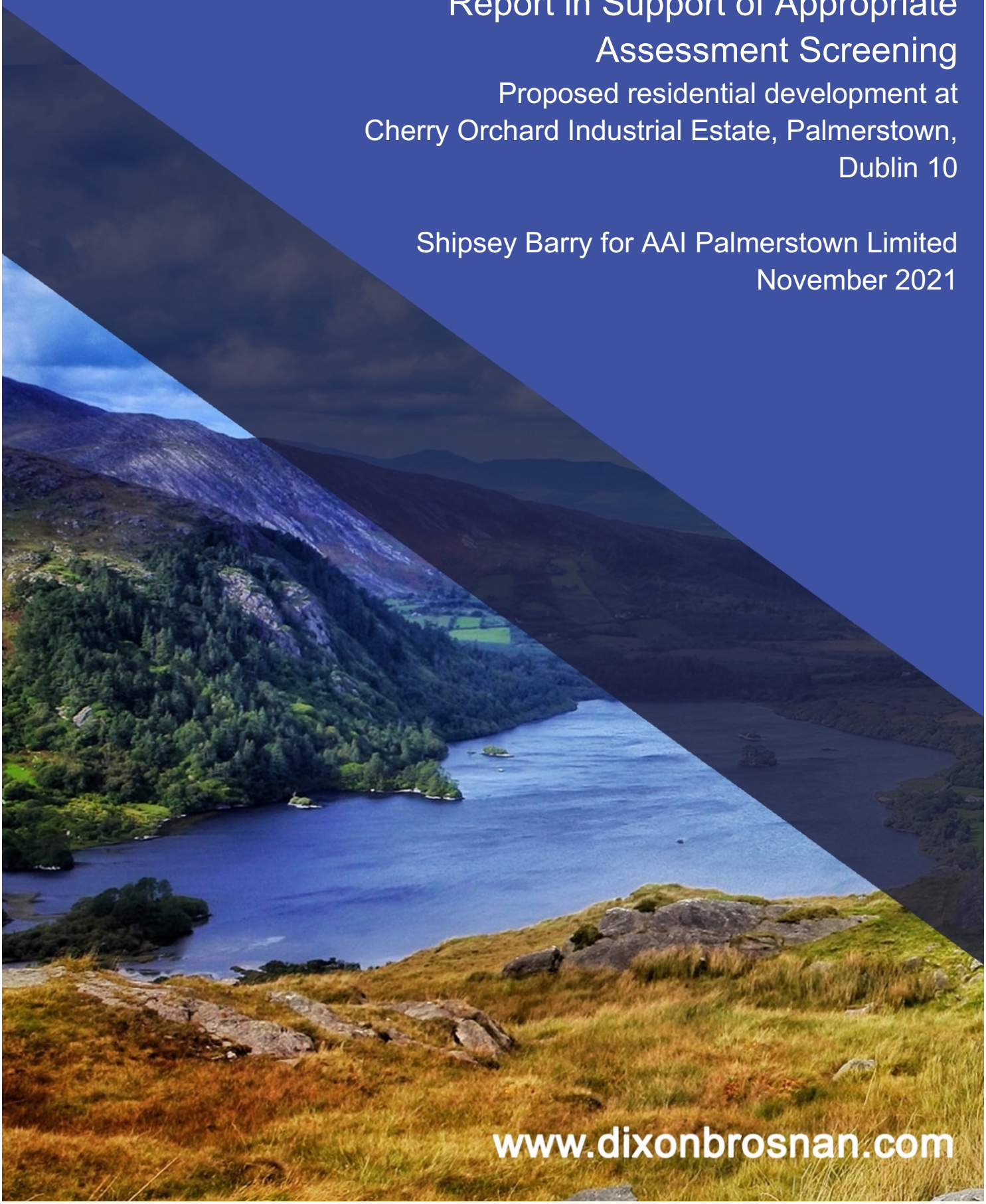
DixonBrosnan
environmental consultants

Report in Support of Appropriate Assessment Screening

Proposed residential development at
Cherry Orchard Industrial Estate, Palmerstown,
Dublin 10

Shipsey Barry for AAI Palmerstown Limited
November 2021



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Project	Report in Support of Appropriate Assessment Screening Proposed residential development at Cherry Orchard Industrial Estate Palmerstown, Dublin 10	
Client	AAI Palmerstown Limited	
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1. Introduction

1.1 Background

The information in this report has been compiled by DixonBrosnan Environmental Consultants, on behalf of the applicant. It provides information on and assesses the potential for the proposed development at Units 64 & 65, Cherry Orchard Industrial Estate, Palmerstown, Dublin 10, to impact on any Natura 2000 sites within its zone of influence.

The Birds Directive (2009/147/EC) and the Habitats Directive (92/42/EEC) put an obligation on EU Member States to establish the Natura 2000 network of sites of highest biodiversity importance for rare and threatened habitats and species across the EU. In Ireland, the Natura 2000 network of European sites comprises Special Areas of Conservation (SACs, including candidate SACs) and Special Protection Areas (SPAs, including proposed SPAs). SACs are selected for the conservation of Annex I habitats (including priority types which are in danger of disappearance) and Annex II species (other than birds). SPAs are selected for the conservation of Annex I birds and other regularly occurring migratory birds and their habitats. The annexed habitats and species for which each site is selected correspond to the qualifying interests of the sites and from these the conservation objectives of the site are derived. The Birds and Habitats Directives set out various procedures and obligations in relation to nature conservation management in Member States in general, and of the Natura 2000 sites and their habitats and species in particular. A key protection mechanism is the requirement to consider the possible nature conservation implications of any plan or project on the Natura 2000 site network before any decision is made to allow that plan or project to proceed. Not only is every new plan or project captured by this requirement but each plan or project, when being considered for approval at any stage, must take into consideration the possible effects it may have in combination with other plans and projects when going through the process known as Appropriate Assessment (AA).

The obligation to undertake Appropriate Assessment (AA) derives from Article 6(3) and 6(4) of the Habitats Directive, and both involve a number of steps and tests that need to be applied in sequential order. Article 6(3) is concerned with the strict protection of sites, while Article 6(4) is the procedure for allowing derogation from this strict protection in certain restricted circumstances. As set out in Section 177U of the Planning and Development Act 2000 as amended, a screening for appropriate assessment of an application for consent for the proposed development must be carried out by the competent authority to assess, in view of best scientific knowledge, if the proposed development, individually or in combination with another plan or project is likely to have a significant effect on any European site. Each step in the assessment process precedes and provides a basis for other steps. The results at each step must be documented and recorded carefully so there is full traceability and transparency of the decisions made.

1.2 Aim of Report

The purpose of this report is to inform the AA process as required under the Habitats Directive (92/43/EEC) in instances where a plan or project may give rise to significant impacts on a Natura 2000 site. This report aims to inform the Appropriate Assessment process in determining whether the development, both alone and in combination with other plans or projects, are likely to have a significant impact on the Natura 2000 sites in the study area, in the context of their conservation objectives and specifically on the habitats and species for which the sites have been designated.

This report has been prepared with regard to the following guidance documents, where relevant.

- *Managing Natura 2000 Sites: The Provision of Article 6 of the Habitats Directive 92/43/EEC* (European Commission (EC), 2018);
- *Assessment of Plans and Projects Significantly Affecting Natura 2000 sites: Methodical Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC* (European Commission (EC), 2001);
- *Guidance Document on Article 6(4) of the Habitats Directive 92/43/EEC* (European Commission, (EC) 2007);
- *Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities* (Department of Environment, Heritage and Local Government, 2010 revision);
- *Appropriate Assessment under Article 6 of the Habitats Directive; Guidance for Planning Authorities. Circular NPW 1/10 and PSSP 2/10* (Department of Environment, Heritage and Local Government, 2010);
- *Guidelines for Good Practice Appropriate Assessment of Plans under Article 6(3) Habitats Directive* (International Workshop on Assessment of Plans under the Habitats Directive, 2011);
- *Commission notice Guidance document on wind energy developments and EU nature legislation*, (EC 2020);
- *Communication from the Commission on the precautionary principle. European Commission* (2000) and
- CJEU Case C 164/17 Edel Grace Peter Sweetman v An Bord Pleanála.

1.3 Authors of Report

This report was prepared by Carl Dixon MSc. (Ecological Monitoring), Sorcha Sheehy PhD (Ecology/Ornithology) and Cian Gill MSc (Ecology).

Carl Dixon MSc (Ecology) is a senior ecologist who has over 20 years' experience in ecological and water quality assessments with particular expertise in freshwater ecology. He also has experience in mammal surveys, invasive species surveys and ecological supervision of large-scale projects. Projects in recent years include the Waste to Energy Facility Ringaskiddy, Shannon LNG Project, supervision of the Fermoy Flood Relief Scheme, Skibbereen Flood Relief Scheme, Upgrade of Mallow WWTP Scheme, Douglas Flood Relief Scheme, Great

Island Gas Pipeline etc. He has carried out ecological surveys and prepared AA/NIS reports for a range of projects.

Sorcha Sheehy PhD (ecology/ornithology) is an experienced ecological consultant with over ten years' experience. She has worked on Screening/NIS's for a range of small and large-scale projects with particular expertise in assessing impacts on birds. Recent projects include bird risk assessments for Dublin and Cork Airports, Waste to Energy Facility Ringaskiddy and Water Storage Schemes for Irish Water.

Cian Gill MSc (Ecology) is a qualified ecologist with ten years' experience working with wildlife and ecology-based NGOs and public bodies in Ireland, the UK and the US. Past projects include invasive species planning for the city of Rosemount, Minnesota, and the Under The Sea project for Essex Wildlife Trust. Recent projects include ecological reports for Cork-based housing and private developments.

2. Regulatory Context and Appropriate Assessment Procedure

2.1 Regulatory Context

The Habitats Directive (Council Directive 92/43/EEC on the *Conservation of Natural Habitats and of Wild Fauna and Flora*) aims to maintain or restore the favourable conservation status of habitats and species of community interest across Europe. The requirements of these directives are transposed into Irish law through the European Communities (Birds and Natural Habitats Regulations; S.I. No. 477 of 2011).

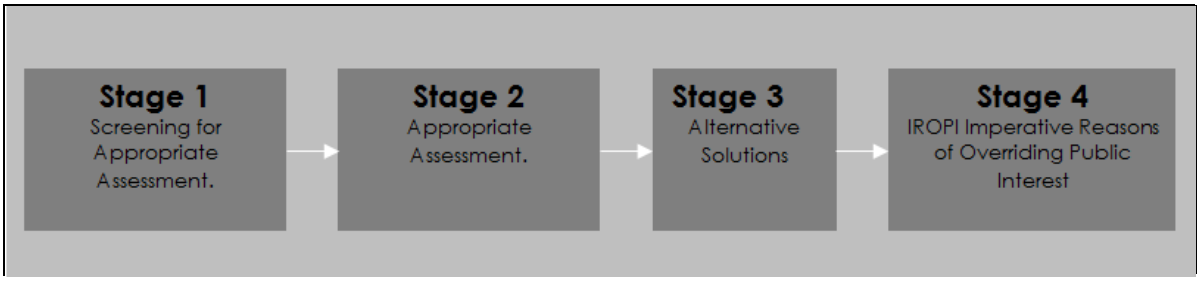
Under the Directive a network of sites of nature conservation importance have been identified by each Member State as containing specified habitats or species requiring to be maintained or returned to favourable conservation status. In Ireland the network consists of SACs and SPAs, and also candidate sites, which form the Natura 2000 network.

Article 6(3) of Council Directive 92/43/EEC of 21 May 1992 on the *Conservation of Natural Habitats and of Wild Fauna and Flora* (as amended) (hereafter 'the Habitats Directive') requires that, any plan or project not directly connected with or necessary to the management of a designated site, but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. A competent authority (e.g. the EPA or Local Authority) can only agree to a plan or project after having determined that it will not adversely affect the integrity of the site concerned.

The possibility of a significant effect on a designated or "European" site has generated the need for an appropriate assessment to be carried out by the competent authority for the purposes of Article 6(3). A Stage Two Appropriate Assessment is required if it cannot be excluded, on the basis of objective information, that the proposed development, individually or in combination with other plans or projects, will have a significant effect on a European site. The first (Screening) Stage for appropriate assessment operates merely to determine whether a (Stage Two) Appropriate Assessment must be undertaken on the implications of the plan or project for the conservation objectives of relevant European sites.

2.2 Appropriate Assessment Procedure

The assessment requirements of Article 6(3) establish a stage-by-stage approach. This assessment follows the stages outlined in the 2001 European Commission publications "Assessment of plans and projects significantly affecting Natura 2000 sites: methodological guidance on the provisions of Articles 6(3) and 6(4) of the Habitats Directive 92/43/EEC" (2001) and Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (Draft) Office for Official Publications of the European Communities, Luxembourg (EC, 2015);



The stages are as follows:

Stage One: Screening — the process which identifies any appreciable impacts upon a Natura 2000 site of a project or plan, either alone or in combination with other projects or plans, and considers whether these impacts are likely to be significant;

Stage Two: Appropriate assessment — the consideration of the impact on the integrity of the Natura 2000 site of the project or plan, either alone or in combination with other projects or plans, with respect to the site's structure and function and its conservation objectives. Additionally, where there are adverse impacts, an assessment of the potential mitigation of those impacts;

Stage Three: Assessment of alternative solutions: The process which examines alternative ways of achieving the objectives of the project or plan that avoid adverse impacts on the integrity of the Natura 2000 site. It is confirmed that no reliance is placed by the developer on Stage Three in the context of this application for development consent;

Stage Four: Assessment where no alternative solutions exist and where adverse impacts remain — an assessment of compensatory measures where, in the light of an assessment of imperative reasons of overriding public interest (IROPI), it is deemed that the project or plan should proceed (it is important to note that this guidance does not deal with the assessment of imperative reasons of overriding public interest). Again, for the avoidance of doubt, it is confirmed that no reliance is placed by the developer on Stage Four in the context of this application for development consent.

It is the responsibility of the competent authority to make a decision on whether or not the proposed development should be approved, taking into consideration any potential impact upon any Natura 2000 site within its zone of influence.

3. Receiving Environment

3.1. Existing Site

The proposed development site is located at the former warehouse facility at units 64 & 65, Cherry Orchard Industrial Estate (**Figure 1**). The site presents a gateway location at the Western junction of Kennelsfort Road Upper and the Eastern industrial estate. The existing buildings on the site will be demolished and the existing surface & foul drainage and watermain lines on the site will be grubbed up and removed. The proposed site measures approximately 0.763ha.

The site is bound by the Kennelsfort Road Upper to the west, Cherry Orchard Industrial Estate Road to the south. There are retail units to the northern boundary of the site and warehouse units to the east. The topography of the site shows a decrease in level of the surrounding roads falling from south to north along Kennelsfort Road Upper. However, due to its previous development, the site itself remains fairly level and the interfaces between the site and the surrounds are relatively level. At the east boundary, the elevation rises from the site to the road and at the south road boundaries the site is similar level to the road.

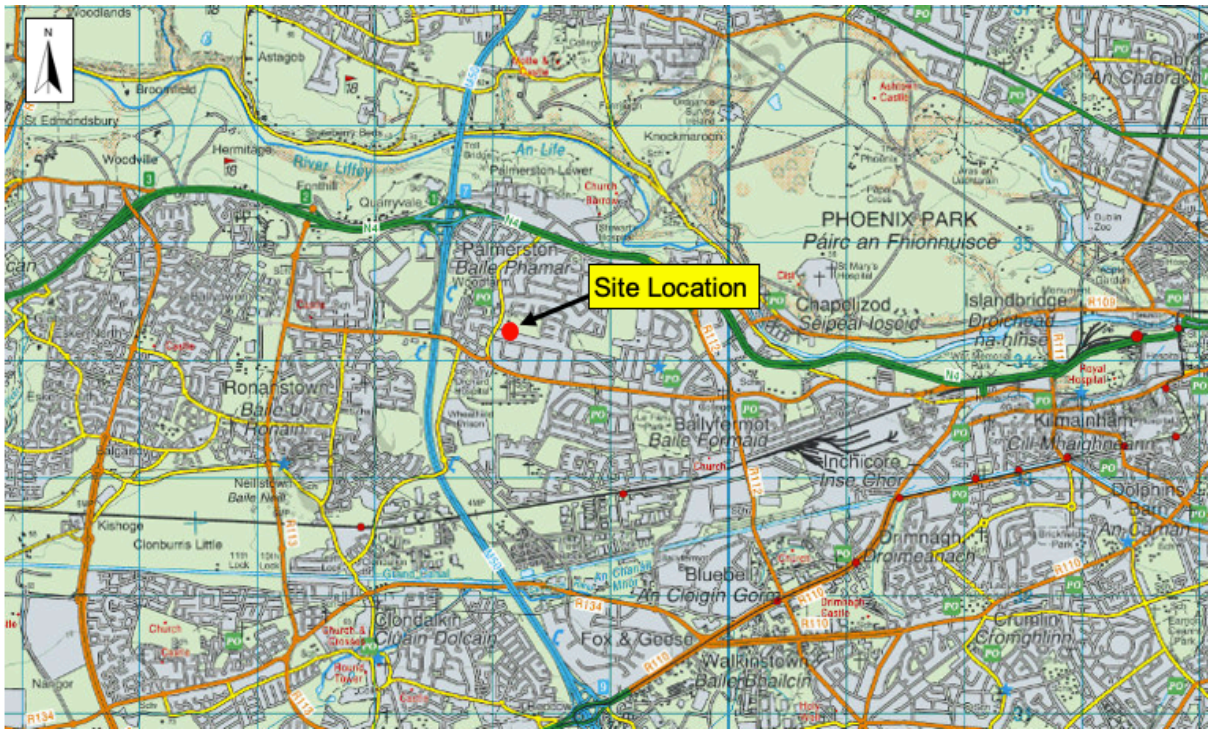


Figure 1. Site location| Source OSI.ie

Figure 2. Site boundary and local enviros | Source OSI.ie

3.2 Proposed Development

Proposed on the site are four apartment blocks, ranging in height between five and nine storeys. The proposal is for 148 apartments and associated facilities with a mix of one-bedroom apartments and two bedroom apartments. On-site parking is contained within a landscaped podium element with 2 on street go-car spaces provided. Vehicular access to the site will be provided in the southeast corner from Cherry Orchard Industrial Estate road. The podium green space is centrally located, and the four apartment buildings are set out around this, with access to the green space. Two buildings have direct access to the public street to the west and south respectively. The landscaped podium is accessible from both external public roads via steps. The parking area is located below the podium level and is accessed directly from road level along the southern boundary as noted above. All necessary services for the buildings are to be provided and connected into existing services in the area.

An overview of the proposed development site is shown in **Figure 3**.

Figure 3. Approximate overview of proposed development site | Source ShipseyBarry

3.2.1 Surface Water Drainage

Local Authorities require that all developments must include a sustainable urban drainage system, SUDS. A combination of SuDs mechanisms will be utilised on this site. This includes; permeable surfacing with stone storage, bio retention landscaped areas and tree pits, stone storage systems fed by slot drains on the podium slab and green roofing. Based on the combined approach an attenuation tank is not required. All possible SuDs mechanisms have been explored. Given the nature of the site with the building layout, podium slab and limited open space at ground level it is not feasible to utilize swales, ponds etc. The site investigation indicates that infiltration is not available. On this basis the subbase of the porous asphalt is designed to store the run-off generated by storm events. Green roofs have been provided on the apartment blocks for the most part.

To alleviate any possible risk of flood the on-site surface water storage is designed for a 1 in 100-year storm (+20%). A 20% increase in runoff due to global warming is included as per “Greater Dublin Regional Code of Practice for Drainage Works” and the “GDSDS”. Site specific MET Eireann Rainfall data has been used in the surface water drainage and attenuation design. Site specific MET Eireann Rainfall data has been used in the surface water drainage and attenuation design. The surface water will be dealt with and stored on site and a connection to the existing surface water drainage system will be used to dispose of the surface water from the developed site. To provide the required attenuation volume the stone sub bases have been designed as storage. A connection to the public surface water system (750mm dia. Surface water pipe) on the Cherry Orchard Industrial Estate road south of the

site via a hydrobrake limiting discharge to 2 L/s. Site specific Greenfield runoff rate has been used in the calculations. Based on this this flow rate and the site hard standing the required volume for each area has been calculated.

The surface water strategy for each hard standing area is outlined below.

- The stone storage on the podium will be used to deal with the surface water in this area. A stone paving with falls to slot drains and a stone sub base build up will be provided.
- The external perimeter path will be dealt with via falls on the hard standing area to the tree pits and bioretention rain landscaped areas at street level
- The entrance road surfacing will take the form of porous asphalt and will provide storage for the run-off from the road, car park area and the roof area (450mm depth)

The surface run-off from the car park will be connected to the stone buildup in the porous asphalt entrance road via a petrol interceptor (Kingspan NSBP003). The proposed car park drainage layout for the development and the location of petrol interceptor is indicated on the drainage layout. The car park drainage will consist of a standard concrete finish car park slab laid to falls to surface water gullies and below slab 150mm diameter pipes.

There is an existing 225mm public surface water sewer traversing the site to the west. 2HP confirm a wayleave will be registered with the Property Registration Authority in favour of South Dublin County Council in relation to the existing sewer where it traverses the site. The extents of the wayleave will be agreed with South Dublin County Council. A minimum clear setback distance of 3m will be provided between all structures and trees and the centreline of the surface water sewer.

There will be a complete separation of the foul and surface water drainage systems within the site, both in respect of installation and use. The surface water drains are designed in accordance with BS EN 752, Code of Practice for Drainage Outside Buildings. Drawings included in **Appendix 3** show the proposed surface water layout.

3.2.2. Foul Water Drainage

The foul drainage system has been designed in accordance with Irish Water Code of Practice and Standard Details for Wastewater, BS 8301:1985, Code of Practice for Building Drainage and the current Building Regulations and Irish Water Code of Practice.

The foul drainage system for the development is a gravity feed system falling to the public foul drainage system (225mm dia. foul water pipe) on the Cherry Orchard Industrial Estate road south of the site on site. The development will not result in a significant increase in foul discharge from the site on the public sewer and we do not anticipate any capacity problems. The main foul sewers in the proposed development are to consist of 225mm diameter uPVC pipes with fall 1/170 chosen throughout to minimise the risk of blockages and to aid maintenance. Based on the 225mm diameter pipes with a 1:170 fall, the design flow is calculated as 34.94 l/s. A roughness coefficient (ks) of 1.5mm is applied to the design of all pipes.

A Confirmation of Feasibility and Statement of Design Acceptance for the development has been received from Irish Water, refer to letter contained in **Appendix 2**. Irish Water have confirmed the development is feasible without upgrade by Irish Water. Drawings included in **Appendix 3** show the proposed foul drainage layout.

3.2.3. Water Supply System

There is an existing 150mm diameter asbestos water main on the Cherry Orchard Industrial Estate road south of the site on site. A looped 100mm diameter HDPE watermain will be installed on site with a new connection to this public water main.

In accordance with requirements air valves and scour valves will be provided around the site as necessary. Hydrants will be provided as directed by the Fire Safety Certificate and Technical Guidance Document B of the Building Regulations 2006. Water saving devices including aerated taps and low water usage appliances will be used in the proposed development in accordance with best practice. The water supply system has been designed and will be installed in accordance with Irish Water Code of Practice and Standard Details for Water. Confirmation of Feasibility and Statement of Design Acceptance for the development has been received from Irish Water, refer to letter contained in **Appendix 2**. Irish Water have confirmed the development is feasible without upgrade by Irish Water.

3.2.4. Flood Risk Assessment

Initially a desktop flood risk assessment was undertaken to identify possible sources of flooding and the risk posed to the development, and separately the risk posed to surrounding areas because of the development. A number of sources of information were reviewed including the OPW's websites, www.floodmaps.ie and www.floodinfo.ie, and Appendix 13 of Dún Laoghaire-Rathdown County Development Plan 2016-2022.

External Sources

The site is situated far enough away from the sea not to be subjected to coastal or tidal flooding. The OPW flood mapping website, www.floodmaps.ie has been reviewed, and from the information contained in this report it is evident that the site has not been subjected to flooding during previously reported flooding events. The surrounding land slopes away from the site. As such it is reasonable to assume there is no risk to the proposed development resulting from flooding off-site.

Internal sources

It is intended that all surface water run off generated by the 1in100 year storm will be dealt with via attenuation tank storage and porous surfacing. An allowance has been made for a 20% increase in runoff due to global warming, as per the "Greater Dublin Strategic Drainage Study" recommendations. As such the proposed development is deemed not to be subjected to pluvial flooding from internal sources.

Due to all these factors the risk of flooding is deemed to be minimal.

4. Screening

4.1 Introduction

This section contains the information required for the competent authority to undertake screening for AA for the proposed development.

The aims of this section are to:

- Determine whether the proposed development is directly connected with, or necessary to, the conservation management of any Natura 2000 Sites;
- Provide information on, and assess the potential for the proposed development to significantly effect on Natura 2000 Sites (also known as European sites); and
- Determine whether the proposed development, alone or in combination with other projects, is likely to have significant effects on Natura 2000 sites in view of their conservation objectives.

The proposed development is not directly connected with, or necessary to the conservation management of any Natura 2000 sites.

4.2 Study Area and Scope of Appraisal

Natura 2000 sites (European sites) are only at risk from significant effects where a source-pathway-receptor link exists between a proposed development and a Natura 2000 site(s). This can take the form of a direct impact (e.g. where the proposed development and/or associated construction works are located within the boundary of the Natura 2000 site(s) or an indirect impact where impacts outside of the Natura 2000 site(s) affect ecological receptors within (e.g. impacts to water quality which can affect riparian habitats at a distance from the impact source).

Considering the Natura 2000 sites present in the region, their Qualifying Interests (QIs) and conservation objectives, and any potential impact pathways that could link those sites to the proposed development area, a distance of 15km was considered appropriate to encompass all Natura 2000 sites potentially within the Zone of Influence (ZoI) of the proposed development.

Thus, any appreciable direct, indirect or cumulative impacts which could arise from the proposed development in relation to the designated sites within this zone were considered.

4.3 Field Study

A site inspection was carried out on the 21st of April 2021 to identify the habitats, flora and fauna present at the site. The surveys assessed the potential for all Qualifying Interests (QIs)/ Special Conservation Interests (SCIs) of European sites and third schedule invasive species to occur within the proposed site.

4.4 Source-Pathway-Receptor Model

The likely effects of the proposed development on any European site has been assessed using a source-pathway-receptor model, where:

- A 'source' is defined as the individual element of the proposed works that has the potential to impact on a European site, its qualifying features and its conservation objectives.
- A 'pathway' is defined as the means or route by which a source can affect the ecological receptor.
- A 'receptor' is defined as the SCI of SPAs or QI of SACs for which conservation objectives have been set for the European sites being screened.

A source-pathway-receptor model is a standard tool used in environmental assessment. In order for an effect to be likely, all three elements of this mechanism must be in place. The absence or removal of one of the elements of the mechanism results in no likelihood for the effect to occur. The source-pathway-receptor model was used to identify a list of European sites, and their QIs/SCIs, with potential links to European sites. These are termed as 'relevant' European sites/QIs/SCIs throughout this report.

4.5 Likely Significant Effect

The threshold for a Likely Significant Effect (LSE) is treated in the screening exercise as being above a de minimis level. The opinion of the Advocate General in CJEU case C-258/11 outlines:

"the requirement that the effect in question be 'significant' exists in order to lay down a de minimis threshold. Plans or projects that have no appreciable effect on a European site are thereby excluded.

If all plans or projects capable of having any effect whatsoever on the site were to be caught by Article 6(3), activities on or near the site would risk being impossible by reason of legislative overkill."

In this report, therefore, 'relevant' European sites are those within the potential ZoI of activities associated with the construction and operation of the proposed development, where LSE pathways to European sites were identified through the source-pathway-receptor model.

4.6 Screening Process

The Screening for Appropriate Assessment will incorporate the following steps:

- Definition of the zone of influence for the proposed works;
- Identification of the European sites that are situated (in their entirety or partially or downstream) within the zone of influence of the proposed works;

- Identification of the most up-to-date QIs and SCIs for each European site within the zone of influence;
- Identification of the environmental conditions that maintain the QIs/SCIs at the desired target of Favourable Conservation Status;
- Identification of the threats/impacts – actual or potential that could negatively impact the environmental conditions of the QIs/SCIs within the European sites;
- Highlighting the activities of the proposed works that could give rise to significant negative impacts; and
- Identification of other plans or projects, for which in-combination impacts would likely have significant effects.

4.7 Desktop Review

A desktop review facilitates the identification of the baseline ecological conditions and key ecological issues relating to Natura 2000 sites and facilitates an evaluation assessment of potential in-combination impacts. Sources of information used for this report include reports prepared for the area and information from statutory and non-statutory bodies. The following sources of information and relevant documentation were utilised:

- National Parks & Wildlife Service (NPWS) - www.npws.ie
- Environmental Protection Agency (EPA) – www.epa.ie
- National Biodiversity Data Centre – www.biodiversityireland.ie
- Invasive Species Ireland - http://www.invasivespeciesireland.com/
- *Best Practice Guidance for Habitat Survey and Mapping* (Heritage Council, 2011)
- South Dublin County Council Development Plan 2016-2022 (South Dublin County Council, 2016)
- Information on the status of EU protected habitats in Ireland (National Parks & Wildlife Service, 2013a & 2013b)
- South Dublin County Council Planning Database and
- Ringsend WWTP (Reg D0034-01) Annual Environmental Report (AER) 2020 (Irish Water 2021)

5. Natura 2000 Sites

5.1 Designated sites within a 15km Radius

Natura 2000 sites within a 15 km radius of the proposed development site are listed below in **Table 1** and shown in **Figure 4**. It is noted that use of a 15km radius is a precautionary measure, as impacts at this distance from the proposed development are highly unlikely in the absence of recognisable pathways.

The proposed development is not located within any Natura 2000 site. The River Liffey is located 1.3km to the northeast of the site. The River Liffey drains into Dublin Bay within the South Dublin Bay and River Tolka Estuary SPA and the South Dublin Bay SAC. Surface waters generated during construction could potentially carry silt, hydrocarbons or other contaminants into either the local sewer network or the local surface water network which ultimately discharges to Dublin Bay via the Ringsend Wastewater Treatment Plant (WWTP). There is also a potential risk that surface waters may be contaminated as a consequence of groundwater dewatering at the proposed site during construction, as some localised contaminated land may be encountered. Wastewater discharging from the proposed development will be conveyed to the Ringsend WWTP for treatment prior to discharging into the Dublin Bay/ Liffey Estuary Lower. Four of the Natura 2000 sites listed in **Table 1** are located within Dublin Bay (South Dublin Bay SAC, North Dublin Bay SAC, North Bull Island SPA and the South Dublin Bay & River Tolka Estuary SPA). Qualifying species and habitats within these Natura 2000 sites could potentially be impacted via a reduction in water quality.

Therefore, a source-pathway-receptor link has been identified between the source (the proposed development) and the receptors (South Dublin Bay SAC, North Dublin Bay SAC, North Bull Island SPA and the South Dublin Bay & River Tolka Estuary SPA) via a potential pathway (discharge of surface water run-off during construction/operation, wastewater discharges during operation and the spread of invasive species).

The South Dublin Bay SAC and North Dublin Bay SAC are of conservation significance for the occurrence of good examples of habitats that are listed on Annex I of the E.U. Habitats Directive. North Bull Island SPA and the South Dublin Bay & River Tolka Estuary SPA are recognised under the E.U. Birds Directive as being of international importance by regularly supporting in excess of 20,000 wintering waterfowl including Annex I listed species under the E.U. Birds Directive. Further information on these sites is provided below. Site synopses for these Natura 2000 are included in **Appendix 1**.

It is noted that the proposed development site does not include any habitats which could potentially provide foraging or roosting habitat for SCI species within the North Bull Island SPA and the South Dublin Bay & River Tolka Estuary SPA. A detailed ecological impact assessment of the site was carried out (Refer to **Section 7**). The ecological appraisal of the site indicates that it supports common habitats which are not of value in the context of the Natura 2000 designation.

Given the limited scale of the proposed development, the lack of a hydrological connection, the dilution provided in the estuarine/marine environment, the lack of foraging/roosting habitat for SCI birds and the distances involved, no potential impact on other designated sites has been identified.

Table 1. Natura 2000 sites and their location relative to the proposed development site

Natura 2000 Sites	Site Code	Distance at closest point and potential source-pathway-receptor link
Special Area of Conservation (SAC)		
Rye Water Valley/Carton SAC	001398	8.0km west. No pathway exists.
Glenasmole Valley SAC	001209	9.95km south. No pathway exists.
South Dublin Bay SAC	000210	11.1km east. Although unlikely, a source-pathway-receptor link has been identified between the source (proposed development site) and the receptor (South Dublin Bay SAC) via a potential pathway (impacts on water quality and spread of invasive species during construction or operational phase).
Wicklow Mountains SAC	001209	12.3km south. No pathway exists.
North Dublin Bay SAC	000206	13.2km east. Although unlikely, a source-pathway-receptor link has been identified between the source (proposed development site) and the receptor (North Bull Island SAC) via a potential pathway (impacts on water quality and spread of invasive species during construction or operational phase).
Special Protection Area (SPA)		
South Dublin Bay and River Tolka Estuary SPA	004024	10.0km east Although unlikely, a source-pathway-receptor link has been identified between the source (proposed development site) and the receptor (South Dublin Bay and River Tolka Estuary SPA) via a potential pathway (impacts on water quality and spread of invasive species during construction or operational phase).
North Bull Island SPA	004006	13.3km. Although unlikely, a source-pathway-receptor link has been identified between the source (proposed development site) and the receptor (North Bull Island SPA) via a potential pathway (impacts on water quality and spread of invasive species during construction or operational phase).
Wicklow Mountains SPA	004040	13.2km southeast. No pathway exists.

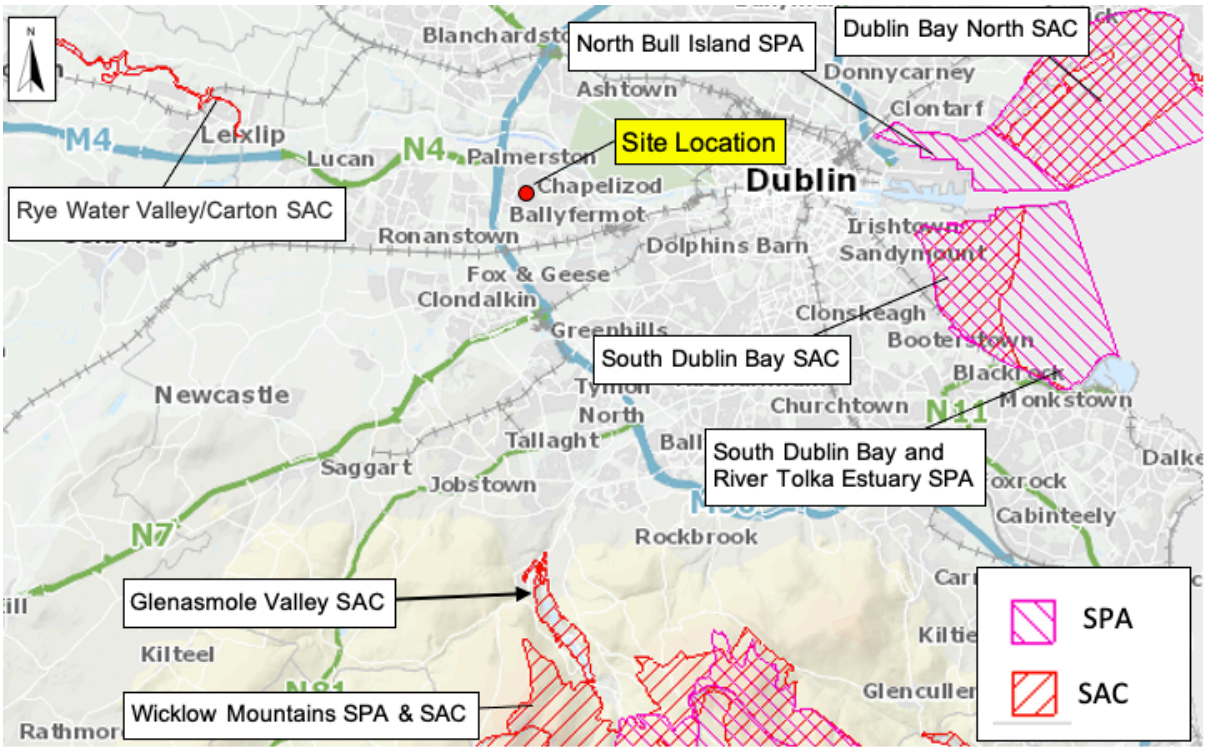


Figure 4. Location of the proposed development boundary and Natura 2000 sites | Source: EPA Envision mapping https://gis.epa.ie/EPAMaps/) | Not to scale

5.2 European Sites Descriptions

5.2.1 North Dublin Bay SAC

The North Bull Island sand spit is a relatively recent depositional feature, formed as a result of improvements to Dublin Port during the 18th and 19th centuries. It is almost five kilometres long and one kilometre wide and runs parallel to the coast between Clontarf and Sutton. The sediment which forms the island is predominantly glacial in origin and siliceous in nature. Between the island and the mainland there occurs two sheltered intertidal areas which are separated by a solid causeway constructed in 1964. The seaward side of the island has a fine sandy beach. A substantial area of shallow marine water is included in the site. The interior of the island is excluded from the site as it has been converted to golf courses. The proximity of the North Bull Island to Dublin City results in it being a very popular recreational area. It is also very important for educational and research purposes. Nature conservation is a main land use within the site.

Site possesses an excellent diversity of coastal habitats. The North Bull Island dune system is one of the most important systems on the east coast and is one of the few in Ireland that is actively accreting. It possesses extensive and mostly good quality examples of embryonic, shifting marram and fixed dunes, as well as excellent examples of humid dune slacks. Both Atlantic and Mediterranean salt marshes are well represented and a particularly good marsh zonation is shown. The salt marshes grade into mudflats and sandflats, some of which are dominated by annual Salicornia species. *Petalophyllum ralfsii* occurs at its only known station away from the western seaboard. The site has five Red Data Book vascular plant species and four Red Data Book bryophyte species. This is one of the most important sites for wintering waterfowl in Ireland, with internationally important populations of *Branta bernicla horta*, *Calidris canutus* and *Limosa lapponica*, plus nationally important numbers of a further 14

species. 20% of the national total of *Pluvialis squatarola* occurs here. Formerly it had important colony of *Sterna albifrons*. North Dublin Bay is nationally important for three insect species. The scientific interests of the site have been well documented and future prospects are good owing to the various designations assigned to site.

5.2.2 South Dublin Bay SAC

This intertidal site extends from the South Wall at Dublin Port to the West Pier at Dun Laoghaire, a distance of approximately 5 km. At their widest, the intertidal flats extend for almost 3 km. The seaward boundary is marked by the low tide mark, while the landward boundary is now almost entirely artificially embanked. Several permanent channels exist, the largest being Cockle Lake. A small sandy beach occurs at Merrion Gates, while some bedrock shore occurs near Dun Laoghaire. A number of small streams and drains flow into the site. The proximity of the site to Dublin City results in it being a very popular recreational area. It is also important for educational and research purposes.

Site possesses a fine and fairly extensive example of intertidal flats. Sediment type is predominantly sand, with muddy sands in the more sheltered areas. A typical macro-invertebrate fauna exists. Has the largest stand of Zostera on the east coast. Supports part of the important wintering waterfowl populations of Dublin Bay. Regularly has an internationally population of *Branta bernicila horta*, plus nationally important numbers of at least a further 6 species, including *Limosa lapponica*. Regular autumn roosting ground for significant numbers of *Sterna* terns, including *S. dougallii*. The scientific interests of the site have been well documented.

5.2.3 North Bull Island SPA

The North Bull Island sand spit is a relatively recent depositional feature, formed as a result of improvements to Dublin Port during the 18th and 19th centuries. It is almost 5km long and 1km wide and runs parallel to the coast between Clontarf and Sutton. The sediment which forms the island is predominantly glacial in origin and siliceous in nature. A well-developed dune system runs the length of the island, with good examples of embryonic, shifting marram and fixed dunes, as well as excellent examples of humid dune slacks. Extensive salt marshes also occur. Between the island and the mainland occur two sheltered intertidal areas which are separated by a solid causeway constructed in 1964. The seaward side of the island has a fine sandy beach. A substantial area of shallow marine water is included in the site. Part of the interior of the island has been converted to golf courses. The proximity of the North Bull Island to Dublin City results in it being a very popular recreational area. It is also very important for educational and research purposes. Nature conservation is a main land use within the site.

The site is among the top ten sites for wintering waterfowl in the country. It supports internationally important populations of *Branta bernicila hrota* and *Limosa lapponica* and is the top site in the country for both of these species. A further 14 species have populations of national importance, with particular notable numbers of *Tadorna tadorna* (8.5% of national total), *Anas acuta* (11.6% of national total), *Pluvialis squatarola* (6.9% of national total), *Calidris canutus* (10.5% of national total). North Bull Island SPA is a regular site for passage waders such as *Philomachus pugnax, Calidris ferruginea* and *Tringa erythropus*. The site supports *Asio flammeus* in winter. Formerly the site had an important colony of *Sterna albifrons* but breeding has not occurred in recent years. The site provides both feeding and

roosting areas for the waterfowl species. Habitat quality for most of the estuarine habitats is very good. The site has a population of the rare *Petalophyllum ralfsii* which is the only known station away from the western seaboard as well as five Red Data Book vascular plant species and four bryophyte species. It is nationally important for three insect species. Wintering bird populations have been monitored more or less continuously since the late 1960s, and the other scientific interests of the site have also been well documented. Future prospects are good owing to various designations assigned to site.

5.2.4 South Dublin Bay and River Tolka Estuary SPA

This site comprises a substantial part of Dublin Bay. It includes virtually all of the intertidal area in the south bay, as well as much of the Tolka Estuary to the north of the River Liffey. A portion of the shallow bay waters is also included. In the south bay, the intertidal flats extend for almost 3 km at their widest. The sediments are predominantly well-aerated sands. The sands support the largest stand of *Zostera noltii* on the East Coast. Several permanent channels exist, the largest being Cockle Lake. A small sandy beach occurs at Merrion Gates, while some bedrock shore occurs near Dun Laoghaire. The landward boundary is now almost entirely artificially embanked. Sediments in the Tolka Estuary vary from soft thixotrophic muds with a high organic content in the inner estuary to exposed, well aerated sands off the Bull Wall. The proximity of the site to Dublin City results in it being a very popular recreational area. It is also important for educational and research purposes.

The site possesses extensive intertidal flats which support wintering waterfowl which are part of the overall Dublin Bay population. It regularly has an internationally important population of *Branta bernicla hrota*, which feeds on *Zostera noltii* in the autumn. It has nationally important numbers of a further 6 species: *Haematopus ostralegus, Charadrius hiaticula, Calidris canutus, Calidris alba, Calidris alpina* and *Limosa lapponica*. It is an important site for wintering gulls, especially *Larus ridibundus* and *Larus canus*. South Dublin Bay is the premier site in Ireland for *Larus melanocephalus*, with up to 20 birds present at times. Is a regular autumn roosting ground for significant numbers of terns, including *Sterna dougallii, S. hirundo* and S*. paradisaea*.

5.3 Natura 2000 sites – Features of interests and conservation objectives

The EU Habitats Directive contains a list of habitats (Annex I) and species (Annex II) for which SACs must be established by Member States. Similarly, the EU Birds Directive contains lists of important bird species (Annex I) and other migratory bird species for which SPAs must be established. Those that are known to occur at a site are referred to as ‘qualifying interests’ and are listed in the Natura 2000 forms which are lodged with the EU Commission by each Member State. A ‘qualifying interest’ is one of the factors (such as the species or habitat that is present) for which the site merits designation. The National Parks and Wildlife Service (NPWS) are responsible for the designation of SACs and SPAs in Ireland.

The conservation objectives for the site are detailed in:

- NPWS (2013) *Conservation Objectives: North Dublin Bay SAC 000206. Version 1.* National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
- NPWS (2013) *Conservation Objectives: South Dublin Bay SAC 000210. Version 1.* National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

- NPWS (2015) *Conservation Objectives: North Bull Island SPA 004006. Version 1.* National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
- NPWS (2015) *Conservation Objectives: South Dublin Bay and River Tolka Estuary SPA 004024. Version 1*. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

The overall aim of the Habitats Directive is to maintain or restore the favourable conservation status of habitats and species of community interest. These habitats and species are listed in the Habitats and Birds Directives and Special Areas of Conservation and Special Protection Areas are designated to afford protection to the most vulnerable of them. These two designations are collectively known as the Natura 2000 network. European and national legislation places a collective obligation on Ireland and its citizens to maintain at favourable conservation status sites designated as Special Areas of Conservation and Special Protection Areas. The Government and its agencies are responsible for the implementation and enforcement of regulations that will ensure the ecological integrity of these sites.

The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level. Favourable conservation status of a habitat is achieved when its natural range, and area it covers within that range, is stable or increasing, and the ecological factors that are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and the conservation status of its typical species is favourable.

The favourable conservation status of a species is achieved when population data on the species concerned indicate that it is maintaining itself, and the natural range of the species is neither being reduced or likely to be reduced for the foreseeable future, and there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis. The species and/or habitats listed as features of interests for the South Dublin Bay SAC, North Dublin Bay SAC, North Bull Island SPA and the South Dublin Bay & River Tolka Estuary SPA are included in **Tables 2 to 5**.

Table 2. Qualifying interests for North Dublin Bay SAC

Habitat/species Code	Habitat /Species	Conservation objective
1140	Mudflats and sandflats not covered by seawater at low tide	Maintain
1210	Annual vegetation of drift lines	Restore
1310	Salicornia and other annuals colonising mud and sand	Restore
1330	Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)	Maintain
1410	Mediterranean salt meadows (*Juncetalia maritimi*)	Maintain
2110	Embryonic shifting dunes	Restore
2120	Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes)	Restore
2130	Fixed coastal dunes with herbaceous vegetation (grey dunes)	Restore
2190	Humid dune slacks	Restore
1395	Petalwort *Petalophyllum ralfsii*	Maintain

Restore = Restore favourable conservation condition, Maintain = Maintain favourable conservation condition

Table 3. Qualifying interests for South Dublin Bay SAC

Habitat/species Code	Habitat /Species	Conservation objective
1140	Mudflats and sandflats not covered by seawater at low tide	Maintain
1210	Annual vegetation of drift lines	Maintain/Restore
1310	Salicornia and other annuals colonising mud and sand	Maintain/Restore
2110	Embryonic shifting dunes	Maintain/Restore

Restore = Restore favourable conservation condition, Maintain = Maintain favourable conservation condition

Table 4: Special Conservation Interests for North Bull Island SPA

Species Code	Species	Scientific name	Conservation objective
A046	Brent Goose	*Branta bernicla hrota*	Maintain
A048	Shelduck	*Tadorna tadorna*	Maintain
A052	Teal	*Anas crecca*	Maintain
A054	Pintail	*Anas acuta*	Maintain
A056	Shoveler	*Anas clypeata*	Maintain
A130	Oystercatcher	*Haematopus ostralegus*	Maintain
A140	Golden Plover	*Pluvialis apricaria*	Maintain
A141	Grey Plover	*Pluvialis squatarola*	Maintain
A143	Knot	*Calidris canutus*	Maintain
A144	Sanderling	*Calidris alba*	Maintain
A149	Dunlin	*Calidris alpina alpina*	Maintain

Species Code	Species	Scientific name	Conservation objective
A156	Black-tailed Godwit	*Limosa limosa*	Maintain
A157	Bar-tailed Godwit	*Limosa lapponica*	Maintain
A160	Curlew	*Numenius arquata*	Maintain
A162	Redshank	*Tringa totanus*	Maintain
A169	Turnstone	*Arenaria interpres*	Maintain
A179	Black-headed Gull	*Chroicocephalus ridibundus*	Maintain
A999	Wetlands & waterbirds		Maintain

Restore = Restore favourable conservation condition, Maintain = Maintain favourable conservation condition

Table 5: Special Conservation Interests for South Dublin Bay & River Tolka Estuary SPA

Species Code	Species	Scientific name	Conservation objective
A046	Brent Goose	*Branta bernicla hrota*	Maintain
A130	Oystercatcher	*Haematopus ostralegus*	Maintain
A137	Ringed Plover	*Charadrius hiaticula*	Maintain
A141	Grey Plover	*Pluvialis squatarola*	Maintain
A143	Knot	*Calidris canutus*	Maintain
A144	Sanderling	*Calidris alba*	Maintain
A149	Dunlin	*Calidris alpina alpina*	Maintain
A157	Bar-tailed Godwit	*Limosa lapponica*	Maintain
A162	Redshank	*Tringa totanus*	Maintain
A179	Black-headed Gull	*Chroicocephalus ridibundus*	Maintain
A192	Roseate Tern	*Sterna dougallii*	Maintain
A193	Common Tern	*Sterna hirundo*	Maintain
A194	Arctic Tern	*Sterna paradisaea*	Maintain
A999	Wetlands & waterbirds		Maintain

Restore = Restore favourable conservation condition, Maintain = Maintain favourable conservation condition

To acknowledge the importance of Ireland's wetlands to wintering waterbirds, “Wetland and Waterbirds” may be included as a Special Conservation Interest for some SPAs that have been designated for wintering waterbirds and that contain a wetland site of significant importance to one or more of the species of Special Conservation Interest. Thus, a further objective is to maintain or restore the favourable conservation condition of the wetland habitat within the North Bull Island SPA and the South Dublin Bay & River Tolka Estuary SPA as a resource for the regularly occurring migratory waterbirds that utilise them.

It should be noted that some of the Natura 2000 sites overlap each other and thus the conservation objectives for these sites should be used in conjunction with those for overlapping and adjacent sites as appropriate.

6. Water Quality data

6.1 EPA Water Quality Data

The Environmental Protection Agency (EPA) carries out a biological assessment of most river channels in the country on a regular basis. The assessments are used to derive Q values, indicators of the biological quality of the water. The biological health of a watercourse provides an indication of long-term water quality. The EPA Q value scheme is summarised in **Table 6**. The relationship between the Q-rating system and the Water Framework Directive classification as defined by the Surface Waters Regulations 2009 (S.I. 272 of 2009) is shown in **Table 7**. EPA biological monitoring data for the closest freshwater monitoring sites applicable to the development site, in relation to flow direction and topography are shown in **Figure 5** and **Table 8**.

The Q Value system, which is used by the Environmental Protection Agency, describes the relationship between water quality and the macro-invertebrate community in numerical terms. The presence of pollution causes changes in flora and fauna of rivers. Well documented changes occur in the macro-invertebrate community in the presence of organic pollution: sensitive species are progressively replaced by more tolerant forms as pollution increases. Q5 waters have a high diversity of macro-invertebrates and good water quality, while Q1 have little or no macro-invertebrate diversity and unsatisfactory water quality.

The intermediate ratings Q1-2, Q2-3, Q3-4 and Q4-5 are used to denote transitional conditions, while ratings within parenthesis indicate borderline values. Great importance is attached to the EPA biotic indices, and consequently it is these data that are generally used to form the basis of water quality management plans for river catchments.

Table 6. EPA biotic index scheme

Q value	Water quality	Pollution	Condition
5	Good	Unpolluted	Satisfactory
4	Fair	Unpolluted	Satisfactory
3	Doubtful	Moderately polluted	Unsatisfactory
2	Poor	Seriously polluted	Unsatisfactory
1	Bad	Seriously polluted	Unsatisfactory

Table 7. Correlation between the WFD classification and Q values

Ecological status WFD	Q Values
High	Q5, Q4-5
Good	Q4
Moderate	Q3-4
Poor	Q3, Q2-3
Bad	Q2, Q1

Table 8. EQP Water quality status

Location	Q Values	Sampling Year
Lucan Bridge	Q3-4 (moderate)	2019
2km d/s Chapelizard bridge	Q3 (poor)	2019

The proposed development site lies within the catchment of the River Liffey and is located approximately 1.3km from the river, as presented in **Figure 5**. The most recent biological monitoring, conducted by the EPA in 2019, at locations upstream and downstream of the proposed development site is presented in **Table 8**. It indicate that water quality was Q3-4 (moderate) upstream and Q3 (poor) downstream of the site.

Figure 5: Proposed development site in relation to relevant EPA biological monitoring sites along the River Liffey. Source EPA catchment.ie 22/04/2021

6.2 River Basin Management Plan for Ireland 2015 – 2018 (2nd Cycle)

The Water Framework Directive (WFD) sets out the environmental objectives which are required to be met through the process of river basin planning and implementation of those plans. Specific objectives are set out for surface water, groundwater and protected areas. The challenges that must be overcome in order to achieve those objectives are very significant. Therefore, a key purpose of the River Basin Management Plan (RBMP) is to set out priorities and ensure that implementation is guided by these priorities.

The second-cycle RBMP aims to build on the progress made during the first cycle. Key measures during the first cycle included the licensing of urban waste-water discharges (with an associated investment in urban waste-water treatment) and the implementation of the Nitrates Action Programme (Good Agricultural Practice Regulations). The former measure has resulted in significant progress in terms both of compliance levels and of the impact of urban waste-water on water quality. The latter provides a considerable environmental baseline which all Irish farmers must achieve and has resulted in improving trends in the level of nitrates and phosphates in rivers and groundwater. It is acknowledged, however, that sufficient progress has not been made in developing and implementing supporting measures during the first cycle.

Overall, RBMP assesses the quality of water in Ireland and presents detailed scientific characterisation of our water bodies. The characterisation process also takes into account wider water quality considerations, such as the special water-quality requirements of protected areas. The characterisation process identifies those water bodies that are *At Risk* of not meeting the objectives of the WFD, and the process also identifies the significant pressures causing this risk. Based on an assessment of risk and pressures, a programme of measures has been developed to address the identified pressures and work towards achieving the required objectives for water quality and protected areas. Data relating to the watercourses within the study area is provided in **Table 9** and the location of these shown in **Figure 6.**

Treated wastewater from the proposed development site will ultimately be discharged to the transitional waters (Liffey Estuary Lower) / coastal waters (Dublin Bay) via a primary discharge point from the Ringsend WWTP. The 2019 AER for the Ringsend WWTP notes that the discharge from the wastewater treatment plant does not have an observable negative impact on the water quality in the near field of the discharge and in the Liffey and Tolka Estuaries. However, the WFD characterisation process concluded that the Ringsend WWTP is a significant pressure on the Liffey Estuary Lower water body.

The WFD 3rd cycle results have been partially released through the EPA website. These results show that the status of Dublin Bay remains "Not at risk".

Table 9. WFD Status

Catchment: Liffey and Dublin Bay (Code 9) – 2nd Cycle			
This catchment includes the area drained by the River Liffey and by all streams entering tidal water between Sea Mount and Sorrento Point, Co. Dublin, draining a total area of 1,616km2. The largest urban centre in the catchment is Dublin City. The other main urban centres are Dun Laoghaire, Lucan, Clonee, Dunboyne, Leixlip, Maynooth, Kilcock, Celbridge, Newcastle, Rathcoole, Clane, Kill, Sallins, Johnstown, Naas, Newbridge, Athgarvan, Kilcullen and Blessington. The total population of the catchment is approximately 1,255,000. The Liffey catchment contains the largest population of any catchment in Ireland and is characterised by a sparsely populated, upland south eastern area and a densely populated, flat, low lying area over the remainder of the catchment basin. The Liffey catchment comprises 17 sub-catchments with 77 river water bodies, six lakes, six transitional and five coastal water bodies, and 16 groundwater bodies **Proposed Development Site –** Sub catchment Liffey_SC_090. A predominantly urban sub-catchment as it flows through Dublin City from Lexlip, it displays some of the major issues associated with inefficient drainage systems and problems with misconnections. This is a known major issue for the respective Local Authorities and work is underway to further identify sources of these pressures. Combined sewer overflows have also been identified as a significant pressure in Dublin City Council. This data needs to be reviewed before further work can be prioritised.			
Waterbodies relevant to the proposed project (2nd Cycle)			
Waterbody	WFD Status	Risk	**Pressure Category** **WFD Status**
LIFFEY_180	Unassigned	At risk	Urban runoff, urban wastewater
LIFFEY_190	Moderate	At risk	Urban runoff, urban wastewater
Liffey Estuary	Good	At risk	Urban wastewater

Catchment: Liffey and Dublin Bay (Code 9) – 2nd Cycle			
Dublin Bay	Good	Not at risk	n/a

Source: EPA envision mapping and www.catchments.ie 22/04/2021

Figure 6. WFD 2nd cycle - waterbodies in the vicinity of the proposed development | Source: EPA Envision mapping | not to scale. Red lines 'At Risk'.

6.2 Urban Wastewater Treatment Directive

The Waste Water Discharge (Authorisation) Regulations 2007 (S.I. 684 of 2007) gives effect to the requirements of the Urban Waste Water Treatment Directive (Directive 91/271/EEC) and the Water Framework Directive (2000/60/EC) in Ireland. The Urban Waste Water Treatment Directive (UWWTD) lays down the requirements for the collection, treatment and discharge of urban waste-water and specifies the quality standards which must be met — based on agglomeration size — before treated waste-water is released into the environment.

The priority objective for this river basin planning cycle is to secure compliance with the Urban Waste Water Treatment Directive and to contribute to the improvement and protection of waters in keeping with the water-quality objectives established by this Plan. Achieving this objective entails addressing waste-water discharges and overflows where protected areas (i.e. designated bathing waters and shellfish waters) or high-status waters are at risk from urban waste-water pressures.

As part of the proposed development wastewater discharging from the proposed development will be conveyed to the Ringsend WWTP (D0034-01) for treatment prior to discharging into the Dublin Bay.

7. Site Surveys

7.1 Habitat survey

A site survey was carried out on the 21st of April 2021. Habitat mapping was carried out in line with the methodology outlined in the *Best Practice Guidance for Habitat Survey and Mapping* (Heritage Council, 2011). The terrestrial and aquatic habitats within or adjacent to the

proposed development site was classified using the classification scheme outlined in the Heritage council publication *A Guide to Habitats in Ireland* (Fossitt, 2000) and cross referenced with Annex I Habitats where required. An overview of the current habitats recorded within the site is shown in **Figure 7** and the habitats recorded on site are described in **Table 10**.

No Annex I habitats were recorded within the proposed development site. No protected species were recorded during the site visits.

Table 10. Habitat recorded within proposed development site

Habitat	Comments
Buildings and artificial surfaces (BL3)	This habitat includes the main vacant two-story warehouse structure and the surrounding concrete surfaces. The lower half of the building is brick, with corrugated metal on its upper level and roof. Also noted were various vents, entrance structures, industrial-sized automatic gates/doors. All doors/openings were securely locked. No broken windows or any other available entrances were noted. Refer to **Photos 1** to **3**. This habitat is not listed as a qualifying habitat for Natura 2000 sites and does not have any links to Annex I habitats.
Treelines (WL2)	A planted treeline runs along the southern boundary of the site, within the grass verge of the public road. The treeline is composed of non-native species, mostly Hybrid Black Poplar (*Populus x canadensis*) and occasional Norway Maple (*Acer platanoides*). Refer to **Photo 4.** A small stand of Hybrid Black Poplar are located at the north west corner of the site. This habitat is not listed as a qualifying habitat for Natura 2000 sites and does not have any links to Annex I habitats.
Recolonising bare ground (ED3)	Situated in the north and west of the building are areas of concrete ground which has been recolonised by mixture of common species which are typical of disturbed ground habitats. Species noted include Dandelion (*Taraxacum* spp), Ragwort (*Senecio jacobaea*), Greater Plantain (*Plantago major)*, Cleaver (*Galium aparine*), Ivy (*Hedera helix*), Cocksfoot (*Dactylus* spp) and some young Willow saplings (*Salix* spp). The invasive species Buddleia (*Buddleja davidii*) was also recorded at the south west corner of the building. This habitat is not listed as a qualifying habitat for Natura 2000 sites and does not have any links to Annex I habitats.

Photo 1: Building facing south

Photo 2: Building facing east

Photo 3: Western side of site with recolonised bare ground in foreground.

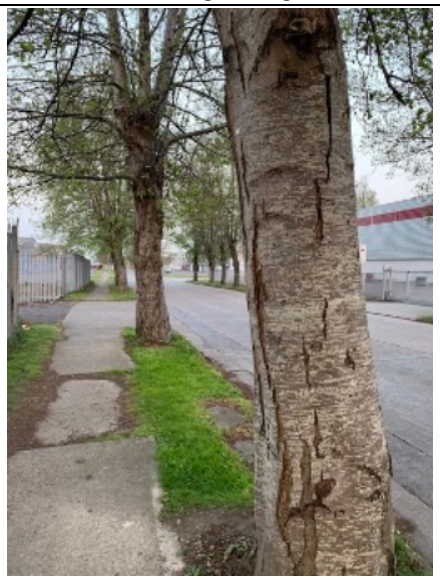


Photo 4: Treelines along southern boundary

Figure 7. Habitat map of proposed development site (all lines indictive)

7.2 Birds

Birds species listed in Annex I of the Birds Directive are considered a conservation priority. During the survey, all birds seen or heard within the development site were recorded. Certain bird species are listed by BirdWatch Ireland as Birds of Conservation Concern in Ireland (BOCCI). These are bird species suffering declines in population size. BirdWatch Ireland and the Royal Society for the Protection of Birds have identified and classified these species by the rate of decline into Red and Amber lists (Gilbert *et al.* 2021). Red List bird species are of high conservation concern and the Amber List species are of medium conservation. Green listed species are regularly occurring bird species whose conservation status is currently considered favourable. Birds species listed in Annex I of the Birds Directive (2009/147/EC) are considered a conservation priority. No Annex I bird species were recorded during the site survey.

The National Biodiversity Centre online data base lists 110 species of bird recorded within grid square O03, eleven of which are listed under Annex I of the Birds Directive or BOCCI Red List, as presented in **Table 11**.

Table 11. Annex I and/or Red List Bird species in Grid square O03

Species	Annex I	BOCCI (2021) – Red List
European Golden Plover (Pluvialis apricaria)		x
Corn Crake (Crex crex)	x	x
Grey Partridge (Perdix perdix)		x
Red Grouse (Lagopus lagopus)		x
Common Pochard (Aythya ferina)		x

Species	Annex I	BOCCI (2021) – Red List
Eurasian Woodcock (Scolopax rusticola)		x
Grey Wagtail (Motacilla cinerea)		x
Meadow Pipit (Anthus pratensis)		x
Barn Owl (Tyto alba)		x
Common Redshank (Tringa totanus)		x
Yellowhammer (Emberiza citrinella)		x

A bird survey was carried out in conjunction with habitat surveys on 21st of April 2021. During the survey, all birds seen or heard within the development site were recorded and presented in **Table 12**. The majority of birds utilising the proposed works areas were common in the local landscape.

Table 12. Bird Species recorded at the site in April 2021

Species	Annex I	BOCCI (2021) – Red List
Wood pigeon (*Columba palumbus*)		

The proposed development site is located within an industrial estate dominated with buildings and recolonising bare ground. A small treeline and grassy verge are located on the western and southern boundary. There is minimal foraging or nesting habitat within the site boundary.

The surrounding area includes industrial and residential developments and a school with associated playing fields. These habitats offer minimal opportunity for bird species beyond those common to urban and suburban areas and this is reflected in the common species identified on the site during the visit.

Overall, the proposed development site is of a low local value for terrestrial bird species that are relatively common in the Irish countryside. No species of high conservation status were recorded within the proposed development site. No signs of other significant nesting species were recorded. No birds listed as SCIs for the North Bull Island SPA or South Dublin Bay SPA were recorded or are likely to utilise the proposed development site.

7.3 Invasive Species

Non-native species are defined as those species which have been introduced outside of their native range by humans and their activities, either purposefully or accidentally. Invasive non-native species are so-called as they typically display one or more of the following characteristics or features: (1) prolific reproduction through seed dispersal and/or re-growth from plant fragments; (2) rapid growth patterns; and, (3) resistance to standard weed control methods.

Regulations 49 and 50 of the European Communities (Birds and Natural Habitats) Regulations 2011 make it an offence to plant, disperse, allow dispersal or cause the spread of certain species e.g. Japanese knotweed and Himalayan Balsam, keep the plant in possession for purpose of sale, breeding, reproduction, propagation, distribution, introduction or release, keep anything from which the plant can be reproduced or propagated from, without a granted licence and keep any vector material for the purposes of breeding, distribution, introduction or release. The Wildlife (Amendment) Act 2000 states that anyone who plants or otherwise

causes to grow in a wild state in any place in the State any species of (exotic) flora, or the flowers, roots, seeds or spores of (exotic) flora shall be guilty of an offence.

There is a statutory obligation under S.I. 477 of 2011 of the European Communities (Birds and Natural Habitats) Regulations 2011 to address invasive species in Ireland. With relation to this particular project high risk invasive species like Japanese knotweed (*Reynoutria japonica*) are of particular interest. These species for example are listed under the 3rd Schedule: Part 1 – Plants; Non-native species subject to restrictions under Regulations 49 & 50. Regulation 49 deals with the 'Prohibition on introduction and dispersal' while Regulation 50 deals with the 'Prohibition on dealing with and keeping certain species'.

Where a non-native species displays invasive qualities and is not managed it can potentially: (1) out compete native vegetation, affecting plant community structure and habitat for wildlife; (2) cause damage to infrastructure including road carriageways, footpaths, walls and foundations; and, (3) have an adverse effect on landscape quality.

The NBDC lists a number of high impact invasive species which have been recorded within grid square O03 (**Table 13**).

Table 13. NBDC list of high impact invasive species.

Common Name	Latin Name
American Mink	*Mustela vison*
Brown Rat	*Rattus norvegicus*
Canadian Waterweed	*Elodea canadensis*
Cherry Laurel	*Prunus laurocerasus*
Eastern Grey Squirrel	*Sciurus carolinensis*
Fallow Deer	*Dama dama*
Feral Ferret	*Mustela furo*
Giant Hogweed	*Heracleum mantegazzianum*
Harlequin Ladybird	*Harmonia axyridis*
House Mouse	*Mus musculus*
House Mouse	*Mus musculus*
Indian Balsam	*Impatiens glandulifera*
Japanese Knotweed	*Fallopia japonica*
New Zeeland Flatworm	Arthurdendyus triangulatus
Nuttall's Waterweed	*Elodea nuttallii*
Rhododendron ponticum	
Siberian Chipmunk	*Tamias sibiricus*
Sika Deer	*Cervus nippon*

Source NBDC 20/04/2021

The control of invasive species in Ireland comes under the Wildlife (Amendment) Act 2000, where it states that

‘Any person who— [...] plants or otherwise causes to grow in a wild state in any place in the State any species of flora, or the flowers, roots, seeds or spores of flora, [‘refers only to exotic species thereof’][...] otherwise than under and in accordance with a licence granted in that behalf by the Minister shall be guilty of an offence.’
The Birds and Natural Habitats Regulations 2011 (SI 477 of 2011), Section 49(2) prohibits the introduction and dispersal of species listed in the Third Schedule, which includes Japanese Knotweed and Himalayan Balsam, as follows: “any person who plants, disperses, allows or causes to disperse, spreads or otherwise causes to grow [….] shall be guilty of an offence.”
No third-schedule invasive species were recorded within the proposed development site.

The Medium Impact Invasive species Buddleia (*Buddleja davidii)* was recorded on the site, at the south west corner of the building. This species is listed on the Invasive Species Ireland *“Amber List: Recorded Species”* (which under the right conditions could represent a significant impact on native species or habitats). Buddleia is also included in the *NRA Guidelines on the Management of Noxious Weeds and Non-native Species on National Roads* (NRA, 2010) as these species have been shown to have an adverse impact on landscape quality, native biodiversity or infrastructure.

8. Potential Impacts

All potential impacts would relate to direct and indirect impacts to relevant habitats and fauna of the South Dublin Bay SAC, North Dublin Bay SAC, North Bull Island SPA and the South Dublin Bay & River Tolka Estuary SPA. Impacts are based on the EC (2018), professional judgement and criteria or standards where available.

The potential impacts associated with the proposed development are discussed in the following section with respect to their likelihood to have significant impacts on Natura 2000 sites. As part of the assessment direct, indirect and cumulative impacts were considered. Direct impacts refer to habitat loss or fragmentation arising from land-take requirements for development. Indirect and secondary impacts do not have a straight-line route between cause and effect, and it is potentially more challenging to ensure that all the possible indirect impacts of the project/plan - in combination with other plans and projects have been established.

As part of the assessment the potential for impacts associated with the development were reviewed as outlined below:

- Loss of habitat
- Impacts from noise and disturbance
- Potential impacts of surface water run-off
- Potential increase in the discharges from Ringsend WWTP
- Spread of invasive species
- Cumulative Impacts

8.1 Loss of habitat

The proposed development site is not located within a designated site. The habitats recorded within the proposed development site do not correspond to habitats listed on Annex I of the Habitats Directive or to qualifying habitats for the South Dublin Bay SAC and North Dublin Bay

SAC. The habitats within the proposed development area are considered of a low value at a local level and are relatively common in the surrounding landscape.

The habitats within the development area may be utilised on occasions by common birds for feeding, however the area to be affected is not likely to be a critical feeding resource for these species in the context of the wider landscape.

No foraging habitat of significant value for species listed as qualifying interests for the North Bull Island SPA and the South Dublin Bay & River Tolka Estuary SPA will be affected. No breeding habitat for species listed as qualifying interests for the North Bull Island SPA and the South Dublin Bay & River Tolka Estuary SPA will be affected. Therefore, the proposed development will not result in any significant deterioration in habitat quality or loss of habitat within the North Bull Island SPA and the South Dublin Bay & River Tolka Estuary SPA.

The proposed development will not result in any loss of habitat within Natura 2000 sites. The recorded habitats are considered of low value at a local level and are common in the surrounding landscape. No potential for habitat fragmentation has been identified. Thus no effects on the qualifying interests and conservation of objectives of Natura 2000 site due to habitat loss will occur.

8.2 Impacts from noise and disturbance

Potentially increased noise and disturbance associated with the site works could cause disturbance/displacement of fauna. If of sufficient severity, there could be impacts on reproductive success.

The potential effects and impacts of disturbance have been widely recognised in wildlife conservation legislation, as has the need to develop conservation measures for birds whilst taking human activities into account. Article 4.4 of the Bird's Directive (79/409/EEC) requires member states to "*take appropriate steps to avoid… any disturbances affecting the birds, in so far as these would be significant having regard to the objectives of this Article*". This specifically relates to conservation measures concerning Annex I species.

The wintering birds listed as qualifying interests for the North Bull Island SPA and the South Dublin Bay & River Tolka Estuary SPA are strongly associated with estuarine shoreline areas or wetlands. No wetland or grassland habitat suitable for inland foraging, were present within the footprint of the proposed development or in proximity to the development site. It follows that these species do not rely on the food resources available within the footprint of the proposed development.

Potentially increased noise and disturbance associated with the site works or with the occupancy of the completed dwellings, could cause disturbance/displacement of fauna. If of sufficient severity, there could be impacts on reproductive success. The South Dublin Bay & River Tolka Estuary SPA and North Bull Island SPA are located 10km and 13.3km east respectively of the site and no impacts on birds within these SPA's will occur. There is no suitable foraging or roosting habitat for SCI birds within the proposed development site.

Given the scale and temporary nature of the works and the distance involved no effect on bird populations listed as qualifying interests for relevant SPAs is predicted to occur. Likewise given the absence of suitable habitats for SCI bird species, no effect from increased noise and

disturbance on bird populations listed as qualifying interests for relevant SPAs during occupancy of the completed dwellings will occur.

8.3 Potential Impacts of Surface Water Run-off

Potential impacts on aquatic habitats which can arise from this type of development include increased silt levels in surface water run-off, inadvertent spillages of hydrocarbons from fuel and hydraulic fluid and increased nutrients from treated wastewater.

High levels of silt in surface water run-off from the storage areas, can impact in particular on fish species, in particular salmonids. If of sufficient severity, adult fish could theoretically be affected by increased silt levels as gills may become damaged by exposure to elevated suspended solids levels. If of sufficient severity, aquatic invertebrates may be smothered by excessive deposits of silt from suspended solids. In areas of stony substrate, silt deposits may result in a change in the macro-invertebrate species composition, favouring less diverse assemblages and impacting on sensitive species. Aquatic plant communities may also be affected by increased siltation. Submerged plants may be stunted and photosynthesis may be reduced. It is noted the nearest watercourses is the River Liffey approximately 1.3km northeast of the proposed development site.

Elevated silt levels could theoretically, if of sufficient magnitude, result in changes in the ecology of receiving waters. The risk of significant silt levels being deposited within nearby watercourses during the construction phase of the development is considered low and due to the dilution provided in the estuarine environment and naturally fluctuating levels of silt impacts are only likely to arise from extremely severe levels of siltation. Likewise given the location of the works, the distance of the proposed development from the estuarine environment, the robust nature of qualifying habitats (e.g. Mudflats and sandflats not covered by seawater at low tide [1140], Salicornia and other annuals colonising mud and sand [1310], Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330], Mediterranean salt meadows) and the dilution provided in the estuarine/marine environment, no impacts on water quality within European sites due to elevated silt levels during construction will occur.

Inadvertent spillages of hydrocarbons during construction could introduce toxic chemicals into the aquatic environment via surface water run-off or groundwater contamination and have a direct toxicological impact on habitats and fauna. Given the distance from estuarine/marine environment, the robust nature of qualifying habitats and the dilution provided in the estuarine/marine environment no impacts on water quality within European sites due to such spills will occur.

It is noted that environmental control measures will be implemented during construction in line with standard guidelines (i.e. *Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects* (Department of Environment, Heritage and Local Government, July 2006), CIRIA document – *133 Waste Minimisation in Construction, CIRIA document – Guidelines Control of Water Pollution from Construction Sites – Guide to Good Practice*)). Whilst the implementation of such measures during construction will assist in minimising impacts on the local environment, the implementation of these measures has not been taken into consideration in this screening report when reaching a conclusion as to the likely impact of the development on Natura 2000 sites. During

construction surface water runoff will discharge to the existing surface water sewer running along St. Ita's Rd located at the entrance of the site.

The method by which surface water will be managed during operation will use the existing surface water network and a number of Sustainable Drainage Systems (SuDS). Therefore no impact on water quality is predicted during the operational phase of the proposed development.

The construction and operational stage of the proposed development will not impact surface water quality or affect conservation objectives of the South Dublin Bay SAC, North Dublin Bay SAC, North Bull Island SPA and the South Dublin Bay & River Tolka Estuary SPA. Therefore, no significant effects on Natura 2000 sites will occur.

8.4 Potential Increase in the Discharges from Ringsend WWTP (Indirect Impact)

Once constructed surface and wastewater from the proposed development will be conveyed for treatment to Ringsend WWTP, which is located approximately 11.5km east of the proposed development site.

The Ringsend WWTP treatment process includes the following;

- Preliminary treatment (including screening / grit removal)
- Primary treatment
- Secondary treatment - SBR and Nereda Pilot Plant
- Sludge treatment
- Tertiary treatment – UV treatment (during the bathing season)

According to the Annual Environmental Report for 2020 (Irish Water 2021) the Ringsend WWTP was non-compliant with the ELV's set in the wastewater discharge licence. There were 69 samples non-compliant with the ELV in relation to cBOD. The non-compliance is due to overloading. There were 52 samples non-compliant with the ELV in relation to COD. The non-compliance is due to overloading. There were 146 samples non-compliant with the ELV in relation to TSS. The non-compliance is due to overloading. There were 97 samples non-compliant with the ELV for TP. The non-compliance was due to no P removal treatment on site. There were 94 samples non-compliant with the ELV for TN. The non-compliance was due to overloading. The WWTP effluent was compliant with the pH and Toxicity ELVs set in the wastewater discharge licence. The WWTP was non- compliant with the ELV set in the wastewater discharge licence for Faecal Coliforms (E. Coli) monitored during the specified period 01/05/20 to 31/08/20 (4 breaches). Two breaches of the Condition 2 ELV occurred on the 27/07/2020 (198,630 MPN/100ml) and the 17/08/2020 (241,960 MPN/100 ml).

The AER 2020 notes the following regarding the ssignificance of these results:

- The Ringsend WWTP was non-compliant with the ELV's set in the wastewater discharge licence (as described above).

- The primary discharge from the wastewater treatment plant does have an observable negative impact on the water quality in the near field of the discharge and in the Liffey and Tolka Estuaries

- The primary discharge from the wastewater treatment plant does not have an observable negative impact on the Water Framework Directive status in the Liffey Estuary. The DIN limit for Dublin Bay has been exceeded on occasion at 4 locations in 2020.

Other potential causes of deterioration in water quality relevant to this area are upstream riverine pollutants, combined sewer overflows, exfiltration from sewers and misconnections to surface water sewers in the large urban agglomeration.

Any existing or proposed projects discharging to the plant have the potential to act cumulatively to reduce water quality in Dublin Bay, affecting European sites therein. Despite Ringsend WWTP historically operating above capacity, no significant effects from discharge arising from the proposed development are predicted due to the following:

- There was no proven link between WWTP discharges and nutrient enrichment of sediments in Dublin Bay based on analyses of dissolved and particulate Nitrogen signatures (Wilson and Jackson, 2011);

- Enriched water entering Dublin Bay has been shown to rapidly mix and become diluted such that the plume is often indistinguishable from the rest of bay water (O'Higgins and Wilson, 2005); and

- Marine modelling for Ringsend WWTP indicates that discharged effluent is rapidly mixed and dispersed to low levels via tidal mixing within a short distance of the outfall pipe (Dowly & Bedri 2007).

- Irish Water is continuing to progress with the delivery of the Ringsend Capacity Upgrade. It is anticipated that commissioning of the Capacity Upgrade will be fully operational by the end of 2020. An Bord Pleanála granted planning permission for the project on 24th April 2019, consenting for the works required to facilitate the use of the AGS technology in the existing treatment tanks and to omit construction of the Long Sea Outfall tunnel. The Upgrade works are expected to take until 2025 to complete. However, the proposed upgrade is currently programmed to start producing an effluent in line with the parameters set out in the UWWTD by end of 2022. It is important to note that this programmed 2022 date is the anticipated date that the plant can start producing an effluent in line with the parameters set out in the UWWTD and the actual confirmed UWWTD compliance determination will be up to 12 months from that date (on attaining 12 months compliance with the UWWTD ELVs).

- In the future, it is intended that wastewater from the Greater Dublin area will be treated at the extended Ringsend Plant as well as at a new plant being planned in North County Dublin.

- Therefore, it is concluded that there will be no likelihood for significant effects on any European sites, and there will be no adverse effects on European site integrity during

the construction or operation of the proposed development in combination with other plans or projects, based on the fact that;

- The coastal waters in Dublin Bay are classed as “Good/Not at Risk” status (WFD);
- It is an objective of all development plans within the catchment of Ringsend WWTP to include Sustainable Urban Drainage Systems for all new development;
- It is extremely unlikely that during construction a pollution event would occur of a magnitude that would have an adverse effect on water quality within Dublin Bay;
- There was no proven link between WWTP discharges and nutrient enrichment of sediments in Dublin Bay based on analyses of dissolved and particulate Nitrogen signatures (Wilson and Jackson, 2011); and
- Enriched water entering Dublin bay has been shown to rapidly mix and become diluted such that the plume is often indistinguishable from the rest of the bay water (O'Higgins and Wilson, 2005).

Based on the above no effect on water quality or on the qualifying interests and conservation objectives for Natura 2000 sites will occur by the planned development at Cherry Orchard.

8.5 Spread of Invasive Species

No high-risk invasive species were recorded within the proposed development.

Buddleia, a medium-risk invasive species, was recorded within the proposed development site. This will be removed pre-construction. However, even in the absence of removal this invasive species cannot colonise the estuarine/marine habitats for which the South Dublin Bay and North Dublin Bay SAC’s are designated. Therefore, no potential impacts from invasive species on Natura 2000 sites will occur.

8.6 Cumulative Impacts

Cumulative impacts refer to a series of individually impacts that may, in combination, produce a significant impact. The underlying intention of this in combination provision is to take account of cumulative impacts from existing or proposed plans and projects and these will often only occur over time.

High negative threats, pressures and activities identified for the South Dublin Bay SAC, North Dublin Bay SAC, North Bull Island SPA and the South Dublin Bay & River Tolka Estuary SPA include roads and motorways, bridges, shipping, urbanised areas, industrial or commercial development, walking, horse-riding, golf courses, land reclamation and accumulation of organic material.

Other developments near the proposed development site and their potential cumulative impacts are listed in **Table 11**.

Table 11. Other developments near site and potential cumulative impacts

Plans and Projects	Key Policies/Issues/Objectives Directly Related to the Conservation of the Natura 2000 Network	Impact
River Basin Management Plan 2018-2021	The project should comply with the environmental objectives of the Irish RBMP which are to be achieved generally by 2021. • Ensure full compliance with relevant EU legislation • Prevent deterioration • Meeting the objectives for designated protected areas • Protect high status waters • Implement targeted actions and pilot schemes in focus sub-catchments aimed at: targeting water bodies close to meeting their objective and addressing more complex issues which will build knowledge for the third cycle.	The implementation and compliance with key environmental policies, issues and objectives of this management plan will result in positive in-combination effects to European sites. The implementation of this plan will have a positive impact for the biodiversity. It will not contribute to in-combination or cumulative impacts with the proposed development.
Inland Fisheries Ireland Corporate Plan 2016 - 2020	To ensure that Ireland's fish populations are managed and protected to ensure their conservation status remains favourable. That they provide a basis for a sustainable world class recreational angling product, and that pristine aquatic habitats are also enjoyed for other recreational uses. To develop and improve fish habitats and ensure that the conditions required for fish populations to thrive are sustained and protected. To grow the number of anglers and ensure the needs of IFI's other key stakeholders are being met in a sustainable conservation focused manner. EU (Quality of Salmonid Waters) Regulations 1988. All works during development and operation of the project must aim to conserve fish and other species of fauna and flora habitat; biodiversity of inland fisheries and ecosystems and protect spawning salmon and trout.	The implementation and compliance with key environmental issues and objectives of this corporate plan will result in positive on-combination effects to European sites. The implementation of this corporate plan will have a positive impact for biodiversity of inland fisheries and ecosystems. It will not contribute to in-combination or cumulative impacts with the proposed works.
Irish Water Capital Investment	Proposals to upgrade and secure water services and water treatment services countrywide.	Likely net positive impact due to water conservation and more effective treatment of water.

Plans and Projects	Key Policies/Issues/Objectives Directly Related to the Conservation of the Natura 2000 Network	Impact
Plan 2014-2016		
Water Services Strategic Plan (WSSP, 2015)	Irish Water has prepared a Water Services Strategic Plan (WSSP, 2015), under Section 33 of the Water Service No. 2 Act of 2013 to address the delivery of strategic objectives which will contribute towards improved water quality and biodiversity requirements through reducing: • Habitat loss and disturbance from new / upgraded infrastructure; • Species disturbance; • Changes to water quality or quantity; and Nutrient enrichment /eutrophication.	The WSSP forms the highest tier of asset management plans (Tier 1) which Irish Water prepare and it sets the overarching framework for subsequent detailed implementation plans (Tier 2) and water services projects (Tier 3). The WSSP also sets out the strategic objectives against which the Irish Water Capital Investment Programme is developed. The current version of the CAP outlines the proposals for capital expenditure in terms of upgrades and new builds within the Irish Water owned assets. Therefore, no adverse significant in-combination effects are envisaged.
NPWS Conservation Management Plans	Conservation Management Plans have not been fully prepared for the European sites being assessed. However, conservation objectives are set for all sites.	The overall aim of the Habitats Directive is to maintain or restore the favourable conservation status of habitats and species of community interest. A site-specific conservation objective aims to define favourable conservation condition for a particular habitat or species at that site. The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level.

Plans and Projects	Key Policies/Issues/Objectives Directly Related to the Conservation of the Natura 2000 Network	Impact
		The resultant effects of conservation objectives are a net positive and there is no potential for in combination effects on European sites.
WWTP discharges	Ringsend WWTP is the primary WWTP in Greater Dublin area with a Plant Capacity PE of 1640000	Discharges from municipal WWTPs are required to meet water quality standards. Irish Water Capital Investment Plan proposes to upgrade water treatment services countrywide (see above). The long-term cumulative impact is predicted to be negligible.
Commercial and Residential Applications Under consideration	A review of the South Dublin County Council Planning system indicted that there were no significant current planning applications within the vicinity of the proposed development site. This proposed development is the first part of a Cherry Orchard Industrial Estate Redevelopment Master Plan.	Future developments will only be granted permission where discharges from same meet with relevant water quality standards. The long-term cumulative impact is predicted to be negligible.

The potential for the proposed development to indirectly impact the South Dublin Bay SAC, North Dublin Bay SAC, North Bull Island SPA and the South Dublin Bay & River Tolka Estuary SPA has been assessed. Potential cumulative impacts on the sites may arise owing to an alteration to water quality or quantity. Deterioration in water quality can occur as an indirect consequence of point source or diffuse pollution, which in turn changes the aquatic environment and reduces its capacity to support certain plants and animals. This leads to potential negative consequences for the qualifying interests that rely on the maintenance of water quality within the Natura 2000 site.

The area surrounding the proposed development is heavily urbanised with a mixture of commercial properties scattered within, which have the potential to produce “in combination” effects to water quality in Dublin Bay. Sustainable drainage proposals at this site will ensure that operational surface water runoff arising from this development will be treated prior to discharge to the existing storm sewer. Therefore, the likelihood of impacts arising from this development is deemed to be low. It is considered extremely unlikely that during construction, a pollution event would occur of a magnitude that would have any adverse effects on water quality in Dublin Bay or affect the features of interest of any of the Natura 2000 sites, due to the distance between the site and Dublin Bay and potential for dilution in the drainage network before entering Ringsend WWTP. Similarly, no significant cumulative impacts in relation to noise and disturbance have been identified.

9. Screening conclusion and statement

This AA screening report has been prepared to assess whether the proposed development, individually or in-combination with other plans or projects, and in view of best scientific knowledge, is likely to have a significant effect on any European site(s).

The screening exercise was completed in compliance with the relevant European Commission guidance, national guidance, and case law. The potential impacts of the proposed development have been considered in the context of the European sites potentially affected, their qualifying interests or special conservation interests, and their conservation objectives.

Through an assessment of the source-pathway-receptor model, which considered the ZoI of effects from the proposed development and the potential in-combination effects with other plans or projects, the following findings were reported:

- The proposed development at Units 64 & 65, Cherry Orchard Industrial Estate, Palmerstown, Dublin 10 either alone or in-combination with other plans and/or projects, does not have the potential to significantly affect any European Site, in light of their conservation objectives.

Therefore, a Stage 2 Appropriate Assessment is deemed not to be required.

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Appendices

Appendix 1– Natura 2000 Site Synopses

Site Name: North Dublin Bay SAC

Site Code: 000206

This site covers the inner part of north Dublin Bay, the seaward boundary extending from the Bull Wall lighthouse across to the Martello Tower at Howth Head. The North Bull Island is the focal point of this site.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes):

- [1140] Tidal Mudflats and Sandflats
- [1210] Annual Vegetation of Drift Lines
- [1310] Salicornia Mud
- [1330] Atlantic Salt Meadows
- [1410] Mediterranean Salt Meadows
- [2110] Embryonic Shifting Dunes
- [2120] Marram Dunes (White Dunes)
- [2130] Fixed Dunes (Grey Dunes)*
- [2190] Humid Dune Slacks
- [1395] Petalwort (Petalophyllum ralfsii)

North Bull Island is a sandy spit which formed after the building of the South Wall and Bull Wall in the 18th and 19th centuries. It now extends for about 5 km in length and is up to 1 km wide in places. A well-developed and dynamic dune system stretches along the seaward side of the island. Various types of dunes occur, from fixed dune grassland to pioneer communities on foredunes. Marram Grass (Ammophila arenaria) is dominant on the outer dune ridges, with Lyme-grass (Leymus arenarius) and Sand Couch (Elymus farctus) on the foredunes. Behind the first dune ridge, plant diversity increases with the appearance of such species as Wild Pansy (Viola tricolor), Kidney Vetch (Anthyllis vulneraria), Common Bird's-foot-trefoil (Lotus corniculatus), Common Restharrow (Ononis repens), Yellow-rattle (Rhinanthus minor) and Pyramidal Orchid (Anacamptis pyramidalis). In these grassy areas and slacks, the scarce Bee Orchid (Ophrys apifera) occurs.

About 1 km from the tip of the island, a large dune slack with a rich flora occurs, usually referred to as the 'Alder Marsh' because of the presence of Alder trees (Alnus glutinosa). The water table is very near the surface and is only slightly brackish. Saltmarsh Rush (Juncus maritimus) is the dominant species, with Meadowsweet (Filipendula ulmaria) and Devil's-bit Scabious (Succisa pratensis) being frequent. The orchid flora is notable and includes Marsh Helleborine (Epipactis palustris), Common Twayblade (Listera ovata), Autumn Lady's-tresses (Spiranthes spiralis) and Marsh Orchids (Dactylorhiza spp.).

Saltmarsh extends along the length of the landward side of the island. The edge of the marsh is marked by an eroding edge which varies from 20 cm to 60 cm high. The marsh can be zoned into different levels according to the vegetation types present. On the lower marsh, Glasswort (Salicornia europaea), Common Saltmarsh-grass (Puccinellia maritima), Annual Sea-blite (Suaeda maritima) and Greater Sea-spurrey (Spergularia media) are the main species. Higher up in the middle marsh Sea Plantain (Plantago maritima), Sea Aster (Aster tripolium), Sea Arrowgrass (Triglochin maritima) and Thrift (Armeria maritima) appear. Above the mark of the normal high tide, species such as Common Scurvygrass (Cochlearia officinalis) and Sea Milkwort (Glaux maritima) are found, while on the extreme upper marsh, the rushes Juncus maritimus and J. gerardi are dominant. Towards the tip of the island, the saltmarsh grades naturally into fixed dune vegetation.

The habitat ‘annual vegetation of drift lines’ is found in places, along the length of Dollymount Strand, with species such as Sea Rocket (Cakile maritima), Oraches (Atriplex spp.) and Prickly Saltwort (Salsola kali).

The island shelters two intertidal lagoons which are divided by a solid causeway. The sediments of the lagoons are mainly sands with a small and varying mixture of silt and clay. The north lagoon has an area known as the "Salicornia flat", which is dominated by Salicornia dolichostachya, a pioneer glasswort species, and covers about 25 ha. Beaked Tasselweed (Ruppia maritima) occurs in this area, along with some Narrow-leaved Eelgrass (Zostera angustifolia). Dwarf Eelgrass (Z. noltii) also occurs in Sutton Creek. Common Cordgrass (Spartina anglica) occurs in places but its growth is controlled by management. Green algal mats (Enteromorpha spp., Ulva lactuca) cover large areas of the flats during summer. These sediments have a rich macrofauna, with high densities of Lugworms (Arenicola marina) in parts of the north lagoon. Mussels (Mytilus edulis) occur in places, along with bivalves such as Cerastoderma edule, Macoma balthica and Scrobicularia plana. The small gastropod Hydrobia ulvae occurs in high densities in places, while the crustaceans Corophium volutator and Carcinus maenas are common. The sediments on the seaward side of North Bull Island are mostly sands. The site extends below the low spring tide mark to include an area of the sublittoral zone.

Three rare plant species which are legally protected under the Flora (Protection) Order, 1999 have been recorded on the North Bull Island. These are Lesser Centaury (Centaurium pulchellum), Red Hemp-nettle (Galeopsis angustifolia) and Meadow Saxifrage (Saxifraga granulata). Two further species listed as threatened in the Red Data Book, Wild Clary/Sage (Salvia verbenaca) and Spring Vetch (Vicia lathyroides), have also been recorded. A rare liverwort, Petalophyllum ralfsii, was first recorded from the North Bull Island in 1874 and has recently been confirmed as still present. This species is of high conservation value as it is listed on Annex II of the E.U. Habitats Directive. The North Bull is the only known extant site for the species in Ireland away from the western seaboard.

North Dublin Bay is of international importance for waterfowl. During the 1994/95 to 1996/97 period the following species occurred in internationally important numbers (figures are average maxima): Brent Goose 2,333; Knot 4,423; Bar-tailed Godwit 1,586. A further 14 species occurred in nationally important concentrations - Shelduck 1505; Wigeon 1,166; Teal 1,512; Pintail 334; Shoveler 239; Oystercatcher 2,190; Ringed Plover 346; Grey Plover 816; Sanderling 357; Dunlin 6,238; Black-tailed Godwit 156; Curlew 1,193; Turnstone 197 and Redshank 1,175. Some of these species frequent South Dublin Bay and the River Tolka Estuary for feeding and/or roosting purposes (mostly Brent Goose, Oystercatcher, Ringed Plover, Sanderling and Dunlin).

The tip of the North Bull Island is a traditional nesting site for Little Tern. A high total of 88 pairs nested in 1987. However, nesting attempts have not been successful since the early 1990s. Ringed Plover, Shelduck, Mallard, Skylark, Meadow Pipit and Stonechat also nest. A well-known population of Irish Hare is resident on the island.

The invertebrates of the North Bull Island have been studied and the island has been shown to contain at least seven species of regional or national importance in Ireland (from the Orders Diptera, Hymenoptera and Hemiptera).

The main land uses of this site are amenity activities and nature conservation. The North Bull Island is the main recreational beach in Co. Dublin and is used throughout the year. Much of the land surface of the island is taken up by two golf courses. Two separate Statutory Nature Reserves cover much of the island east of the Bull Wall and the surrrounding intertidal flats. The site is used regularly for educational purposes. North Bull Island has been designated a Special Protection Area under the E.U. Birds Directive and it is also a statutory Wildfowl Sanctuary, a Ramsar Convention site, a Biogenetic Reserve, a Biosphere Reserve and a Special Area Amenity Order site.

This site is an excellent example of a coastal site with all the main habitats represented. The site holds good examples of nine habitats that are listed on Annex I of the E.U. Habitats Directive; one of these is listed with priority status. Several of the wintering bird species have populations of international importance, while some of the invertebrates are of national importance. The site contains a numbers of rare and scarce plants including some which are legally protected. Its proximity to the capital city makes North Dublin Bay an excellent site for educational studies and research.

Site Name: South Dublin Bay SAC

Site Code: 000210

This site lies south of the River Liffey in Co. Dublin, and extends from the South Wall to the west pier at Dun Laoghaire. It is an intertidal site with extensive areas of sand and mudflats. The sediments are predominantly sands but grade to sandy muds near the shore at Merrion Gates. The main channel which drains the area is Cockle Lake.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes):

- [1140] Tidal Mudflats and Sandflats
- [1210] Annual vegetation of drift lines
- [1310] Salicornia and other annuals colonising mud and sand
- [2110] Embryonic shifting dunes

The bed of Dward Eelgrass (Zostera noltii) found below Merrion Gates is the largest stand on the east coast. Green algae (Enteromorpha spp. and Ulva lactuca) are distributed throughout the area at a low density. Fucoid algae occur on the rocky shore in the Maretimo to Dún Laoghaire area. Species include Fucus spiralis, F. vesiculosus, F. serratus, Ascophyllum nodosum and Pelvetia canaliculata.

Several small, sandy beaches with incipient dune formation occur in the northern and western sectors of the site, notably at Poolbeg, Irishtown and Merrion/ Booterstown. The formation at Booterstown is very recent. Drift line vegetation occurs in association with the embryonic and incipient fore dunes. Typically drift lines occur in a band approximately 5 m wide, though at Booterstown this zone is wider in places. The habitat occurs just above the High Water Mark and below the area of embryonic dune. Species present are Sea Rocket (Cakile maritima), Frosted Orache (Atriplex laciniata), Spear-leaved Orache (A. prostrata), Prickly Saltwort (Salsola kali) and Fat Hen (Chenopodium album). Also occurring is Sea Sandwort (Honkenya peploides), Sea Beet (Beta vulgaris subsp. maritima) and Annual Sea-blite (Suaeda maritima). A small area of pioneer saltmarsh now occurs in the lee of an embryonic sand dune just north of Booterstown Station. This early stage of saltmarsh development is here characterised by the presence of pioneer stands of glassworts (Salicornia spp.) occurring below an area of drift line vegetation. As this is of very recent origin, it covers a small area but ample areas of substrate and shelter are available for the further development of this habitat.

Lugworm (Arenicola marina), Cockles (Cerastoderma edule) and annelids and other bivalves are frequent throughout the site. The small gastropod Hydrobia ulvae occurs on the muddy sands off Merrion Gates.

South Dublin Bay is an important site for waterfowl. Although birds regularly commute between the south bay and the north bay, recent studies have shown that certain populations which occur in the south bay spend most of their time there. The principal species are Oystercatcher (1215), Ringed Plover (120), Sanderling (344), Dunlin (2628) and Redshank (356) (average winter peaks 1996/97 and 1997/98). Up to 100 Turnstones are usual in the south bay during winter. Brent Goose regularly occur in numbers of international importance (average peak 299). Bar-tailed Godwit (565), a species listed on Annex I of the E.U. Birds Directive, also occur.

Large numbers of gulls roost in South Dublin Bay, e.g. 4,500 Black-headed Gulls in February 1990; 500 Common Gulls in February 1991. It is also an important tern roost in the autumn, regularly holding 2000-3000 terns including Roseate Terns, a species listed on Annex I of the E.U. Birds Directive. South Dublin Bay is largely protected as a Special Protection Area.

At low tide the inner parts of the south bay are used for amenity purposes. Baitdigging is a regular activity on the sandy flats. At high tide some areas have windsurfing and jet-skiing.

This site is a fine example of a coastal system, with extensive sand and mudflats, and incipient dune formations. South Dublin Bay is also an internationally important bird site.

Site Name: South Dublin Bay and River Tolka Estuary SPA

Site Code: 004024

The South Dublin Bay and River Tolka Estuary SPA comprises a substantial part of Dublin Bay. It includes the intertidal area between the River Liffey and Dun Laoghaire, and the estuary of the River Tolka to the north of the River Liffey, as well as Booterstown Marsh. A portion of the shallow marine waters of the bay is also included.

In the south bay, the intertidal flats extend for almost 3 km at their widest. The sediments are predominantly well-aerated sands. Several permanent channels exist, the largest being Cockle Lake. A small sandy beach occurs at Merrion Gates, while some bedrock shore occurs near Dun Laoghaire. The landward boundary is now almost entirely artificially embanked. There is a bed of Dwarf Eelgrass (Zostera noltii) below Merrion Gates which is the largest stand on the east coast. Green algae (Ulva spp.) are distributed throughout the area at a low density. The macroinvertebrate fauna is well-developed, and is characterised by annelids such as Lugworm (Arenicola marina), Nephthys spp. and Sand Mason (Lanice conchilega), and bivalves, especially Cockle (Cerastoderma edule) and Baltic Tellin (Macoma balthica). The small gastropod Spire Shell (Hydrobia ulvae) occurs on the muddy sands off Merrion Gates, along with the crustacean Corophium volutator. Sediments in the Tolka Estuary vary from soft thixotrophic muds with a high organic content in the inner estuary to exposed, well-aerated sands off the Bull Wall. The site includes Booterstown Marsh, an enclosed area of saltmarsh and muds that is cut off from the sea by the Dublin/Wexford railway line, being linked only by a channel to the east, the Nutley stream. Sea water incursions into the marsh occur along this stream at high tide. An area of grassland at Poolbeg, north of Irishtown Nature Park, is also included in the site.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Light-bellied Brent Goose, Oystercatcher, Ringed Plover, Grey Plover, Knot, Sanderling, Dunlin, Bar-tailed Godwit, Redshank, Black-headed Gull, Roseate Tern, Common Tern and Arctic Tern. The E.U. Birds Directive pays particular attention to wetlands, and as these form part of the SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

The site is an important site for wintering waterfowl, being an integral part of the internationally important Dublin Bay complex – all counts for wintering waterbirds are five year mean peaks for the period 1995/96 to 1999/2000. Although birds regularly commute between the south bay and the north bay, recent studies have shown that certain populations which occur in the south bay spend most of their time there. An internationally important population of Light-bellied Brent Goose (368) occurs regularly and newly arrived birds in the autumn feed on the Eelgrass bed at Merrion. At the time of designation the site supported nationally important numbers of a further nine species: Oystercatcher (1,145), Ringed Plover (161), Grey Plover (45), Knot (548), Sanderling (321), Dunlin (1,923), Bar-tailed Godwit (766), Redshank (260) and Black-headed Gull (3,040). Other species occurring in smaller numbers include Great Crested Grebe (21), Curlew (127) and Turnstone (52). Little Egret, a species which has recently colonised Ireland, also occurs at this site.

South Dublin Bay is a significant site for wintering gulls, with a nationally important population of Black-headed Gull, but also Common Gull (330) and Herring Gull (348). Mediterranean Gull is also recorded from here, occurring through much of the year, but especially in late winter/spring and again in late summer into winter.

Both Common Tern and Arctic Tern breed in Dublin Docks, on a man-made mooring structure known as the E.S.B. dolphin – this is included within the site. Small numbers of Common Tern and Arctic Tern were recorded nesting on this dolphin in the 1980s. A survey in 1995 recorded nationally important numbers of Common Tern nesting here (52 pairs). The breeding population of Common Tern at this site has increased, with 216 pairs recorded in 2000. This increase was largely due to the ongoing management of the site for breeding terns. More recent data highlights this site as one of the most important Common Tern sites in the country with over 400 pairs recorded here in 2007.

South Dublin Bay is an important staging/passage site for a number of tern species in the autumn (mostly late July to September). The origin of many of the birds is likely to be the Dublin breeding sites (Rockabill and the Dublin

Docks) though numbers suggest that the site is also used by birds from other sites, perhaps outside the state. This site is selected for designation for its autumn tern populations: Roseate Tern (2,000 in 1999), Common Tern (5,000 in 1999) and Arctic Tern (20,000 in 1996).

The South Dublin Bay and River Tolka Estuary SPA is of ornithological importance as it supports an internationally important population of Light-bellied Brent Goose and nationally important populations of a further nine wintering species. Furthermore, the site supports a nationally important colony of breeding Common Tern and is an internationally important passage/staging site for three tern species. It is of note that four of the species that regularly occur at this site are listed on Annex I of the E.U. Birds Directive, i.e. Bar-tailed Godwit, Common Tern, Arctic Tern and Roseate Tern. Sandymount Strand/Tolka Estuary is also a Ramsar Convention site.

Site Name: North Bull Island SPA

Site Code: 004006

This site covers all of the inner part of north Dublin Bay, with the seaward boundary extending from the Bull Wall lighthouse across to Drumleck Point at Howth Head. The North Bull Island sand spit is a relatively recent depositional feature, formed as a result of improvements to Dublin Port during the 18th and 19th centuries. It is almost 5 km long and 1 km wide and runs parallel to the coast between Clontarf and Sutton. Part of the interior of the island has been converted to golf courses.

Saltmarsh extends along the length of the landward side of the island and provides the main roost site for wintering birds in Dublin Bay. The island shelters two intertidal lagoons which are divided by a solid causeway. These lagoons provide the main feeding grounds for the wintering waterfowl. The sediments of the lagoons are mainly sands with a small and varying mixture of silt and clay. Green algal mats (Ulva spp.) are a feature of the flats during summer. These sediments have a rich macro-invertebrate fauna, with high densities of Lugworm (Arenicola marina) and Ragworm (Hediste diversicolor).

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Light-bellied Brent Goose, Shelduck, Teal, Pintail, Shoveler, Oystercatcher, Golden Plover, Grey Plover, Knot, Sanderling, Dunlin, Black-tailed Godwit, Bar-tailed Godwit, Curlew, Redshank, Turnstone and Black-headed Gull. The site is also of special conservation interest for holding an assemblage of over 20,000 wintering waterbirds. The E.U. Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

The North Bull Island SPA is of international importance for waterfowl on the basis that it regularly supports in excess of 20,000 waterfowl. The site supports internationally important populations of three species, Light-bellied Brent Goose (1,548), Black-tailed Godwit (367) and Bar-tailed Godwit (1,529) - all figures are mean peaks for the five winters between 1995/96 and 1999/2000. The site is one of the most important in the country for Light-bellied Brent Goose. A further 14 species have populations of national importance – Shelduck (1,259), Teal (953), Pintail (233), Shoveler (141), Oystercatcher (1,784), Grey Plover (517), Golden Plover (2,033), Knot (2,837), Sanderling (141), Dunlin (4,146), Curlew (937), Redshank (1,431), Turnstone (157) and Black-headed Gull (2,196). The populations of Pintail and Knot are of particular note as they comprise 14% and 10% respectively of the all-Ireland population totals. Other species that occur regularly in winter include Grey Heron, Little Egret, Cormorant, Wigeon, Goldeneye, Red-breasted Merganser, Ringed Plover and Greenshank. Gulls are a feature of the site during winter and, along with the nationally important population of Black-headed Gull (2,196), other species that occur include Common Gull (332) and Herring Gull (331). While some of the birds also frequent South Dublin Bay and the River Tolka Estuary for feeding and/or roosting purposes, the majority remain within the site for much of the winter. The wintering bird populations have been monitored more or less continuously since the late 1960s and the site is now surveyed each winter as part of the larger Dublin Bay complex.

The North Bull Island SPA is a regular site for passage waders, especially Ruff, Curlew Sandpiper and Spotted Redshank. These are mostly observed in single figures in autumn but occasionally in spring or winter.

The site formerly had an important colony of Little Tern but breeding has not occurred in recent years. Several pairs of Ringed Plover breed, along with Shelduck in some years. Breeding passerines include Skylark, Meadow Pipit, Stonechat and Reed Bunting. The island is a regular wintering site for Short-eared Owl, with up to 5 present in some winters.

The North Bull Island SPA is an excellent example of an estuarine complex and is one of the top sites in Ireland for wintering waterfowl. It is of international importance on account of both the total number of waterfowl and the individual populations of Light-bellied Brent Goose, Black-tailed Godwit and Bar-tailed Godwit that use it. Also of significance is the regular presence of several species that are listed on Annex I of the E.U. Birds Directive, notably Golden Plover and Bar-tailed Godwit, but also Ruff and Short-eared Owl. North Bull Island is a Ramsar Convention site, and part of the North Bull Island SPA is a Statutory Nature Reserve and a Wildfowl Sanctuary.

Appendix 2 – Irish Water Correspondence

Louise Mahony

The Glass House
11 Coke Lane
Smithfield
Dublin 7
Co. Dublin
D07 WNP2

Uisce Éireann
Bosca OP 448
Oifig Sheachadta na
Cathrach Theas
Cathair Chorcaí

Irish Water
PO Box 448,
South City
Delivery Office,
Cork City.

www.water.ie

7 January 2021

Re: CDS20002792 pre-connection enquiry - Subject to contract | Contract denied

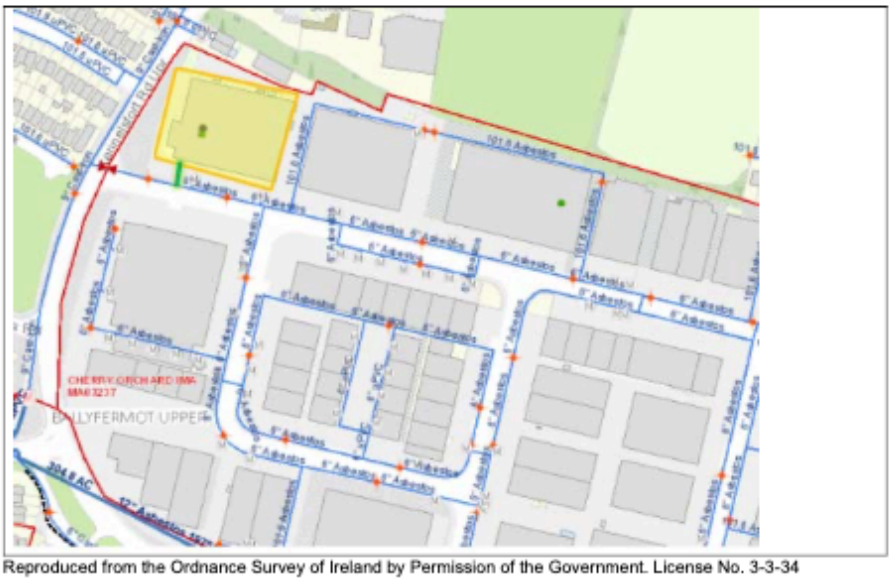
Connection for Housing Development of 148 unit(s) at Units 64 & 65, Cherry Orchard Industrial Estate, Co. Dublin

Dear Sir/Madam,

Irish Water has reviewed your pre-connection enquiry in relation to a Water & Wastewater connection at Units 64 & 65, Cherry Orchard Industrial Estate, Co. Dublin (the **Premises**). Based upon the details you have provided with your pre-connection enquiry and on our desk top analysis of the capacity currently available in the Irish Water network(s) as assessed by Irish Water, we wish to advise you that your proposed connection to the Irish Water network(s) can be facilitated at this moment in time.

SERVICE	OUTCOME OF PRE-CONNECTION ENQUIRY THIS IS NOT A CONNECTION OFFER. YOU MUST APPLY FOR A CONNECTION(S) TO THE IRISH WATER NETWORK(S) IF YOU WISH TO PROCEED.
Water Connection	Feasible Subject to connection to the existing 6" main
Wastewater Connection	Feasible without infrastructure upgrade by Irish Water
SITE SPECIFIC COMMENTS	
Water Connection	Feasible Subject to connection to the existing 6" main
Wastewater Connection	Feasible without infrastructure upgrade by Irish Water
The design and construction of the Water & Wastewater pipes and related infrastructure to be installed in this development shall comply with the Irish Water Connections and Developer Services Standard Details and Codes of Practice that are available on the Irish Water website. Irish Water reserves the right to supplement these requirements with Codes of Practice and these will be issued with the connection agreement.	

The map included below outlines the current Irish Water infrastructure adjacent to your site:



Reproduced from the Ordnance Survey of Ireland by Permission of the Government. License No. 3-3-34

Whilst every care has been taken in its compilation Irish Water gives this information as to the position of its underground network as a general guide only on the strict understanding that it is based on the best available information provided by each Local Authority in Ireland to Irish Water. Irish Water can assume no responsibility for and give no guarantees, undertakings or warranties concerning the accuracy, completeness or up to date nature of the information provided and does not accept any liability whatsoever arising from any errors or omissions. This information should not be relied upon in the event of excavations or any other works being carried out in the vicinity of the Irish Water underground network. The onus is on the parties carrying out excavations or any other works to ensure the exact location of the Irish Water underground network is identified prior to excavations or any other works being carried out. Service connection pipes are not generally shown but their presence should be anticipated.

General Notes:

1) The initial assessment referred to above is carried out taking into account water demand and wastewater discharge volumes and infrastructure details on the date of the assessment. **The availability of capacity may change at any date after this assessment.**
2) This feedback does not constitute a contract in whole or in part to provide a connection to any Irish Water infrastructure. All feasibility assessments are subject to the constraints of the Irish Water Capital Investment Plan.
3) The feedback provided is subject to a Connection Agreement/contract being signed at a later date.
4) A Connection Agreement will be required to commencing the connection works associated with the enquiry this can be applied for at https://www.water.ie/connections/get-connected/
5) A Connection Agreement cannot be issued until all statutory approvals are successfully in place.

6) Irish Water Connection Policy/ Charges can be found at https://www.water.ie/connections/information/connection-charges/
7) Please note the Confirmation of Feasibility does not extend to your fire flow requirements.
8) Irish Water is not responsible for the management or disposal of storm water or ground waters. You are advised to contact the relevant Local Authority to discuss the management or disposal of proposed storm water or ground water discharges
9) To access Irish Water Maps email datarequests@water.ie
10) All works to the Irish Water infrastructure, including works in the Public Space, shall have to be carried out by Irish Water.

If you have any further questions, please contact Paul Lowry from the design team on 018230377 or email paullowr@water.ie For further information, visit **www.water.ie/connections.**

Yours sincerely,

Yvonne Harris

Yvonne Harris

Head of Customer Operations

Appendix 3. Drawings

NOTES

GENERAL

1.) THESE DRAWINGS TO BE READ IN CONJUNCTION WITH ALL RELEVANT HAYES HIGGINS ENGINEERING DRAWINGS AND SPECIFICATIONS.

2.) DO NOT SCALE. USE FIGURED DIMENSIONS ONLY.

DRAINAGE LEGEND

- EXISTING FOUL WATER SEWER
- EXISTING SURFACE WATER SEWER
- EXISTING WATERMAIN

REV	DATE	DESCRIPTION	DWG BY	APPR. BY
P	23.04.21	ISSUED FOR PLANNING	ROC	LM

ISSUED
PLANNING

CLIENT
AAI PALMERSTOWN LIMITED

PROJECT NAME
APARTMENTS AT UNITS 64 & 65
CHERRY ORCHARD INDUSTRIAL ESTATE

DRAWING NAME
EXISTING TOPOGRAPHIC SURVEY

PROJECT No.
20D018

DRAWING No.	REVISION
01	P

SCALE	DRAWN DATE
1:200	22.04.20

CAD DRAWN BY	CHECKED BY	APPROVED BY
R.O.C.	L.M.	R.L.

HAYES HIGGINS PARTNERSHIP
The Glass House, 11 Coke Lane
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Gas House Lane, Kilkenny. Tel: (056) 7764710
Email: info@hhp.ie

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NOTES

GENERAL

1.) THESE DRAWINGS TO BE READ IN CONJUNCTION WITH ALL RELEVANT HAYES HIGGINS ENGINEERING DRAWINGS AND SPECIFICATIONS.

2.) DO NOT SCALE. USE FIGURED DIMENSIONS ONLY.

DRAINAGE LEGEND

- EXISTING FOUL WATER SEWER
- EXISTING SURFACE WATER SEWER
- EXISTING WATERMAIN

LEGEND

- EXTENT OF POROUS ASPHALT WITH STONE BUILD-UP AS SURFACE WATER STORAGE
- BIO RETENTION LANDSCAPED AREAS & TREE PIT
- PODIUM SLAB TO HAVE SLOT DRAINS & STONE BUILD-UP AS SURFACE WATER STORAGE

APARTMENT BLOCK A G.F.L. 53.000

APARTMENT BLOCK B G.F.L. 53.000

APARTMENT BLOCK C G.F.L. 52.700

APARTMENT BLOCK D G.F.L. 53.000

SUBSTATION

G.L. 53.00

G.L. 56.60

EX. 9" WATERMAIN

EX. 225mm ø S.W. SEWER

EX. 6" WATERMAIN

EX. 4" WATERMAIN

EX. 225mm ø F.W. SEWER

EX. 300mm ø S.W. SEWER

EX. 375mm ø S.W. SEWER

EX. 750mm ø S.W. SEWER

EX.FMH C.L. 53.54

EX.FMH C.L. 52.80

EX.FMH C.L. 52.23

EX.SMH C.L. 53.22

EX.SMH C.L. 53.55 I.L. 51.02

EX.SMH C.L. 52.61 I.L. 50.28

EX.SMH C.L. 52.14 I.L. 49.46

PALISADE FENCE

GRASS

POST BOX

GATE

ESB

REV	DATE	DESCRIPTION	DWG BY	APPR. BY
P1	23.11.21	LAYOUT UPDATED FOR PLANNING	ROC	LM
P	23.04.21	ISSUED FOR PLANNING	ROC	LM

ISSUED

PLANNING

CLIENT

AAI PALMERSTOWN LIMITED

PROJECT NAME

APARTMENTS AT UNITS 64 & 65
CHERRY ORCHARD INDUSTRIAL ESTATE

DRAWING NAME

PROPOSED SITE LAYOUT

PROJECT No.

20D018

DRAWING No.	REVISION
02	P1

SCALE	DRAWN DATE
1:200	22.04.20

CAD DRAWN BY	CHECKED BY	APPROVED BY
R.O.C.	L.M.	R.L.

HAYES HIGGINS PARTNERSHIP
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Gas House Lane, Kilkenny. Tel: (056) 7764710
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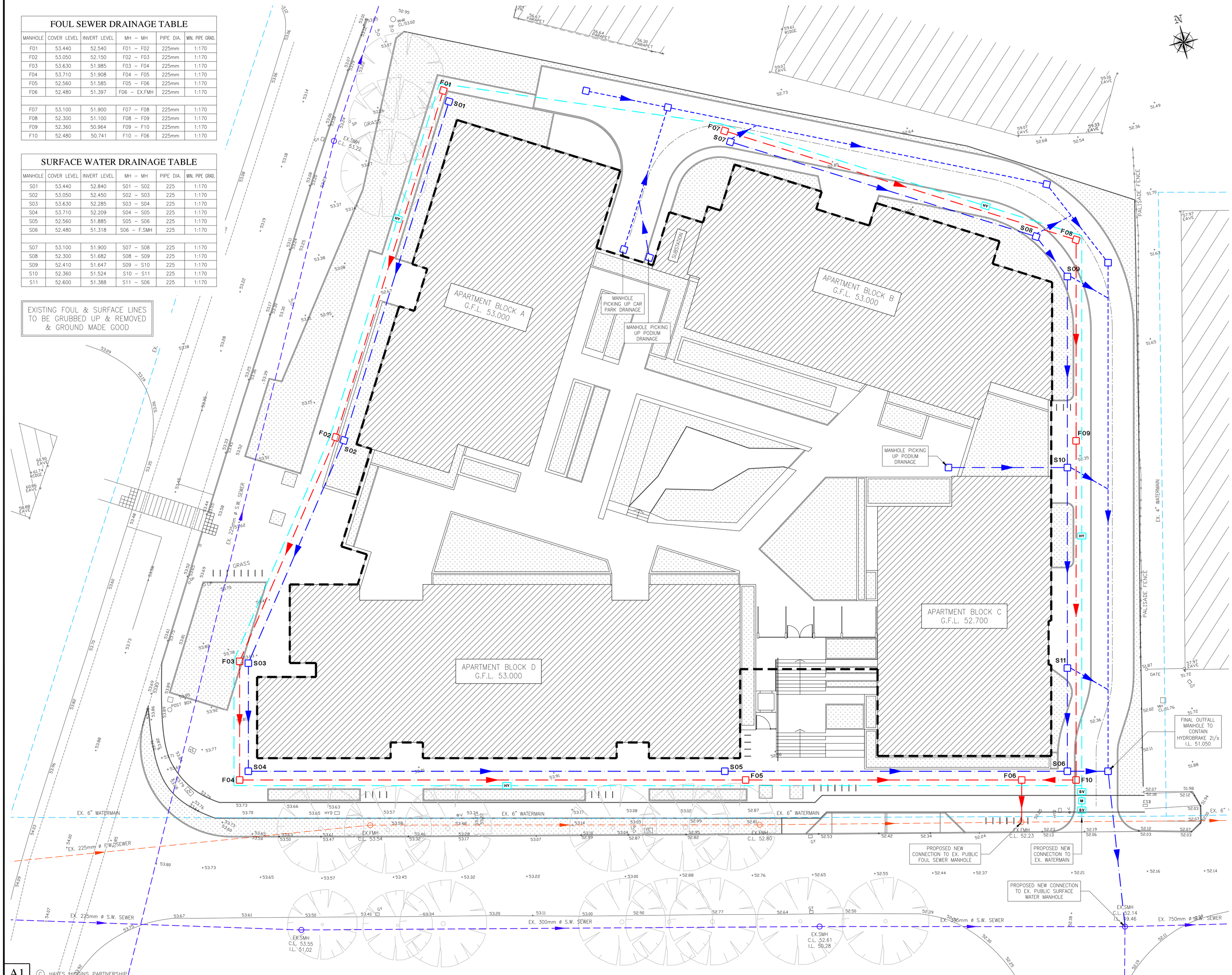
FOUL SEWER DRAINAGE TABLE

MANHOLE	COVER LEVEL	INVERT LEVEL	MH – MH	PIPE DIA.	MIN. PIPE GRAD.
F01	53.440	52.540	F01 – F02	225mm	1:170
F02	53.050	52.150	F02 – F03	225mm	1:170
F03	53.630	51.985	F03 – F04	225mm	1:170
F04	53.710	51.908	F04 – F05	225mm	1:170
F05	52.560	51.585	F05 – F06	225mm	1:170
F06	52.480	51.397	F06 – EX.FMH	225mm	1:170
F07	53.100	51.900	F07 – F08	225mm	1:170
F08	52.300	51.100	F08 – F09	225mm	1:170
F09	52.360	50.964	F09 – F10	225mm	1:170
F10	52.480	50.741	F10 – F06	225mm	1:170

SURFACE WATER DRAINAGE TABLE

MANHOLE	COVER LEVEL	INVERT LEVEL	MH – MH	PIPE DIA.	MIN. PIPE GRAD.
S01	53.440	52.840	S01 – S02	225	1:170
S02	53.050	52.450	S02 – S03	225	1:170
S03	53.630	52.285	S03 – S04	225	1:170
S04	53.710	52.209	S04 – S05	225	1:170
S05	52.560	51.885	S05 – S06	225	1:170
S06	52.480	51.318	S06 – F.SMH	225	1:170
S07	53.100	51.900	S07 – S08	225	1:170
S08	52.300	51.682	S08 – S09	225	1:170
S09	52.410	51.647	S09 – S10	225	1:170
S10	52.360	51.524	S10 – S11	225	1:170
S11	52.600	51.388	S11 – S06	225	1:170

EXISTING FOUL & SURFACE LINES TO BE GRUBBED UP & REMOVED & GROUND MADE GOOD



NOTES

GENERAL

1.) THESE DRAWINGS TO BE READ IN CONJUNCTION WITH ALL RELEVANT HAYES HIGGINS ENGINEERING DRAWINGS AND SPECIFICATIONS.

2.) DO NOT SCALE. USE FIGURED DIMENSIONS ONLY.

3.) ALL DRAINAGE TO BE SUBMITTED AND AGREED WITH SOUTH DUBLIN COUNTY COUNCIL PRIOR TO COMMENCEMENT OF WORKS.

4.) CONTRACTOR TO TRACE ALL SERVICES WITHIN SITE BOUNDARY TO ASCERTAIN OUTFALL LOCATIONS OF ALL DRAIN RUNS & LOCATION OF ALL LIVE SERVICES PRIOR TO COMMENCEMENT OF SITE CLEARANCE WORKS.

5.) PIPES LAID IN ROADWAYS TO BE ENCASED IN 150mm CONCRETE WHERE COVER TO PIPE IS LESS THAN 1.2m. PIPES LAID IN OPEN SPACES TO BE ENCASED IN 150mm CONCRETE WHERE COVER TO PIPE IS LESS THAN 0.9m.

6.) MANHOLES/MAIN DRAINAGE SERVING SAME TO BE CONFIRMED AT DESIGN STAGE.

7.) RW OUTLETS AND AJ'S TO BE PROVIDED IN ACCORDANCE WITH DOWNPIPE LOCATIONS INDICATED ON ARCHITECTS DRAWINGS.

8.) CONTRACTOR TO ENSURE FULL COORDINATION WITH ALL OTHER UNDERGROUND SERVICES PRIOR TO THE COMMENCEMENT OF WORKS.

9.) RW OUTLETS, AJ, GULLY (AND MANHOLE) LOCATIONS ARE SUBJECT TO APPROVAL PRIOR TO INSTALLATION. 1No. GULLY REQUIRED FOR EVERY 200m3 HARD STANDING MIN.

10.) FOUL DRAINAGE SYSTEM TO IRISH WATER SPECIFICATIONS (IW-CDS-5030-01, 02 & 03).

11.) MAINS WATER SYSTEM TO IRISH WATER SPECIFICATIONS (IW-CDS-5020-01, 02 & 03).

12.) WATER SUPPLY TO BE METERED, LOCATION OF WATER METER TO BE TO THE AGREEMENT OF IRISH WATER & SOUTH DUBLIN COUNTY COUNCIL WATER SERVICES DIVISION. REFER TO IRISH WATER INFRASTRUCTURE STANDARD DETAILS. REFER TO IW COP FOR WATER INFRASTRUCTURE.

13.) THE HYDRANT LOCATIONS CURRENTLY SHOWN ARE FOR INDICATIVE PURPOSES ONLY. A MORE DETAILED ASSESSMENT WILL BE CARRIED OUT AT THE NEXT DESIGN STAGE.

DRAINAGE LEGEND

- EXISTING FOUL WATER SEWER
- EXISTING SURFACE WATER SEWER
- EXISTING WATERMAIN
- PROPOSED uPVC FOUL WATER SEWER
- PROPOSED uPVC SURFACE WATER SEWER
- PROPOSED uPVC PERFORATED SURFACE WATER SEWER
- PROPOSED 100mm ø HDPE WATERMAIN
- HY NEW HYDRANT
- SV SLUICE VAVLE
- M WATER METER

REV	DATE	DESCRIPTION	DWG BY	APPR. BY
P1	23.11.21	LAYOUT UPDATED FOR PLANNING	ROC	LM
P	23.04.21	ISSUED FOR PLANNING	ROC	LM

ISSUED
PLANNING

CLIENT
AAI PALMERSTOWN LIMITED

PROJECT NAME
APARTMENTS AT UNITS 64 & 65
CHERRY ORCHARD INDUSTRIAL ESTATE

DRAWING NAME
PROPOSED DRAINAGE LAYOUT

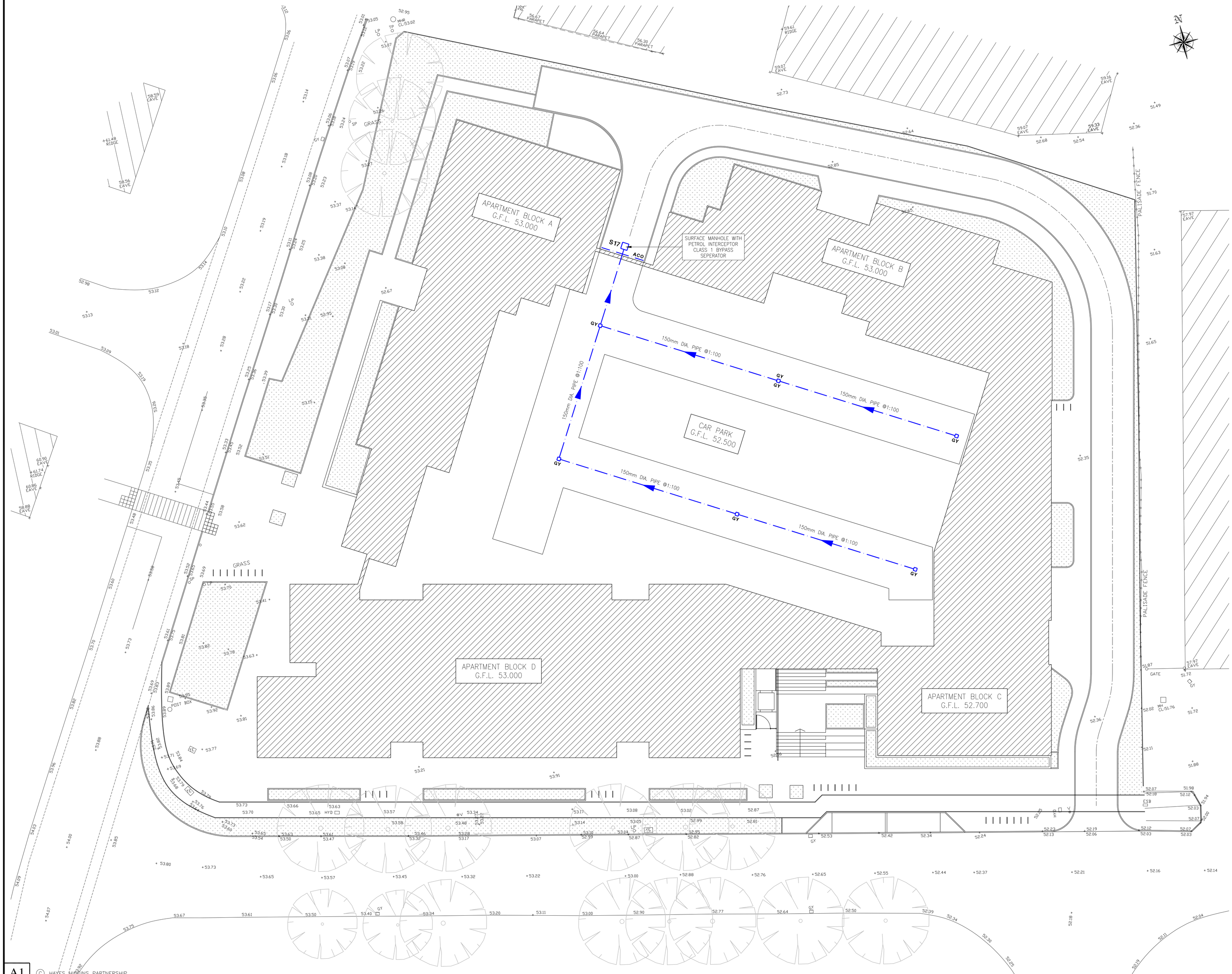
PROJECT No.
20D018

DRAWING No.	REVISION
03	P1
SCALE	DRAWN DATE
1:200	22.04.20

CAD DRAWN BY	CHECKED BY	APPROVED BY
R.O.C.	L.M.	R.L.

HAYES HIGGINS PARTNERSHIP
The Glass House, 11 Coke Lane
Smithfield, Dublin 7. Tel: 01 6612321
E-mail: admin@hayeshiggins.ie
Gas House Lane, Kilkenny. Tel: (056) 7764710
Email: info@hhp.ie

A1



NOTES

GENERAL

1.) THESE DRAWINGS TO BE READ IN CONJUNCTION WITH ALL RELEVANT HAYES HIGGINS ENGINEERING DRAWINGS AND SPECIFICATIONS.

2.) DO NOT SCALE. USE FIGURED DIMENSIONS ONLY.

3.) ALL DRAINAGE TO BE SUBMITTED AND AGREED WITH SOUTH DUBLIN COUNTY COUNCIL PRIOR TO COMMENCEMENT OF WORKS.

4.) CONTRACTOR TO TRACE ALL SERVICES WITHIN SITE BOUNDARY TO ASCERTAIN OUTFALL LOCATIONS OF ALL DRAIN RUNS & LOCATION OF ALL LIVE SERVICES PRIOR TO COMMENCEMENT OF SITE CLEARANCE WORKS.

5.) PIPES LAID IN ROADWAYS TO BE ENCASED IN 150mm CONCRETE WHERE COVER TO PIPE IS LESS THAN 1.2m. PIPES LAID IN OPEN SPACES TO BE ENCASED IN 150mm CONCRETE WHERE COVER TO PIPE IS LESS THAN 0.9m.

6.) MANHOLES/MAIN DRAINAGE SERVING SAME TO BE CONFIRMED AT DESIGN STAGE.

7.) RW OUTLETS AND AJ'S TO BE PROVIDED IN ACCORDANCE WITH DOWNPIPE LOCATIONS INDICATED ON ARCHITECTS DRAWINGS.

8.) CONTRACTOR TO ENSURE FULL COORDINATION WITH ALL OTHER UNDERGROUND SERVICES PRIOR TO THE COMMENCEMENT OF WORKS.

9.) RW OUTLETS, AJ, GULLY (AND MANHOLE) LOCATIONS ARE SUBJECT TO APPROVAL PRIOR TO INSTALLATION. 1No. GULLY REQUIRED FOR EVERY 200m3 HARD STANDING MIN.

10.) FOUL DRAINAGE SYSTEM TO IRISH WATER SPECIFICATIONS (IW-CDS-5030-01, 02 & 03).

11.) MAINS WATER SYSTEM TO IRISH WATER SPECIFICATIONS (IW-CDS-5020-01, 02 & 03).

12.) WATER SUPPLY TO BE METERED, LOCATION OF WATER METER TO BE TO THE AGREEMENT OF IRISH WATER & SOUTH DUBLIN COUNTY COUNCIL WATER SERVICES DIVISION. REFER TO IRISH WATER INFRASTRUCTURE STANDARD DETAILS. REFER TO IW COP FOR WATER INFRASTRUCTURE.

13.) THE HYDRANT LOCATIONS CURRENTLY SHOWN ARE FOR INDICATIVE PURPOSES ONLY. A MORE DETAILED ASSESSMENT WILL BE CARRIED OUT AT THE NEXT DESIGN STAGE.

REV	DATE	DESCRIPTION	DWG BY	APPR. BY
P	23.11.21	ISSUED FOR PLANNING	ROC	LM

ISSUED
PLANNING

CLIENT
AAI PALMERSTOWN LIMITED

PROJECT NAME
APARTMENTS AT UNITS 64 & 65
CHERRY ORCHARD INDUSTRIAL ESTATE

DRAWING NAME
PROPOSED DRAINAGE LAYOUT AT CAR PARK LEVEL

PROJECT No.
20D018

DRAWING No.	REVISION
03A	P

SCALE	DRAWN DATE
1:200	22.04.20

CAD DRAWN BY	CHECKED BY	APPROVED BY
R.O.C.	L.M.	R.L.

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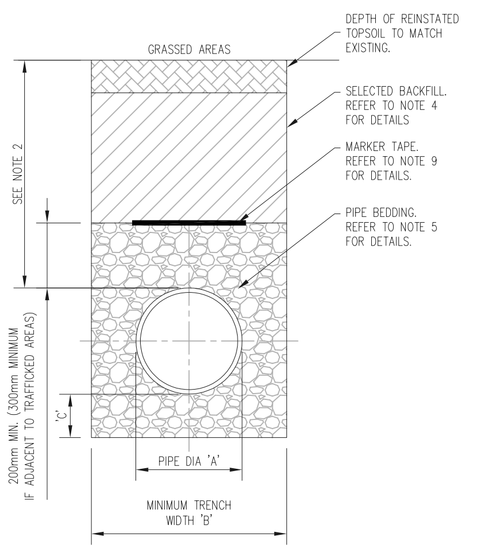
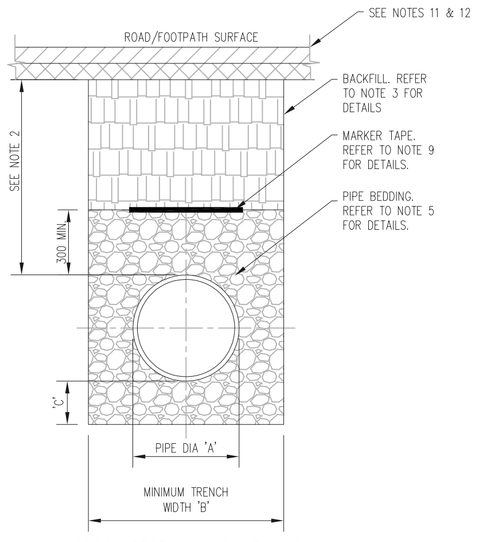
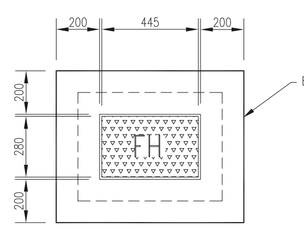
A1



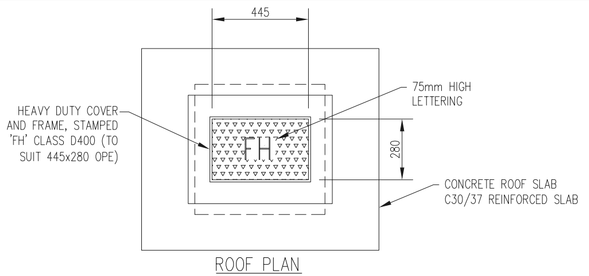
CROSS SECTION IN GRASSED AREAS
SCALE 1:20



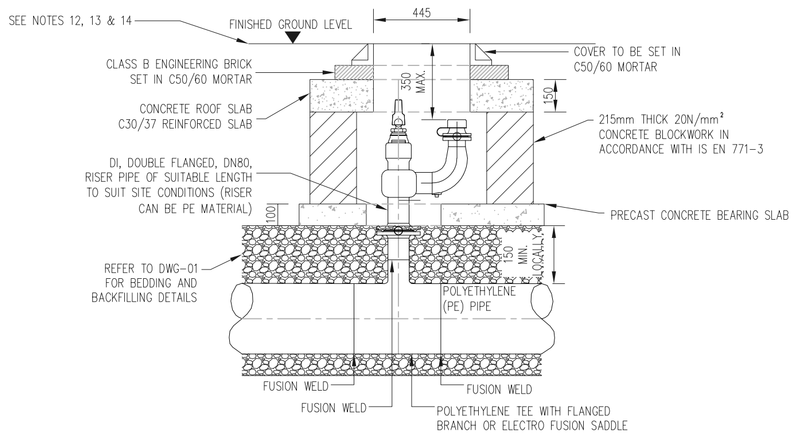
CROSS SECTION IN ROADWAYS
SCALE 1:20



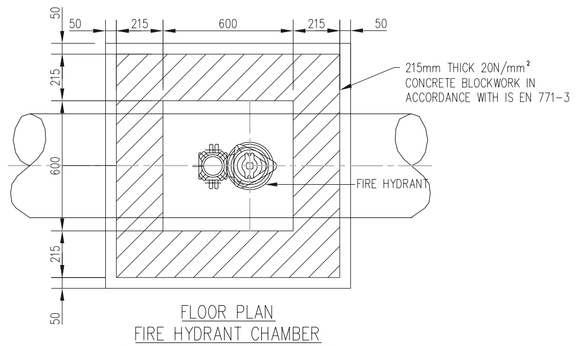
PLINTH DETAIL IN GRASS AREA
SCALE 1:20



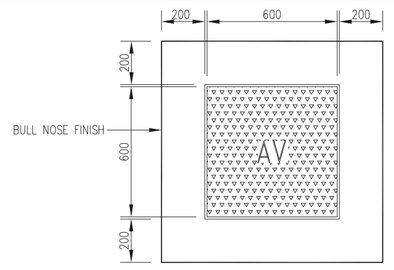
ROOF PLAN
SCALE 1:20



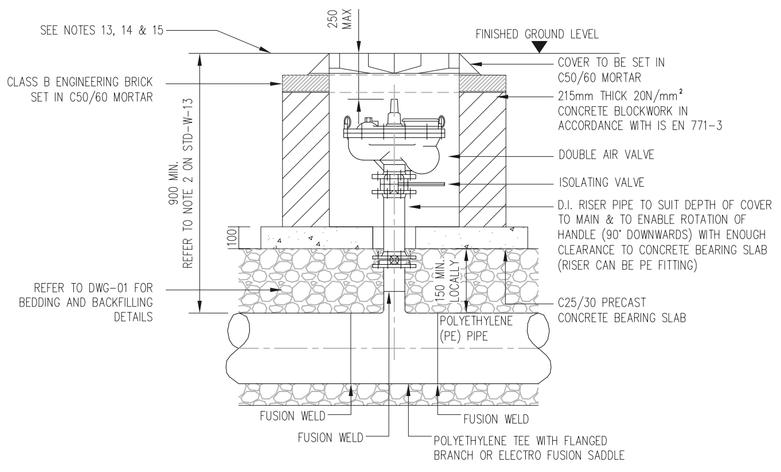
SECTION
SCALE 1:20



FLOOR PLAN
FIRE HYDRANT CHAMBER
(BLOCKWORK CONSTRUCTION)
SCALE 1:20



PLINTH DETAIL IN GRASS AREA
SCALE 1:20



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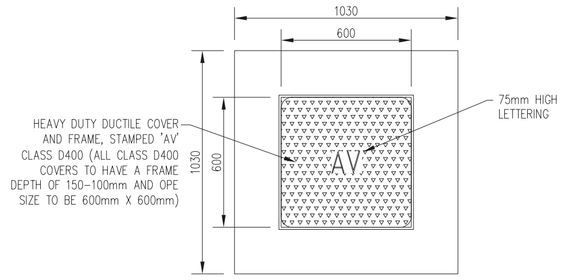
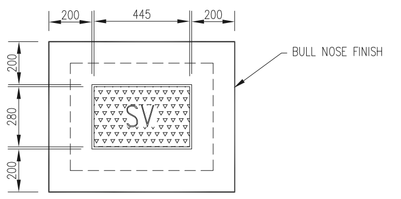
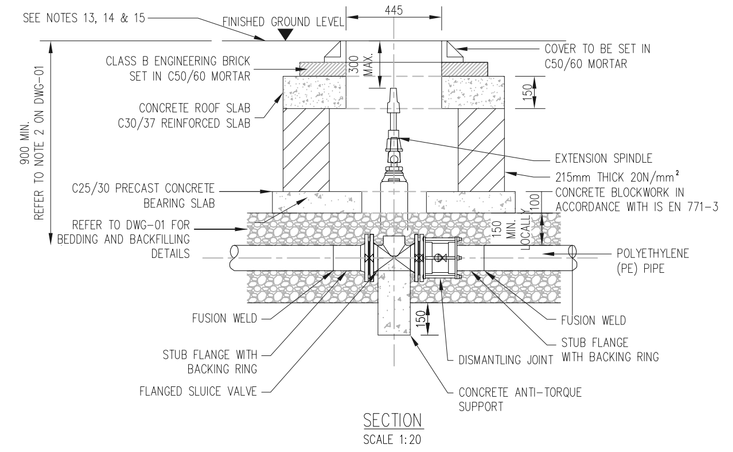
SCALE 1:20



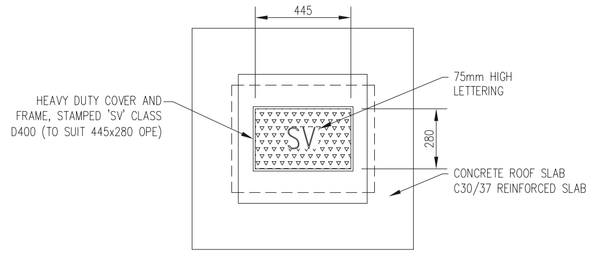
ROOF PLAN
SCALE 1:20



PLINTH DETAIL IN GRASS AREA
SCALE 1:20



SECTION
SCALE 1:20



ROOF PLAN
SCALE 1:20

NOTES

GENERAL

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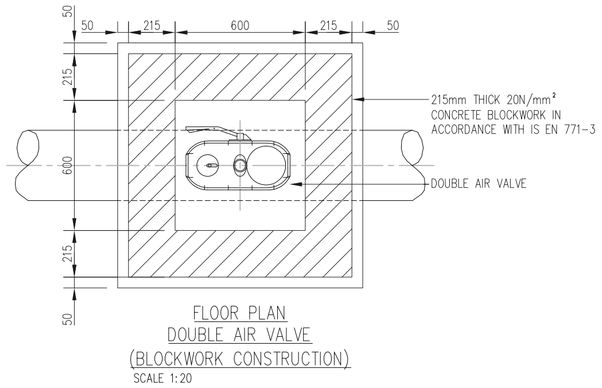
2.) DO NOT SCALE. USE FIGURED DIMENSIONS ONLY.

PIPE DIAMETER 'A' (mm)	DEPTH OF BEDDING 'C' (mm)
≤ 200	150
≥ 250	200
PIPE DIAMETER 'A' (mm)	**TRENCH WIDTH 'B' (mm)**
≤ 80	SEE NOTE 10.
100	500
150	600
200	600
250	750
300	750
350	750
400	900
450	900

DETAIL 01 – TRENCH BACKFILL AND BEDDING

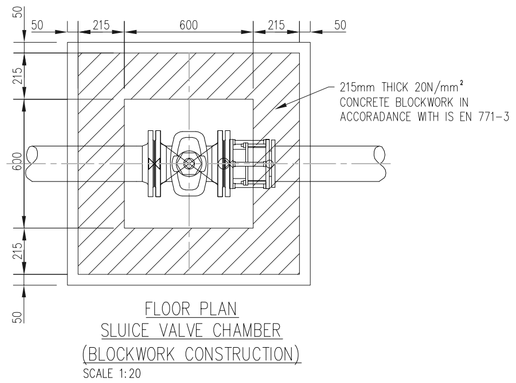
DETAIL 02 – ON-LINE HYDRANT FOR POLYETHYLENE (P.E.) PIPE

DIAMETER OF MAIN	UP TO 250 (mm)	250 TO 350 (mm)
DIAMETER OF BRANCH	80mm	100mm
BORE OF VALVE INLET	80mm	100mm



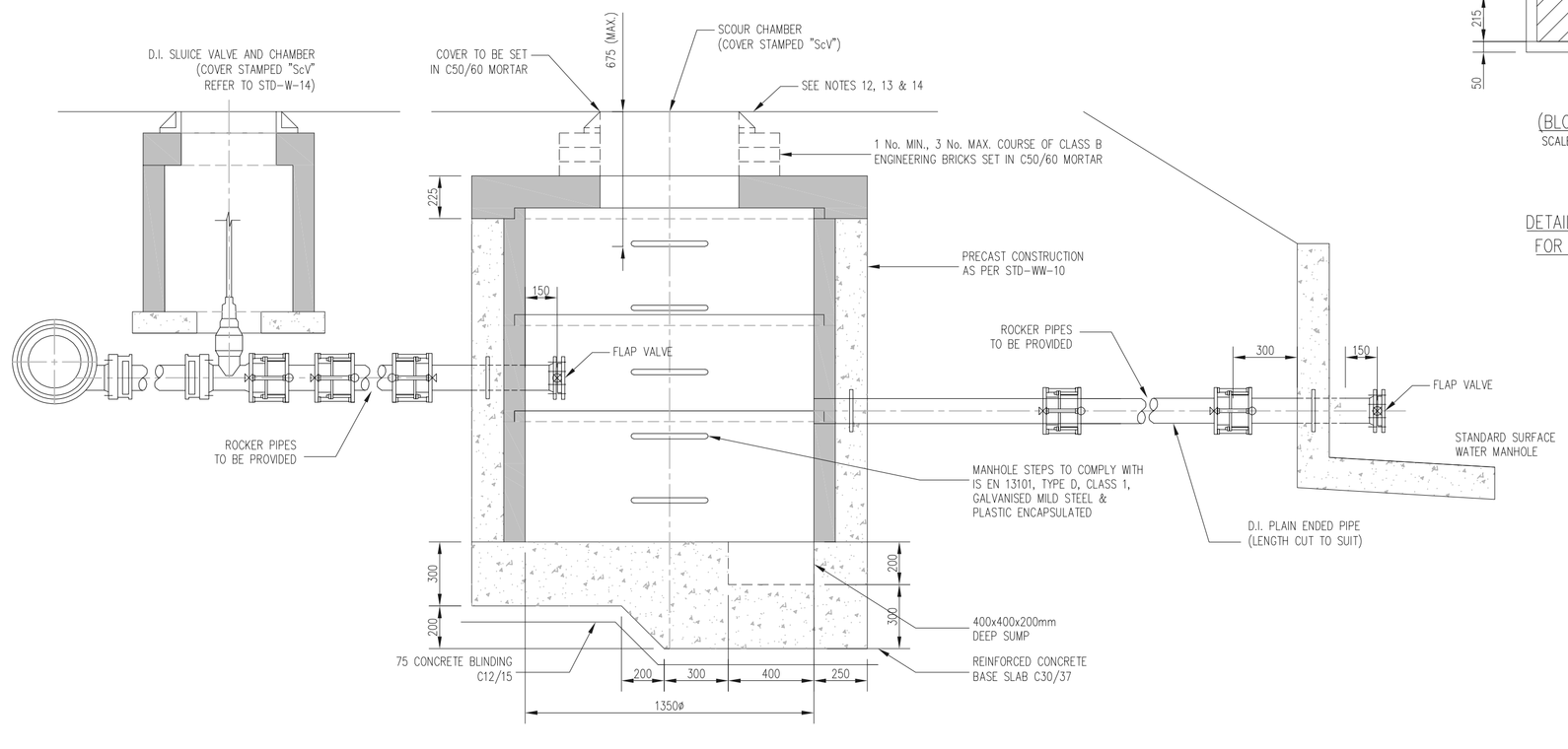
FLOOR PLAN
DOUBLE AIR VALVE
(BLOCKWORK CONSTRUCTION)
SCALE 1:20

DETAIL 03 – ON-LINE AIR VALVE FOR POLYETHYLENE (P.E.) PIPE



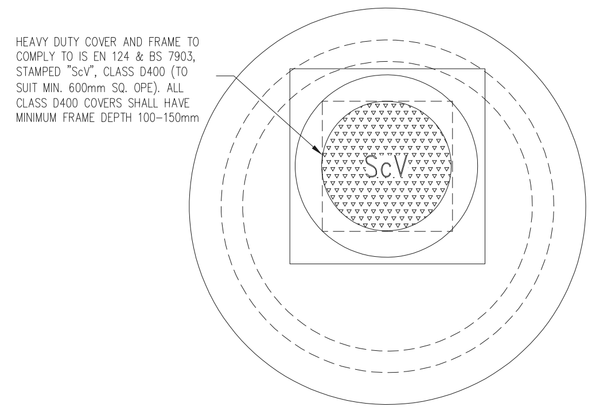
FLOOR PLAN
SLUICE VALVE CHAMBER
(BLOCKWORK CONSTRUCTION)
SCALE 1:20

DETAIL 04 –SLUICE VALVE FOR POLYETHYLENE (P.E.) PIPE (<350mm ø)

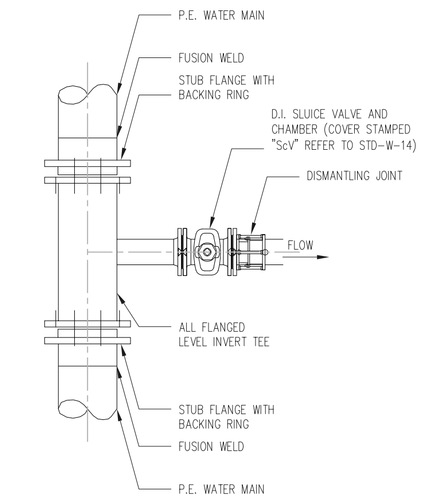


SECTION
NTS

DETAIL 10 – SCOUR VALVE CHAMBER FOUL RISING MAIN (<200mm ø)



ROOF PLAN
NTS



PLAN (POLYETHYLENE WATER MAIN)
NTS

REV	DATE	DESCRIPTION	DWG BY	APPR. BY
P	20.04.21	ISSUED FOR PLANNING	DW	LM

ISSUED
PLANNING

CLIENT
AAI PALMERSTOWN LIMITED

PROJECT NAME
APARTMENTS AT UNITS 64 & 65
CHERRY ORCHARD INDUSTRIAL ESTATE

DRAWING NAME
IRISH WATER WATERMAIN DETAILS SHEET 1 OF 4

PROJECT No.
20D018

DRAWING No.	REVISION
04	P
SCALE: AS SHOWN	DRAWN DATE: 20.04.2021

CAD DRAWN BY	CHECKED BY	APPROVED BY
DW	LM	DH

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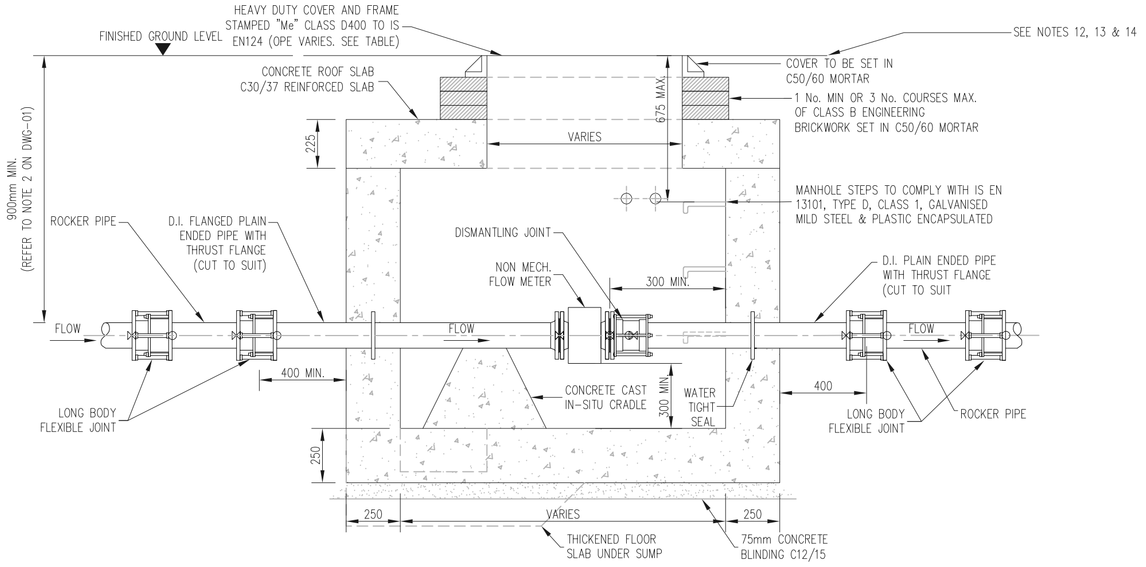
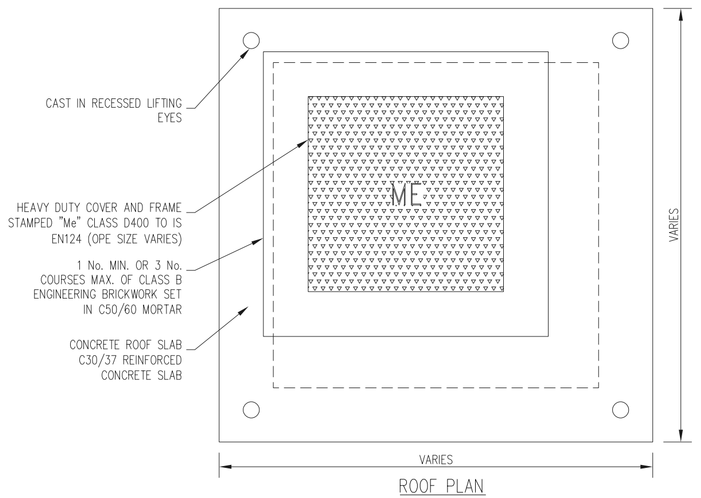
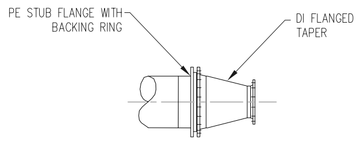


SECTION
SCALE 1:20

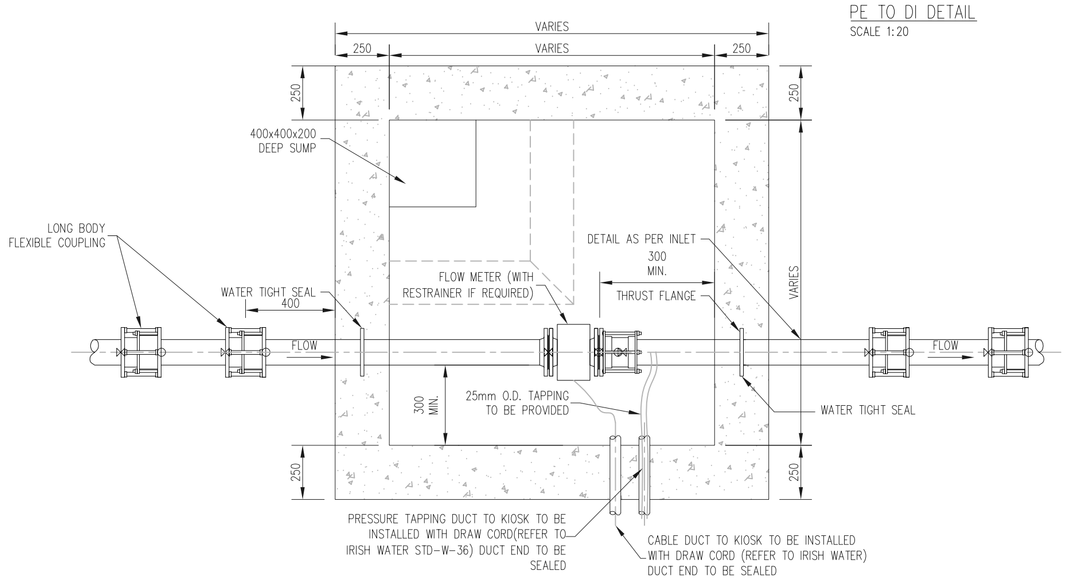


ROOF PLAN
SCALE 1:20

METER DIAMETER 'A' (mm)	INTERNAL CHAMBER DIMENSIONS	COVER DIMENSIONS
50 – 100	1200 x 1200mm	750 x 750mm
101 – 250	1500 x 1500mm	900 x 900mm

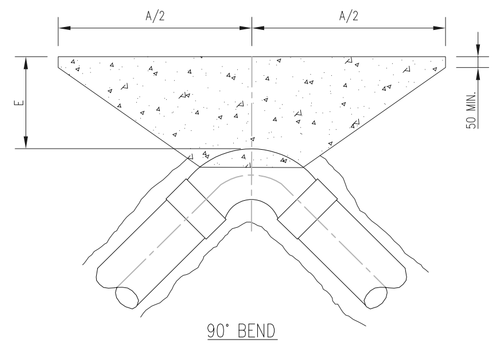


PE TO DI DETAIL
SCALE 1:20

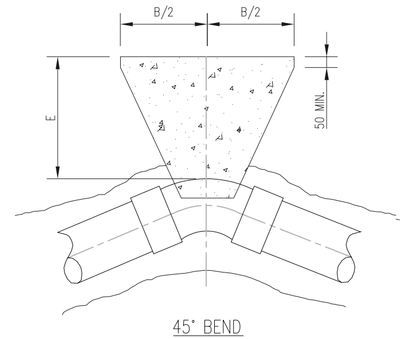


FLOOR PLAN
SCALE 1:20

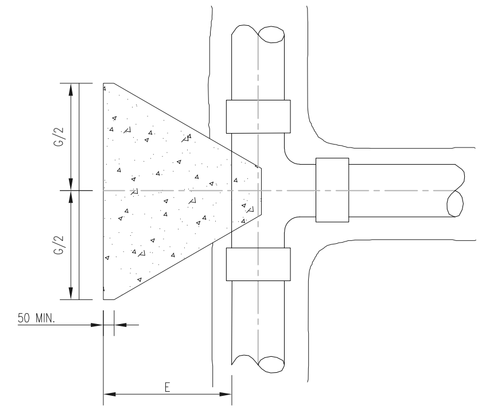
DETAIL 05 – NON-MECH. METER CHAMBER (40-250mm ø)



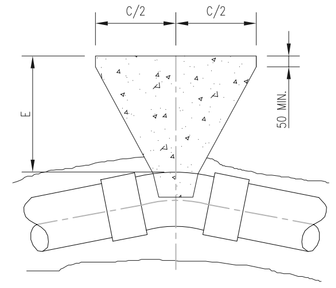
90° BEND



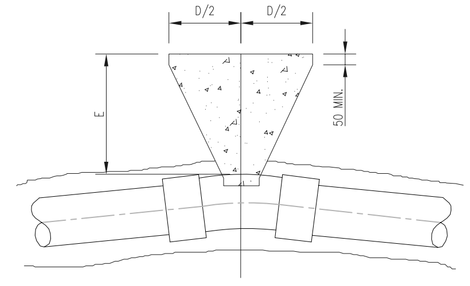
45° BEND



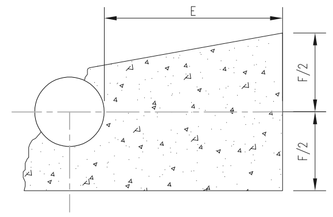
TEE



22.5° BEND



11.25° BEND

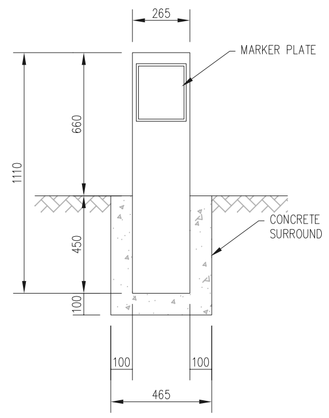


SECTIONAL ELEVATION FOR BEND OR TEE

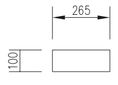
HORIZONTAL BENDS

NOM. DIAMETER (mm)	15 BAR TO 18 BAR TEST PRESSURE DIMENSIONS 'A'	'B'	'C'	'D'	'E'	'F'	'G'
100	750mm	400mm	205mm	100mm	220mm	400mm	530mm
150	1250mm	700mm	350mm	180mm	250mm	500mm	890mm

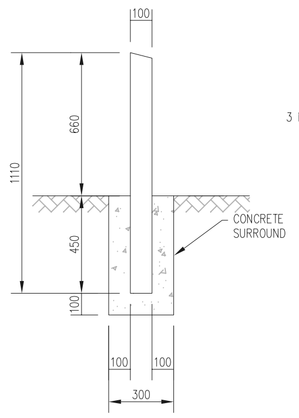
DETAIL 06 – WATER MAIN THRUST AND SUPPORT BLOCKS



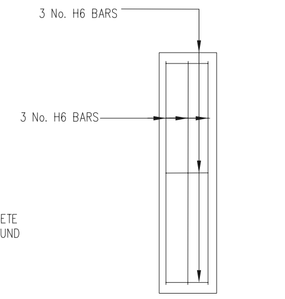
ELEVATION
SCALE 1:20



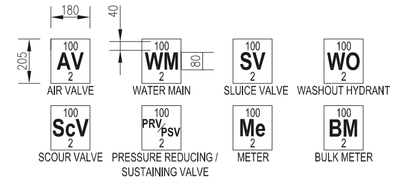
PLAN
SCALE 1:20



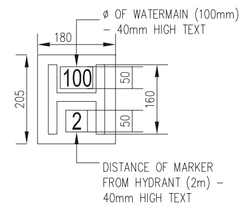
SECTION
SCALE 1:20



REINFORCEMENT DETAILS
SCALE 1:20



DETAIL 07 – MARKER POSTS/PLATES



HYDRANT

NOTES

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2.) DO NOT SCALE. USE FIGURED DIMENSIONS ONLY.

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P	20.04.21	ISSUED FOR PLANNING	DW	LM

ISSUED
PLANNING

CLIENT
AAI PALMERSTOWN LIMITED

PROJECT NAME
APARTMENTS AT UNITS 64 & 65
CHERRY ORCHARD INDUSTRIAL ESTATE

DRAWING NAME
IRISH WATER WATERMAIN DETAILS SHEET 2 OF 4

PROJECT No.
20D018

DRAWING No.
04

REVISION
P

SCALE
AS SHOWN

DRAWN DATE
20.04.2021

CAD DRAWN BY
DW

CHECKED BY
LM

APPROVED BY
DH

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A1

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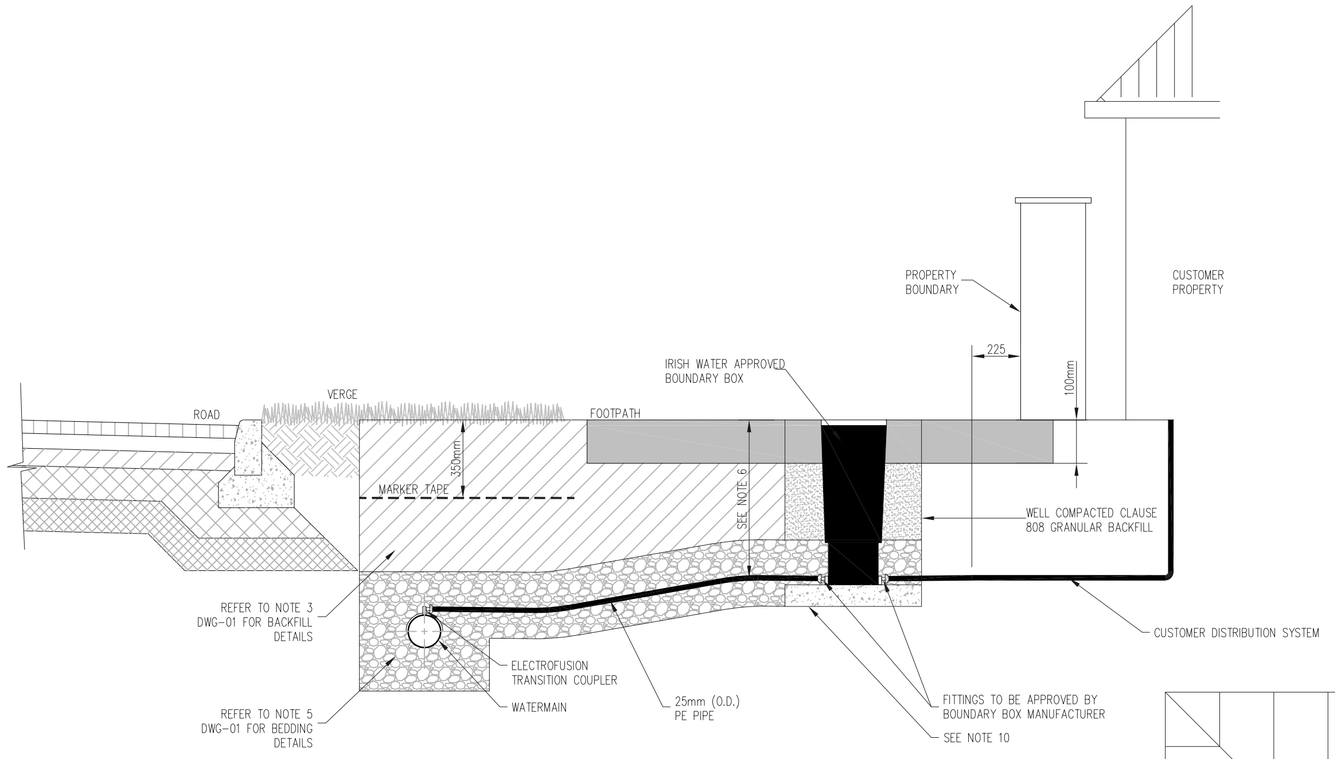
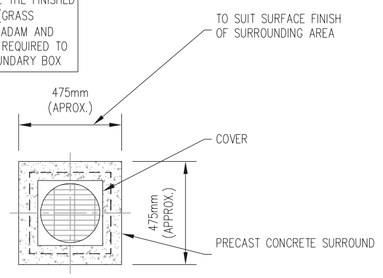
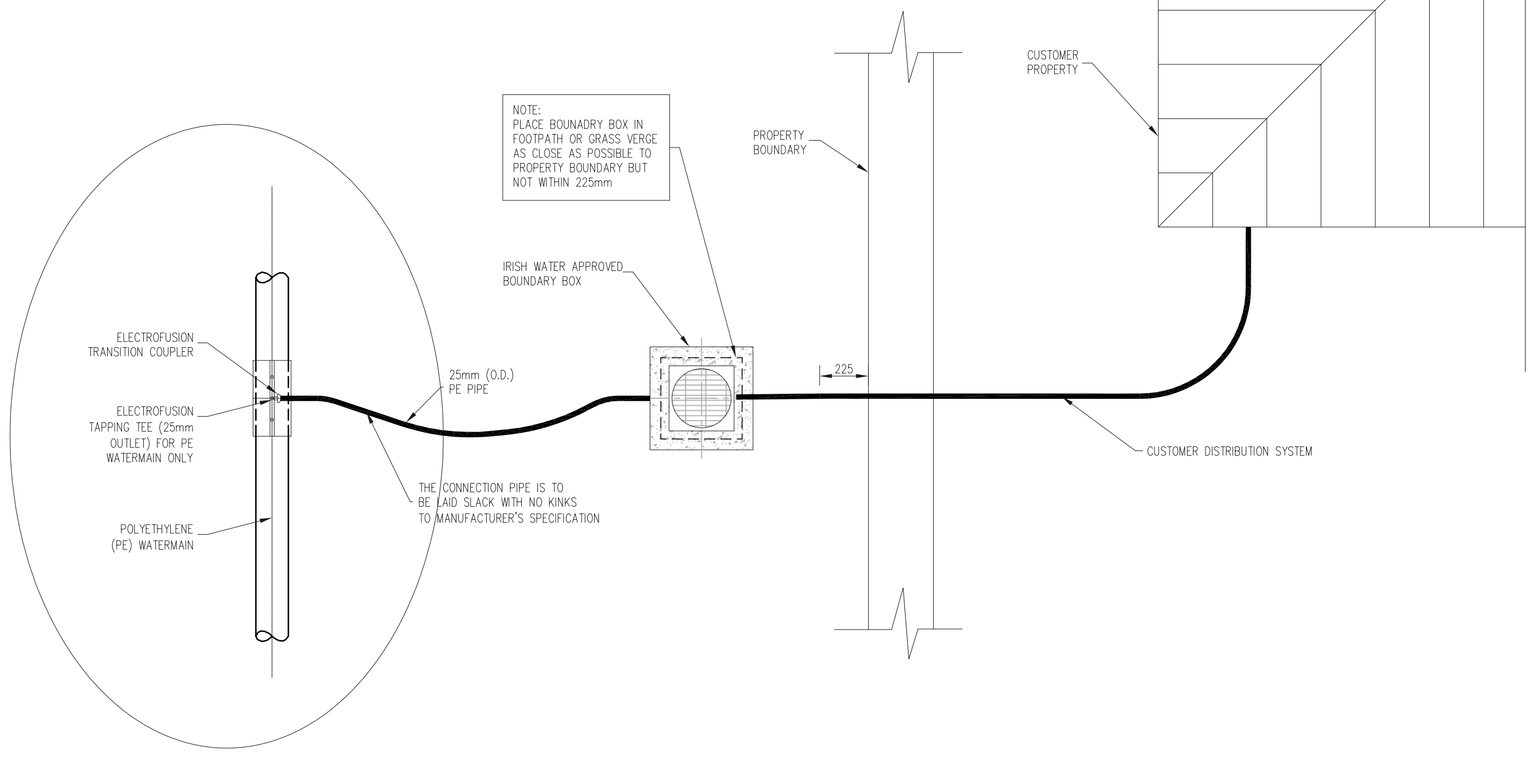


SECTION
(CUSTOMER CONNECTION AND BOUNDARY BOX)
SCALE 1:20

NOTE:
THIS DETAIL APPLIES TO WHERE THE FINISHED SURFACE IS EITHER UNBOUND (GRASS VERGE), BRICK PAVING OR MACADAM AND WHERE A CONCRETE PLINTH IS REQUIRED TO SUPPORT THE TOP OF THE BOUNDARY BOX



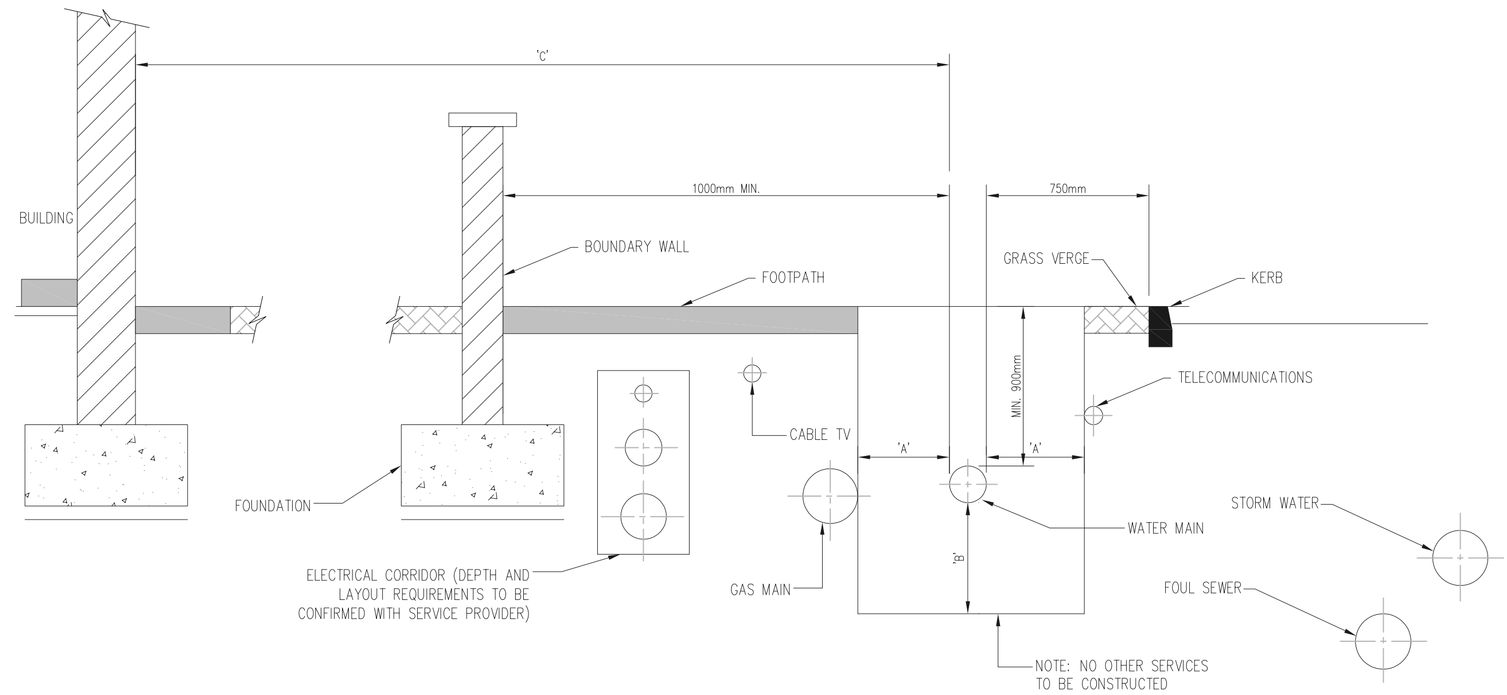
PLAN
(CONCRETE SURROUND TO BOUNDARY BOX COVER)
SCALE 1:20



FOR POLYETHYLENE (PE) WATERMAIN ONLY
SCALE 1:20

PLAN
(CUSTOMER CONNECTION AND BOUNDARY BOX)
SCALE 1:20

DETAIL 08 – CUSTOMER CONNECTION AND BOUNDARY BOX (25mm OD PIPE)



DIAMETER (mm)	'A' (mm)	'B' (mm)
< 300	300	300
300 – 450	500	500
> 450	3000	500

DIAMETER (mm)	'C' (mm)
≤ 150	3000
200 – 600	5000
> 600	8000

DETAIL 09 – TYPICAL SERVICE LAYOUT INDICATING SEPARATION DISTANCES

REV	DATE	DESCRIPTION	DWG BY	APPR. BY
P	20.04.21	ISSUED FOR PLANNING	DW	LM

ISSUED
PLANNING

CLIENT
AAI PLAMERSTOWN LIMITED

PROJECT NAME
APARTMENTS AT UNITS 64 & 65
CHERRY ORCHARD INDUSTRIAL ESTATE

DRAWING NAME
IRISH WATER WATERMAIN DETAILS SHEET 3 OF 4

PROJECT No.
20D018

DRAWING No.	REVISION
04	P

SCALE	DRAWN DATE
AS SHOWN	20.04.2021

CAD DRAWN BY	CHECKED BY	APPROVED BY
DW	LM	DH

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2.) DO NOT SCALE. USE FIGURED DIMENSIONS ONLY.

DETAIL 01 – TRENCH BACKFILL & BEDDING

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES (mm) UNLESS NOTED OTHERWISE.
2. THE MINIMUM DEPTH OF COVER FROM THE FINISHED GROUND LEVEL TO THE EXTERNAL CROWN OF THE PIPE SHALL BE 900mm WHERE THE PIPE IS TO BE LOCATED IN HOUSING ESTATE ROADS. GREATER DEPTHS OF COVER AND/OR PIPE STRENGTH AND/OR A HIGHER CLASS OF BEDDING MATERIAL MAY BE REQUIRED WHERE HIGH TRAFFIC LOADING IS ANTICIPATED. THE DESIRABLE COVER FOR A WATERMAIN SHOULD BE 1200mm, WHERE PRACTICABLE & SHOULD NOT EXCEED 3.0m.

   CLAUSE 804/808 MATERIAL IN ACCORDANCE WITH THE NATIONAL ROADS AUTHORITY SPECIFICATION FOR ROAD WORKS IS TO BE USED AS BACKFILL MATERIAL WHERE THE WATER MAIN IS LOCATED IN ROADS, FOOTPATHS OR WHEN THE NEAREST PART OF THE TRENCH IS WITHIN 1m OF THE PAVED EDGE OF THE ROADWAY. CLAUSE 804/808 IS TO BE COMPACTED AS PER CLAUSE 802 OF THE NATIONAL ROADS AUTHORITY SPECIFICATION FOR ROAD WORKS. CLAUSE 808 IS TO BE USED WITHIN 500mm OF CEMENT BOUND MATERIALS, CONCRETE PAVEMENTS, CONCRETE STRUCTURES OR CONCRETE PRODUCTS. OTHERWISE CLAUSE 804 MAY BE USED. ALTERNATIVE BACKFILL MATERIAL TO THAT DESCRIBED ABOVE (CLAUSE 804 OR CLAUSE 808) OF THE PIPE TRENCH WILL ONLY BE ALLOWED BY IRISH WATER WHERE THE ROADS AUTHORITY IN WHOSE FUNCTIONAL AREA THE DEVELOPMENT IS LOCATED, PROVIDES WRITTEN APPROVAL TO THE DEVELOPER TO THE USE OF SUCH ALTERNATIVE MATERIAL.
4. SELECTED EXCAVATED MATERIAL MAY BE USED IN GREEN-FIELD AREAS ABOVE GRANULAR PIPE SURROUND MATERIAL SUBJECT TO REVIEW BY IRISH WATER.
5. PIPE BEDDING SHALL COMPLY WITH WS 4–08–02 AND IGN 4–08–01 GRANULAR MATERIAL SHALL BE 14mm TO 5mm GRADED AGGREGATE OR 10mm SINGLE SIZED AGGREGATE TO IS EN 13242.
6. IN SOFT GROUND CONDITIONS (CBR <5) THE MATERIAL SHOULD BE EXCAVATED OUT AND DISPOSED OF IN ACCORDANCE WITH THE WASTE MANAGEMENT ACT AND CLAUSE 804/808 MATERIAL IN ACCORDANCE WITH THE NATIONAL ROADS AUTHORITY SPECIFICATION FOR ROADS WORKS SHALL REPLACE THE EXCAVATED MATERIAL, WRAPPED IN GEO–TEXTILE WRAPPING. ALTERNATIVELY, SPECIAL PIPE SUPPORT ARRANGEMENTS, INCLUDING PILING ETC. MAY BE REQUIRED WHERE THE DEPTH OF SOFT MATERIAL IS EXCESSIVE. SUCH ARRANGEMENTS SHALL BE SUBJECT TO ASSESSMENT BY IRISH WATER BEFORE ADVANCING WITH THE WORK.
7. PIPES SHALL NOT BE SUPPORTED ON STONES OR ROCKS, OR ANY HARD OBJECT AT ANY POINT ALONG THE TRENCH. ROCK SHALL BE EXCAVATED TO A DEPTH OF 150mm BELOW THE ACTUAL DEPTH OF THE TRENCH WITH THE VOID FILLED WITH CLAUSE 804/808 MATERIAL IN ACCORDANCE WITH THE NATIONAL ROADS AUTHORITY SPECIFICATION FOR ROAD WORKS. THE GRANULAR MATERIAL SHALL BE LAID ABOVE THIS VOID BACKFILL MATERIAL.
8. SHOULD MINIMUM COVER NOT BE ACHIEVABLE, CONCRETE GRADE C8/10 SHALL BE USED AS BACKFILL MATERIAL.
9. MARKER TAPE TO BE 400mm WIDE BLUE POLYETHYLENE MATERIAL IN ACCORDANCE WITH EN 12163, PLASTIC PIPES SHALL HAVE WARNING TAPE INCORPORATING A REINFORCED BAND BRACING WIRE. SERVICE PIPES SHALL HAVE 200mm WIDE MESH TAPE. MARKER TAPE TO BE LAID AT TOP OF PIPE BEDDING LAYER.
10. TRENCH WIDTHS FOR PIPE SIZES ≤80mm MAY BE <500mm SUBJECT TO CONSIDERATION BEING GIVEN TO THE TRENCH DEPTH, HEALTH & SAFETY & CONSTRUCTION ACCESS REQUIREMENTS.
11. NEW ROAD CONSTRUCTION & SURFACE FINISH TO BE TO ROAD AUTHORITY REQUIREMENTS.
12. EXISTING ROAD REINSTATEMENT TO COMPLY WITH CURRENT VERSION OF "GUIDELINES FOR MANAGING OPENINGS IN PUBLIC ROADS" BY THE DEPT. OF TRANSPORT, TOURISM & SPORT, OR TRANSPORT INFRASTRUCTURE IRELAND REQUIREMENTS.

DETAIL 02 – ON–LINE HYDRANT FOR POLYETHYLENE (P.E.) PIPE

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES (mm) UNLESS NOTED OTHERWISE.
2. HYDRANT CHAMBERS SHALL BE COVERED WITH APPROVED HEAVY DUTY METAL COVERS TO IS 261 OR BS 5834. COVER AND FRAME SHALL BE SUITABLE FOR ROAD AND TRAFFIC CONDITIONS AND IS SUBJECT TO REVIEW BY IRISH WATER.
3. ALL HYDRANTS, SURFACE BOX FRAMES & COVERS SHALL COMPLY WITH THE RELEVANT PROVISIONS OF IS EN 14339, IS EN 1074–6 & BS 750. FIRE HYDRANTS SHALL BE TYPE 2. THE HYDRANT INLET SHALL BE 80mm DIAMETER WITH PN16.
4. ALL HYDRANTS SHALL BE CLOCKWISE CLOSING.
5. HYDRANT CHAMBER TO BE CONSTRUCTED OF PRECAST CONCRETE UNITS OR HIGH DENSITY BLOCKWORK. ALTERNATIVELY PROPRIETARY PREFABRICATED CHAMBER UNITS MAY ALSO BE USED, SUBJECT TO REVIEW BY IRISH WATER. ROOF SLABS SHALL BE DESIGNED TO CARRY ALL LIVE LOADS & DEAD LOADS, & CONSIST OF A REINFORCED CONCRETE SLAB OF IN–SITU CONCRETE, GRADE C30/37, WITH A MINIMUM THICKNESS OF 150mm. ALTERNATIVELY, PRE–CAST CONCRETE ROOFS MAY BE USED, SUBJECT TO IRISH WATER REVIEW, & COMPLIANCE WITH BS 5911, PART 4.
6. CONCRETE CHAMBERS SHALL BE SURROUNDED BY A MINIMUM OF 150mm COMPACTED CLAUSE 808 MATERIAL AS PER DRAWING 01.
7. DUCTILE IRON PIPES AND FITTINGS TO BE IN ACCORDANCE WITH IS EN 545. PE PIPES AND FITTINGS TO BE IN ACCORDANCE WITH IS EN 12201:2011.
8. 200mm ALL AROUND, 100mm DEEP CONCRETE PLINTH AROUND COVERS IN GREEN AREAS.
9. THRUST BLOCKS (NOT SHOWN ON DRAWING), TO BE PROVIDED AS PER STANDARD DRAWING 06 AT ALL TEES, BENDS, TAPERS, DEAD ENDS AND PIPES AT STEEP SLOPES.
10. ANTI–CORROSION TAPE TO BE PROVIDED AROUND BURIED FLANGES.
11. ALL CONCRETE TO BE IN ACCORDANCE WITH IS EN 206
12. ANY SPECIAL ROAD REINSTATEMENT AROUND COVER & FRAME SHALL BE TO ROAD AUTHORITY'S REQUIREMENTS.
13. NEW ROAD CONSTRUCTION & SURFACE FINISH TO BE TO ROAD AUTHORITY REQUIREMENTS.
14. EXISTING ROAD REINSTATEMENT TO COMPLY WITH CURRENT VERSION OF "GUIDELINES FOR MANAGING OPENINGS IN PUBLIC ROADS" BY THE DEPT. OF TRANSPORT, TOURISM & SPORT, OR TRANSPORT INFRASTRUCTURE IRELAND REQUIREMENTS.

DETAIL 03 –ON–LINE AIR VALVE FOR POLYETHYLENE (P.E.) PIPE

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES (mm) UNLESS NOTED OTHERWISE.
2. AIR VALVE CHAMBERS SHALL BE COVERED WITH APPROVED VENTILATED HEAVY DUTY DUCTILE IRON COVERS TO IS EN 124 RATING D400. COVER AND FRAME SHALL BE SUITABLE FOR ROAD AND TRAFFIC CONDITIONS AND IS SUBJECT TO REVIEW BY IRISH WATER.
3. AIR VALVES SHALL COMPLY WITH THE REQUIREMENTS OF IS EN 1074–4. AIR VALVES SHALL BE DOUBLE ORIFICE TYPE AND SHALL INCLUDE AN ISOLATING VALVE. THE ISOLATING VALVE SHALL BE EITHER A GATE VALVE CONFORMING TO IS EN 1074–2 & SHALL BE OF A BOLTLESS BONNET DESIGN, OR A BUTTERFLY VALVE TO IS EN 1074–2.
4. SERVICE CONNECTIONS SHALL NOT BE PROVIDED WITHIN 2m OF THE AIR VALVE LOCATION.
5. AIR VALVE CHAMBERS TO BE OF PRECAST CONCRETE UNITS OR HIGH DENSITY BLOCKWORK. ALTERNATIVE PROPRIETARY PREFABRICATED CHAMBER UNITS MAY ALSO BE USED, SUBJECT TO REVIEW BY IRISH WATER.
6. PRECAST CONCRETE CHAMBERS SHALL BE SURROUNDED BY A MINIMUM OF 150mm COMPACTED CLAUSE 808 MATERIAL AS PER DRAWING 01.
7. DUCTILE IRON PIPES/FITTINGS AND PE PIPES/FITTINGS TO BE IN ACCORDANCE WITH IS EN 545 AND IS EN 12201:2011.
8. 200mm ALL AROUND, 100mm DEEP CONCRETE PLINTH AROUND COVERS IN GREEN AREAS.
9. THRUST BLOCKS (NOT SHOWN ON DRAWING), TO BE PROVIDED AS PER STANDARD DRAWING 06 AT ALL TEES, BENDS, TAPERS, DEAD ENDS AND PIPES AT STEEP SLOPES.
10. ANTI–CORROSION TAPE TO BE PROVIDED AROUND BURIED FLANGES.
11. THE LOCATION OF THE AIR VALVE SHALL BE THE SUBJECT OF PARTICULAR AGREMENT WITH IRISH WATER TO ENSURE THAT THE RISK OF CONTAMINATION THROUGH THE VALVE IS ELIMINATED.
12. ALL CONCRETE TO BE IN ACCORDANCE WITH IS EN 206.
13. ANY SPECIAL ROAD REINSTATEMENT AROUND COVER & FRAME SHALL BE TO ROAD AUTHORITY'S REQUIREMENTS.
14. NEW ROAD CONSTRUCTION & SURFACE FINISH TO BE TO ROAD AUTHORITY REQUIREMENTS.
15. EXISTING ROAD REINSTATEMENT TO COMPLY WITH CURRENT VERSION OF "GUIDELINES FOR MANAGING OPENINGS IN PUBLIC ROADS" BY THE DEPT. OF TRANSPORT, TOURISM & SPORT, OR TRANSPORT INFRASTRUCTURE IRELAND REQUIREMENTS.

DETAIL 04 – SLUICE VALVE FOR POLYETHYLENE (P.E.) PIPE (<350mm ø)

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES (mm) UNLESS NOTED OTHERWISE.
2. SLUICE VALVE CHAMBERS SHALL BE COVERED WITH APPROVED HEAVY DUTY METAL COVERS TO IS 261 OR BS 5834. COVER AND FRAME SHALL BE SUITABLE FOR ROAD AND TRAFFIC CONDITIONS AND IS SUBJECT TO REVIEW BY IRISH WATER.
3. SLUICE VALVES SHALL BE RESILIENT SEATED AND SHALL COMPLY WITH BS 5163–1, BS 5163–2, IS EN 1074–1, IS EN 1074–2, OR EQUIVALENT E.U. SPECIFICATIONS.
4. ALL SLUICE VALVES SHALL BE ANTI–CLOCKWISE CLOSING.
5. VALVE CHAMBER TO BE CONSTRUCTED OF PRECAST CONCRETE UNITS OR HIGH DENSITY BLOCKWORK. ALTERNATIVELY PROPRIETARY PREFABRICATED CHAMBER UNITS MAY ALSO BE USED, SUBJECT TO REVIEW BY IRISH WATER. ROOF SLABS SHALL BE DESIGNED TO CARRY ALL LIVE LOADS & DEAD LOADS, & CONSIST OF A REINFORCED CONCRETE SLAB OF IN–SITU CONCRETE, GRADE C30/37, WITH A MINIMUM THICKNESS OF 150mm. ALTERNATIVELY, PRE–CAST CONCRETE ROOFS MAY BE USED, SUBJECT TO IRISH WATER REVIEW, & COMPLIANCE WITH BS 5911, PART 4.
6. CONCRETE CHAMBERS SHALL BE SURROUNDED BY A MINIMUM OF 150mm COMPACTED CLAUSE 808 MATERIAL AS PER DRAWING 01.
7. DUCTILE IRON PIPES AND FITTINGS TO BE IN ACCORDANCE WITH IS EN 545. PE PIPES AND FITTINGS TO BE IN ACCORDANCE WITH IS EN 12201:2011.
8. 200mm ALL AROUND, 100mm DEEP CONCRETE PLINTH AROUND COVERS IN GREEN AREAS.
9. THRUST BLOCKS (NOT SHOWN ON DRAWING), TO BE PROVIDED AS PER STANDARD DRAWING 06 AT ALL TEES, BENDS, TAPERS, DEAD ENDS AND PIPES AT STEEP SLOPES.
10. ANTI–CORROSION TAPE TO BE PROVIDED AROUND BURIED FLANGES.
11. ALL CONCRETE TO BE IN ACCORDANCE WITH IS EN 206.
12. 450x450mm INTERNAL DIMENSION CHAMBERS MAY BE PROVIDED SUBJECT TO REVIEW BY IRISH WATER. SUCH CHAMBERS SHALL BE PROVIDED WITH GRADE 'A' HEAVY DUTY COVER & FRAME & STAMPED 'SV'.
13. ANY SPECIAL ROAD REINSTATEMENT AROUND COVER AND FRAME SHALL BE TO ROAD AUTHORITY'S REQUIREMENTS.
14. NEW ROAD CONSTRUCTION & SURFACE FINISH TO BE TO ROAD AUTHORITY REQUIREMENTS.
15. EXISTING ROAD REINSTATEMENT TO COMPLY WITH CURRENT VERSION OF "GUIDELINES FOR MANAGING OPENINGS IN PUBLIC ROADS" BY THE DEPT. OF TRANSPORT, TOURISM & SPORT, OR TRANSPORT INFRASTRUCTURE IRELAND REQUIREMENTS.

DETAIL 05 – NON–MECH. METER CHAMBER (40 – 250mm ø)

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES (mm) UNLESS NOTED OTHERWISE.
2. STRUCTURAL DESIGN AND REINFORCEMENT DETAIL TO BE PROVIDED BY THE DEVELOPER AND SUBMITTED TO IRISH WATER FOR REVIEW. ROOF SLABS SHALL BE DESIGNED TO CARRY ALL LIVE LOADS & DEAD LOADS, & CONSIST OF A REINFORCED CONCRETE SLAB OF IN–SITU CONCRETE, GRADE C30/37, WITH A MINIMUM THICKNESS OF 225mm. ALTERNATIVELY, PRE–CAST CONCRETE ROOFS MAY BE USED, SUBJECT TO IRISH WATER REVIEW, & COMPLIANCE WITH BS 5911, PART 4.
3. CONCRETE FOR FLOW METER CHAMBER TO BE C30/37.
4. PRECAST UNITS COMPLETED WITH RUBBER SEALING GASKET BETWEEN UNITS, COMPLYING WITH THE REQUIREMENTS OF IS EN 1917 AND BS 5911–PART 3, COMPLETE WITH 150mm CONCRETE SURROUND MAY BE USED AS AN ACCEPTABLE ALTERNATIVE. CONCRETE SURROUND TO BE GRADE C16/20 IN ACCORDANCE WITH IS EN 206.
5. METER CHAMBER SHALL BE COVERED WITH APPROVED HEAVY DUTY METAL COVERS TO IS EN124 RATING D400. COVER AND FRAME SHALL BE SUITABLE FOR ROAD AND TRAFFIC CONDITIONS AND IS SUBJECT TO REVIEW BY IRISH WATER.
6. 200mm ALL ROUND, 100mm DEEP CONCRETE PLINTH AROUND COVERS IN GRASS AREAS.
7. ANTI–CORROSION TAPE TO BE PROVIDED AROUND BURIED FLANGES.
8. DUCTILE IRON PIPES AND FITTINGS TO BE IN ACCORDANCE WITH IS EN545. PE PIPES AND FITTINGS TO BE IN ACCORDANCE WITH IS EN 12201:2011.
9. ALL CHAMBERS TO BE CHECKED FOR UPLIFT BY THE DEVELOPER BASED ON GROUND CONDITIONS WITHIN THE SITE. SHOULD ANTI–FLOATATION MEASURES BE REQUIRED THEY SHALL BE SUBJECT TO REVIEW BY IRISH WATER.
10. PIPEWORK TO BE DOWNSIZED TO ACCOMMODATE THE REQUIRED RANGE OF THE FLOW METER. STRAIGHT PIPE LENGTHS UPSTREAM AND DOWNSTREAM OF THE METER TO BE PROVIDED. THE METER SHALL BE CAPABLE OF ACCURATE NIGHT FLOW MEASUREMENTS.
11. ALL CONCRETE TO BE IN ACCORDANCE WITH IS EN 206.
12. ANY SPECIAL ROAD REINSTATEMENT AROUND COVER & FRAME SHALL BE TO ROAD AUTHORITY'S REQUIREMENTS.
13. NEW ROAD CONSTRUCTION & SURFACE FINISH TO BE TO ROAD AUTHORITY REQUIREMENTS.
14. EXISTING ROAD REINSTATEMENT TO COMPLY WITH CURRENT VERSION OF "GUIDELINES FOR MANAGING OPENINGS IN PUBLIC ROADS" BY THE DEPT. OF TRANSPORT, TOURISM & SPORT, OR TRANSPORT INFRASTRUCTURE IRELAND REQUIREMENTS.

DETAIL 06 – WATER MAIN THRUST AND SUPPORT BLOCKS

NOTES:

1. ALL DIMENSIONS IN MILLIMETRES (mm) UNLESS NOTED OTHERWISE.
2. CONCRETE THRUST BLOCKS (ANCHORAGE) SHALL BE POSITIONED SYMMETRICALLY WITH RESPECT TO THE CONNECTING PIPE & BENDS.
3. TRENCH DIMENSIONS: REFER TO DRAWING 01.
4. THRUST BLOCKS SHALL BEAR ON UNDISTURBED SOIL. IF FOR ANY REASON THEY CANNOT THEN THE DEVELOPER SHALL NOTIFY IRISH WATER IMMEDIATELY WITH A PROPOSED SOLUTION.
5. THRUST BLOCK REINFORCEMENT REQUIRES SPECIFIC DESIGN.
6. FOR TEST PRESSURES GREATER THAN 18 BAR, THRUST BLOCK DESIGN IS TO BE SUBMITTED TO IRISH WATER FOR REVIEW.
7. THRUST BLOCKS ARE DESIGNED FOR AN AVERAGE BEARING PRESSURE OF 100kN/m (TYPICAL FOR SOFT CLAY) FOR OTHER CONDITIONS. ACTUAL DIMENSIONS MAY BE ALTERED ON INSTRUCTIONS FROM IRISH WATER.
8. CONCRETE IN THRUST BLOCKS SHALL BE GRADE C20/25.
9. COMPRESSIBLE FILLER FOR CONCRETE PROTECTION TO BE IN ACCORDANCE WITH BS EN 622–1 AND BS EN 622–4. BITUMINOUS MATERIAL SHALL NOT BE PUT IN CONTACT WITH PLASTIC PIPES. THE THICKNESS OF COMPRESSIBLE FILLER FOR MAINS < 450mm IN DIAMETER IS TO BE 18mm.
10. CONCRETE THRUST BLOCKS FOR POLYETHYLENE PIPE TO COMPLY WITH THE MANUFACTURER'S REQUIREMENTS.
11. POLYETHYLENE PIPES SHALL BE WRAPPED IN PLASTIC SHEETING HAVING A COMPOSITION IN ACCORDANCE WITH BS 6076 BEFORE BEING CAST INTO CONCRETE.
12. ALL CONCRETE TO BE IN ACCORDANCE WITH IS EN 206.

DETAIL 07 – MARKER POSTS/PLATES

NOTES:

1. WHERE PRACTICAL MARKER PLATES SHALL BE FIXED TO ADJACENT WALLS OR ALTERNATIVELY ATTACHED TO MARKER POSTS.
2. PLATES TO BE FIXED IN POSITION USING WALL PLUGS AND STAINLESS STEEL SCREWS.
3. MARKER PLATES TO BE MANUFACTURED IN ACCORDANCE WITH BS 3251.
4. FOR HYDRANT PLATE ALL CHARACTERS SHOULD BE BLACK AND THE REMAINDER OF THE FRONT FACE SHOULD CONFORM TO COLOUR REFERENCE No. 309 (CANARY YELLOW) OF BS 381C.
5. PIPE DIAMETER ON HYDRANT PLATE TO REFER TO WATERMAIN NOT BRANCH.
6. SLUICE VALVE, AIR VALVE, SCOUR VALVE, WASHOUT HYDRANT AND METER PLATES SHOULD BE CAST IRON. ALL CHARACTERS SHOULD BE BLACK ON WHITE PAINT BACKGROUND. ALTERNATIVE MATERIAL MAY BE USED SUBJECT TO ACCEPTANCE BY IRISH WATER.
7. CONCRETE SURROUND TO MARKER POST TO BE GRADE C25/30 AND IN ACCORDANCE WITH IS EN 206/2013.
8. PLASTIC MARKER POSTS ARE NOT ACCEPTABLE.
9. ALL CONCRETE TO BE IN ACCORDANCE WITH IS EN 206.

DETAIL 08 – CUSTOMER CONNECTION AND BOUNDARY BOX (25mm OD PIPE)

NOTES:

GENERAL NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS (mm) UNLESS NOTED OTHERWISE.
2. FOR CONNECTION TO AN EXISTING MAIN THE CONNECTION SHALL BE AS PER THE PIPE MANUFACTURER'S SPECIFICATION.
3. ELECTRO FUSION COUPLING TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
4. ALL CONCRETE TO BE IN ACCORDANCE WITH IS EN 206.

BOUNDARY BOX NOTES:

1. THE BOUNDARY BOX IS TO BE IN ACCORDANCE WITH THE IRISH WATER SPECIFICATION, INCORPORATING ALL A G1.5 MANIFOLD, STOP–TAP, FROST PLUG & NON–RETURN VALVE.
2. THE BOUNDARY BOX SHALL BE POSITIONED IN PUBLIC SPACE & AS CLOSE AS POSSIBLE TO THE PROPERTY BOUNDARY BUT NO PART OR FITTING TO BE WITHIN 225mm OF THE PROPERTY LINE.
3. THE BOUNDARY BOX SHALL BE LOCATED WHERE IT IS SAFE TO OPEN THE COVER & ACCESS THE STOP TAP OR VISUALLY READ THE METER, i.e. ON A FOOTPATH OR VERGE, & NOT IN A CARRIAGEWAY.
4. THE SURFACE BOX COVER ON THE BOUNDARY BOX SHOULD NOT BE LESS THAN GRADE C (BS 5834-2–2011): & THE BOUNDARY BOX SHOULD BE LOCATED SUCH THAT HEAVIER GRADES OF COVER WOULD NOT BE REQUIRED.
5. THE SHAFT OF THE BOUNDARY BOX IS TO BE INSTALLED VERTICALLY, & THE SURFACE BOX/COVER INCLINED TO MATCH THE SURFACE GRADIENT.
6. THE BOUNDARY BOX IS TO BE INSTALLED AT A MINIMUM DEPTH OF 600mm (+/– 25mm) TO THE CROWN OF THE INLET & OUTLET FITTINGS ON THE OUTSIDE OF THE BOX.
7. THE SERVICE CONNECTION PIPE SHALL NOT BE WRAPPED AROUND THE SHAFT OF THE BOUNDARY BOX OR BENT IN ANY RADIUS LESS THAN THAT APPROVED BY THE MANUFACTURER.
8. THE PIPE FITTINGS TO THE BOUNDARY BOX SHALL BE APPROVED BY THE BOUNDARY BOX MANUFACTURER.
9. THE BOUNDARY BOX SHALL BE INSTALLED HYGIENICALLY & LEFT CLEAN & FREE OF CONSTRUCTION WASTE OR DIRT FOR LATER METER INSTALLATION BY IRISH WATER.
10. BOX TO BE FOUNDED ON 100mm DEPTH OF C12/15 CONCRETE AND SURROUNDED WITH CLAUSE 808 GRANULAR MATERIAL.
11. THE DESIRABLE MINIMUM COVER FROM THE FINISHED GROUND LEVEL TO THE EXTERNAL CROWN OF A SERVICE CONNECTION SHALL BE 750mm WITH AN ABSOLUTE MINIMUM DEPTH OF 600mm FOR SHORT DISTANCES (SUBJECT TO IRISH WATER AGREEMENT). THE DESIRABLE MAXIMUM COVER FOR A SERVICE CONNECTION PIPE SHOULD BE 1200mm, WHERE PRACTICABLE.
12. CUSTOMER'S DISTRIBUTION PIPEWORK WITHIN THE PREMISES SHOULD BE SUITABLY SIZED TO ACCOMMODATE FLOW FROM 20mm INTERNAL DIAMETER SERVICE PIPE.

DETAIL 09 – TYPICAL SERVICE LAYOUT INDICATING SEPARATION DISTANCES

NOTES:

1. THE SEPARATION DISTANCES OUTLINED ARE MINIMUM REQUIREMENTS.
2. SPECIFIC SEPARATION CLEARANCE DISTANCES IN EXCESS OF THESE MINIMA SHALL BE PROVIDED FOR SERVICES SUCH AS GAS, ELECTRICITY, FIBRE–OPTIC OR OIL FILLED CABLES AS THE CASE MAY BE. THE PARTICULAR UTILITY PROVIDERS SHALL BE CONSULTED TO DETERMINE THESE MINIMUM SEPARATION DISTANCES AND EVIDENCE OF THIS CONSULTATION, WITH THE SPECIFIED SEPARATION DISTANCES, SHALL BE PROVIDED TO IRISH WATER AT DESIGN STAGE.
3. WATERMAIN (PROPOSED) SEPARATION DISTANCES

HORIZONTAL

300mm TO DISTRIBUTION MAINS OF LESS THAN 300mm DIAMETER.

500mm TO TRUNK MAINS BETWEEN 300mm AND 450mm DIAMETER.

3m TO ARTERIAL WATER MAINS OF GREATER THAN 450mm DIAMETER.

VERTICAL

300mm TO DISTRIBUTION MAINS OF LESS THAN 300mm DIAMETER.

500mm TO TRUNK/ARTERIAL MAINS OF DIAMETER GREATER THAN 300mm.

ANY PROPOSED PIPE CROSSING SHOULD BE LOCATED MID–WAY BETWEEN THE WATER JOINTS WITH MINIMUM CLEAR DISTANCE OF 300mm AND UP TO 500mm. ALL CROSSINGS SHOULD BE AT LEAST 500mm AWAY FROM FITTINGS OR JOINTS.

4. WATERMAIN (EXISTING) SEPARATION DISTANCES

HORIZONTAL

500mm AT EITHER SIDE OF MAINS UP TO AND INCLUDING 200mm IN DIAMETER.

1m AT EITHER SIDE OF MAINS OF 225mm TO 250mm DIAMETER.

2m AT EITHER SIDE OF MAINS OF 300mm AND 375mm IN DIAMETER.

5m AT EITHER SIDE OF MAINS OF 400mm AND 450mm IN DIAMETER.

SPECIFIC IRISH WATER ADVISED DISTANCES FOR MAINS IN EXCESS OF 475mm DIAMETER.

5. NOTIFICATION IN WRITING IS REQUIRED SHOULD WORKS BE WITHIN THE FOLLOWING DISTANCES FROM AN EXISTING WATERMAIN OR WASTEWATER RISING MAIN:

HORIZONTAL

1000mm AT EITHER SIDE OF EXISTING MAINS LESS THAN OR EQUAL TO 200mm DIAMETER.

2000mm AT EITHER SIDE OF EXISTING MAINS OF 250mm TO 350mm DIAMETER.

5000mm AT EITHER SIDE OF EXISTING MAINS OF DIAMETER GREATER THAN 350mm DIAMETER.

WHERE DUCTS OR PIPES ARE TO BE LAID CLOSE TO AN EXISTING WATERMAIN OR SEWER IN THE OWNERSHIP OF IRISH WATER, NOTIFICATION IN WRITING SHALL BE PROVIDED A MINIMUM OF 10 DAYS AHEAD OF ADVANCEMENT OF THE WORK.

NOTIFICATION IN WRITING IS REQUIRED SHOULD WORKS BE WITHIN 1.5m DISTANCE OF A WASTEWATER SEWER.

REQUIREMENTS SHALL ALSO APPLY TO TRIAL HOLES OR SLIT TRENCHES TO LOCATE THE MAIN OR GAIN GROUND INFO DATA. LARGER DIAMETERS >300mm DISTRIBUTION AND TRUNK MAINS, IRISH WATER MUST BE NOTIFIED AT LEAST 1 MONTH IN ADVANCE.

DEVELOPERS SHALL ALSO COMPLY WITH ANY NOTIFICATION REQUIREMENTS OF OTHER UTILITY PROVIDERS (ESB, GAS MAIN, TELECOMMUNICATION ETC.)

6. DETAILED PROPOSALS, INCLUDING WORK METHOD STATEMENTS, INSURANCE CONFIRMATION AND DETAILS OF WORK COMPLETED OF A SIMILAR NATURE MUST BE SUBMITTED TO IRISH WATER FOR REVIEW. ALL SUCH WORKS IN THE VICINITY OF ARTERIAL WATER MAINS AND SEWER (MAINS GREATER THAN 400mm) SHALL BE SUBJECT TO WRITTEN AGREEMENT WITH IRISH WATER BEFORE CONSTRUCTION COMMENCES ON SITE. THIS AGREEMENT SHALL ALSO INCLUDE ANY NECESSARY PROTECTION FOR WATER MAINS.
7. ANY DAMAGE SHALL BE NOTIFIED IMMEDIATELY TO IRISH WATER. THE PERSON WHO CAUSES THE DAMAGE TO A WATER MAIN OR FITTING WILL BE DEEMED TO HAVE COMMITTED AN OFFENCE UNDER SECTION 45 OF THE WATER SERVICES ACT 2007.
8. WATERMAINS OF ANY SIZE SHALL NOT BE WITHIN 1m OF THE BOUNDARY TO A PREMISES.
9. UNDER NO CIRCUMSTANCES WILL IRISH WATER ACCEPT WATER MAIN INSTALLATIONS UNDER STRUCTURES, EXISTING OR PROPOSED, OR IN CLOSE PROXIMITY TO ANY EXISTING STRUCTURES OR FEATURES THAT WILL INHIBIT ACCESS FOR POST INSTALLATION MAINTENANCE AND ACCESS.
10. WHERE THE DESIGN DEVIATES FROM THIS STANDARD DETAIL, THE DESIGN SHALL BE SUBJECT TO THE REVIEW OF IRISH WATER.
11. SEPARATION DISTANCES BETWEEN UTILITIES MAY BE INCREASED TO PROVIDE FOR CHAMBER & THRUST BLOCKS AT BENDS.

DETAIL 10 – SCOUR VALVE CHAMBER FOUL RISING MAIN (<200mm ø)

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES (mm) UNLESS NOTED OTHERWISE.
2. VALVE SURFACE BOX TO BE IN ACCORDANCE WITH IS 261 OR BS 5834. SCOUR CHAMBERS SHALL BE COVERED WITH APPROVED HEAVY DUTY METAL COVERS TO IS EN 124 RATING D400. COVERS AND FRAMES SHALL BE SUITABLE FOR ROAD AND TRAFFIC CONDITIONS SUBJECT TO REVIEW BY IRISH WATER.
3. SLUICE VALVES SHALL BE DOUBLE FLANGED WITH DUCTILE IRON RESILIENT SEAL GATE VALVES, SUITABLE FOR USE IN RISING MAINS. THEY SHALL COMPLY WITH THE REQUIREMENTS IS EN 1074 AND THEY SHALL HAVE THE APPROPRIATE CE MARKINGS.
4. SCOUR CHAMBER TO BE IN ACCORDANCE WITH BS EN 1992–3.
5. STRUCTURAL DESIGN AND REINFORCEMENT DETAILS TO BE PROVIDED BY THE DEVELOPER AND SUBMITTED TO IRISH WATER FOR REVIEW. ROOF SLABS SHALL BE DESIGNED TO CARRY ALL LIVE LOADS & DEAD LOADS, & CONSIST OF A REINFORCED CONCRETE SLAB OF IN–SITU CONCRETE, GRADE C30/37, WITH A MINIMUM THICKNESS OF 225mm. ALTERNATIVELY, PRE–CAST CONCRETE ROOFS MAY BE USED, SUBJECT TO IRISH WATER REVIEW, & COMPLIANCE WITH BS 5911, PART 4.
6. THRUST BLOCKS (NOT SHOWN ON DRAWING), TO BE PROVIDED AS PER STANDARD DRAWING STD–WW–14 AT ALL TEES, BENDS, TAPERS, DEAD ENDS AND PIPES AT STEEP SLOPES.
7. 200mm ALL AROUND, 100mm DEEP CONCRETE PLINTH AROUND COVERS IN GREEN AREAS.
8. ANTI CORROSION TAPE TO BE PROVIDED AROUND BURIED FLANGES.
9. ALL CONCRETE TO BE IN ACCORDANCE WITH IS EN 206.
10. ALL DUCTILE IRON PIPEWORK AND FITTINGS TO BE IN ACCORDANCE WITH IS EN 598.
11. ALL CHAMBERS TO BE CHECKED FOR UPLIFT BY THE DEVELOPER BASED ON GROUND CONDITIONS WITHIN THE SITE. SHOULD ANTI FLOATATION MEASURES BE REQUIRED THEY SHALL BE SUBJECT TO REVIEW BY IRISH WATER.
12. ANY SPECIAL ROAD REINSTATEMENT AROUND COVER & FRAME SHALL BE TO ROAD AUTHORITY'S REQUIREMENTS.
13. NEW ROAD CONSTRUCTION & SURFACE FINISH TO BE TO ROAD AUTHORITY REQUIREMENTS.
14. EXISTING ROAD REINSTATEMENT TO COMPLY WITH CURRENT VERSION OF "GUIDELINES FOR MANAGING OPENINGS IN PUBLIC ROADS" BY THE DEPT OF TRANSPORT, TOURISM & SPORT, OR TRANSPORT INFRASTRUCTURE IRELAND REQUIREMENTS.

REV	DATE	DESCRIPTION	DWG BY	APPR. BY
P	20.04.21	ISSUED FOR PLANNING	DW	LM

ISSUED

PLANNING

CLIENT

AAI PALMERSTOWN LIMITED

PROJECT NAME

APARTMENTS AT UNITS 64 & 65
CHERRY ORCHARD INDUSTRIAL ESTATE

DRAWING NAME

IRISH WATER WATERMAIN DETAILS SHEET 4 OF 4

PROJECT No.

20D018

DRAWING No.	REVISION
04	P

SCALE	DRAWN DATE
AS SHOWN	20.04.2021

CAD DRAWN BY	CHECKED BY	APPROVED BY
DW	LM	DH

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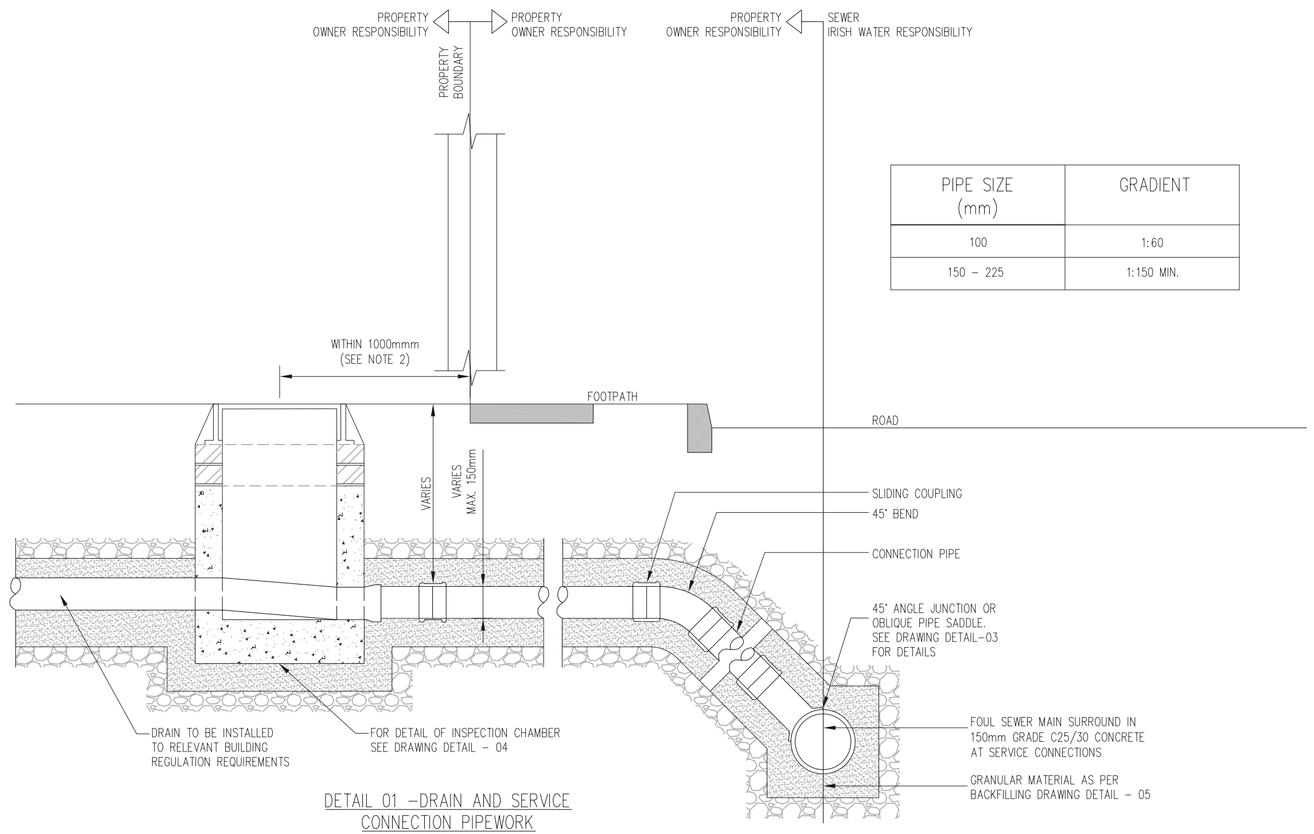
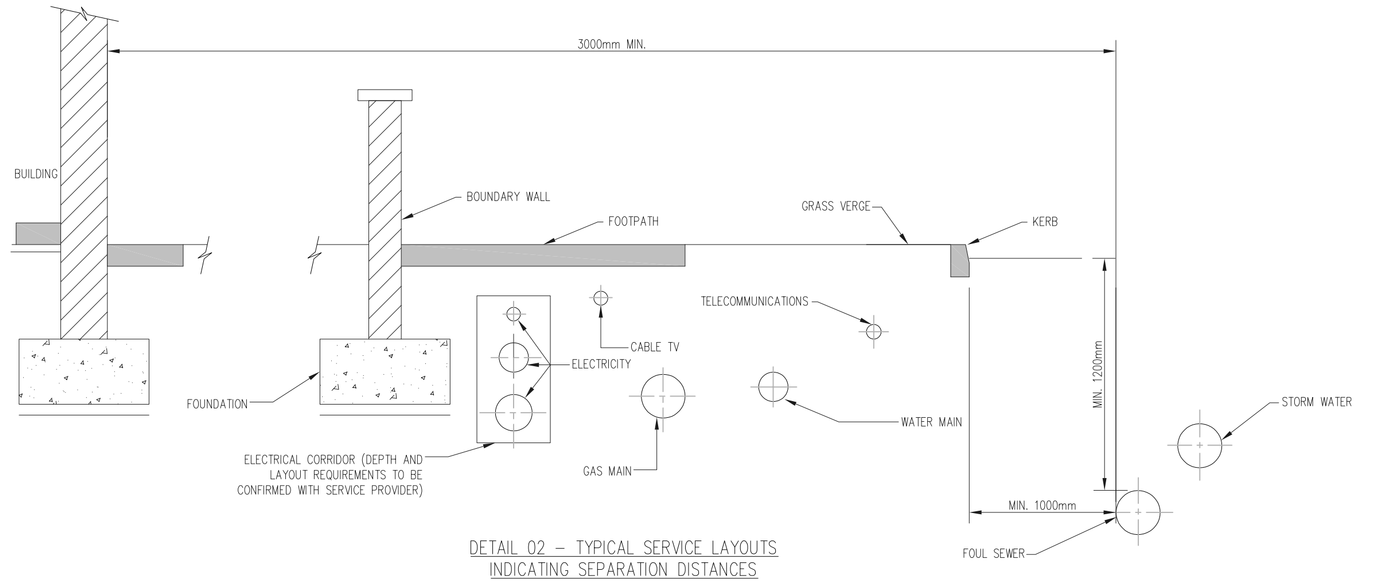


DETAIL 01 –DRAIN AND SERVICE CONNECTION PIPEWORK

PIPE SIZE (mm)	GRADIENT
100	1:60
150 – 225	1:150 MIN.



DETAIL 02 – TYPICAL SERVICE LAYOUTS INDICATING SEPARATION DISTANCES

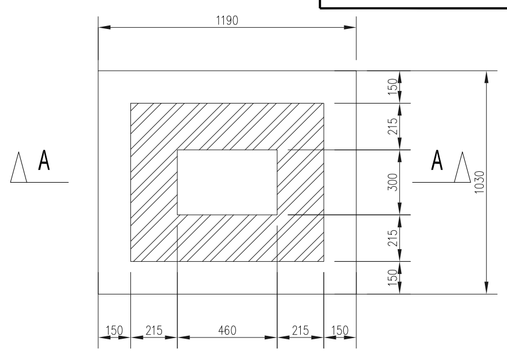
NOTES

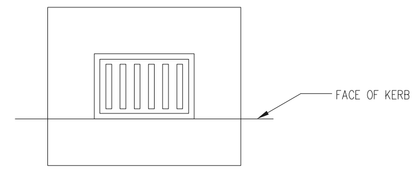
GENERAL

1.) THESE DRAWINGS TO BE READ IN CONJUNCTION WITH ALL RELEVANT HAYES HIGGINS ENGINEERING DRAWINGS AND SPECIFICATIONS.

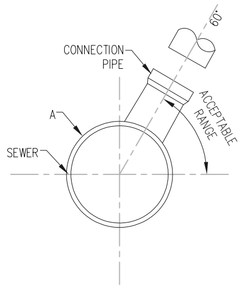
2.) DO NOT SCALE. USE FIGURED DIMENSIONS ONLY.

3.) FOUL WATER/WASTE WATER TO CURRENT IRISH WATER SPECIFICATION AND DETAILS (IW-CDS-5030-01).

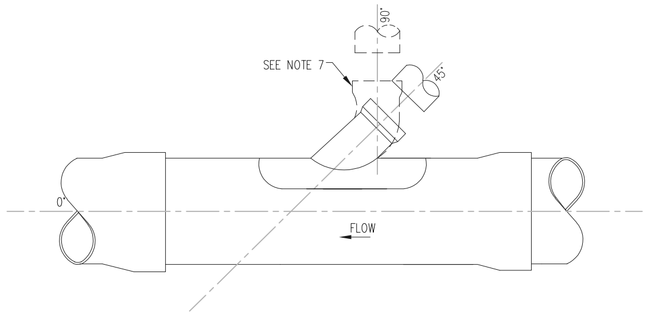




BASE AND SURFACE PLANS

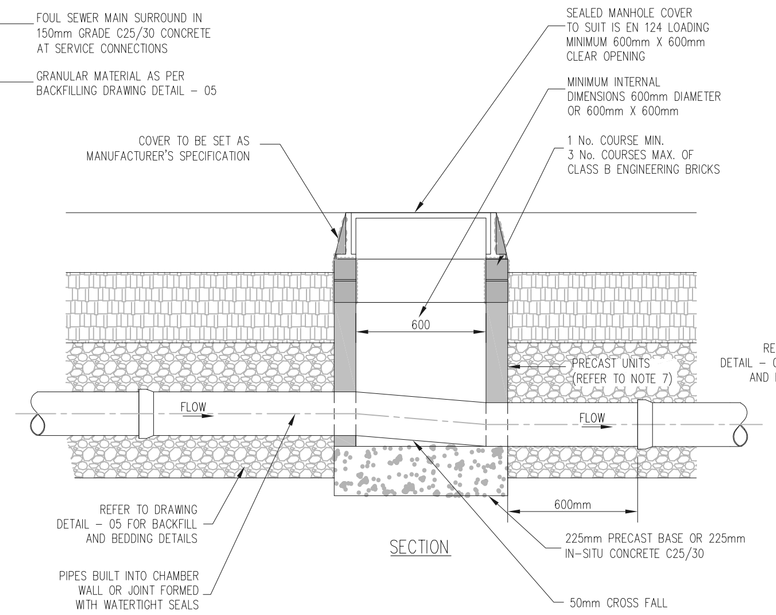


CROSS-SECTIONAL VIEW OF SEWER

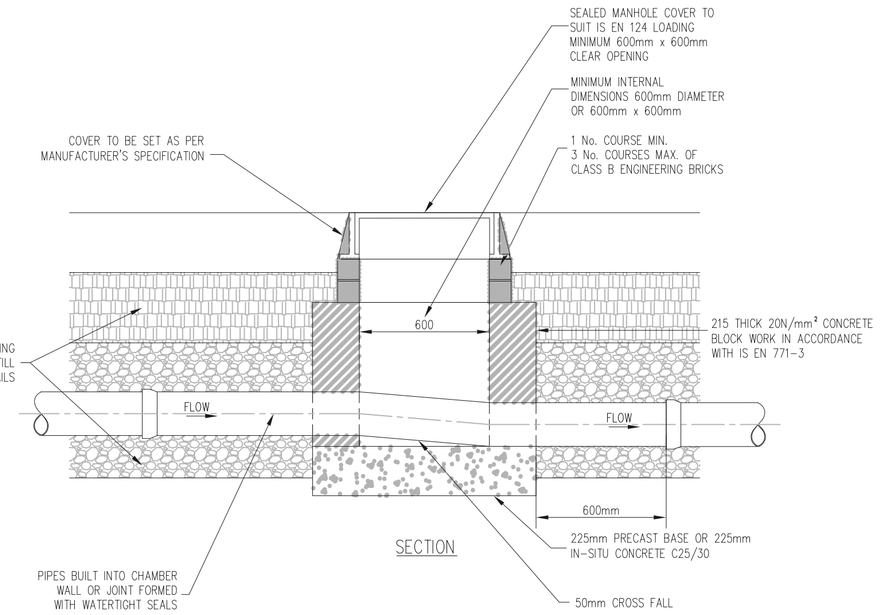


VIEW IN DIRECTION OF ARROW A

APPROVED 45° SADDLE CONNECTION



SECTION



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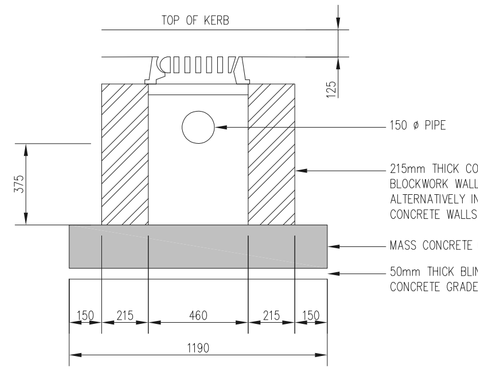
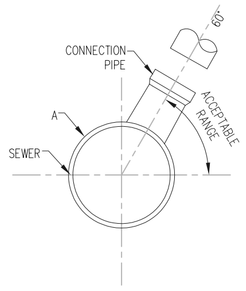
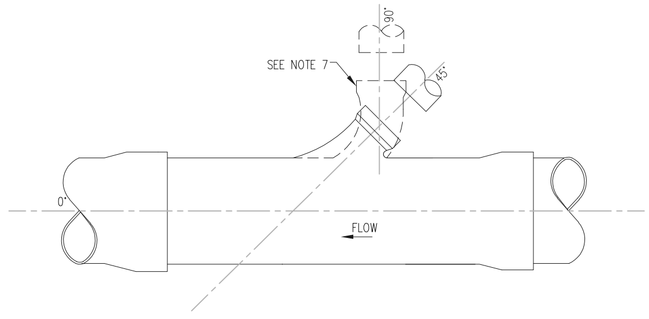


SECTION A-A

ROAD GULLY



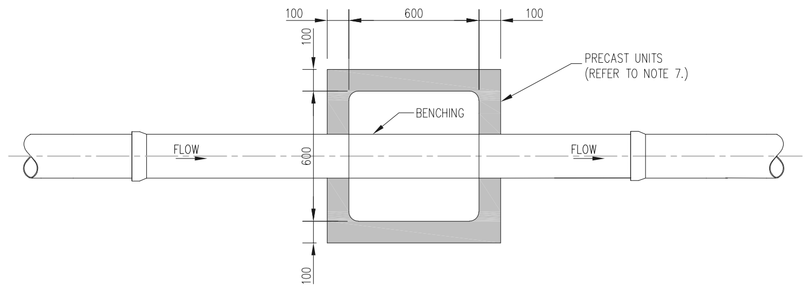
CROSS-SECTIONAL VIEW OF SEWER



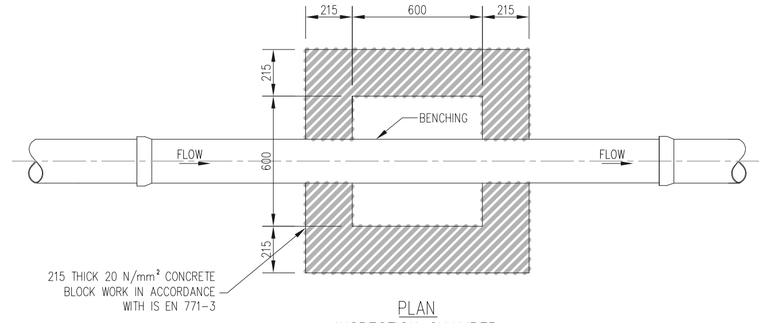
VIEW IN DIRECTION OF ARROW A

45° JUNCTION

DETAIL 03 – TYPICAL SEWER/SERVICE PIPE CONNECTION

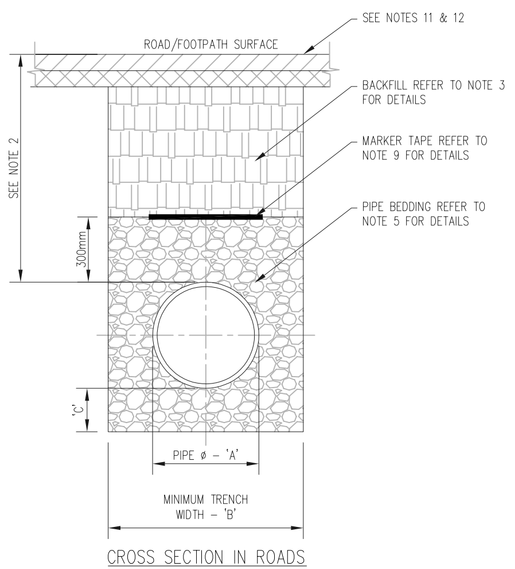


PLAN
INSPECTION CHAMBER
(PRECAST CONCRETE CONSTRUCTION)



PLAN
INSPECTION CHAMBER
(BLOCKWORK CONSTRUCTION)

DETAIL 04 – PRIVATE SIDE INSPECTION CHAMBER

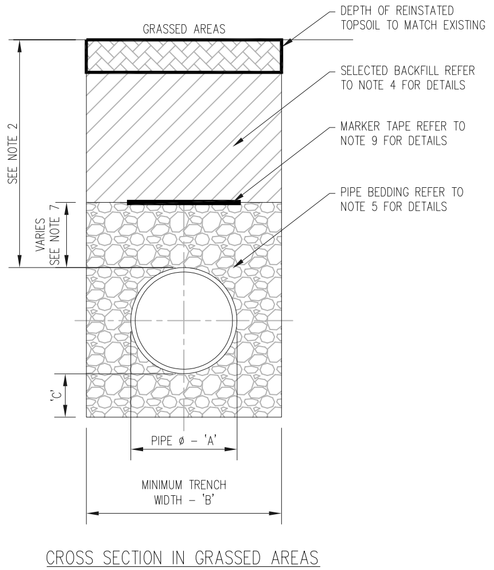


CROSS SECTION IN ROADS

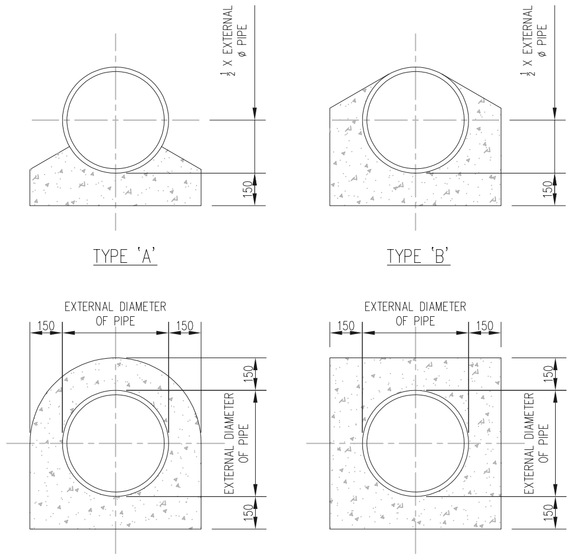
PIPE DIAMETER 'A' (mm)	DEPTH OF BEDDING 'C' (mm)
≤ 100	100
150 – 450	200

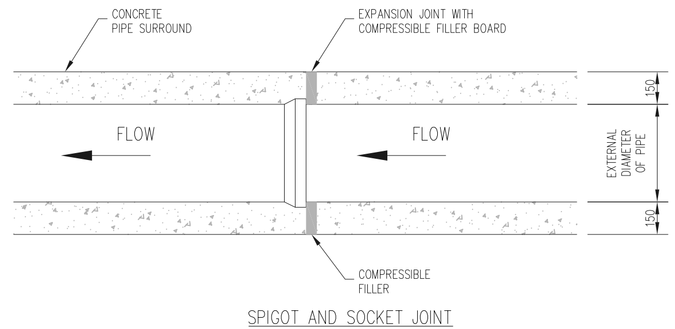
PIPE DIAMETER 'A' (mm)	TRENCH WIDTH 'B' (mm)
≤ 80 RISING MAIN	SEE NOTE 10.
100	500
150	600
200	600
250	750
300	750
350	750
400	900
450	900

DETAIL 05 – TRENCH BACKFILL AND BEDDING



CROSS SECTION IN GRASSED AREAS





SPIGOT AND SOCKET JOINT

DETAIL 06 –CONCRETE BED, HAUNCH AND SURROUND TO WASTEWATER PIPES
SCALE 1:20

REV	DATE	DESCRIPTION	DWG BY	APPR. BY
P	20.04.21	ISSUED FOR PLANNING	DW	LM

ISSUED
PLANNING

CLIENT
AAI PALMERSTOWN LIMITED

PROJECT NAME
APARTMENTS AT UNITS 64 & 65
CHERRY ORCHARD INDUSTRIAL ESTATE

DRAWING NAME
IRISH WATER FOUL & SURFACE DRAINAGE DETAILS SHEET 1 OF 4

PROJECT No.
20D018

DRAWING No.	REVISION
05	P

SCALE	DRAWN DATE
AS SHOWN	20.04.21

CAD DRAWN BY	CHECKED BY	APPROVED BY
DW	LM	DH

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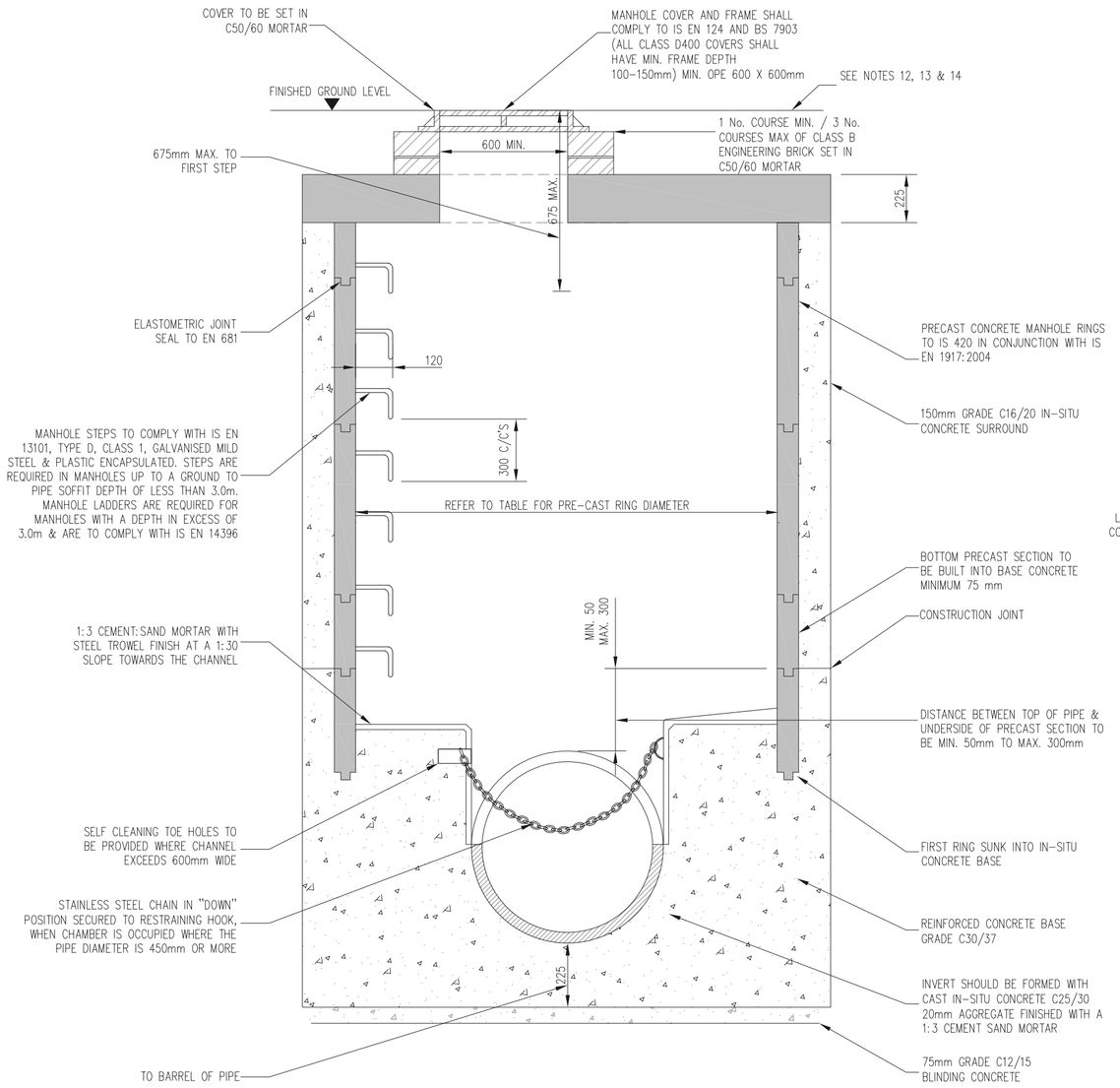
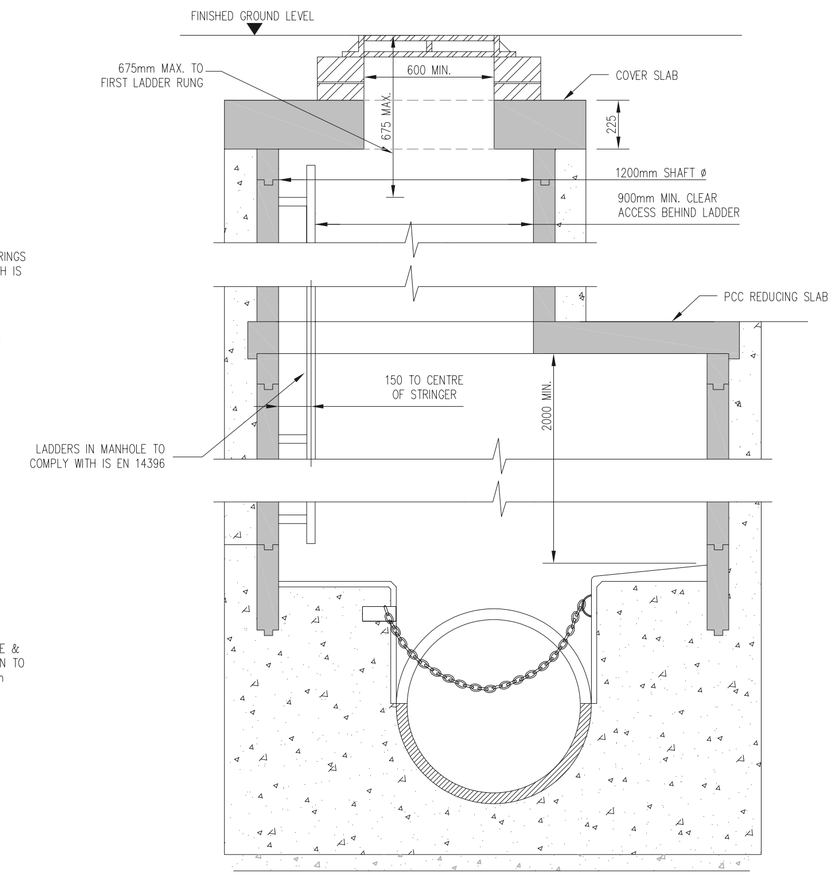
A1



SECTION A–A



MANHOLE DETAIL > 3m & < 6m GROUND TO SOFFIT DEPTH

(NOTE: ON MANHOLES <1.5m#, REDUCING SLAB NOT TO BE USED & PCC RINGS TO CONTINUE UP TO COVER SLAB)

ROCKER PIPE LENGTH	
PIPE DIAMETER (mm)	ROCKER PIPE LENGTH (mm)
150 – 600	600
> 600 – 750	1000
> 750	1250

MINIMUM MANHOLE DIAMETERS	
DIAMETER OF LARGEST PIPE IN MANHOLE (mm)	INTERNAL DIAMETER OF MANHOLE (mm)
< 375	1200
375 TO 450	1350
500 TO 750	1500

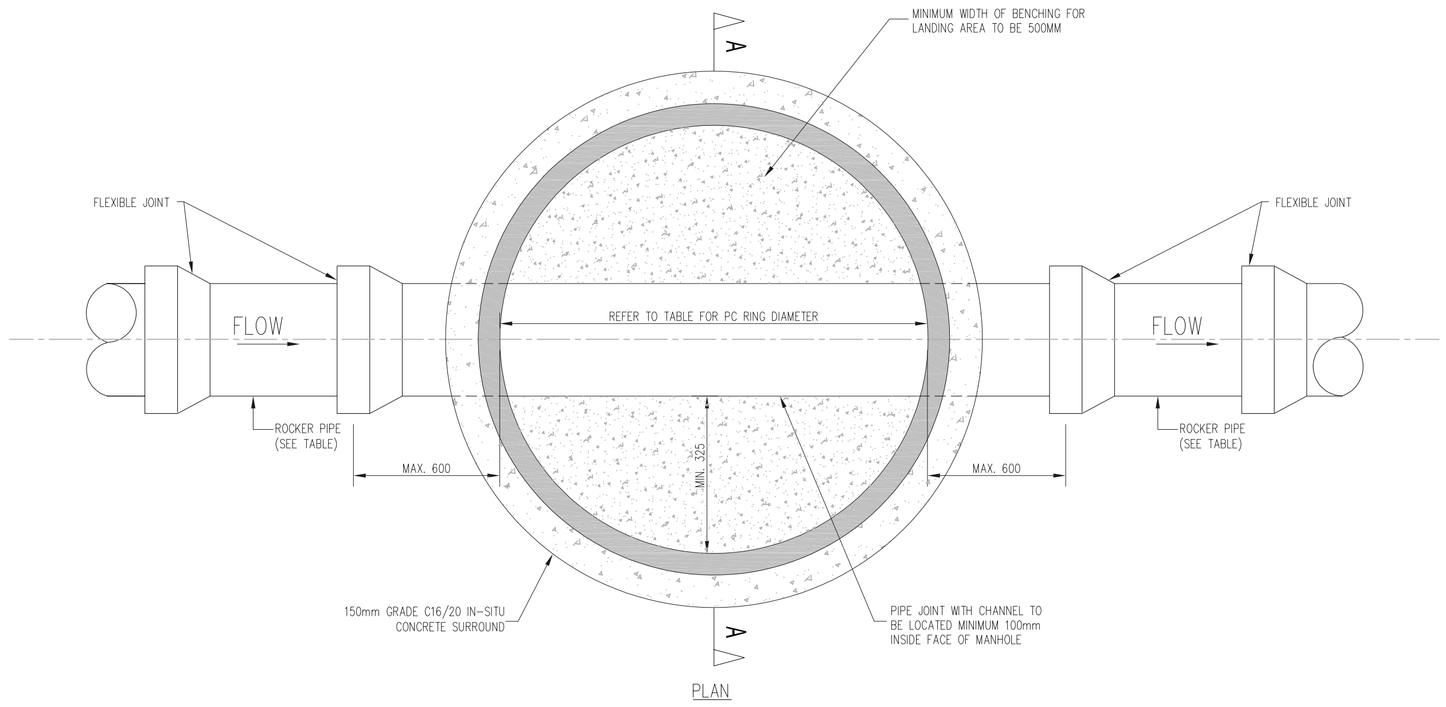
NOTES

GENERAL

1.) THESE DRAWINGS TO BE READ IN CONJUNCTION WITH ALL RELEVANT HAYES HIGGINS ENGINEERING DRAWINGS AND SPECIFICATIONS.

2.) DO NOT SCALE. USE FIGURED DIMENSIONS ONLY.

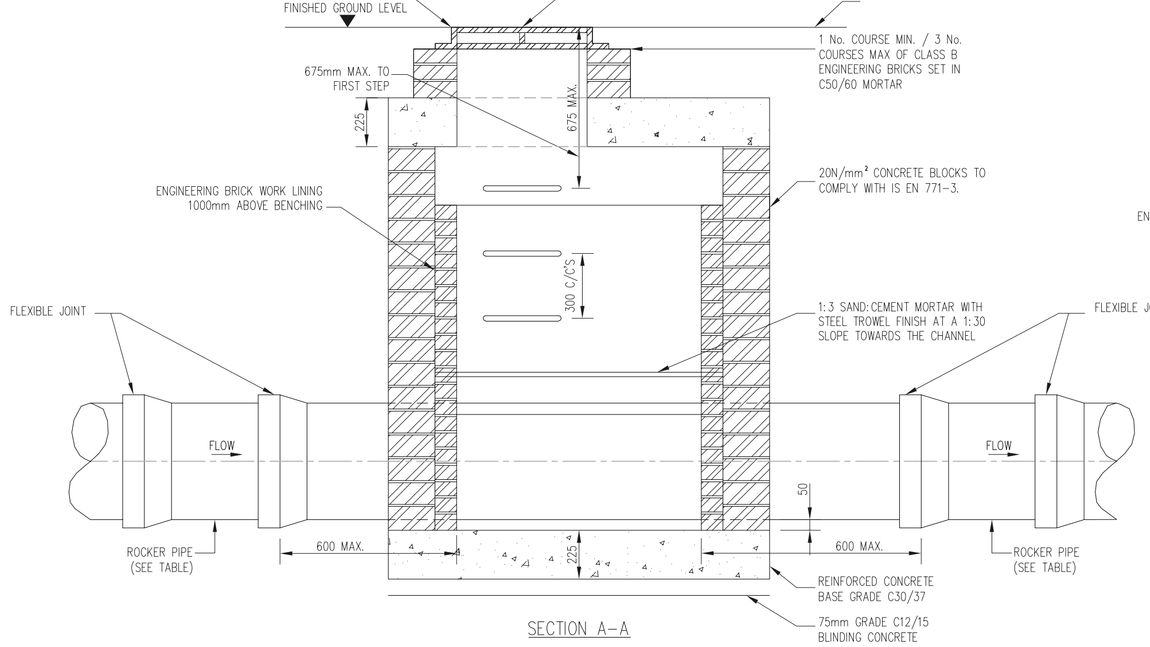
3.) FOUL WATER/WASTE WATER TO CURRENT IRISH WATER SPECIFICATION AND DETAILS (IW-CDS-5030-01).



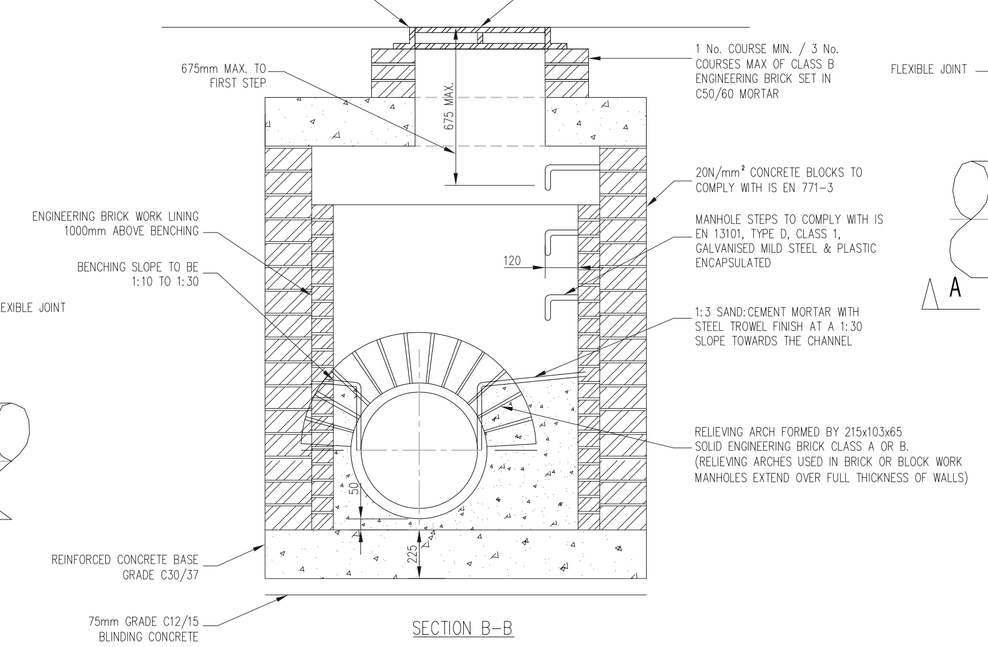
PLAN

DETAIL 08 – PRE-CAST CONCRETE MANHOLE

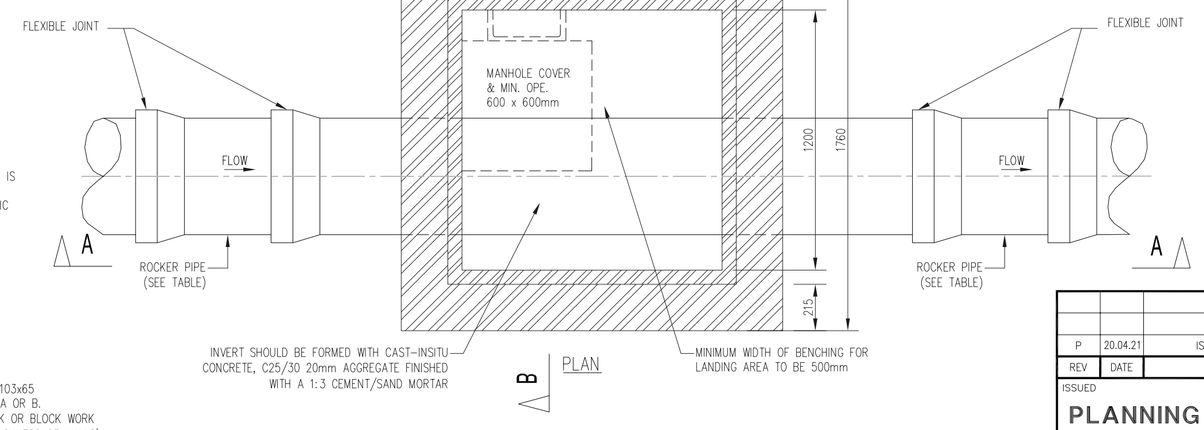
ROCKER PIPE LENGTH	
PIPE DIAMETER (mm)	ROCKER PIPE LENGTH (mm)
150 – 600	600
> 600 – 750	1000
> 750	1250



SECTION A–A

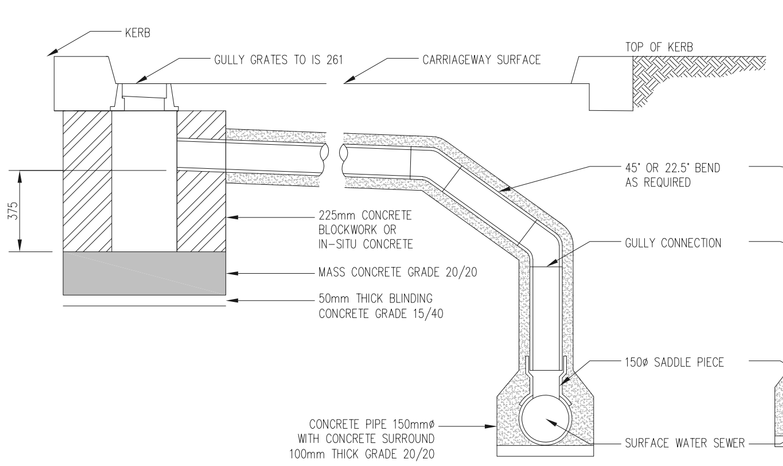


SECTION B–B

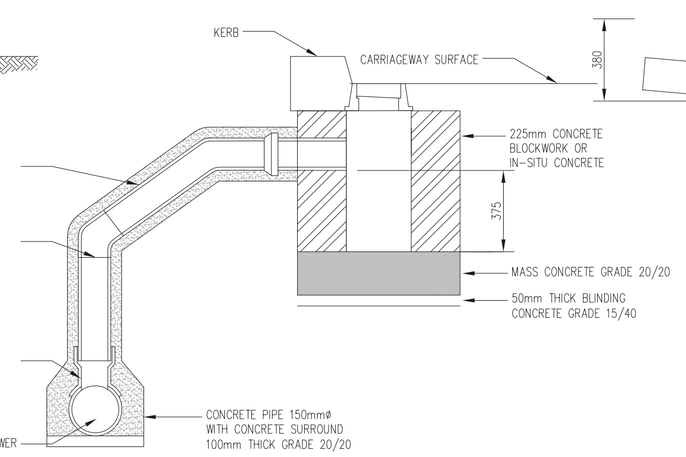


PLAN

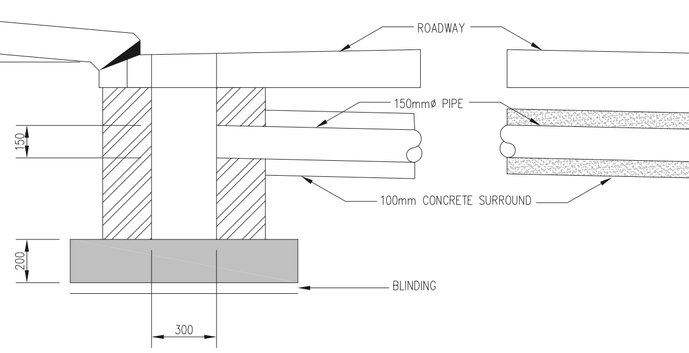
DETAIL 07 – BLOCKWORK MANHOLE (< 450ø)

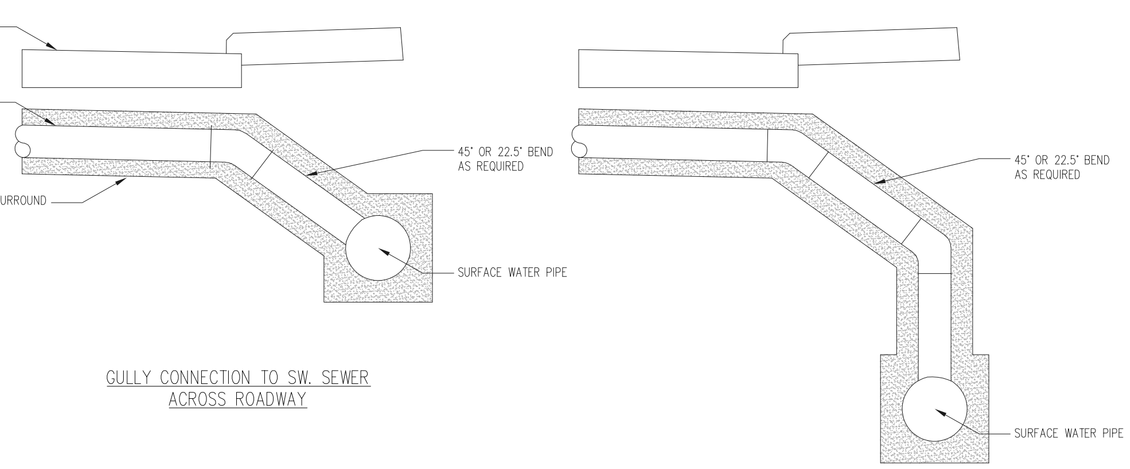


GULLY PIT TO SW. SEWER ON OPPOSITE SIDE OF CARRIAGEWAY



GULLY PIT TO SW. SEWER ON SAME SIDE OF CARRIAGEWAY





GULLY CONNECTION TO SW. SEWER ACROSS ROADWAY

REV	DATE	DESCRIPTION	DWG BY	APPR. BY
P	20.04.21	ISSUED FOR PLANNING	DW	LM

ISSUED
PLANNING

CLIENT
AAI PALMERSTOWN LIMITED

PROJECT NAME
APARTMENTS AT UNITS 64 & 65
CHERRY ORCHARD INDUSTRIAL ESTATE

DRAWING NAME
IRISH WATER FOUL & SURFACE DRAINAGE DETAILS SHEET 2 OF 4

PROJECT No.
20D018

DRAWING No.	REVISION
05	P
SCALE: AS SHOWN	DRAWN DATE: 20.04.21

CAD DRAWN BY	CHECKED BY	APPROVED BY
DW	LM	DH

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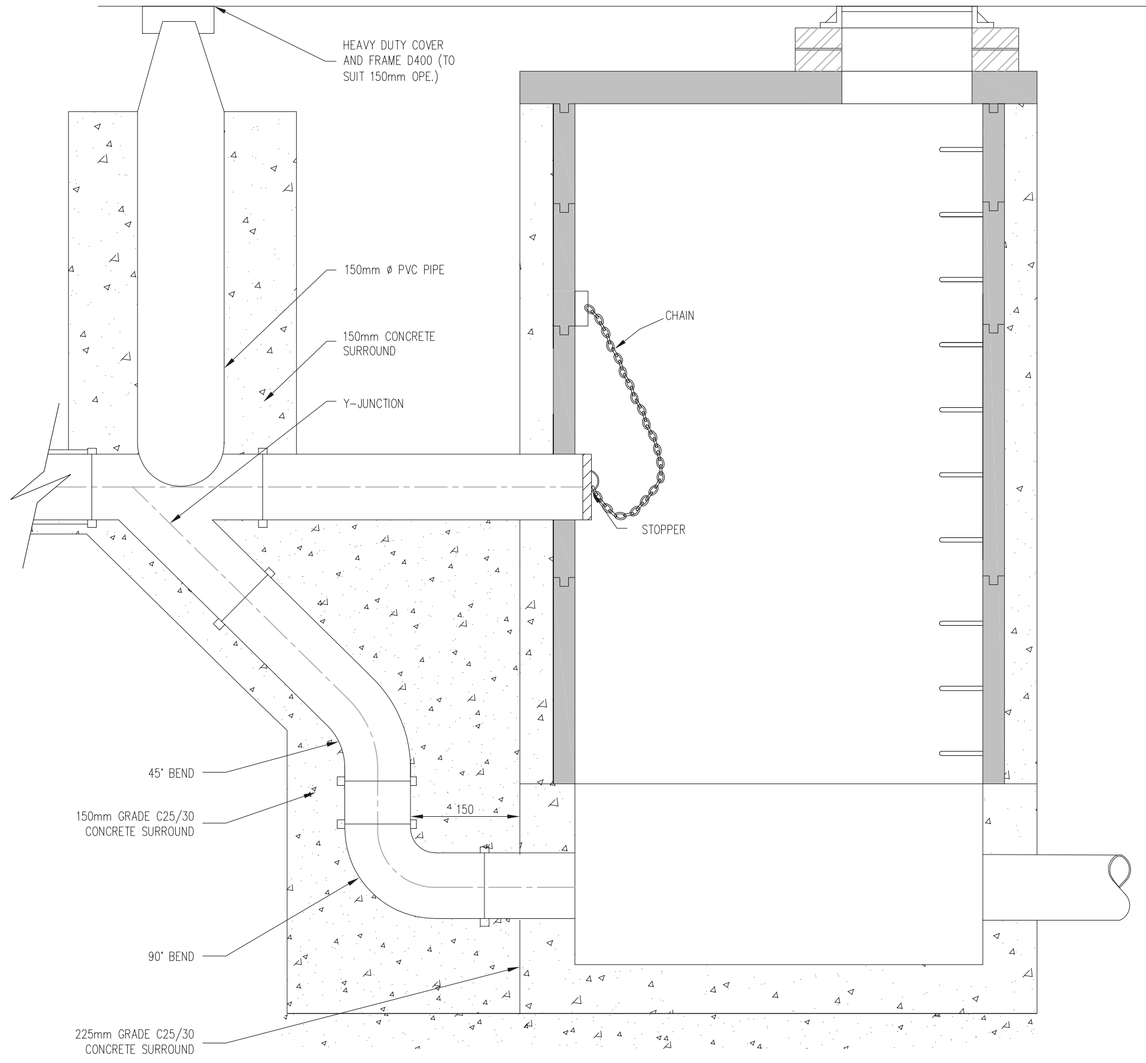
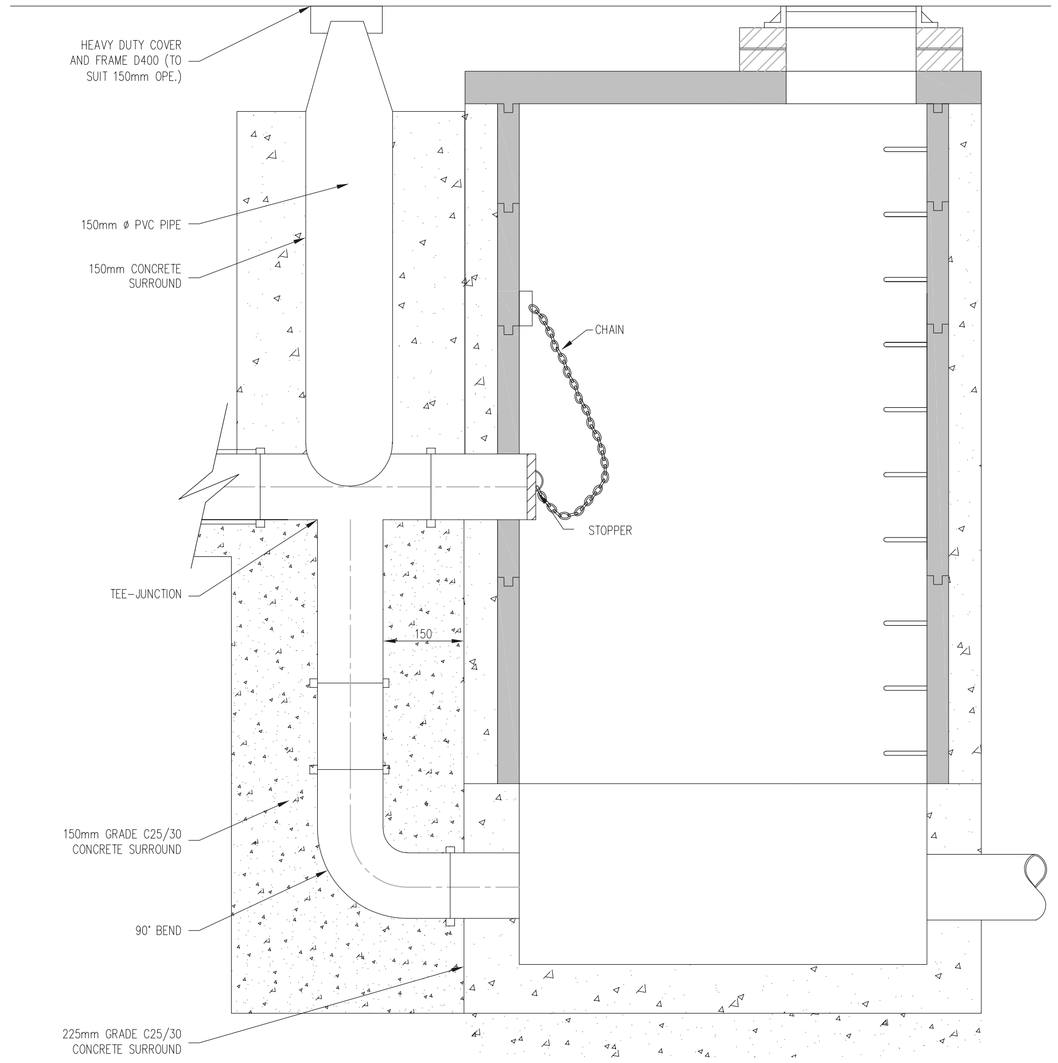
A1



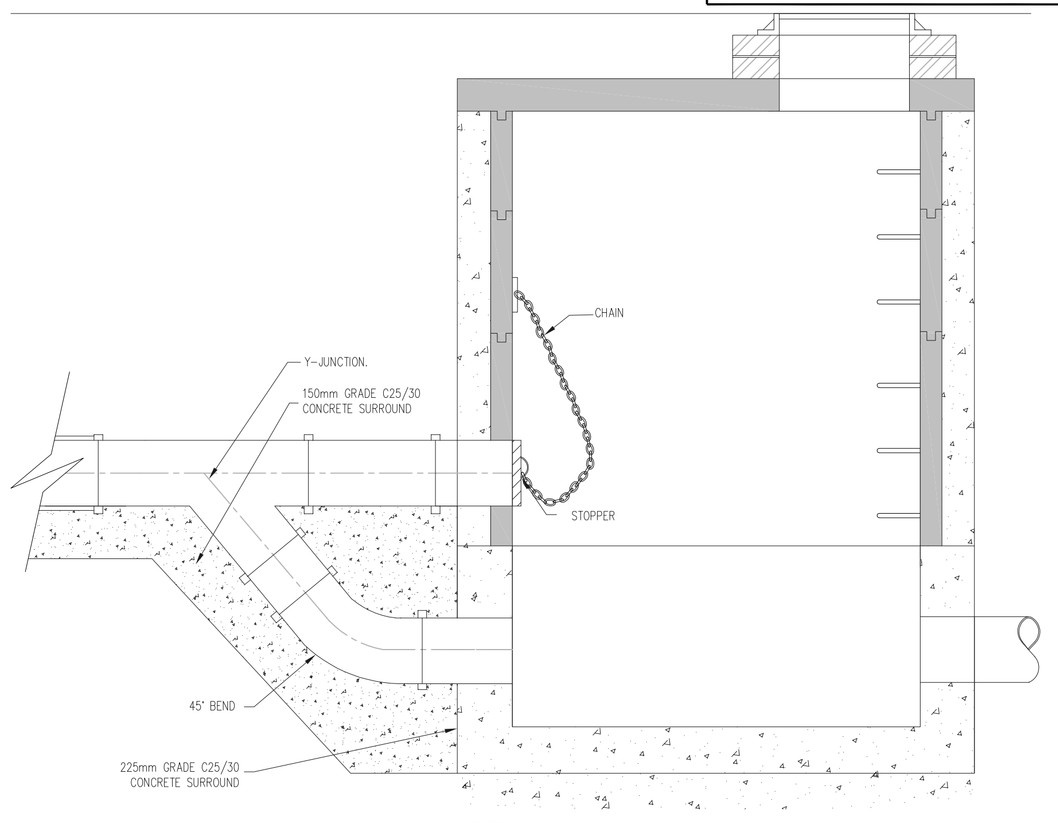
TYPE No.1

150mm – 450mm ø (INCL.) DROP GREATER THAN 1700mm
500mm – 900mm ø (INCL.) DROP GREATER THAN 2300mm



TYPE No.2

150mm – 450mm ø (INCL.) DROP GREATER THAN 900mm AND LESS THAN 1700mm
500mm – 900mm ø (INCL.) DROP GREATER THAN 1300mm AND LESS THAN 2300mm



TYPE No.3

150mm – 450mm ø (INCL.) DROP GREATER THAN 600mm AND LESS THAN 900mm
500mm – 900mm ø (INC.L) DROP GREATER THAN 600mm AND LESS THAN 1300mm

NOTES

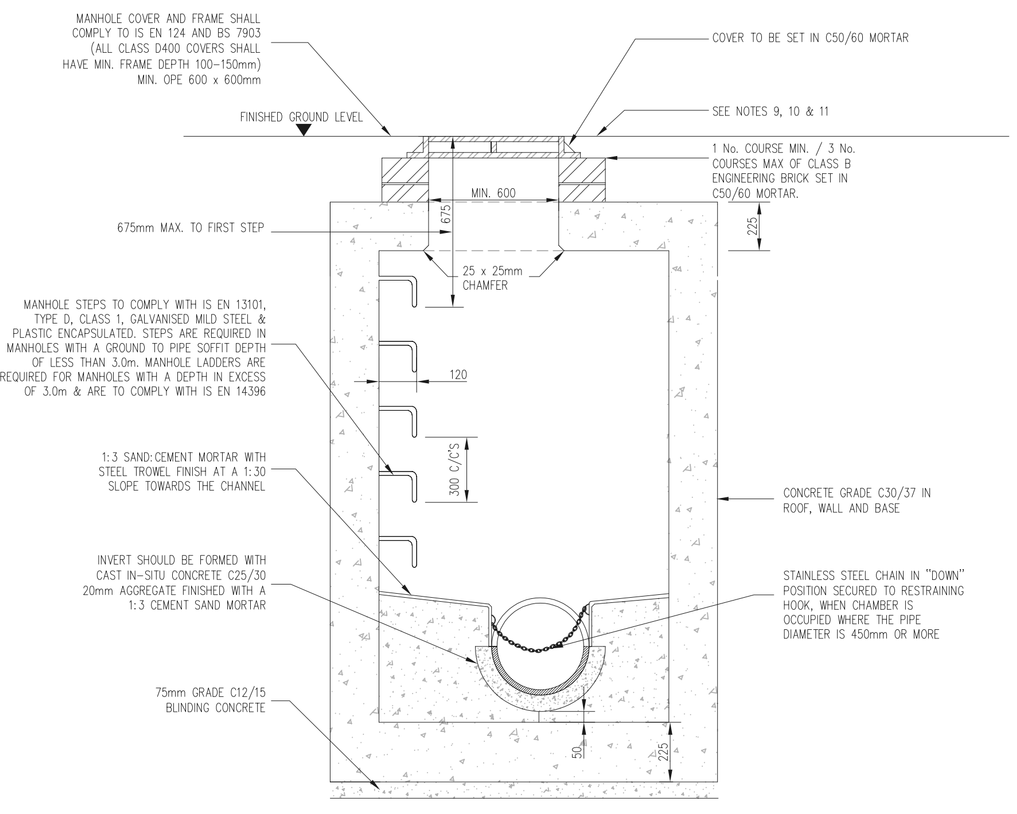
GENERAL

1.) THESE DRAWINGS TO BE READ IN CONJUNCTION WITH ALL RELEVANT HAYES HIGGINS ENGINEERING DRAWINGS AND SPECIFICATIONS.

2.) DO NOT SCALE. USE FIGURED DIMENSIONS ONLY.

3.) FOUL WATER/WASTE WATER TO CURRENT IRISH WATER SPECIFICATION AND DETAILS (IW-CDS-5030-01).

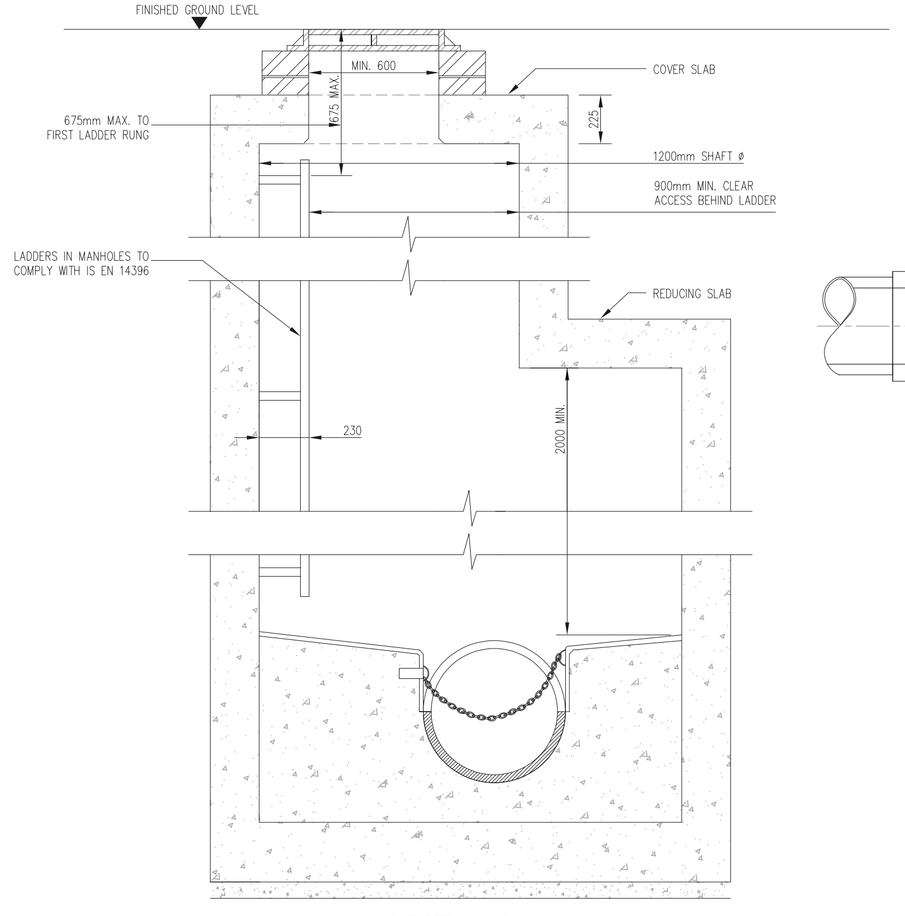
DETAIL 10 – BACKDROP MANHOLES



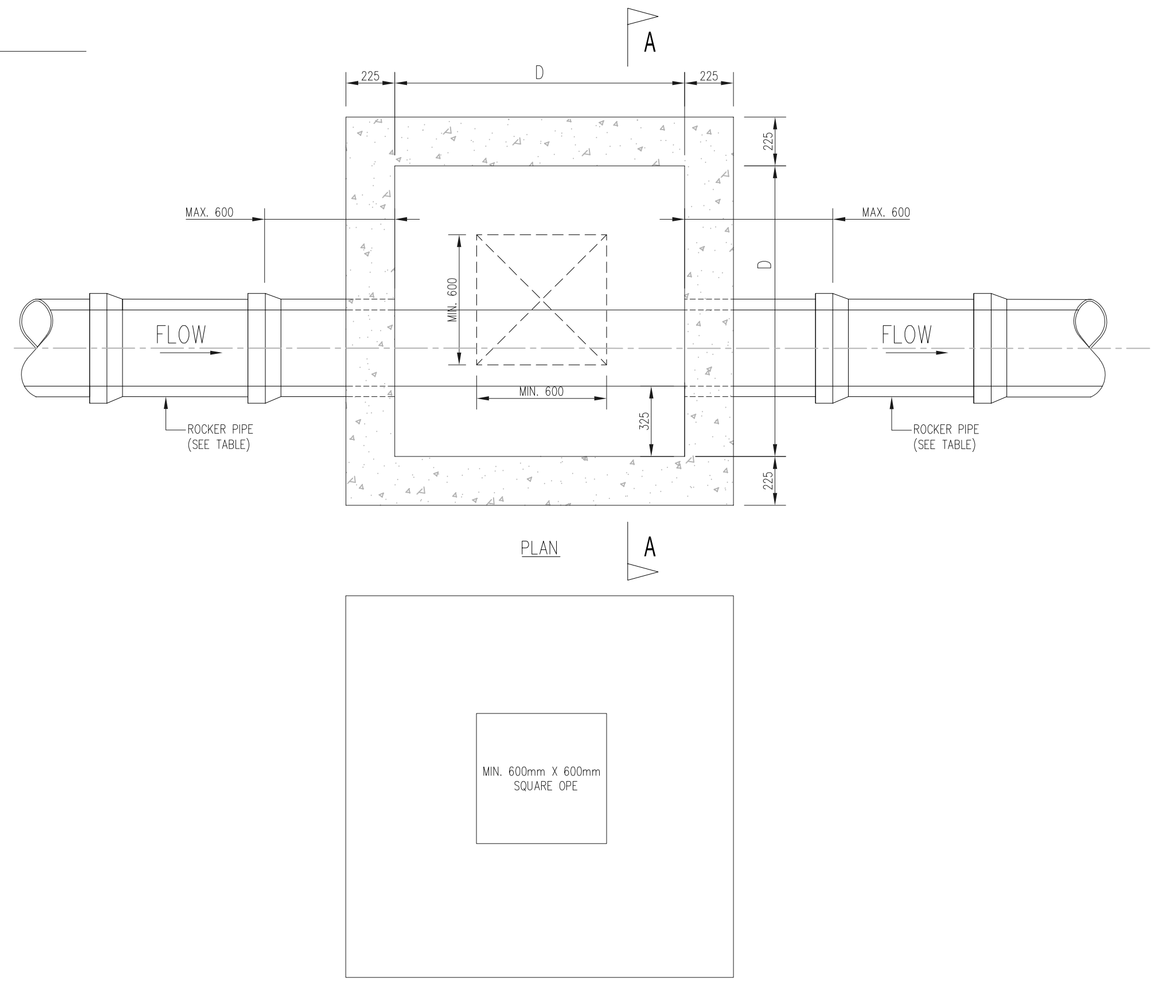
SECTION A–A

ROCKER PIPE LENGTH	
PIPE DIAMETER (mm)	ROCKER PIPE LENGTH (mm)
150 – 600	600
> 600 – 750	1000
> 750	1250

MINIMUM MANHOLE DIMENSIONS "D"	
DIAMETER OF LARGEST PIPE IN MANHOLE (mm)	INTERNAL DIMENSION OF MANHOLE (mm)
< 375	1200
375 – 450	1350
500 – 750	1500



MANHOLE DETAIL > 3m & < 6m GROUND TO PIPE SOFFIT DEPTH
(NOTE: ON MANHOLES <1.5m SHAFT DIMENSION, REDUCING SLAB NOT TO BE USED & SHAFT TO CONTINUE UP TO COVER SLAB)



ROOF PLAN

DETAIL 09 – IN-SITU CONCRETE MANHOLE

REV	DATE	DESCRIPTION	DWG BY	APPR. BY
P	20.04.21	ISSUED FOR PLANNING	DW	LM

ISSUED
PLANNING

CLIENT
AAI PALMERSTOWN LIMITED

PROJECT NAME
APARTMENTS AT UNITS 64 & 65
CHERRY ORCHARD INDUSTRIAL ESTATE

DRAWING NAME
IRISH WATER FOUL & SURFACE DRAINAGE DETAILS SHEET 3 OF 4

PROJECT No.
20D018

DRAWING No.	REVISION
05	P

SCALE	DRAWN DATE
AS SHOWN	20.04.21

CAD DRAWN BY	CHECKED BY	APPROVED BY
DW	LM	DH

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Email: info@hhp.ie

A1

NOTES

GENERAL

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2.) DO NOT SCALE. USE FIGURED DIMENSIONS ONLY.

3.) FOUL WATER/WASTE WATER TO CURRENT IRISH WATER SPECIFICATION AND DETAILS (IW-CDS-5030-01).

NOTES

DETAIL 01 – DRAIN AND SERVICE CONNECTION PIPEWORK

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES (mm) UNLESS NOTED OTHERWISE.
2. AN INSPECTION CHAMBER SHOULD BE LOCATED AT OR WITHIN 1m OF THE PROPERTY BOUNDARY AT THE UPSTREAM END OF EACH SERVICE CONNECTION ON THE PRIVATE SIDE OF THE CURTILAGE, IF PRACTICABLE, CONSULT WITH IRISH WATER ON ALTERNATIVE LOCATIONS.
3. ANY PIPE AND ASSOCIATED ACCESS UPSTREAM OF THE POINT OF CONNECTION TO A PUBLIC SEWER WITHIN THE CONFINES OF A PRIVATE BOUNDARY IS A PRIVATE DRAIN AND SHOULD BE CONSTRUCTED IN ACCORDANCE WITH BUILDING REGULATIONS.

DETAIL 02 – TYPICAL SERVICE LAYOUT INDICATING SEPARATION DISTANCES

NOTES:

1. THE SEPARATION DISTANCES OUTLINED ARE MINIMUM REQUIREMENTS.
2. SPECIFIC SEPARATION CLEARANCE DISTANCES IN EXCESS OF THESE MINIMA SHALL BE PROVIDED FOR SERVICES SUCH AS GAS, ELECTRICITY, FIBRE-OPTIC OR OIL FILLED CABLES AS THE CASE MAY BE. THE PARTICULAR UTILITY PROVIDERS SHALL BE CONSULTED TO DETERMINE THESE MINIMUM SEPARATION DISTANCES AND EVIDENCE OF THIS CONSULTATION, WITH THE SPECIFIED SEPARATION DISTANCES, SHALL BE PROVIDED TO IRISH WATER AT DESIGN STAGE.
3. NOTIFICATION IN WRITING IS REQUIRED SHOULD WORKS BE WITHIN THE FOLLOWING DISTANCES FROM AN EXISTING WATER MAIN OR WASTEWATER RISING MAIN:

HORIZONTAL

1m AT EITHER SIDE OF AN EXISTING MAIN LESS THAN 200mm DIAMETER.

2m AT EITHER SIDE OF AN EXISTING MAIN OF 200mm TO 350mm DIAMETER.

5m AT EITHER SIDE OF AN EXISTING MAIN OF 350mm OR GREATER IN DIAMETER.

WHERE DUCTS OR PIPES ARE TO BE LAID CLOSE TO AN EXISTING WATERMAIN OR SEWER IN THE OWNERSHIP OR IRISH WATER, NOTIFICATION IN WRITING SHALL BE PROVIDED A MINIMUM OF 10 DAYS AHEAD OF ADVANCEMENT OF THE WORK.

NOTIFICATION IN WRITING IS REQUIRED SHOULD WORKS BE WITHIN 1.5m DISTANCE OF A WASTEWATER SEWER.

REQUIREMENTS SHALL ALSO APPLY TO TRIAL HOLES OR SLIT TRENCHES TO LOCATE THE MAIN OR GAIN GROUND INFO DATA.

LARGER DIAMETERS >350mm DISTRIBUTION AND TRUNK MAINS, IRISH WATER MUST BE NOTIFIED AT LEAST 1 MONTH IN ADVANCE.

DEVELOPERS SHALL ALSO COMPLY WITH ANY NOTIFICATION REQUIREMENTS OF OTHER UTILITY PROVIDERS (ESB, GAS MAIN, TELECOMMUNICATION ETC.).

4. DETAILED PROPOSALS, INCLUDING WORK METHOD STATEMENTS, INSURANCE CONFIRMATION AND DETAILS OF WORK COMPLETED OF A SIMILAR NATURE MUST BE SUBMITTED TO IRISH WATER FOR ITS CONSIDERATION BEFORE AGREEMENT WILL ISSUE. ALL SUCH WORKS IN THE VICINITY OF ARTERIAL WATER MAINS AND SEWERS (MAINS GREATER THAN 400mm) SHALL BE SUBJECT TO WRITTEN AGREEMENT WITH IRISH WATER BEFORE CONSTRUCTION COMMENCES ON SITE. THIS AGREEMENT SHALL ALSO INCLUDE ANY NECESSARY PROTECTION FOR WATER MAINS.
5. ANY DAMAGE SHALL BE NOTIFIED IMMEDIATELY TO IRISH WATER. THE PERSON WHO CAUSES THE DAMAGE TO A SEWER MAIN OR FITTING WILL BE DEEMED TO HAVE COMMITED AN OFFENCE UNDER SECTION 45 OF THE WATER SERVICES ACT 2007.
6. UNDER NO CIRCUMSTANCES WILL IRISH WATER ACCEPT SEWER MAIN INSTALLATIONS UNDER STRUCTURES, EXISTING OR PROPOSED, OR IN CLOSE PROXIMITY TO ANY EXISTING STRUCTURES OR FEATURES THAT WILL INHIBIT ACCESS FOR POST INSTALLATION MAINTENANCE AND ACCESS.
7. THE MINIMUM CLEAR DISTANCE WILL BE INCREASED IF THE SEWER IS GREATER THAN 3m DEEP OR IF THE DIAMETER IS GREATER THAN 375mm. THE MINIMUM CLEAR DISTANCE IN THESE SITUATIONS SHALL BE > DEPTH TO INVERT OR 10 TIMES THE SEWER DIAMETER, WHICH EVER IS GREATER.
8. THE EXTERNAL FACES OF MANHOLE SHALL BE AT LEAST 0.5m FROM KERB LINE.
9. WHERE DESIGN DEVIATES FROM TYPICAL DETAILS, THE LAYOUT IS SUBJECT TO REVIEW BY IRISH WATER.

DETAIL 03 – TYPICAL SEWER/SERVICE PIPE CONNECTION

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS (mm) UNLESS NOTED OTHERWISE.
2. AS FAR AS PRACTICABLE, JUNCTIONS AND SERVICE CONNECTIONS SHALL BE BUILT IN FOR ALL PLANNED USERS WHEN THE SEWER IS BEING CONSTRUCTED. WHERE IT IS NECESSARY TO MAKE A POST-CONSTRUCTION CONNECTION THE DEVELOPER SHALL BRING THE SEWER TO THE INSPECTION CHAMBER, INSTALL THE INSPECTION CHAMBER AND SEAL THE UPSTREAM END UNTIL THE CONNECTION IS REQUIRED.
3. THE VERTICAL ANGLE BETWEEN THE SERVICE CONNECTING PIPE AND THE HORIZONTAL SHALL BE GREATER THAN 0° AND NOT MORE THAN 60°.
4. WHERE THE CONNECTION IS BEING MADE TO A SEWER WITH A NOMINAL INTERNAL DIAMETER OF 300mm DIAMETER OF LESS, CONNECTIONS SHALL BE MADE USING 45° ANGLE JUNCTIONS.
5. WHERE THE CONNECTION IS BEING MADE TO A SEWER WITH A NOMINAL INTERNAL DIAMETER GREATER THAN 300mm :
   A) IF THE DIAMETER OF THE CONNECTING PIPE IS GREATER THAN HALF THE DIAMETER OF THE SEWER, AN ACCESS MANHOLE SHALL BE CONSTRUCTED TO FORM THE CONNECTION POINT; OR
   B) IF THE DIAMETER OF THE CONNECTING PIPE IS LESS THAN OR EQUAL TO HALF THE DIAMETER OF THE SEWER, THEN THE CONNECTION SHALL BE MADE USING A PREFORMED SADDLE FITTING WITH A SLOW BEND BETWEEN THE SADDLE AND THE CONNECTING SEWER/DRAIN.
6. CONNECTIONS MADE WITH SADDLE FITTINGS SHALL BE MADE BY CUTTING AND SAFELY REMOVING A CORE FROM THE PIPE AND JOINTING THE SADDLE FITTING TO THE PIPE IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS TO ENSURE A WATERTIGHT JOINT. THE CONNECTING PIPE SHALL NOT PROTRUDE INTO THE SEWERS.
7. THE USE OF 90° CONNECTIONS TO THE SEWER MAY BE ALLOWED SUBJECT TO IRISH WATER REVIEW, PROVIDED THE SADDLE OR BRANCH INCORPORATES A SWEPT TEE CONNECTION TOWARDS THE DIRECTION OF FLOW.

DETAIL 04 – PRIVATE SIDE INSPECTION CHAMBER

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES (mm) UNLESS NOTED OTHERWISE.
2. AN INSPECTION CHAMBER SHOULD BE LOCATED AT OR WITHIN 1m OF THE PROPERTY BOUNDARY AT THE UPSTREAM END OF EACH SERVICE CONNECTION ON THE PRIVATE SIDE OF THE CURTILAGE, IF PRACTICABLE, CONSULT WITH IRISH WATER ON ALTERNATIVE LOCATIONS.
3. ANY PIPE AND ASSOCIATED ACCESS UPSTREAM OF THE POINT OF CONNECTION TO A PUBLIC SEWER IS A PRIVATE DRAIN AND SHOULD BE CONSTRUCTED IN ACCORDANCE WITH THE BUILDING REGULATIONS.
4. ACCESS POINTS SHOULD BE LOCATED SO THAT THEY ARE ACCESSIBLE AND APPARENT TO THE MAINTAINER AT ALL TIMES FOR USE. THEY SHOULD AVOID REAR GARDENS OR ENCLOSED LOCATIONS AND THEY SHOULD NEVER BE OVERLAIN WITH SURFACE DRESSING, TOPSOIL, ETC.
5. COVERS AND FRAMES SHALL BE SUITABLE FOR ROAD AND TRAFFIC CONDITIONS SUBJECT TO REVIEW BY IRISH WATER.
6. 200mm ALL AROUND, 100mm DEEP CONCRETE PLINTH AROUND COVERS IN GREEN AREAS.
7. PROPRIETARY PREFABRICATED CHAMBER UNITS MAY ALSO BE USED, SUBJECT TO REVIEW BY IRISH WATER.
8. CHAMBERS SHALL BE SURROUNDED BY A MINIMUM OF 150mm COMPACTED CLAUSE 804 OR CLAUSE 808 MATERIAL AS PER DETAIL – 05.

DETAIL 05 – TRENCH BACKFILL AND BEDDING

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES (mm) UNLESS NOTED OTHERWISE.
2. THE MINIMUM DEPTH OF COVER FROM THE FINISHED SURFACE TO THE CROWN OF GRAVITY PIPES WITHOUT PROTECTION SHOULD BE AS FOLLOWS:

A) GARDENS AND PATHWAYS WITHOUT ANY POSSIBILITY OF VEHICULAR ACCESS – DEPTH NOT LESS THAN 0.5M (THIS WOULD NORMALLY RELATE TO DRAINS IN PRIVATE PROPERTY, SHALLOW PIPES OF THIS NATURE ARE UNDESIRABLE AND SHOULD BE INSTALLED IN ACCORDANCE WITH THE CURRENT BUILDING REGULATIONS).

B) DRIVEWAYS, PARKING AREAS AND YARDS WITH HEIGHT RESTRICTIONS TO PREVENT ENTRY BY VEHICLES WITH A GROSS VEHICLE WEIGHT IN EXCESS OF 7.5 TONNES – DEPTH NOT LESS THAN 0.75m.

C) DRIVEWAYS, PARKING AREAS AND NARROW STREETS WITHOUT FOOTWAYS (EG MEWS DEVELOPMENTS) WITH LIMITED ACCESS FOR VEHICLES WITH A GROSS VEHICLE WEIGHT IN EXCESS OF 7.5 TONNES – DEPTH NOT LESS THAN 0.9m.

A. DEPTHS OF SEWERS IN GATED ESTATES SHALL BE SIMILAR TO THAT OUTLINED ABOVE.

B. AGRICULTURAL LAND AND PUBLIC OPEN SPACE – DEPTH NOT LESS THAN 0.9m.

C. OTHER HIGHWAYS AND PARKING AREAS WITH UNRESTRICTED ACCESS TO VEHICLES WITH A GROSS VEHICLE WEIGHT IN EXCESS OF 7.5 TONNES – DEPTH NOT LESS THAN 1.2m.

3. CLAUSE 804/808 MATERIAL IN ACCORDANCE WITH THE NATIONAL ROADS AUTHORITY SPECIFICATION FOR ROAD WORKS IS TO BE USED AS BACKFILL MATERIAL WHERE THE SEWER MAIN IS LOCATED IN ROADS, FOOTPATHS OR WHEN THE NEAREST PART OF THE TRENCH IS WITHIN 1M OF THE PAVED EDGE OF THE ROADWAY. CLAUSE 804/808 IS TO BE COMPACTED AS PER CLAUSE 802 OF THE NATIONAL ROADS AUTHORITY SPECIFICATION FOR ROAD WORKS. CLAUSE 808 IS TO BE USED WITHIN 500mm OF CEMENT BOUND MATERIALS, CONCRETE PAVEMENTS, CONCRETE STRUCTURES OR CONCRETE PRODUCTS, OTHERWISE CLAUSE 804 MAY BE USED.
   ALTERNATIVE BACKFILL MATERIAL TO THAT DESCRIBED ABOVE (CLAUSE 804 OR 808) OF THE PIPE TRENCH WILL ONLY BE ALLOWED BY IRISH WATER WHERE THE ROADS AUTHORITY IN WHOSE FUNCTIONAL AREA THE DEVELOPMENT IS LOCATED, PROVIDES WRITTEN APPROVAL TO THE DEVELOPER TO THE USE OF SUCH ALTERNATIVE MATERIAL.
4. SELECTED EXCAVATED MATERIAL MAY BE USED IN GREENFIELD AREAS ABOVE GRANULAR PIPE SURROUND MATERIAL SUBJECT TO REVIEW BY IRISH WATER.
5. PIPE BEDDING SHALL COMPLY WITH WIS 4-08-02 AND IGN 4-08-01 GRANULAR MATERIAL SHALL BE 14mm TO 5mm GRADED AGGREGATE OR 10mm SINGLE SIZED AGGREGATE IS EN 13242. CONCRETE BED, HAUNCH & SURROUND, WHERE REQUIRED, SHALL BE TO DETAIL – 06.
6. IN SOFT GROUND CONDITIONS (CBR < 5) THE MATERIAL SHOULD BE EXCAVATED AND DISPOSED OF IN ACCORDANCE WITH THE WASTE MANAGEMENT ACT AND CLAUSE 804 / 808 MATERIAL IN ACCORDANCE WITH THE NATIONAL ROADS AUTHORITY SPECIFICATION FOR ROAD WORKS SHALL REPLACE THE EXCAVATED MATERIAL, WRAPPED IN GEO-TEXTILE WRAPPING. ALTERNATIVELY,
7. IN GREENFIELD AREAS, TYPE B BACKFILL (SELECTED EXCAVATED MATERIAL) WILL BE ALLOWED ABOVE THE SIDE HAUNCH GRANULAR MATERIAL IN THE CASE OF RIGID PIPES. A GRANULAR SURROUND OF A MINIMUM DEPTH OF 150mm ABOVE THE CROWN OF THE PIPE IS REQUIRED FOR FLEXIBLE PIPES, AND TYPE B MATERIAL MAY BE USED AS BACKFILL ABOVE THIS. ALL RISING MAINS IN GREENFIELD AREAS SHALL HAVE A MINIMUM COVER OF 300mm OF GRANULAR MATERIAL ABOVE THE EXTERNAL CROWN OF THE PIPE.
8. PIPES SHALL NOT BE SUPPORTED ON STONES, ROCKS OR ANY HARD OBJECTS AT ANY POINT ALONG THE TRENCH. ROCK SHALL BE EXCAVATED TO A DEPTH OF 150mm BELOW THE ACTUAL DEPTH OF THE TRENCH WITH VOID FILLED WITH CLAUS 804/808 MATERIAL IN ACCORDANCE WITH THE NATIONAL ROADS AUTHORITY SPECIFICATION FOR ROAD WORKS. THE GRANULAR MATERIAL SHALL BE LAID ABOVE THIS VOID BACKFILL MATERIAL.
9. NON DEGRADABLE MARKER TAPE SHOULD BE INSTALLED AT THE TOP OF PIPE BEDDING LAYER. IN THE CASE OF NON METAL PIPE MATERIAL THE MARKER TAPE SHOULD INCORPORATE A TRACE WIRE WHICH IS LINKED TO FITTINGS AND TERMINATED AT THE WASTE WATER PUMPING STATION AND THE DISCHARGE MANHOLE.
10. TRENCH WIDTHS FOR PIPES SIZES <=80mm MAY BE <500mm SUBJECT TO CONSIDERATION BEING GIVEN TO THE TRENCH DEPTH, HEALTH & SAFETY & CONSTRUCTION ACCESS REQUIREMENTS
11. NEW ROAD CONSTRUCTION & SURFACE FINISH TO BE TO ROAD AUTHORITY REQUIREMENTS.
12. EXISTING ROAD REINSTATEMENT TO COMPLY WITH CURRENT VERSION OF "GUIDELINES FOR MANAGING OPENINGS IN PUBLIC ROADS" BY THE DEPT. OF TRANSPORT, TOURISM & SPORT OR TRANSPORT INFRASTRUCTURE IRELAND REQUIREMENTS.

DETAIL 06 – CONCRETE BED, HAUNCH AND SURROUND TO WASTEWATER PIPES

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS (mm) UNLESS NOTED OTHERWISE.
2. CONCRETE PIPE BEDS AND HAUNCHES MAY BE REQUIRED TO ADDRESS MINIMUM COVER SITUATIONS, AND SHALL BE SUBJECT TO SUBMISSION AND ASSESSMENT BY IRISH WATER BEFORE ADVANCING WITH THE WORKS.
3. CONCRETE PIPE BEDS AND HAUNCHES SHALL HAVE A MINIMUM THICKNESS OF 150MM WITH AN ABSOLUTE MINIMUM DEPTH OF COVER ABOVE THE EXTERNAL CROWN OF THE PIPE OF 750MM.
4. CONCRETE TO BE IN ACCORDANCE WITH IS EN 206 AND TO BE CLASS C16/20 .
5. THE HAUNCHES AND SURROUNDS TO BE FORMED USING FORM WORK TO PROVIDE A ROUGH CAST FINISH.
6. EXPANSION JOINTS IN THE CONCRETE SHALL BE PROVIDED AT ALL PIPE JOINTS TO ALLOW FOR PIPE FLEXIBILITY, COMPRESSIBLE FILLER BOARD TO BE IN ACCORDANCE WITH BS EN 622-1 AND BS EN 622-4, AND TO BE 18mm THICK.
7. POLYETHYLENE PIPES SHALL BE WRAPPED IN PLASTIC SHEETING HAVING A COMPOSITION IN ACCORDANCE WITH BS 6076 BEFORE BEING CAST INTO CONCRETE.
8. BITUMINOUS MATERIAL SHALL NOT BE PUT IN CONTACT WITH PE OR PVC PIPES.

DETAIL 07 – BLOCKWORK MANHOLE (<450mm ø)

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES (mm) UNLESS NOTED OTHERWISE.
2. SOLID BLOCKWORK TO BE OF HIGH STRENGTH (20N/mm²) TO IS EN 771.
3. MAXIMUM DEPTH OF BLOCK WORK MANHOLE IS 1.20m (THE USE OF BLOCK WORK IN DEEPER MANHOLES WILL BE CONSIDERED BUT SUCH USE WILL REQUIRE DETAILED STRUCTURAL DESIGN AND BE SUBJECT TO IRISH WATER REVIEW).
4. WALLS TO BE FLUSH POINTED AND NOT PLASTERED INTERNALLY, INTERNAL LINING OF ENGINEERING BRICK TO IS EN 771-1 TO A HEIGHT OF 1m ABOVE BENCHING. ENGINEERING BRICK TO BE BONDED TO BLOCKWORK USING ENGLISH GARDEN WALL BOND.
5. STRUCTURAL DESIGN AND REINFORCEMENT DETAILS FOR ROOF AND BASE SLABS TO BE PROVIDED BY THE DEVELOPER AND SUBMITTED TO IRISH WATER FOR REVIEW. MANHOLE ROOFS SHALL CONSIST OF A REINFORCED CONCRETE SLAB OF IN-SITU CONCRETE, C30/37, WITH A MINIMUM THICKNESS OF 225mm DESIGNED TO CARRY ALL LIVE AND DEAD LOADS. ALTERNATIVELY, APPROVED PRE-CAST CONCRETE ROOF SLABS MAY BE USED SUBJECT TO IRISH WATER REVIEW AND COMPLIANCE WITH BS 5911 PART 4: 2002.
6. COVERS AND FRAMES SHALL BE SUITABLE FOR ROAD AND TRAFFIC CONDITIONS SUBJECT TO REVIEW FROM IRISH WATER.
7. 200M ALL AROUND, 100mm DEEP CONCRETE PLINTH AROUND COVERS IN GREEN AREAS.
8. ALL CHAMBERS TO BE CHECKED FOR UPLIFT BY THE DEVELOPER BASED ON GROUND CONDITIONS WITHIN THE SITE SHOULD ANTI-FLOATATION MEASURES BE REQUIRED THEY SHALL BE SUBJECT TO REVIEW BY IRISH WATER.
9. ALL CONCRETE TO BE IN ACCORDANCE WITH IS EN 206: 2013
10. ANY SPECIAL ROAD REINSTATEMENT AROUND COVER & FRAME SHALL BE TO ROAD AUTHORITY'S REQUIREMENTS.
11. NEW ROAD CONSTRUCTION & SURFACE FINISH TO BE TO ROAD AUTHORITY REQUIREMENTS.
12. EXISTING ROAD REINSTATEMENT TO COMPLY WITH CURRENT VERSION OF "GUIDELINES FOR MANAGING OPENINGS IN PUBLIC ROADS" BY THE DEPT. OF TRANSPORT, TOURISM & SPORT OR TRANSPORT INFRASTRUCTURE IRELAND REQUIREMENTS.

DETAIL 08 – PRECAST CONCRETE MANHOLE

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS (mm) UNLESS NOTED OTHERWISE.
2. PRE-CAST MANHOLES UNITS: COMPLYING WITH REQUIREMENTS OF IS EN 1917 AND BS 5911-PART 3.
3. THICKER MANHOLE BASES REQUIRED FOR SEWERS IN EXCESS OF 3m DEEP WHERE THE SIZE IS GREATER THAN THE STANDARD MINIMUM SIZE.
4. APPROVED PRE-CAST CONCRETE BASES MAY BE USED INCORPORATING CHANNELS, BENCHING ETC. SUBJECT TO IRISH WATER REVIEW AND COMPLYING WITH BS 5911-PART 4 2002.
5. STRUCTURAL DESIGN AND REINFORCEMENT DETAILS TO BE PROVIDED BY THE DEVELOPER AND SUBMITTED TO IRISH WATER FOR REVIEW.
6. MANHOLES GREATER THAN 3m IN DEPTH WILL REQUIRE A DETAILED STRUCTURAL DESIGN AND BE SUBJECT TO IRISH WATER REVIEW.
7. MANHOLE ROOFS SHALL CONSIST OF A REINFORCED CONCRETE SLAB OF IN-SITU CONCRETE, C30/37, WITH A MINIMUM THICKNESS OF 225mm DESIGNED TO CARRY ALL LIVE AND DEAD LOADS. ALTERNATIVELY, APPROVED PRE-CAST CONCRETE ROOF SLABS MAY BE USED SUBJECT TO IRISH WATER REVIEW AND COMPLIANCE WITH BS 5911 PART 4: 2002.
8. COVERS AND FRAMES SHALL BE SUITABLE FOR ROAD AND TRAFFIC CONDITIONS SUBJECT TO REVIEW BY IRISH WATER.
9. 200mm ALL AROUND, 100mm DEEP CONCRETE PLINTH AROUND COVERS IN GREEN AREAS.
10. ALL CHAMBERS TO BE CHECKED FOR UPLIFT BY THE DEVELOPER BASED ON GROUND CONDITIONS WITHIN THE SITE. SHOULD ANTI-FLOATATION MEASURES BE REQUIRED THEY SHALL BE SUBJECT TO REVIEW BY IRISH WATER.
11. ALL CONCRETE TO BE IN ACCORDANCE WITH IS EN 206: 2013.
12. ANY SPECIAL ROAD REINSTATEMENT AROUND COVER & FRAME SHALL BE TO ROAD AUTHORITY'S REQUIREMENTS.
13. NEW ROAD CONSTRUCTION & SURFACE FINISH TO BE TO ROAD AUTHORITY REQUIREMENTS.
14. EXISTING ROAD REINSTATEMENT TO COMPLY WITH CURRENT VERSION OF "GUIDELINES FOR MANAGING OPENINGS IN PUBLIC ROADS" BY THE DEPT. OF TRANSPORT, TOURISM & SPORT OR TRANSPORT INFRASTRUCTURE IRELAND REQUIREMENTS.
15. IF DEPTH FROM GROUND TO PIPE SOFFIT IS GREATER THAN 6m DEEP, A SITE SPECIFIC ENGINEERED SOLUTION FOR ACCESS SHALL BE PROVIDED.
16. PROPRIETARY WATERTIGHT PCC MANHOLE RING SYSTEMS WITH A WALL THICKNESS >125mm, & A WATER TIGHT JOINT SEALING SYSTEM, MAY BE USED WITHOUT CONCRETE SURROUND, SUBJECT TO THE GROUND WATER LEVEL AT THE MANHOLE BEING LOW, & SUBJECT TO REVIEW BY IRISH WATER.

DETAIL 09 – IN-SITU CONCRETE MANHOLE

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES (mm) UNLESS NOTED OTHERWISE.
2. IN-SITU MANHOLES TO HAVE A MINIMUM WALL AND FLOOR THICKNESS OF 225mm FOR MANHOLE DEPTHS UP TO 3.0m AND 300mm OR MORE WHEN THE MANHOLE DEPTH EXCEEDS 3.0m.
3. STRUCTURAL DESIGN AND REINFORCEMENT DETAILS TO BE PROVIDED BY THE DEVELOPER AND SUBMITTED TO IRISH WATER FOR REVIEW. MANHOLE ROOFS SHALL CONSIST OF A REINFORCED CONCRETE SLAB OF IN-SITU CONCRETE, C30/37, WITH A MINIMUM THICKNESS OF 225mm DESIGNED TO CARRY ALL LIVE AND DEAD LOADS. ALTERNATIVELY, APPROVED PRE-CAST CONCRETE ROOF SLABS MAY BE USED SUBJECT TO IRISH WATER APPROVAL AND COMPLIANCE WITH BS 5911 PART 4: 2002.
4. MANHOLES GREATER THAN 3m IN DEPTH WILL REQUIRE A DETAILED STRUCTURAL DESIGN AND BE SUBJECT TO IRISH WATER REVIEW.
5. COVERS AND FRAMES SHALL BE SUITABLE FOR ROAD AND TRAFFIC CONDITIONS SUBJECT TO REVIEW BY IRISH WATER.
6. 200M ALL AROUND, 100mm DEEP CONCRETE PLINTH AROUND COVERS IN GREEN AREAS.
7. ALL CHAMBERS TO BE CHECKED FOR UPLIFT BY THE DEVELOPER BASED ON GROUND CONDITIONS WITHIN THE SITE. SHOULD ANTI-FLOATATION MEASURES BE REQUIRED THEY SHALL BE SUBJECT TO REVIEW BY IRISH WATER.
8. ALL CONCRETE TO BE IN ACCORDANCE WITH IS EN 206: 2013
9. ANY SPECIAL ROAD REINSTATEMENT AROUND COVER & FRAME SHALL BE TO ROAD AUTHORITY'S REQUIREMENTS.
10. NEW ROAD CONSTRUCTION & SURFACE FINISH TO BE TO ROAD AUTHORITY REQUIREMENTS.
11. EXISTING ROAD REINSTATEMENT TO COMPLY WITH CURRENT VERSION OF "GUIDELINES FOR MANAGING OPENINGS IN PUBLIC ROADS" BY THE DEPT. OF TRANSPORT, TOURISM & SPORT OR TRANSPORT INFRASTRUCTURE IRELAND REQUIREMENTS.
12. IF DEPTH FROM GROUND TO PIPE SOFFIT EXCEEDS 6m, A SITE SPECIFIC ENGINEERED SOLUTION FOR ACCESS SHALL BE PROVIDED.

DETAIL 10 – BACKDROP MANHOLES

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES (mm) UNLESS NOTED OTHERWISE.
2. RODDING EYE CHAMBER SHALL BE COVERED WITH APPROVED HEAVY DUTY METAL COVERS TO IS 261 AND BS 5834. COVER AND FRAME SHALL BE SUITABLE FOR ROAD AND TRAFFIC CONDITIONS AND IS SUBJECT TO REVIEW BY IRISH WATER.
3. ALL CHAMBERS TO BE CHECKED FOR UPLIFT BY THE DEVELOPER BASED ON GROUND CONDITIONS WITHIN THE SITE. SHOULD ANTI-FLOATATION MEASURES BE REQUIRED THEY SHALL BE SUBJECT TO REVIEW BY IRISH WATER.
4. ALL CONCRETE TO BE IN ACCORDANCE WITH IS EN 206.
5. MANHOLE DETAILS TO BE IN ACCORDANCE WITH DETAIL – 07, 08 & 09.

REV	DATE	DESCRIPTION	DWG BY	APPR. BY
P	20.04.21	ISSUED FOR PLANNING	DW	LM

ISSUED
PLANNING

CLIENT
AAI PALMERSTOWN LIMITED

PROJECT NAME
APARTMENTS AT UNITS 64 & 65
CHERRY ORCHARD INDUSTRIAL ESTATE

DRAWING NAME
IRISH WATER FOUL
& SURFACE DRAINAGE
DETAILS SHEET 4 OF 4

PROJECT No.
20D018

DRAWING No.	REVISION
05	P

SCALE	DRAWN DATE
AS SHOWN	20.04.21

CAD DRAWN BY	CHECKED BY	APPROVED BY
DW	LM	D.H.

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