Irish Water & Wicklow County Council

Arklow Wastewater Treatment Works

Site Assessment Report – Phase 1

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1.0 Introduction

1.1 Report Objectives

This report includes a Phase 1 Site Assessment (SA), pipeline routes and marine outfall location selection for the Arklow Wastewater Treatment Plant (WWTP) in accordance with recent best practise methodologies in wastewater treatment plant site selection. The objectives of this SA Report are to identify the following;

- Review of suitable sites for the proposed WWTP in the Arklow town Environs;
- Review of suitable locations for the treated effluent discharge to the Irish Sea including potential transfer pipeline corridors to the WWTP;
- Review of potential pipeline corridors for the connecting pipelines from the existing drainage networks to the proposed WWTP.

This phase sets out the methodologies and constraints identified in the site selection criteria. It is understood that Irish Water intend to enter a non-statutory consultation process with stakeholders and the public to determine their views on the constraints and methodologies used in this report

1.2 Background

At present, untreated wastewater from homes and businesses in Arklow is discharged into the Avoca River that runs directly through Arklow Town. This practice of discharging untreated wastewater to the river is no longer acceptable and Irish Water intends to fix this problem in partnership with Wicklow County Council. The Arklow Wastewater Treatment Plant will bring benefits to Arklow in terms of health, integrity of the environment and improved water quality for all. The scheme, which is required to meet current National and European environmental legislation, incorporates the construction of a new WWTP together with a pumping station, transfer pipelines and long sea outfall.

The existing sewerage system within the town discharges raw sewerage to the River Avoca. There is a mixture of separate, partially separate and combined sewers. The latter are generally the older sewers within the town, dating back to the 1930's and 1940's and carrying a mixture of foul sewerage and surface water. Surface and foul water flows are conveyed through separate pipe systems in the more recently laid sewers.

According to the Arklow Town Plan 2011- 2017, *"The current wastewater treatment demand for the plan area is estimated at 17,000p.e. with domestic demand being 14,500p.e. and non-domestic demand being 2,500p.e."* It expresses the need for a wastewater treatment plant to service the town to ensure "*growth of population and economic activity".*

1.3 History of the Scheme

Arklow Town Council obtained planning permission for development comprising of the provision of a sewage treatment works, sewers and associated ancillary works at Seabank, Arklow on the 3rd September 1993. This was confirmed by An Bord Pleanála (ABP) in March

1994. However, this was not progressed due to changes in the Department of Environment's policy around sludge treatment and disposal. Arising out of requirements from the European Commission, a further application for planning permission was made to Wicklow County Council (WCC) dated 15th January 1999. WCC granted this permission. APB granted permission in 2005.

Issues around this permission were appealed through the High Court & Supreme Courts by an objector, Arklow Holidays, until 2011. Following a ruling in favour of a WWTP from the Supreme Court at that time, WCC, with the agreement of the Department of Environment Community and Local Government (DECLG), began the detailed design and procurement of the scheme with a view to start works in May 2012.

Design works proceeded until a notice to enter was served on the lands that were purchased under the CPO for the WWTP. Arklow Holidays obstructed entry into the Seabank site forcing Arklow Town Council to seek injunctive relief in May 2012. The same litigant as before (Arklow Holidays) has brought further challenges around the CPO, the duration of the Planning Permission and an alleged difference in site size between the 1993 and the 1999 applications. High Court and Supreme Court hearings in this regard are ongoing.

1.4 Study Area

The study area has been determined with reference to *"The Arklow Town Environs Development Plan 2011 – 2017*" which sets the boundary for Arklow town and its environs.

An Environmental Impact Statement (EIS) prepared for the Arklow Sewerage Scheme WWTP, prepared in 1999 described the main aim of the development. It is to develop a scheme to treat wastewater to acceptable levels in accordance with national and EU standards prior to discharging to the Irish Sea.

These documents have enabled the selection of the study area, which included Arklow town and the Arklow town environs. The study area is shown in Figure 1.4.1 included in the Appendix A.

1.5 Irish Water

Established in March 2013 as part of the Water Services Act 2013, Irish Water have assumed responsibility for bringing the water and wastewater services of the 34 Local Authorities together under one national service provider. As such, this report will serve to inform Irish Water of all possible sites for a new Wastewater Treatment Works for Arklow should the planning on the existing site in Seabank expire. Planning is due to expire in early 2015.

2.0 Summary of Methodology

2.1 Guidance Documents

This document takes guidance from recent best practise in wastewater treatment plant site selection which recommended that the Site Assessment (SA) be progressed to avoid significant environmental impact where possible. This is to be achieved through the selection of appropriate locations for a WWTP, treated effluent outfall, and transfer pipeline corridors.

In the absence of guidance manuals for the location of WWTP's the following documents have been consulted:

EPA Landfill Manuals: Manual on Site Selection (Draft for consultation) was published in December 2006. The purpose of this manual is to provide guidance on the selection of a landfill site. This document has been used for reference and provides guidance on identification of areas considered to be generally unsuitable for landfill and buffer zones for sensitive receptors. In relation to buffer zones and landfills it states that;

"A distance of 250m between housing (and similar sensitive receptors) and a landfill footprint should be maintained for new 'greenfield' landfills that are handling potentially polluting/odorous wastes. In the case of inert waste used in development or restoration related activities/landfills - these waste recovery activities being generally short-term in operation and non-odorous/gas forming - the selection of an appropriate buffer will be a site-specific determination" (Ref Section 6.6).

EPA Wastewater Treatment Manuals: Treatment Systems for Small Communities, Business, Leisure Centres and Hotels was published in 1999. Although this document is directed towards the siting of small waste water treatment systems, it provides guidance in relation to the separation distance to be maintained between the location of a small WWTP and residential developments. A 50 m buffer zone is recommended in this document.

A methodology has been devised for this Report that uses the above reference documents, best practice, local experience, and builds on all the aforementioned. The resulting methodology for the Preliminary Screening is considered to be a comprehensive approach.

Development Plans: The "*Wicklow County Development Plan 2010 – 2016"* and the "*Arklow Town and Environs Development Plan 2011 – 2017*" have both been used for guidance in relation to locating the study area, siting local amenities and historic monuments and locating sensitive landscapes.

2.2 Methodology

The SA/Route Selection will be split up into 2 main phases:

- **Phase One:** Preliminary screening of the study area to identify a short list of potential alternative land parcels of suitable size to accommodate the proposed WWTP and also to identify marine outfall locations and potential transfer pipeline corridors. This will include a public consultation stage whereby the constraints and methodologies used for the screening and the emerging preferred land parcels, marine outfall locations and transfer pipeline corridors will be taken to the wider public.

- **Phase Two:** Assessment of the short listed potential alternative land parcels, marine outfall locations and transfer pipeline corridors identified in Phase 1 and consideration of submissions received during Phase 1. Land parcels will be assessed against a range of environmental and technical criteria including but not limited to ecology, cultural heritage, landscape, air quality, climate, traffic, land use, planning policy, engineering and design constraints, capital and operational costs.

The selection of the preferred site, marine outfall location and transfer pipeline corridors based on the above assessment findings, will result in a preferred site location.

3.0 Phase 1

3.1 Introduction

The purpose of this SA Phase One - Preliminary Screening is to identify a number of suitable land parcels within which a proposed WWTP could potentially be located and to identify marine outfall locations and transfer pipeline corridors for associated infrastructure in Arklow town environs.

3.2 Assessment Methodology for Phase One – Preliminary Screening

- Step 1 - Determine the required treatment capacity of the WWTP;
- Step 2 - Determine the area of land required to accommodate the proposed WWTP;
- Step 3 – Constraints Consultation with statutory bodies to assist in the identification of constraints within the Study Area;
- Step 4 - Map potential constraints based on environmentally designated areas;
- Step 5 - Apply appropriate buffer zones to sensitive receptors;
- Step 6 - Examination of available residual lands not subject to constraints for land parcels of suitable size;
- Step 7 - Assess the identified land parcels with respect to Planning Permissions granted but not yet constructed in their vicinity;
- Step 8 – Examination of constraint mapping to identify areas not subject to constraints for the possible location of a treated effluent marine outfall and to identify potential transfer pipeline corridors
- Step 9 - Assess the identified land parcels in terms of their proximity and accessibility to the identified load centres (refer to definition on page 11), feasible outfall locations, and transfer pipeline corridors;
- Step 10 – Assessment of the remaining land parcels under high level defined engineering and design constraints; and
- Step 11 - Compile a shortlist of suitable land parcels and potential transfer pipeline corridors not subject to the constraints listed above.

3.3 Step 1 – Capacity of the WWTP & Identification of Load Centres

It is anticipated that the proposed WWTP will be required to have a treatment capacity in the order of 25,000 population equivalents (PE). To allow any future expansion to the works, spare capacity will have to be taken into consideration. Therefore, the Arklow WWTP will be designed to an extension capacity of 36,000 PE.

3.4 Step 2 - Area of Land Required

In order to contain all the necessary unit processes for a treatment plant of the required capacity, a site of approximately 1.5 hectares would be the minimum area required to accommodate the proposed WWTP.

Parcels of land c. 2 hectares in area were sought in order to provide:

- flexibility in the final selection of the treatment process to be utilised;
- sufficient space to adequately construct and screen the site; and
- to ensure flexibility regarding purchase of the required land;

Any land parcels smaller than this, were not considered.

3.5 Step 3 – Constraints Information

Constraint information was gathered through various public information sources and their relevant website services to assist in the identification of areas not suitable for a WWTP. Issues raised during this constraints period were considered as part of Step 4: Mapping of Constraints.

3.6 Step 4 – Mapping Constraints

Mapping of potential constraints was carried out for the entire study area. This was a desk based process with all constraints mapped within AutoCAD. This approach allows areas considered undesirable for the location of the WWTP by virtue of the preferred mitigation strategy to be identified at an early stage in the siting process and screened out from further consideration. The areas containing constraints were identified under the following headings;

- Ecology;
- Cultural Heritage;
- Geology;
- Water;
- Sensitive Receptors

Details of each of the areas containing constraints are provided below.

3.6.1 Ecology

Sites designated for their nature conservation interest under European and Irish legislation including Natural Heritage Areas (NHA), proposed Natural Heritage Areas (pNHA), Special Protection Areas (SPA), Special Areas of Conservation (SAC), candidate SAC (cSAC) and RAMSAR Convention on Wetlands were mapped and these areas were screened out from further consideration.

Other areas of ecological value and protected areas such as designated shellfish waters, Nature Reserves, Annex 1 Habitats, Refuge for Fauna, Tree Preservation Orders Flora Protection Orders and Parks Biodiversity Buffer Designations/Nature Development Areas were also mapped and screened out as potential locations for the WWTP. The mapping compiled from these ecological constraints is illustrated in Figure 3.6.1, included in Appendix B.

3.6.2 Cultural Heritage

Designated cultural heritage sites such as National Monuments, archaeological sites as identified in the Record of Monuments and Places (RMP), structures listed in the Record of Protected Structures (RPS), and Architectural Conservation Areas have also been mapped and screened out from further consideration as potential locations for the WWTP. The mapping compiled from these cultural heritage constraints is illustrated in Figure 3.6.2, included in Appendix C.

3.6.3 Geology

The Geological Survey of Ireland identified sites of geological importance in the County and recommended their protection as County Geological Sites. Some of these sites may be designated, in due course, as Natural Heritage Areas (NHAs) because of their geological interest from a national perspective. Therefore any Geological Heritage Sites were mapped and screened out from further consideration as potential locations for the WWTP. None of these sites fell within the Arklow town and environs boundary, hence, there is no map to reflect these areas in the Appendix of this report.

3.6.4 Water

In order to avoid significant direct and indirect impacts on protected water bodies, Salmonid Waters, designated SAC, SPA, and NHA areas, recreational waters, designated bathing waters, designated nutrient sensitive waters, designated shellfish waters and aquifers designated as extremely vulnerable were mapped and screened out of further consideration for siting the WWTP.

Areas which are at risk from fluvial and tidal flooding as mapped using a hydrological model that was used as part of the Arklow Flood Feasibility Study for a 1 in 100 year storm event. Storm events north of the M11 Bridge were mapped using the OPW CFRAM study. The affected areas were screened out of further consideration as potential locations for the WWTP.

Protected water bodies and areas at risk from flooding are illustrated in Figure 3.6.4, included in Appendix D.

3.6.5 Landscape

'Highly Sensitive Landscapes' are defined within the Wicklow area and details of these have been included in the Wicklow County Development Plan 2010-2016. An assessment of the landscape was undertaken to ensure that *"the environment and heritage generally are maintained in a sustainable manner, while at the same time enabling a proactive approach to development"* (Ref Section 17.9 Wicklow County Development Plan 2010-2016).

Although landscape design measures would be employed to provide effective screening, it was decided at this stage to include Highly Sensitive Landscapes as a screening constraint and these areas would therefore be screened out from further consideration. The Arklow town and its environs are classified as an "*Urban Area"* under the Wicklow County Development Plan 2010-2016 and therefore no such areas were ruled out during this stage.

3.6.6 Sensitive Receptors

To aid in the identification of all sensitive receptors (residential and commercial dwellings) OSI mapping was utilised. This mapping provides a detailed outline of all dwellings within the study area.

As well as commercial and residential dwellings, it was ensured, in so far as possible that known odour sensitive receptors, which included schools, hospitals, nursing homes, places of worship, graveyards, prisons, education facilities, sports clubs and facilities, childcare facilities, historical sites/buildings and museums were mapped. Social amenity areas, as per the "*Arklow Town Development Plan 2011 – 2017*" are shown in Figure 3.6.6, included in Appendix E.

3.7 Step 5 - Application of Appropriate Buffer zones to Sensitive Receptors

Given that neither Arklow Town Council nor Wicklow County Council Development Plans provide any recommended buffer zones for WWTP's, a 100m buffer zone was applied to residential receptors and a 50 m buffer zone applied to commercial receptors (as agreed with Wicklow County Council). Commercial receptors have been deemed less sensitive to municipal treatment activities and hence, the smaller buffer zone has been applied to suit. These buffer zones was deemed adequate at this stage of the exclusion process. Particularly sensitive receptors will be examined in further detail in Phase 2 of this report.

The principal purpose of these buffers was to identify suitable land parcels for a potential WWTP site at a reasonable distance from sensitive receptors, thereby minimizing the potential impact on these sensitive receptors. This buffer is only for the purposes of this study and has no statutory or other weight.

As per Chapter 11 of the Wicklow County Development Plan 2010-2016, an appropriate buffer zone has also been applied to all roads and railways lines as seen in the Table 3.1 below to allow for future expansion to this infrastructure. These exclusion zones are illustrated in figure 3.7.1 attached in Appendix F.

Infrastructure Type	Set Back
Motorway/National Road	20 m
Rural Regional Road	20 m
Rural Local Roads	20 m
Urban Roads	10 m
Railway Line	20 m

Table 3.1 Transportation Infrastructure Buffer Zones

Sensitive receptors complete with buffer zones as applied are illustrated in Figure 3.7.2 included in Appendix G.

3.8 Step 6 - Examination of Available Residual Lands

Completion of Steps 1 through 5 of the preliminary screening process ensured that potential constraints were identified, mapped and screened out of further consideration as part of this process. The mapping of these combined constraints is illustrated in Figure 3.8.1 included in Appendix H.

Step 6 of the preliminary-screening process entailed an examination of the available residual lands not subject to the constraints outlined above for land parcels of suitable size to accommodate the proposed WWTP. A total of 11 such land parcels were identified. The land parcels so identified are all in excess of the 2 hectares required.

All identified land parcels are listed by Townland name in Table 3.1 and their location is shown in Figure 3.8.2, included in Appendix I.

Ballynattin	Ferrybank
Lamberton & Ballyraine	Kilbride (ED Kilbride)
Bogland & Kish	Killiniskyduff
Money Big	Ballymoney (ED Kilbride)
Tinahask Upper	Seabank
Shelton Abbey	

Table 3.2 Residual Lands

3.9 Step 7 – Assessment of the identified Land Parcels with respect to Planning Permissions Granted

Planning applications within the last five years which are in close proximity to the potential land parcels were examined and the same buffer zone as sensitive receptors was applied. This ensured that any development covered by a planning application granted by Wicklow County Council within the last five years and not yet constructed is subject to the same protection as other sensitive receptors.

Three of the identified land parcels, Ballynattin, Seabank & Kilbride (ED Kilbride) were found to have been the subject of granted planning permissions. These can be seen in Figure 3.9.1, included in Appendix J. Ballynattin was screened out from further consideration at this stage, as when buffer zones were applied, the size of the available land became such that it was now of insufficient size to accommodate the proposed WWTP.

An appropriate buffer zone (100 m) was applied to the Seabank and Kilbride (ED Kilbride) sites and the area within the land parcels was screened out from further consideration. There was sufficient land available to facilitate a WWTP development at both the Seabank and Kilbride (ED Kilbride) land parcels after the screening out of the buffer zone and as such, Seabank and Kilbride (ED Kilbride) remain suitable land parcel options.

All 10 remaining identified land parcels are listed by Townland name in Table 3.2 below and their location is shown in Figure 3.9.2, included in Appendix K.

Lamberton & Ballyraine	Kilbride (ED Kilbride)
Bogland & Kish	Killiniskyduff
Money Big	Ballymoney (ED Kilbride)
Tinahask Upper	Seabank
Ferrybank	Shelton Abbey

Table 3.3 Residual Lands

3.10 Step 8 – Identification of Possible Locations for Transfer Pipeline Corridors & Marine Outfalls

3.10.1 Routing of Transfer Pipeline Corridors

The transfer pipelines will transfer untreated effluent from the existing network to the proposed WWTP. Treated effluent will be discharged to the Irish Sea via a transfer pipeline from the WWTP to the marine outfall location.

Routing of the transfer pipelines considers how to link the main load centre to the outfall location via the potential WWTP sites while minimising the construction impacts on ecology, cultural heritage, geology, water, landscape and humans.

For the purpose of this report, the location of the load centre is being taken as the midway point of the planned siphon crossing the Avoca River. This is a point to which all flow gravitates to, from the Arklow town sewer network. This location forms a critical part of this site assessment scheme as it will be used to compare the proximity from the load centre to each of the individual land parcel options.

3.10.2 Marine Outfalls

Examination of the marine and coastal zone constraint mapping in Step 4 of this Phase identified that no constraints impacted the location of a new marine outfall off the coast of Arklow. Therefore, these undesignated areas have all been identified as potential areas for the location of a new marine outfall.

Discharging into the Avoca River has been ruled out from the outset of this report as previous surveys have indicated that a single point discharge into the watercourse would not provide sufficient dilution of the effluent. The River Avoca has high levels of natural deposition, which has proved problematic in the past. A river outfall would further contribute to this deposition, thus increasing the potential for environmental issues. In addition to this, a large section of the river is protected by a pNHA classification. As the nature of this report is to avoid areas of

ecological concern, a long sea outfall is considered more appropriate to serve a WWTP in the Arklow area.

3.11 Step 9 – Assessment of Identified Land Parcels with Respect to Proximity to Load Centres, Transfer Pipeline Corridors and Feasible Outfall Locations

A topographical map of Arklow environs was applied, as a background layer, to the 10 remaining land parcels as illustrated in Figure 3.11.1, included in Appendix L. A desk based review, visual survey and assessment of each land parcel in terms of proximity and accessibility to the identified load centres, transfer pipeline corridors and outfall locations was then undertaken. Each land parcel is described below in terms of location, size, elevation, surrounds and access with a summary of the assessment findings provided.

For the purpose of clarity, please see definitions below:

Load Centre: The midway point of the planned siphon crossing the Avoca River, a point to which all flow gravitates to/from the Arklow town sewer network

Centre of the town: The Post Office on Main Street has been identified as a reference point to the centre of the town.

Note: All rising main distances included below are measured along the shortest road network distance to the load centre. Marine outfall distance are measured as straight line distances to the coast.

3.11.1 Parcel 1 – Lamberton & Ballyraine Upper

Location

This land parcel is located between the townlands of Lamberton & Ballyraine Upper, just east of the M11 motorway and approximately 1.5 km west of the centre of Arklow town and has a total area of 6.5 ha. The land slopes downward in a north-east direction with a central elevation of approximately 40.0 mOD.

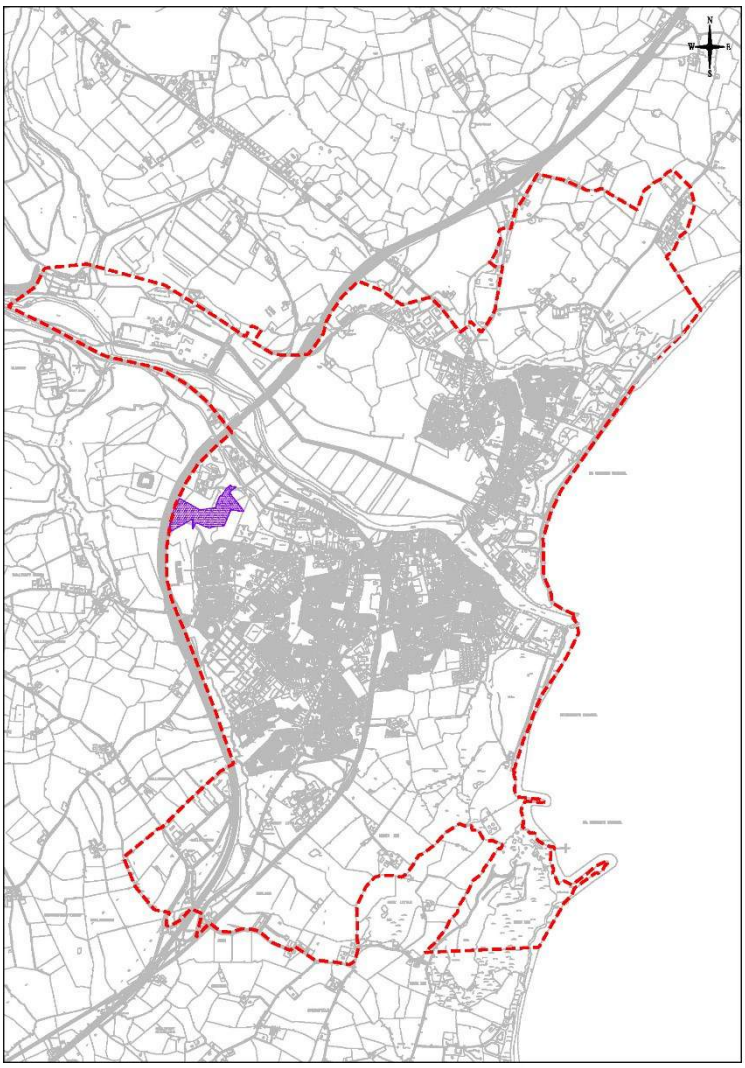
Surrounds

The eastern part of this land parcel is located in open agricultural land (tillage and grassland) while the rest is situated in a heavily wooded area. The Woodlands housing estate lies directly to the south of this parcel and 'Ballyraine House' lies to the North.

Access

Access to this land parcel would be best achieved via Woodlands Park Rd. although access could also be achieved along the R747.

Proximity to Load Centre, Transfer Pipelines Corridors & Outfall



Parcel 1: Lamberton & Ballyraine

This land parcel is approximately 2.45 km from the load centre, as defined in section 3.10.1 of this report. The nearest coastal location is approximately 2.4 km away.

Criteria	Distance
Distance to Load Centre	2.45 km
Distance to Nearest Coastal Location	2.4 km
Total:	**4.85 km**

Further consideration of this land parcel is not proposed as it is not favourably located to the load centre or sea outfall. Upon assessment, access routes to the land parcel also performed less favourably than other land parcels.

3.11.2 Parcel 2 – Bogland & Kish

Location

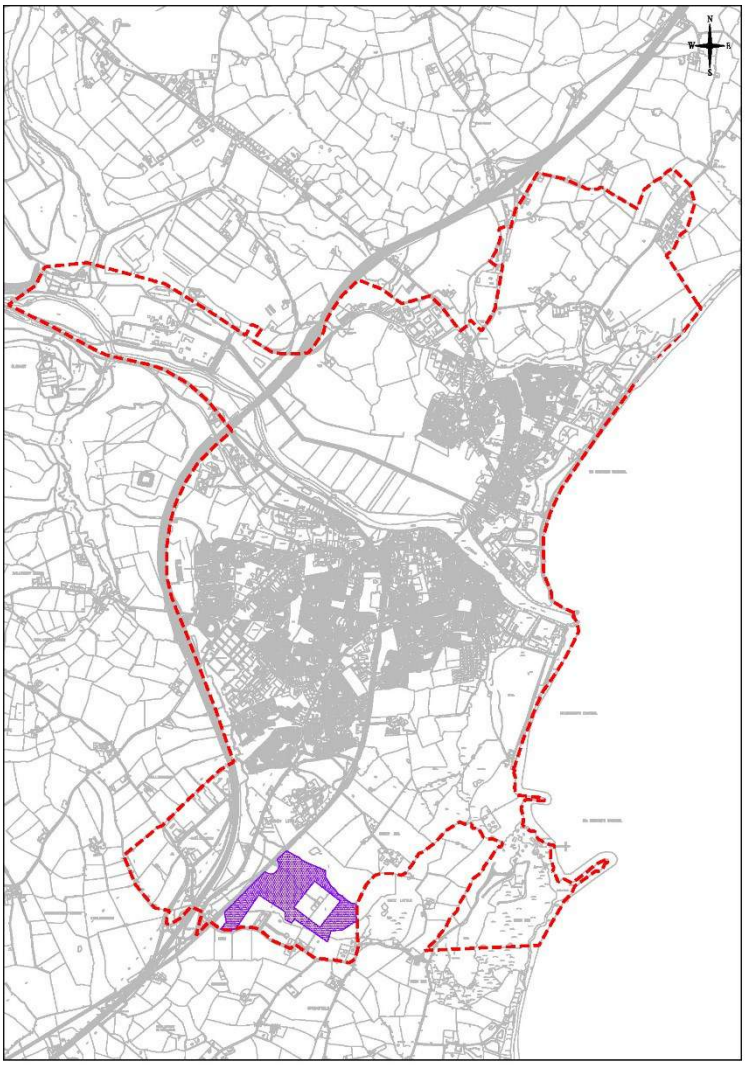
This land parcel is located between the townlands of Bogland & Kish, east of the M11 motorway and approximately 2.5 km south of the centre of Arklow town and has a total area of 22.5 ha. The land has a central elevation of approximately 40.0 mOD.

Surrounds

This land parcel is located in open agricultural land (tillage and grassland). The 20m buffer zone offset from the Dublin South East railway makes up the western boundary of this land parcel while Kish Business Park lies alongside the southern boundar. Although the size of this land parcel is 22.5 ha, it should be noted that the peculiar shape limits the placing of a 2 ha site to few areas.

Access

Access to this land parcel would be best achieved from the 3rd class road off the R772 which provides access to the Kish Business Park.



Parcel 2: Bogland & Kish

Proximity to Load Centre, Transfer Pipelines Corridors & Outfall

This land parcel is approximately 5.2 km from the load centre, as defined in section 3.10.1 of this report. The nearest coastal location is approximately 1.9 km away.

Criteria	Distance
Distance to Load Centre	5.2 km
Distance to Nearest Coastal Location	1.9 km
Total:	**7.1 km**

Further consideration of this land parcel is not proposed as it is not favourably located to the load centre or sea outfall. Access routes to this land parcel also performed less favourably than other land parcels.

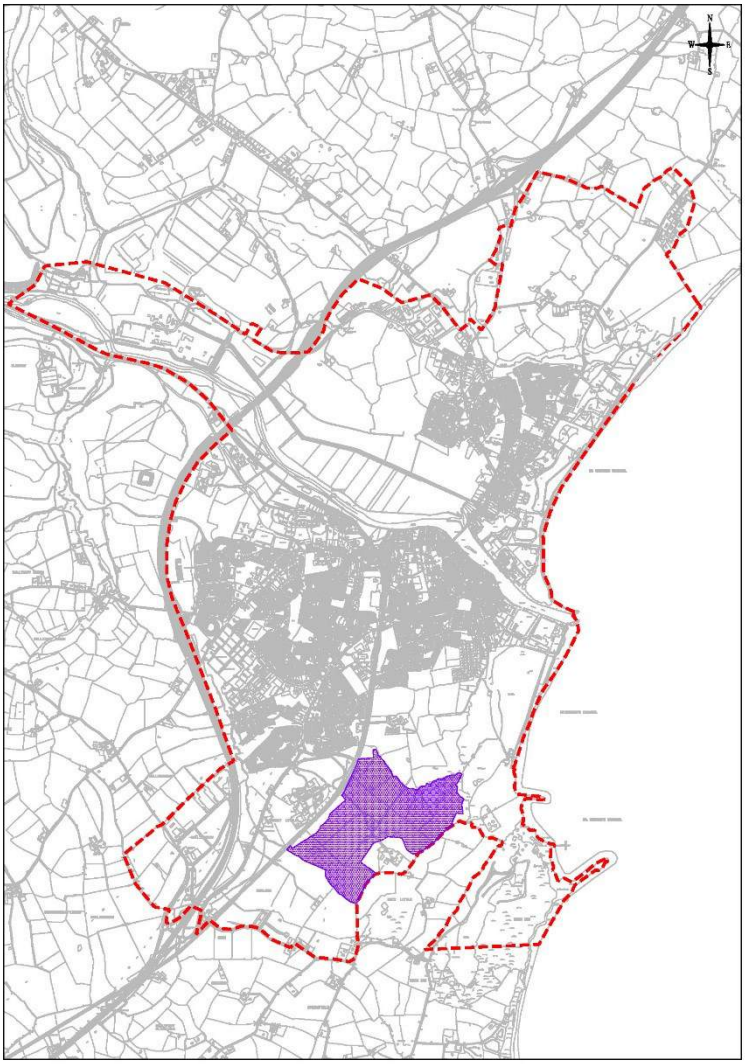
3.11.3 Parcel 3 – Money Big

Location

This land parcel is located in the townland of Money Big, east of the R772 and approximately 1.9 km south of the centre of Arklow town and has a total area of 59.5 ha. The land has a central elevation of approximately 40.0 mOD falling to 20.0 mOD at the boundary of the parcel.

Surrounds

This land parcel is located in open agricultural land (tillage and grassland). The 20m buffer zone offset from the Dublin South East railway line makes up the western boundary of this land parcel while the Arklow golf course and the Arklow Rock quarry make up the north eastern boundary of the parcel. 10 kV power lines traverse the parcel in a north west-south east direction & a north east - south west direction. Servier Laboratories are situated along the western boundary of this parcel. The parcel has 4 ponds located within its boundaries.



Parcel 3: Money Big

Access

Ideally, access to this land parcel would be best achieved from the private road servicing Roadstone Quarry. There is another private road in the centre of this parcel which services a private dwelling. No public roads exist within this land parcel.

Proximity to Load Centre, Transfer Pipelines Corridors & Outfall

This land parcel is approximately 3.75 km from the load centre, as defined in section 3.10.1 of this report. The nearest coastal location is approximately 1.1 km away.

Criteria	Distance
Distance to Load Centre	3.75km
Distance to Nearest Coastal Location	1.1 km
Total:	**4.85 km**

Further consideration of this land parcel is not proposed as it is not favourably located to the load centre or sea outfall. Upon assessment, access routes to the land parcel also performed less favourably than other land parcels.

3.11.4 Parcel 4 – Tinahask Upper

Location

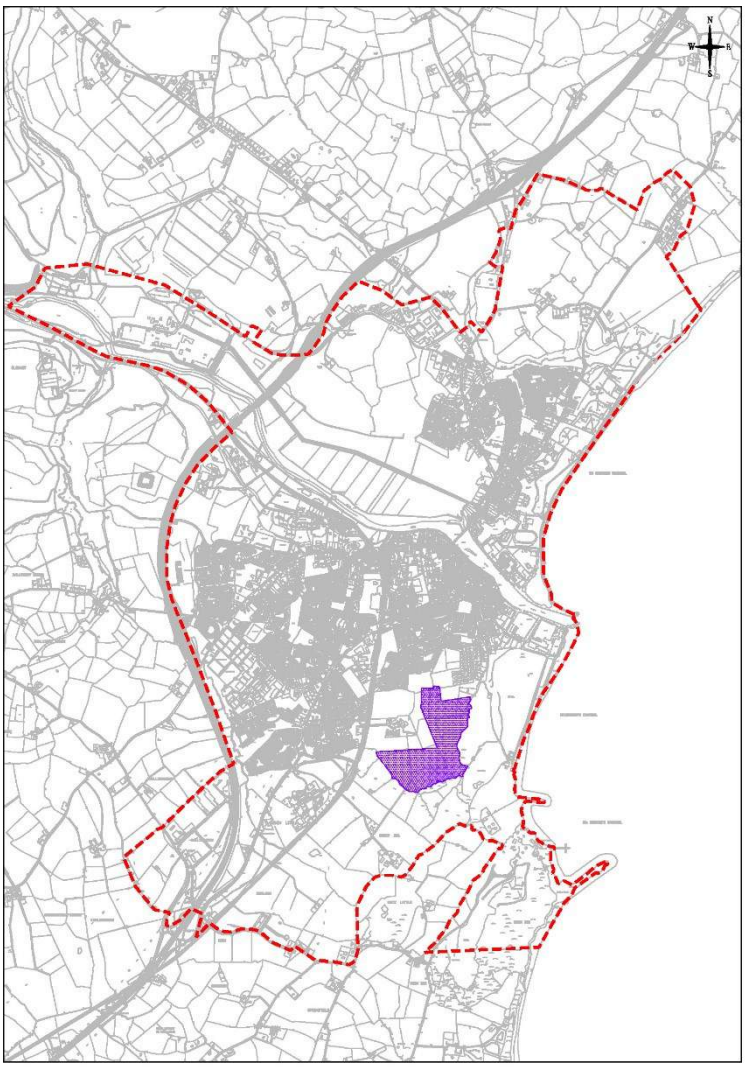
This land parcel is located in the townland of Tinahask Upper, east of the Dublin South East railway line and approximately 1.4 km south of the centre of Arklow town and has a total area of 24.4 ha. The land has a central elevation of approximately 30.0 mOD falling to 20.0 mOD at the eastern boundary of the parcel.

Surrounds

This land parcel is located in open agricultural land (tillage and grassland). The Dublin South East railway line runs parallel to the western boundary while the Arklow golf course makes up the eastern boundary of the parcel. The parcel has 2 ponds located within its boundaries.

Access

There are currently no roads within this land parcel. All roads in the surrounding area are servicing housing developments.



Parcel 4: Tinahask Upper

Proximity to Load Centre, Transfer Pipelines Corridors & Outfall

This land parcel is approximately 2.75 km from the load centre, as defined in section 3.10.1 of this report. The nearest coastal location is approximately 700 m away.

Criteria	Distance
Distance to Load Centre	2.75 km
Distance to Nearest Coastal Location	0.7 km
Total:	**3.45 km**

Despite the poor access to this land parcel, Tinahask Upper is proposed for further consideration under Step 10 given the flexibility it offers with site placement and its proximity to both the load centre and a possible sea outfall location.

3.11.5 Parcel 5 – Ferrybank

Location

This land parcel is located near the mouth of the Avoca River in the townland of Ferrybank, approximately 950 m east of the centre of Arklow town and has a total area of 2.7 ha. The land has a central elevation of approximately < 10.0 mOD.

Surrounds

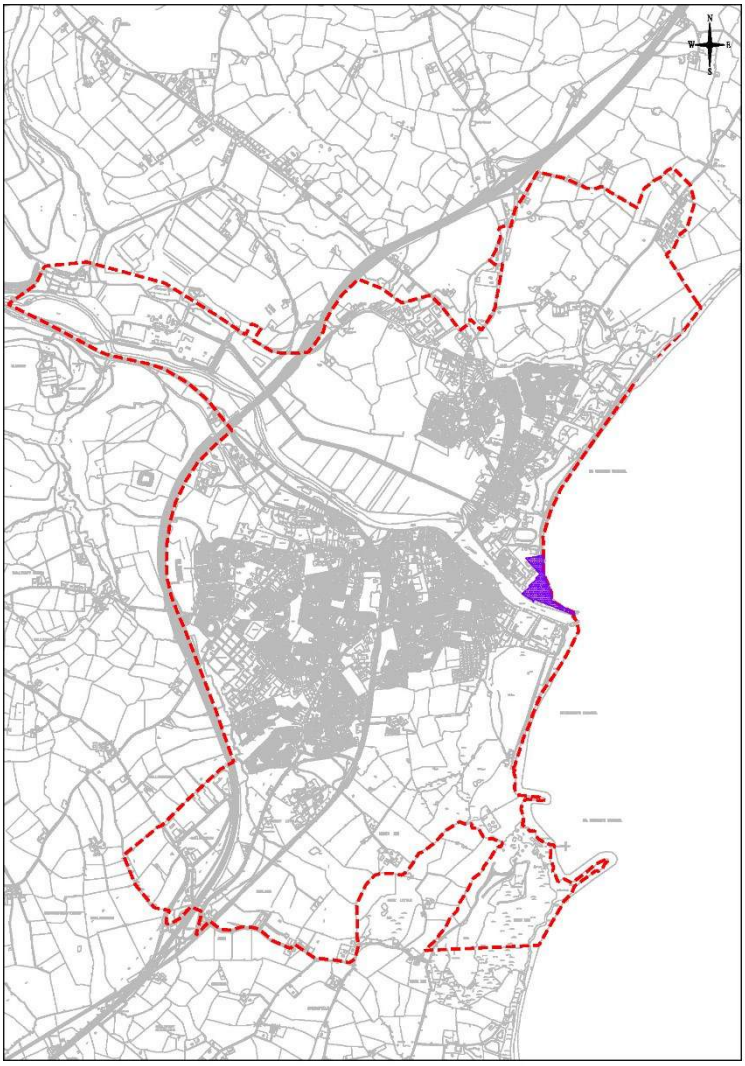
This land parcel encompasses the site of an abandoned gypsum factory, formally Arklow Gypsum Ltd. which closed down in the early 1980's. Disused tanks and buildings occupy the site which is currently lying idle. The land parcel has the Avoca River to the south and terminates at the coastline at Arklow harbour.

Access

Access to this land parcel would be best achieved via Mill Rd.

Proximity to Load Centre, Transfer Pipelines Corridors & Outfall

This land parcel is approximately 520m from the load centre, as defined in section 3.10.1 of this report. Its coastal location makes it ideal for connecting to a sea outfall.



Parcel 5: Ferrybank

Criteria	Distance
Distance to Load Centre	0.52 km
Distance to Nearest Coastal Location	0.0 km
Total:	**0.52 km**

This land parcel is proposed for further consideration under Step 10 given its central elevation, proximity to the load centre and a possible sea outfall location. This land parcel also provides more favourable access routes compared with the other land parcels.

3.11.6 Parcel 6 – Kilbride (ED Kilbride)

Location

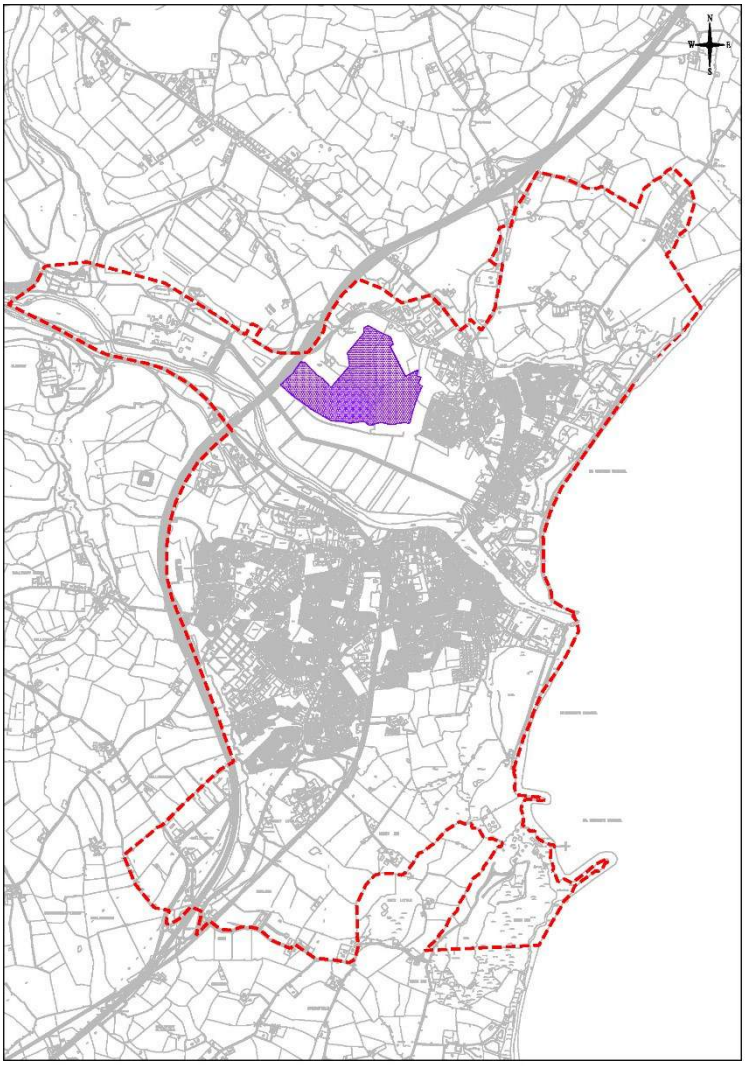
This land parcel is located in the townland of Kilbride (ED Kilbride), east of the M11 motorway and approximately 1.1 km north of the centre of Arklow town and has a total area of 40.8 ha. The land has a central elevation of approximately 20.0 mOD falling to 30 mOD at the northern boundary down to 10.0 mOD at the southern end of the land parcel.

Surrounds

This land parcel is located in open agricultural land (tillage and grassland). The 20m buffer zone offset form the M11 motorway runs along the western boundary while the marsh makes up the southern boundary of the parcel.

Access

There are currently no roads within the parcel, and so access to this land parcel would be best achieved via the 3rd class road towards the northern boundary of the parcel.



Parcel 6: Kilbride (ED Kilbride)

Proximity to Load Centre, Transfer Pipelines Corridors & Outfall

This land parcel is approximately 3.1 km from the load centre, as defined in section 3.10.1 of this report. The nearest coastal location is approximately 1.6 km away.

Criteria	Distance
Distance to Load Centre	3.1 km
Distance to Nearest Coastal Location	1.6 km
Total:	**4.7 km**

Further consideration of this land parcel is not proposed as it is not favourably located to the load centre or sea outfall. Upon assessment, access routes to the land parcel also performed less favourably than some of the other land parcels.

3.11.7 Parcel 7 – Killiniskyduff

Location

This land parcel is located in the townland of Killiniskyduff south of the M11 motorway and approximately 2.2 km north of the centre of Arklow town and has a total area of 23.9 ha. The land has a central elevation of approximately 30.0 mOD and is deemed to be relatively flat.

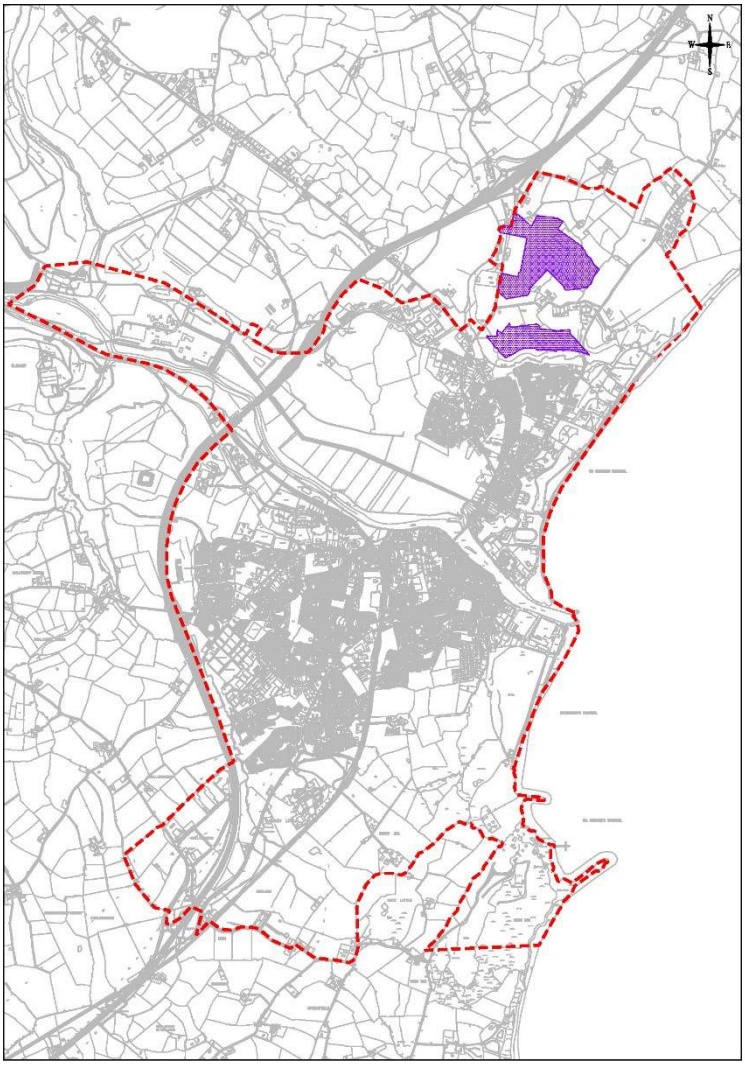
Surrounds

This land parcel is located in open agricultural land (tillage and grassland). The 20m buffer zone offset from the R772 runs in a North-South direction along the western boundary of the parcel. The ESB Arklow 220kV Substation lies on the western boundary of the parcel.

Access

Access to this land parcel would be best achieved via R772 which runs along the western side of this land parcel.

Proximity to Load Centre, Transfer Pipelines Corridors & Outfall



Parcel 7: Killiniskyduff

Parcel 7: Killiniskyduff

This land parcel is approximately 2.5km from the load centre, as defined in section 3.10.1 of this report. The nearest coastal location is approximately 1.1 km away.

Criteria	Distance
Distance to Load Centre	2.5 km
Distance to Nearest Coastal Location	1.1 km
Total:	**3.6 km**

Further consideration of this land parcel is not proposed as it is not favourably located to the load centre or sea outfall. Upon assessment, the elevation of the land parcel also performed less favourably than some of the other land parcels.

3.11.8 Parcel 8 – Ballymoney (ED Kilbride)

Location

This land parcel is located in the townland of Ballymoney (ED Kilbride) south of the M11 motorway and approximately 2.7 km north of the centre of Arklow town and has a total area of 17.9 ha. The land has a central elevation of approximately 30.0 mOD with a downward slope in the southern direction.

Surrounds

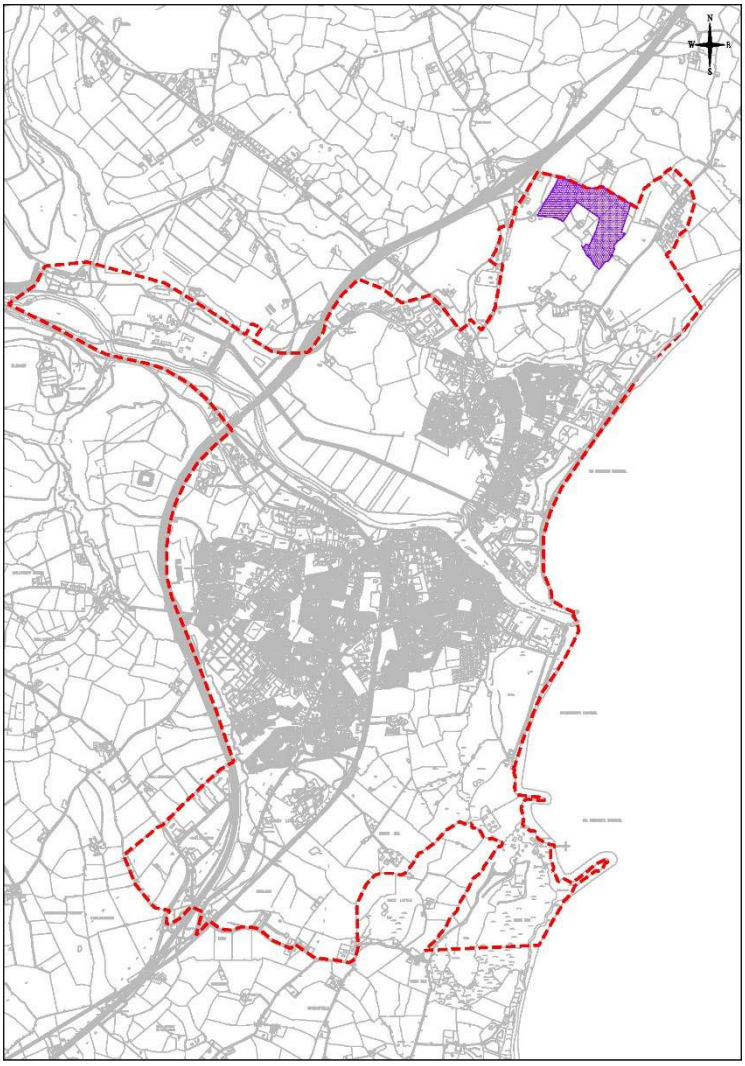
This land parcel is located in open agricultural land (tillage and grassland). A 20m buffer zone offset from the R772 runs in a North-South direction along the western boundary of the parcel.

Access

Access to this land parcel would be best achieved via R772 which runs along the western side of this land parcel.

Proximity to Load Centre, Transfer Pipelines Corridors & Outfall

This land parcel is approximately 3.5km from the load centre, as defined in section 3.10.1 of this report. The nearest coastal location is approximately 1.1 km away.



Parcel 8: Ballymoney (ED Kilbride)

Criteria	Distance
Distance to Load Centre	3.5 km
Distance to Nearest Coastal Location	1.1 km
Total:	**4.6 km**

Further consideration of this land parcel is not proposed as it is not favourably located to the load centre or sea outfall. Upon assessment, the elevation of the land parcel also performed less favourably than some of the other land parcels.

3.11.9 Parcel 9 – Seabank

Location

This land parcel is located in the townland of Seabank approximately 2.0 km north east of the centre of Arklow town and has a total area of 23.6 ha. The land has a central elevation of approximately 20.0 mOD with a downward slope towards the coast.

Surrounds

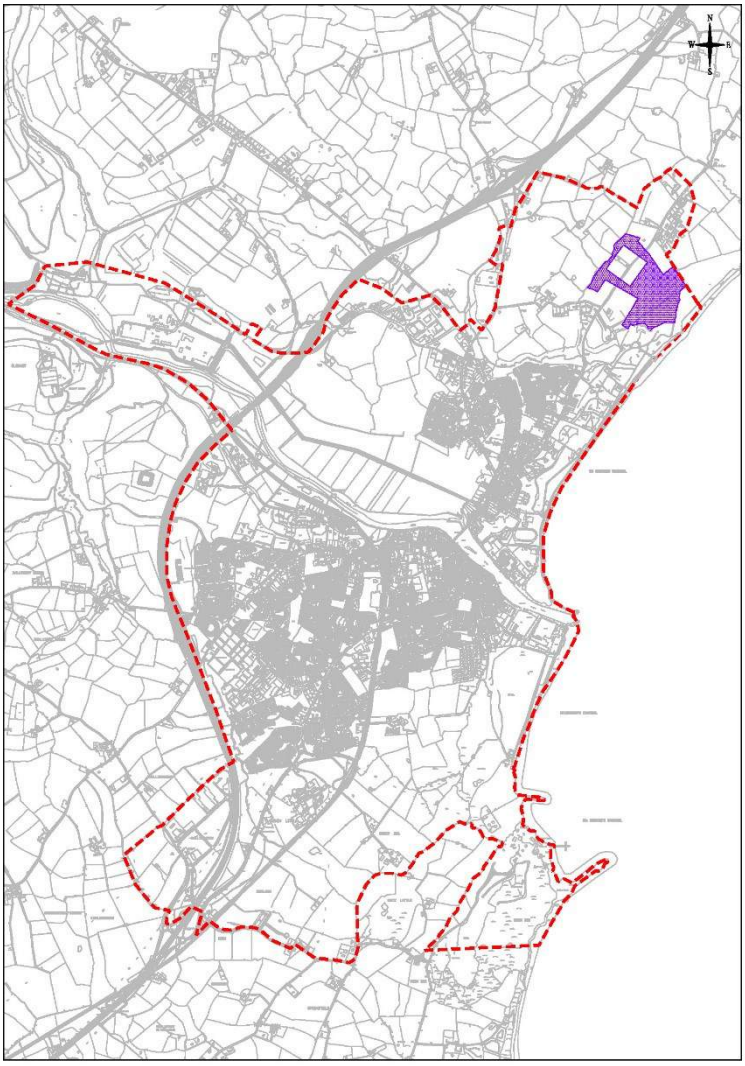
This land parcel is located in open agricultural land (tillage and grassland) with a 20 m buffer zone offset from either side of the R750 running through the centre of the parcel.

Access

Access to this land parcel would be best achieved via R750 which runs along through the centre of the parcel.

Proximity to Load Centre, Transfer Pipelines Corridors & Outfall

This land parcel is approximately 2.75km from the load centre, as defined in section 3.10.1 of this report. The nearest coastal location is approximately 350 m away.



Parcel 9: Seabank

Criteria	Distance
Distance to Load Centre	2.75 km
Distance to Nearest Coastal Location	0.35 km
Total:	**3.1 km**

This land parcel is proposed for further consideration under Step 10 given its proximity to the load centre and a possible sea outfall location.

3.11.10 Parcel 10 – Shelton Abbey

Location

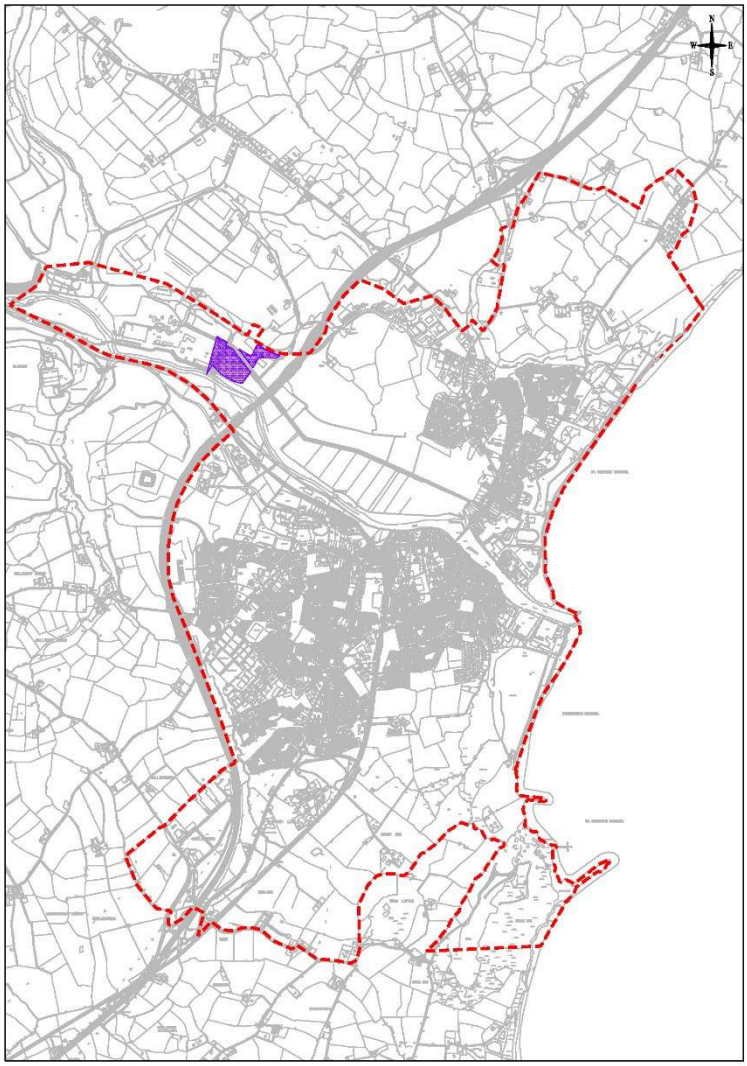
This land parcel is located in the townland of Shelton Abbey approximately 1.8 km north east of the centre of Arklow town and has a total area of c. 6 ha. The land has a central elevation of approximately 0-10.0 mOD and has a gentle fall in the direction of the river.

Surrounds

This land parcel is located next to the site of the old IFI plant which was closed down in July 2000. The parcel is mainly grassed with some forestation in the northern sections. High voltage power lines traverse the north-south direction of the parcel and there is a pylon located alongside the northern border.

Access

Access to this land parcel would be best achieved via the minor road connecting the R747 and beech road. This road runs alongside northern border of the parcel.



Parcel 10: Shelton Abbey

Proximity to Load Centre, Transfer Pipelines Corridors & Outfall

This land parcel is approximately 2.25 km from the load centre, as defined in section 3.10.1 of this report. The nearest coastal location is approximately 2.6 km away.

Criteria	Distance
Distance to Load Centre	2.25 km
Distance to Nearest Coastal Location	2.6 km
Total:	**4.85 km**

Further consideration of this land parcel is not proposed as it is not favourably located to the load centre or sea outfall. The high voltage running through the centre of the parcel would also pose a significant service re-routing issue.

3.11.11 Land Parcels for Further Consideration

Following Step 9 of the ASA process, the following land parcels are remaining:

- Ferrybank
- Seabank
- Tinahask Upper

3.12 Step 10 – Assessment of the Land Parcels with Respect to High Level Defined Engineering and Design Constraints

The 3 remaining land parcels as listed in Section 3.11.11 above were assessed under high level engineering and design constraints as follows:

- Interception points and invert levels on the existing drainage network and the load centre;
- Elevation of the individual land parcels;
- Consideration of whether the forward flows to the WWTP from the load centres could be achieved by gravity or pumped flows;
- Pipeline gradients; and
- Consideration of power requirements and energy usage for pumped flows.

The entire land profile, from the interception point on the existing drainage networks, to the treatment plant inlet, through the plant itself, and onwards to the coast and the submarine outfall, are all important factors in defining the overall engineering advantages of a given land parcel.

Adequate gradient to achieve self-cleansing velocities in foul sewerage conveyance pipelines or tunnels, in all flow conditions of operation, is essential, in order to avoid solids deposition, septicity, and shock loadings at the onset of wet weather.

The volumes to be transferred are large (c. 18,200 m^3/day for phase 1 commissioning and 26,300 m^3/day for phase 2 commissioning), and minimisation of pumping energy usage is important. An ideally elevated site will be high enough, so as to permit the treated effluent to discharge, from the WWTP, to the outfall, at all stages of the tide. Pumping to a site which is unnecessarily high, and beyond this minimum desirable elevation, is wasteful of energy.

Under this assessment the land parcels at Tinahask Upper & Seabank performed less favourably than Ferrybank. The elevation of this land parcel is closer to the elevation of the pumping station. As a result of this, power requirements and energy usage for pumped flows will be significantly higher at Tinahask Upper and Seabank. However, all 3 land parcels remain viable options as it was not deemed appropriate at the preliminary screening stage to rule them out without closer examination. This criteria will be examined more closely in Phase 2.

3.13 Step 11 – Compilation of Short List of Land Parcels to take forward to Phase Two.

It is recommended that the 3 remaining land parcels (Ferrybank, Seabank & Tinahask Upper) and the potential pipeline corridors shown in Figure 3.13.1: Appendix M, be brought forward for further consideration against a range of technical and environmental criteria under Phase 2: Sites Assessment.

At this stage of the assessment process, potential route corridors as shown in Figure 3.13.1: Appendix M, have been identified. The final routing of the transfer pipelines within these corridors will be determined following Phase 2 of the Sites Assessment process.

4.0 Conclusions

4.1 Summary

Upon completion of Phase 1, three remaining land parcels have been deemed more favourable locations and are to be brought forward for further consideration. These three parcels include

- Ferrybank
- Seabank
- Tinahask Upper

4.2 Next Steps

It is understood that Irish Water intend to enter a non-statutory consultation process with stakeholders and the public to attain input on the selection process used for the proposed location of the Arklow WWTP. Upon receipt of submissions from stakeholders and the public, it is proposed to enter a second statutory consultation process as part of the selection process for the preferred location of the new WWTP.

4.2.1 Phase 1

The first step of public consultation is due to commence on the 15th of October 2014 and will end on the 5th December 2014.

4.2.2 Phase 2

Phase 2 consists of the assessment of the short listed potential alternative land parcels, marine outfall locations and transfer pipeline corridors identified in Phase 1. During Phase 2, land parcels will be assessed against a range of environmental and technical criteria including but not limited to ecology, cultural heritage, landscape, air quality, climate, traffic, land use, planning policy, engineering and design constraints, capital and operational costs. Any issues raised during this public consultation will be scheduled in a Factual Consultation Report. The Factual report will be considered by the Project Team as part of the assessment process to identify the emerging preferred site options.

Following completion of the Phase 2 process, it is anticipated that Irish Water will commence the formal planning permission process for the preferred WWTP site.