

February 2022



Site Selection Methodology Consultation Report

Sludge Hub Centres – North West Region



Table of Contents

Site Selection Methodology Consultation Report.....	1
Site Selection Methodology Consultation Report.....	1
1. Sludge Hub Centres – Site Selection Methodology	4
1.1 Introduction	4
1.2 Project Background	4
1.3 Sludge Hub Centres	4
1.4 Project Benefits	5
1.5 Sludge Hub Centres – North West Region.....	5
1.6 North West Region - Public Consultation	6
2. Consultation Process.....	10
2.1 Introduction	10
2.2 Consultation Promotion	10
3. Consultation Feedback	16
3.1 Overview	16
3.2 Consultation Question 1	17
3.3 Consultation Question 2	20
3.4 Consultation Question 3.....	24
4. Next stages of the project.....	26
Appendix A – Website Content	28
Appendix B – Newsletter	29
Appendix C – Press Release	33
Appendix D – Advertisement.....	34
Appendix E – Groups and Organisations Contacted Directly	36
Appendix F – Letter to An Taoiseach.....	38
Appendix G – Direct Engagement Letters	39
Appendix H – Glossary of acronyms.....	41



1

Introduction

1. Sludge Hub Centres – Site Selection Methodology

1.1 Introduction

In 2016, Irish Water published the National Wastewater Sludge Management Plan (NWSMP). The Plan sets out a nationwide strategy to deliver a sustainable and standardised approach to managing wastewater sludge now and over the next 25 years. This report identified the need for investment in strategic sludge management infrastructure at some of our wastewater treatment plants which included the development of regional Sludge Hub Centres (SHCs).

Irish Water published the Site Selection Methodology Reports (SSMR) for the Sludge Hubs Centres project in September 2019. Following the publication of these reports, Irish Water held a non-statutory public consultation, inviting feedback from members of the public and stakeholders on the SSMR. This report has been prepared to provide detail on the consultation activities that were carried out and to provide a summary of the feedback that was received following the publication of the SSMR for the North West Region.

1.2 Project Background

Sludge is generated from the treatment of wastewater and once it is produced it needs to be treated so that it is suitable for either disposal or re-use. Since 2014, Irish Water has been building and upgrading wastewater treatment plants nationwide. The volume of sludge is increasing year on year and is predicted to continue to increase as our population continues to grow.

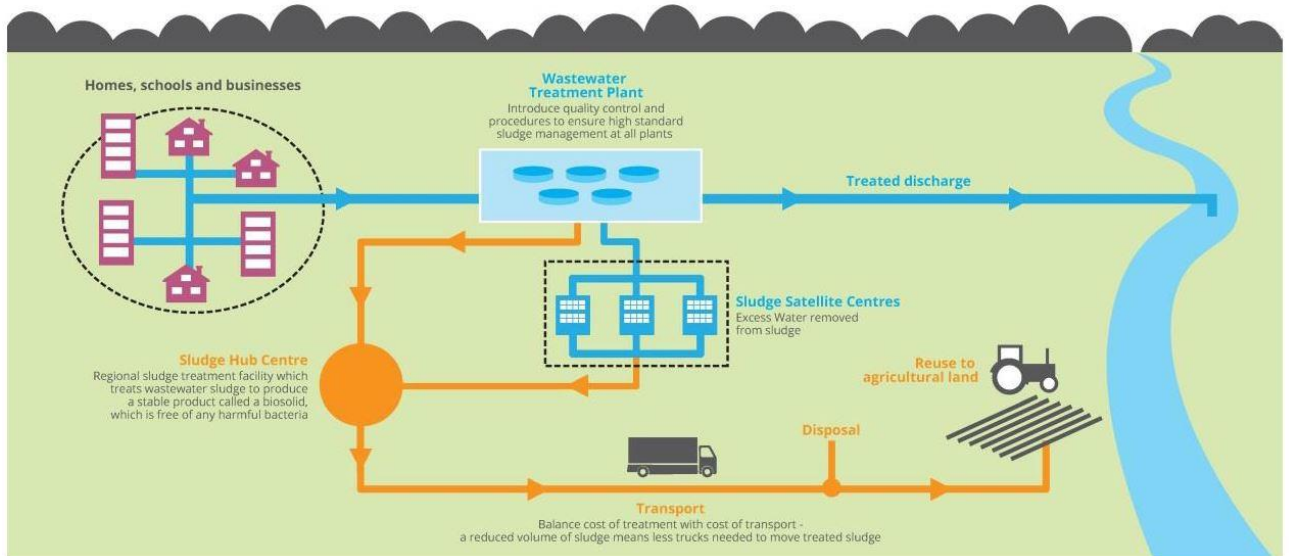
Irish Water has been developing ways of reducing sludge volumes for the most efficient movement of sludge, to achieve the best balance between the cost of transport and the cost of treatment. This means we must invest in strategic sludge management infrastructure at some of our wastewater treatment plants to ensure all regions are served in the most efficient way possible. The NWSMP proposes to develop a Sludge Hub Centre (SHC) and Satellite Dewatering Centre (SDC) network for wastewater sludge treatment, optimised on a regional rather than county basis. The three regions are:

- North West Region
- East Midlands
- South Region

1.3 Sludge Hub Centres

The use of a 'hub' and satellite' approach for the management of wastewater sludge provides for wastewater sludge from outlying rural works to be directed via intermediate treatment plants (Satellite Dewatering Centres), where sludge is dewatered prior to transfer to a centralised treatment facility (Sludge Hub Centre).

Sludge hubs are typically located at large wastewater treatment plants and accept sludge from the surrounding region for treatment. The role of Sludge Hub Centres within the wastewater treatment process is presented in Figure. 1 below.



Error! Reference source not found..1 Sludge Hub Centres function in the wastewater treatment process

1.4 Project Benefits

The provision of new or upgraded sludge treatment facilities with import reception facilities to allow treatment of wastewater sludge on a wider regional basis will improve environmental outcomes, reduce sludge quantities for disposal, improve energy recovery, reduce operating costs and reduce overall energy consumption. Irish Water’s objective is to provide more efficient and effective treatment of sludge.

Existing sludge hubs and a list of potential infrastructure upgrades were identified in the NWSMP. As part of the Sludge Hub Centres project, Irish Water is carrying out an assessment of the capability of existing wastewater treatment plants currently accepting and treating sludge across the country. Through this assessment, the sites most suited to serve as Sludge Hub Centres on a regional basis will be identified. Should a site be selected as a Sludge Hub Centre, the capacity of sludge management facilities at these sites would need to be upgraded and increased.

1.5 Sludge Hub Centres – North West Region

On 24 September 2019, Irish Water published the *Site Selection Methodology Report – North West Region* for the Sludge Hub Centre’s project. The Site Selection Methodology Report (SSMR) set out the proposed methodology for

assessing and comparing the potential SHC sites in the North West Region. This included details on the project need, the sites being considered for assessment, the site selection criteria and the project roadmap.

The North West Region and the location of the sites being assessed in the site selection process is illustrated in **Figure 1.2**. Irish Water has identified the wastewater treatment plants at Sligo and Tuam for assessment.



Figure 1.2 North West Region boundary and sites being assessed as proposed SHCs

1.6 North West Region - Public Consultation

Public consultation is a key element in ensuring stakeholders and members of the public have an opportunity to contribute to the development of this project.

Irish Water published three regional site selection methodology reports for the SHCs in the North West, East Midlands and South regions simultaneously and sought feedback from members of the public and interested stakeholders.

Irish Water invited feedback on the following questions:

1. Is there any additional information on the potential sites identified that we should be aware of?

2. In addition to the criteria set out to select a preferred site, are there any other factors you think should be considered in choosing the preferred site?
3. How would you like Irish Water to communicate with you as the project progresses?

Irish Water sought feedback from the public, businesses, local authorities, elected representatives, public bodies and stakeholder groups on the SSMR. Each submission was reviewed and subsequently incorporated into this consultation report.

The SHC project consultation roadmap, sets out the steps planned to facilitate engagement by the public and relevant stakeholders as the project progresses. It illustrates the expected timelines of the SHC project, and the various stages involved in bringing it from the NWSMP through to planning and construction.

The project roadmap is presented in in **Figure 1.3** below.

In order to generate awareness of and participation in the consultation, a range of communications tools were used to promote the consultation. These communications tools are summarised in Section 2 of this report.

Irish Water commenced a period of non-statutory public consultation to run for four weeks from 24 September 2019 until 22 October 2019. The consultation period was extended until 5 November 2019, due to a technical issue with the project email address being identified at the start of October.

Sludge Hub Centres (SHC) Consultation Roadmap

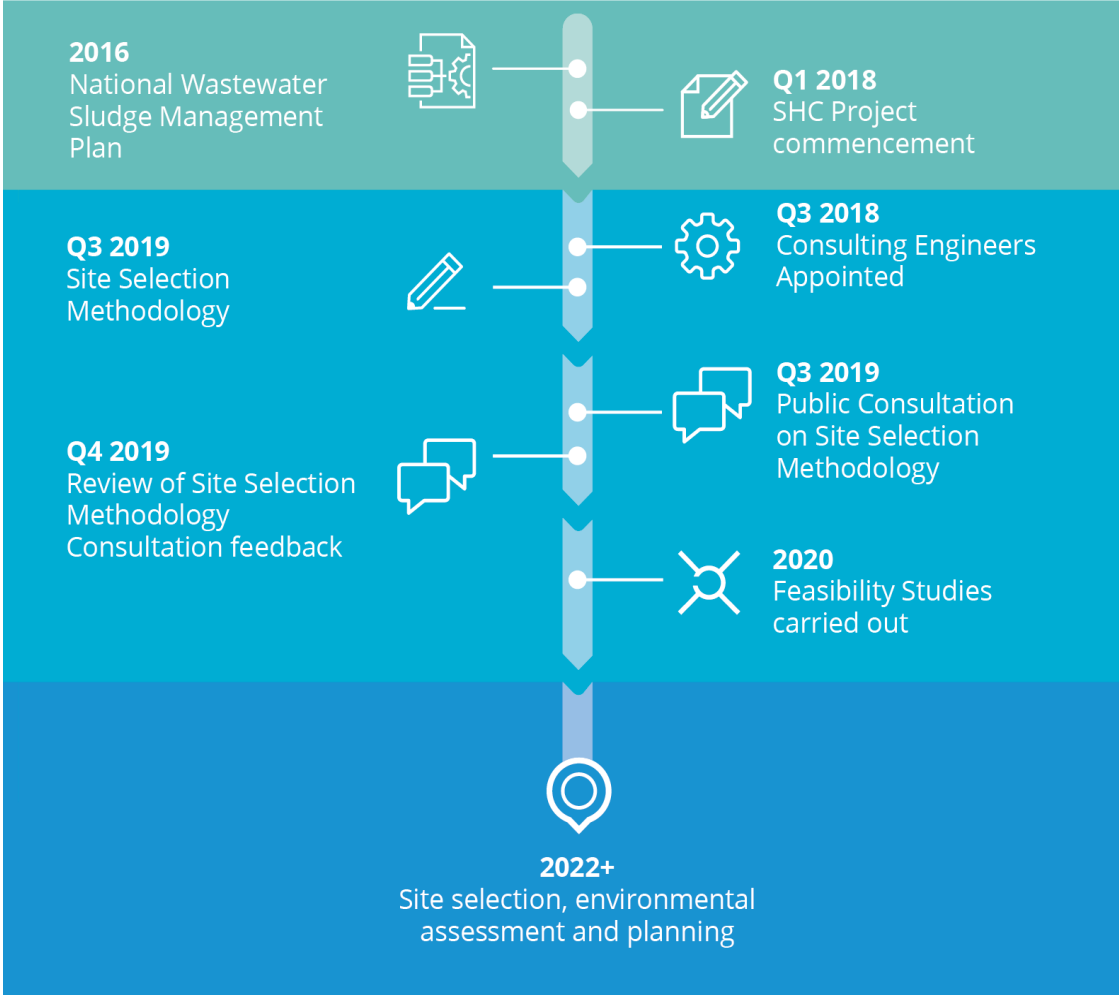



Figure 1.3 Project Roadmap



2



Consultation Process

2. Consultation Process

2.1 Introduction

A variety of communications methods were used throughout and prior to the consultation period to promote and invite stakeholders to participate in the non-statutory consultation for the North West Region. Stakeholders that were targeted included the public, elected representatives, statutory bodies, and interested bodies / groups.

Public participation is a valuable asset in the development of any infrastructure project and our aim was to promote and encourage participation in the consultation process and welcome feedback on the SHC Site Selection Methodology.

The following communication tools were used:

- The SHCs dedicated project webpage on the Irish Water website contained details relevant to the North West Region;
- The consultation Site Selection Methodology Report and newsletters which were put on public display at local authority planning counters and libraries in the North West Region and available to download on the project webpage;
- Press release to local print and online media;
- Newspaper adverts placed in local newspapers;
- Correspondence via email and post;
- Social media postings on Irish Water's Twitter and LinkedIn accounts, with information on the public consultation and links to the SHC website; and
- Correspondence via the sludgehubsnorthwest@water.ie email address.

2.2 Consultation Promotion

2.2.1 Site Selection Methodology Report

The Site Selection Methodology Report for the North West Region was published for the consultation period. This was made available to view or download from the webpage (www.water.ie/sludgehubs) and was also issued to display at local authority planning counters and county libraries in the North West Region.

The SSMR included relevant project information regarding sites being considered for selection, the selection criteria, details on how to submit feedback, further information and next steps following the consultation period.

Details on how to participate in the consultation were included on the SHC webpage. Submissions were invited through the following channels:

By email: sludgehubsnorthwest@water.ie

Or by Post: Sludge Hub Centres – North West Region Public Consultation, C/O J. B. Barry and Partners Ltd, Classon House, Dundrum Business Park, Dundrum Road, Dublin 14, D14 T9T0

2.2.2 Project and Consultation webpage

A dedicated SHC project webpage was hosted on the water.ie website and went live in September 2019 at www.water.ie/sludgehubs. The webpage provided details of the public consultation. Details for the North West Region were provided in a sub-section of the webpage.

The SSMR for the North West Region was also made available to view or download, as well as other relevant information including the terms of reference, details on how to make a submission in the public consultation and the SHC project consultation roadmap.

The information was published on 17 September 2019 and has been available on the website since that date.

During the period of the consultation, there were 1,392 page views of the website www.water.ie/sludgehubs.

Sample website content can be found in Appendix A.

2.2.3 Consultation newsletter

An information newsletter for the North West Region was produced and distributed to local authority planning counters and libraries within the North West Region prior to the consultation. The newsletter included details of the consultation including the consultation roadmap, a brief overview of the project need, details of consultation questions and means of which stakeholders could provide feedback on the SSMR. Libraries and planning counters were subsequently contacted and encouraged to share and promote the material with local stakeholders.

An image of this newsletter can be found in Appendix B.

2.2.4 Press release

A press release announcing the commencement of the consultation was issued to regional and local news outlets, including both the traditional print media and online media outlets. This press release was issued to raise awareness of the consultation amongst the general public, thus increasing public participation and feedback on the Site Selection Methodology Report for the North West Region.

The press release is presented in Appendix C.

2.2.5 Newspaper Advertisements

To promote the consultation to a wider audience, newspaper adverts were placed in the following regional newspapers:

Regional Newspaper	Dates
Connacht Tribune	20/09/2019; 18/10/2019
The Sligo Champion	17/09/2019; 15/10/2019

Table 2.1 List of newspapers adverts placed in during consultation.

The advertisements were placed in local newspapers to announce the commencement of the consultation period, raise awareness and to encourage participation in the public consultation for the North West Region.

The advertisement included a brief overview of the SHC process and the two WwTPs being considered in the Site Selection Methodology, along with an invitation to submit feedback by email and by post. This advertisement included details on how the public could review and obtain further information on the consultation both online and at planning counters / county libraries and details on how stakeholders could make a submission.

A copy of this advertisement can be found in Appendix D.

2.2.6 Social Media

The launch of the SHC consultation was promoted on social media using the Irish Water LinkedIn and Twitter pages, as displayed in Figure 2.1 below. The Irish Water LinkedIn page had approximately 19,300 followers and the Irish Water Twitter page approximately 27,000 followers at the time of the consultation.

Promoting the consultation on this platform enhanced the potential to inform a higher volume of people across a broad demographic. The post resulted in over 14,000 impressions over the two social media platforms.

Figure 2.1 Screenshot of Twitter post on public consultation



2.2.7 Direct Engagement and Correspondence

A number of governmental and non-governmental stakeholders were invited to participate in the public consultation through targeted correspondence. The list of stakeholders is identified in Appendix E.

2.2.7.1 Elected Representatives

On the 17 September 2019, a letter and email were issued to the Department of the Taoiseach and the Minister for Housing, Planning and Local Government. A copy of the letter issued is presented in Appendix F.

Additionally, an email was issued to all elected representatives in the North West Region including MEPs TDs, Senators and councillors informing them of the consultation.

Information was provided regarding the SSMR and elected representatives and their constituents were encouraged to submit feedback on the report.

2.2.7.2 Local Authorities

Local authorities are an extremely important stakeholder group given their past responsibility for sludge management. An email was issued on 24 September 2019 introducing the SHC SSMR Report – North West Region and providing details of the consultation to the Chief Executives and various relevant Directors of Services of the local authorities within the North West Region. All local authorities were contacted prior to the consultation period and offered copies of the Site Selection Methodology Report for the North West Region and an information newsletter on the upcoming consultation.

2.2.7.3 Public, Environmental and Interested Bodies

Public, environmental and interested bodies were contacted by Irish Water by email with information about the consultation and invited to give their feedback on the Site Selection Methodology in the North West Region.

Any requests for briefings from the interested bodies was considered by the project team and facilitated where appropriate.

A list of the environmental, public and interested bodies who received a correspondence is presented in Appendix E, while a sample of the letter issued can be viewed in Appendix G.

2.2.7.4 Direct Engagement

Representatives of the project team were made available to brief elected representatives during the consultation period.

Additionally, on 18 November 2019, Irish Water provided a site visit and an overview of the sludge hub centre projects to elected representatives from the Tuam area. This meeting was attended by nine elected representatives and representatives from Irish Water and Galway County Council. The meeting provided an overview of Tuam WwTP, the sludge treatment processes and the site selection methodology. At this meeting, elected representatives were encouraged to make submissions in relation to the public consultation.



3

Consultation Feedback

3. Consultation Feedback

3.1 Overview

In the North West Region 22 submissions were received for this period of consultation. A total of 18 emails and 4 letters were received. Respondents are categorised as shown in Table 3.1.

Category	Number Received
Individuals, members of the public	5
Community groups	1
Businesses and business groups	4
Public bodies	10
Elected representatives	2
Total Participation	22

Table 3.1 Consultation Participation

The public bodies that made submissions are listed in Table 3.2. Some bodies made more than one submission.

Public Bodies
Department of Rural and Community Development
Department of Communications, Climate Action and Environment
Department of Culture, Heritage and Gaeltacht
Environmental Protection Agency (EPA)
Geological Survey of Ireland (GSI)
Inland Fisheries Ireland (IFI)
Galway County Council
Transport Infrastructure Ireland (TII)

Table 3.2 Public Bodies Responding to the Consultation

The issues raised and feedback provided during the public consultation period are summarised in the following sections of the report. Feedback is compiled from stakeholders' submissions with repeated themes summarised and specific issues reported directly. Feedback provided by individuals, businesses and

elected representatives is reported anonymously. Feedback from public bodies has been attributed as appropriate.

Feedback is summarised under headings that correspond to the questions asked in terms of reference of the consultation. In cases where submissions made did not fall under the specific consultation questions, these were grouped into relevant subsections following the criteria outlined in the SSMR.

Feedback has been reviewed by the project team and, where relevant, will be considered by the project team in the development of the Preferred Site Selection Report. Responses to queries raised in submissions are not provided in this report.

The views contained in this section do not reflect the views of Irish Water but represent the views of the stakeholders who made submissions as part of the public consultation. Accordingly, Irish Water does not attest to the accuracy of the information provided below.

3.2 Consultation Question 1

Is there any additional information on the potential sites identified that we should be aware of?

In answer to this consultation question several respondents provided specific information relating to the potential SHC locations. Feedback was further summarised under the following common themes: Technical; Environmental; Planning; and Other.

3.2.1 Technical

Submissions received from Galway County Council, a business group and a stakeholder group suggested that the technical information provided was limited or insufficient. Galway County Council stated that: “The main area of concern related to the lack of detailed information in the public documents available to the public in advance of the submission date.” Some stakeholders sought additional information such as the number of tankers to the WWTP, sludge quantities, details of techniques and technologies to be used at a future Sludge Hub Centre. It was also requested that these details be included in future reports for the project.

With respect to the existing Tuam WWTP, concerns were raised in multiple submissions that the treatment plant does not have the capability to deal with the current issues being faced and an upgrade as a sludge hub would aggravate the problems. Submissions by several stakeholder groups raised concerns about the ongoing operation of the Tuam WWTP and highlighted potential odour nuisance and potential spillages into the River Clare.

A detailed submission was made by a stakeholder in relation to the Sligo WWTP outlining the feasibility of developing the treatment plant as a regional sludge hub, noting the suitability of existing infrastructure, available capacity and the financial benefits.

3.2.2 Environment

Biodiversity

There were a number of submissions received in relation to biodiversity including the potential impact to Natura 2000 sites, aquatic environments and water quality.

The potential impact on Natura 2000 sites and other areas of conservation and biodiversity due to the development of sludge hubs was noted in submissions from the Department of Culture, Heritage & Gaeltacht and two stakeholder groups in Tuam.

Submissions from Galway County Council and residents in Tuam discussed the effect of the development of sludge hub on water bodies, noting concerns that a sludge hub centre would negatively impact rivers and lakes and other water bodies and degrade the water quality and biodiversity. Galway County Council noted that “There is particular concern about possible environmental impacts of the proposed development especially on the Clare River. The importation and treatment of additional significant volumes of sludge will lead to a higher environmental risk for this sensitive receptor.”

Submission by a business in Tuam and an elected representative on behalf of Tuam Municipal District suggests that the Annual Environmental Report (AER) by EPA highlights discharge to River Clare from 2012 to 2018 and it has been noted that the trigger levels have been exceeded. It also suggests that River Clare is the feeder to Tuam’s drinking water.

Inland Fisheries Ireland (IFI) and other submissions noted their concerns about the water bodies near Tuam WWTP. IFI stated that “Tuam Wastewater Treatment Plant is bordered by the Clare River which is the largest tributary of Lough Corrib and sees thousands of salmon and trout run the river to spawn every year.” A submission from an Elected Representative from Galway East, raised concern that “the site in Tuam is located adjacent to the River Clare and the River Nanny.” The submission further stated that “in summer the levels in these rivers are low and the discharge would have serious consequences for water quality in the Corrib which feeds the Luiminagh Water Treatment facility.” The submission also raised concern that water quality, fish spawning and nursery areas, sporting, commercial fishing and angling and recreational areas would be impacted.

IFI raised concerns that the Sligo WWTP “lies adjacent to the Garvogue Estuary which is a migratory route for salmon, sea trout, lamprey and eel to the Garvogue River system.”

Geology and Hydrogeology

The Geological Survey of Ireland (GSI) brought attention to the County Geological Sites (CGS), as adopted under the National Heritage Plan, and highlighted that “Knocknarea (GR 162776 334463) – a karstic hill” in Sligo. GSI noted that “With the current plans, there are no envisaged impacts on the integrity of these CGSs.” However, GSI recommends that if the proposed plan is altered then the GSI should be contacted for further information.

A stakeholder in Tuam suggested that local farmers are concerned about the by product from sludge treatment and anaerobic digestion processes affecting their lands, livestock and business value.

A submission from a resident noted concerns that a tanker spill on route to a potential Sludge Hub at Tuam would cause harm to groundwater.

Hydrology and Flood Risk

A submission from a stakeholder in Tuam and an elected representative on behalf of Tuam Municipal District suggested that there is restriction of land availability close to Tuam WwTP as indicated by flood risks maps and referred to a “refusal for zoning in 2018 LAP.”

Air Quality

A submission from an elected representative from Galway East noted that developing sludge hub centres will result in potential greenhouse gas emissions as a result of sludge transportation across the country.

A submission from a resident in Tuam raised concern on “impact on air quality for residents within a 5km radius of the proposed hub” due to tanker movements.

Odour

In submissions relating to Tuam WWTP from an elected representative on behalf of the Tuam Municipal District Council Members and a stakeholder group, it was stated that local businesses such as those requiring clean rooms as a part of product building, would be impacted due to potential odour.

3.2.3 Planning

There were a number of submissions received from stakeholders in Tuam in relation to planning concerns regarding the proposed location of the sludge hub centres.

Submissions received by two elected representatives, stakeholder groups and residents in Tuam highlighted concerns about the proximity of the potential

development at Tuam WWTP to businesses, care facilities for the elderly, childcare, or residential areas and that there would be an impact due to traffic, odour and air pollution issues.

A submission from an elected representative stated that the site in Tuam “is surrounded by residential areas. Since the existing plant opened there have been many issues raised and not dealt with including Odour, Traffic, Spillages. There will be a further risk of a re-occurrence of such issues if activities are intensified to the degree as indicated.”

A stakeholder group in Tuam stated that “There are regular releases of foul odours into the atmosphere. There have also been numerous incidents of spillages and pollution of the nearby River Clare. The submission also requested Irish Water to locate the new sludge hub in a more rural location, away from centres of employment and residential areas.

A business in Tuam and an elected representative on behalf of Tuam Municipal district noted that the adjoining lands to Tuam WWTP are agricultural and that rezoning attempts have been reversed in the past. It also stated that there is no precedence for this type of treatment system in Tuam and that a past planning application for anaerobic digester in Tuam was turned down.

3.2.4 Other

There were submissions from stakeholders in Tuam with concerns that the value of land and their business would be impacted by the development of a sludge hub.

3.3 Consultation Question 2

In addition to the criteria set out to select a preferred site, are there any other factors you think should be considered in choosing the preferred site?

In answer to this consultation question respondents provided feedback on additional factors that should be considered by the project team in selecting a preferred site. This feedback is summarised under the following common themes: Technical, Environmental, Planning and Other.

3.3.1 Technical Criteria

In a submission from the EPA, it was suggested that “adequate dewatering satellite facilities, capable of accepting all wastewater treatment plant and domestic wastewater treatment sludges, needs to be provided in each region and should be considered as part of this methodology.” It further suggests that “the sludge hub should be located within a sustainable transport distance from

these dewatering facilities. Where the distance between dewatering facilities and the preferred sludge hub is considered excessive Irish Water should provide for additional sludge hubs centres within a region.”

A number of submissions questioned the rationale of a regional hub approach to the management of wastewater sludge. It was recommended in one such submission, that sludge should be treated locally in accordance with the principle of “dealing with waste at its source.”

3.3.2 Environmental Criteria

Biodiversity

The Department of Culture, Heritage and Gaeltacht (DCHG) suggested considering the proximity of European sites, Natural Heritage Areas, Statutory Nature Reserves or areas of local biodiversity importance to the proposed sludge hub sites. It was also suggested that the objectives of River Basin Management Plan 2018-2021, sub-basin plans for sites designated for the protection of Freshwater Pearl Mussel, The European Union Environmental Objectives (Freshwater Pearl Mussel) (Amendment) Regulations 2009 to 2018 and rivers designated under Salmonid Regulations (SI 293/1988) be considered.

It is also recommended that the future impacts of any nitrogen (NO_x) emissions from combined heat and power engines on nitrogen-sensitive Natura 2000 sites or Annex 1 habitats outside European sites should be taken into account at site selection stage as impacts of nitrogen deposition include acidification and eutrophication.

Odour

Residents in Tuam raised concerns over the potential odour issues that may arise due to the mass sludge movements.

Air Quality

A submission from an elected representative from Galway East, questioned the rationale of sludge hubs in terms of potential greenhouse gas emissions resulting from sludge transportation across the country.

Hydrology and Flood Risk

The Department of Culture, Heritage and the Gaeltacht recommended that reference should be made to the *Planning System and Flood Risk Management Guidance for Planning Authorities* and that flood risk mapping and any relevant Flood Risk Management Plans should be consulted. It was also recommended

that site selection should factor in increased future flood risk due to climate change.

With regard to flood risk management, GSI recommends using their “National Aquifer and Recharge maps” which includes data from turloughs and their flooding potential. GSI suggested that their Coastal Vulnerability Index should be adopted at site selection stage with regards to flood risk for coastal sites along with the GSI/OPW Groundwater Flood Project.

Geology and Hydrogeology

GSI, in its submission, brings attention to data that may be of use in the ongoing planning and decision-making process. It makes the following recommendations and identifies relevant sources of information.

- Sand and gravel aquifers should be considered and are published on GSI's webviewer. GSI should be contacted directly for the most up to date aquifer data, karst features and zones of contribution to aid in site selection process.
- Groundwater dependent ecosystems (e.g. turloughs) and karst features are taken into account and that groundwater users are considered in terms of subsoil permeability and groundwater recharge at/around the hub centre.
- The importance of groundwater as a source of drinking water should be considered. The Groundwater Programme provides advice and maps to members of public, consultancies and public bodies about groundwater quality, quantity and distribution.
- Other online resources are available from GSI databases such as topographic data, ground investigation information and water supply schemes.
- Important geological and geomorphological sites throughout the country for designation as geological NHAs (Natural Heritage Areas) should be considered. This is provided through the Irish Geoheritage Programme (IGH) and County Geological Sites (CGS) as adopted under the National Heritage Plan.
- Geohazards such as landslides should be taken into consideration, especially when developing areas where these risks are prevalent.

Land Spreading

In its submission, the Geological Survey of Ireland (GSI) requested further information regarding wastewater sludge composition in order to better understand the impacts of land spreading of wastewater sludge. The GSI made suggestions in relation to assessing ground conditions before land spreading,

noting issues around the uptake of phosphorous and nutrients in plants. GSI also suggested to assess bioavailability of soil and subsoils at each land spreading site.

Inland Fisheries Ireland (IFI) stressed the potential impact on fisheries due to land spreading. The submission included concerns “in relation to the land spreading of sludge and the potential for contamination of lands, groundwater and surface water with excessive nitrogen, heavy metals and other pollutants particularly where sludge is derived from industrial waste streams.” They further state that “such contamination could have a significant negative and long-term impact on the fisheries resource in the North west where angling provides an important contribution to the local rural economy.”

DCHG recommended that “Nitrogen emissions may also result from the impacts of land-spreading of the final product which may arise as a result of the operation of the sludge hub centres. This matter should be considered as part of the site selection process taking into account the potential impacts on nitrogen-sensitive Natura 2000 sites or other sensitive receptors.”

A submission from an elected representative from Galway East, noted that that the geology of the Galway region is karstic limestone and that there is an associated risk from land spreading. He further raised concerns that “Treated sludge contains heavy metals and pharmaceutical products. What impacts can these have on crops if used on land?”

Additionally, a submission by an elected representative noted that at a public meeting on the proposed SHC, local farmers were concerned that the sludge by-product produced would impact their lands and livestock.

3.3.3 Planning Criteria

Planning Objectives

A submission from Galway County Council included concerns that the development of Tuam WwTP as a sludge hub would impact the local authority’s plans to increase investment in Tuam. It also noted that the Sludge Management plan for Galway City and County (November 2010) proposed a new East Galway Plant for a dewatering centre/sludge hub. It was commented that this had not been taken into consideration in the planning of the project.

A submission from a stakeholder group raised concerns that: “The development of the sludge treatment hub would have a devastating negative impact on our plans to increase employment in the Business Park.”

Submission from an elected representative on behalf of the Tuam Municipal District Council Members and a stakeholder group identified Tuam as one of eight “key towns” under the National Planning Framework / Regional Spatial and Economic Strategy. The submission also noted that “lands at Weir Road are identified by the Galway Local Authority as a key site for future commercial / industrial development.”

It was recommended in one submission that a bond be lodged with the County Council as an insurance against environmental impacts and impacts on the tourism industry that could be caused by a spill from the sludge hub or a sludge haulage vehicle.

Traffic

Submissions by an elected representative, an elected representative on behalf of Tuam Municipal District Council Members, a business and residents in Tuam included comments that the increased volume of tankers would be detrimental to the road and traffic which leads to the Tuam WwTP.

Transport Infrastructure Ireland (TII) gave feedback, which was not specific to either site, advising that the national road network should continue to serve their intended strategic purpose as outlined in the Spatial Planning and National Roads Guidelines. In addition, they suggest that “Consultations should be had with the relevant local authority/ national road design office with regard to locations of existing and future national road schemes.”

As stated earlier, the EPA suggested that adequate dewatering facilities be considered for each region as a part of the methodology. It was suggested that the location and the capacity of the dewatering facilities be considered along with the transport distances between the dewatering sites and the Sludge Hub. The transportation of sludge over longer distances was also questioned in multiple submissions.

A submission from an elected representative from Galway East, questioned the compliance of the project with the principles of *Local Government Climate Charter* or the All of Government *Climate Action Plan* in terms of transport-related emissions.

3.3.4 Other

It was suggested in submission from an elected representative from Galway East that Irish Water should engage with Bord na Móna for alternative solutions for sludge treatment in relation to the potential Tuam sludge hub centre.

3.4 Consultation Question 3

How would you like Irish Water to communicate with you as the project progresses?

The majority of submissions did not provide any feedback on how they would like Irish Water to communicate as the project progresses. Several stakeholders in Tuam, Transport Infrastructure Ireland (TII) and the GSI indicated that they would like to be communicated on the project via email.



4

Next Steps

4. Next stages of the project

The feedback received as part of this period of public consultation has been reviewed by the project team and the feedback and issues raised will inform the Site Selection Report for the Preferred Site(s) in the North West Region.

Irish Water would like to thank all those who submitted feedback during this period of public consultation on the Site Selection Methodology Report.



Appendices

Appendix A – Website Content

CONTACT US | SIGN IN | PAY NOW



Projects & Plans | Water Supply | Wastewater | For Home | For Business | Conservation | Connections | Support | About Us



Regional Sludge Hub Centres

Irish Water is assessing wastewater treatment plants as potential sludge hub centres so that sludge can be treated more effectively and efficiently

Home / Projects & Plans / National Projects / Regional Sludge Hub Centres

Site Selection Methodology Public Consultation

Irish Water has published the site selection methodology reports for the sludge hub centres and is inviting feedback from members of the public and interested stakeholders on these reports.

Sludge hub centres - North West region



What is happening now?

Irish Water has published the Site Selection Methodology Report for the sludge hub centres – North West region. As part of the next phase of this project, we are now inviting feedback from members of the public and interested stakeholders as part of a four-week non-statutory public consultation.

Public consultation for the North West Region has been extended until Tuesday 05 November, 2019. This is due to an IT issue, as submissions emailed sludgehubsnorthwest@water.ie prior to this have not been received. View the [Site Selection Methodology Report](#).

Irish Water is inviting feedback on the following:

- 01 Is there any additional information on the potential sites identified that we should be aware of?
- 02 In addition to the criteria set out to select a preferred site, are there any other factors you think should be considered in choosing the preferred site?
- 03 How would you like Irish Water to communicate with you as the project progresses?

Have your say

If you would like to make a submission, please send it by email or post by Tuesday 05 November 2019 via the following:

- **Email:** sludgehubsnorthwest@water.ie
- **Post:** Sludge Hub Centres – North West Region, C/O J. B. Barry & Partners Ltd., Classon House, Dundrum Business Park, Dundrum Road, Dublin 14, D14 T9T0

Site selection

As part of the sludge hub centres project, Irish Water will identify and assess the capability of existing wastewater treatment plants across the North West region. Irish Water has initially identified the following two wastewater treatment plants (WWTP) in the North West region for assessment in the site selection process.

- Tuam Wastewater Treatment Plant
- Sligo Wastewater Treatment Plant

Both of these wastewater treatment plants currently accept and treat sludge. Should a site be progressed as a regional sludge hub centre the capacity of sludge management facilities at these sites would need to be upgraded and increased. The assessment of the potential treatment facilities and selection of preferred sites will be based on environmental, planning, economic, and technical factors.

View the [Site Selection Methodology Report](#) for the North-West region.

Next Steps

All submissions will be reviewed and relevant feedback considered as part of the Sludge Hub Centre Preferred Site Selection Report.

Submissions from individuals will be reported anonymously and feedback from organisations will be attributed to them. Submissions will not be individually responded to but will be summarised in a consultation report which will be published on this page.

For information on how we store your data, view our [Privacy Notice](#).

Following this non-statutory public consultation, the Sludge Hub Centres Preferred Site Selection Report will be published.

As the Sludge Hub Centres Project develops, there will be further opportunities for stakeholders and the public to contribute to the project.

Sludge Hub Centres Site Selection Methodology

Public Consultation | North West Region

Irish Water has published the [Site Selection Methodology Report for the Sludge Hubs Centres](#) and is inviting feedback from members of the public and interested stakeholders for the North West region.

In this newsletter we explain:

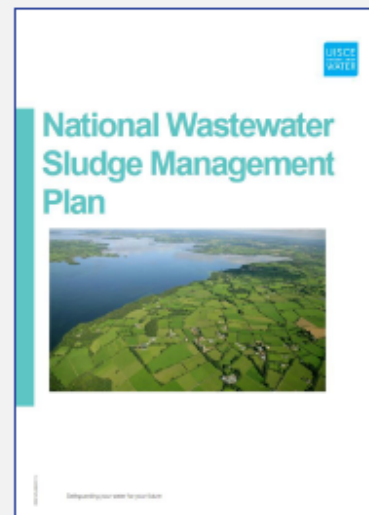
- Project Background
- What is happening now?
- Why are Sludge Hub Centres needed?
- What sites are being considered?
- What is the methodology for selecting the preferred site?
- Next steps

Project Background

In 2016, Irish Water published the National Wastewater Sludge Management Plan (NWSMP). The Plan sets out a nationwide strategy to deliver a sustainable and standardised approach to managing wastewater sludge now and over the next 25 years.

Sludge is generated from the treatment of wastewater, however once it is produced it needs to be treated so that it is safe for disposal or re-use. Irish Water has been building and upgrading wastewater treatment plants nationwide. The volume of wastewater sludge is increasing every year and is predicted to continue to increase.

The NWSMP estimates that by 2040 around 50,000 truck-loads of sludge will be generated each year. Irish Water has been developing ways of reducing sludge volumes for the most efficient movement of sludge, to achieve the best balance between the cost of transport and of treatment. This means that Irish Water must invest in strategic sludge management infrastructure at a number of wastewater treatment plants to ensure all regions are served in the most efficient way possible.

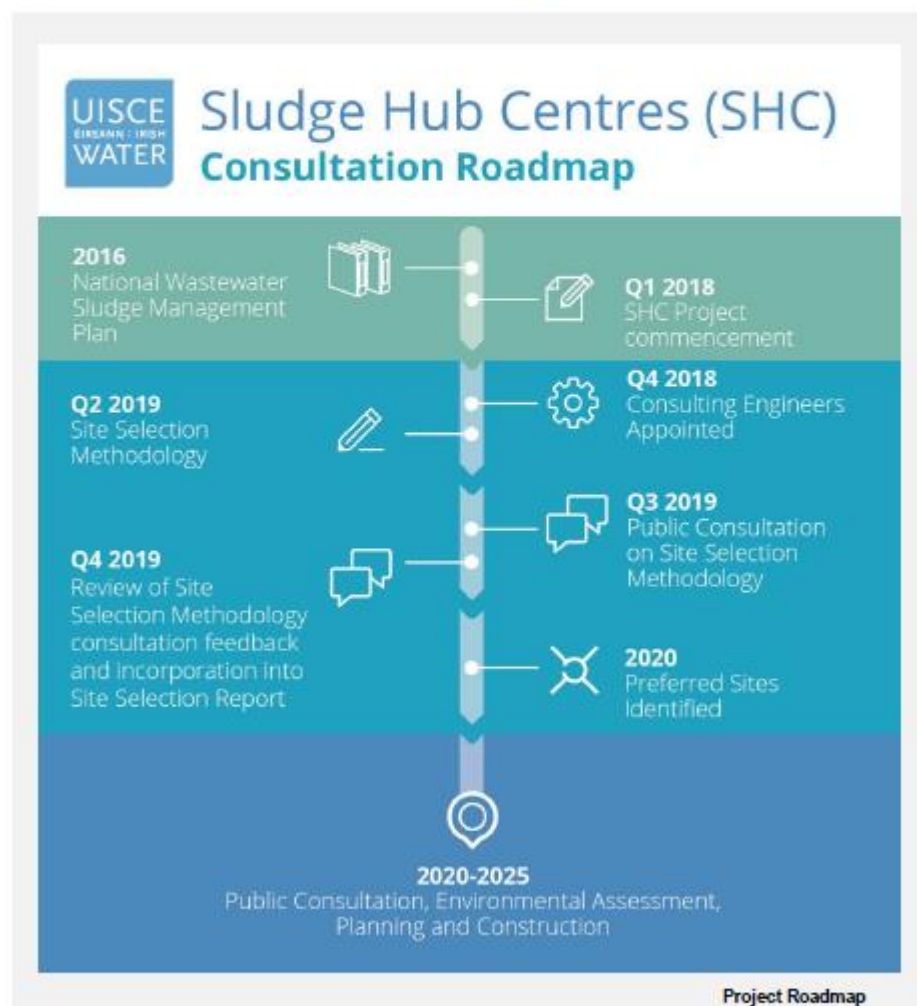


NWSMP published 2016

What is happening now?

Sludge Hub Centres form part of Irish Water's National Wastewater Sludge Management Plan to ensure the safe and sustainable management of sludge. A Sludge Hub Centre is a centralised treatment facility for the effective treatment of wastewater sludge prior to reuse or disposal. Irish Water will now identify and assess the capability of a number of existing wastewater treatment plants across the region to become Sludge Hub Centres.

The selected wastewater treatment plant(s) will require investment to increase the capacity of the existing infrastructure. The Site Selection Methodology Report identifies two wastewater treatment plants (WWTP) in the North West region and sets out the rationale for selecting a preferred site(s).



Why are Sludge Hub Centres needed?

Sludge is generated in wastewater treatment plants around the country. Between now and 2040, Irish Water estimates that the volume of wastewater sludge produced will increase by 80%. Irish Water needs to plan and invest in the future so that sludge can be treated and disposed of safely, and in a way that does not pose a risk to public health, the environment or agricultural lands. Developing Sludge Hub Centres will help Irish Water achieve this goal.

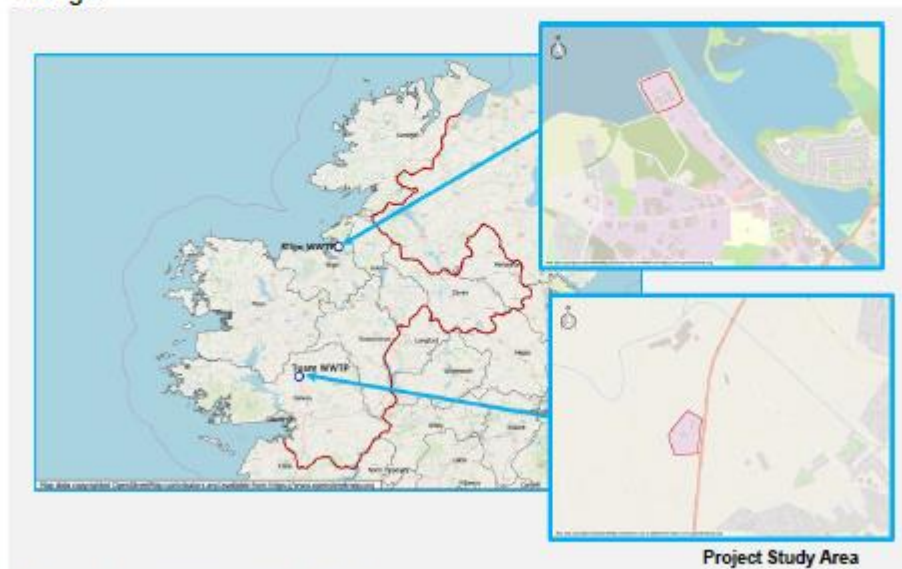
What are the benefits of the Sludge Hub Centres?

Optimising the number of Sludge Hub Centres is a critical part of a more efficient national sludge management system. Irish Water is assessing the number of Sludge Hub Centres so that sludge can be treated in a more effective and efficient way. Investing in sludge treatment facilities will:

- Lower traffic movements and reduce transport emissions by reducing the amount of sludge that needs to be transported and the distance it needs to travel.
- Reduce operating costs per kg of sludge treated.
- Promote energy recovery.

What sites are being considered?

The study area for the North West region includes the counties of Galway and Sligo. Irish Water has identified the wastewater treatment plants in Tuam and Sligo as a potential Sludge Hub Centre for assessment in the site selection process. Both of these wastewater treatment plants currently accept and treat sludge.



3 Irish Water | Sludge Hub Centres – North West Region

What is the methodology for selecting the preferred sites?

The assessment of these wastewater treatment plants as a Sludge Hub Centre will be based on environmental, planning, economic, and technical factors. If a site is identified as a Sludge Hub Centre for the North West region, then the capacity of sludge management infrastructure at these sites would need to be upgraded and increased. The Site Selection Methodology Report can be viewed and downloaded at www.water.ie/sludgehubs.

Next Steps - Have your Say

Irish Water has published the Site Selection Methodology Report for the Sludge Hubs Centres and is inviting feedback on the site selection methodology from members of the public and interested stakeholders for the North West region. A four week period of non-statutory public consultation process will run from **Tuesday 24 September 2019 until Tuesday 22 October 2019**.

Irish Water is inviting feedback on the following:

1. Is there any additional information on the potential sites identified that we should be aware of?
2. In addition to the criteria set out to select a preferred site, are there any other factors you think should be considered in choosing the preferred site?
3. How would you like Irish Water to communicate with you as the project progresses?

Submissions can be made to Irish Water in the following ways:

By email: sludgehubsnorthwest@water.ie

By post: Sludge Hubs Centres – North West region,
c/o J.B. Barry & Partners Ltd, Classon House, Dundrum Business
Park, Dundrum Road, Dublin 14, D14 T9T0

Appendix C – Press Release

Irish Water seeking public input on site selection for Regional Sludge Hub Centres

17 September 2019 - Irish Water is launching a public consultation on the Site Selection Methodology Report for Regional Sludge Hub Centres. The consultation is seeking the public and interested stakeholder views on the site selection methodology. The consultation opens on 24 September 2019 and closes on 22 October 2019.

The Site Selection Methodology Report follows on from the National Wastewater Sludge Management Plan 2016, which sets out a nationwide strategy for managing wastewater sludge now and over the next 25 years. One of the recommendations of the report was to develop a number of existing sludge treatment facilities into regional Sludge Hubs Centres.

Paul Fallon says: “Through the consultation we are inviting feedback from members of the public and interested stakeholders on the site selection methodology. In particular we are eager to understand if there is any additional information on the potential sites identified that we should be aware of; whether there are any additional factors we should be considered in choosing the preferred sites and how the public would like to be communicated with as the project progresses.”

The Site Selection Methodology Report identifies wastewater treatment plants in; Sligo Town and Tuam in Galway as potential Sludge Hub Centres in the North West region. The assessment of these wastewater treatment plants as Sludge Hub Centres will be based on environmental, planning, economic, and technical factors.

Since 2014, Irish Water has been building and upgrading wastewater treatment plants nationwide and developing ways of reducing sludge volumes to achieve the best balance between the cost of transport and the cost of treatment. The volume of sludge is increasing year on year and is predicted to continue to increase. The National Wastewater Sludge Management Plan estimated that by 2040 around 50,000 truck-loads of sludge will be generated each year, which represents an 80% increase.

Paul Fallon says: “Irish Water is planning for now and the future so that sludge can be treated and disposed of safely and in a way that does not pose a risk to public health, the environment or agricultural lands by increasing the capacity of sludge management facilities. The development of regional Sludge Hubs Centres is key to ensure that, as a country, we can manage the increasing volumes of sludge we produce.”

Submissions can be made to Irish Water in the following ways:

By email: sludgehubsnorthwest@water.ie

By post: Sludge Hubs Centres East Midlands Region, c/o J.B. Barry & Partners Ltd, Classon House, Dundrum Business Park, Dundrum Road, Dublin 14, D14 T9T0

To view the Site Selection Methodology Report or for further information, visit www.water.ie/sludgehubs.

The Report and project newsletter are also available at planning counters in the relevant local authority offices and public libraries across the country.



Irish Water Public Consultation: Sludge Hub Centres Site Selection Methodology – North West Region

Irish Water has published the Site Selection Methodology Report for the Sludge Hubs Centres and is inviting feedback on the site selection methodology from members of the public and interested stakeholders for the North West region.

Sludge Hub Centres form part of Irish Water's National Wastewater Sludge Management Plan to ensure the safe and sustainable management of sludge. A Sludge Hub Centre is a centralised treatment facility for the effective treatment of wastewater sludge prior to reuse or disposal.

The Site Selection Methodology Report identifies Tuam and Sligo Wastewater Treatment Plants as potential Sludge Hub Centres in the North West Region. The assessment of these wastewater treatment plants as a Sludge Hub Centre will be based on environmental, planning, economic, and technical factors.

Due to an IT issue, submissions emailed sludgehubsnorthwest@water.ie prior to this have not been received, Irish Water are asking for any submissions to resubmitted. Irish Water have extended the period of non-statutory public consultation until **Tuesday 05 November, 2019**.

Submissions can be made to Irish Water in the following ways:

By email: sludgehubsnorthwest@water.ie

By post: Sludge Hubs Centres North West Region
c/o J.B. Barry & Partners Ltd, ~~Classon~~ House, Dundrum Business Park, Dundrum Road, Dublin 14, D14 T9T0

To view the Site Selection Methodology Report or for further information, visit www.water.ie/sludgehubs.

The Site Selection Methodology Report and project newsletter is also available at planning | counters in the relevant local authority offices and public libraries across the country.

Safeguarding our water for our future

Irish Water Public Consultation: Sludge Hub Centres Site Selection Methodology – North West Region

Irish Water has published the Site Selection Methodology Report for the Sludge Hubs Centres and is inviting feedback on the site selection methodology from members of the public and interested stakeholders for the North West region.

Sludge Hub Centres form part of Irish Water's National Wastewater Sludge Management Plan to ensure the safe and sustainable management of sludge. A Sludge Hub Centre is a centralised treatment facility for the effective treatment of wastewater sludge prior to reuse or disposal.

The Site Selection Methodology Report identifies Tuam and Sligo Wastewater Treatment Plants as potential Sludge Hub Centres in the North West Region. The assessment of these wastewater treatment plants as a Sludge Hub Centre will be based on environmental, planning, economic, and technical factors.

Due to an IT issue, submissions emailed sludgehubsnorthwest@water.ie prior to this have not been received, Irish Water are asking for any submissions to resubmitted. Irish Water have extended the period of non-statutory public consultation until **Tuesday 05 November, 2019.**

Submissions can be made to Irish Water in the following ways:

By email: sludgehubsnorthwest@water.ie

By post: Sludge Hubs Centres North West Region
c/o J.B. Barry & Partners Ltd, ~~Classon~~ House, Dundrum Business Park, Dundrum Road, Dublin 14, D14 T9T0

To view the Site Selection Methodology Report or for further information, visit www.water.ie/sludgehubs.

The Site Selection Methodology Report and project newsletter is also available at planning | counters in the relevant local authority offices and public libraries across the country.

Safeguarding our water for our future

Appendix E – Groups and Organisations Contacted Directly

Public Representatives in the Sludge Hub Centres Project Study Area
Minister for Agriculture, Food and the Marine
Minister for Arts, Heritage, Regional, Rural and Gaeltacht Affairs
Minister for Communications, Climate Action and the Environment
Minister for Housing, Planning, Community and Local Government
Minister of State for Housing and Urban Renewal at the Department of Housing, Planning, Community and Local Government
MEPs/TDs/Senators and Councillors in the North West

Stakeholders
An Taisce
Bord Bia
Bord na Móna
Coillte
CRÉ (Composting and AD Association of Ireland)
Department of Agriculture, Environment and Rural Affairs, Northern Ireland
Environmental Protection Agency (EPA)
Failte Ireland
Food Drink Ireland (FDI)
Food Safety Authority of Ireland
Geological Survey of Ireland (GSI)
IBEC
ICOS (Irish Co-operative Organisation Society)
ICSMA (Irish Creamery Milk Supplies)
IDIA (Irish Dairies Industries) Dairy Industry Ireland
Irish Farmers Association (IFA)
Inland Fisheries Ireland (IFI)
Irish Bioenergy Association
Irish Technology Centre for Biorefining and Bioenergy (TCBB)
National Transport Authority
Sludge Haulage Framework Contractors
Sustainable Water Network Ireland (SWAN)
The Health and Safety Authority (HSA)
The Health Service Executive (HSE)
Transport Infrastructure Ireland (TII)

Waterways Ireland

Zero Waste Action Ireland (ZWA)

Appendix F – Letter to An Taoiseach



17th September 2019

An Taoiseach
Mr. Leo Varadkar T.D.,
Department of the Taoiseach,
Government Buildings,
Upper Merrion Street,
Dublin 2, D02 R583

Uisce Éireann
Teach Coill
24-26 Sráid Thalbóid,
Baile Átha Cliath 1
D01 NP86
Éire

Irish Water
Coill House
24-26 Talbot Street
Dublin 1
D01 NP86
Ireland

T: +353 1 89 25000
F: +353 1 89 25001
www.water.ie

Re: Sludge Hub Site Selection Methodology Consultation

Dear Taoiseach,

I am writing to you to inform you that Irish Water has published the Site Selection Methodology Reports for the Sludge Hubs Centres in North West, East Midlands and Southern Region. Irish Water is inviting feedback on the site selection methodology from members of the public and interested stakeholders for the East Midlands region.

Sludge Hub Centres form part of Irish Water's National Wastewater Sludge Management Plan to ensure the safe and sustainable management of sludge. A Sludge Hub Centre is a centralised treatment facility for the effective treatment of wastewater sludge prior to reuse or disposal.

The Site Selection Methodology Reports identify wastewater treatment plants in Longford, Dundalk, Drogheda, Navan, Portlaoise, Mullingar, Tullamore, Carrigrennan, Shanbally, Tralee, Limerick City, Clonmel, Dungarvan, Waterford, Kilkenny, Wexford, Tuam and Sligo as potential Sludge Hub Centres. The assessment of these wastewater treatment plants as a Sludge Hub Centre will be based on environmental, planning, economic, and technical factors.

A four week period of non-statutory public consultation process will run from **Tuesday 24 September 2019** until **Tuesday 22 October 2019**.

The Site Selection Methodology Report or for further information, visit www.water.ie/sludgehubs. The Report and project newsletter is also available at planning counters in the relevant local authority offices and public libraries across the country.

I have also issued this update to Minister Eoghan Murphy and would be delighted to provide you or your officials with a briefing on the National Wastewater Sludge Management Plan should it be required

Yours sincerely

Niall Gleeson
Managing Director

Síodhóirí / Directors: Cathal Marley (Chairman), Niall Gleeson, Eamon Gallen, Brendan Murphy, Michael G. O'Sullivan
Offic Chláraithe / Registered Office: Teach Coill, 24-26 Sráid Thalbóid, Baile Átha Cliath 1, D01 NP86 / Coill House, 24-26 Talbot Street, Dublin 1, D01 NP86
Is cuideachta ghníomhaíochta ainmnithe atá faoi theocrann scaireanna é Uisce Éireann / Irish Water is a designated activity company, limited by shares.
Umhír Chláraithe in Éirinn / Registered in Ireland No.: 530363

000000

Appendix G – Direct Engagement Letters



Re: Sludge Hub Site Selection Methodology Consultation

Dear Sir/Madam,

I am writing to you to inform you that Irish Water has published the Site Selection Methodology Reports for the Sludge Hubs Centres Project in North West, East Midlands and Southern Region. Irish Water is inviting feedback on the site selection methodology from members of the public and interested stakeholders.

Sludge Hub Centres form part of Irish Water's National Wastewater Sludge Management Plan to ensure the safe and sustainable management of sludge. A Sludge Hub Centre is a centralised treatment facility for the effective treatment of wastewater sludge prior to reuse or disposal.

The Site Selection Methodology Reports identify wastewater treatment plants in Longford, Dundalk, Drogheda, Navan, Portlaoise, Mullingar, Tullamore, Carrigrennan, Shanbally, Tralee, Limerick City, Clonmel, Dungarvan, Waterford, Kilkenny, Wexford, Tuam and Sligo as potential Sludge Hub Centres. The assessment of these wastewater treatment plants as a Sludge Hub Centre will be based on environmental, planning, economic, and technical factors.

A four week period of non-statutory public consultation process will run from **Tuesday 24 September 2019** until **Tuesday 22 October 2019**. The Site Selection Methodology Report and Project Newsletter are also available at planning counters in the relevant local authority offices and public libraries across the country.

For the Site Selection Methodology Report or for further information and how to make a submission, please visit www.water.ie/sludgehubs.

Kind regards,

Paul Fallon
Infrastructure Programme Manager

Uisce Éireann
Teach Colvill
24-26 Sráid Thalbóid
Baile Átha Cliath 1
D01 NP86
Éire

Irish Water
Colvill House
24-26 Talbot Street
Dublin 1
D01 NP86
Ireland

T: +353 1 89 25000
T: +353 1 89 25001
www.water.ie

Stiúrthóirí / Directors: Cathal Marley (Chairman), Niall Gleeson, Eamon Gallen, Brendan Murphy, Michael G. O'Sullivan
Oifig Chláraithe / Registered Office: Teach Colvill, 24-26 Sráid Thalbóid, Baile Átha Cliath 1, D01 NP86 / Colvill House, 24-26 Talbot Street, Dublin 1, D01 NP86
Is cuideachta ghníomhalochta ainmnithe atá faoi theorainn scaireanna é Uisce Éireann / Irish Water is a designated activity company, limited by shares.
Uimhir Chláraithe in Éirinn / Registered in Ireland No.: 530363

IWHP-AD

REV009



Uisce Éireann
Teach Colvill
24-26 Sráid Thalbóid
Baile Átha Cliath 1
D01 NP86
Éire

Irish Water
Colvill House
24-26 Talbot Street
Dublin 1
D01 NP86
Ireland

T: +353 1 89 25000
T: +353 1 89 25001
www.water.ie

Re: Sludge Hub Site Selection Methodology Consultation

Dear Sir/Madam,

Irish Water has published the Site Selection Methodology Report for the Sludge Hubs Centres and is inviting feedback on the site selection methodology from members of the public and interested stakeholders for the North West region.

Sludge Hub Centres form part of Irish Water's National Wastewater Sludge Management Plan to ensure the safe and sustainable management of sludge. A Sludge Hub Centre is a centralised treatment facility for the effective treatment of wastewater sludge prior to reuse or disposal.

The Site Selection Methodology Report identifies Tuam and Sligo Wastewater Treatment Plants as potential Sludge Hub Centres in the North West Region. The assessment of these wastewater treatment plants as a Sludge Hub Centre will be based on environmental, planning, economic, and technical factors.

Due to an IT issue, submissions emailed sludgehubsnorthwest@water.ie prior to this have not been received, Irish Water are asking for any submissions to resubmitted. Irish Water have extended the period of non-statutory public consultation until **Tuesday 05 November, 2019.**

Submissions can be made to Irish Water in the following ways:

By email: sludgehubsnorthwest@water.ie

By post: Sludge Hubs Centres North West Region
c/o J.B. Barry & Partners Ltd, Clason House, Dundrum Business Park,
Dundrum Road, Dublin 14, D14 T9T0

To view the Site Selection Methodology Report or for further information, visit www.water.ie/sludgehubs.

The Site Selection Methodology Report and project newsletter is also available at planning counters in the relevant local authority offices and public libraries across the country.

Kind Regards,

Paul Fallon
Infrastructure Programme Manager

Appendix H – Glossary of acronyms

Term	Acronym
Sludge Hub Centre	SHC
National Wastewater Sludge Management Plan	NWSMP
Site Selection Methodology Report	SSMR
Geological Survey Ireland	GSI
Department of Culture, Heritage and the Gaeltacht	DCHG
Environmental Protection Agency	EPA
Inland Fisheries Ireland	IFI
Wastewater Treatment Plant	WwTP