for net positive impact.

### 6.7.4 Energy Efficient Design

The options selected involve gravity water mains and have no energy using equipment.

## 6.8 Evaluation Matrix

The following sub-sections set out the evaluation of the options within the two sections.

### 6.8.1 Evaluation Matrix – Section 1

Table 6-4 set out the assessment of the criterion for route selection for the water main in Section 1. The two route options are evaluated in the matrix.

**Table 6-4 Evaluation Matrix Summary for Section 1 Route Options**

| Criteria | Sub-criteria | Route Option 1 | Route Option 2 | Route Option 3 | Route Option 4 |
|---|---|---|---|---|---|
| Technical | Pipeline Corridor | | | | |
| | Pipeline Length | | | | |
| | Pipeline Diameter | | | | |
| | Pipe Materials | | | | |
| | Chambers and Fittings | | | | |
| | Trench Widths | | | | |

| Criteria | Sub-criteria | Route Option 1 | Route Option 2 | Route Option 3 | Route Option 4 |
|---|---|---|---|---|---|
| | Physical Obstructions | | | | |
| | Utilities-Electricity | | | | |
| | Utilities-Gas | | | | |
| | Utilities – Stormwater | | | | |
| | Utilities - Wastewater | | | | |
| | Utilities-Telecom | | | | |
| | Utilities -Water | | | | |
| | Ground Conditions | | | | |
| | Constructability | | | | |
| | Topography | | | | |
| | River Maigue | | | | |
| Environmental | Ecologically Sensitive Areas | | | | |
| | National Monuments | | | | |
| | RMP Records | | | | |
| | NIAH sites | | | | |
| | Protected Structures | | | | |
| | ACAs | | | | |
| | High Value Landscapes | | | | |
| | Water Bodies | | | | |
| | Alien Invasive Species | | | | |
| Landowner | Land Requirements – Wayleaves | | | | |
| | Land Requirements – Acquisitions | | | | |
| | Planning Applications | | | | |
| | Land Zoning | | | | |
| | Road Opening Licence | | | | |
| | Reinstatement Requirements / Costs | | | | |
| | Co-location with other utilities or proximate to existing wayleaves | | | | |
| | Traffic Management | | | | |
| | Road Safety | | | | |
| | Planning | | | | |
| Costs | Cost Estimate - Capital | | | | |
| | Operational Costs | | | | |
| | Carbon Footprint | | | | |
| | Sustainability | | | | |
| | Waste Management | | | | |
| | Biodiversity Enhancement | | | | |

As required by Section 5.5.5 of the Uisce Éireann guidance document IW-AD-PD-GL-008, no weighting of criteria was applied. There is therefore no implication that one criterion is of greater or lesser importance than any other criterion.

When evaluating options relative to each other, particular emphasis is placed on those constraints categorised as Primary Constraints (i.e. ecological, flooding and archaeological sites/ features afforded protection at a World or European level). In this assessment however the primary constraints are neutral across the two options.

It is clearly evident from the matrix that route Option 2 and 4 have numerous less favourable criteria in comparison to the Option 1 and 3 and thus will not emerge as the preferred route.

In comparing Option 1 and Option 3 in terms of technical criteria the route Option 3 would be the preferred route option.

In terms of the environmental criteria Options 1, 2 and 3 are preferrable in terms of NIAH sites.

The assessment of options is favouring route Option 3 as the emerging preferred route in respect of technical, landowner and cost criteria.

### 6.8.2 Evaluation Matrix – Section 2

Table 6-4 set out the assessment of the criterion for route selection for the water main in Section 2. The three route options are evaluated in the matrix.

**Table 6-5 Evaluation Matrix Summary Section 2 Route Options**

| Criteria | Sub-criteria | Route Option 1 | Route Option 2 | Route Option 3 | Route Option 4 |
|---|---|---|---|---|---|
| Technical | Pipeline Corridor | | | | |
| | Pipeline Length | | | | |
| | Pipeline Diameter | | | | |
| | Pipe Materials | | | | |
| | Chambers and Fittings | | | | |
| | Trench Widths | | | | |
| | Physical Obstructions | | | | |
| | Utilities-Electricity | | | | |
| | Utilities-Gas | | | | |
| | Utilities – Stormwater | | | | |
| | Utilities - Wastewater | | | | |
| | Utilities-Telecom | | | | |
| | Utilities -Water | | | | |
| | Ground Conditions | | | | |
| | Constructability | | | | |
| | Topography | | | | |
| | River Maigue | | | | |
| Environmental | Ecologically Sensitive Areas | | | | |
| | National Monuments | | | | |
| | RMP Records | | | | |
| | NIAH sites | | | | |
| | Protected Structures | | | | |
| | ACAs | | | | |
| | High Value Landscapes | | | | |
| | Water Bodies | | | | |
| | Alien Invasive Species | | | | |
| Landowner | Land Requirements – Wayleaves | | | | |
| | Land Requirements – Acquisitions | | | | |
| | Planning Applications | | | | |
| | Land Zoning | | | | |
| | Road Opening Licence | | | | |

| Criteria | Sub-criteria | Route Option 1 | Route Option 2 | Route Option 3 | Route Option 4 |
|---|---|---|---|---|---|
| | Reinstatement Requirements / Costs | | | | |
| | Co-location with other utilities or proximate to existing wayleaves | | | | |
| | Traffic Management | | | | |
| | Road Safety | | | | |
| | Planning | | | | |
| Costs | Cost Estimate - Capital | | | | |
| | Operational Costs | | | | |
| | Carbon Footprint | | | | |
| | Sustainability | | | | |
| | Waste Management | | | | |
| | Biodiversity Enhancement | | | | |

As required by Section 5.5.5 of the Uisce Éireann guidance document IW-AD-PD-GL-008, no weighting of criteria was applied. There is therefore no implication that one criterion is of greater or lesser importance than any other criterion.

When evaluating options relative to each other, particular emphasis is placed on those constraints categorised as Primary Constraints (i.e. ecological, flooding and archaeological sites/ features afforded protection at a World or European level). In this assessment however the primary constraints are neutral across all three options.

It is clearly evident from the matrix that route Options 1 and 4 has numerous less favourable criteria in comparison to the other route options and thus will not emerge as the preferred route.

In comparing route Option 2 and route Option 3 in terms of technical criteria the route Option 3 would be the preferred route option.

In terms of the environmental criteria all options are similar with the exception of the Option 4 is favourable in comparison.

The landowner criteria would favour towards route Option 3 over route Option 2 mainly related to co-location with other utilities where the option to rehabilitate the distribution main is favourable. Costs would favour toward route Option 2, 3 and 4.

The assessment of options is favouring route Option 3 as the emerging preferred route mainly in respect of technical, landowner and cost criteria.

# 7. STEP 6 FINALISED ROUTE SELECTION WITH RECOMMENDED OPTIONS

## 7.1 SECTION 1

The emerging preferred solution is route Option 3.

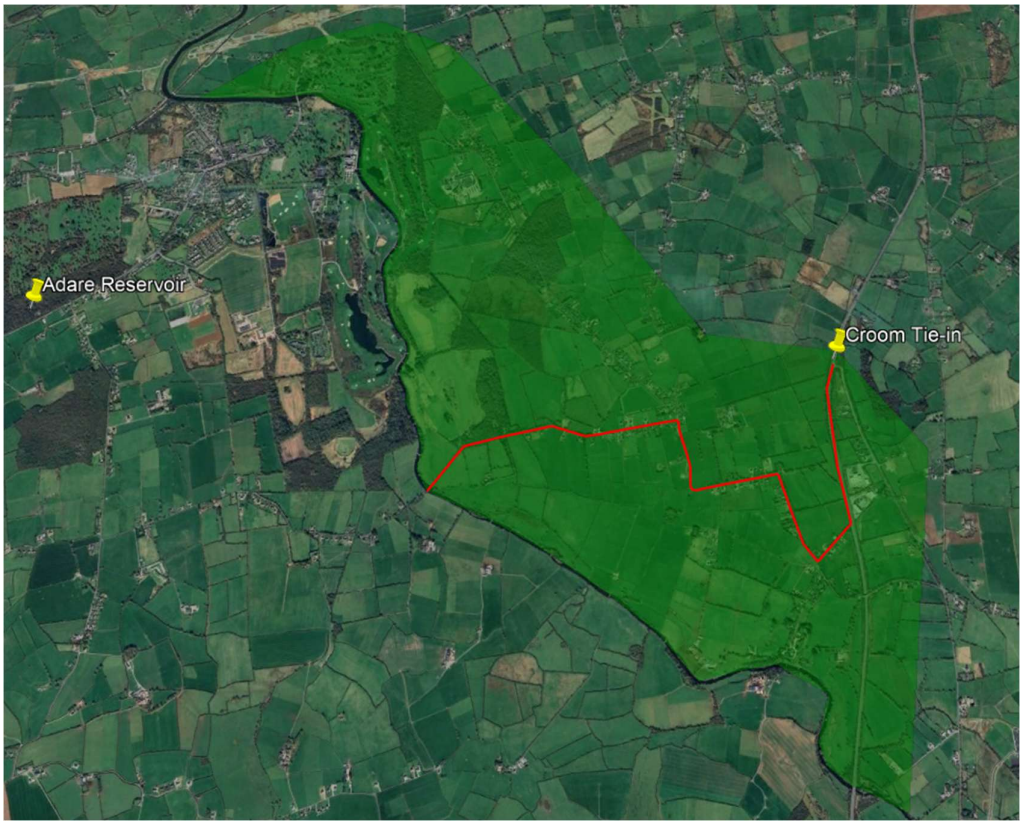


Figure 7-1 Emerging Preferred Route Option 1

## 7.2 SECTION 2

The emerging preferred solution is route Option 3.


Figure 7-2 Emerging Preferred Site Option 2

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