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# **EIAR Chapter 11 Material Assets: Built Services**

## **Suir Island Infrastructure Links**



**Comhairle Contae Thiobraid Árann**  
Tipperary County Council

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## 11 Material Assets: Built Services

### 11.1 Introduction

This chapter evaluates the potential impacts, from the proposed development on Material Assets, as defined in the Environmental Protection Agency (EPA) Guidelines; *'Guidelines on the information to be contained in Environmental Impact Assessment Reports (May 2022); Advice Notes 'Draft Advice Notes for Preparing Environmental Impact Statements (EPA, 2015)', and European Commission Guidance on Environmental Impact Assessment of Projects: 'Guidance on the preparation of the Environmental Impact Assessment Report (2017)'*.

### 11.2 Assessment Methodology

In this EIA Report, the impacts on some of the material assets described in the above guidance have already been considered in the following chapters and therefore these aspects will not be addressed in specific detail within this chapter.

- Chapter 4, Population and Human Health.
- Chapter 6, Land & Soils
- Chapter 7, Hydrology.
- Chapter 8, Air Quality.
- Chapter 9, Climate.
- Chapter 12, Traffic & Transportation.
- Chapter 13, Resources & Waste Management. and
- Chapter 14, Archaeology & Cultural Heritage.

This chapter assesses ownership and access, built services and infrastructure, which have not already been addressed elsewhere in this EIA Report. **Section 11.3** addresses ownership and access. The subsequent sections address built services and infrastructure. The potential impacts on built services and infrastructure, if any, are assessed in terms of the following:

- Land Use, Property, and Access;
- Power, Electrical, and Gas Supply;
- Surface Water Infrastructure;
- Water Supply Infrastructure;
- Flood Protection Infrastructure; and
- Foul Drainage Infrastructure;

The proposed development will not impact on any other structures or water resources. The associated built services and infrastructure in the vicinity of the site are summarised in the following sections. Further detail is provided within the planning application EIAR Chapters.

The assessment of the impact on utilities has been undertaken by consultation with regard to availability with the utility supplier, ESB Networks, Telecom and Irish Water (IW). Mitigation measures are proposed where required.

Information on built-assets in the vicinity of the proposed development lands was collated from the following sources:

- A desktop review of Irish Water Utility Plans, ESB Networks Utility Plans, Gas Networks Ireland Service Plans, Eir E-Maps and Virgin Media Maps;
- Consultations with Tipperary County Council;
- Consultations with the Office of Public Works;
- Submission of a Pre-Connection Enquiry Application to Irish Water (Ref: CDS21008413);

- Review of ESB Utility Plans;
- Review of EIR Telecommunication Maps;
- Review of Eircom Telecommunication Maps;
- Review of Virgin Media Telecommunication Maps;
- Review of Topographical and bathymetric surveys;
- Review of aerial photography; and
- Site Inspections / Walkover.

As part of assessing the likely impact of the proposed development, surface water runoff, foul drainage discharge and water usage calculations were carried out in accordance with the following guidelines:

- The Greater Dublin Strategic Drainage Study (GDSDS) published in March 2005;
- Ciria Report C753 The SuDS Manual;
- Irish Water (IW) Code of Practice for Wastewater Infrastructure (IW-CDS-5030-03) Irish Water Code of Practice for Water Infrastructure (IW-CDS-5020-03);
- Transport Infrastructure Ireland (TII) Spacing of Road Gullies DN-DNG-03067 (including Amendment No. 1 dated June 2015);
- Transport Infrastructure Ireland (TII) Determination of Pipe and Bedding Combinations for Drainage Works DN-DNG-03070 (including Amendment No. 1 dated June 2015);
- Transport Infrastructure Ireland (TII) Rural Cycleway Design (Offline and Greenways) DN-GEO-03047 published in August 2022;
- Transport Infrastructure Ireland (TII) various Standard Construction Details for drainage, watermains, stonemasonry walls and pedestrian road crossings; and
- Department of Housing, Local Government and Heritage (DHLGH) Nature-based Solutions to the Management of Rainwater and Surface Water Runoff in Urban Areas Water Sensitive Urban Design Best Practice Interim Guidance Document.

### 11.3 Receiving Environment

Available as-built utility drawings have been included in **Appendix 11.1**.

#### 11.3.1 Land Use, Property, and Access

The subject site located within urban land consisting of mixed-use properties situated in the centre of Clonmel, County Tipperary. The Proposed Development site boundary encompasses areas to the north of the River Suir, namely; The Quay, Quay Street and New Quay (referred to as 'The Quays'), South of the River Suir i.e. Raheen Road and a portion of Suir Island.

The lands are owned by the Applicant, Tipperary County Council. The proposed development forms part of the local strategy to transform Suir Island into the "Green Heart of Clonmel" as highlighted in the Clonmel & Environs Development Plan 2013 – 2019. The proposed development concepts were developed in the Suir Island Masterplan which proposed the following key elements:

*Table 11-1: Suir Island Masterplan Key Proposals*

Element	Description
<b>Public Plaza and North Bridge</b>	<ul style="list-style-type: none"> <li>- New public plaza to North Quay, linking to Sarsfield Street and Clonmel town centre</li> <li>- Stepped and ramped access to new bridge to north of Suir Island</li> </ul>
<b>Raised Walkway around berm and Tree Top Walk</b>	<ul style="list-style-type: none"> <li>- Raised walkway to existing flood berm, with seating</li> </ul>

	<ul style="list-style-type: none"> <li>- Potential as event space</li> <li>- Starting point for accessible tree top walk into the east of island</li> </ul>
<b>Suir Island Garden</b>	<ul style="list-style-type: none"> <li>- Formal garden, seating and picnic provision</li> <li>- Potential uses for Suir Island House</li> </ul>
<b>Wildwood clearings and associated pathways/looped walks.</b>	<ul style="list-style-type: none"> <li>- Clearings with range of possible uses (e.g. outdoor classroom to archery, orienteering, bike park, children's play, zip line)</li> <li>- Alternative 'fitness routes' for higher energy walking</li> <li>- Poetry/sculpture trails and seating</li> </ul>
<b>Re-water Millrace and develop river crossings and pathways</b>	<ul style="list-style-type: none"> <li>- Re-watering of millrace, with footbridges and stepping stones</li> <li>- Kayak launch/access pontoon and potential loop route for return to slalom starting point</li> <li>- Children's hydrology play area</li> </ul>
<b>South Pedestrian Bridge</b>	<ul style="list-style-type: none"> <li>- Pedestrian link bridge (giving clearance for kayakers below) from Suir Island to Southern bank and Denis Burke Park</li> <li>- Seating/slalom viewing possible</li> </ul>
<b>Facilities Building</b>	<ul style="list-style-type: none"> <li>- Providing storage, kitchenette, public toilets and shower facilities</li> </ul>

### 11.3.2 Power/Electrical, Telecommunications and Gas Supply Infrastructure

Existing ESB Network Low-Voltage (LV) to Medium-Voltage (MV) power supply infrastructure is located in and around The Quay, Quay Street and New Quay and Quay Street car park. On Suir Island, Low-Voltage (LV) lines stretch into Suir Island car park from Old Bridge Road but does not extend to the proposed development area. For Raheen Road, no existing ESB services are present within the proposed development study area. Refer to the existing ESB Network Utility Drawing (No. 20200812-047\_A0) included in **Appendix 11.1**.

Existing Gas Network infrastructure is located along the northern footpath of The Quay, Quay Street and New Quay consisting of Low-Pressure (LP) distribution lines. On Suir Island a single Low-Pressure (LP) distribution line is connected to the Hughes Mill apartment building. Low to Medium-Pressure pipelines are located along Raheen Road up to the Raheen College entrance, where the gas network deviates from Raheen Road and continues through Denis Burke Park. Refer to the existing Gas Network Ireland Utility Drawing (Dated 13/08/2020) included in **Appendix 11.1**.

Existing streetlighting and associated electrical infrastructure is located in the Quay Street carpark, Suir Island carpark and along Raheen Road as shown on the topographical survey drawing (No. MGL38728\_T-ITM-2D\_Rev0) included in **Appendix 11.1**.

Eircom, Enet and Virgin Media telecommunication services are present in and around the proposed development footprint as shown on the drawings included in **Appendix 11.1**. As shown on the drawings, the Enet services are not located in close proximity to the proposed development footprint, but Eircom and Virgin Media services will intersect with elements of the proposed development.

### 11.3.3 Surface Water Infrastructure

The as-built surface water network for The Quays is shown on Drawing 1401-01 which should be read in conjunction with Drawing A5243-C064, showing the plan layout and long sections for The Quays, as designed by Mott MacDonald in December 2009. Drawing A5243-C064 indicates pipe sizes and slopes included in **Appendix 11.1**.

The main surface water pipeline is indicated as OQ-06 to OQ-01 and ranges from 300mm diameter to 450mm diameter. Road gullies on The Quay, Quay Street and Sarsfield Street drain via the main pipeline to manhole OQ-01, which discharges to the Suir River through a flap non- return valve located in the quay wall and/or to the existing surface water pump station located west of the existing Quays carpark. The existing surface water pump station discharges to the Suir River through the quay wall as indicated on Drawing A5243-C064 included in **Appendix 11.1**.

The as-built surface water network located in the Suir Island carpark is shown on Drawing 1401-01 which should be read in conjunction with Drawing A5243-C066, which shows the plan layout and long sections for Suir Island surface water network, as designed by Mott MacDonald in December 2009.

The existing surface water drainage system consists of multiple pipelines, ranging from 225mm to 450mm in diameter and drains to manhole SI-01. A 600mm diameter pipeline is connected to manhole SI-01 which discharges into the Little Island Mill Race. On Drawing A5243-C066, a connection is shown to the existing surface water pump station via a 450mm diameter pipeline and indicates that the pumping station discharges into the Little Island Mill Race via a 300mm diameter ductile-iron pipeline. Refer to the Suir Island surface water drainage drawings included in **Appendix 11.1**.

The existing surface water drainage manholes and road gully's locations were surveyed by Murphy Surveys in November 2020. The plan layout of the existing surface water pipelines in Raheen Road is shown on Drawing No. A5243-N506-F included in **Appendix 11.1**. As shown on the drawing, existing gullies drain to the main surface water pipeline draining westwards towards a surface water pump station located near the intersection with Old Bridge Road. The pump station discharges into the River Suir as indicated on the drawing.

### 11.3.4 Water Supply Infrastructure

Water supply infrastructure in The Quay, Quay Street, New Quay surrounding Quay Street carpark, Suir Island and Raheen Road is shown on the Irish Water Utilities Network Drawing IW-AGG-2017-000 included in **Appendix 11.1**.

The existing water utility network in the Quays consists of 100mm diameter Unplasticized Polyvinyl Chloride (uPVC) pipes connected to the network at Old Bridge Road and Sarsfield Road. Minor connections consisting of 50mm diameter uPVC connects business and shops to the network as shown.

For Suir Island, the main distribution pipeline crosses the River Suir via Old Bridge Road consisting of 100mm diameter High-Density Polyethylene (HDPE) and Polyvinyl chloride (PVC) pipes, Small diameter pipelines extend to Hughes Mill apartment building and the existing carpark. A single 150mm diameter uPVC pipeline runs along the southern edge of Raheen Road which connects to the water supply infrastructure located in Old Bridge Road and Waterford Road.

### 11.3.5 Flood Protection Infrastructure

The proposed development interacts with flood defences constructed for the Clonmel Flood Defence and Drainage Scheme. The infrastructure consists of a concrete masonry defence wall constructed along The Quay Road. The defence wall allows for the installation of demountable barriers to raise the flood defences to provide protection for up to the 1% Annual Exceedance Probability or 1-in-100-year recurrence interval flood event including a 20% Climate Change allowance. The flood defences located in the Quays is shown on Figure 11-1.





*Figure 11-1: The Quays flood defence wall with demountable barrier system*

The Suir Island carpark is protected by an earthfill embankment berm, providing protection from the main River Suir channel as well as the southern river reach or Slalom Course. For Raheen Road, a concrete masonry flood protection wall provides protection from flood water levels in the Slalom Course.

Refer to the Clonmel Flood Defence Scheme drawing (No. 9983\_Clonmel\_Flood\_Defence\_Plan\_03) included in **Appendix 11.1**. The “defended” areas benefiting from the Clonmel Flood Defence Scheme is shown on Drawings O16CLN\_EXFCD\_F0\_45 & 46 in the Planning Engineering Report (RPT-20\_071-059) Appended to EIAR Chapter 2 Project Description and Planning Policy Context.

### **11.3.6 Foul Drainage Infrastructure**

A 900mm diameter concrete foul drainage pipeline is located in The Quay road draining in an easterly direction and contains 5 No. manholes between Old Bridge Road and Sarsfield Street. The area north of the proposed plaza is serviced by 375mm diameter vitrified clay and 300mm diameter concrete pipelines originating from Bridge Street and Sarsfield Street, respectively. A public toilet is located in the existing Quay Street car park with an expected connection to the nearest manhole structure on the existing 900mm diameter concrete foul pipeline mentioned above. Refer to the Irish Water Sewer Utilities Network drawing IW-AGG-2017-000 included in **Appendix 11.1**.

No formalised foul drainage infrastructure is available on Suir Island. It is expected that the Hughes Mill apartment building and other residential buildings located on Suir Island drains to septic tanks with overflows to the River Suir.

A single 525mm diameter foul drainage pipeline is installed along Raheen Road up to the Raheen College entrance, where the pipeline deviates from the road through Denis Burke Park draining in an easterly direction as shown on the aforementioned Irish Water drawing.

## **11.4 Characteristics of the Proposed Development**

This section describes the built services and infrastructure for the proposed development during both construction and operation phases. The proposed development consists of various infrastructure upgrades which will impact on Built Services to various degrees and durations. The detailed project description and proposed development elements are summarised in Chapter 2: Project Description and Planning Policy Context.

### **11.4.1 Land Use, Property, and Access**

During the construction phase, access will be prevented to parts of the Suir Island utilised for recreational activities. The proposed construction compound is shown on Drawing 20\_071-CSE-GEN-XX-DR-C-2286 included in Volume C of this EIAR. Safe access for users can be accommodated around the proposed construction compound for long periods during construction which will be dependent on work locations, potential hazards and various types of construction activities taking place at the time. Access to the car park located in the Quays will be closed for the full duration of the construction phase. Temporary road closures in Raheen Road will restrict access and movements during the construction phase.

During the operation phase, the proposed development will promote recreational activities in the North Plaza and Suir Island as well as significantly enhance the pedestrian access to the amenities. Access to properties such as local business, shops, Denis Burke Park and Raheen College will be improved for pedestrians which encourages people to make the modal-shift to sustainable transport methods i.e. cycling.

### **11.4.2 Power/Electrical, Telecommunications and Gas Supply Infrastructure**

During construction, contractors will require power for lighting and heating of the site offices and their onsite construction compound. The power requirements will be relatively minor and will be provided by a temporary grid feed of 10-15 Medium-Voltage (MV). No diversions will be required to existing electrical, power, telecommunication or gas utilities. Due to the envisaged construction duration of 18-months, the contractor may consider to connect the construction compound offices to telecommunication networks for broadband services.

In the North Plaza, the proposed works will entail the removal of 3 existing public lighting poles, located adjacent to the eastern ingress/egress points to the existing car park. As the handrails located on the North Bridge access steps and ramp will be illuminated, it is not required to replace the removed public lighting poles.

The narrowing of Raheen Road will require the removal of one existing public lighting pole, which will be replaced by the bespoke balustrade lighting on the access ramp and steps leading up to the southern bridge crossing and one lighting pole to be relocated to match the realigned pedestrian walkway.

### **11.4.3 Surface Water Infrastructure**

During construction run-off into excavations/earthworks cannot be prevented entirely and is largely a function of prevailing weather conditions. Any surface water run-off collecting in excavations will likely contain a high sediment load. This will be diverted to small settlement basins and/or filtration tanks and will not be allowed to directly discharge to existing field drains or surface water features.

The redevelopment of the existing car park and realignment of The Quays will require the removal of nineteen (19) existing road gullies, which will be replaced by seventeen (17) gullies along the proposed kerbline. Additionally, slotted drains will be installed along the widened pedestrian walkway and on both sides of Sarsfield Street and Quay Street.

Three (3) existing gullies located on the southern kerbline of the Suir Island car park will be removed to allow for the construction of the 2m-wide pedestrian pathway. A new 225mm diameter surface water pipeline is proposed, which will be connected to seven (7) new gullies to drain the southern portion of the carpark. The access ramp to the bridge will be serviced by slot drains. The gullies, slot drains and pipeline will be connected to the existing surface water pump station.

For Raheen Road, five (5) existing gullies will be removed due to the proposed narrowing of the road lane widths and widening of the pedestrian walkway. The existing surface water pipeline draining towards Old Bridge Road pump station will be extended further east past the Raheen College entrance

via a new 300mm diameter and 225mm diameter pipeline which will require 4 No. manholes. A total of twenty-three (23) new road gullies are proposed along the narrowed Raheen Road. Slotted drains are proposed on the access ramp and at the bottom of the bridge access steps which will be connected to the proposed surface water pipeline.

The proposed surface water drainage infrastructure was designed in accordance with the Greater Dublin Strategic Drainage Study (GDSDS) manual completed in March 2005, Irish Water (IW) Code of Practice for Water Infrastructure (IW-CDS-5020-03) and TII Spacing of Road Gullies DN-DNG-03067. Refer to the Engineering Planning Report (Report No. RPT-20\_071-059) for more information.

#### **11.4.4 Water Supply Infrastructure**

During construction, a water source will be required for the duration of the works for welfare facilities, dust suppression and general construction activities. Initially, water supply will be provided by water-trucks and bottled water for site personnel use. A temporary connection to the existing watermain will be established to provide service and utilities subject to relevant applications and approvals. The water demand during the construction phase will not be significant enough to affect existing pressures. No diversions of existing networks will be required for the works

No permanent alterations to the existing water supply infrastructure are included in the Suir Island Infrastructure Links proposed development.

#### **11.4.5 Flood Protection Infrastructure**

During construction, localised temporary flood protection sheet piling around the bridge foundation work areas will be required to protect the work areas from water levels and minimise the ingress of groundwater to excavations. The construction of the bridge foundations will occur during the summer months when risk of flooding is reduced.

No alterations are required to the existing flood protection masonry wall and demountable barriers located along The Quay. The North Bridge will span over the demountable barriers with a minimum vertical clearance of 300mm as requested by the Office of Public Works.

The Suir Island earthfill embankment will be utilised as a connection between the northern and southern bridge crossings. The embankment levels will be raised and a formalised surface provided for users. The bridge abutments will be constructed on top of the berm corners, consisting of piled foundations, reinforced concrete pile caps and abutment structures to support the prefabricated steel bridge decks.

The Raheen Road bridge landing will be integrated into the existing masonry flood defence wall with piled foundation supports on each side to ensure additional loading is not transferred to the defence wall structure.

#### **11.4.6 Foul Drainage Infrastructure**

Welfare facilities will be required for the contractors on site during the construction works. The strict use of portable sanitary facilities will be included in the construction specifications with waste collected and disposed of appropriately.

The existing public toilet located in the Quay Street/The Quay car park will be relocated below the proposed access ramp leading up to the North Bridge. The existing small-diameter connection from the public toilet will be diverted to the existing 900mm diameter pipeline.

A new foul pumping station is proposed within Suir Island car park which will be available for future Irish Water connections. Wastewater will be pumped 0.1km approx. via a rising main along the proposed bridge linked from Suir Island onto the proposed North Plaza where it will connect into the existing public network along the Quays. An emergency storage tank is to be provided adjacent to the proposed pumping station and will provide storage for the 24-hour Dry Weather Flow.

## **11.5 Potential Impacts of the Proposed Development**

### **11.5.1 Construction Phase**

#### **Land Use, Property, and Access**

During the construction phase there are potential short-term nuisances such as dust and noise. To minimise nuisance for neighbours, the contractor will be required to operate in compliance with the Construction Environmental Management Plan (CEMP). The potential impact associated with land use and property for the construction phase will be *localised, negative, not significant* and short-term.

There will be a *negative, not significant* and *short-term* impact during the construction phase on the movement of pedestrians and parking space when the works areas are closed by site hoarding on the Quays and Suir Island simultaneously. During the construction, road-lane closures in Raheen Road will impact on road user which will be *negative, significant* and *short-term*.

Access to business and residential buildings located in the North Plaza will be maintained throughout the works which will have a *negative, not significant* and *short-term* impact on individuals located directly adjacent to the works.

Access to Raheen College will be maintained throughout the works which will have a *negative, not significant* and *short-term* impact on individuals working and attending the college.

#### **Power and Electrical Supply Infrastructure**

During construction, contractors will require power for heating and lighting of the site and their onsite accommodation. In addition, some on site equipment/plant will require power.

A construction compound and temporary power supply will be installed for the construction of the proposed development. No offsite parking is required. The power requirements for the construction phase will be relatively minor and therefore the power demand for the construction phase will have a *short-term, neutral* and *imperceptible* impact.

Excavations within the vicinity of existing electrical services will be carried out in consultation with ESB Networks to ensure there is no impact on existing users. The potential impacts associated with power supply infrastructure for the proposed development during the construction phase is considered to be *short-term, neutral* and *imperceptible*.

Telecommunications including internet will be required during the construction phase will be provided via a mobile connection. The potential impacts associated with telecommunications for the proposed development for the construction phase is considered to be *short-term, neutral* and *imperceptible*.

#### **Surface Water Infrastructure**

The contractor will be required to manage surface water as outlined in the construction surface water management plan included in the Construction Environmental Management Plan (CEMP). The design and control measures will ensure that run-off water containing silt or potential construction contaminants will be contained on site and dealt with accordingly.

The potential impacts associated with surface water run-off for the proposed development during the construction phase is *short-term, neutral* and *imperceptible*.

#### **Water Supply and Foul Drainage Infrastructure**

Welfare facilities (canteens, toilets etc.) will be required for the construction staff. Portable toilets will be provided onsite for construction staff. There are no potential impacts on the existing infrastructure associated with wastewater management for the proposed development for the construction phase.

During construction, a water source will be required for the duration of the works for welfare facilities, dust suppression and general construction activities. A temporary water connection to the existing network will be required for welfare facilities. Water used for construction activities will be restricted to water trucks filled from municipal standpipes of fire hydrants subject to the approval of the local authority.

It is concluded the potential impacts associated with wastewater and water supply for the proposed development for the construction phase are *short-term, neutral and imperceptible*.

### **Flood Protection Infrastructure**

The temporary works sheet piling around the 3 No. piers is shown on Drawing 20\_071-CSE-00-XX-DR-C-2460 included in Volume C – Drawings of the planning application suite of documents. For the proposed access route over the existing flood defence berm on Suir Island, a precast concrete culvert and localised sheet piling will be utilised to span the old millrace channel to reduce the footprint of the access route and maintain ecological water requirement flows through this sensitive area.

The sheet piling will be localised around each pier (c. 50m<sup>2</sup>) with access routes as shown on the drawing. The main purpose of the localised sheet piling is to:

- Provide protection against rising river water levels up to the 50% AEP levels plus an additional 300mm freeboard; and
- To minimise the ingress of groundwater into the works area and to reduce the volume of groundwater to be pumped, filtered and discharged during the construction phase.

The 50% AEP levels plus 300mm freeboard scenario was selected based on the inundation extents of more extreme events. For the 20% AEP event, the access routes to the pier locations will be inundated for all piers, which would require large-scale sheet piling and/or protection berms to be constructed. The foundation works in the floodplains shall only be permitted during summer months.

The effect of the proposed temporary structures (Drawing 20\_071-CSE-00-XX-DR-C-2460) on the existing flood water surface elevations (WSE) has been determined in the Hec-Ras model and analyses the worst-case scenario, i.e. all three temporary works areas in place at the same time.

For both the northern and southern river reaches, there is little to no variations in WSE when comparing the existing scenario (baseline) and the temporary works scenario, but with the reduction in flow area, the flow velocities increased by circa 14% to 18% and 5% to 11% for the northern and southern reaches, respectively, during extreme flooding events for the 1-in-100-year and 1-in-1000-year recurrence interval flood. Refer to the Hydraulic Modelling Report (RPT-20\_071-055) for more information.

Overall, the potential impact on flooding in the River Suir during the construction phase is *Negative, Imperceptible to Not significant and Temporary*.

### **11.5.2 Operational Phase**

#### **Land Use, Property, and Access**

During the operational phase the proposed development is not anticipated to generate significant air (including odour) and noise emissions during normal operating conditions; these have been discussed further in the respective EIAR chapters listed in **Section 11.2**.

The proposed development represents an improvement for pedestrians and local users by promoting sustainable transport methods, provides leisure facilities and increases accessibility from Denis Burke Park and local business and shops located in the town centre. The overall potential impacts associated the land use, property and access for the operation phase of the development will be *positive, significant and long-term*.

### **Power and Electrical Supply Infrastructure**

There is sufficient capacity available within the existing power supply network for the proposed lighting proposals of the bridge walkways, ramps and steps. The impacts of lighting proposals on biodiversity are detailed in Chapter 5 (Biodiversity/Species and Habitats) of the EIAR. Based on the availability of supply, there is a *long-term, neutral, not significant* effect on the electrical supply infrastructure during the operational phase of the proposed development

### **Surface Water Infrastructure**

The operational phase of the proposed development will result in a minimal increase in hardstanding area on Suir Island, which will negligibly increase surface water run-off. The proposed surface water pipeline and gullies will be connected to the existing surface water pump station located in the Suir Island car park. The minimal increase in hardstanding and subsequent increase in surface water run-off will not require any upgrading to the existing pump station.

For the proposed North Plaza and Raheen Road, the hardstanding area will not be increased by the proposed development. The proposed surface water networks will improve run-off loading and negate ponding which will be connected to the existing surface water pump stations located in Quay Street car park and near the intersection between Raheen Road and Old Bridge Road. Both pump stations discharge into the River Suir. Refer to the Planning Engineering Report (No. RPT-20\_071-059) for the design information in relation to the proposed surface water upgrades.

There is a *long-term, neutral, not significant* impact on surface water infrastructure during the operational phase of the proposed development.

### **Water Supply and Foul Drainage Infrastructure**

A pre-connection enquiry (PCE) application form has been submitted to Irish Water (IW) and consultation has confirmed that the connection to wastewater infrastructure is feasible without infrastructure upgrade by Irish Water. Further details are provided within the Planning Engineering Report (Report No. RPT-20\_071-059).

There is a *long-term, neutral, not significant* impact on foul water infrastructure during the operational phase of the proposed development.

### **Flood Protection Infrastructure**

The construction of the proposed bridge foundations and support piers within the existing flood plain has a negligible impact on existing flood water levels and will not significantly increase flood water levels upstream or downstream of the development. Refer to the Suir Island Hydraulic Modelling Report (Report No. RPT-20\_071-055) for details. The proposed northern bridge crossing will span the existing flood protection wall and demountable barrier system located along The Quays with a minimum vertical clearance of 300mm and the southern bridge landing will be integrated with the existing flood defence wall located in Raheen Road.

There is a *long-term, neutral, imperceptible* impact on surface water infrastructure during the operational phase of the proposed development.

## **11.6 Remedial and Mitigation Measures**

### **11.6.1 Construction Phase**

Construction of the proposed development will require connections to water supply and drainage infrastructure, power and telecommunications.

Continuous consultation with TCC, Irish Water and ESB Networks and other relevant service providers will ensure impacts on the existing infrastructure during the construction phase will be imperceptible.

The works contractor will be obliged to put best practice measures in place to ensure that there are no interruptions to utilities considered above, unless this has been agreed in advance.

#### **Power and Electrical Supply Infrastructure**

The power demand for the construction phase will be relatively minor and the connection works are entirely within proposed site boundaries, so it is not anticipated that this would have any significant potential offsite impact. As such, no remedial or mitigation measures are required in relation to power supply for the construction phase.

#### **Surface Water Infrastructure**

During the construction phase, any surface water run-off collecting in excavations or from exposed soil will likely contain a high sediment load. This will be diverted for appropriate settlement and will not be allowed to discharge directly to the existing ditches on site. Measures for protection of receiving waters are outlined in the CEMP provided with planning.

#### **Water Supply Infrastructure**

A connection will be put in place for the construction of the proposed development. The works contractor will be obliged to put best practice measures in place to ensure that there are no interruptions to the water supply, unless this has been agreed in advance. Strict quality control measures will be undertaken while laying pipes to minimise or eradicate infiltration and ex-filtration.

#### **Flood Protection Infrastructure**

Any temporary flood protection sheet piling works will be kept to a minimum and foundations works will be strictly contained to the summer months when the river levels and flood risk is low. No additional mitigation measures are proposed in terms of flood protection infrastructure.

#### **Foul Drainage Infrastructure**

Welfare facilities (canteens, toilets etc.) will be required for the construction staff. Portable toilets will be provided onsite for construction staff. Foul drainage for the proposed development will be in accordance with the Building Regulations Technical Guidance Document H for design and construction.

Strict quality control measures will be undertaken while laying pipes to minimise or eradicate infiltration and ex-filtration.

### **11.6.2 Operational Phase**

#### **Surface Water Infrastructure**

Surface water infrastructure has been designed in accordance with the Greater Dublin Strategic Drainage Study (GDSDS) manual completed in March 2005. No additional remedial and mitigation measures are required for the surface water infrastructure.

#### **Water Supply and Foul Drainage Infrastructure**

IW have agreed in principle that the wastewater and water requirements for the development can be accommodated, subject to application. No remedial or mitigation measures are required in relation to foul drainage or water supply infrastructure.

#### **Flood Protection Infrastructure**

The OPW have agreed in principle that the proposed development would not impact on existing flood defence infrastructure. No additional and remedial mitigation measures are required.

## 11.7 Residual Impacts

### 11.7.1 Construction Phase

The works contractor will be obligated to follow best practice measures to ensure that there are no interruptions to service from the existing telecommunications network, water supply, sewer (foul and storm) and electrical grid. Any planned interruptions will be agreed in advance with the utility suppliers. Strict quality control measures will be undertaken while laying pipes to minimise or eradicate infiltration and ex-filtration.

The implementation of mitigation measures within each chapter and detailed in **Section 11.6.1** will ensure that the residual impacts of the proposed development on material assets will be neutral, imperceptible, and short-term for the construction phase.

### 11.7.2 Operational Phase

The proposed development requires electrical power, water supply, surface water and foul water supply connections. Consultations have been undertaken with TCC, Irish Water and ESB Networks respectively, and confirmed availability of supply and/or spare capacity. These entities are responsible for the review of all developments within a local authority or area and assesses the combined impacts on existing and future infrastructure. As such, there will therefore be no significant impact on material assets to the wider economy or environment.

The implementation of mitigation measures within each EIAR Chapter and the measures detailed in **Section 11.6.2** will ensure that the residual impacts on the material assets during the operational phase will be *neutral, not significant and long-term*.

## 11.8 Cumulative Impact Assessment

This section allows for a qualitative description of the resultant specific direct, indirect, secondary, cumulative, short, medium, and long-term permanent, temporary, positive, and negative effects as well as impact interactions which the proposed development may have, assuming all mitigation measures are fully and successfully applied. A list of planned projects located within the potential zone of influence is summarised in Section 1.15 of EIAR Chapter 1 Introduction.

A proposal to develop Suir Island (Willow Island) Gardens as a public amenity. Within the red line site boundary, there is a development proposal adjacent to the Suir Island Infrastructure Links Scheme proposed development. The Suir Island Gardens proposed development is being submitted through the Part 8 planning application process. The nature and extent of the proposed development works at Suir Island Gardens will comprise of the provision of open lawns; landscape planting to include the provision of 40 new native trees along with herb and shrub planting; seating and picnic areas; provision of both hard and soft pathways; new entrance gate and associated cladding on adjoining walls; formal and informal children's play areas throughout the site; securing of Suir Island House (a Protected Structure) with decorative grills at ground floor level; external feature lighting fitted to walls of Suir Island House (a Protected Structure); ancillary site development works that shall include site drainage for the hard landscaped areas, provision of water supply for the play area and wash down purposes, provision of electrical supply for the external feature lighting, and removal and reconstruction of a short section of boundary wall and all associated site works.

### 11.8.1 Construction Phase

If unregulated, predicted impacts associated with the construction phase of the proposed development and the Suir Island Gardens project would be expected to include potential disruption to local natural and human material assets resulting in both short-term and long-term impacts. The implementation of the mitigation measures set out in this Chapter and other Chapters of the EIAR document would ensure



that there is unlikely to be any significant residual impact during the construction phase. Therefore, impacts are likely to be *neutral, not significant, and short-term*.

### 11.8.2 Operation Phase

The proposed development in unison with the Suir Island Gardens project will have a positive impact on the existing urban environment by increasing accessibility from Denis Burke Park to Clonmel Town Centre and will promote the use of sustainable transport methods for local users. The proposal will complement the permitted uses on the site, currently being delivered, and other emerging development proposals in the area.

The inclusion of the proposed foul pumping station on Suir Island will provide Irish Water with the facilities to remove the existing septic tanks with overflows to the River Suir and enable connections from Suir Island to the greater foul water network system. Residual predicted impacts on this infrastructure are likely to be *long-term* and *positive*. Irish Water has confirmed the feasibility of connecting to the existing foul network located in the Quays.

The proposed development has been designed to comply with the provision of best-practice SuDS guidelines and is therefore unlikely to have any residual impacts in terms of the impact on surface water drainage infrastructure.

The proposed development is unlikely to have any significant impact on the local water supply and electricity supply networks and the overall impact with respect to these utilities can be described as *long-term* and *neutral*.

Overall, the impact of the proposed development on Built Services is considered to be *neutral, not significant, and permanent*.

### 11.9 Difficulties Encountered

There were no difficulties associated with this assessment.

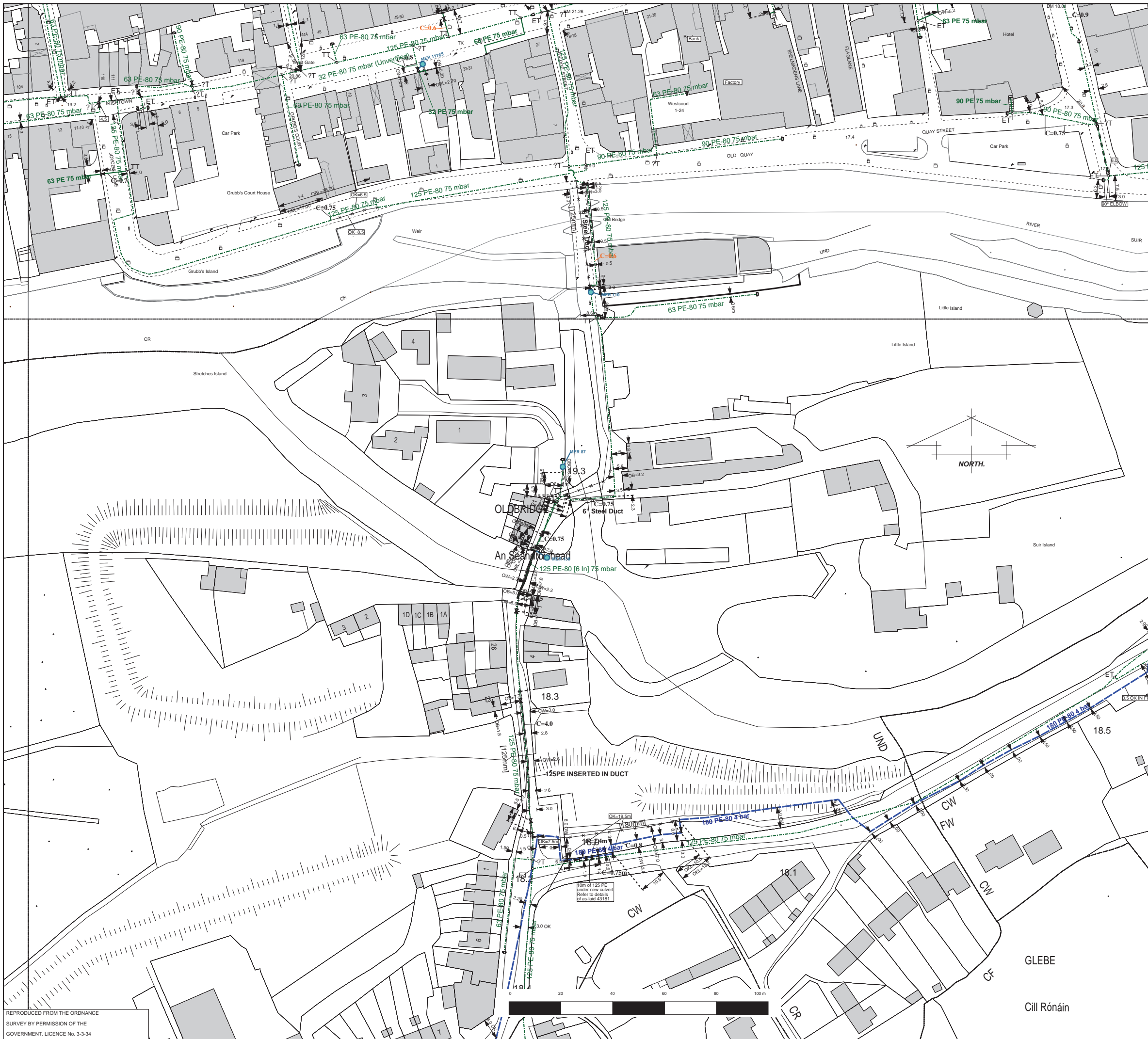
### 11.10 References

- Ciria Report C753 The SuDS Manual;
- Department of Housing, Local Government and Heritage (DHLGH) Nature-based Solutions to the Management of Rainwater and Surface Water Runoff in Urban Areas Water Sensitive Urban Design Best Practice Interim Guidance Document;
- Environmental Protection Agency (EPA) – Surface Water Quality, Water Features and Regions and Monitoring Stations;
- EPA – Catchments Data;
- EPA (Environmental Protection Agency) Guidelines on the Information to be contained in Environmental Impact Assessment Reports, May 2022;
- Floodmaps.ie – Flood Mapping;
- Irish Water (IW) Code of Practice for Wastewater Infrastructure (IW-CDS-5030-03) Irish Water Code of Practice for Water Infrastructure (IW-CDS-5020-03);
- NRA (TII) Environmental Impact Assessment of National Road Schemes – A Practical Guide, November 2008;
- NRA (TII) Guidelines for Assessment of Ecological Impacts of National Roads Schemes, Revision 2, June 2009;
- NRA (TII) Guidelines for the crossing of watercourses during the construction of National Road Schemes, (2008);
- NRA (TII) Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes, (2009);

- OPW The National CFRAM Programme Flood Risk Management Plan for River Basin Suir (16), (2018);
- OPW The National Preliminary Flood Risk Assessment (PFRA), Designation of Areas for Further Assessment, March 2012;
- OPW The National Preliminary Flood Risk Assessment (PFRA), Overview Report, March 2012;
- OPW The Planning System and Flood Risk Management, Guidelines for Planning Authorities, November 2009;
- The Greater Dublin Strategic Drainage Study (GDSDS) published in March 2005;
- Transport Infrastructure Ireland (TII) Determination of Pipe and Bedding Combinations for Drainage Works DN-DNG-03070 (including Amendment No. 1 dated June 2015);
- Transport Infrastructure Ireland (TII) Rural Cycleway Design (Offline and Greenways) DN-GEO-03047 published in August 2022;
- Transport Infrastructure Ireland (TII) Spacing of Road Gullies DN-DNG-03067 (including Amendment No. 1 dated June 2015);
- Transport Infrastructure Ireland (TII) various Standard Construction Details for drainage, watermains, stonemasonry walls and pedestrian road crossings.

## Appendix 11.1: Existing Built Service Drawings





**Important Safety Notice:**  
 Damage to gas pipelines can result in serious injury or death. Gas network information is provided as a general guide. The exact location and depth of medium or low pressure distribution gas pipes must be verified on site by carrying out necessary investigations, including, for example, hand digging trial holes along the route of the pipe.  
 Service pipes are not generally shown but their presence should always be anticipated.

High pressure transmission pipelines are shown in red. If a transmission pipeline is identified within 10m of any intended excavations then work must not proceed before GNI has been consulted. The true location and depth of a transmission pipeline must be verified on site by a representative of GNI. Contact can be made through 1850 427 747.

All work in the vicinity of the gas network must be completed in accordance with the current edition of the Health & Safety Authority publication, A Code of Practice For Avoiding Danger From Underground Services<sup>A</sup> which is available from the Health and Safety Authority (1890 289 389) or can be downloaded at www.hsa.ie.

**Legal Notice:**  
 Gas Networks Ireland (GNI) and its affiliates, accept no responsibility for the accuracy of any information contained in this document including data concerning location and technical designation of the gas distribution and transmission network (the A Information<sup>A</sup>). The Information should not be relied on for accurate distance or depth of cover measurements.

Any representations and warranties, express or implied, are excluded to the fullest extent permitted by law. No liability shall be accepted for any loss or damage including, without limitation, direct, indirect or consequential loss, arising out of or in connection with the use or re-use of the Information.

- Aurora Telecom Fibre Optic Cable
- Aurora Telecom Duct
- Aurora Telecom Sub-duct
- Aurora Telecom Inserted Gas Pipe

Contact Aurora Telecom on 1850-427-399 or (01)203-0120.

- Transmission Pipe (High Pressure)
- Transmission Pipe (Construction Issue)
- Distribution Pipe (Medium Pressure)
- Distribution Pipe (Low Pressure)
- Service Pipe (Medium Pressure)
- Service Pipe (Low Pressure)
- Strategic Pipe (Medium Pressure)
- Strategic Pipe (Low Pressure)
- Inserted Pipe (Medium Pressure)
- Inserted Pipe (Low Pressure)
- Distribution Pipe (Abandoned)

- Cover (depth in meters)
- CP Test Point
- End Cap
- Hot Tap
- Installation
- Valve
- Mains Verification \*\*
- Pressure Monitor
- Protection (Sleeve)
- Protection (Slabbing)
- Reducer
- Service Terminator
- Tee
- Transition

\*\* Please contact GNI on 1850-427747 for specific information.

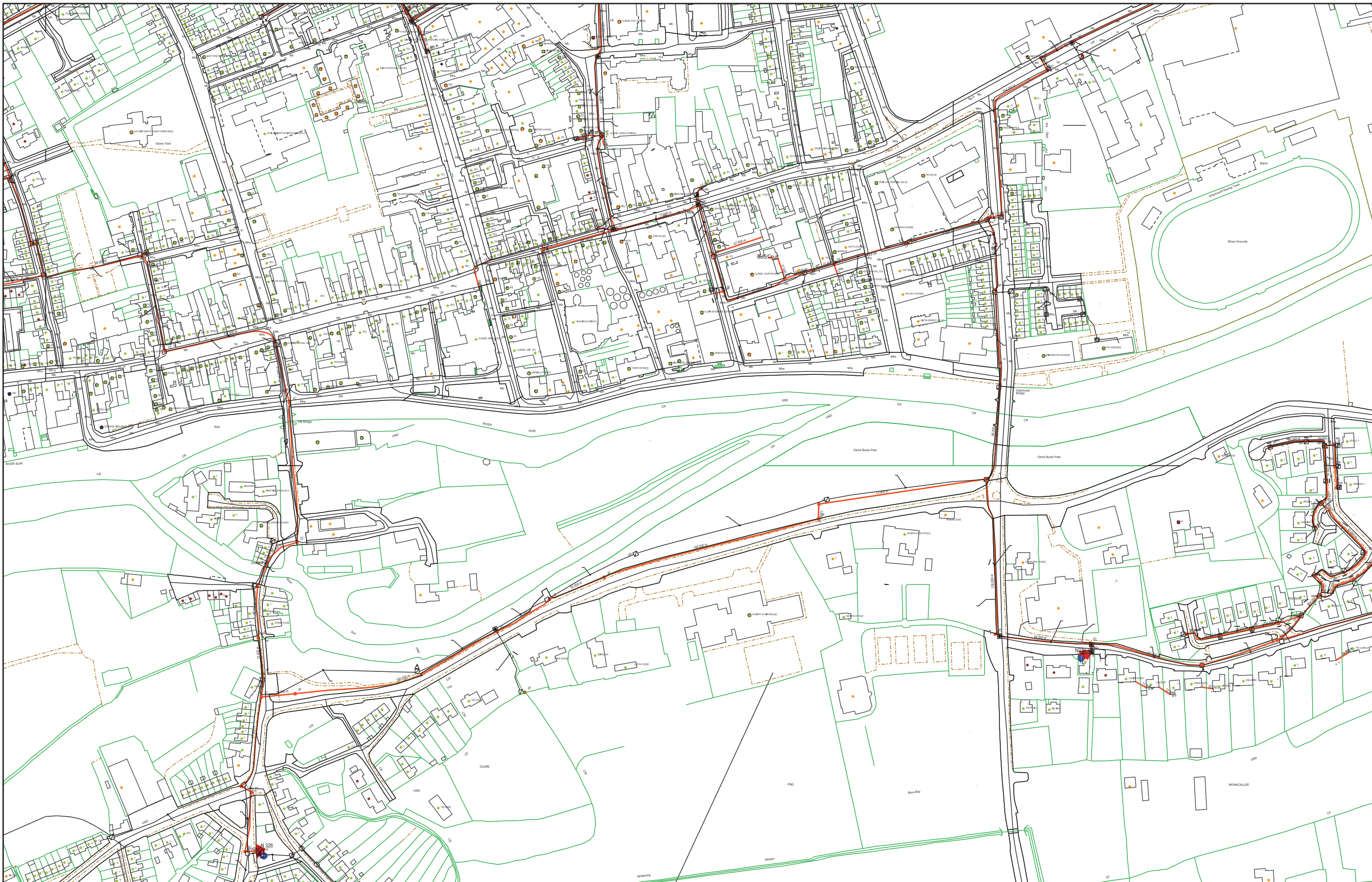
Design Department - DUBLIN

**GAS NETWORK INFORMATION**

Issue:	CSEA Constl Eng		
Location:	Little Island, Raheen Rd		
Plot Date:	13/08/2020	Contact:	K.Crowley
Plotted by:	rm	Scale:	1:1000

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Ballymount,  
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PROJECT NAME  
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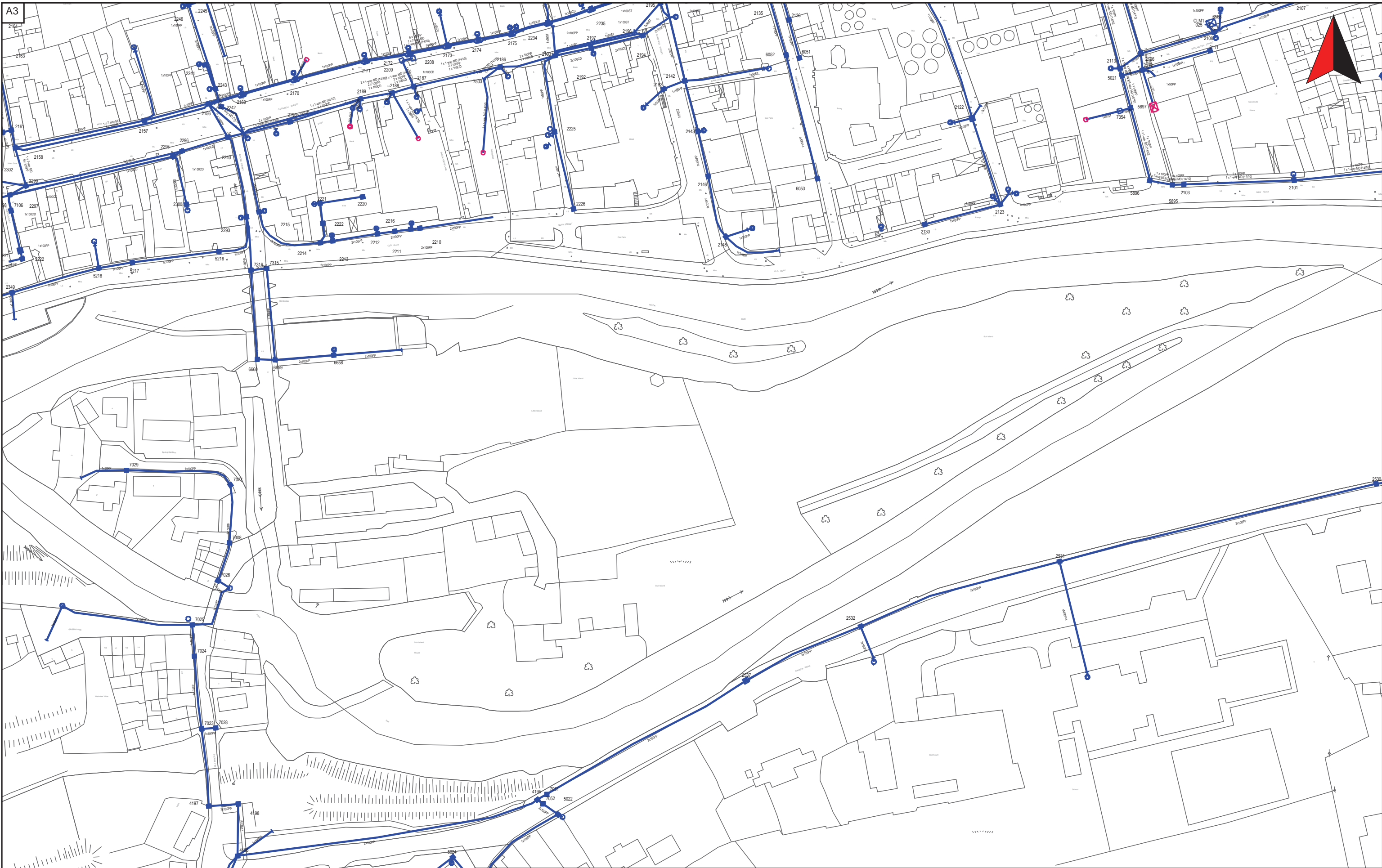
Produced on: 17/08/2020



@ A3







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<https://cbyd.emaps.eircom.ie/>

Scale: 1:1500

Irish National Grid Co-Ordinates  
Centre XY: 220404 m, 122156 m

Date  
12/08/2020

emaps CBYD

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**Description of Works:**

Suir Island Infrastructure

**Project Reference:**

20\_071

**Customer Name:** Kevin Crowley

**Company:** CSEA

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**LEGEND**

- DUCT
- THIRD PARTY DUCT
- THIRD PARTY CHAMBER
- CARRIAGEWAY CHAMBER (CW1)
- CARRIAGEWAY CHAMBER (CW2)
- CARRIAGEWAY CHAMBER (CW3)
- VERGECHAMBER (VW1)
- VERGE CHAMBER (VW2)
- VERGE CHAMBER (VW3)
- FOOTWAY CHAMBER (FW1)
- FOOTWAY CHAMBER (FW2)
- FOOTWAY CHAMBER (FW3)
- CHAMBER LXXX
- SWEPT T SWTXXX
- CAP END CPXXX
- SPLICE POINT
- LOOPJOINT
- SPECIAL ENGINEERING DIFFICULTY
- SWEPT TEE
- SHEET SCHEMATIC
- nnn
- CPnnn CUSTOMER PREMISES
- NOTES: ALL DUCTS AT STANDARD DEPTH 600mm IN CARRIAGEWAY 450mm IN FOOTWAY/GRASS UNLESS OTHERWISE SHOWN eg
- 350
- DUCT CONFIGURATION (4 X 110mm WITH 1 DUCT SUBDUCTED)
- COR1CH00\_nnn-00\_nnn





Drawing Produced: 25/08/2020 16:00

Description of Works:

Suir Island Infrastructure

Project Reference:

20\_071

Customer Name: Kevin Crowley

Company: CSEA

Disclaimer:

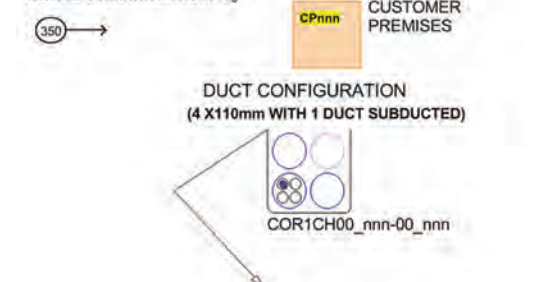
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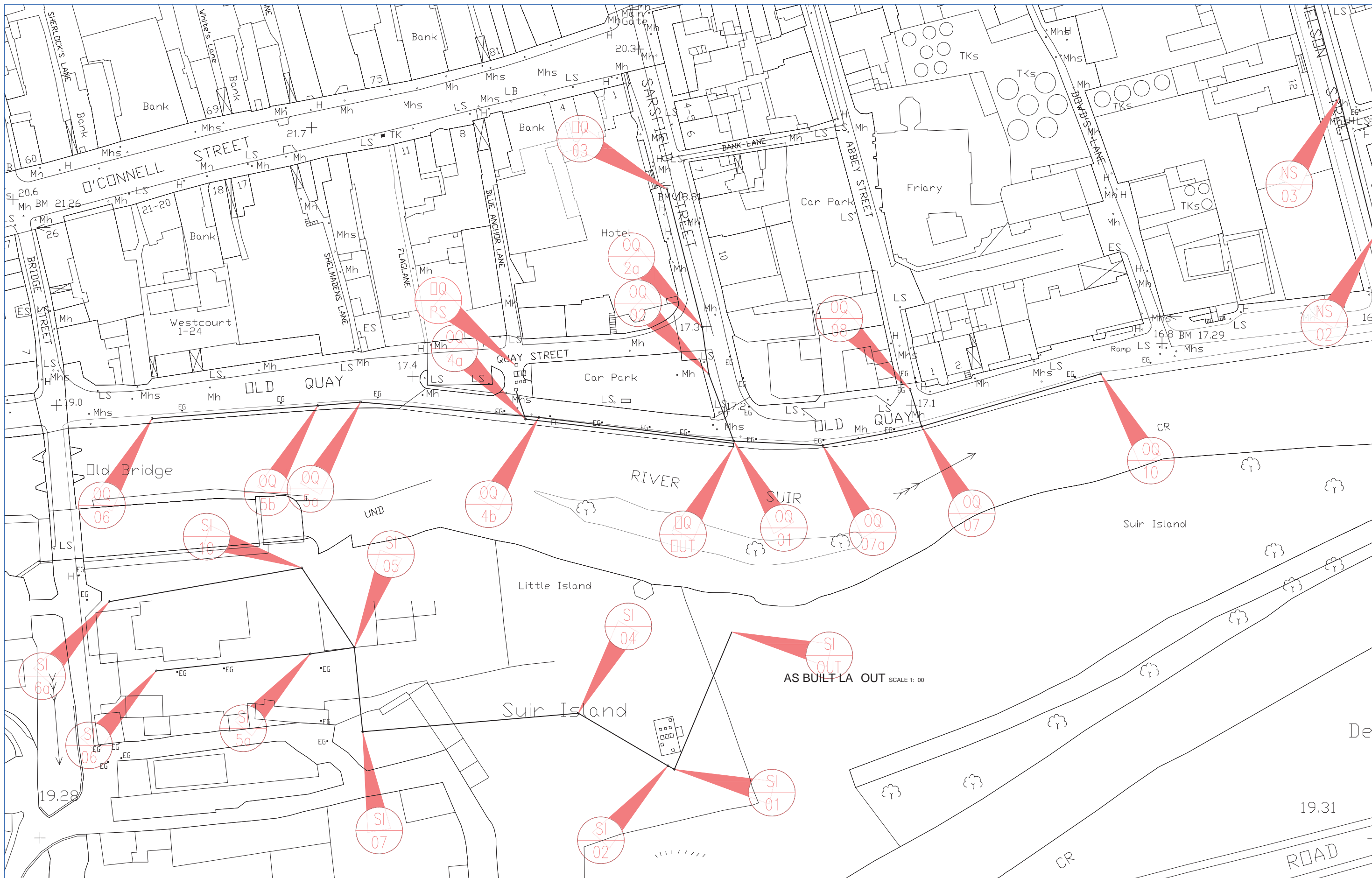
LEGEND

- DUCT
- THIRD PARTY DUCT
- THIRD PARTY CHAMBER
- CARRIAGEWAY CHAMBER (CW1)
- CARRIAGEWAY CHAMBER (CW2)
- CARRIAGEWAY CHAMBER (CW3)
- VERGECHAMBER (VW1)
- VERGE CHAMBER (VW2)
- VERGE CHAMBER (VW3)
- FOOTWAY CHAMBER (FW1)
- FOOTWAY CHAMBER (FW2)
- FOOTWAY CHAMBER (FW3)
- CHAMBER LXXX
- SWEPT T SWTXXX
- CAP END CPXXX
- SPLICE POINT
- LOOPJOINT
- SPECIAL ENGINEERING DIFFICULTY
- SWEPT TEE

NOTES:  
ALL DUCTS AT STANDARD DEPTH  
600mm IN CARRIAGEWAY  
450mm IN FOOTWAY/GRASS  
UNLESS OTHERWISE SHOWN eg







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No.	Date	Amendment / Issue	App
14/02/14		SECTIONS	NC

Client  
**South Tipperary County Council**

Drawn By  
 NC

Checked By

Approved By

Date  
 12/02/14

Project  
**RIVER SUIR (CLONMEL) DRAINAGE SCHEME**

Scale / Sheet Size  
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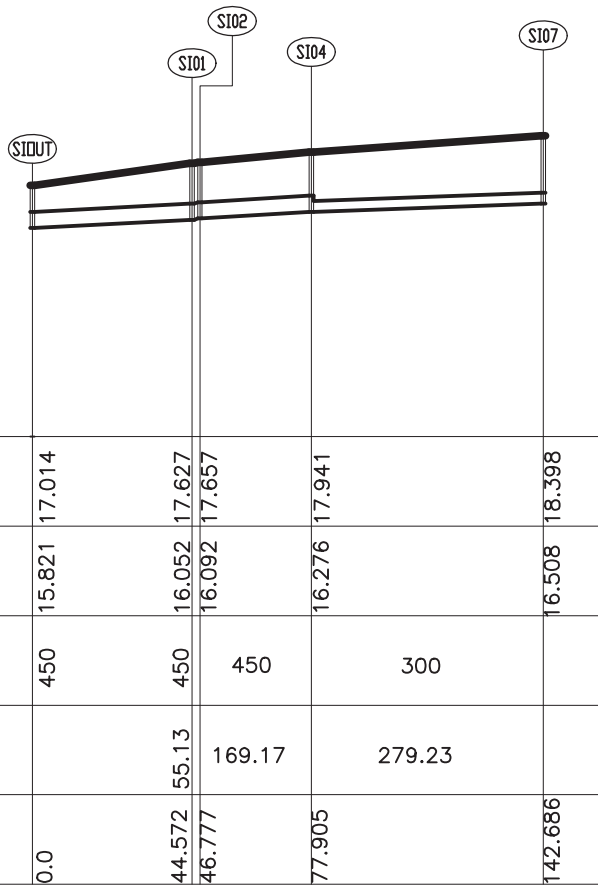
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**1401-01**

Rev  
 -

Title  
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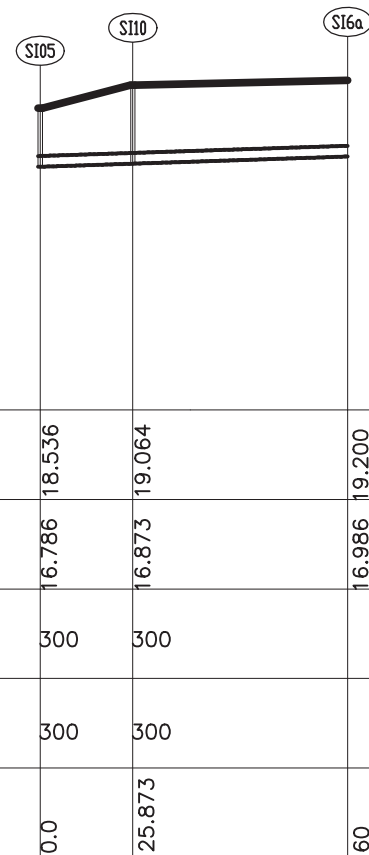
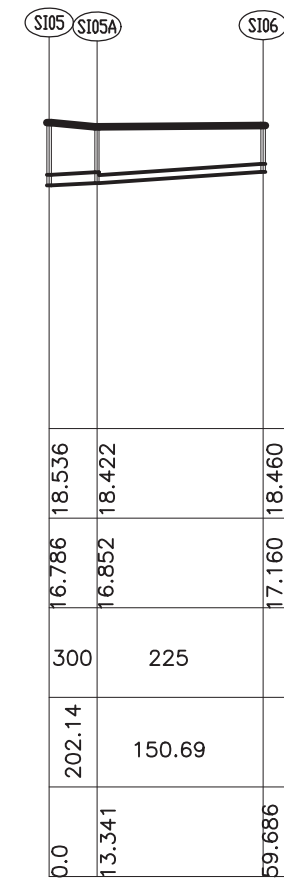






DATUM +10.00

COVER/GROUND LEVEL	17.014	17.627	17.657	17.941	18.398
INVERT LEVEL	15.821	16.052	16.092	16.276	16.508
PIPE DIAMETER	450	450	450	300	
GRADIENT		55.13	169.17	279.23	
CHAINAGE (M)	0.0	44.572	46.777	77.905	142.686



DATUM +10.00

COVER/GROUND LEVEL	18.536	19.064	19.200
INVERT LEVEL	16.786	16.873	16.986
PIPE DIAMETER	300	300	
GRADIENT	300	300	
CHAINAGE (M)	0.0	25.873	60

LONGITUDINAL SECTIONS THROUGH STORM DRAINAGE SCALES: HORZ. 1:1000 & VERT 1:100



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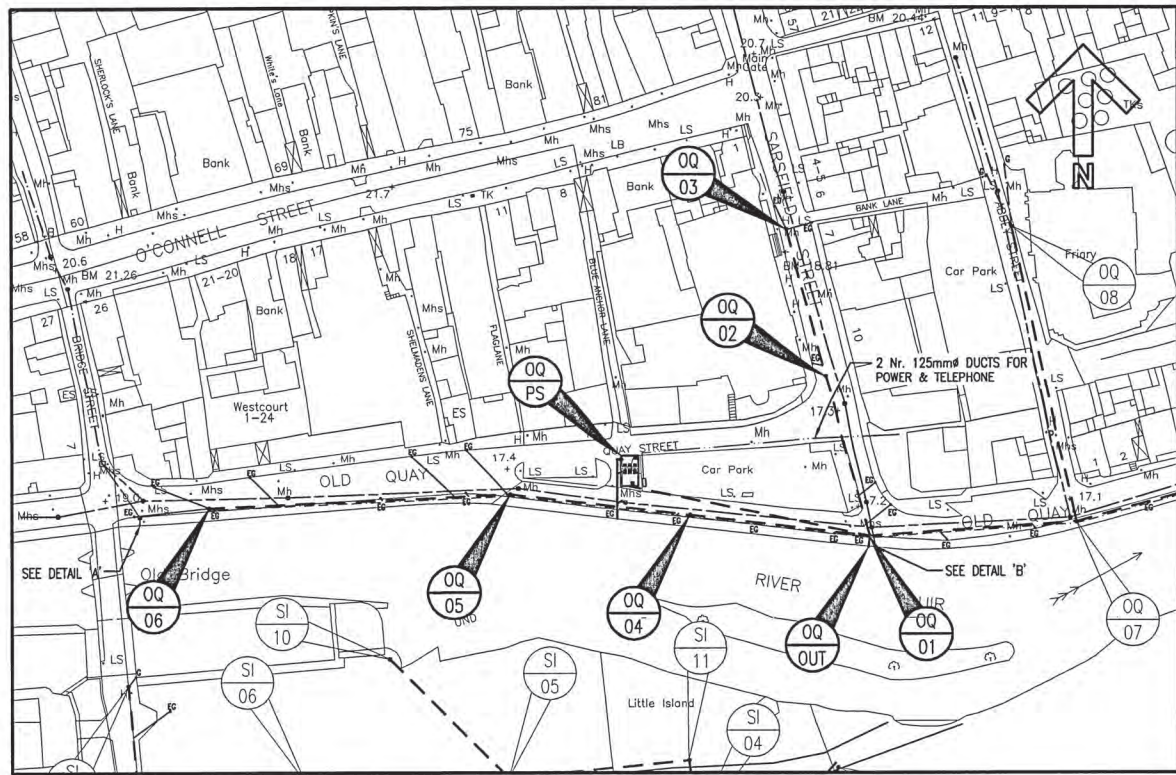
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Client	OPW
Drawn By	NC
Checked By	
Approved By	
Date	12/02/14

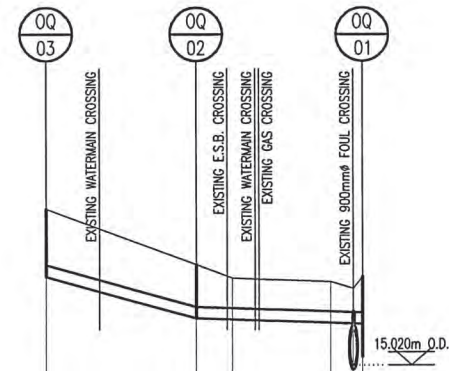
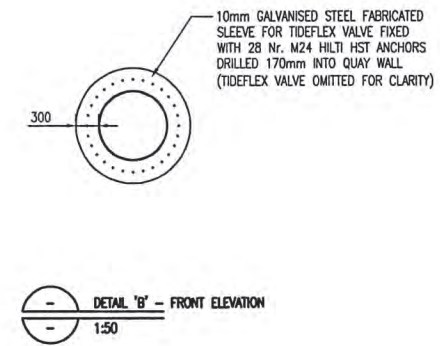
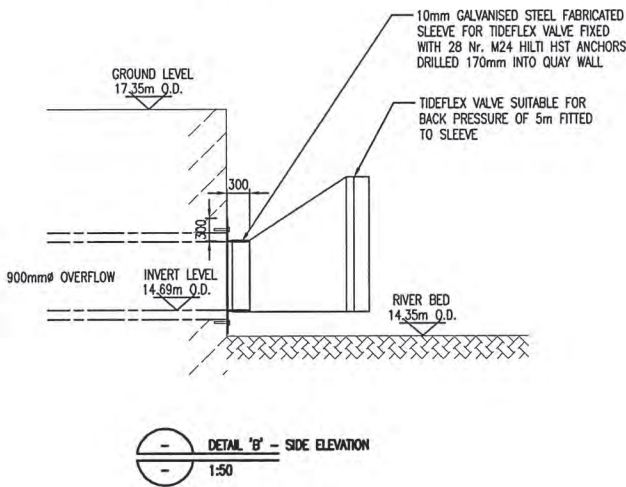
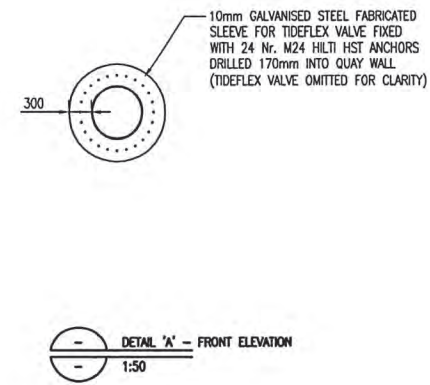
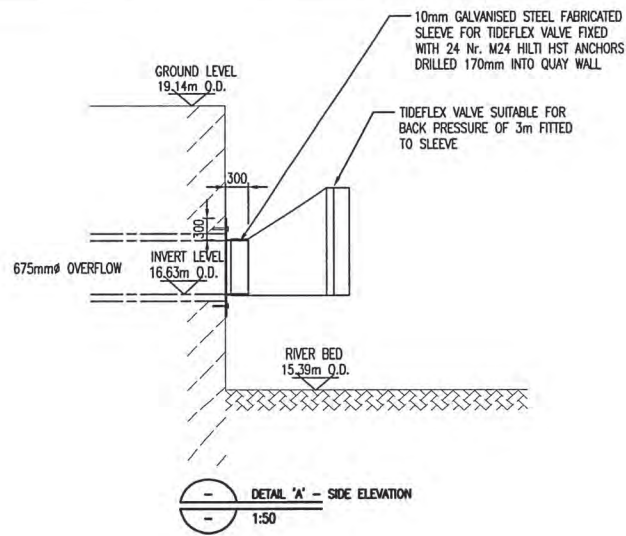
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Scale / Sheet Size	AS SHOWN @ A1

Drawing Number	1401-17	Rev	-
Title			
SECTIONS			



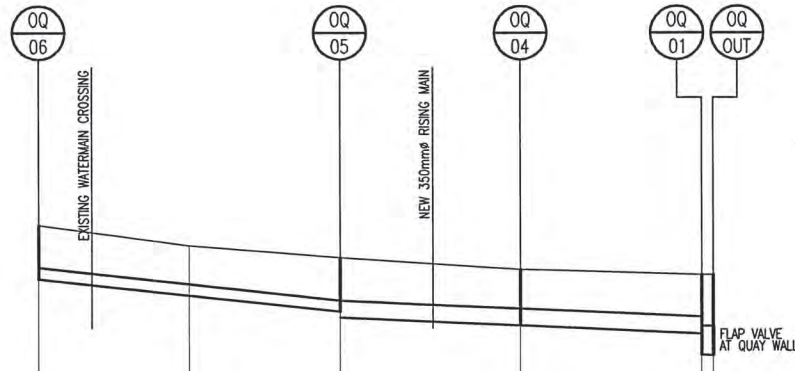


LOCATION PLAN  
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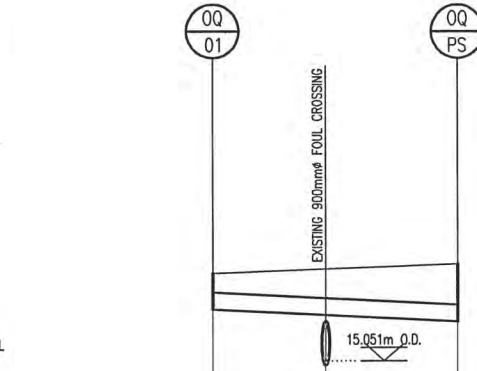
VERTICAL SCALE 1:100  
HORIZONTAL SCALE 1:1,000  
DATUM 10m O.D.  
(MALIN HEAD)

GROUND LEVEL	19.110	17.651	17.300	17.200	17.033	17.348
INVERT LEVEL	17.331	16.244	17.300	16.097	15.241	17.348
PIPE DIAMETER		300				
GRADIENT		37		300		
CHAINAGE	0.0	39.9	49.5	75.6	81.6	84.0



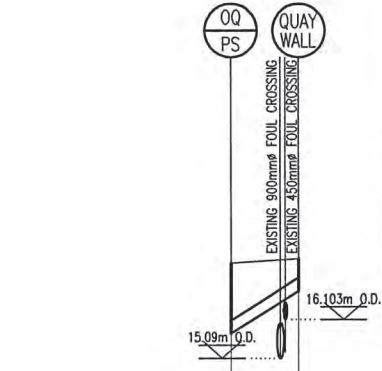
VERTICAL SCALE 1:100  
HORIZONTAL SCALE 1:1,000  
DATUM 10m O.D.  
(MALIN HEAD)

GROUND LEVEL	18.650	18.109	17.794	17.482	17.348	17.348
INVERT LEVEL	17.237	16.381	16.231	16.008	15.241	15.236
PIPE DIAMETER		300		450	-750	
GRADIENT		93		215	-600	
CHAINAGE	0.0	40.0	80.0	128.0	176.0	179.0



VERTICAL SCALE 1:100  
HORIZONTAL SCALE 1:1,000  
DATUM 10m O.D.  
(MALIN HEAD)

GROUND LEVEL	17.348		17.348	17.586
INVERT LEVEL	16.400	16.25	16.075	17.586
PIPE DIAMETER		600		
GRADIENT		200		
CHAINAGE	0.0	30	65.0	



VERTICAL SCALE 1:100  
HORIZONTAL SCALE 1:1,000  
DATUM 10m O.D.  
(MALIN HEAD)

GROUND LEVEL	17.596	17.700
INVERT LEVEL	15.730	16.867
PIPE DIAMETER	350 DUCTILE IRON	
GRADIENT	-15.8	
CHAINAGE	0.0	18.0

Notes



KEY PLAN  
SCALE 1:10,000

- LEGEND:
- FOUL SEWER EXISTING
  - STORM SEWER EXISTING
  - STORM SEWER PROPOSED
  - COMBINED SEWER EXISTING
  - LANDDRAIN
  - EXISTING GULLY TO BE REVISED
  - NEW GULLY

ISSUED FOR TENDER

B	18.12.09	OPW	ISSUED FOR TENDER	BO'CO F/2
A	23.10.09	RSEW	ISSUED FOR APPROVAL	BO'CO DHIC
Rev	Date	Drawn	Description	Ch'k'd App'd

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www.mottmac.com

Client  
**OPW**  
OFFICE OF PUBLIC WORKS  
ENGINEERING SERVICES  
51 St. STEPHENS GREEN  
DUBLIN 2

Title  
**SUIR RIVER (CLONMEL NORTH & EAST)  
DRAINAGE SCHEME  
CIVIL WORKS CONTRACT**

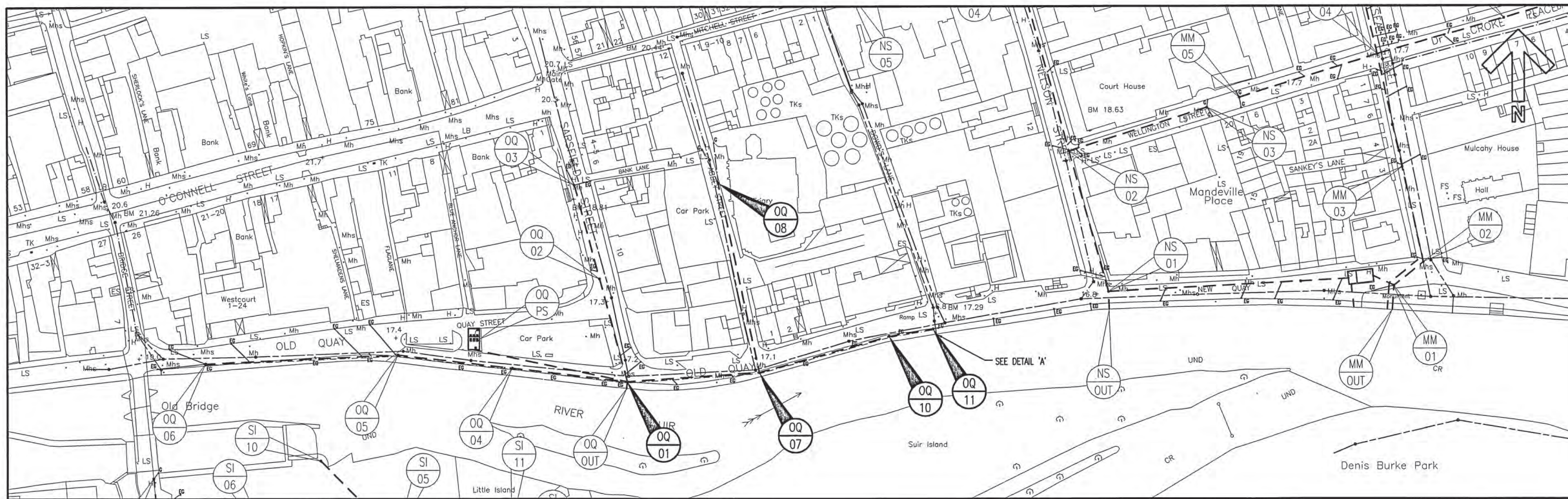
PROPOSED STORM WATER DRAINAGE  
OLD QUAY 1 OF 2

Designed	B O'Connor	Eng.Chk.	N Smyth
Drawn	R Seward	Coordination	
Dwg.Chk.	N Smyth	Approved	D Hickey

Scale as A1	Project A5243	Status	TEN
AS SHOWN	CAD file 5243C064		
Drawing No	A5243-C064	Rev	B

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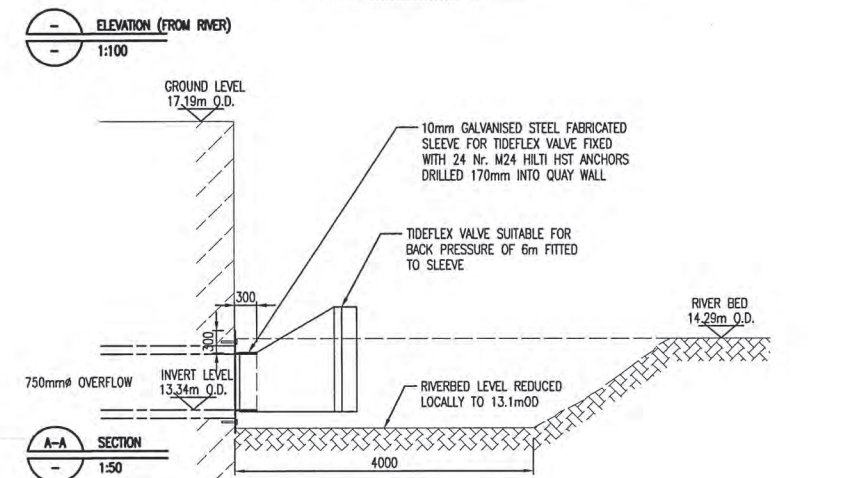
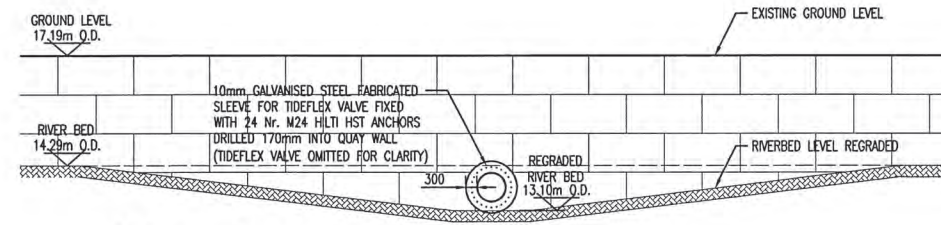
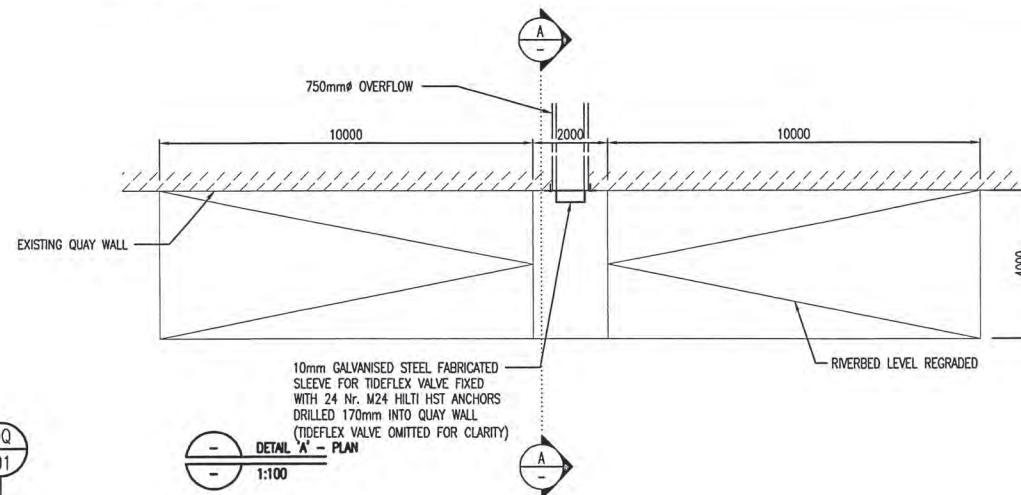
Notes



KEY PLAN  
SCALE 1:10,000

- LEGEND:
- FOUL SEWER EXISTING
  - STORM SEWER EXISTING
  - STORM SEWER PROPOSED
  - COMBINED SEWER EXISTING
  - LANDRAIN
  - EXISTING GULLY TO BE REVISED EG
  - NEW GULLY G

NOTE:  
OUTLETS FROM EXISTING GULLIES TO BE DECOMMISSIONED BY FILLING THEM WITH CONCRETE TO THE QUAY WALL.



VERTICAL SCALE 1:100  
HORIZONTAL SCALE 1:1,000  
DATUM 10m O.D. (MALIN HEAD)

GROUND LEVEL	18.965	17.033
INVERT LEVEL	17.866	16.018
PIPE DIAMETER	225	
GRADIENT	43	
CHAINAGE	0.0	78.5

VERTICAL SCALE 1:100  
HORIZONTAL SCALE 1:1,000  
DATUM 10m O.D. (MALIN HEAD)

GROUND LEVEL	17.050	17.086	16.978	17.348
INVERT LEVEL	15.650	15.613	15.501	15.241
PIPE DIAMETER			600	
GRADIENT			500	
CHAINAGE	0.0	18.5	74.5	129.5

ISSUED FOR TENDER

Rev	Date	Drawn	Description	Ch'kd	App'd
B	18.12.09	BOAL	ISSUED FOR TENDER		
A	23.10.09	RSEW	ISSUED FOR APPROVAL	BO'CO	DHIC

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OFFICE OF PUBLIC WORKS  
ENGINEERING SERVICES  
51 St. STEPHENS GREEN  
DUBLIN 2

Title

SUIR RIVER (CLONMEL EAST)  
DRAINAGE SCHEME  
CIVIL WORKS CONTRACT

PROPOSED STORM WATER DRAINAGE  
OLD QUAY 2 OF 2

Designed	B O'Connor	Eng.Chk.	N Smyth
Drawn	R Seward	Coordination	
Dwg.Chk.	N Smyth	Approved	D Hickey

Scale at A1  
AS SHOWN

Project A5243  
CAD file 5243C065

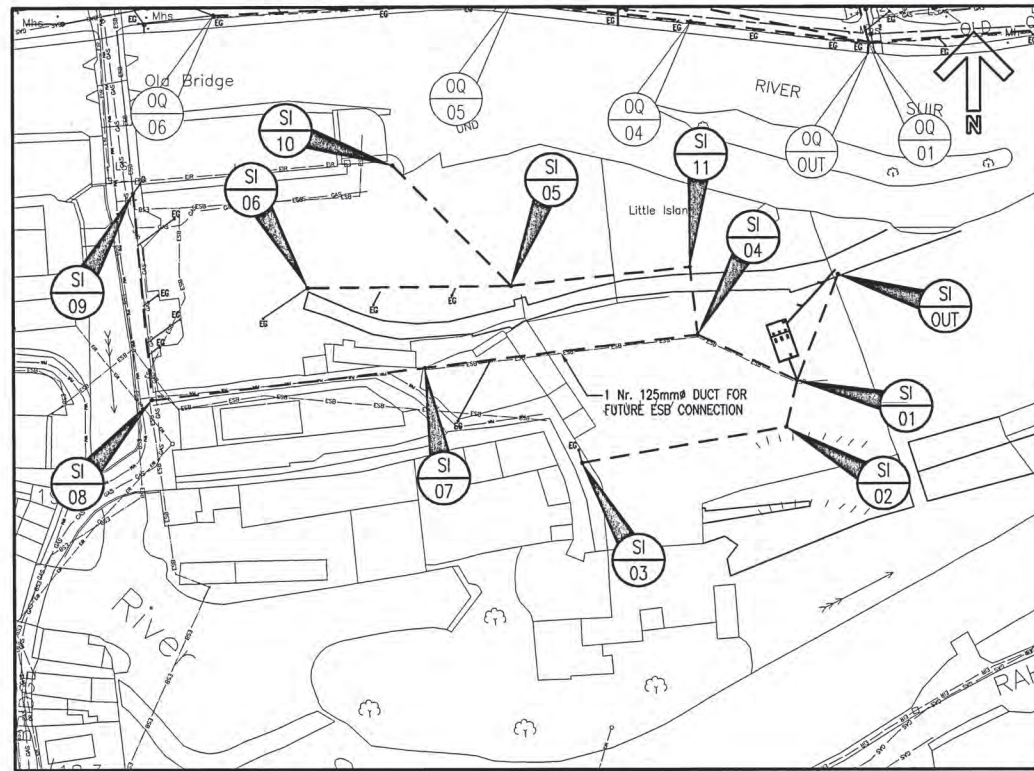
Status  
TEN

Drawing No A5243-C065

Rev B

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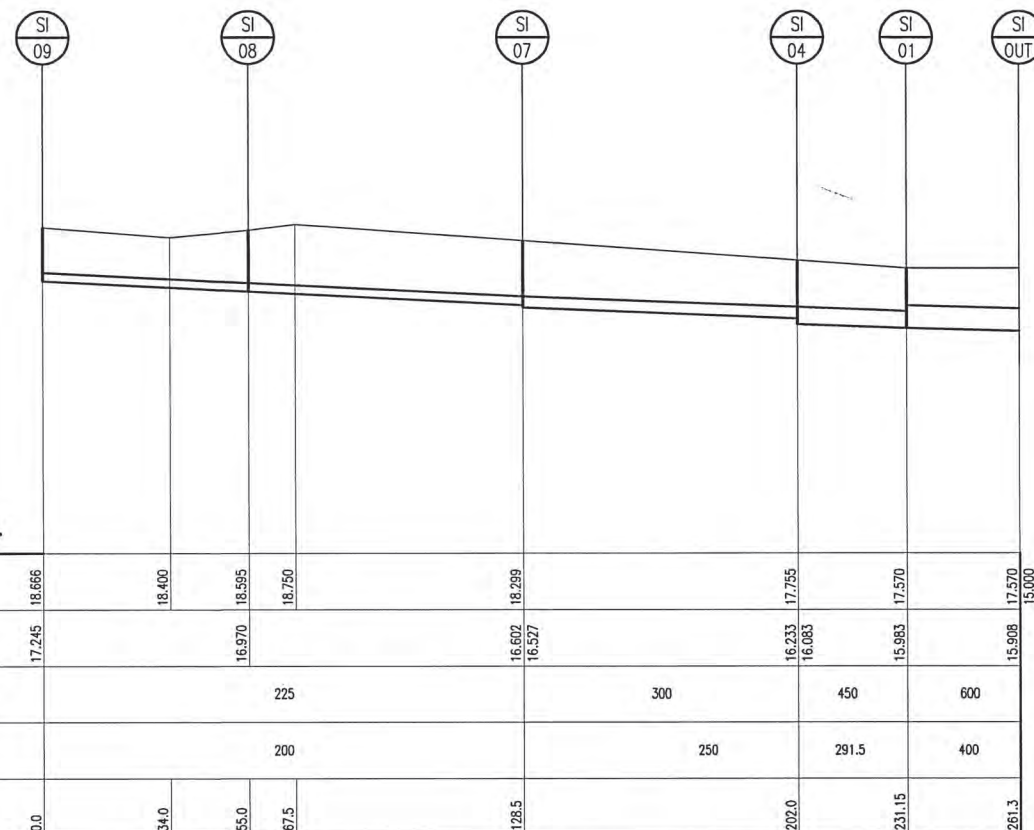
LOCATION PLAN  
SCALE 1:1,000

VERTICAL SCALE 1:100  
HORIZONTAL SCALE 1:1,000  
DATUM 10m O.D.  
(MALIN HEAD)

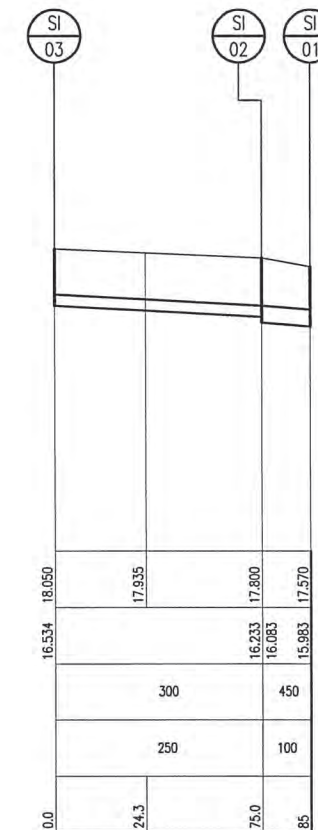
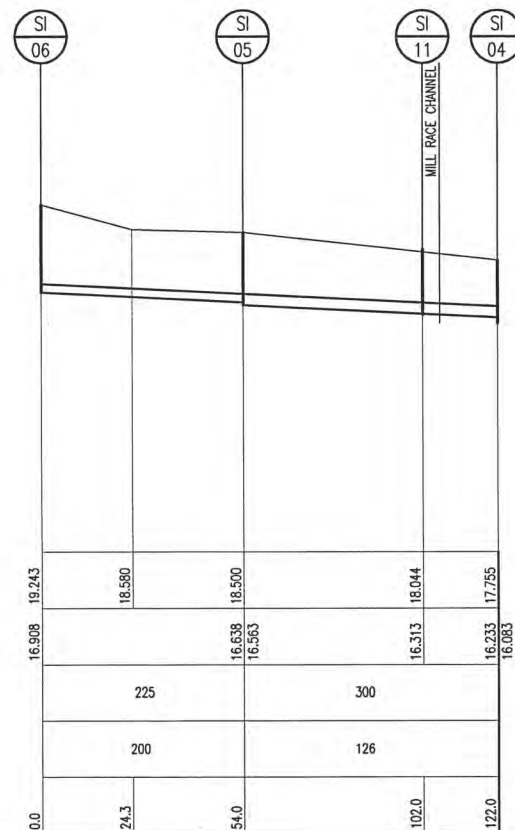
GROUND LEVEL	18.590	18.590
INVERT LEVEL	16.818	16.638
PIPE DIAMETER	300	
GRADIENT	250	
CHAINAGE	0.0	45.0

VERTICAL SCALE 1:100  
HORIZONTAL SCALE 1:1,000  
DATUM 10m O.D.  
(MALIN HEAD)

GROUND LEVEL	17.200	17.200	17.570	15.000
INVERT LEVEL	16.050	16.000	15.100	15.900
PIPE DIAMETER	450		300 D.I.	
GRADIENT	100		-31	
CHAINAGE	0.0	5.0	25.0	



VERTICAL SCALE 1:100  
HORIZONTAL SCALE 1:1,000  
DATUM 10m O.D.  
(MALIN HEAD)



Notes



KEY PLAN  
SCALE 1:10,000

LEGEND:

FOUL SEWER EXISTING	---
STORM SEWER EXISTING	---
STORM SEWER PROPOSED	---
COMBINED SEWER EXISTING	---
EXISTING GULLY TO BE REVISED	EG
NEW GULLY	G

ISSUED FOR TENDER

Rev	Date	Drawn	Description	Ch'kd	App'd
B	18.12.09	DOAL	ISSUED FOR TENDER		
A	23.10.09	RSEW	ISSUED FOR APPROVAL	BO'CO	DHIC

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51 St. STEPHENS GREEN  
DUBLIN 2

Title

SUIR RIVER (CLONMEL NORTH & EAST)  
DRAINAGE SCHEME  
CIVIL WORKS CONTRACT

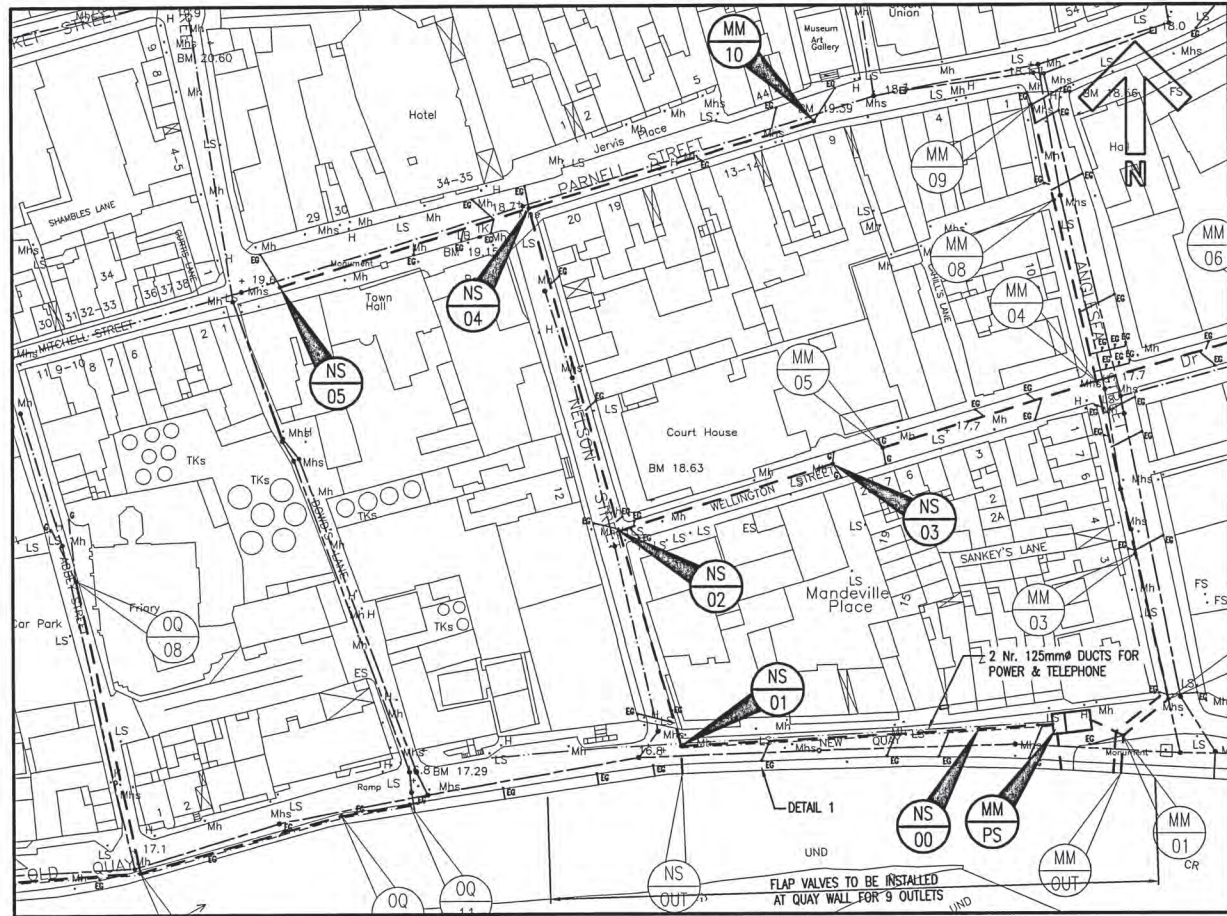
PROPOSED STORM WATER DRAINAGE  
SUIR ISLAND

Designed	B O'Connor	Eng.Chk.	N Smyth
Drawn	R Seward	Coordination	
Dwg.Chk.	N Smyth	Approved	D Hickey
Scale at A1	Project	A5243	Status
AS SHOWN	CAD file	5243C066	TEN
Drawing No	A5243-C066		Rev
			B

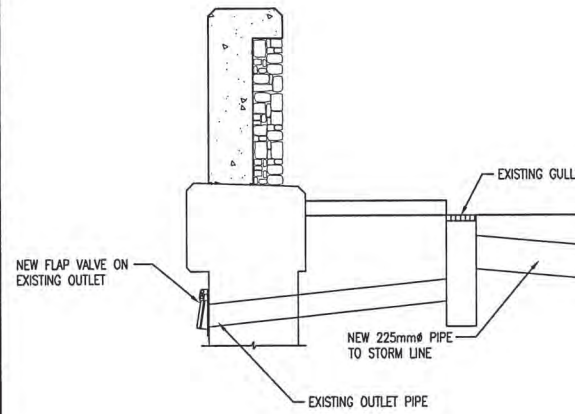
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LOCATION PLAN  
SCALE 1:1,000



ELEVATION OF DETAIL 1  
SCALE 1:25  
CONNECTION BETWEEN EXISTING GULLIES  
AT QUAY WALL AND NEW STORM SYSTEM  
5 Nr. THUS

	MM 10	NS 04
GROUND LEVEL	18.450	18.700
INVERT LEVEL	17.500	17.150
PIPE DIAMETER	300	
GRADIENT	228	
CHAINAGE	0.0	80.0

VERTICAL SCALE 1:100  
HORIZONTAL SCALE 1:1,000  
DATUM 10m O.D.  
(MALIN HEAD)

Notes



KEY PLAN  
SCALE 1:10,000

LEGEND:  
FOUL SEWER EXISTING  
STORM SEWER EXISTING  
STORM SEWER PROPOSED  
COMBINED SEWER EXISTING  
LANDDRAIN  
EXISTING GULLY TO BE REUSED  
NEW GULLY

ISSUED FOR TENDER

Rev	Date	Drawn	Description	Ch'k'd	App'd
B	18.12.09	DUAL	ISSUED FOR TENDER	96-60	F/26
A	23.10.09	RSEW	ISSUED FOR APPROVAL	BO'CO	DHIC



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ENGINEERING SERVICES  
51 St. STEPHENS GREEN  
DUBLIN 2

Title  
SUIR RIVER (CLONMEL NORTH & EAST)  
DRAINAGE SCHEME  
CIVIL WORKS CONTRACT

PROPOSED STORM WATER DRAINAGE  
NELSON STREET

Designed	B O'Connor	Eng.Chk.	N Smyth
Drawn	R Seward	Coordination	-
Dwg.Chk.	N Smyth	Approved	D Hickey

Scale at A1	Project A5243	Status	TEN
AS SHOWN	CAD file 5243C067	Rev	B

Drawing No **A5243-C067**

	NS 03	NS 02
GROUND LEVEL	17.648	17.550
INVERT LEVEL	16.097	15.964
PIPE DIAMETER	450	
GRADIENT	450	
CHAINAGE	0.0	60.0

VERTICAL SCALE 1:100  
HORIZONTAL SCALE 1:1,000  
DATUM 10m O.D.  
(MALIN HEAD)

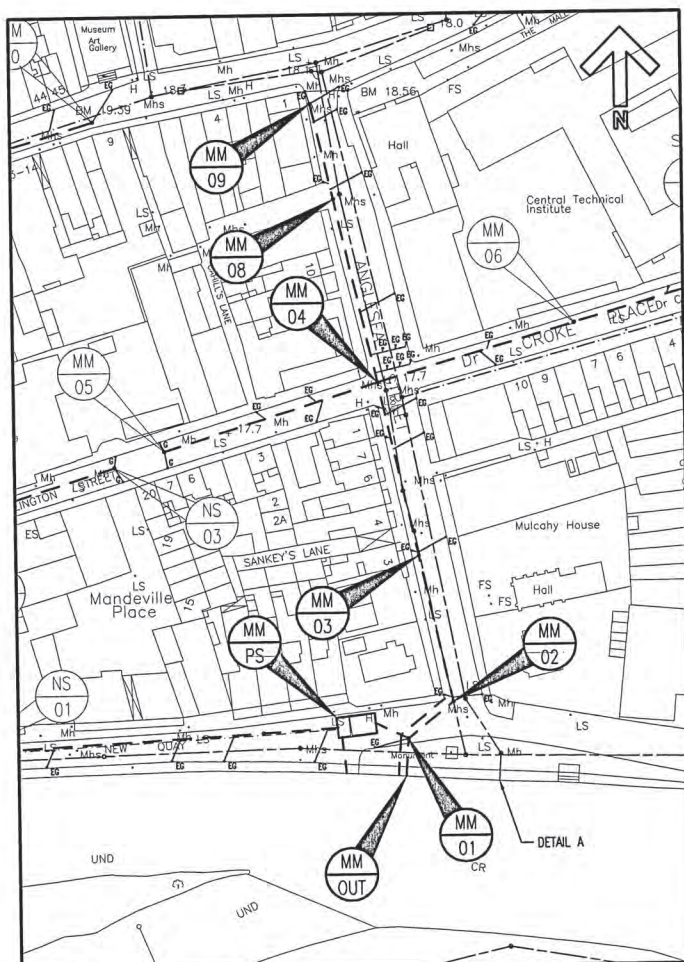
	NS 05	NS 04	NS 02	NS 01	NS OUT
GROUND LEVEL	19.600	18.700	17.550	16.800	14.637
INVERT LEVEL	18.275	17.375	15.964	15.631	15.814
PIPE DIAMETER	225	450		1050	
GRADIENT	78	76	450		
CHAINAGE	0.0	70.0	160.0	220.0	227.5

VERTICAL SCALE 1:100  
HORIZONTAL SCALE 1:1,000  
DATUM 10m O.D.  
(MALIN HEAD)

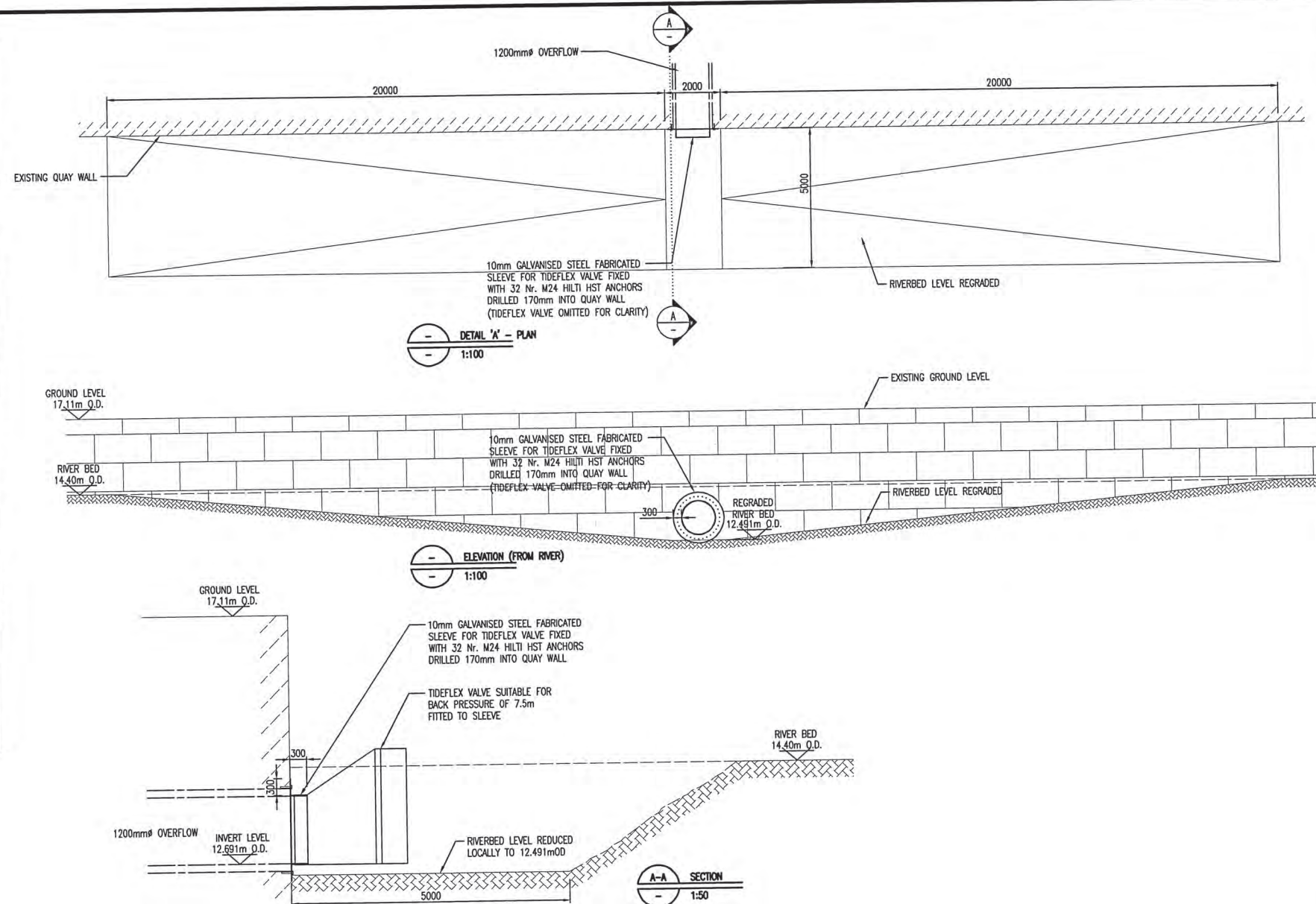
	NS 01	NS 00	MM PS
GROUND LEVEL	16.800	16.850	16.100
INVERT LEVEL	15.230	13.846	13.900
PIPE DIAMETER	1050		
GRADIENT	57	45	
CHAINAGE	0.0	80.0	100.0

VERTICAL SCALE 1:100  
HORIZONTAL SCALE 1:1,000  
DATUM 10m O.D.  
(MALIN HEAD)





LOCATION PLAN  
SCALE 1:1,000



VERTICAL SCALE 1:100  
HORIZONTAL SCALE 1:1,000  
DATUM 10m O.D. (MALIN HEAD)

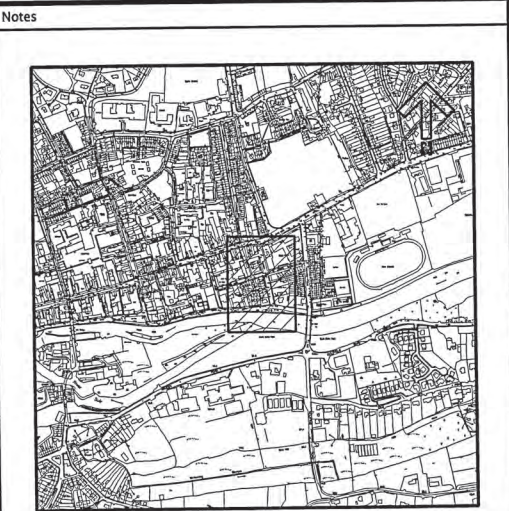
CHAINAGE	MM 09	MM 08	MM 04	MM 03	MM 02	MM 01	MM PS	MM OUT
GROUND LEVEL	18.000	17.922	17.700	17.295	16.954	16.857	16.842	
INVERT LEVEL	16.424	16.358	15.974	15.911	15.858	15.857	15.824	
PIPE DIAMETER	450		750				600	DUCTILE IRON
GRADIENT	400		600	750		750		
CHAINAGE	0.0	26.0	76.0	123.5	163.5	179.0	182.8	189.0

VERTICAL SCALE 1:100  
HORIZONTAL SCALE 1:1,000  
DATUM 10m O.D. (MALIN HEAD)

CHAINAGE	MM 02	MM 01	MM PS	MM OUT
GROUND LEVEL	16.950	16.950	17.110	
INVERT LEVEL	15.400	15.500	15.500	
PIPE DIAMETER	500	D.I.		
GRADIENT	98			
CHAINAGE	0.0	9.8		

VERTICAL SCALE 1:100  
HORIZONTAL SCALE 1:1,000  
DATUM 10m O.D. (MALIN HEAD)

CHAINAGE	MM 02	MM 01	MM PS
GROUND LEVEL	16.954	16.900	16.900
INVERT LEVEL	15.608	15.107	14.807
PIPE DIAMETER	600	1050	
GRADIENT	31	55	
CHAINAGE	0.0	15.5	25.3



KEY PLAN  
SCALE 1:10,000

- LEGEND:
- FOUL SEWER EXISTING
  - STORM SEWER EXISTING
  - STORM SEWER PROPOSED
  - COMBINED SEWER EXISTING
  - EXISTING GULLY TO BE REVISED
  - NEW GULLY

Rev	Date	Drawn	Description	Chk'd	App'd
B	18.12.09	BOAL	ISSUED FOR TENDER	EGEO	DMC
A	23.10.09	RSEW	ISSUED FOR APPROVAL	BO'CO	DHIC

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ENGINEERING SERVICES  
51 St. STEPHENS GREEN  
DUBLIN 2

Title

SUIR RIVER (CLONMEL NORTH & EAST)  
DRAINAGE SCHEME  
CIVIL WORKS CONTRACT

PROPOSED STORM WATER DRAINAGE  
MONUMENT 1 OF 2

Designed	B O'Connor	Eng.Chk.	N Smyth	Status	TEN
Drawn	R Seward	Coordination		Rev	B
Dwg.Chk.	N Smyth	Approved	D Hickey		
Scale at A1	AS SHOWN	Project	A5243		
Drawing No	A5243-C068	CAD file	5243C068		

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**Legend**

- Bulk Meter
- ◁ PRV
- ◁ Sluice Valve Open
- ✖ Sluice Valve Closed
- ✦ Scour Valves
- Water Stop Valves
- ✦ Fire Hydrant
- ◇ Abstraction Point
- ⊂ Cap
- Other Fittings

**Water Distribution Mains Owned By**

- Irish Water
- Irish Water
- Irish Water



Coordinate System: TM65 Irish Grid  
Projection: Transverse Mercator

Scale @ A0: 1:1,200  
Drawing No.: IW-AGG-2017-000

Drawn By: MBS

Checked By: <Add Name>

Approved By: <Add Name>

Drawn Date: 25/08/2017

Checked Date: <dd/mm/yyyy>

Approved Date: <dd/mm/yyyy>



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Map Template Design: kcarroll@water.ie

# Water Utilities Network Clonmel - Co. Tipperary





**Legend**

**Sewer Manholes**

**Manhole Type**

- Standard
- Other; Unknown

**Sewer Discharge Points**

**Discharge Type**

- Other; Unknown

**Sewer Inlets**

**Inlet Type**

- Gully
- Gravity - Combined
- Gravity - Foul
- Gravity - Overflow
- Gravity - Combined
- Gravity - Foul

**Legend**



Coordinate System: TM65 Irish Grid  
Projection: Transverse Mercator

Scale @ A0: 1:1,200

Drawing No.: IW-AGG-2017-000

Drawn By: MBS

Checked By: <Add Name>

Approved By: <Add Name>

Drawn Date: 25/08/2017

Checked Date: <dd/mm/yyyy>

Approved Date: <dd/mm/yyyy>



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Map Template Design: kcarroll@water.ie

# Sewer Water Utilities Network Clonmel - Co. Tipperary







TITLE:  
20200812-047\_A0

COLOUR CODE:

- BLACK - 38KV & HIGHER VOLTAGE OVERHEAD LINES
- GREEN - MV(10KV/20KV) OVERHEAD LINES
- BLUE - LV (400V/230V) OVERHEAD LINES
- CYAN - 38KV & HIGHER VOLTAGE UNDERGROUND CABLE ROUTES
- RED - MV/LV (10KV/20KV/400V/230V) UNDERGROUND CABLE ROUTES

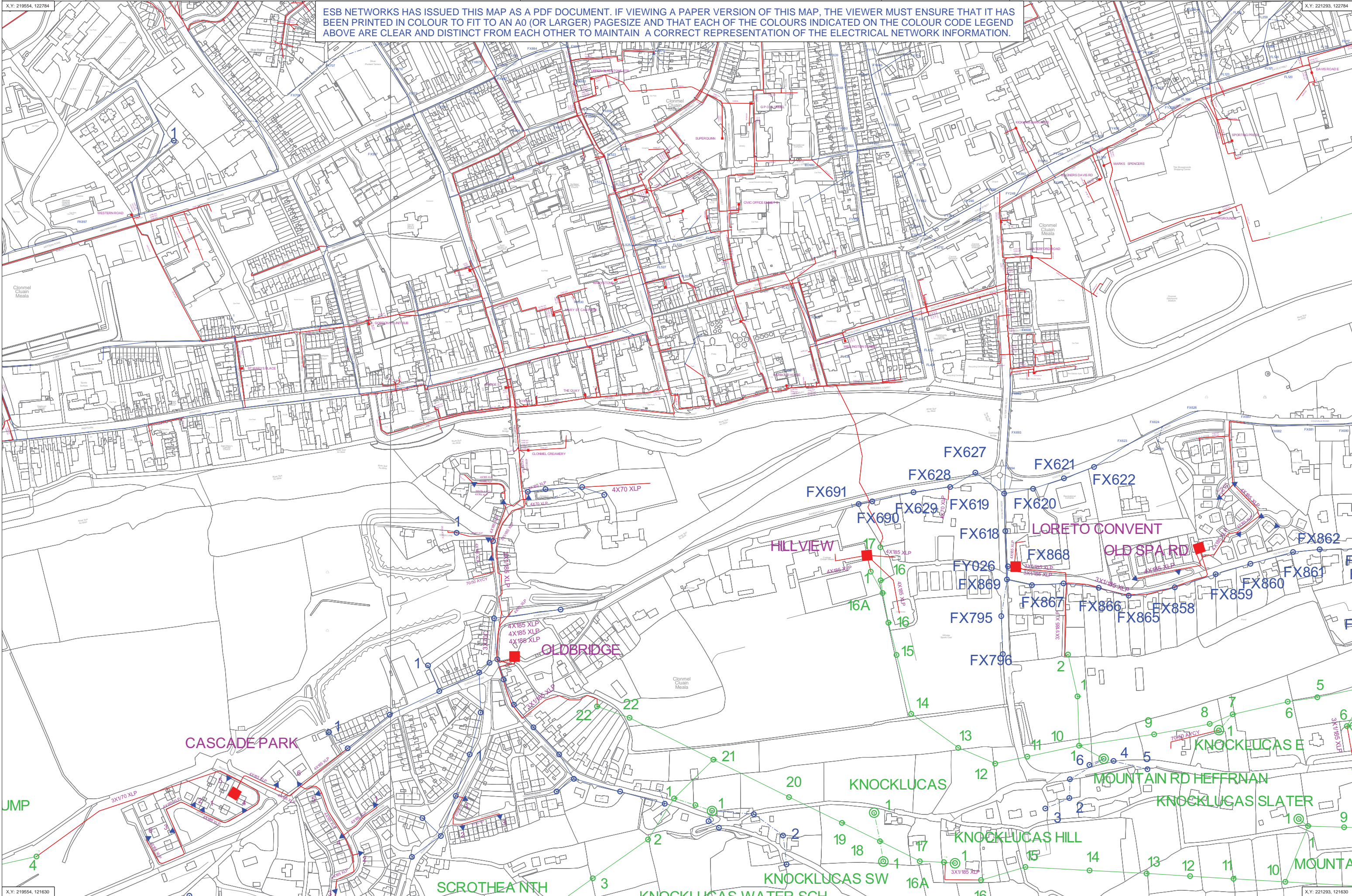
DATE: 12-Aug-2020

\*\* SCALE: 1:1500

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X,Y: 219554, 122784

X,Y: 221293, 122784

X,Y: 219554, 121630

X,Y: 221293, 121630





FD 17

FD 18

FD 18

FD 19

FD 19

FD 20

FD 20

FD 16

FD 07

FD 07

FD 12

FD 06

FD 11

FD 10

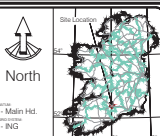
FD 08

FD 09

LEGEND

- Surveyed Section Lines with Reference & Section Orientation (As Shown)
- Surveyed Section Lines with Reference & Section Orientation (As Shown)
- Surveyed Section Lines with Reference & Section Orientation (As Shown)

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Date	18.07.14
Author	OPW
Checker	OPW
Drawn	OPW
Reviewed	OPW
Approved	OPW



CLIENT	
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Project	00000009986_SPT_Minicomp_011_2014
Date	18.07.14
Scale	1:1000@A0
Description	FLOOD DEFENCES PLAN
Drawing Number	9986_CLONMEL_FLOOD_DEFENCE_PLAN_03

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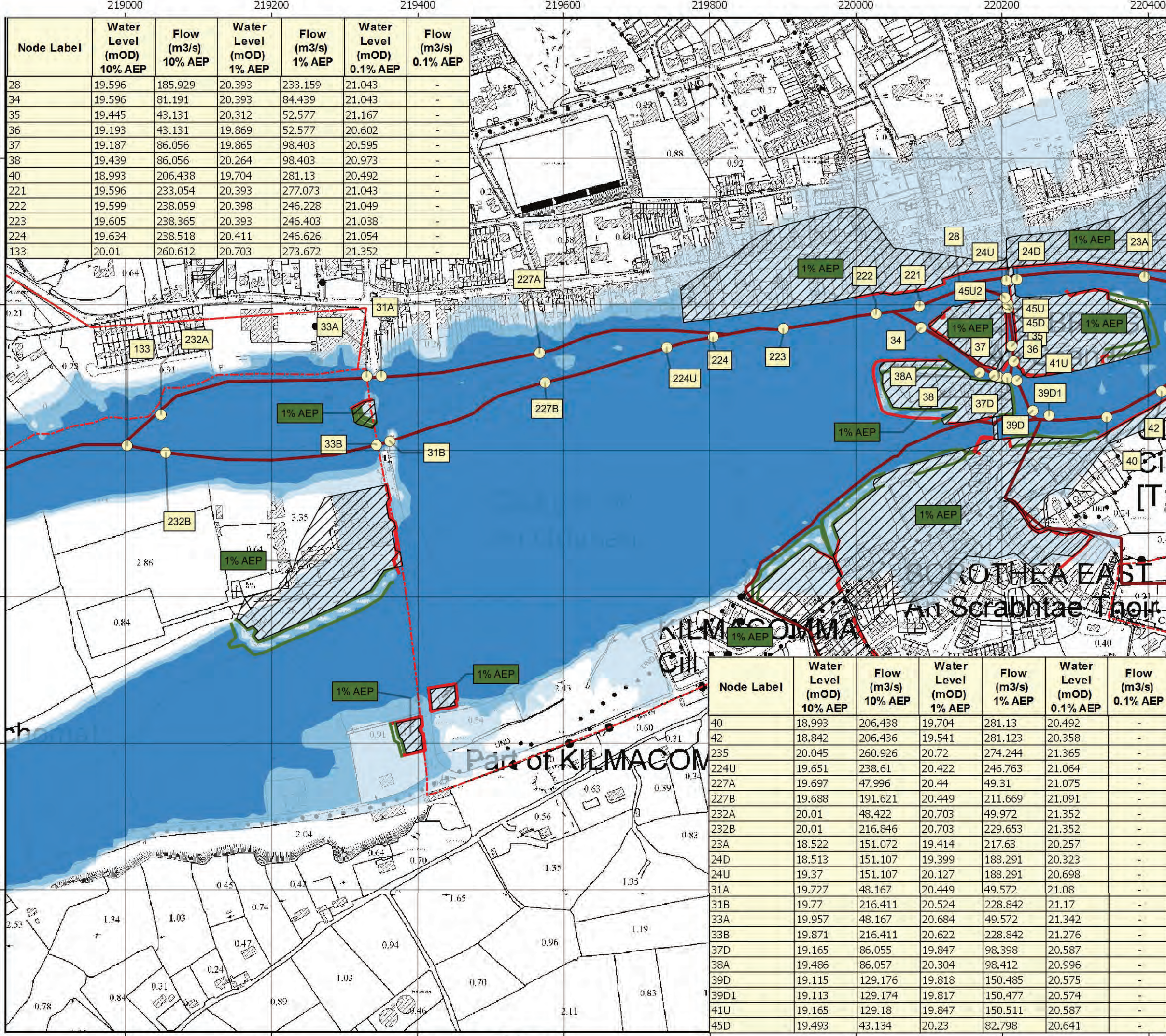
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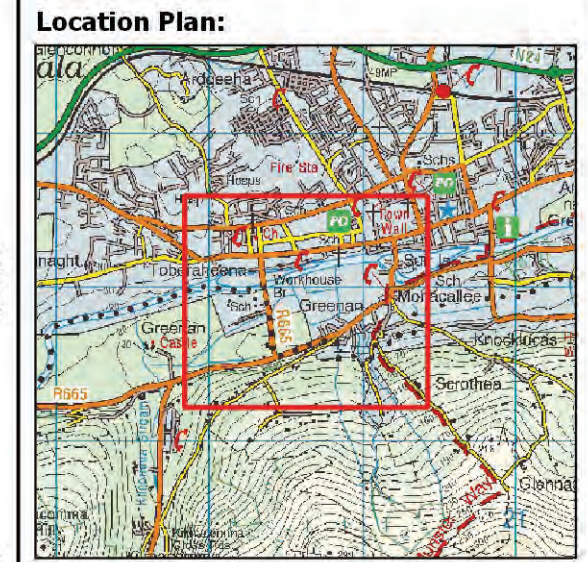
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 Southside, L11 3LQ  
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 Fax: (+44) 01562 723403  
 Email: london@murphysurveys.co.uk





Node Label	Water Level (mOD) 10% AEP	Flow (m3/s) 10% AEP	Water Level (mOD) 1% AEP	Flow (m3/s) 1% AEP	Water Level (mOD) 0.1% AEP	Flow (m3/s) 0.1% AEP
28	19.596	185.929	20.393	233.159	21.043	-
34	19.596	81.191	20.393	84.439	21.043	-
35	19.445	43.131	20.312	52.577	21.167	-
36	19.193	43.131	19.869	52.577	20.602	-
37	19.187	86.056	19.865	98.403	20.595	-
38	19.439	86.056	20.264	98.403	20.973	-
40	18.993	206.438	19.704	281.13	20.492	-
221	19.596	233.054	20.393	277.073	21.043	-
222	19.599	238.059	20.398	246.228	21.049	-
223	19.605	238.365	20.393	246.403	21.038	-
224	19.634	238.518	20.411	246.626	21.054	-
133	20.01	260.612	20.703	273.672	21.352	-

Node Label	Water Level (mOD) 10% AEP	Flow (m3/s) 10% AEP	Water Level (mOD) 1% AEP	Flow (m3/s) 1% AEP	Water Level (mOD) 0.1% AEP	Flow (m3/s) 0.1% AEP
40	18.993	206.438	19.704	281.13	20.492	-
42	18.842	206.436	19.541	281.123	20.358	-
235	20.045	260.926	20.72	274.244	21.365	-
224U	19.651	238.61	20.422	246.763	21.064	-
227A	19.697	47.996	20.44	49.31	21.075	-
227B	19.688	191.621	20.449	211.669	21.091	-
232A	20.01	48.422	20.703	49.972	21.352	-
232B	20.01	216.846	20.703	229.653	21.352	-
23A	18.522	151.072	19.414	217.63	20.257	-
24D	18.513	151.107	19.399	188.291	20.323	-
24U	19.37	151.107	20.127	188.291	20.698	-
31A	19.727	48.167	20.449	49.572	21.08	-
31B	19.77	216.411	20.524	228.842	21.17	-
33A	19.957	48.167	20.684	49.572	21.342	-
33B	19.871	216.411	20.622	228.842	21.276	-
37D	19.165	86.055	19.847	98.398	20.587	-
38A	19.486	86.057	20.304	98.412	20.996	-
39D	19.115	129.176	19.818	150.485	20.575	-
39D1	19.113	129.174	19.817	150.477	20.574	-
41U	19.165	129.18	19.847	150.511	20.587	-
45D	19.493	43.134	20.23	82.798	20.641	-



**LEGEND**

- AFA Boundary
- Defended Area
- Modelled River Centreline
- Node Point
- 10% AEP Fluvial Extent (High Risk)
- 1% AEP Fluvial Extent (Medium Risk)
- 0.1% AEP Fluvial Extent (Low Risk)
- Flood Defence - Embankment
- Flood Defence - Wall
- Gate
- NODE123 Node Label
- Standard of Protection of Flood Defence

**IMPORTANT USER NOTE:**  
THE VIEWER OF THIS MAP SHOULD REFER TO THE DISCLAIMER, GUIDANCE NOTES AND CONDITIONS OF USE THAT ACCOMPANY THIS MAP.

**OPW**  
The Office of Public Works  
Jonathan Swift Street  
Trim  
Co. Meath

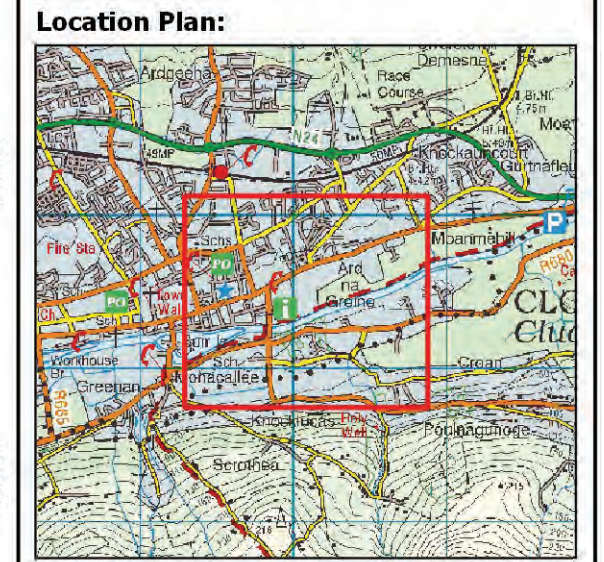
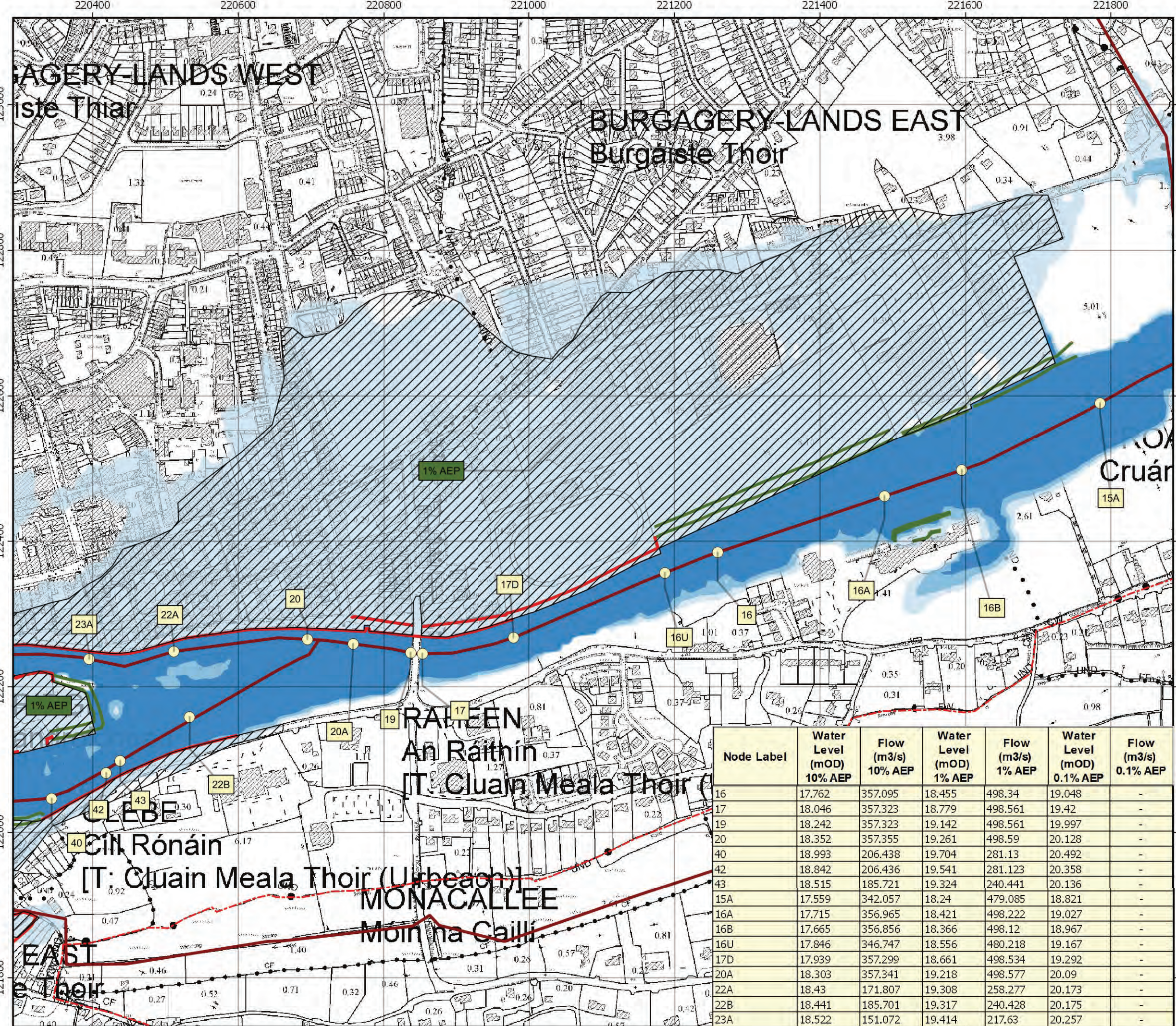
Project: SUIR CFRAM STUDY

Map: **CLONMEL SCHEME FLUVIAL FLOOD EXTENT MAP**

Map Type:	EXTENT		
Source:	FLUVIAL		
Map Area:	HPW		
Scenario:	CURRENT		
Drawn by:	NMC	Date:	Sep - 2016
Checked by:	MC	Date:	Sep - 2016
Approved by:	GG	Date:	Sep - 2016

Map No.: O16CLN\_EXFCD\_F0\_45  
Revision: F0  
Map Scale: 1:5,000 Plot Scale: 1:1 @ A3





**LEGEND**

- AFA Boundary
- Defended Area
- Modelled River Centreline
- Node Point
- 10% AEP Fluvial Extent (High Risk)
- 1% AEP Fluvial Extent (Medium Risk)
- 0.1% AEP Fluvial Extent (Low Risk)
- Flood Defence - Embankment
- Flood Defence - Wall
- Gate
- NODE123 Node Label
- xx% AEP Standard of Protection of Flood Defence

**IMPORTANT USER NOTE:**  
THE VIEWER OF THIS MAP SHOULD REFER TO THE DISCLAIMER, GUIDANCE NOTES AND CONDITIONS OF USE THAT ACCOMPANY THIS MAP.



Node Label	Water Level (mOD) 10% AEP	Flow (m3/s) 10% AEP	Water Level (mOD) 1% AEP	Flow (m3/s) 1% AEP	Water Level (mOD) 0.1% AEP	Flow (m3/s) 0.1% AEP
16	17.762	357.095	18.455	498.34	19.048	-
17	18.046	357.323	18.779	498.561	19.42	-
19	18.242	357.323	19.142	498.561	19.997	-
20	18.352	357.355	19.261	498.59	20.128	-
40	18.993	206.438	19.704	281.13	20.492	-
42	18.842	206.436	19.541	281.123	20.358	-
43	18.515	185.721	19.324	240.441	20.136	-
15A	17.559	342.057	18.24	479.085	18.821	-
16A	17.715	356.965	18.421	498.222	19.027	-
16B	17.665	356.856	18.366	498.12	18.967	-
16U	17.846	346.747	18.556	480.218	19.167	-
17D	17.939	357.299	18.661	498.534	19.292	-
20A	18.303	357.341	19.218	498.577	20.09	-
22A	18.43	171.807	19.308	258.277	20.173	-
22B	18.441	185.701	19.317	240.428	20.175	-
23A	18.522	151.072	19.414	217.63	20.257	-

Project: SUIR CFRAM STUDY

Map: **CLONMEL SCHEME FLUVIAL FLOOD EXTENT MAP**

Map Type: EXTENT

Source: FLUVIAL

Map Area: HPW

Scenario: CURRENT

Drawn by: NMC Date: Sep - 2016

Checked by: MC Date: Sep - 2016

Approved by: GG Date: Sep - 2016

Map No.: O16CLN\_EXFCD\_F0\_46

Revision: F0

Map Scale: 1:5,000 Plot Scale: 1:1 @ A3







### LEGEND

- Street furniture & Services**
- Over Head Wires (LUAS) - Pylon ESB
  - Powerlines
  - Pipe
  - Light
  - Barrier
  - Pump
  - Trail Pit
  - Bus/Tram Shelter
  - Postbox
  - Valve - General
  - Water Valve
  - Gas Valve
  - Shut-off Valve
  - Air Valve
  - Stop Cock
  - C/P Post
  - Marker Post
  - Travelling Light
  - Parking Meter
  - Flower Area Mark
  - Small Cast Valve
  - Unknown Valve
  - Basin Shelf
  - Keok
  - UIG Car Park Vent
  - Waste Bin
  - Hydrant
  - Fire Hydrant
  - ESB Box
  - ESB Inspection Cover
  - Traffic Control Box
  - LUAS Technical Cabinet
  - Ticket Vending Machine
  - Water Meter Cover
  - Telecom Inspection Cover
  - Monument / Toilets
  - Tank Storage
  - Basement, MH, Cover & Pipe
  - Drained Area Mark
  - Stop for pole
  - Pipe Protection
  - Washout

- Natural Features**
- Surface Change
  - Land Drain
  - Bottom of Slope
  - Top of Slope
  - Ditch
  - Water Edge / Lake / Pond
  - Hedge / Trees Drop Line / Vegetation
  - Tree Contourous
  - Water Level
  - Crown Level
  - Invert level
  - Bed Level
  - Spotheight
  - Fall Way
  - Green
  - Tee Box
  - Other
  - Survey Station
  - Photo point
  - Top of Tree

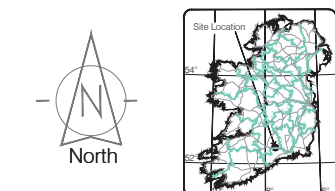
- Built Features**
- Roads & Road Markings**
- Building
  - Edge of Road
  - Kerb Bottom
  - Kerb Top
  - Bridge Abutment
  - Bridge Deck
  - Bridge Pier
  - Building Footprint
  - Footpath / Platform Train & Vm
  - Damp Proof Course / Veig
  - Bridge Pier / Wall & Gate-Pile / LUAS Trackbed
  - Cycleway / Private Landing Area
  - Fence
  - Gate
  - Road Centreline
  - Top of Wall
  - Hoarding
  - Property Line
  - Road Bar
  - Top of Fence
  - Wall / Retaining Wall
  - Railway / Tram Rail / Gating / Ramp
  - Building Canopy / Roof / Overhang
  - Floor Level
  - Apex Height
  - Eaves Height
  - Parquet Height
  - Soffit Elevation
  - Step Level
  - Concrete Pad
  - Track

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Drawn by	MGL	Date	02.11.2020	Drawn	Main Head
Checked by	ST	Date	NOV 2020	GIS System	
Checked by	MT	Date	02.11.20	Irish National Grid	ITM



Topographic surveys, Measured Building Surveys, Setting-out, As-Built Surveys, Hydrographic Surveys, Legal Mapping, Pipeline Surveys, Services Location, Ground Penetrating Radar, Laser Scanning, Remote Sensing

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**Client:** Tipperary County Council

**Project:** The Gas House Bridge Clonmel

**Date:** 02.11.2020 **Scale:** 1:2000@A1

**Description:** Topographical Survey

**Drawing Number:** MGL38728\_T\_ITM\_3D\_Rev0





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