

Galway Untreated Agglomerations Study

Roundstone Pumping Stations Site Selection Report

01 November 2019

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1 Introduction

As of 14th January 2014, Irish Water assumed responsibility from local authorities for water services functions nationally. A key element of the infrastructure challenge for Irish Water is to meet the demands of decades of underinvestment in wastewater infrastructure. Between 2016 and 2021, the remaining period of the Irish Water Business Plan, Irish Water is ramping up investment to spend an average of €326m per year on wastewater infrastructure.

Irish Water is a regulated water services utility. The Environmental Protection Agency (EPA) is the technical and environmental regulator and issues and enforces authorisations for wastewater discharges. The Commission for Regulation of Utilities (CRU) is the financial regulator and aims to ensure water services are delivered in a safe, secure and sustainable manner and that Irish Water operates in an efficient manner. One of the key ways in which the CRU does this is through the revenue control process.

The objective of wastewater treatment is to collect the wastewater generated within our communities, remove the polluting material, and then release the treated water safely back to the environment. Without such treatment, the wastewater, also referred to as sewage, can be contaminated with harmful bacteria and viruses which put human health at risk and can pose a threat to aquatic ecosystems and the amenity value of our waters.

The 'Urban Waste Water Treatment Directive and Regulations', 2007 as amended, (UWWTD) set standards to be met in the collection and treatment of wastewater, as well as the monitoring requirements for wastewater discharges from urban areas. Compliance with this directive is monitored by the EPA. Compliance with these requirements has driven, and will continue to drive, investment in water services infrastructure. The EU also has a monitoring function and can pursue legal cases against Member States for failure to comply with the requirements or the dates by which compliance is to be achieved as specified within the Directive.

1.1 Strategic Overview

The EPA in their Report – 'Focus on Wastewater Treatment in Ireland', 2013, listed 44 agglomerations in Ireland where untreated sewage is discharged directly to receiving waters, either directly from sewer network outfalls, or via septic or holding tanks where the level of treatment provided is negligible.

In response to this situation, Irish Water initiated the implementation of a number of schemes to bring these agglomerations into compliance with the UWWTD. These schemes, known as Untreated Agglomeration Studies (UTAS) are being collectively advanced on a county-by-county basis.

The role of Irish Water in the implementation of the UTAS programmes is to design, construct and deliver wastewater infrastructure.

1.2 Project Overview

The Roundstone agglomeration is listed as an untreated agglomeration in the above referenced EPA report and forms part of the UTAS bundle for County Galway.

At present, wastewater is collected and released back into the environment without treatment into Roundstone Bay. This current practice is unsustainable and unacceptable, and it is the objective of Irish Water to deliver wastewater treatment at Roundstone to ensure that the water quality

standards set down by regulatory bodies will be achieved, as outlined within European and national legislation. Furthermore, the provision of cleaner water will enhance the amenity value and act as a platform for socio-economic development within Roundstone.

Delivering a solution for Roundstone, within a complex statutory and regulatory process, involves defining the project scope, site selection, site purchase, planning permission, and construction, while optimising value for money. It is expected that a planning application will be submitted to the Local Authority in 2021. Subject to statutory approval, it is envisaged that the construction phase will be completed by 2024.

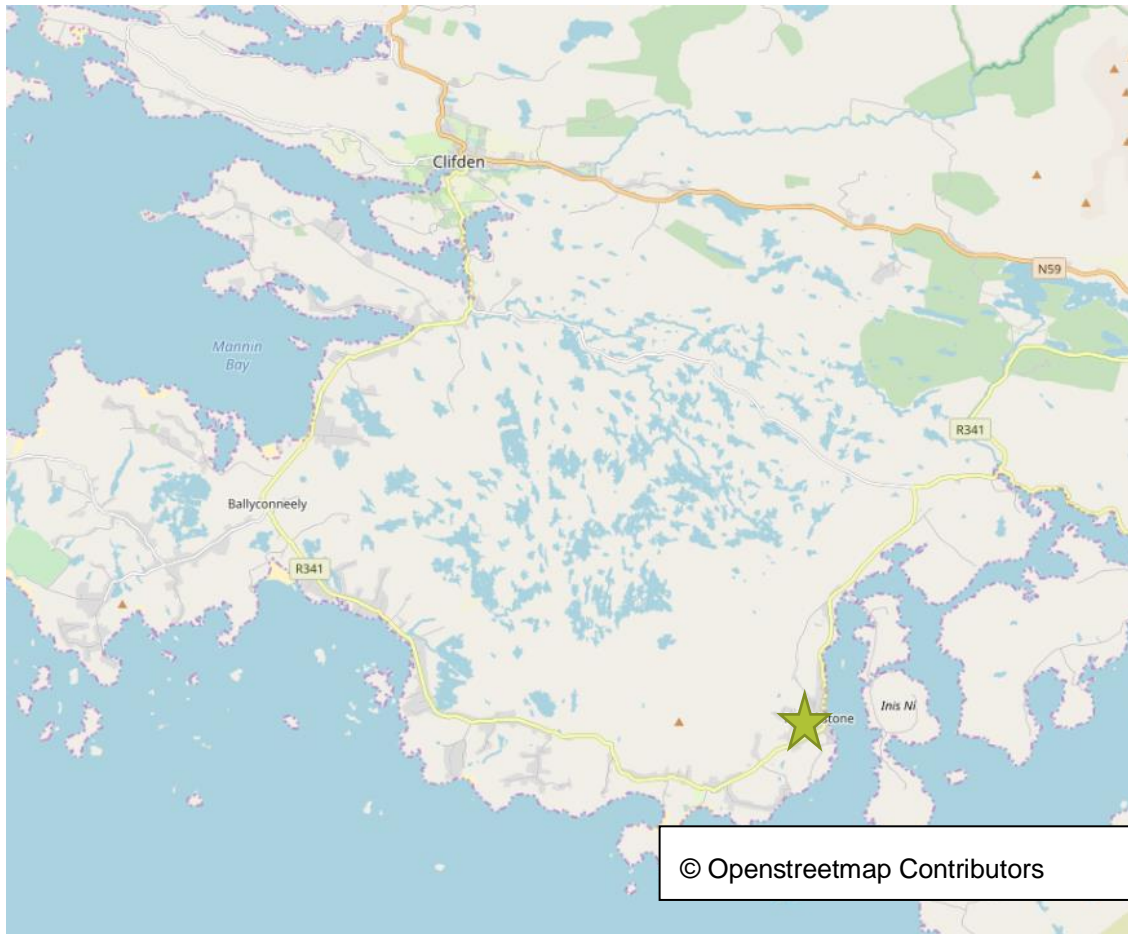
1.3 Roundstone

Roundstone is a rural coastal village in Connemara, situated approximately 76km to the west of Galway City, and approximately 20km south east of Clifden via the R341. The village is within a rural setting and is situated on the coast of Roundstone Bay which is to the east of the village. Figure 1 below shows the location of the village in the context of its rural coastal setting.

The village is formed of a small cluster of linear development, with the main commercial and administrative areas of the village situated along High Street (R341). Much of the remaining linear development is predominantly residential in nature and is situated along the other roads which form part of the village.

At present, wastewater in Roundstone is collected in three separate gravity-fed sewer networks and discharged to Roundstone Bay without any form of treatment.

Figure 1: Location of Roundstone



Source: OpenStreetMap.org

1.4 Project Need

The prevailing topography in Roundstone has dictated the historic placement of the existing outfalls which are annotated in Figure 2. The existing discharges to Roundstone Bay from the agglomeration has a Wastewater Certificate of Authorisation (CoA) (Reg. No. A0115-01), which was issued by the EPA on 10th May 2011. Condition 3.4 of the CoA requires appropriate improvements, including the construction of a wastewater treatment plant (WWTP), which are necessary to ensure all discharges from the agglomeration contribute to achieving at least good status in accordance with the Surface Water Regulations. The agglomeration is currently non-compliant with its CoA.

It is the objective of Irish Water to intercept the sewage prior to discharge into the sea and pump it through three pumping stations (PSs) towards a new modern WWTP. The placement of the proposed pumping stations is constrained by the existing wastewater network and outfalls.

Collectively, the Roundstone Sewerage Scheme will be designed to ensure that the water quality standards set down by regulatory bodies will be achieved, as outlined within European and national legislation. Furthermore, cleaner coastal waters will enhance the amenity value of Roundstone, while the investment in the sewage system will promote and facilitate socio-economic development.

The aim of the Project is therefore to bring the Roundstone agglomeration into compliance with the EU Urban Waste Water Treatment Directive (91/271/EEC), national regulations (including EPA stipulations) and to ensure the continued sustainable development of Roundstone.

Figure 2: Location of Existing Networks and Outfalls



Source: OpenStreetMap.org

1.5 Purpose of this Site Selection Report

This report deals exclusively with the selection of preferred sites for the placement of the three PSs and links with the previous site selection report prepared for the proposed WWTP entitled “Roundstone Site Selection Report, Revision D, dated 22 March 2019”.

The purpose of this report is to identify options in relation to the proposed PSs for the provision of wastewater infrastructure in support of the overall aim of eliminating untreated wastewater from being discharged to Roundstone Bay.

The assessment sets out the justification for selecting sites to accommodate three new PSs and considers planning policy, environmental constraints, technical, and economic considerations.

1.6 Site Selection Process

Irish Water’s general approach to site selection includes three stages.

1.6.1 Stage 1 – Project Need and Scope

Stage 1 provides a contextualisation of the project need at a local level. This includes describing existing and proposed wastewater infrastructure and the connectivity requirements. This section sets out the technical scope and critical requirements needed to facilitate the development.

1.6.2 Stage 2: Identification of Site Options

Stage 2 defines the study area for the proposed wastewater infrastructure and provides a detailed analysis of the project history (where relevant) including the planning policy context. Once this context is established, the baseline constraints are identified, i.e. environmental, archaeological, buffer distances, etc. Based on a review of these constraints, Stage 2 then identifies site options for wastewater infrastructure.

1.6.3 Stage 3: Site Assessment

The site options identified in Stage 2 are then progressed to Stage 3 where each option is subjected to a detailed qualitative site assessment and scoring assessment. It should be noted that this assessment provides a more direct qualitative assessment of the options than the broader study area ‘baseline’ which is established in the previous section. These assessments are based on planning, environmental, technical, and financial considerations. The various considerations are outlined in the following sub-sections:

1.6.3.1 Planning Considerations

- Zoning, and
- Planning Policy and Objectives

1.6.3.2 Environmental Considerations

- Landscape and Visual,
- Archaeology, Architectural and Cultural Heritage;
- Odour, Noise & Vibration,
- Land Use;
- Ecology;
- Flooding.

1.6.3.3 Pumping Station Technical Considerations

- PSs should generally be situated at a low point in the overall drainage area so that they are gravity-fed;
- The integrity of the wastewater collection network upstream and the land; boundary/catchment to be served (for meeting existing and future demand);
- The potential to reuse existing assets such as outfalls, existing structures, overflows, etc.;
- The site space available to accommodate new or upgraded works;
- Proximity to residential/ commercial premises;
- The level of access required to the pumping station site to accommodate construction, and also operation and maintenance activities thereafter;
- Provision for drainage away from the pumping station to prevent flooding and consideration must be given to overflow of the wet well in the event of failure of all plant or the power supply;
- Whether the PS has an associated storm water overflow, emergency overflow or a pumped overflow; and
- Hydraulic design should be given paramount consideration for hydraulic efficiency.

1.6.3.4 Water and Wastewater Network Technical Considerations

- Availability of existing or proposed service or utility corridors;
- Land availability required to accommodate new or upgraded works;
- Public spaces (e.g. roads, foot/cycle paths, parks) are the preferred location for pipelines by Irish Water for ease of access for maintenance during the operational phase;
- Hydraulic design shall be given paramount consideration for hydraulic efficiency; and
- Level of access required to accommodate construction, and also operation and maintenance activities thereafter.

1.6.3.5 Financial Considerations

- Construction/ capital costs;
- Operational costs.

2 Stage 1: Project Need and Scope

2.1 Proposed Infrastructure

Section 1.4 of this report provides an overview of the Project Need.

The current population equivalent (PE) served by the existing sewer networks has been assessed based on the summer loading, and the projected 30-year design horizon PE was determined to be 1,000. This informed the required capacity for the proposed upgrade to the existing wastewater infrastructure.

A key aim of the project is to tie in and integrate the three existing sewer networks into one system and to construct a new WWTP to serve the integrated system. This integrated solution is constrained by the topography of Roundstone, which has historically dictated the locations of drainage runs and sea outfalls at low-points along the foreshore. The integrated solution therefore requires the existing outfall sewers to be intercepted and redirected towards the proposed WWTP through the provision of three sewage PSs. Of the new PSs, two will act as intermediate stations to connect the Network No.2 and Network No.3 outfalls to the main gravity network, which gravitates in a northerly direction along High Street towards the Network No. 1 outfall. The third PS, proposed at this outfall due to the prevailing topography, will act as a terminal PS to connect the integrated network to the proposed new WWTP site.

The existing Network No. 1 outfall at Seal Rock will be maintained as the treated effluent discharge point from the new WWTP. The other two bypassed outfalls (Networks No. 2 and 3) will be maintained as emergency overflows for the associated new PSs.

2.2 Technical Scope - Pumping Stations and Rising Mains

2.2.1 Terminal Pumping Station at Network 1 Outfall

Initial calculations have indicated that a new PS with an incoming flow rate of approximately 7.4 l/s will be required to accommodate all flows arriving at the existing outfall at Network No.1, which are to be forwarded to the new WWTP.

The proposed PS will be required to have a 2 hour emergency storage capacity for the 7.4 l/s flow rate. This leads to a required land take for the PS which is estimated at 153m².

A proposed rising main will connect this PS to the proposed WWTP at Roundstone, the preferred site for which has been identified in the WWTP Site Selection Report referenced under Section 1.5.

2.2.2 PS No.2 at Network 2 Outfall

Initial calculations have indicated that a new PS with an incoming flow rate of approximately 0.28 l/s will be required to transfer flows from the existing outfall at Network 2 to the main network, i.e. Network No.1.

The proposed PS will be required to have a 2 hour emergency storage capacity for the 0.28 l/s flow rate. This leads to a required land take for the PS which is estimated at 20m².

A proposed rising main will connect the Network No.2 PS to the Network No.1 gravity main.

2.2.3 PS No.3 at Network 3 Outfall

Initial calculations have indicated that a new PS with an incoming flow rate of approximately 2.1 l/s will be required to transfer flows from the existing outfall at Network 3 to the main network, i.e. Network No.1.

The proposed PS will be required to have a 2 hour emergency storage capacity for the 2.1 l/s flow rate. This leads to a required land take for the PS which is estimated at 81m².

A proposed rising main will connect the Network No.3 PS to the Network No.1 gravity main.

3 Stage 2: Identification of Site Options

3.1 Introduction

This section of the report defines the study area for the proposed wastewater infrastructure and provides a detailed analysis of the planning policy context. Once this context is established, Stage 2 identifies the baseline constraints such as environmental, archaeological, buffer distances etc.

3.2 Study Area

The study area can be defined as the land which encompasses the village of Roundstone as described above. However, for completeness, the area outlined in Figure 2 is taken to be the study area, not least in terms of the positioning of the proposed PSs.

3.3 Planning Policy Context

The site is designated within Galway County Council which is the Local Authority for the site.

3.3.1 Galway County Development Plan 2015-2021

Roundstone is identified in the Galway County Development Plan 2015-2021 as a “Small Settlement and the Countryside/Rural Area” in its Settlement Strategy. Such areas are described in the County Development Plan as:

“... considered predominantly rural in nature. They provide an important, albeit limited service to the local community through their existing facilities such as national schools or a post office and it is important to support the growth and development of these small centres to facilitate the needs of local communities.”

These rural areas are divided into two categories:

1. Rural Areas Under Strong Urban Influence: These areas exhibit characteristics such as proximity to the immediate environs or close commuting catchment of Galway City, rising population, evidence of considerable planning pressure for development of housing due to proximity to such urban areas or to major transport corridors with ready access to the urban area, and pressures on infrastructure such as the local road network.
2. Structurally Weaker Rural Areas: These areas exhibit characteristics such as persistent and significant population decline as well as a weaker economic structure based on indices of income, employment and economic growth.

The Core Strategy set out in the Galway County Development Plan 2015-2021 does not allocate specific growth targets for Roundstone during the lifetime of the Development Plan.

The planning **Vision for County Galway**, as set out in the CDP, aims to:

“Enhance the quality of life of the people of Galway and maintain the County as a uniquely attractive place in which to live, work, invest and visit, harnessing the potential of the County’s competitive advantages in a sustainable and environmentally sensitive manner.”

Chapter 2 of the CDP outlines the “Development Strategy Objectives” and notes the following:

- Objective DS 12 - Service Led Development: *“Development shall only be permitted where there is satisfactory water and wastewater provision to service same...”*

In relation to “Economic Development and Tourism Policies and Objectives” the CDP notes the following:

- Objective EDT 14 - Tourism Infrastructure and Services: *“Provide where feasible, and support the provision of tourism infrastructure and services including greenway amenity and water based tourism infrastructure throughout the County in appropriate locations”.*

The CDP also establishes a number of Strategic Aims for realising the vision for County Galway. These include:

- Strategic Aim 9 - Infrastructural Projects: *“Facilitate the development of infrastructural projects, which will underpin sustainable development throughout the County and region during the plan period”.*

In relation to “Water, Wastewater, Waste Management & Extractive Industry” the CDP notes that the sustainable growth of County Galway is dependent on the satisfactory provision of services infrastructure and utilities; specifically, to protect, preserve and conserve the County's water resources whilst facilitating the provision of necessary water and waste water infrastructure. The CDP outlines a wide range of water policies/objectives designed to address these opportunities and challenges. The key policies/objectives which are considered relevant to the proposed wastewater PSs are identified below:

- Policy WS 1 - Irish Water: Galway County Council will work in close co-operation with Irish Water in its new role as the lead authority for water services.
- Policy WS2 - Irish Water and Rural Towns and Villages: Galway County Council will work with Irish Water to provide appropriate water and waste water facilities in rural towns and villages;
- Policy WS 5 - Water Quality: Promote public awareness of water quality issues and the measures required to protect all waters including all surface water and groundwater bodies.
- Policy WW 1 - Collaborative Provision of Wastewater Collection and Treatment Systems: Co-operate with Irish Water in the delivery of the Proposed Capital Investment Plan 2014-2016 (or updated plan) and to increase capacity to service settlements, to jointly investigate proposals for future upgrades of treatment plants; and participate in the provision of a long-term solution for waste water treatment in the West Region;
- Objective WW1 - EU Policies and Directives: Ensure that all waste water generated is collected, treated and discharged after treatment in a safe and sustainable manner, having regard to the standards and requirements set out in EU and national legislation and guidance and subject to compliance with the provisions and objectives of the EU Water Framework Directive, relevant River Basin Management Plans, Urban Waste Water Directive and the EU Habitats Directive;
- Objective WW 2 - Provision of Wastewater Collection and Treatment Systems: Support, in conjunction with Irish Water, during the lifetime of the plan the provision, extension and upgrading of waste water collection and treatment systems in all towns and villages of the County to serve existing and planned future populations, including Clarinbridge, Corofin and Lackagh;
- Objective WW6 - Adherence to Environmental Standards: Promote the provision of safe and secure waste water infrastructure to ensure that the public is protected and that permitted

development, is within the environmental carrying capacity and does not negatively impact on habitat quality or species diversity.

The CDP demonstrates a clear strategic aim in its policies and objectives to facilitate sustainable development and growth of County Galway through the provision of wastewater infrastructure whilst ensuring compliance with the provisions and objectives of the EU Urban Waste Water Directive.

There is a clear need to provide wastewater treatment in Roundstone and there is general planning policy support for such development in the Galway County Development Plan 2015-2021. Neither a specific treatment process nor potential sites have been identified in Galway's planning policy documentation.

3.3.2 Study Area Constraints

An assessment of potential areas to locate the proposed foul PSs was undertaken by firstly identifying areas which are removed from sensitive receptors. Due to the layout of the existing sewer network within Roundstone this assessment proved challenging due to the proximity of sensitive receptors in relation to the sewer network.

The Irish Water "Code of Practice for Wastewater Infrastructure" states that a 'buffer' distance shall be maintained between PSs and property boundaries. The specified 'buffer' distance is related to the size of the PS and is required to minimise any risk of odour, noise, or vibration nuisances. These recommended buffer distances were considered in the first instance as a critical constraint in terms of site selection and is addressed further under Section 3.3.7.

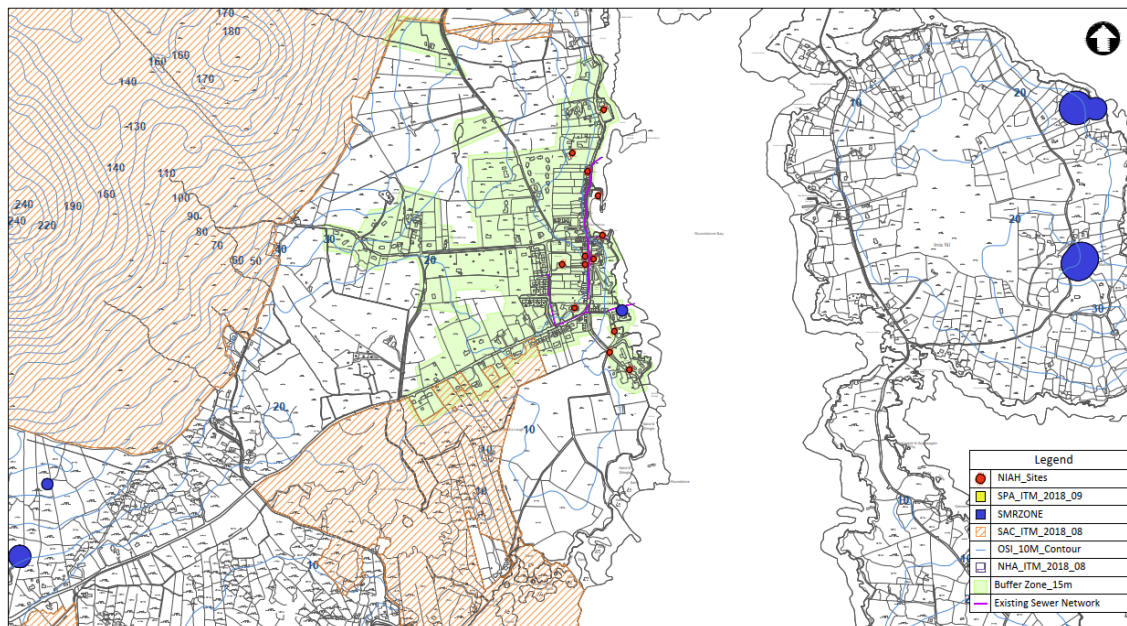
The potential areas were further refined by identifying and mapping the following constraints:

- Designated European Sites i.e. SACs, SPAs etc.
- Sites of archaeological significance i.e. National Monuments Service, National Inventory of Architectural Heritage, Protected Structures etc.
- Proximity to existing sewer network and outfall locations
- Existing topography and contours, which requires consideration in terms of the constructability of the Terminal PS and rising main to the future WWTP site, avoiding excessive pumping heads and associated lifetime operational costs.
- Technical considerations

Therefore, sites which are located outside of any designated European sites, which meet the buffer distances referred to in Table 1, which do not contain sites of archaeological significance, which are in proximity to the existing sewer network and outfall locations are considered as potentially suitable for the proposed PSs.

Figure 3 maps the application of the above criteria, and identifies the constraints, in the identification of the proposed sites, which will be advanced for further assessment. A full-size copy of the constraints map is included in Appendix A.

Figure 3: Constraints Map (Sketch No. 386624-MMD-XX-03-SK-C-0033)



Source: Mott MacDonald Ltd

3.3.3 Land Use

In terms of land use, there are a mix of uses within the village, however much of the study area is in residential use. There are some commercial uses linked to the location of the village on the coast and a number of commercial uses linked to the tourism industry within the village, as well as community uses such as the church and community centre.

3.3.4 Ecology

Sites that are outside and removed from any identified European and Nationally protected Natura 2000 sites (SACs and SPAs) are preferred locations. The location of the European Sites in relation to Roundstone is shown in Figure 3.

3.3.5 Archaeology and Heritage

There are a number of registered structures within the study area. From a planning policy context, the County Development Plan (CDP) includes a number of key policies and objectives in relation to archaeology and cultural heritage, however in general terms the following policies are applicable:

- Policy GH 1 – Conserve, protect and enhance the special character of the County as defined by its natural heritage and biodiversity, its built environment, landscape and cultural, social and sporting heritage.
- Policy GH 2 – Ensure that heritage protection is an integral part of coherent policies on economic and social development and of urban and rural planning.
- Policy GH 3 – Implement the legislative provisions of the Planning and Development Act, 2000 (as amended), which offers protection to the architectural, archaeological and natural heritage.
- Policy GH 4 – Engage with all relevant stakeholders (and in particular local communities) in matters relating to the protection of natural, built and cultural heritage.

In terms of Archaeology the following policies are relevant:

- Policy ARC 1 – Legislative Context: It is the policy of Galway County Council to support and promote the conservation and appropriate management and enhancement of the County's archaeological heritage within the plan area. Galway County Council will ensure the implementation of the legislative, statutory and policy provisions relevant to the conservation of the archaeological heritage.
- Policy ARC 2 – Archaeological Sites: Seek to promote awareness of and access to archaeological sites in the County where appropriate.
- Policy ARC 3 – Consultation: Consult with the National Monuments Service of the Department of Arts, Heritage and the Gaeltacht in relation to proposed developments adjoining archaeological sites.
- Policy ARC 4 – Management of Archaeological Sites and Monuments: Support the preservation, conservation and management of archaeological sites and monuments, together with the settings of these monuments.
- Policy ARC 5 – Archaeological Heritage: Ensure the protection and sympathetic enhancement of archaeological heritage in the plan area, in particular by implementing the relevant provisions of the Planning and Development Act, 2000 (as amended), The National Monuments Act, 1930 (as amended), and The National Policy on Town Defences, 2008 (Department of the Environment, Heritage and Local Government).
- Policy ARC 6 – Archaeological Landscapes: To facilitate where possible the identification of important archaeological landscapes in the County.

The CDP also includes several Architectural Heritage policies which are relevant within the context of PS site selection. Some of these are extracted below:

- Objective AH 1 – Legislative Context: Ensure the protection of the architectural heritage of County Galway which is a unique and special resource, in particular by implementing the legislative provisions of the Planning and Development Act, 2000 (as amended) in relation to architectural heritage and the policy guidance contained in the Architectural Heritage Protection Guidelines 2011 (and any updated/superseding document).
- Objective AH 2 – Protected Structures: Ensure the protection and sympathetic enhancement of structures included and proposed for inclusion in the Record of Protected Structures (RPS) that are of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest, together with the integrity of their character and setting.

3.3.6 Landscape

The existing landscape of the study area generally has a low density profile. A maximum of two storeys in height is the predominant scale within the village, apart from the religious buildings, notably, St Marys Church and Our Lady Star of the Sea which are situated to the west and south west of the High Street respectively.

More widely the character of the surrounding landscape is dominated by the coastal and rural setting of the village.

The CDP includes a general policy to preserve existing Landscape Character, which according to Policy LCM 1 advises that the Local Authority will:

- Preserve and enhance the character of the landscape where, and to the extent that, in the opinion of the Planning Authority, the proper planning and sustainable development of the

area requires it, including the preservation and enhancement, where possible of views and prospects and the amenities of places and features of natural beauty or interest.

3.3.7 Odour, Noise and Vibration

The buffer distances referenced in the Irish Water “Code of Practice for Wastewater Infrastructure” (as referred to in Section 3.3.2) in relation to potential odour, noise, and vibration nuisance are outlined in Table 1.

Table 1: Required ‘Buffer’ Distances for Foul PSs

Classification	Peak Design Flow	Distance to Property Boundary
Type 1: Small	< 0.25 l/s	5m
Type 2: Mid-Range	0.25 l/s to 1 l/s	10m
Type 3: Medium	> 1 l/s	15m

Source: Irish Water Code of Practice for Wastewater Infrastructure

Initial calculations have categorised the proposed network PSs as follows:

- Terminal PS – Type 3
- Network 2: Pumping Station – Type 2
- Network 1: Pumping Station – Type 3

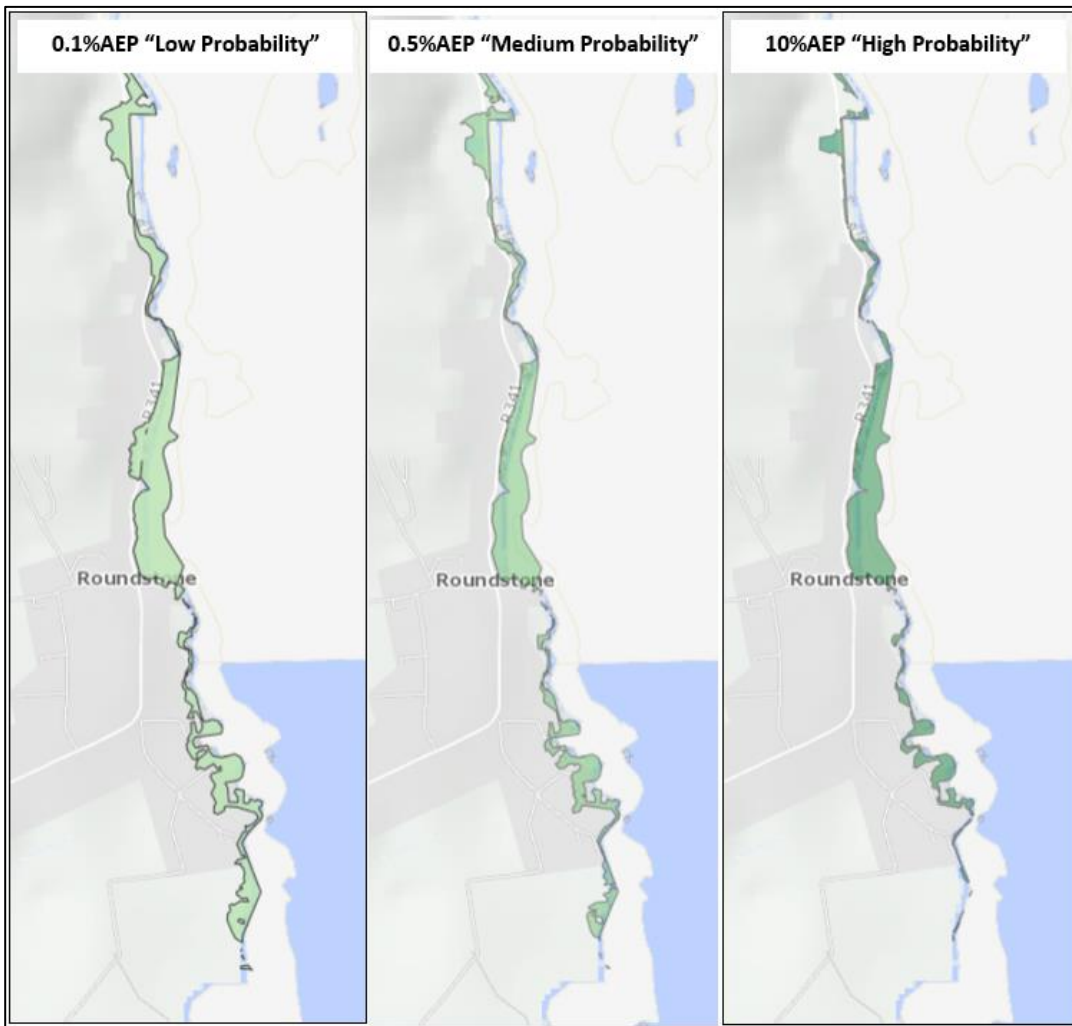
3.3.8 Water and Flooding

The study area was reviewed against the OPW Flood Maps and Flood Plans (available at: www.floodinfo.ie). These maps outline the flood risk for a range of flood event scenarios and include for climate change. Roundstone is located adjacent to Roundstone Bay and according to the OPW Flood Maps the area is susceptible to tidal flooding. A Flood Risk Management Plan (FRMP) has been developed by the OPW for the Galway Bay North River Basin. Below are some notable details outlined within the FRMP.

- Source(s) of flood risk – Tidal
- There are no surface watercourses within the study area
- No surface watercourses drain through or into the study area
- There have been historic flood events within the study area due to high tides

Figure 4 below shows the coastal flood extents for “high”, “medium”, and “low” probability flood events in Roundstone. In accordance with Section 5.5 of the Irish Water Wastewater Code of Practice, sites that are susceptible to flooding at a frequency of more than 1:30 year recurrence are not considered, with the finished slab level of the pumping stations required to be above the 1:100-year flow level (0.1% AEP). Sites where these criteria can be met are preferred locations for the proposed pumping stations.

Figure 4: Flood Maps for Roundstone



Source: FloodMaps. Available at: www.floodinfo.ie

3.4 Suitable Sites for the Proposed Pumping Stations

3.4.1 Terminal PS

Following the above constraints-based identification criteria, a total of three potential sites were identified for the Terminal PS and are included within Stage 3 for further assessment. These sites are identified as follows:

- Site A: Site on reclaimed land on the foreshore at the location of the existing outfall from Network No.1;
- Site B: Site inside the boundary wall of the rectory located to the west of the existing outfall from Network No.1;
- Site C: Site located on land beside the existing pier.

3.4.2 Pumping Station No. 2

Network No. 2 is significantly smaller than the other networks and initial calculations suggest that the associated PS No.2 would only contribute approx. 3.8% of the total flow to the Terminal PS. Due to the topography of the study area and the location of the existing outfalls and networks, only one site is considered feasible for the location of PS No.2. This is located at the end of the pier at the existing outfall from Network 2. As this is the only viable location, PS No.2 is not considered within Stage 3.

3.4.3 Pumping Station No. 3

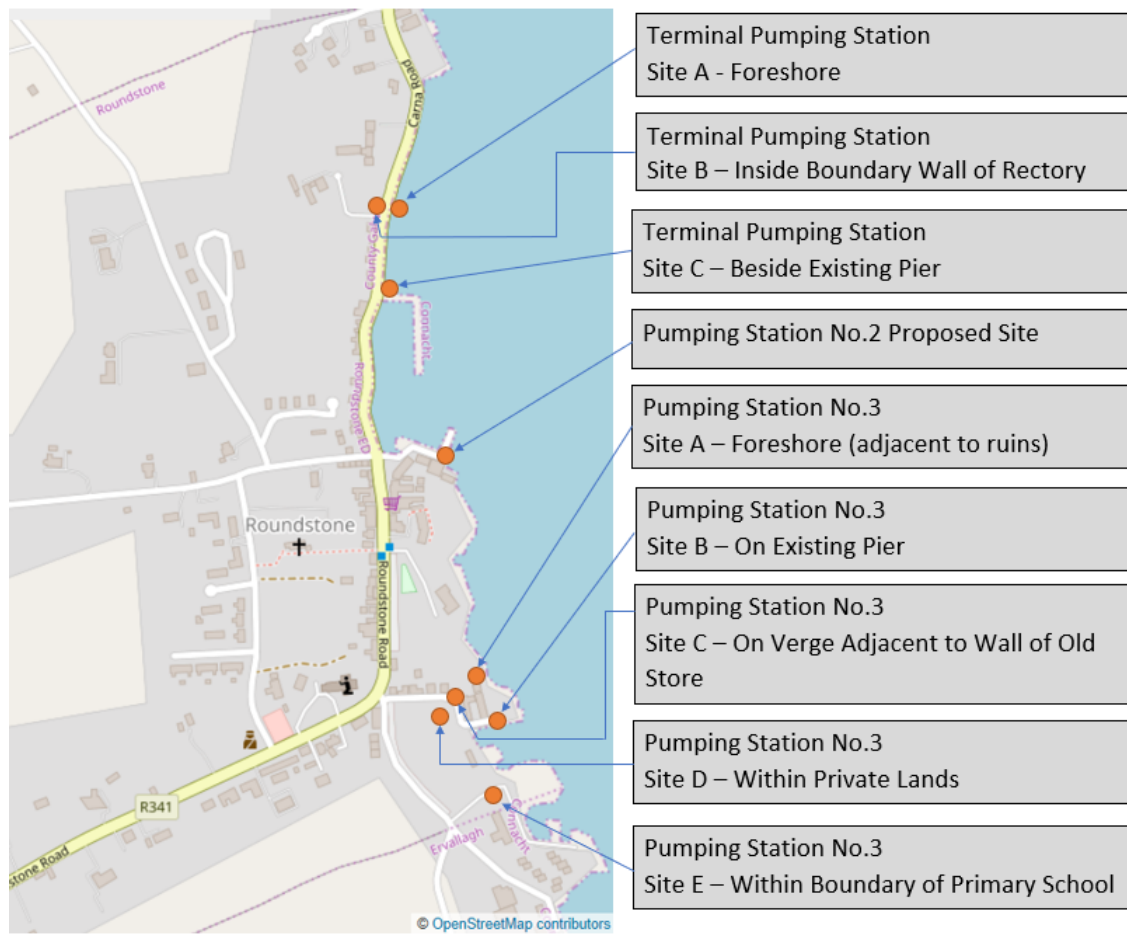
A total of five potential sites were identified for PS No.3 following the constraints-based assessment and are included within Stage 3 for further assessment. The sites are identified as follows:

- Site A: Site located on the foreshore adjacent to the existing ruins;
- Site B: Site located on the existing pier adjacent to the old store;
- Site C: Site located within verge adjacent to the wall of the old store;
- Site D: Site within private lands to the west of the old store;
- Site E: Site within the boundary of primary school.

Figure 5 provides an overview of the potential sites assessed for the various PS.

Photographs of the potential sites for the PSs are included in Appendix B.

Figure 5: Potential Locations for Proposed Pumping Stations



Source: OpenStreetMap.org

4 Stage 3: Site Assessment

4.1 Site Assessment

The site and route assessment methodology involved assessing potential sites and routes under multiple planning, environmental, technical and financial criteria.

A scoring matrix was developed for the purposes of assessing the suitability of each potential site. The matrix is based on the factors which have been identified as having the greatest relevance to the selection of the most appropriate sites.

Each factor is given a score of between 1 and 5, with 1 representing the most favourable option or an option with no adverse impact. If the factor is considered as having some impact, then a score of 2 to 4 is assigned. If the factor is considered to be a major difficulty in progressing site development, then the worst score of 5 is assigned.

4.2 Description of Scoring Criteria

4.2.1 Planning Assessment

The Galway County Development Plan does not have any land zonings (with the exception of those for the purpose of the *County Galway Wind Energy Strategy*). Settlements with a population of more than 1,500 persons are required to have a Local Area Plan in place. However, as Roundstone has a population of less than 1,500, there is no specific Local Area Plan in place.

Areas such as these are sometimes referred to as "white lands" or un-zoned lands as there are no specific land use zoning objectives for these rural areas. Therefore, planning assessment has not been scored as part of this report.

4.2.2 Environmental Assessment Criteria

4.2.2.1 Landscape and Visual

Roundstone is a coastal village located in the heart of Connemara. Landscape protection is an important criteria and policy objective of Galway County Council.

The landscape and visual impact assessment for each site was informed by an evaluation of the visual impact on surrounding land uses. Views from the surrounding areas into the pumping station sites were assessed using aerial imagery, Google Streetview, and photos from site visits. The visual impact was evaluated upon the level of existing screening, screening which may be retained following construction of the pumping station and setback distances from public roads. The following scoring system will be applied:

- Sites with a high level of existing screening will receive a score of 1,
- Sites with a moderate level of existing screening will receive a score of 3,
- Sites with a low level of existing screening will receive a score of 5

4.2.2.2 Archaeology, Architectural, and Cultural Heritage

The discovery of archaeological finds can add significant cost implications and time delays to a Project. Numerous NIAH sites, National Monuments sites and sites listed on the Record of

Protected Structures have been identified adjacent to the routes of proposed pipelines and proximity to these known features increases the risk of encountering unknown features.

This assessment was informed by a review of National Monuments Service map viewer (<http://webgis.archaeology.ie/historicenvironment>). A review of the Record of Monuments and Places (RMP), National Inventory of Architectural Heritage listed structures and Galway County Council's Record of Protected Structures (RPS). The evaluation of each site was based upon its proximity to archaeological or cultural heritage features, and the following scoring system will be applied to each site:

- Sites with no obvious potential for archaeological finds and not adjacent to any listed feature or structure will receive a score of 1.
- Sites within 50 - 100m of a listed feature or structure will receive a score of 3.
- Sites or required pipelines situated immediately adjacent to, or within the boundary of, a listed feature or structure will receive a score of 5.

4.2.2.3 Odour, Noise, and Vibration

Site options for the pumping stations were assessed based on the distance from the nearest residential dwelling.

The Irish Water Code of Practice for Wastewater Infrastructure states that Type 2 and Type 3 pumping stations should be located no closer than 10m, and 15m respectively from a property boundary. Therefore, the following scoring will be applied to each site:

- Sites which are greater than 15m from the nearest existing (or planned) residential development will receive a score of 1,
- Sites which are less than 15m from the nearest existing (or planned) residential development will receive a score of 5.

4.2.2.4 Land Use

This assessment considers the land use for the construction, maintenance and operation of the proposed development.

- Sites located outside of private lands and which have no specific use will receive a score of 1,
- Sites located outside of private lands and which have a specific use will receive a score of 3,
- Sites within private lands and which have no specific land use will receive a score of 4,
- Sites within private lands and which have a specific land use will receive a score of 5.

4.2.2.5 Ecology

This assessment was informed by Environmental Protection Agency maps (<https://gis.epa.ie/EPAMaps/AAGeoTool>), National Biodiversity Data Centre maps (<https://maps.biodiversityireland.ie/Map>), and available aerial imagery.

The evaluation of each site is based upon its ecological value, potential for protected species to be present and predicted habitat loss. Higher levels of biodiversity loss are less favourable options.

- Sites with no habitat loss will receive a score of 1,
- Sites with a moderate level of habitat loss will receive a score of 3,
- Sites with a high level of habitat loss will receive a score of 5.

4.2.2.6 Flooding

Flood risk was characterised having regard to coastal flooding in the Catchment Flood Risk Assessment and Management (CFRAM) mapping. The following scoring will be applied to each site:

- Sites located outside of the flood extents will receive a score of 1,
- Sites located within the 0.5% AEP extents will receive a score of 3,
- Sites located within the 10% AEP extents will receive a score of 5.

4.2.3 Technical Assessment Criteria

4.2.3.1 Availability of Electrical Supply

This assessment reviews if the sites are serviced by existing services or utilities. As the proposed sites are generally located within the village centre, the availability of electricity is not considered to be a significant factor when determining the preferred sites. Therefore, sites will be assessed as either having existing services or not, with no intermediate scoring. The following scoring system will be used:

- Sites which have an existing three phase power supply less than 10m from the proposed development will receive a score of 1.
- Sites which do not currently have a power supply within 10m of the proposed development will receive a score of 5.

4.2.3.2 Existing Assets and Connections

This assessment considers the potential to reuse existing assets and maintain existing connections. This can be achieved by locating the proposed PSs at existing low points. Sites that have the potential to maximise the use of existing assets are considered to be more favourable.

- Sites which will allow for inter-connection with existing outfalls under gravity will receive a score of 1,
- Sites which will require a new overflow outfall pipe from the pumping station will receive a score of 5.

4.2.3.3 Traffic and Road Disruption

This assessment reviews the extent of traffic and road disruption associated with construction at the proposed sites. Sites which would result in undue disruption to traffic in general, but in particular to school and/or access to the IDA lands, are assessed less favourably.

- Sites which will not cause undue traffic or road disruptions during construction will receive a score of 1,
- Sites which will cause traffic or road disruptions during construction will receive a score of 5.

4.2.3.4 Constructability

This assessment reviews the constructability of the proposed developments at the various sites. Sites were scored less favourably if significant temporary works or ancillary works are required to facilitate construction of the proposed development. Such works include cofferdams, sheet piling, significant amounts of imported fill, tree felling, support/ removal of adjacent structures etc.

- Sites which require minimal temporary works or ancillary works will receive a score of 1,

- Sites which require significant temporary works or ancillary works to facilitate construction will receive a score of 5.

4.2.3.5 Land and Space Availability

This assessment considers the land and space availability at each of the proposed sites. The following scoring system will be applied:

- Sites which are deemed to have available space for construction of the proposed pumping station will receive a score of 1,
- Sites which are deemed to require additional works to create the necessary land/ space for the construction of the proposed development will receive a score of 3,
- Sites which are deemed to require significant additional works to create the necessary land/ space for the construction of the proposed development will receive a score of 5.

4.2.3.6 Access to the Proposed Sites

This assessment considers the level of access required to accommodate construction, operation and maintenance activities. The following scoring system will be applied:

- Sites with good access from a public road receive a score of 1,
- Sites with restricted access receive a score of 3,
- Sites which have no direct access, or which require consent to access will receive a score of 5.

4.2.4 Financial Assessment Criteria

Irish Water is regulated by the CRU and thus is obliged to be efficient with both capital and operational costs.

4.2.4.1 Construction Capital Cost

Preliminary cost estimates have been undertaken for the potential sites which are based on costs from the Irish Water Project Costing Tool. Non-contract costs such as those associated with attaining licences (e.g. foreshore) are also included in the cost estimates, along with the associated costs for a new outfall where required. The following scoring system was applied:

- Sites with the lowest combined capital costs will receive a score of 1,
- Sites with a cost of between 5 and 10% greater than the site with the lowest combined capital costs will receive a score of 2,
- Sites with a cost of between 11 and 15% greater than the site with the lowest combined capital costs will receive a score of 3,
- Sites with a cost of between 16 and 20% greater than the site with the lowest combined capital costs will receive a score of 4,
- Sites with a cost of more than 20% greater than the site with the lowest combined capital costs will receive a score of 5.

4.2.4.2 Operational Costs

Preliminary cost estimates have been undertaken for the potential sites for an operational period over 30 years. The following scoring system was applied:

- Sites with the lowest operational costs receive a score of 1.

- Sites with a cost of less than 5% greater than the site with the lowest operational costs receive a score of 2,
- Sites with a cost of between 5 and 10% greater than the site with the lowest operational costs receive a score of 3,
- Sites with a cost of between 10 and 20% greater than the site with the lowest operational costs receive a score of 4,
- Sites with a cost of more than 20% greater than the site with the lowest operational costs receive a score of 5.

4.3 Site Scoring

The following sub-sections outline the scoring assessment for each of the proposed site options for the Terminal PS and PS No. 3. Each criterion is assigned a weighting to reflect the relative importance. The weighting is multiplied by the score to provide the weighted score. Overall site ranking is based on the total weighted score, with the lowest score being the most favourable. The following are some relevant comments on each site.

4.3.1 Terminal Pumping Station – Site A

4.3.1.1 Planning and Environmental Considerations

Table 2: Unweighted Planning and Environmental Scores – Site A

	Landscape & Visual	Archaeology, Architectural and Cultural Heritage	Odour, Noise & Vibration	Land Use	Ecology	Flooding
Site A	3	3	1	1	3	3

The proposed site is not considered to contravene the overall objectives of the Galway County Development Plan.

Development at this site will have a visual impact as it is located adjacent to the main road into and out of Roundstone. However, this impact is considered to be moderate as the proposed kiosk would be clad in stone of a similar nature to the existing wall.

The site is removed from known archaeological, architectural, or cultural heritage sites.

The footprint of this site is marginally located within the 15m buffer zone of the nearest dwelling located to the south west. However, no infrastructure would be located within this portion of the site, thus all elements of the proposed development which could contribute to noise, odour, or vibration nuisance would be greater than 15m from the nearest dwelling. The site is located within 15m of the Rectory boundary wall but is over 70m away from the Rectory dwelling.

The proposed site is located within the foreshore and will require the reclamation of land to allow for the development.

The risk of coastal flooding will be mitigated by raising the PS levels to tie in with the coastal road.

4.3.1.2 Technical Considerations

Table 3: Unweighted Technical Scores – Site A

	Availability of Electrical Supply	Assets & Connections	Road Disruption	Constructability	Land & Space	Access
Site A	5	1	5	5	5	3

The nearest existing power supply is approximately 40m away.

This site allows for the re-use of the existing outfall from Network No.1 and allows for connection by gravity.

This site will require works to be undertaken within the public road to facilitate the construction of the required diversion/connecting pipework.

The construction of the pumping station at this site will require significant temporary works in the form of a cofferdam.

The proposed site will consist of reclaimed land from the foreshore, which will require considerable infill works to raise the level of the ground in that area to match the existing road level.

In order to facilitate construction, a section of the existing wall adjacent to the pier will have to be removed in order to allow construction vehicles access to the foreshore. Once the construction is completed the area will be reinstated to it's original condition and the pumping station will be accessed directly off the R341.

4.3.1.3 Financial Considerations

Table 4: Unweighted Financial Scores – Site A

	Construction/ Capital Costs	Operational Costs
Site A	5	1

This site ranked second out of three in relation to construction and capital costs.

Due to the minimal difference in operating costs between each of the proposed sites (approx. €100 per year), each option received a score of 1 in relation to operation costs.

4.3.2 Terminal Pumping Station – Site B

4.3.2.1 Planning and Environmental Considerations

Table 5: Unweighted Planning and Environmental Scores – Site B

	Landscape & Visual	Archaeology, Architectural and Cultural Heritage	Odour, Noise, & Vibration	Land Use	Ecology	Flooding
Site B	1	5	5	5	5	3

The site is screened by the existing rectory boundary wall, therefore reducing the overall potential for visual impacts.

The proposed site is located on private lands within the boundary wall of the existing Rectory and is considered to contravene the Architectural Heritage Objectives of the Galway County Development Plan, as development at this site will impact on the boundary wall of the *Ballagh*

House protected structure (Reg No. 650). Objective AH2 of the Galway County Development Plan states:

“Ensure the protection and sympathetic enhancement of structures included and proposed for inclusion in the Record of Protected Structures (RPS)...”

This site is partially within the 15m buffer from the boundary of the nearest residential dwelling.

The site is located within private lands which is in use as a garden to the Rectory.

Tree felling would be required at this site to facilitate access and construction, thus impacting on the ecology in the area.

The site is situated at approximately the same level as the coastal road which is at risk of coastal flooding.

4.3.2.2 Technical Considerations

Table 6: Unweighted Technical Scores - Site B

	Availability of Electrical Supply	Assets & Connections	Road Disruption	Constructability	Land & Space	Access
Site B	5	1	5	5	3	5

Existing power supply is located approx. 30m to the south of the site.

The site is close to the existing outfall location, therefore allowing reuse of this existing asset.

This site will require works to be undertaken within the public road to facilitate the construction of the required diversion/connecting pipework.

To facilitate construction of the proposed development at this site, a significant section of the Rectory boundary wall would need to be removed. Additionally, the site is accessed via an existing narrow gateway with protected stone piers on either side which would be at risk of damage.

Construction at this site would require a significant amount of ancillary works and temporary works to facilitate construction (i.e. tree felling, demolition and reinstatement of Rectory wall).

As mentioned, this site is within private lands, thus once constructed permission would be required to access the site.

4.3.2.3 Financial Considerations

Table 7: Unweighted Financial Scores – Site B

	Construction/ Capital Costs	Operational Costs
Site B	1	1

This site ranked first out of three in relation to construction and capital costs.

Due to the minimal difference in operating costs between each of the proposed sites (approx. €100per year), each option received a score of 1 in relation to operation costs.

4.3.3 Terminal Pumping Station – Site C

4.3.3.1 Planning and Environmental Considerations

Table 8: Unweighted Planning and Environmental Scores – Site C

	Landscape & Visual	Archaeology, Architectural and Cultural Heritage	Odour, Noise, and Vibration	Land Use	Ecology	Flooding
Site C	3	3	5	5	1	3

This site is located on an existing reclaimed area of land adjacent to the foreshore and the existing pier which is vegetated with grass. The potential visual impact on the views across the bay from the adjacent dwellings from this pumping station is not considered high as the majority of the pumping station will be screened by the adjacent stone boundary walls.

This site is within 100m of the boundary of the Rectory wall.

Contrary to Irish Water requirements there are existing dwellings less than 15m to the west of the proposed site.

The site is located outside the R341 road boundary wall, adjacent to the existing pier. This pier is an amenity area and is used frequently for launching boats.

This site consists of a currently grassed area, however it is considered that there will be no loss of habitat.

This site is within the 0.5% AEP extents for coastal flooding.

4.3.3.2 Technical Considerations

Table 9: Unweighted Technical Scores – Site C

	Availability of Electrical Supply	Assets & Connections	Road Disruption	Constructability	Land & Space	Access
Site C	5	5	5	5	3	3

Existing power supply is located approx. 20m to the south of the site.

Development at this site would require construction of a new length of pipeline to allow for reuse of the existing outfall pipe. The site is located upstream of the existing outfall and service connections from properties towards the low point would not be intercepted.

This site will require works to be undertaken within the public road to facilitate the construction of the required diversion/connecting pipework.

Construction at this site would require significant temporary works.

The site is deemed to require additional works to ensure the required land/ space is available for the proposed development.

Access to the site is considered to be restricted as it would share the same access to the pier and parking.

4.3.3.3 Financial Considerations

Table 10: Unweighted Financial Scores – Site C

	Construction/ Capital Costs	Operational Costs
Site C	5	1

This site ranked third out of three in relation to construction and capital costs.

Due to the minimal difference in operating costs between each of the proposed sites (approx. €100 per year), each option received a score of 1 in relation to operation costs.

4.3.4 Pumping Station No.3 – Site A

4.3.4.1 Planning and Environmental Considerations

Table 11: Unweighted Planning and Environmental Scores – Site A

	Landscape & Visual	Archaeology, Architectural and Cultural Heritage	Odour, Noise, and Vibration	Land Use	Ecology	Flooding
Site A	5	5	1	4	3	5

There is no existing screening at the site and development would have a negative impact on views of Roundstone Bay.

The site is located adjacent to a feature (ruins) which is not listed but may be of archaeological interest.

This site is greater than 15m from the nearest residential dwelling.

The proposed site is located within a vacant site adjacent to the foreshore and is within private lands.

This site is currently well vegetated, and it is considered that there would be moderate level of habitat loss associated with the location of a pumping station at this site.

This site is located within the 10% AEP extents for coastal flooding.

4.3.4.2 Technical Considerations

Table 12: Unweighted Technical Scores – Site A

	Availability of Electrical Supply	Assets & Connections	Road Disruption	Constructability	Land & Space	Access
Site A	5	1	5	5	1	5

There is no existing electrical supply at the site and the nearest power supply is greater than 10m from the site.

Significant temporary works and ancillary works would be required to facilitate construction at this site.

The site is located adjacent to the existing outfall and would allow for the reuse of this asset as an emergency overflow from the pumping station.

This site will require works to be undertaken within the public road to facilitate the construction of the required diversion/connecting pipework.

This site would require considerable temporary works to facilitate the construction of the pumping station at this location, i.e. cofferdam.

There is sufficient available space at this location for the construction of the proposed pumping station.

There is currently no direct access to the site and future access would be restricted as it would be via the community centre car park.

4.3.4.3 Financial Considerations

Table 13: Unweighted Financial Scores – Site A

	Construction/ Capital Costs	Operational Costs
Site A	2	1

This site ranked second out of five in relation to construction and capital costs.

Due to the minimal difference in operating costs between each of the proposed sites (approx. €500 per year), each option received a score of 1 in relation to operation costs.

4.3.5 Pumping Station No.3 – Site B

4.3.5.1 Planning and Environmental Considerations

Table 14: Unweighted Planning and Environmental Scores – Site B

	Landscape & Visual	Archaeology, Architectural and Cultural Heritage	Odour, Noise, & Vibration	Land Use	Ecology	Flooding
Site B	5	5	5	5	1	5

The site is located at the end of an old pier and development at this site would negatively impact on views of Roundstone Bay.

The pier is of local cultural importance and the site is within close proximity of an inscribed stone feature which is due for inclusion in the next revision of the Record of Monuments and Places.

Contrary to the Irish Water requirements, the site is located within 15m of an existing residential dwelling.

The site is within private lands and is used for temporary mooring of small private boats.

The site consists of an old pier and is considered that there will no no/minimal habitat loss.

This site is located within the 10% AEP coastal flood extents.

4.3.5.2 Technical Considerations

Table 15: Unweighted Technical Scores – Site B

	Availability of Electrical Supply	Assets & Connections	Road Disruption	Constructability	Land & Space	Access
Site B	5	5	5	5	1	3

There is no existing power supply at the site, the nearest supply is greater than 10m from the site.

The site is removed from the existing Foul Network No.3 and does not allow for the reuse of the existing outfall pipeline as an overflow from the proposed pumping station.

This site will require works to be undertaken within the public road to facilitate the construction of the required diversion/connecting pipework.

The site would require significant temporary works to facilitate the construction of the proposed pumping station, i.e. stabilisation of the pier.

There is sufficient space available for the construction of the proposed pumping station.

Access to the site is restricted as it is via a narrow road.

4.3.5.3 Financial Considerations

Table 16: Unweighted Financial Scores – Site B

	Construction/ Capital Costs	Operational Costs
Site B	5	1

This site ranked fifth out of five in relation to construction and capital costs.

Due to the minimal difference in operating costs between each of the proposed sites (approx. €500 per year), each option received a score of 1 in relation to operation costs.

4.3.6 Pumping Station No.3 – Site C

4.3.6.1 Planning and Environmental Considerations

Table 17: Unweighted Planning and Environmental Scores – Site C

	Landscape & Visual	Archaeology, Architectural and Cultural Heritage	Odour, Noise & Vibration	Land Use	Ecology	Flooding
Site C	3	3	5	1	1	1

The site is located on a small section of grass verge adjacent to the wall of the Old Store. Due to the built-up environment it is considered that there is a moderate level of existing screening.

The site is greater than 50m from the nearest listed feature or structure.

Contrary to Irish Water requirements, the site is located within 15m of an existing residential dwelling.

There is currently no specific use of the proposed site.

It is not considered that the proposed construction will result in habitat loss.

The site is located outside of the flood extents.

4.3.6.2 Technical Considerations

Table 18: Unweighted Technical Scores – Site C

	Availability of Electrical Supply	Assets & Connections	Road Disruption	Constructability	Land & Space	Access
Site C	1	1	5	1	3	3

There is an existing power supply located less than 10m from the proposed site.

The site is located near the existing outfall, thus allowing for reuse of this asset.

This site will require works to be undertaken within the public road to facilitate the construction of the required diversion/connecting pipework.

Construction at this site would not require significant temporary works or ancillary works.

There are space constraints at this site as it is a verge located adjacent to an existing roadway.

Access to the site is via a narrow roadway.

4.3.6.3 Financial Considerations

Table 19: Unweighted Financial Scores – Site C

	Construction/ Capital Costs	Operational Costs
Site C	1	1

This site ranked first out of five in relation to construction and capital costs.

Due to the minimal difference in operating costs between each of the proposed sites (approx. €500 per year), each option received a score of 1 in relation to operation costs.

4.3.7 Pumping Station No.3 – Site D

4.3.7.1 Planning and Environmental Considerations

Table 20: Unweighted Planning and Environmental Scores – Site D

	Landscape & Visual	Archaeology, Architectural and Cultural Heritage	Odour, Noise &Vibration	Land Use	Ecology	Flooding
Site D	1	1	1	4	1	1

Due to the topography of the field in which the site is to be located, and the presence of existing vegetation and hedgerows, there is a high level of screening provided.

The site is removed from archaeological sites in the area and there is no obvious potential for archaeological finds.

This site is greater than 15m from the nearest residential dwellings.

The land is within private lands and is a greenfield site.

It is not considered that this site will result in habitat loss.

The site is located outside of the flood extents.

4.3.7.2 Technical Considerations

Table 21: Unweighted Technical Scores – Site D

	Availability of Electrical Supply	Assets & Connections	Road Disruption	Constructability	Land & Space	Access
Site D	1	1	5	1	1	3

There is an existing power supply at the site.

The site is also located near the existing outfall thus allowing for reuse of this asset.

This site will require works to be undertaken within the public road to facilitate the construction of the required diversion/connecting pipework.

Temporary works required for development at this site are considered to be minimal.

The proposed development location is on a greenfield site and there is significant space to facilitate construction of the proposed pumping station.

Access to the site is via a narrow roadway.

4.3.7.3 Financial Considerations

Table 22: Unweighted Financial Scores – Site D

	Construction/ Capital Costs	Operational Costs
Site D	2	1

This site ranked third out of five in relation to construction and capital costs.

Due to the minimal difference in operating costs between each of the proposed sites (approx. €500 per year), each option received a score of 1 in relation to operation costs.

4.3.8 Pumping Station No.3 – Site E

4.3.8.1 Planning and Environmental Considerations

Table 23: Unweighted Planning and Environmental Scores – Site E

	Landscape & Visual	Archaeology, Architectural and Cultural Heritage	Odour, Noise, & Vibration	Land Use	Ecology	Flooding
Site E	5	5	5	5	3	1

It is considered that this location will have a visual impact on the immediate surrounding area as there is no existing screening.

The construction of a new rising main would pass close to a protected structure (Seaview House – Reg. No. 30328018).

This site is within the boundary of the national school, thus is within the 15m buffer zone.

The site is within private lands used for educational purposes.

The site may require the felling of trees and thus is considered to contribute to a moderate level of habitat loss.

This site is located outside of the coastal flood extents.

4.3.8.2 Technical Considerations

Table 24: Unweighted Technical Scores – Site E

	Availability of Electrical Supply	Assets & Connections	Road Disruption	Constructability	Land & Space	Access
Site E	1	5	5	1	1	1

There is an existing electrical supply at the site.

Development at this site would not allow for reuse of the existing outfall pipe would require a significant length of additional connecting sewer.

This site will require works to be undertaken within the public road to facilitate the construction of the required diversion/connecting pipework.

No significant temporary works would be required for construction at this site.

There is sufficient space available to facilitate construction of the proposed pumping station.

There is good access to the site via Monastery Road.

4.3.8.3 Financial Considerations

Table 25: Unweighted Financial Scores – Site E

	Construction/ Capital Costs	Operational Costs
Site E	4	1

This site ranked fourth out of five in relation to construction and capital costs.

Due to the minimal difference in operating costs between each of the proposed sites (approx. €500 per year), each option received a score of 1 in relation to operation costs.

Table 26: Overall Site Scoring

			Terminal Pumping Station			Pumping Station No. 3				
Criterion	Comment	Weighting	Site A	Site B	Site C	Site A	Site B	Site C	Site D	Site E
Planning and Environmental Considerations										
Landscape & Visual	Sites which do not impact protected views, and which have screening, are more suitable.	10	30	10	30	50	50	30	10	50
Archaeology	The less potential for encountering/ disturbing archaeology, the more suitable the site.	10	30	50	30	50	50	30	10	50
Odour, Noise & Vibration	The further the site is removed from residential dwellings the more suitable the site.	20	20	100	100	20	100	100	20	100
Land Use	Sites outside of private ownership with no specific use are more suitable.	5	5	25	25	25	25	5	20	25
Ecology	Sites with lesser habitat loss are more suitable.	10	30	50	10	30	10	10	10	30
Flooding	Sites located outside of the flood extents are more suitable.	15	45	45	45	75	75	15	15	15
Total for Planning and Environmental			160	280	240	250	310	190	85	270
Technical Considerations										
Services	Sites with existing services are more suitable.	10	50	50	50	50	50	10	10	10
Assets & Connections	Sites which allow the reuse of existing assets and connections are more suitable.	15	15	15	75	15	75	15	15	75
Road Disruption	Site which will cause the least road disruption are more suitable.	5	25	25	25	25	25	25	25	25
Constructability	Sites which require the least amount of temporary works and ancillary works are more suitable.	10	50	50	50	50	50	10	10	10
Land & Space	Sites which have most available space are more suitable.	10	50	30	30	10	10	30	10	10
Access	Sites which have access required to accommodate construction, operation and maintenance activities are more suitable.	10	30	50	30	50	30	30	30	10
Total for Technical			220	220	260	200	240	120	100	140
Financial Considerations										
Construction/ Capital Costs		15	75	15	75	30	75	15	30	60
Operational Costs		20	20	20	20	20	20	20	20	20
Total for Financial			95	35	95	50	95	35	50	80
Overall Total			475	535	595	500	645	345	235	490

5 Recommendations

Having completed a review of the existing wastewater networks (network 1, 2, and 3), a constraints and land suitability appraisal of the Roundstone area was carried out to compile a short list of potential sites for the three Foul PS sites.

A range of technical, planning, and environmental screening criteria were applied for each of these sites. The preferred site for each pumping station is outlined below.

5.1 Terminal Pumping Station – Network No.1

Based on the evaluation in Table 26, Site A is considered the preferred site for the following reasons:

- The site is removed from adjacent properties and can achieve the recommended buffer of 15m as outlined in the Irish Water Code of Practice.
- The site allows for gravity flow to the pumping station as it is located at the existing outfall location.
- The site allows for the reuse of existing assets and connections as the final effluent outfall location will remain the same.
- The site is removed from archaeological sites.

5.2 Pumping Station No.2 - Network No.2

Network No. 2 is significantly smaller than the other networks and initial calculations suggest that the associated pumping station (Pumping Station No. 2) would only contribute approx. 3.8% of the total flow to the terminal pumping station. Due to the topography of the study area and the location of the existing outfalls and networks, only one site is considered feasible for the location of Pumping Station No.2. This is located at the end of the pier at the existing outfall from network 2.

Therefore, it is recommended to utilise this site for the proposed pumping station.

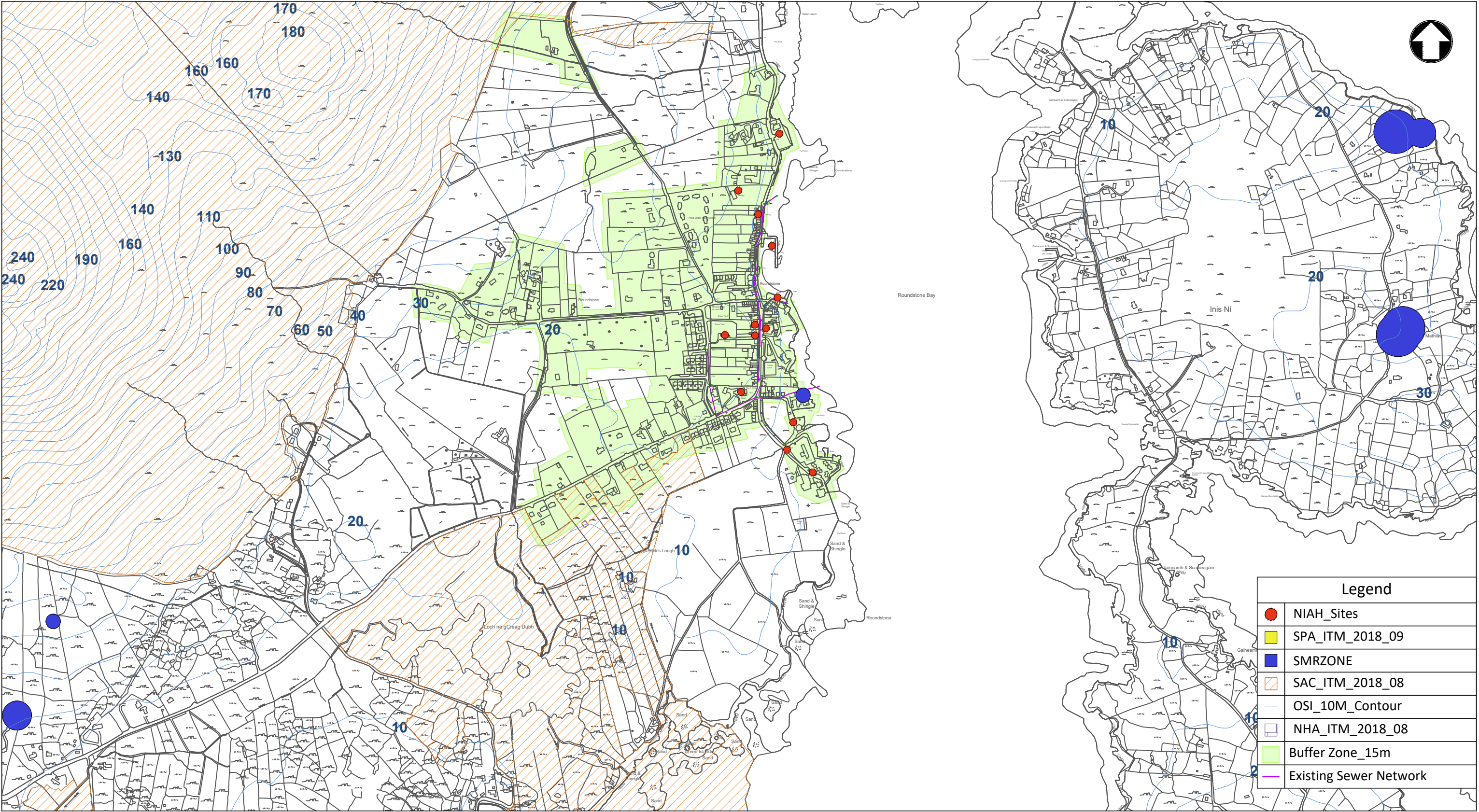
5.3 Pumping Station No.3 – Network No.3

Based on the evaluation in Table 26, Site D is considered the preferred site for the following reasons:

- The site is removed from adjacent properties and can achieve the recommended buffer of 15m as outlined in the Irish Water Code of Practice.
- The site is located outside the flood extents, is near the existing outfall, and would allow a gravity overflow via the existing outfall pipe.
- The site is a greenfield site and provides space allowing ease of construction.
- The site allows for the reuse of the existing outfall pipeline and suggests the shortest required length for the new rising main.
- The site is removed from the archaeological site to the east of the Old Store Building.

It is considered that there are no demonstrably more suitable sites for the proposed PSs than those outlined above, and it is recommended that these are selected for the PS infrastructure at Roundstone.

A. Constraints Map



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									Checked	-	
									Approved	-	
									Scale at A3 1:1,000		
								Drawing Number 386624-MMD-XX-03-SK-C-0033	Security STD	Status SK	Rev P1
		P1	XX/XX/XX	--	--			--	--		

B. Photographs of Potential Pumping Station Sites

Figure B1: Proposed Pumping Station No. 1 Site A – On Foreshore at Location of Existing Outfall from Network No. 1



Source: Mott MacDonald Ireland Ltd

Figure B2: Proposed Pumping Station No. 1 Site B – Inside Boundary Wall of Rectory to the West of Existing Outfall Location from Network No. 1



Source: Mott MacDonald Ireland Ltd

Figure B3: Proposed Pumping Station No 1 Site C – Land Beside Existing Pier



Source: Mott MacDonald Ireland Ltd

Figure B4: Proposed Pumping Station No. 3 Site A – On Foreshore Adjacent to Existing Ruins



Source: Mott MacDonald Ireland Ltd

Figure B5: Proposed Pumping Station No. 3 Site B – On Existing Pier Adjacent to the Old Store Building



Source: Mott MacDonald Ireland Ltd

Figure B6: Proposed Pumping Station No. 3 Site C – On Verge Adjacent to the Wall of the Old Store Building



Source: Mott MacDonald Ireland Ltd

Figure B7: Proposed Pumping Station No. 3 Site D – Within Private Lands to the West of the Old Store Building



Source: Mott MacDonald Ireland Ltd

Figure B8: Proposed Pumping Station No. 3 Site E – Within Boundary of Primary School



Source: Google Earth Street View

