Appendix 3.2

Interceptor Sewer Route Options Report

Irish Water

Arklow Wastewater Treatment Plant Project

Interceptor Sewer Route Options Report

Final | June 2018

Job Number 247825-00. W3136

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1 Introduction

The objective of this report is to accurately detail and describe the route options and construction methods considered for the proposed interceptor sewers in Arklow, Co. Wicklow as part of the Arklow Wastewater Treatment Plant Project. The report also identifies any constraints existing for each route option and details the reasons for selecting the preferred alignments and/or construction option.

This report is based on the information currently available, including site investigation and utility services information. The report identifies the preferred design for the interceptor sewer forming part of the Arklow Waste Water Treatment Plant project, as presented in the drawings included in Appendix A. This design will be reflected in applications for statutory consents required and, subsequently, in the detailed design and preparation of tender documents.

2 Project Overview

2.1 Background

There are currently no sewage treatment works in place for the town of Arklow. As a result, untreated effluent is discharged directly into the Avoca River. To rectify this, the Arklow Wastewater Treatment Plant Project has been initiated. The scheme involves placing of sewers along the North and South Quays to intercept existing outfalls to the river. These two interceptor sewers will be connected to each other by means of a crossing under the Avoca River and will then discharge to the proposed Wastewater Treatment Plant at the site of the Old Wallboard factory at Ferrybank.

2.2 Route Corridors Considered

The Arklow Waste Water Treatment Plant project requires the construction of a treatment plant at the site of the Old Wallboard factory at Ferrybank, Arklow. The site is located on the north side of the Avoca River at the east of the town in a site bounded by North Quay, Mill Road and the coastline.

To convey flows to the plant, new interceptor sewers on the north and south of the river will be required. These will collect flows from the existing sewers which currently outfall to the river and convey them to the treatment plant site at Ferrybank. This will require a sewer crossing under the Avoca River to transfer sewage flows from the south to the north side where the treatment plant will be located.

Since the interceptor sewers will collect flows from the existing sewers discharging to the river, design corridors along the north and south banks of the river are considered the only viable locations for these sewers. Hence no other route corridors for these sewers have been considered and this report identifies the most suitable alignment of the sewers and construction methods within those corridors.

The report also considers options for the sewer crossing of the Avoca River and these are discussed in more detail in Section 3.1 below.

2.3 Pipe Sizing

Pipe sizing for the interceptor sewers is based on hydraulic modelling of the sewer network using Infoworks CS. The hydraulic model has been run for the preferred solution and models both the current state of the network and the expected network for a 50 year design horizon including all anticipated upgrades and extensions.

The sizing is based on restricting the number of overflow events at the combined sewer overflows while providing appropriate storm water storage at key locations (including at the treatment plant site) in conjunction with online storage in the network pipes.

2.4 Utility Services

The utility services deemed relevant to this project are;

- Gas
- Watermains
- Telecoms (including Virgin Media)
- ESB Overhead
- ESB Underground
- Public Lighting
- Foul Sewer Network
- Combined Sewer Network
- Surface Water Network
- Chemical

The above represents our understanding of utility services that may be within the vicinity of the proposed sewers.

The utility services referenced in this report are based on the drawing in Appendix B.

2.5 Listed/Protected Structures

Details of the locations of protected structures in Arklow were obtained from the following sources:

- RMP Sites (Record of Monuments and Places)
- NIAH Sites (Sites of Architectural Heritage Significance)
- Protected Structures (Sites listed in the WCC Development Plan Record of Protected Structures)

These were considered when identifying the route options.

2.6 Designation of Sewer Route Sections

For the purposes of this report, the sewer route has been split into a number of sections as shown on the figure below. This report gives details of the proposed routes and construction methods preferred for each section and any associated constraints.

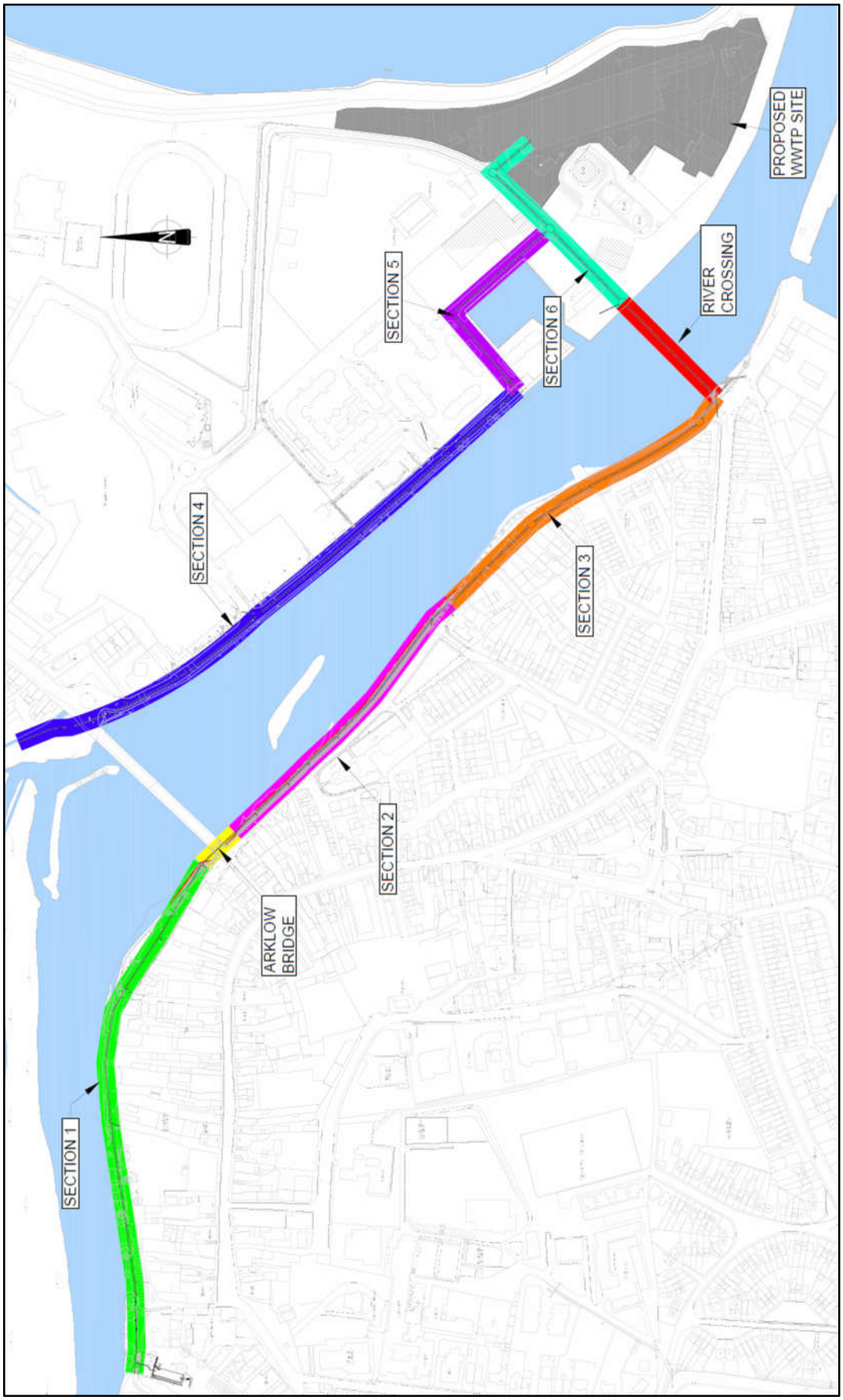


Figure 1 Interceptor Sewer Sections Overview

3 Route Options

3.1 River Crossing

3.1.1 Description of Section

As there will be a single treatment plant for Arklow and there is significant development on both north and south sides of the river, a crossing to transfer sewage to the treatment plant site will be required. The emerging preferred site is at Mill Road/North Quay, hence a crossing which flows from the south to the north bank will be required.

Constraints on the choice of crossing include:

- Use of Arklow Harbour and need to allow for ongoing dredging
- Works proposed as part of the Arklow Flood Relief Scheme
- Architectural and cultural importance of Arklow bridge
- Presence of underground obstructions (sheet piles, etc.)
- Cost and safety implications.

The river along the length of the proposed scheme varies in width from 60m to 150m. There is a tidal influence along the entire reach with this being most significant downstream of Arklow Bridge. There is currently a scour apron under the bridge with a weir and fall in bed level of approximately 1m immediately downstream of the bridge. It should be noted that it is proposed to lower the bed level under the bridge by up to 1m as part of the Arklow Flood Relief Scheme. Existing bed levels at centre of channel vary from -0.66mOD upstream of the bridge to -2.89mOD at the harbour.

The harbour at Arklow is used commercially and there is a turning basin used by ships upstream of the access to the basin (between Mill Rd on the north bank and Harbour Road on the south bank).

The river crossing will be required to be located sufficiently below the bed to provide for protection of the pipe and to allow for future lowering of the bed level by dredging, either for the flood relief scheme or for maintenance of channel depths within the harbour.

3.1.2 Options for consideration

3.1.2.1 Type of Crossing

The crossing of the river could be constructed in three ways:

- Tunnelled with a fall so that the sewer operates under gravity
- Inverted siphon
- Pumped crossing with pumps located on the south side

The pumped crossing option would have the highest ongoing operating costs and would offer few benefits over the siphon option and hence has not been considered further.

It has been the experience that siphons require ongoing maintenance to continue to perform satisfactorily. They are also generally associated with odour problems at the downstream end. The whole North Quay area is zoned as a Waterfront Development zone and can be expected to comprise apartments and commercial development in the future, hence it would be will be particularly sensitive to odour issues. The siphon would also act as a potential restriction on sewer flow necessitating protective measures upstream to prevent surcharging. The advantage of the inverted siphon is that the outlet would be at a higher level than the siphon's lowest point, thus reducing excavation depths on sections of the sewer downstream of the crossing.

A tunnelled crossing operating under gravity would have the minimum operating cost and not present a restriction on flows. The depth of the sewer downstream of the crossing would be determined by the level necessary to pass under the river bed. There would be the disadvantage that downstream depths would be increased with associated increased costs.

3.1.2.2 Locations

The town of Arklow has developed on both sides of the Avoca River and therefore a river crossing to transfer wastewater to a WwTP will be required.

Several alternatives were considered for locating the sewer crossing.

A crossing upstream of Arklow Bridge was ruled out because it would require works in the Arklow Town Marsh pNHA and would also require deeper sewer excavations due its upstream location and distance from the WwTP site.

It was concluded that the environmental impacts would be similar for an interceptor sewer crossing located at any point downstream of the Arklow Bridge. Hence an assessment was made based on two main criteria, namely the shortest length to cross the river and proximity to the preferred WwTP site at Ferrybank. Two locations were identified for further assessment as follows:

Location 1: Shortest river crossing: this is located approximately halfway between Harbour Rd and South Green on the south side and runs to a location in front of the Marina Village development on the north side. Crossing length is approximately 80m.

Location 2: Crossing between Harbour Road and Mill Road with the sewer continuing up Mill Road to enter the treatment plant site. Crossing length is approximately 120m.

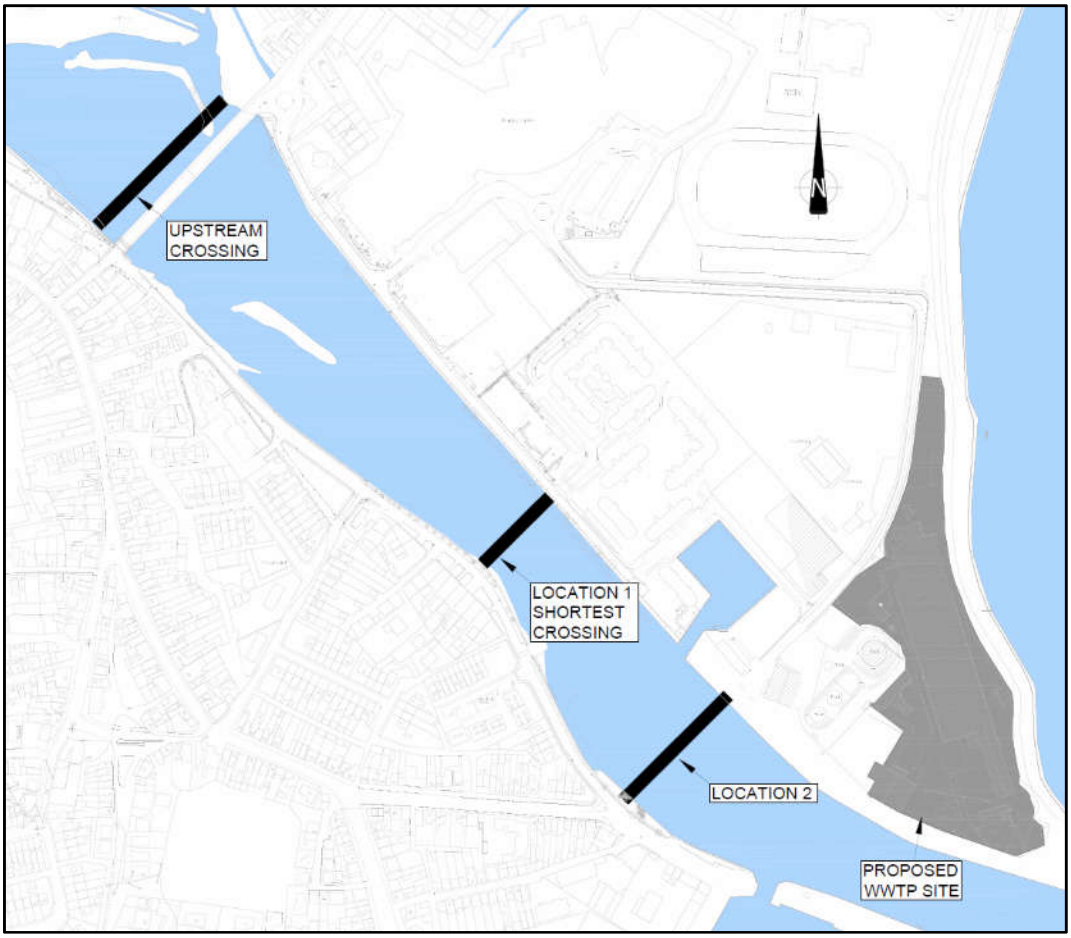


Figure 2 Sewer Crossing Points Considered

3.1.2.3 Sheet Piling

A constraint to be considered in the choice of the crossing location is the presence and depth of the sheet piled quay walls. As-built information revealed that sheet piles are present at both proposed crossing points to a depth of 12m, hence neither location can be considered more favourable in this regard. As-built drawings of the sheet piles at the Harbour Rd/Mill Rd location are included in Appendix C.

3.1.2.4 Arklow Flood Relief Scheme

The Arklow Flood Relief Scheme proposes various measures to prevent future flooding in Arklow, primarily the deepening of the river channel at the bridge and upstream and construction of flood walls/defences upstream and downstream of the bridge. Of particular relevance to selection of the crossing location is the proposal to widen the river at its narrowest point.

3.1.3 Preferred Location and Option

The proposed outlet will be located in an area zoned as a Waterfront Development. Where there are, or can be expected to be, residential and commercial developments, odour issues are a considerable potential nuisance. Given this

significant negative public impact and the other potential environmental issues with an inverted siphon solution as noted in section 3.1.2.1 above, it is concluded that the siphon option is not acceptable for the project and the crossing should be a gravity tunnel.

The Arklow Flood Relief Scheme proposes various measures to prevent future flooding in the town, including a proposal to widen the river at its narrowest point. As this is coincident with Location 1, there is potential for design and construction conflicts between the two schemes, particularly where the sewer would cross the proposed re-aligned sheetpiled river wall on the widened section.

Location 2 holds an advantage because it minimises the length of deep tunnel required after the crossing to reach the WwTP. Hence it was decided that Location 2, despite being longer overall, is the preferred location for the crossing.

3.1.4 Interceptor Sewer Requirements

Modelling has shown that for a gravity sewer river crossing a 1500mm diameter will be required for a single pipe.

To provide a minimum 3m clearance below the dredge level for the river at the crossing point, the invert levels of the sewer vary from -10.152m adjacent to the South Quay to -10.591m at the North Quay. This will result in shaft depths of approximately 12m each side of the river to facilitate the construction.

The length of the river crossing is approximately 120m. The flows from the south interceptor sewer will flow through the crossing, join into the north interceptor sewer and flow on to the treatment facility in the Ferrybank Site.

Figure 3 View of proposed shaft location area on South Quay

Figure 4 View of the proposed river crossing location, looking northeast.

Figure 5 View of proposed shaft location area on North Quay

3.1.5 Known Utility Services

The following services are known to be located on North Quay and South Quay each side of the proposed river crossing location.

- Gas
- Combined Sewer Network
- ESB Overhead and Underground Wires
- Watermains
- Storm Water Sewers

There is a gas main along South Quay, however it is on the south side of the road and should not pose any obstruction to construction. There may however be a requirement to relocate some of the above services at the junction of Harbour Road and South Quay to facilitate construction of the shaft.

The location of the proposed shaft on the North Quay is generally free of utility services. However, there may be a need for the telecoms to be locally rerouted depending on the final location of the shaft.

There are no known services within the river bed.

3.2 Section 1

3.2.1 Description of Section

Section 1 extends for approximately 450m along the South Quay - River Walk between the proposed upgraded storm water overflow (SWO) at the head of the sewer and Arklow Bridge. The upstream third of the section consists of a riverside footpath measuring approximately 2m wide with green space either side, while the rest is a single lane carriageway with a footpath along the river's edge and intermittently along the inside of the carriageway. The carriageway varies from approximately 5m to 13m. The footpaths generally measure 2m wide.

The interceptor sewer is to pass under Arklow Bridge as described in section 3.3 below.

As part of the Arklow Flood Relief Scheme it is proposed to increase the level of the footpath adjacent to the slipway. The design of the sewer will be cognisant of these proposals.

Figure 6 View of the eastern end of Section 1, adjacent to Arklow Bridge

Figure 7 View of the carriageway in the eastern third of Section 1

Figure 8 View of the intersection of the footpath and carriageway at the western end of Section 1

Figure 9 View of the footpath at the west end of Section 1 (note restriction caused by retaining wall)

Figure 10 View from the CSO, looking east

3.2.2 Interceptor Sewer Requirements

The interceptor sewer proposed to be installed in Section 1 varies from 450mm to 750mm in diameter. This equates to an approximate external diameter at the collar of 650mm to 1000mm. Allowing for 500mm working space and 150mm bedding on each side of the pipe, the required trench width needed to install the sewer using open cut methods varies from 1950mm to 2300mm.

The invert levels of the sewer vary from 0.00m adjacent to the CSO to -2.25m at Arklow Bridge. This will require a trench up to approximately 3.6m deep using open cut methods.

It is also proposed to locate an upgraded SWO at the head of this section to replace the existing 'Alps' SWO. The SWO would intercept wastewater in this area, provide appropriate storage and provide a new overflow to the Avoca River. It will also act as an emergency overflow to alleviate flooding on the network system in the event of pump failure at the WwTP. The location has been chosen with a view to optimising the hydraulic design of the system and, in particular, to reduce the need to convey large volumes of storm water to the WwTP

3.2.3 Constraints

3.2.3.1 Known Utility Services

The following services are known to be within Section 1.

- Foul Sewage Network
- ESB Underground
- Telecoms
- Watermains
- Public Lighting

The foul sewage network will not cause any issues as the feeds will tie directly into the new interceptor sewer. The current foul sewers running parallel to the interceptor sewer will be decommissioned. There will be a need for the contractor to manage construction to ensure all services are maintained during the works.

The proposed location of the interceptor sewer clashes with the ESB underground, telecoms and public lighting services in a number of locations along Section 1, hence these will require local rerouting.

Generally the watermains should not cause any significant issues, there being only two locations where existing pipes cross the path of the proposed interceptor sewer.

3.2.3.2 Other Constraints

There are numerous commercial properties along the eastern two thirds of Section 1 which will result in moderate amounts of vehicular and pedestrian traffic. The chosen route will endeavour to keep at least one lane for traffic open during the construction phase to minimise disruptions to Arklow and its residents.

3.2.4 Preferred Construction Methodology

Due to the relatively shallow depths and small diameter pipes, use of trenchless techniques is not considered appropriate. The preferred construction methodology is open cut.

3.3 Arklow Bridge

3.3.1 Requirement

The interceptor sewer on the south side of the river commences to the west of the bridge and flows downstream to the bridge. The flows in this section are required to be transferred to the proposed treatment plant to be located on the north side, downstream of the bridge. As noted in section 3.1.2.2 above, a crossing of the river upstream of the bridge is not preferred, so it will be necessary for the sewer to traverse the south end of the bridge in an area with limited working space and a large number of services present.

3.3.2 Description

Arklow Bridge is a masonry structure dating from the 18th century, consisting of nineteen arches. The bridge has been extended on the upstream side with a reinforced concrete deck section supported by reinforced concrete columns. The bridge deck consists of two traffic lanes with footpaths either side.

A number of surveys and assessments of the bridge have been carried out as part of the Arklow Flood Relief scheme. These show that the bridge is in generally good condition.

There is a concrete scour apron under the bridge, with a weir immediately downstream leading to a water level drop of approximately 1m in normal circumstances.

The bridge is the only crossing of the river in Arklow and a major traffic route for the town. It also has considerable cultural and heritage importance to the town.

It should be noted that the bridge arch nearest the North Quay is partially blocked to provide for existing services, reducing its area by approximately half.

At the south end of the bridge there is a tee junction with South Quay, with buildings located immediately thereafter on Bridge St. The distance from the bridge to the first building on the south side of Bridge St, which is of modern construction, is approximately 12m. On the upstream side of Bridge St is the Bridge Hotel, not of recent construction, located approximately 15m from the bridge. Some 13m of this distance is taken up by the hotel car park with the rest being a short footpath leading to River Walk. The hotel and associated car park are in private ownership.

It should be noted that the bridge deck is considerably higher than the riverside roads either side and hence there is a gradient up to it on Bridge Street and from South Quay and River Walk.

A number of services utilise the bridge as a river crossing. Most significant of these is the 355mm diameter gas main which is located on the bridge's upstream side. At River Walk it loops very briefly upstream, then crosses Bridge St and continues down South Quay. This main supplies the whole of the south of Arklow and represents a significant obstacle to any construction in the area. Also of importance are the two water mains crossing the bridge. Although relatively small (160mm and 100mm diameter), these are the only water supplies to the north side of the town.

Drawing 1202 in Appendix B shows a plan view of the area and recorded services.

3.3.2.1 Arklow Flood Relief Scheme

The Arklow Flood Relief Scheme proposes various measures to prevent future flooding in Arklow, primarily the deepening of the river channel at the bridge and upstream and construction of flood walls/defences upstream and downstream of the bridge. Of particular relevance to this section is the proposal to lower the river level at the bridge by 1m and underpin the existing abutments and piers.

3.3.3 Options for consideration

Three options were identified for consideration for this section of pipe:

- Lay the pipe on land between the bridge abutment and the existing buildings.
- Lay the pipe within the river through the existing arch
- Tunnel at sufficient depth to pass under all obstacles.

Constraints to be considered in choosing the most suitable option include:

- Works proposed as part of the Arklow Flood Relief Scheme.
- Architectural and cultural importance of Arklow Bridge.
- Traffic impact.
- Impact on private property and associated potential for delay.
- Cost and safety implications.
- Potential impact on services.
- Risk of damage to existing structures and buildings.
- Environmental impacts.
- Presence of existing quay wall.
- Effects of the chosen option on the other elements of the scheme both upstream and downstream.

Each of the options is discussed in more detail below.

3.3.3.1 Option 1 – Lay pipe between bridge and buildings

Option 1 involves laying the pipe by open cut methods from a manhole upstream of the bridge to a manhole in South Quay downstream of the bridge. The pipe would be 750mm diameter and depths would vary from approximately 2m to 4m.

Diversion of the gas main is not expected to be feasible due to the restricted area, the size of the main and the need to maintain adequate clearances from existing buildings for the gas line.

Hence the sewer would need to be laid with adequate clearance from the gas main and this would require it to be laid through the car park of the Bridge House Hotel.

Additionally, Bridge Street provides the only cross-river access in the town, hence a full road closure is not favoured because of the absence of alternative routes. Even partial road closures are likely only to be permitted at night, with potential negative impacts on local residents that night working would bring. This option would also require constructing a manhole between the gas main and the building on the corner of Bridge St. and South Quay. This would require temporary works within 2 to 3m of the building edge with as consequent risk of structural damage. It would also require excavation close to the corner of the building at the end of River Walk nearest the bridge. Risk of structural damage to the bridge is considered low for this option.

As the option would involve excavating around and under the existing services it would pose the greatest risk of incidents involving the gas main or the existing water mains. While this risk would be small, assuming proper site management procedures are in place, the potential consequences of damage to the gas main would be high.

Advantages of this option are that there would be no impact on the river channel or flood defence scheme. It would also have no negative consequences on the upstream or downstream sections of work.

In summary, the advantages of Option 1 are:

- No impact on river flows
- No impact on upstream and downstream works

The disadvantages are:

- Maximum traffic impact
- Maximum impact on residents as night working likely
- Maximum risk of structural damage to buildings
- H&S risk associated with gas main
- Risk to other services
- Requires access to private property
- Difficult to build

3.3.3.2 Option 2 - Lay pipe through bridge arch

Option 2 is the laying of the pipe through the first (southernmost) bridge arch below bed level.

The design will also necessitate working within the river channel with associated temporary works required. Depending on the exact details of the abutment foundation, some underpinning or other protection may be required here. Due to the restricted clearances under the bridge, the use of normal sheet piling technique as proposed in other sections, will not be possible and a specific design solution will be required.

The advantages of this option are that it minimises impact on traffic and should not require night working. The use of privately owned land is not required. There is

minimal risk of damage to existing buildings. There is minimal risk to the existing services and no need to work in close proximity to the gas main.

There is a moderate risk of damage to Arklow Bridge but this should be avoidable with suitable design and construction techniques.

In summary the advantages of Option 2 are:

- Minimum traffic impact.
- Minimum impact on residents as night working unlikely.
- Minimum risk of structural damage to buildings.
- Minimum H&S risk associated with gas main.
- Minimum Risk to other services.
- No access to private property required.
- No impact on upstream and downstream works.

The disadvantages are:

- Impact on river flow and flood relief scheme.
- Agreement required with OPW
- Foreshore Consent Requirement

3.3.3.3 Option 3 – Tunnel Option

Option 3 is the laying of the pipe in tunnel from a shaft upstream of the bridge to a shaft downstream. This would require the construction of a 5m diameter shaft either outside the existing quay walls or breaching the quay wall. To avoid the existing gas main, the downstream shaft would have to be located outside the quay wall.

The main disadvantage of this option is the impact on channel flow capacity, both during construction and thereafter. Permanent projections into the channel would be required or the pipe would have to be situated low enough to allow a side access below channel level. It would also require the pipe to be lower than expected channel depth for the flood relief scheme with a consequent knock on effect on downstream levels. It should be noted that there are five existing sewers at high level to be intercepted between the bridge and South Green, a distance of 250m.

Tunnelling under the bridge abutment is not expected to be permissible due to the need to avoid damage to it and the lack of information about the abutment and its foundations. Tunnelling generally can pose a small risk to surrounding buildings due to subsidence above the tunnel but this is expected to be minimal for all structures other than the bridge, with a moderate risk for the bridge abutment with suitable design and construction techniques.

The advantages of this option are that it minimises impact on traffic and should not require night working. Use of privately owned land is not required. There is minimal risk of damage to existing buildings. There is minimal risk to the existing services and no need to work in close proximity to the gas main.

In summary the advantages of Option 3 are:

- Minimum traffic impact.
- Minimum impact on residents as night working unlikely.
- Minimum risk of structural damage to buildings.
- Minimum H&S risk associated with gas main.
- Minimum risk to other services.
- No access to private property required.

The disadvantages are:

- Significant impact on downstream levels.
- Some impact on river channel.

3.3.4 Preferred Option

Based on the factors above, Option 3 is considered to offer limited advantages over Option 2 and significant disadvantages in terms of requiring the levels downstream to be lowered. On this basis Option 3 has been disregarded.

Option 1 is considered to pose a number of issues around buildability and to have maximum negative impact on traffic, local residents and the highest risk of damage to existing buildings and services. Option 2 minimises these risks, hence is preferred to Option 1. Option 2 will require agreement with the OPW/WCC to allow laying of the pipe in the river channel.

Subject to agreement with OPW/WCC, Option 2 laying the pipe through the bridge is the preferred option for this section of the sewer.

3.4 Section 2

3.4.1 Description of Section

Section 2 extends for approximately 280m in a southeast direction along the South Quay from Arklow Bridge to a point between the junctions with South Green and Harbour Road. Along this section South Quay consists of a carriageway varying from 5m to 10m in width. There is a footpath approximately 1.8m wide along the carriageway for a 160m length. There are properties facing directly onto the carriageway for a length of 84m adjacent to Arklow Bridge and properties set back from the carriageway by 1.8m to 7.0m along the remaining 291m length of Section 2. There is also a junction in the section with South Green Road which has a carriageway measuring approximately 7m wide.

The interceptor sewer is to pass under Arklow Bridge and tie in with this section as described in section 3.3 above.

A proposed element of the flood relief scheme is to widen the Avoca River at the eastern end of Section 2. This will require the carriageway to be relocated into the adjacent verges. The design of the interceptor sewer must also be cognisant of this.

The existing stone quay wall along the south quay is in poor condition. There is an existing combined sewer running along the base of the wall encased in concrete.

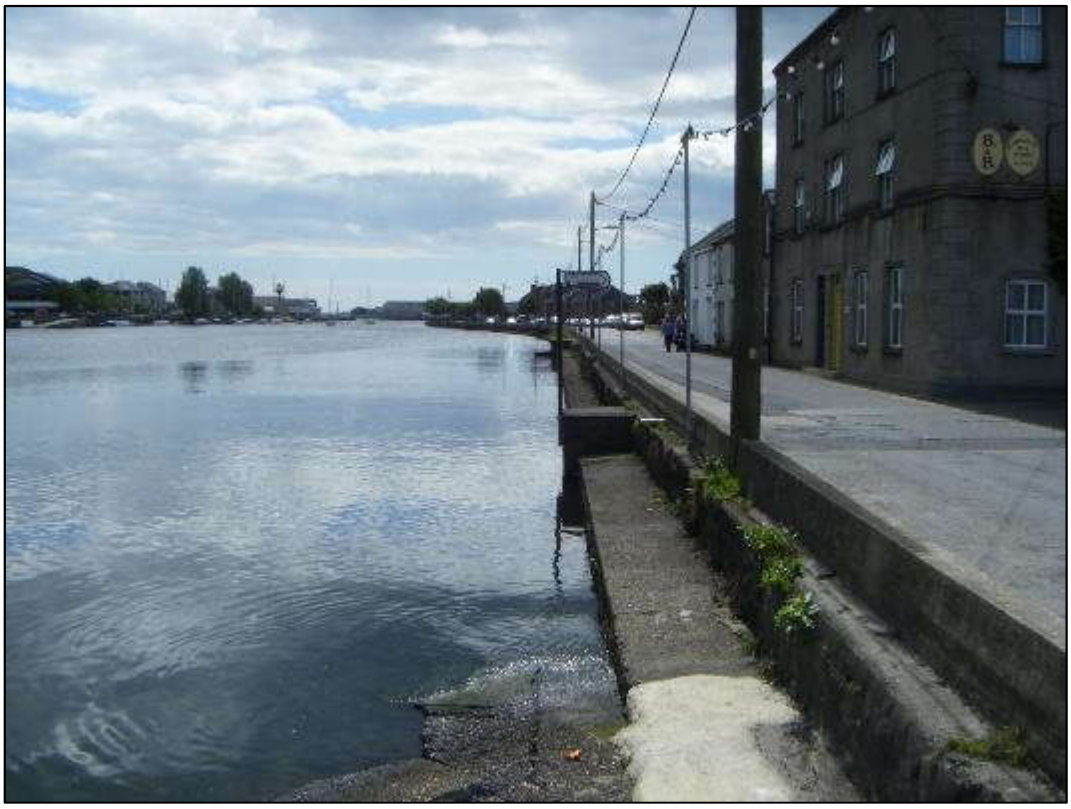


Figure 11 View of the existing stone wall along the South Quay (note encasement containing existing combined sewer)

Figure 12 View of the west end of Section 2, looking east

Figure 13 View of the southernmost span of Arklow Bridge (note the concrete encasement around the west abutment)

Figure 14 View of the location of the proposed widening of the Avoca River

Figure 15 View of the area where the carriageway is to be relocated following widening of the river.

3.4.2 Interceptor Sewer Requirements

The interceptor sewer to be installed in Section 2 varies from 750mm to 1200mm in diameter. This equates to an approximate external diameter at the collar of 1000mm to 1500mm. Allowing for 500mm working space and 150mm bedding on each side of the pipe the required trench width needed to install the sewer varies from 2300mm to 2800mm using open cut methods.

The invert levels of the sewer vary from -2.33m adjacent to Arklow Bridge to -3.72m at the eastern end of Section 2. This will require a trench approximately 4m to 5m deep using open cut methods.

There are also six existing sewers to be intercepted along this section.

3.4.3 Constraints

3.4.3.1 Known Utility Services

The following services are known to be within Section 2.

- Gas
- Combined Sewer Network
- ESB Underground
- ESB Overhead

- Telecoms
- Watermains
- Surface Water
- Public Lighting

All of the above services are provided in a narrow corridor between Arklow Bridge and South Green Road and would require significant rerouting if open cut methods were used. Due to restrictions on the proximity of the gas main to the buildings, relocating the main to provide a corridor for open cut construction is unlikely to be possible.

At South Green there is an existing surface water outfall and the gas main is manifolded into three lines that occupy the majority of the road space to pass over this outfall.

Once past South Green Road the only services that may pose an issue for the interceptor sewer are ESB Overhead Line. It is likely that these will have to be diverted during the course of the works. Gas and telecoms also extend past South Green Road but are on the far side of the road and should not pose any issue. The gas line will also present an obstacle to construction using open cut methods. However, the gas may be rerouted to allow for the widening of the Avoca River as part of the flood relief programme, hence the design of the interceptor sewer will be cognisant of this.

3.4.3.2 Arklow Flood Scheme

As proposed under Arklow Flood Relief Scheme, new flood walls will be constructed along this stretch. Based on previous review, the existing quay walls are in poor condition and will need full replacement. The top level of the new walls will be increased to provide the required flood protection as determined by the Flood Relief Scheme designs.

3.4.4 Preferred Option

Between Arklow Bridge and South Green Road the presence of the gas main and other services mean that laying the pipe within the existing road is not considered feasible. A diversion of the gas main is not considered realistic.

A new quay wall is proposed under the Arklow Flood Relief Scheme. It is proposed that it be constructed sufficiently far outside the existing wall to give adequate space between the two to allow construction of the new sewer. Drawings 704 - 706 & 733 in Appendix A show indicative plans for this. While this would restrict the channel slightly, previous hydraulic modelling of this option shows the effect on flood levels to be minimal and that the effects can be mitigated. This section will extend to just past South Green, where the new wall will tie into the wall line proposed for river widening under the Arklow Flood Scheme.

Over the 175m length beyond South Green Road there are no connections to be intercepted. Over this section the preferred option is tunnelling.

3.5 Section 3

3.5.1 Description of Section

Section 3 extends for approximately 290m in a southeast direction along the South Quay from the point at which it is proposed to widen the Avoca River. Along this section South Quay consists of a carriageway measuring approximately 8m wide. There is a footpath of approximately 1.2m width along both sides of the road for approximately 178m. There are properties with boundary walls facing directly onto the inside footpath along the full length of the section. There is also a junction with Harbour Road at the east end of the section with a carriageway width of approximately 11m.

As mentioned in Section 2, the flood relief scheme for Arklow town proposes to widen the Avoca River. This will require the carriageway to be relocated into the adjacent verges at the west end of Section 3. The design of the interceptor sewer will be cognisant of this.

Figure 16 View of Section 3, Looking southeast

Figure 17 View of the east end of Section 3, looking northwest

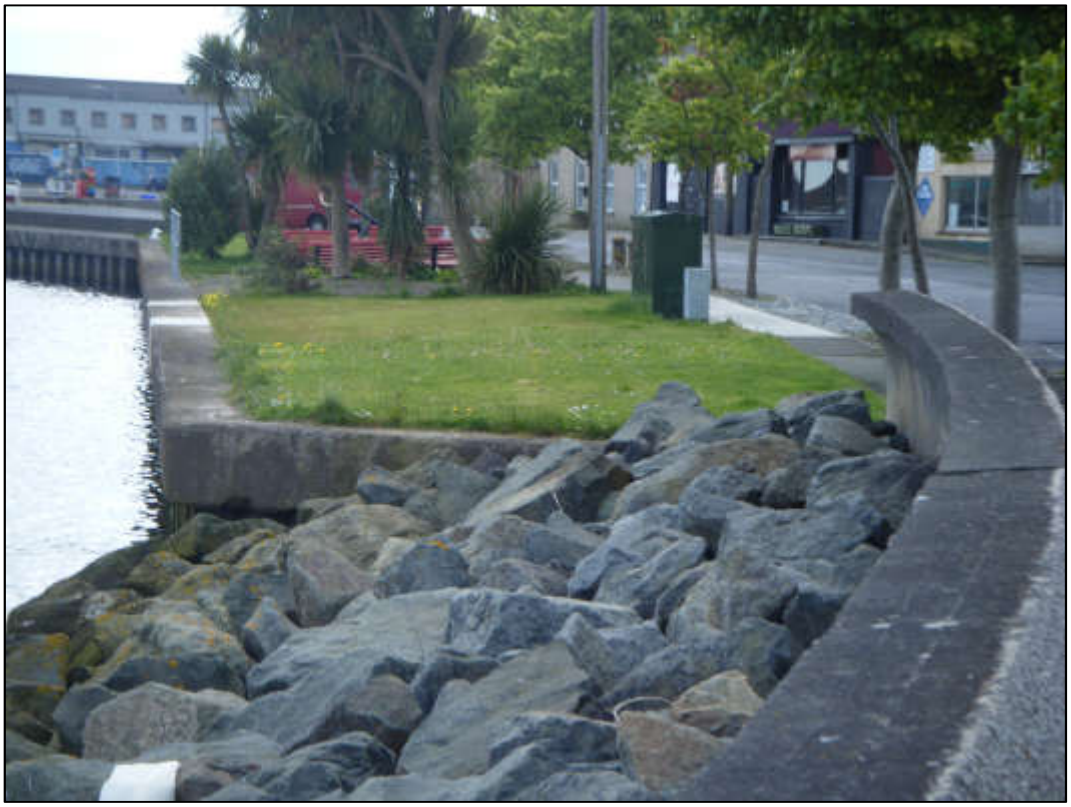


Figure 18 View showing return on sheet pile wall at the east end of Section 3

3.5.2 Interceptor Sewer Requirements

The interceptor sewer to be installed in Section 3 will be 1500mm in diameter. This equates to an approximate external diameter at the collar of 2000mm. Allowing for 500mm working space and 150mm bedding on each side of the pipe the required trench width needed to install the sewer would be 3300mm if using open cut methods.

The invert levels of the sewer vary from -4.02m at TSS1 to -4.74m at TSS3, the eastern end of Section 3. This will require trenches up to 6.5m deep using open cut methods.

3.5.3 Constraints

3.5.3.1 Known Utility Services

The following services are known to be within Section 3.

- Gas
- Combined Sewer Network
- ESB Overhead
- Watermains
- Storm Water
- Telecoms
- Virgin Media
- Public Lighting

Generally, there will be very few clashes with services in Section 3 as all services are located on the opposite site of the road to the proposed interceptor sewer. However, the ESB overhead lines will have to be diverted at the west end of the section during the course of the works (concurrently with Section 2).

As already mentioned in the River Crossing section, there may be a requirement to relocate some of the above services where Harbour Road meets South Quay.

3.5.3.2 Other Constraints

As already mentioned in the description, the design of the interceptor sewer will have to be cognisant of the flood relief scheme requirements, namely the widening of Avoca River at the west end of the section.

There is a return on the sheet piling wall at the east end of Section 3 (See Figure 18). The design will be required to avoid these, noting that these sheet piles are recorded as being 12m in depth.

3.5.4 Preferred Construction Methodology

The preferred construction methodology is tunnelling.

Open cut would require a trench 3.3m wide and 5.88m deep, which would pose significant issues with pedestrian / vehicular management and utility service clashes around Harbour Road. In addition, as ground conditions are expected to be poor, very significant temporary works would be required with importation of large volumes of material. This would also leave significant volumes of excavated material to be disposed of as it is not expected to be suitable for use as backfill below roads.

3.6 Section 4

3.6.1 Description of Section

Section 4 extends for approximately 420m in a southeast direction along North Quay from Arklow Bridge. A short length also extends approximately 50m in a northwest direction from Arklow Bridge into an area of grassland. Along Section 4 North Quay consists of a carriageway measuring approximately 6.5m wide. There is a single footpath 2.6m wide along the full length of the carriageway. There are a number of commercial properties along North Quay, including Bridgewater Shopping Centre.

Figure 19 View of west end of Section 4, looking northwest

Figure 20 View of the west end of Section 4, looking southeast

Figure 21 View of the central portion of Section 4, looking northwest

Figure 22 View of the east end of Section 4, looking northwest

3.6.2 Interceptor Sewer Requirements

The interceptor sewer to be installed in Section 4 varies from 525mm to 1200mm in diameter. This equates to an approximate external diameter at the collar of 800mm to 1600mm. Allowing for 500mm working space and 150mm bedding on each side of the pipe, the required trench width needed to install the sewer varies from 2100mm to 2900mm if using open cut methods.

The invert levels of the sewer vary from -0.85m upstream of Arklow Bridge to-3.97m at the eastern end of Section 4. This would require a trench up to 5.80m deep if using open cut methods.

3.6.3 Constraints

3.6.3.1 Known Utility Services

The following services are known to be within Section 4.

- Gas
- Combined Sewage Network
- ESB Overhead
- ESB Underground
- Telecoms
- Watermains

- Public Lighting
- Chemical (abandoned)

All of the above services are provided within a narrow corridor along North Quay. Installing the interceptor sewer by open trench means would require significant rerouting.

Local rerouting will likely still be required around shafts if tunnelling methods are used.

3.6.3.2 Other Constraints

The road along North Quay, from the junction with Ferrybank to the junction at the Aldi store, is the only access to the North Quay area and the Bridgewater shopping centre. Lane closures on this section of road will cause significant traffic impacts and negative publicity and may not be permitted by the road authority.
Once past the junction at Aldi there is an alternative route available along Mill Road and the potential traffic impact diminishes.

3.6.4 Preferred Construction Methodology

The preferred construction methodology is tunnelling.

Open cut would require a trench up to 2.9m wide and 5.8m deep, which would pose significant issues with utility services and pedestrian / vehicular management. In addition, as ground conditions are expected to be poor, very significant temporary works would be required with importation of large volumes of material. This would also leave significant volumes of excavated material to be disposed of as it is not be expected to be suitable for use as backfill below roads.

Open cut methods would also pose a risk to the existing quay walls which are in poor condition.

Tunnelling from a shaft located in the open space beside the roundabout at Ferrybank to a shaft located past the junction at Aldi would minimise the impact on traffic. Tunnelling should also minimise the risk to the existing quay walls.

3.7 Section 5

3.7.1 Description of Section

Section 5 extends between the Marina Village Apartments and the connection with the sewer running north from the river crossing towards the Ferrybank site at TSN7, approximately a 197m length. Along Section 5 North Quay consists of a carriageway measuring approximately 6.5m wide. There is a single footpath approximately 2.0m wide along the full length of the carriageway up to Mill Road. There are a significant number of resident car parking places along the length of North Quay which face directly out onto the carriageway. The carriageway along Mill Road measures approximately 11m wide, there are no footpaths however. There are a number of commercial properties along Mill Road with employee parking that faces directly onto the carriageway.

Figure 23 View of west end of Section 5, looking northwest

Figure 24 View of the west end of Section 5, looking north

Figure 25 View of the North Quay, looking towards Mill Road

3.7.2 Interceptor Sewer Requirements

The interceptor sewer to be installed in Section 5 is 1200mm in diameter. This equates to an approximate external diameter at the collar of 1600mm. Allowing for 500mm working space and 150mm bedding on each side of the pipe the required trench width needed to install the sewer would be 2900mm if using open cut methods.

The invert levels of the sewer vary from -5.97m at the Marina Village Apartments to -6.35m at TSN7. This would require a trench approximately 8.1m deep if using open cut methods.

3.7.3 Constraints

3.7.3.1 Known Utility Services

The following services are known to be within Section 5.

- Combined Sewer Network
- Surface Water Network
- ESB Underground & Overhead
- Telecoms
- Watermains
- Public Lighting
- Chemical (abandoned)

All of the above services are provided within a narrow corridor adjacent to the Marina Village Apartments. Installing the interceptor sewer by open trench means would require significant rerouting. However, once North Quay turns around the marina there will be little issue with clashing services.

Local rerouting may still be required around shafts if tunnelling methods are used.

3.7.3.2 Sheet Piling

There is existing sheet piling along sections of the quay wall at North Quay and around the small mooring basin located off North Quay adjacent to the Marina Village development. These sheet piles are recorded as being 12m in length and hence would cause obstruction.

3.7.3.3 Other Constraints

Although not along the proposed route, a beacon of regional architectural heritage is noted within an apartment complex off North Quay and should not be disturbed. (NIAH Ref. No. 16322030) (See Figure 26 below).

Figure 26 View of the beacon at North Quay

3.7.4 Preferred Construction Methodology

The preferred construction methodology is tunnelling.

Open cut would require a trench 2.9m wide and 8.1m deep, which would pose significant issues with utility services and pedestrian / vehicular management. In addition, as ground conditions are expected to be poor, very significant temporary works would be required with importation of large volumes of material. This would also leave significant volumes of excavated material to be disposed of as it is not be expected to be suitable for use as backfill below roads. Open cut methods would also pose a risk to the existing quay walls which are in poor condition.

The preferred route is to follow the road and the perimeter of the mooring basin as opposed to under the entrance channel. This avoids tunnelling at greater depths than otherwise required, avoids the sheet piles, apartment car parking area and the vicinity of the protected beacon.

3.8 Section 6

3.8.1 Description of Section

Section 6 comprises the section running along Mill Road between the north side of the river crossing and the proposed WWTP site at Ferrybank. The length is approximately 170m.

The carriageway along Mill Road measures approximately 11m wide, there are no footpaths however. There are a number of commercial properties along Mill Road with employee parking that faces directly onto the carriageway.

Figure 27 View of Mill Road, looking to the Avoca River.

Figure 28 View of Mill Road, looking to the Ferrybank Site

3.8.2 Interceptor Sewer Requirements

The interceptor sewer to be installed in Section 6 will be 1500mm in diameter. This equates to an approximate external diameter at the collar of 2000mm. Allowing for 500mm working space and 150mm bedding on each side of the pipe the required trench width needed to install the sewer would be 3300mm if using open cut methods.

The invert levels of the sewer vary from -10.59m at TSN6 on the north side of the river crossing to -10.99m at the WWTP site. This would require a trench approximately 12.8m deep if using open cut methods.

3.8.3 Constraints

3.8.3.1 Known Utility Services

The following services are known to be within Section 6.

- Combined Sewer Network
- Surface Water Network
- ESB Underground
- Telecoms
- Watermains
- Chemical (abandoned)

Tunnelling is the proposed construction method and with depths greater than 10m there should be few clashes with the utility services present. However local rerouting may still be required.

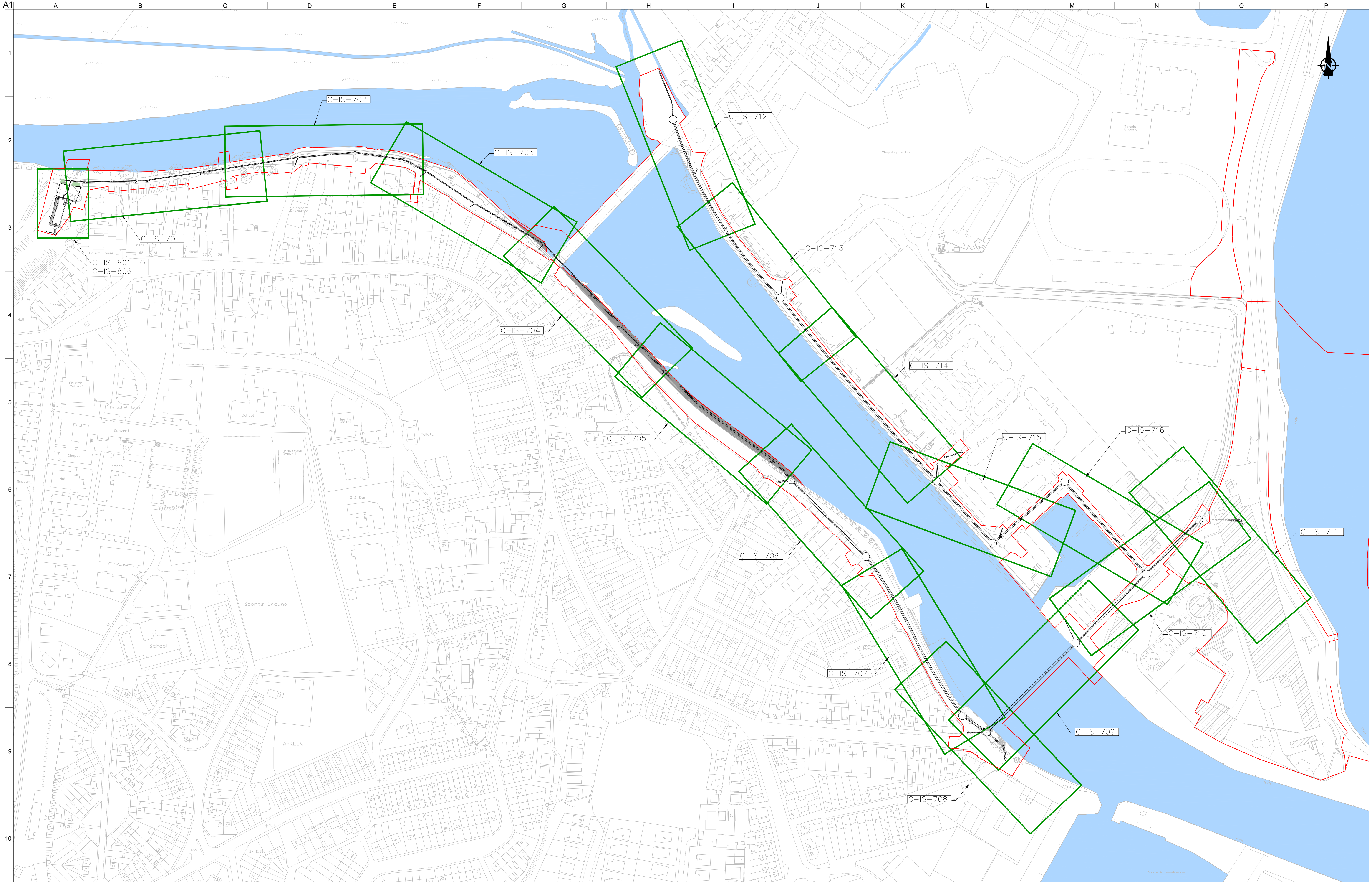
3.8.4 Preferred Construction Methodology

The preferred construction methodology is tunnelling.

Open cut would require a trench 3.3m wide and 12.8m deep, which would pose significant issues with utility services and pedestrian / vehicular management. In addition, as ground conditions are expected to be poor, very significant temporary works would be required with importation of large volumes of material. This would also leave significant volumes of excavated material to be disposed of as it is not be expected to be suitable for use as backfill below roads. Open cut methods would also pose a risk to the existing quay walls which are in poor condition.

Appendix A

Interceptor Sewer Route Drawings



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P1	31/08	MS	DR	ES
Issue	Date	By	Chkd	Appd

Client: UISCE ÉIREANN : IRISH WATER

Job Title
ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1: NOT TO SCALE
Discipline: CIVIL

ARUP BYRNELOOBY
CLANCY MOORE ARCHITECTS

Drawing Title
LOCATION KEY PLAN

Drawing Status
PLANNING

Job No	Drawing No	Issue
247825-00	C-IS-700	P1

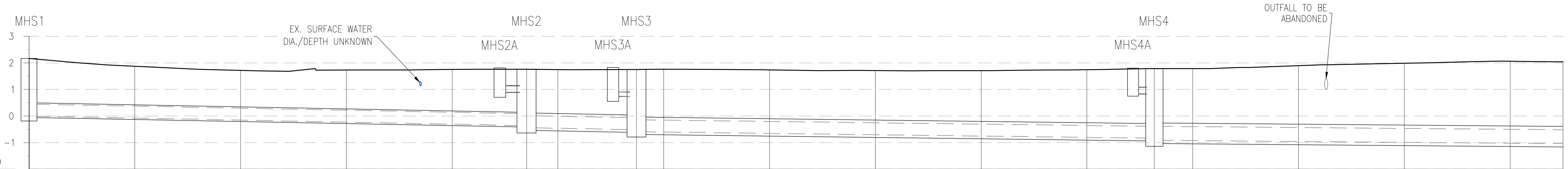
Do not scale

X:\W Files Water\W3000\W3136T Arklow Sewerage Scheme\4 Drawings\4a BLP Drawings\700's Keyplans and Longsections\W3136-700.dwg

LEGEND

- PROPOSED INTERCEPTOR SEWER
- PROPOSED SHEET PILE WITH CAPPING BEAM
- PROPOSED VENT STACK
- EXISTING FOUL/COMBINED SEWER
- EXISTING SURFACE WATER
- TO BE ABANDONED ONCE INTERCEPTOR IS OPERATIONAL
- EXISTING TREE
- EXISTING TREE TO BE REMOVED
- EXISTING TREE TO BE REMOVED & REPLANTED AFTER CONSTRUCTION

LOCATION PLAN
SCALE: 1:250 @ A1



CHAINAGE	EXISTING GROUND LEVEL (m)	MH INVERT LEVEL (m)
00.000	2.166	−0.002
10.000	1.868	
20.000	1.715	
30.000	1.727	
40.000	1.750	
47.036	1.754	−0.361 / −0.436
50.000	1.745	
57.415	1.752	−0.517
60.000	1.757	
70.000	1.738	
80.000	1.709	
90.000	1.705	
100.000	1.744	
106.365	1.779	−0.837 / −0.912
110.000	1.783	
120.000	1.892	
130.000	1.983	
140.000	2.057	
145.000	2.040	

PIPE TYPE & GRADE				
PIPE TYPE & GRADE	450mmø Reinforced Concrete @ 1:131	450mmø S&S CONCRETE @ 1:128	450mmø S&S CONCRETE @ 1:200	525mmø S&S CONCRETE @ 1:300

LOCATION: FOOTPATH

SOUTHERN INTERCEPTOR – LONGSECTION CH. 0–145M SCALE: H 1:250,V 1:100.

Issue	Date	By	Chkd	Appd
P1	31/08	MS	DR	ES

Client: UISCE ÉIREANN : IRISH WATER

Job Title: ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1: AS SHOWN

Discipline: CIVIL

ARUP BYRNELOOBY CLANCY MOORE ARCHITECTS

Drawing Title: LAYOUT PLAN & LONGITUDINAL SECTION 1 OF 16

Drawing Status: PLANNING

Job No: 247825-00 | Drawing No: C-IS-701 | Issue: P1

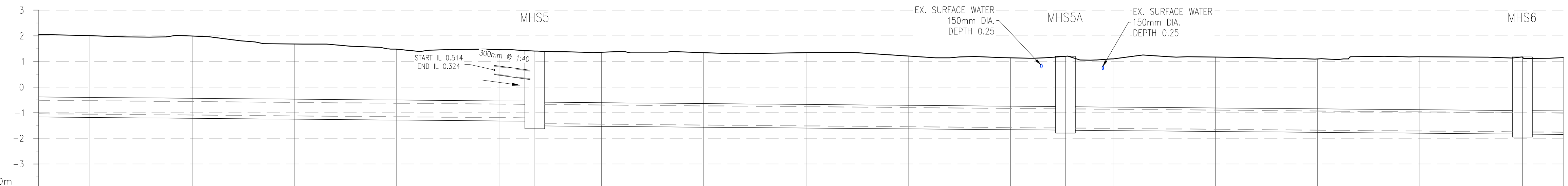
X:\W Files Water\W3000\W31367 Arklow Sewerage Scheme\4 Drawings\4a SLP Drawings\700's Keyplans and Longsections\C-IS-701-717.dwg

Do not scale

LEGEND

- PROPOSED INTERCEPTOR SEWER
- PROPOSED SHEET PILE WITH CAPPING BEAM
- PROPOSED VENT STACK
- EXISTING FOUL/COMBINED SEWER
- EXISTING SURFACE WATER
- TO BE ABANDONED ONCE INTERCEPTOR IS OPERATIONAL
- EXISTING TREE
- EXISTING TREE TO BE REMOVED
- EXISTING TREE TO BE REMOVED & REPLANTED AFTER CONSTRUCTION

LOCATION PLAN
SCALE: 1:250 @ A1



CHAINAGE	145.000	150.000	160.000	170.000	180.000	190.000	193.491	200.000	210.000	220.000	230.000	240.000	245.356	250.000	260.000	270.000	280.000	290.000	294.000
EXISTING GROUND LEVEL (m)	2.040	2.003	1.989	1.681	1.480	1.460	1.410	1.359	1.343	1.348	1.212	1.147	1.207	1.105	1.171	1.100	1.188	1.178	1.150
MH INVERT LEVEL (m)							-1.202 -1.427						-1.600					-1.749	
PIPE TYPE & GRADE	525mmø S&S CONCRETE @ 1:300							750mmø S&S CONCRETE @ 1:300						750mmø S&S CONCRETE @ 1:300					750mmø S&S CONCRET @ 1:300
LOCATION	FOOTPATH						ROAD												

SOUTHERN INTERCEPTOR - LONGSECTION CH. 145-294M SCALE: H 1:250,V 1:100.

Issue	Date	By	Chkd	Appd
P1	31/08	MS	DR	ES

Client: UISCE ÉIREANN : IRISH WATER

Job Title: ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1: AS SHOWN

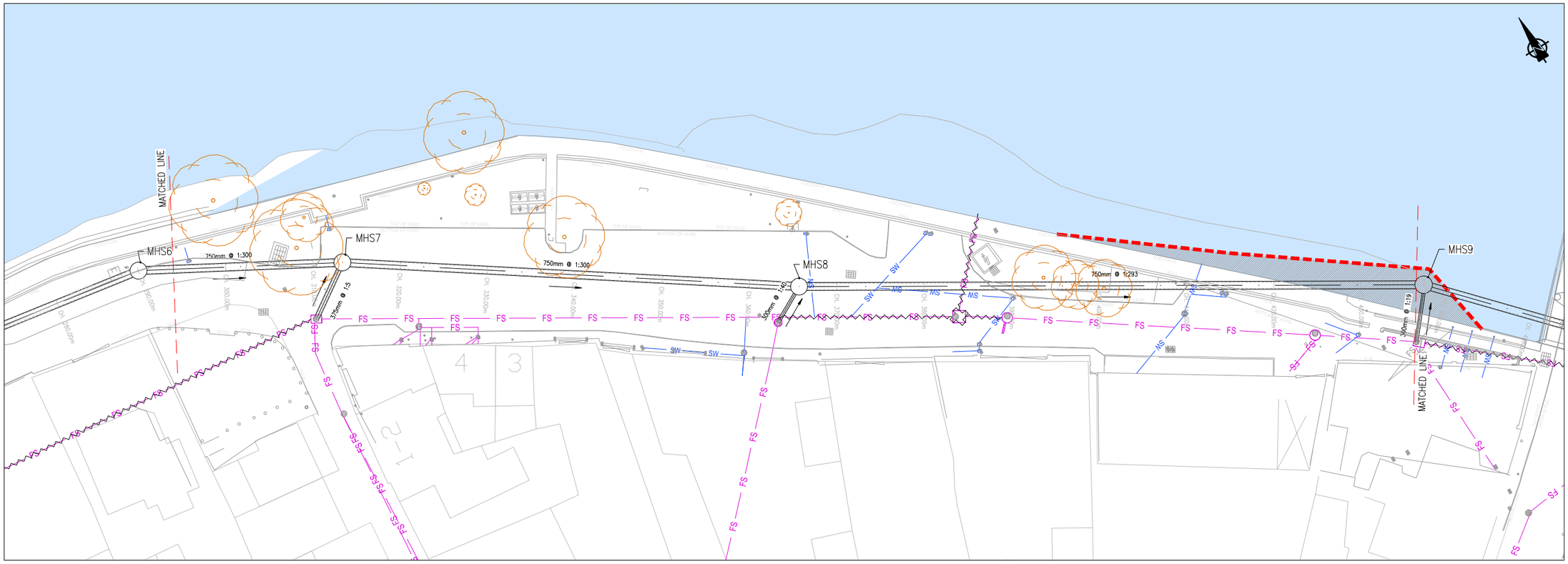
Discipline: CIVIL

ARUP BYRNELOOBY CLANCY MOORE ARCHITECTS

Drawing Title: LAYOUT PLAN & LONGITUDINAL SECTION 2 OF 16

Drawing Status: PLANNING

Job No: 247825-00 | Drawing No: C-IS-702 | Issue: P1



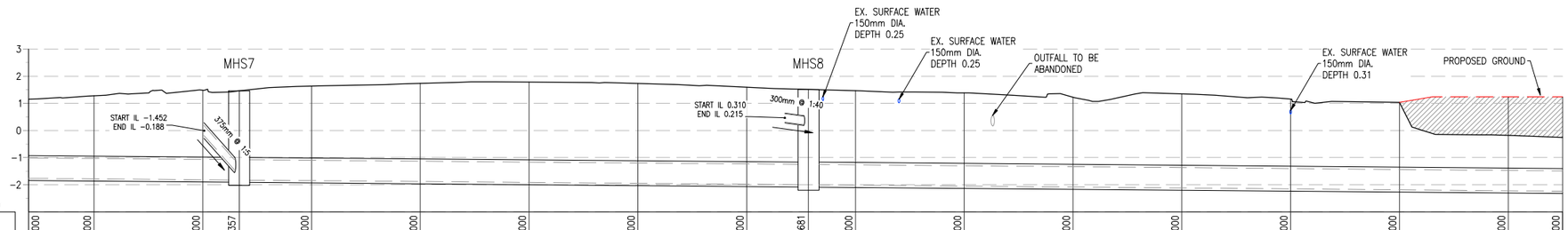
LOCATION PLAN
SCALE: 1: 250 @ A1

LEGEND

- PROPOSED INTERCEPTOR SEWER
- PROPOSED SHEET PILE WITH CAPPING BEAM
- RECLAIMED LAND
- PROPOSED VENT STACK
- EXISTING FOUL/COMBINED SEWER (FS)
- EXISTING SURFACE WATER (SW)
- TO BE ABANDONED ONCE INTERCEPTOR IS OPERATIONAL
- EXISTING TREE
- EXISTING TREE TO BE REMOVED
- EXISTING TREE TO BE REMOVED & REPLANTED AFTER CONSTRUCTION

NOTES:

1. WHERE EXISTING SURFACE WATER NETWORK INTERACTS WITH PROPOSED SHEET PILE & CAPPING BEAM, SURFACE WATER NETWORK TO BE EXTENDED THROUGH PROPOSED SHEET PILE WALL AT EXISTING LOCATIONS.



CHAINAGE	294.000	300.000	310.000	313.357	320.000	330.000	340.000	350.000	360.000	365.681	370.000	380.000	390.000	400.000	410.000	420.000	430.000	435.000
EXISTING GROUND LEVEL (m)	1.150	1.278	1.481	1.456	1.632	1.736	1.782	1.730	1.592	1.509	1.467	1.382	1.223	1.350	1.160	1.033	−0.181	−0.260
PROPOSED GROUND LEVEL (m)																	1.240	1.240
MH INVERT LEVEL (m)				−1.827	−1.827					−2.001	−2.001							
PIPE TYPE & GRADE	750mmø S&S CONCRETE @ 1:300				750mmø S&S CONCRETE @ 1:300						750mmø S&S CONCRETE @ 1:293							
LOCATION	ROAD				ROAD						ROAD					FOOTPATH		

SOUTHERN INTERCEPTOR – LONGSECTION CH. 294–435M SCALE: H 1:250,V 1:100.

Issue	Date	By	Chkd	Appd
P1	31/08	MS	DR	ES

Client: UISCE ÉIREANN : IRISH WATER

Job Title: ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1: AS SHOWN

Discipline: CIVIL

ARUP BYRNELOOBY

CLANCY MOORE ARCHITECTS

Drawing Title: LAYOUT PLAN & LONGITUDINAL SECTION 3 OF 16

Drawing Status: PLANNING

Job No	Drawing No	Issue
247825-00	C-IS-703	P1

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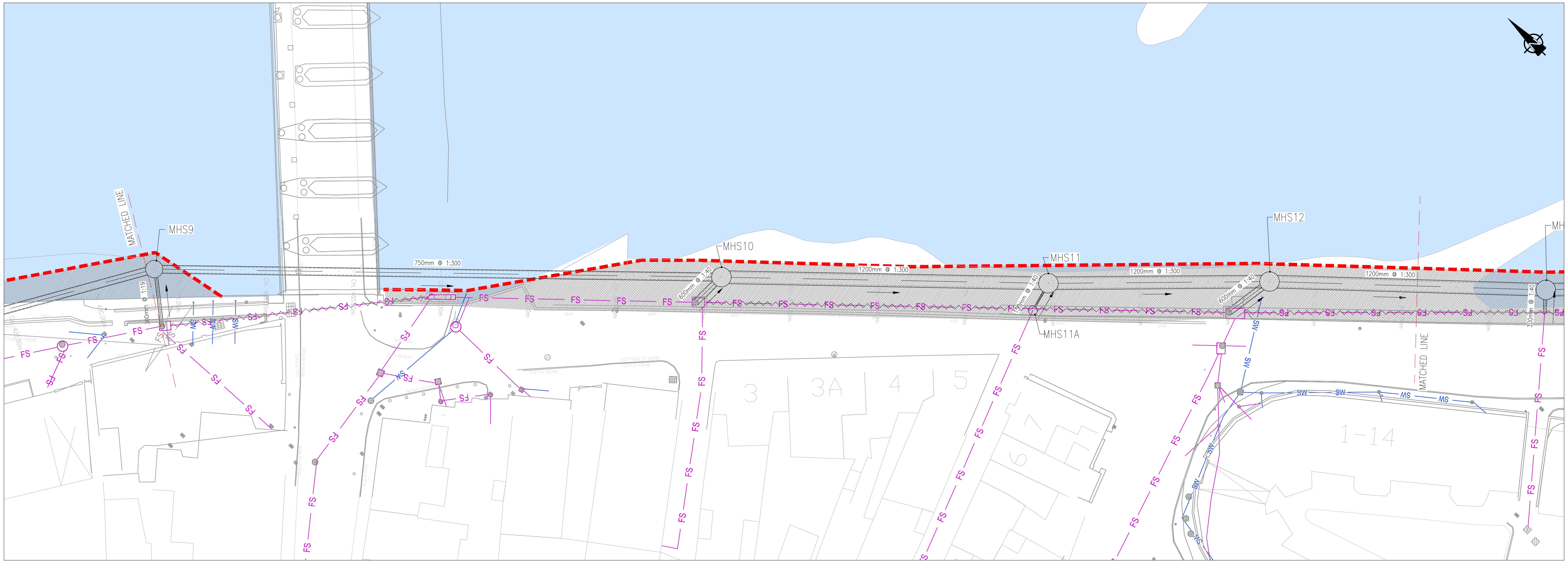
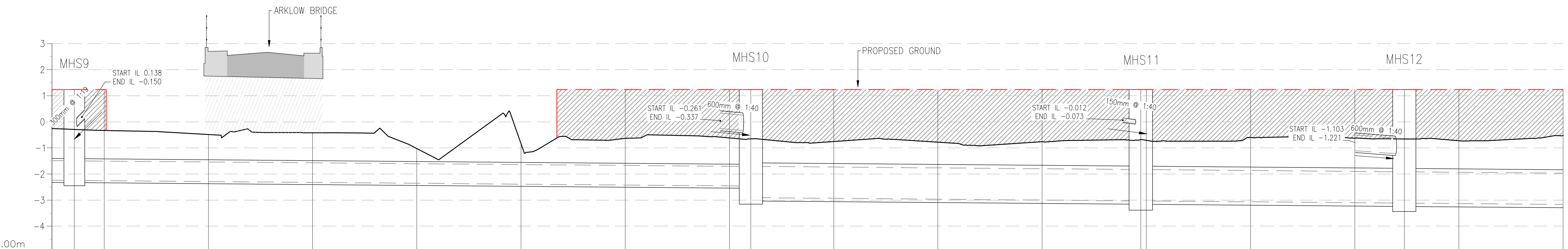


LOCATION PLAN
SCALE: 1:250 @ A1

LEGEND

NOTES:

1. WHERE EXISTING SURFACE WATER NETWORK INTERACTS WITH PROPOSED SHEET PILE & CAPPING BEAM, SURFACE WATER NETWORK TO BE EXTENDED THROUGH PROPOSED SHEET PILE WALL AT EXISTING LOCATIONS.



CHAINAGE	EXISTING GROUND LEVEL (m)	PROPOSED GROUND LEVEL (m)	MH INVERT LEVEL (m)
435.000	-0.260	1.240	
437.138	-0.296	1.240	-2.245
440.000	-0.331	1.240	
450.000	-0.486		
460.000	-0.416		
470.000	-1.025		
480.000	-0.826		
490.000	-0.632	1.240	
500.000	-0.616	1.240	
502.051	-0.650	1.240	-2.461 / -2.904
510.000	-0.751	1.240	
520.000	-0.778	1.240	
530.000	-0.759	1.240	
539.465	-0.676	1.240	-3.029
540.000	-0.705	1.240	
550.000	-0.601	1.240	
560.000	-0.620	1.240	
564.762	-0.657	1.240	-3.113
570.000	-0.724	1.240	
580.000	-0.520	1.240	

PIPE TYPE & GRADE: 750mmø S&S CONCRETE @ 1:293 | 750mmø S&S CONCRETE @ 1:300 | 1200mmø S&S CONCRETE @ 1:300 | 1200mmø S&S CONCRETE @ 1:300 | 1200mmø S&S CONCRETE @ 1:300

LOCATION: RECLAIMED SHEETPILED AREA | RECLAIMED SHEETPILED AREA | RECLAIMED SHEETPILED AREA

SOUTHERN INTERCEPTOR - LONGSECTION CH. 435-580M SCALE: H 1:250,V 1:100.

Issue	Date	By	Chkd	Appd
P1	31/08	MS	DR	ES

Client: UISCE ÉIREANN : IRISH WATER

Job Title: ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1: AS SHOWN

Discipline: CIVIL

ARUP BYRNELOOBY CLANCY MOORE ARCHITECTS

Drawing Title: LAYOUT PLAN & LONGITUDINAL SECTION 4 OF 16

Drawing Status: PLANNING

Job No: 247825-00 | Drawing No: C-IS-704 | Issue: P1

Do not scale

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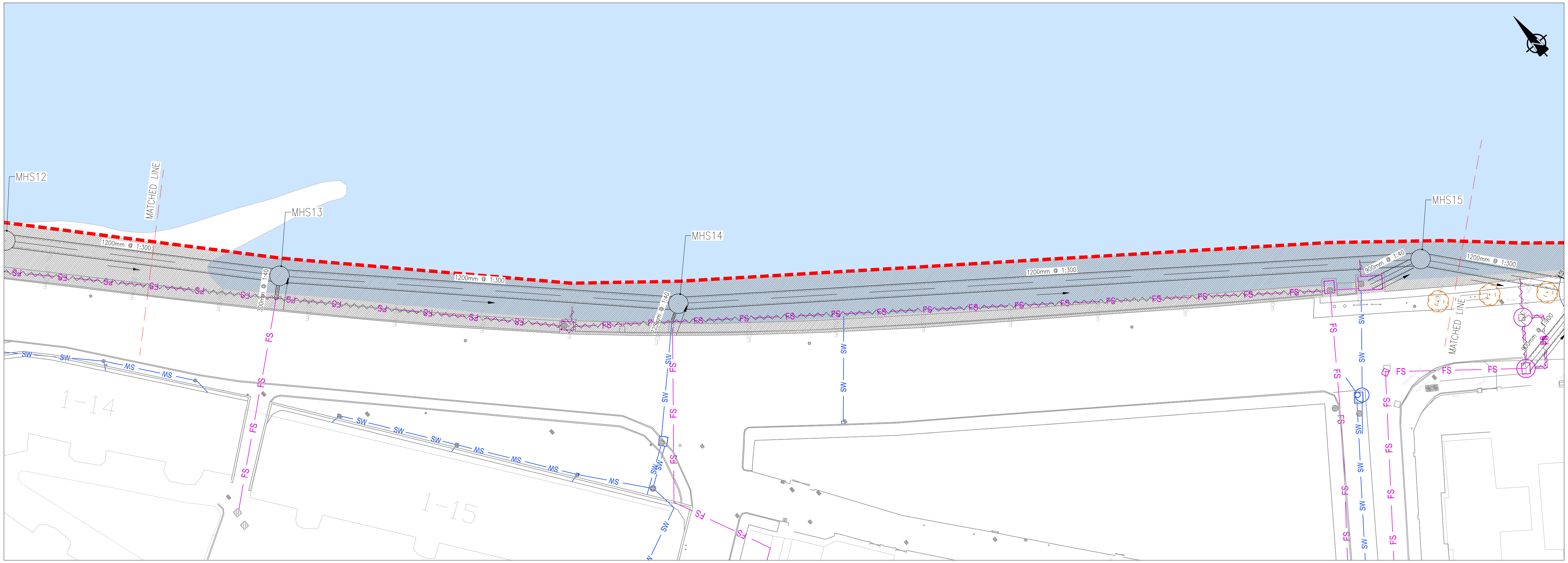


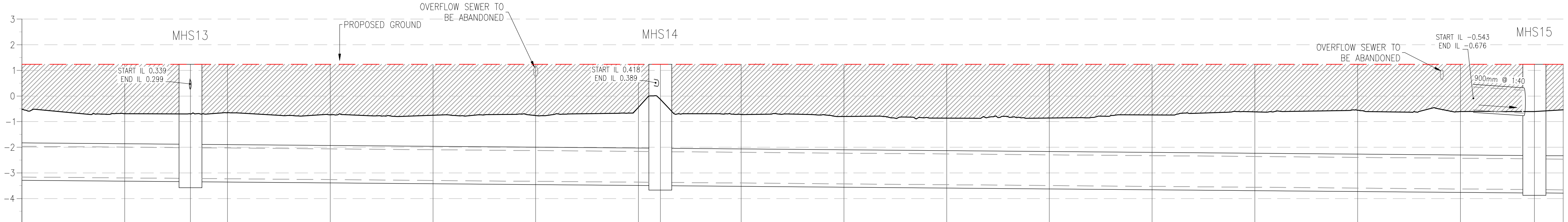
LOCATION PLAN
SCALE: 1:250 @ A1

LEGEND

PROPOSED INTERCEPTOR SEWER
PROPOSED SHEET PILE WITH CAPPING BEAM
RECLAIMED LAND
PROPOSED VENT STACK
EXISTING FOUL/COMBINED SEWER
EXISTING SURFACE WATER
TO BE ABANDONED ONCE INTERCEPTOR IS OPERATIONAL
EXISTING TREE
EXISTING TREE TO BE REMOVED
EXISTING TREE TO BE REMOVED & REPLANTED AFTER CONSTRUCTION

NOTES:

1. WHERE EXISTING SURFACE WATER NETWORK INTERACTS WITH PROPOSED SHEET PILE & CAPPING BEAM, SURFACE WATER NETWORK TO BE EXTENDED THROUGH PROPOSED SHEET PILE WALL AT EXISTING LOCATIONS.



CHAINAGE		580.000	590.000	596.394	600.000	610.000	620.000	630.000	640.000	642.132	650.000	660.000	670.000	680.000	690.000	700.000	710.000	720.000	727.200	730.000
EXISTING GROUND LEVEL (m)		-0.520	-0.694	-0.697	-0.653	-0.731	-0.751	-0.761	-0.440	-0.132	-0.723	-0.801	-0.863	-0.860	-0.741	-0.617	-0.554	-0.606	-0.604	-0.538
PROPOSED GROUND LEVEL (m)	1.240		1.240	1.240	1.240	1.240	1.240	1.240	1.240	1.240	1.240	1.240	1.240	1.240	1.240	1.240	1.240	1.240	1.240	1.240
MH INVERT LEVEL (m)				-3.218						-3.370									-3.654	
PIPE TYPE & GRADE		1200mmØ S&S CONCRETE @ 1:300			1200mmØ S&S CONCRETE @ 1:300						1200mmØ S&S CONCRETE @ 1:300									1200mmØ S&S CONCRETE @ 1:300
LOCATION		RECLAIMED SHEETPILED AREA									RECLAIMED SHEETPILED AREA									RECLAIMED SHEETPILED AREA

SOUTHERN INTERCEPTOR – LONGSECTION CH. 580-730M SCALE: H 1:250,V 1:100.

Issue	Date	By	Chkd	Appd
P1	31/08	MS	DR	ES

Client: UISCE ÉIREANN : IRISH WATER

Job Title: ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1: AS SHOWN

Discipline: CIVIL

ARUP BYRNELOOBY CLANCY MOORE ARCHITECTS

Drawing Title: LAYOUT PLAN & LONGITUDINAL SECTION 5 OF 16

Drawing Status: PLANNING

Job No: 247825-00 | Drawing No: C-IS-705 | Issue: P1

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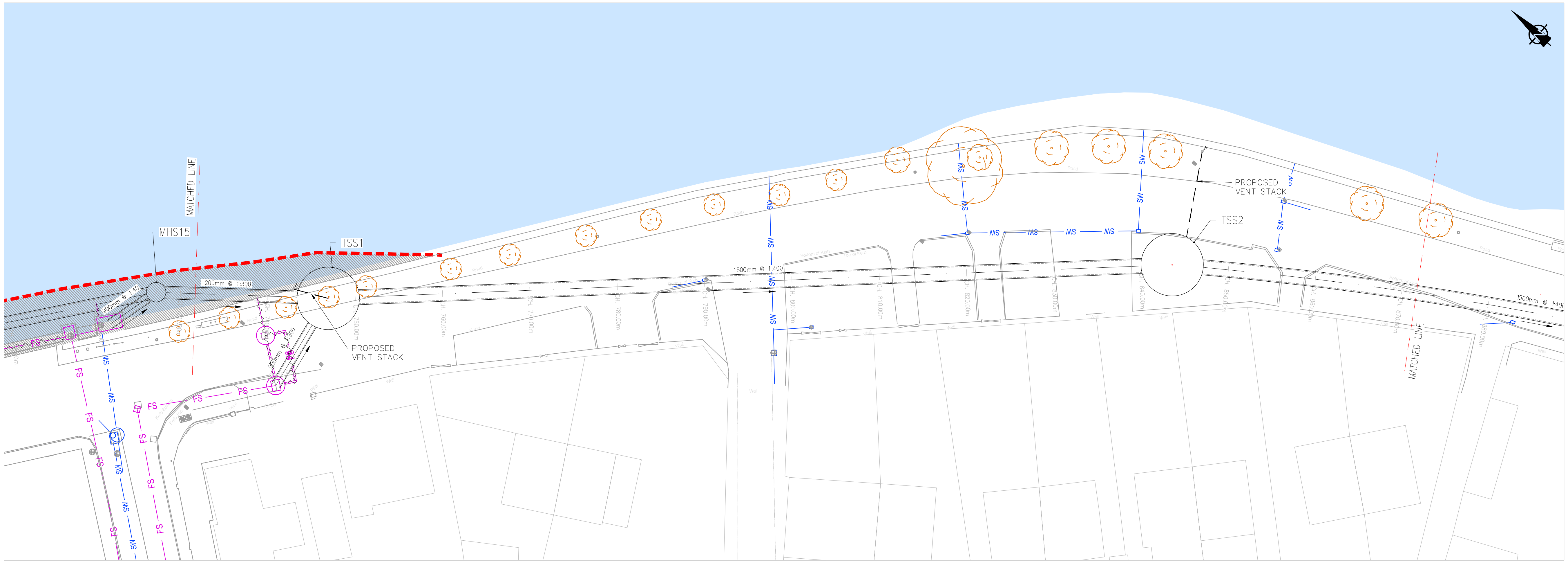
Do not scale



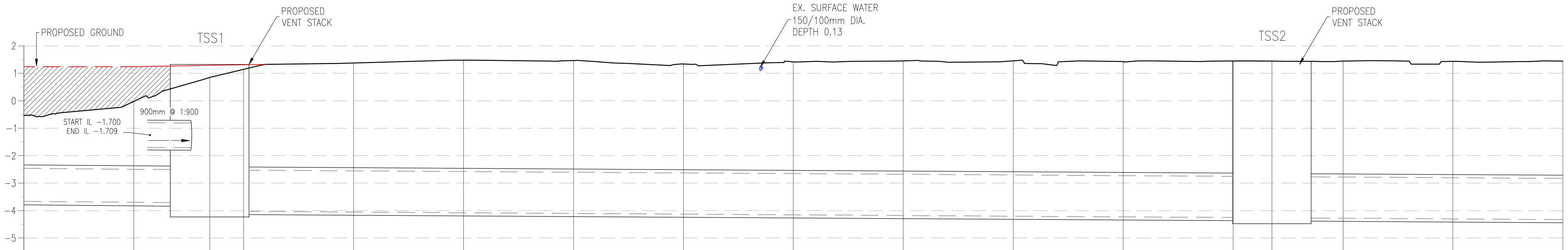
LOCATION PLAN
SCALE: 1:250 @ A1

LEGEND

- PROPOSED INTERCEPTOR SEWER
- PROPOSED SHEET PILE WITH CAPPING BEAM
- RECLAIMED LAND
- PROPOSED VENT STACK
- EXISTING FOUL/COMBINED SEWER
- EXISTING SURFACE WATER
- TO BE ABANDONED ONCE INTERCEPTOR IS OPERATIONAL
- EXISTING TREE
- EXISTING TREE TO BE REMOVED
- EXISTING TREE TO BE REMOVED & REPLANTED AFTER CONSTRUCTION

NOTES:

1. WHERE EXISTING SURFACE WATER NETWORK INTERACTS WITH PROPOSED SHEET PILE & CAPPING BEAM, SURFACE WATER NETWORK TO BE EXTENDED THROUGH PROPOSED SHEET PILE WALL AT EXISTING LOCATIONS.



DATUM -6.00m

CHAINAGE	730.000	740.000	746.906	750.000	760.000	770.000	780.000	790.000	800.000	810.000	820.000	830.000	840.000	843.539	850.000	860.000	870.000
EXISTING GROUND LEVEL (m)	-0.538	-0.026	0.853	1.144	1.378	1.477	1.463	1.344	1.415	1.453	1.457	1.429	1.448	1.440	1.446	1.434	1.441
PROPOSED GROUND LEVEL (m)	1.240																
MH INVERT LEVEL (m)			-3.720 / -4.020											-4.262			
PIPE TYPE & GRADE	1200mmø S&S CONCRETE @ 1:300			1500mmø S&S CONCRETE @ 1:400										1500mmø S&S CONCRETE @ 1:400			
LOCATION	RECLAIMED SHEETPILED AREA			FOOTPATH	ROAD				PUBLIC REALM / GRASSED AREAS / ENTRANCE								

SOUTHERN INTERCEPTOR - LONGSECTION CH. 730-870M SCALE: H 1:250,V 1:100.

Issue	Date	By	Chkd	Appd
P1	31/08	MS	DR	ES

Client: UISCE ÉIREANN : IRISH WATER

Job Title: ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1: AS SHOWN

Discipline: CIVIL

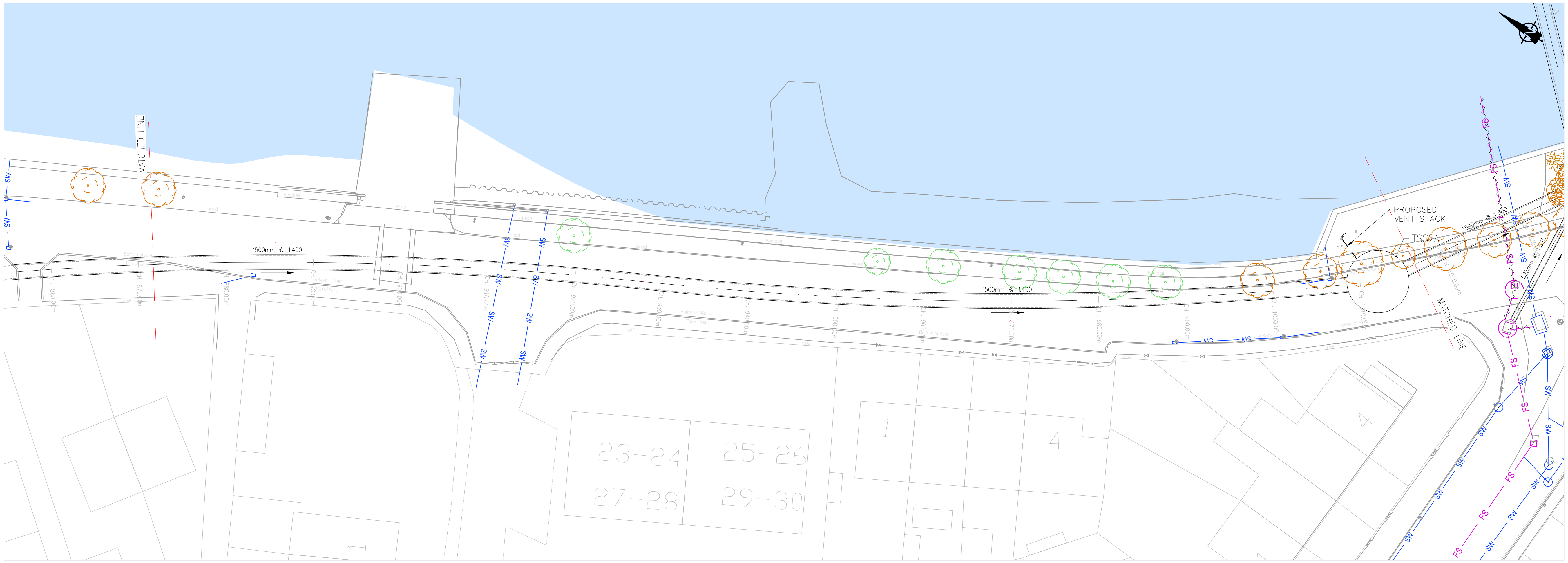
ARUP BYRNELOOBY CLANCY MOORE ARCHITECTS

Drawing Title: LAYOUT PLAN & LONGITUDINAL SECTION 6 OF 16

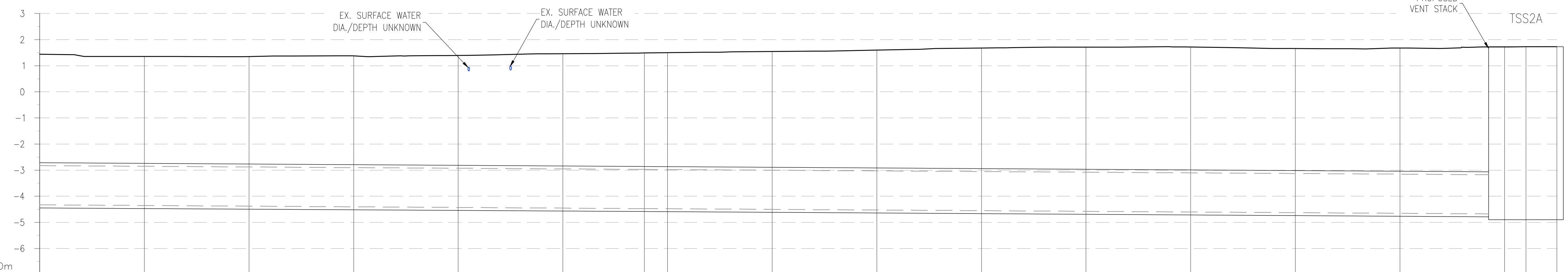
Drawing Status: PLANNING

Job No: 247825-00 | Drawing No: C-IS-706 | Issue: P1

Do not scale



LOCATION PLAN
SCALE: 1:250 @ A1



CHAINAGE	870.000	880.000	885.664	890.000	900.000	910.000	920.000	927.788	930.000	940.000	950.000	960.000	[illegible]	980.000	990.000	1000.000	1010.000	1012.037	1015.000
EXISTING GROUND LEVEL (m)	1.441	1.352	1.350	1.351	1.375	1.393	1.461	1.487	1.497	1.545	1.597	1.681	1.712	1.718	1.656	1.680	1.720	1.729	1.726
MH INVERT LEVEL (m)								-4.473										-4.684	

PIPE TYPE & GRADE	1500mmø S&S CONCRETE @ 1:400 (CH. 870.000–927.788); 1500mmø S&S CONCRETE @ 1:400 (CH. 927.788–1012.037); 1500mmø S&S CONCRETE @ 1:500
LOCATION	ROAD; ROAD; ROAD

SOUTHERN INTERCEPTOR - LONGSECTION CH. 870-1015M SCALE: H 1:250,V 1:100.

LEGEND

- PROPOSED INTERCEPTOR SEWER
- PROPOSED SHEET PILE WITH CAPPING BEAM
- PROPOSED VENT STACK
- EXISTING FOUL/COMBINED SEWER
- EXISTING SURFACE WATER
- TO BE ABANDONED ONCE INTERCEPTOR IS OPERATIONAL
- EXISTING TREE
- EXISTING TREE TO BE REMOVED
- EXISTING TREE TO BE REMOVED & REPLANTED AFTER CONSTRUCTION

X:\W Files Water\W3000\W3136T Arklow Sewerage Scheme\4 Drawings\1\4a BLP Drawings\100's Keyplans and Longsections\C-IS-701-717.dwg

Issue	Date	By	Chkd	Appd
P1	31/08	MS	DR	ES

Client: UISCE ÉIREANN : IRISH WATER

Job Title: ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1: AS SHOWN

Discipline: CIVIL

ARUP BYRNELOOBY

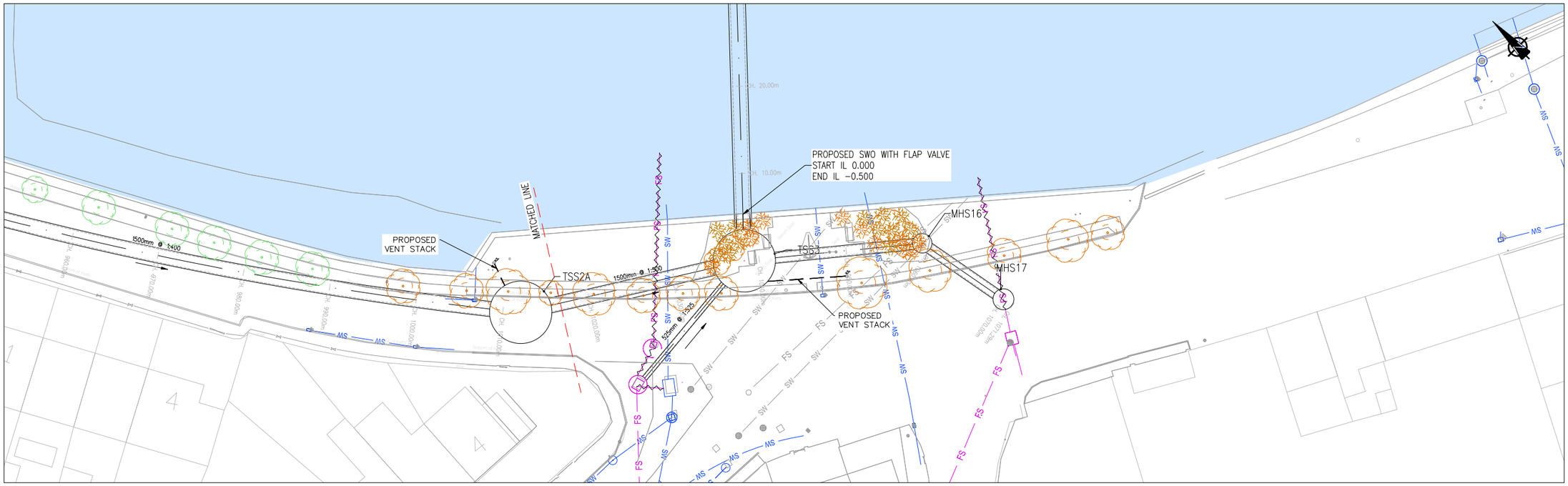
CLANCY MOORE ARCHITECTS

Drawing Title: LAYOUT PLAN & LONGITUDINAL SECTION 7 OF 16

Drawing Status: PLANNING

Job No: 247825-00 | Drawing No: C-IS-707 | Issue: P1

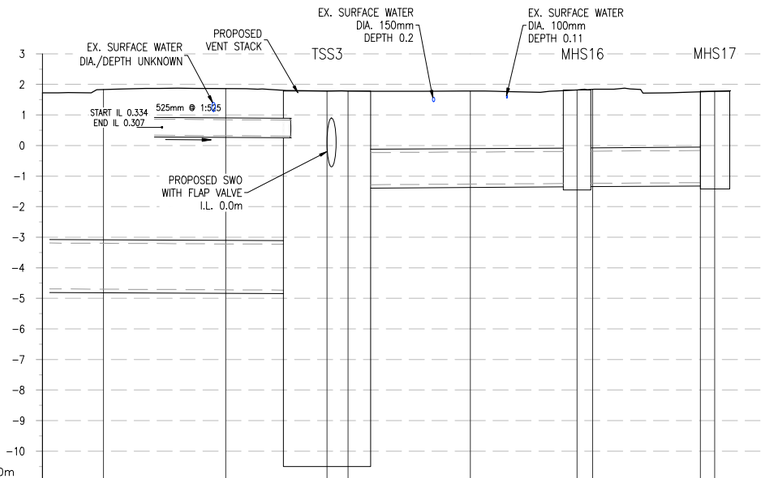
Do not scale



LOCATION PLAN
SCALE: 1:250 @ A1

LEGEND

- PROPOSED INTERCEPTOR SEWER
- PROPOSED SHEET PILE WITH CAPPING BEAM
- PROPOSED VENT STACK
- EXISTING FOUL/COMBINED SEWER (FS)
- EXISTING SURFACE WATER (SW)
- TO BE ABANDONED ONCE INTERCEPTOR IS OPERATIONAL
- EXISTING TREE
- EXISTING TREE TO BE REMOVED
- EXISTING TREE TO BE REMOVED & REPLANTED AFTER CONSTRUCTION



CHAINAGE	1015.000	1020.000	1030.000	1038.281	1040.000	1050.000	1058.743	1060.000	1068.825	1070.000	1071.293	1073.715
EXISTING GROUND LEVEL (m)	1.726	1.834	1.861	1.782	1.785	1.782	1.820	1.837	1.759	1.775		
MH INVERT LEVEL (m)				−4.736	−1.291		−1.244		−1.212			
PIPE TYPE & GRADE		1500mmø S&S CONCRETE @ 1:500			1050mmø S&S CONCRETE @ 1:440			1050mmø S&S CONCRETE @ 1:441				
LOCATION		ROAD										

SOUTHERN INTERCEPTOR – LONGSECTION CH. 1015–1067M SCALE: H 1:250,V 1:100.

Issue	Date	By	Chkd	Appd
P1	31/08	MS	DR	ES

Client: UISCE ÉIREANN : IRISH WATER

Job Title: ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1: AS SHOWN

Discipline: CIVIL

ARUP BYRNELOOBY

CLANCY MOORE ARCHITECTS

Drawing Title: LAYOUT PLAN & LONGITUDINAL SECTION 8 OF 16

Drawing Status: PLANNING

Job No	Drawing No	Issue
247825-00	C-IS-708	P1

Do not scale

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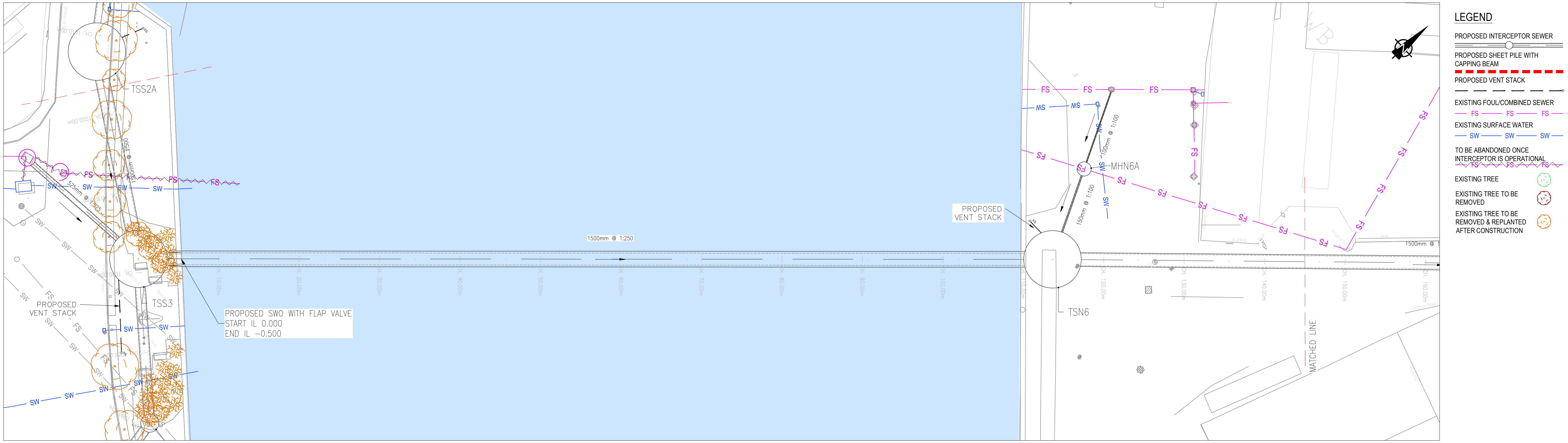
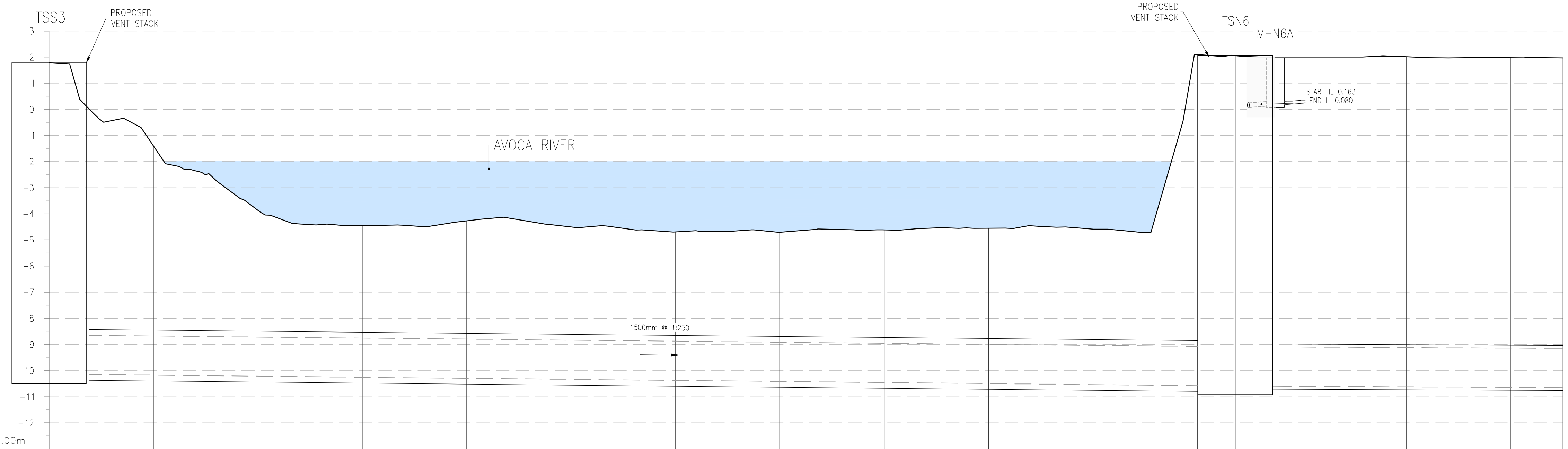


LOCATION PLAN
SCALE: 1:250 @ A1



CHAINAGE	EXISTING GROUND LEVEL (m)	MH INVERT LEVEL (m)
00.000	1.782	
03.850	0.011	-10.152
10.000	-1.399	
20.000	-3.869	
30.000	-4.453	
40.000	-4.272	
50.000	-4.503	
60.000	-4.692	
70.000	-4.707	
80.000	-4.615	
90.000	-4.550	
100.000	-4.591	
110.000	2.093	
113.635	2.056	-10.591
120.000	2.004	
130.000	2.015	
140.000	2.001	
145.000	1.972	

PIPE TYPE & GRADE	LOCATION
1500mmØ S&S CONCRETE @ 1:250 (CH. 03.850 – 113.635)	RIVER BED CROSSING
1500mmØ S&S CONCRETE @ 1:500 (CH. 113.635 – 145.000)	ROAD

SOUTHERN INTERCEPTOR TO WWTW CH. 0-145M - LONGSECTION SCALE: H 1:250,V 1:100.

Issue	Date	By	Chkd	Appd
P1	31/08	MS	DR	ES

Client: UISCE ÉIREANN : IRISH WATER

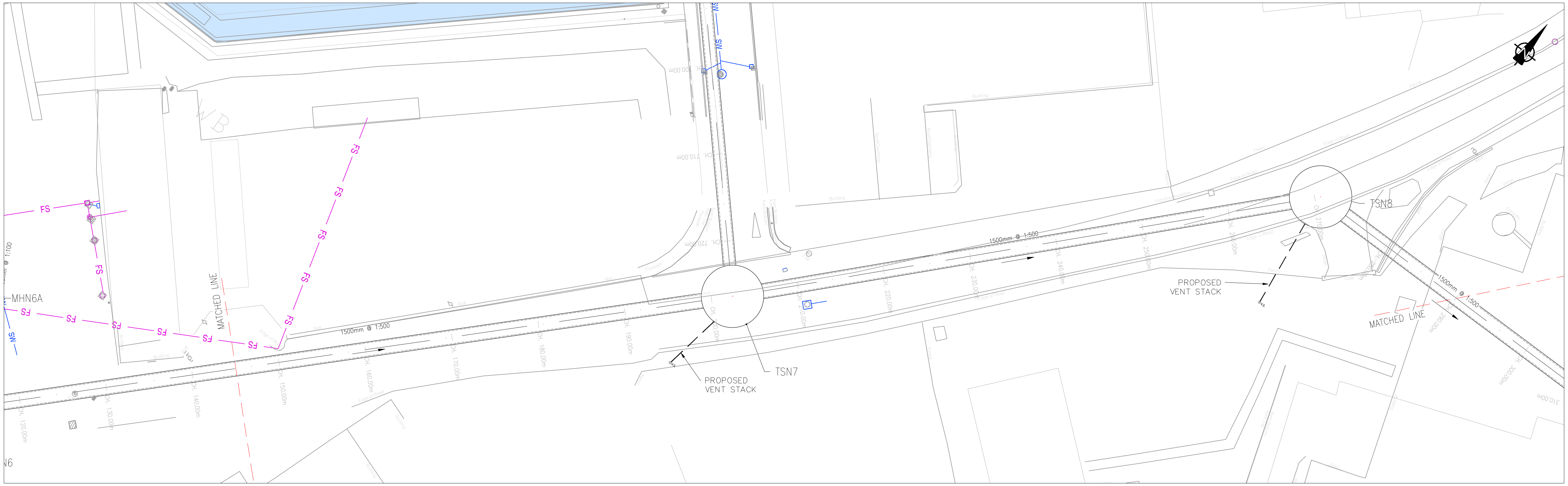
Job Title: ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1: AS SHOWN
Discipline: CIVIL

ARUP | BYRNELOOBY | CLANCY MOORE ARCHITECTS

Drawing Title: LAYOUT PLAN & LONGITUDINAL SECTION 9 OF 16
Drawing Status: PLANNING
Job No: 247825-00
Drawing No: C-IS-709
Issue: P1

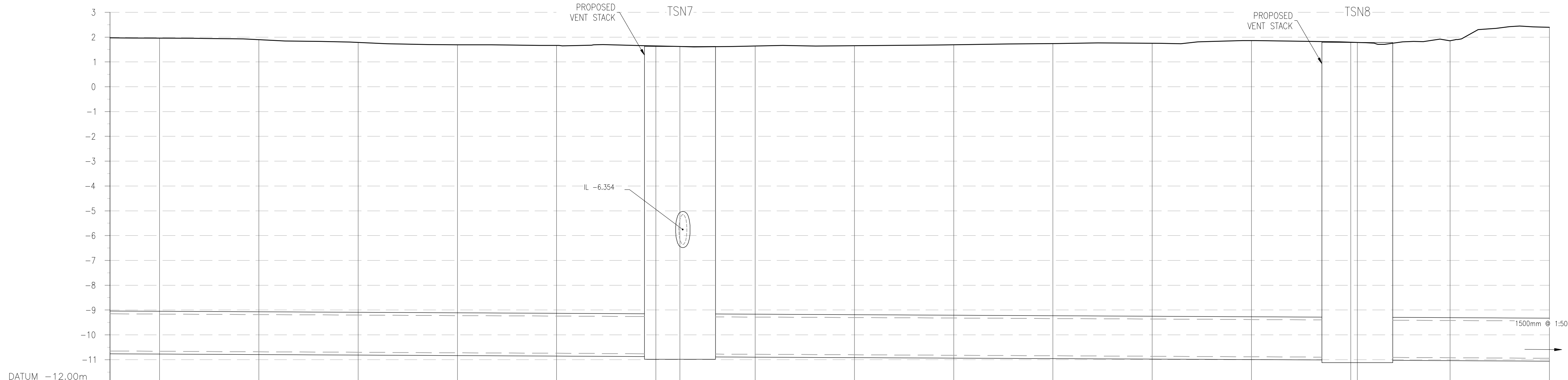
Do not scale



LEGEND

- PROPOSED INTERCEPTOR SEWER
- PROPOSED SHEET PILE WITH CAPPING BEAM
- PROPOSED VENT STACK
- EXISTING FOUL/COMBINED SEWER
- EXISTING SURFACE WATER
- TO BE ABANDONED ONCE INTERCEPTOR IS OPERATIONAL
- EXISTING TREE
- EXISTING TREE TO BE REMOVED
- EXISTING TREE TO BE REMOVED & REPLANTED AFTER CONSTRUCTION

LOCATION PLAN
SCALE: 1:250 @ A1



CHAINAGE	EXISTING GROUND LEVEL (m)	MH INVERT LEVEL (m)
145.000	1.972	
150.000	1.962	
160.000	1.898	
170.000	1.787	
180.000	1.689	
190.000	1.668	
200.000	1.646	
202.425	1.621	-10.769
210.000	1.642	
220.000	1.656	
230.000	1.691	
240.000	1.743	
250.000	1.754	
260.000	1.863	
270.000	1.795	
270.666	1.788	-10.905
280.000	1.858	
290.000	2.394	

PIPE TYPE & GRADE	LOCATION
1500mmø S&S CONCRETE @ 1:500 (CH. 145.000–202.425)	ROAD
1500mmø S&S CONCRETE @ 1:500 (CH. 202.425–270.666)	ROAD / ROAD
1500mmø S&S CONCRETE @ 1:500 (CH. 270.666–290.000)	FOOTPATH / WwTW SITE

SOUTHERN INTERCEPTOR TO WWTW CH. 145-290M - LONGSECTION SCALE: H 1:250,V 1:100.

Issue	Date	By	Chkd	Appd
P1	31/08	MS	DR	ES

Client: UISCE ÉIREANN : IRISH WATER

Job Title: ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1: AS SHOWN
Discipline: CIVIL

ARUP BYRNELOOBY
CLANCY MOORE ARCHITECTS

Drawing Title: LAYOUT PLAN & LONGITUDINAL SECTION 10 OF 16
Drawing Status: PLANNING
Job No: 247825-00
Drawing No: C-IS-710
Issue: P1

Do not scale

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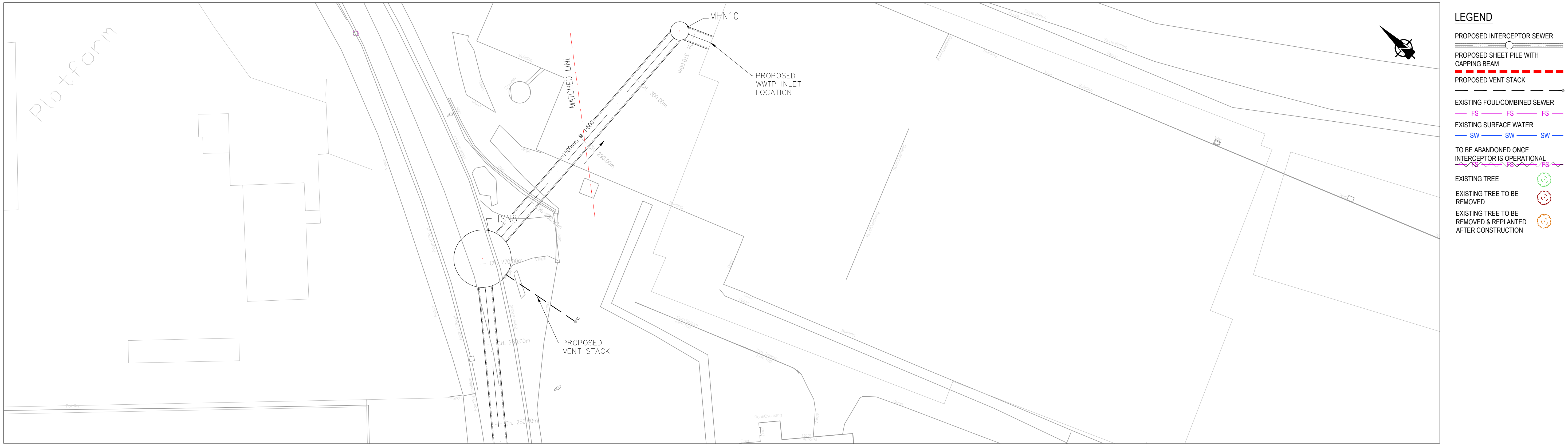
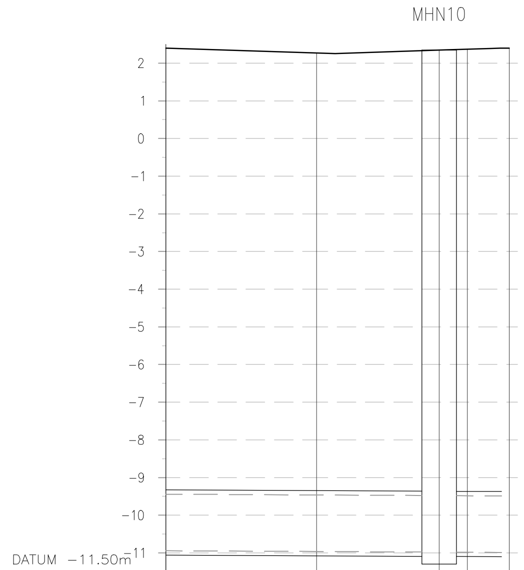


LOCATION PLAN
SCALE: 1:250 @ A1



CHAINAGE	290.000	300.000	308.128	310.000	312.775 / 313.347
EXISTING GROUND LEVEL (m)	2.394	2.270	2.343	2.370	2.400
MH INVERT LEVEL (m)			-10.980 / -10.980		-10.988
PIPE TYPE & GRADE	1500mmØ S&S CONCRETE @ 1:500		1500mmØ S&S CONCRETE @ 1:500		
LOCATION	FOOTPATH / WwTW SITE				

SOUTHERN INTERCEPTOR TO WWTW CH. 290-313M - LONGSECTION SCALE: H 1:250,V 1:100.

Issue	Date	By	Chkd	Appd
P1	31/08	MS	DR	ES

Client: UISCE ÉIREANN : IRISH WATER

Job Title: ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1: AS SHOWN

Discipline: CIVIL

ARUP BYRNELOOBY CLANCY MOORE ARCHITECTS

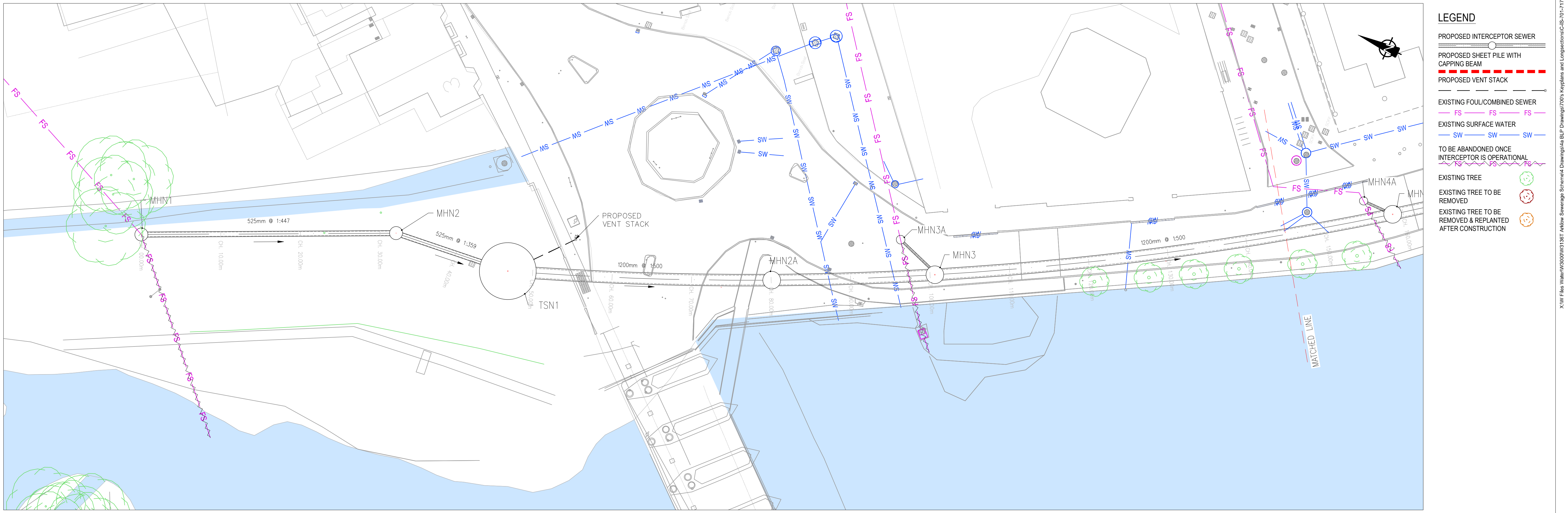
Drawing Title: LAYOUT PLAN & LONGITUDINAL SECTION 11 OF 16

Drawing Status: PLANNING

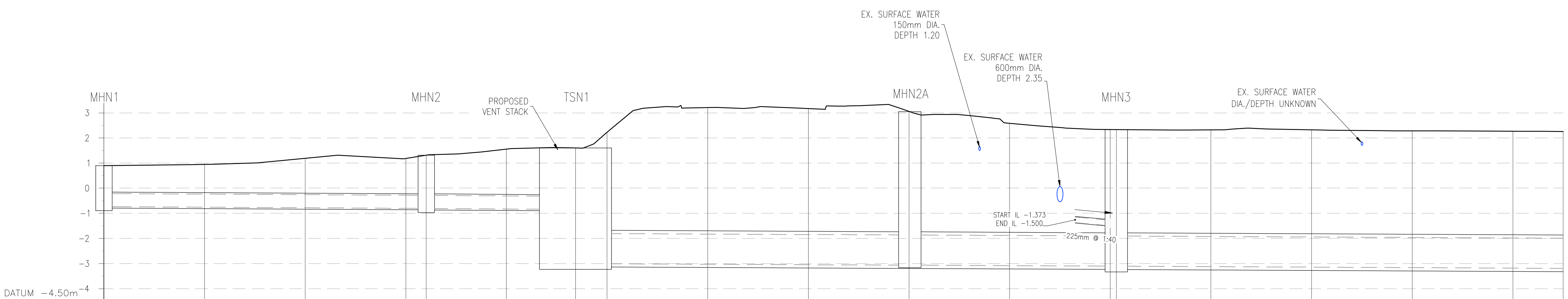
Job No: 247825-00 | Drawing No: C-IS-711 | Issue: P1

Do not scale

X:\W Files Water\W3000\W3136T Arklow Sewerage Scheme\4 Drawings\14a BLP Drawings\700's Keyplans and Longsections\C-IS-701-717.dwg



LOCATION PLAN
SCALE: 1:250 @ A1



CHAINAGE	00.000	10.000	20.000	30.000	32.033	40.000	46.867	50.000	60.000	70.000	73.731	80.000	90.000	100.000	100.596	110.000	120.000	129.645	130.000	140.000	145.000
EXISTING GROUND LEVEL (m)	0.894	0.945	1.192	1.182	1.310	1.555	1.596	2.225	3.209	3.172	3.271	3.058	2.581	2.334	2.331	2.320	2.322	2.281	2.281	2.267	2.257
MH INVERT LEVEL (m)					-0.809		-0.850	-3.000				-3.066 -3.066			-3.107						
PIPE TYPE & GRADE	525mmø S&S CONCRETE @ 1:447				525mmø S&S CONCRETE @ 1:359			1200mmø S&S CONCRETE @ 1:500				1200mmø S&S CONCRETE @ 1:500			1200mmø S&S CONCRETE @ 1:500						
LOCATION	FIELD/GRASS							FOOTPATH	ROAD		VERGE		FOOTPATH				ROAD				

NORTHERN INTERCEPTOR CH. 0-145M - LONGSECTION SCALE: H 1:250,V 1:100.

Issue	Date	By	Chkd	Appd
P1	31/08	MS	DR	ES

Client: UISCE ÉIREANN : IRISH WATER

Job Title: ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1: AS SHOWN

Discipline: CIVIL

ARUP
BYRNELOOBY
CLANCY MOORE ARCHITECTS

Drawing Title: LAYOUT PLAN & LONGITUDINAL SECTION 12 OF 16

Drawing Status: PLANNING

Job No	Drawing No	Issue
247825-00	C-IS-712	P1

Do not scale

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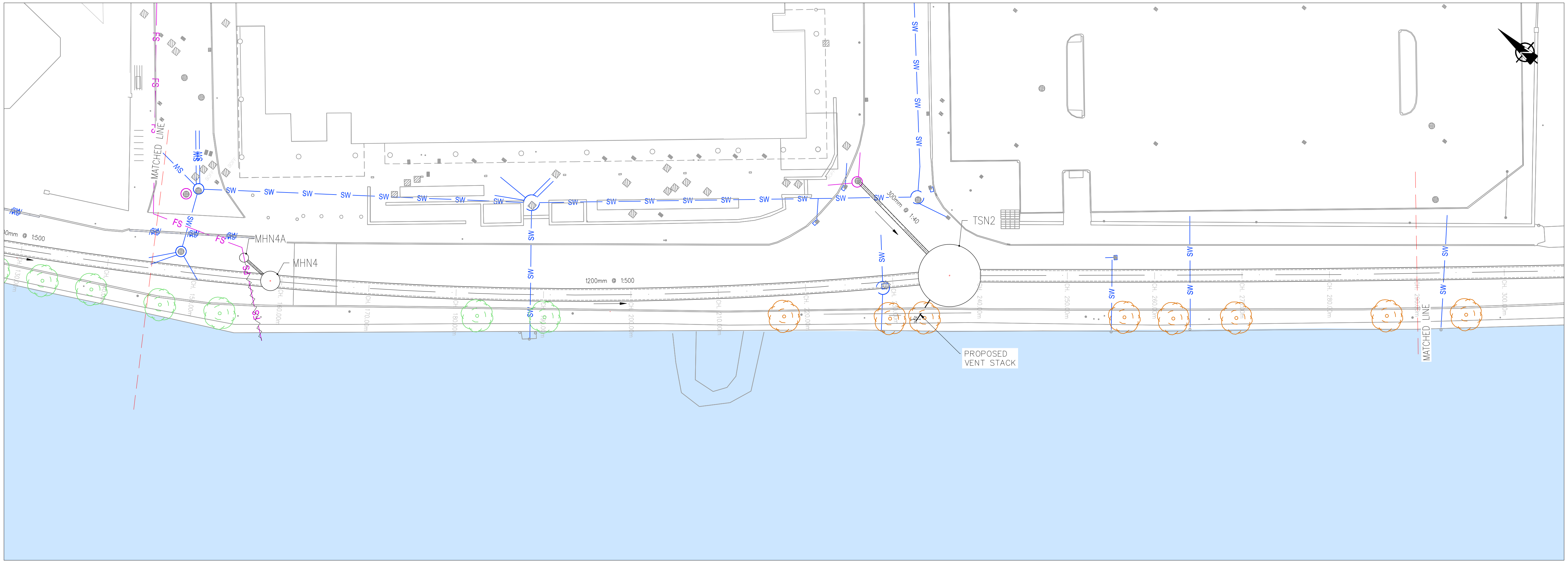
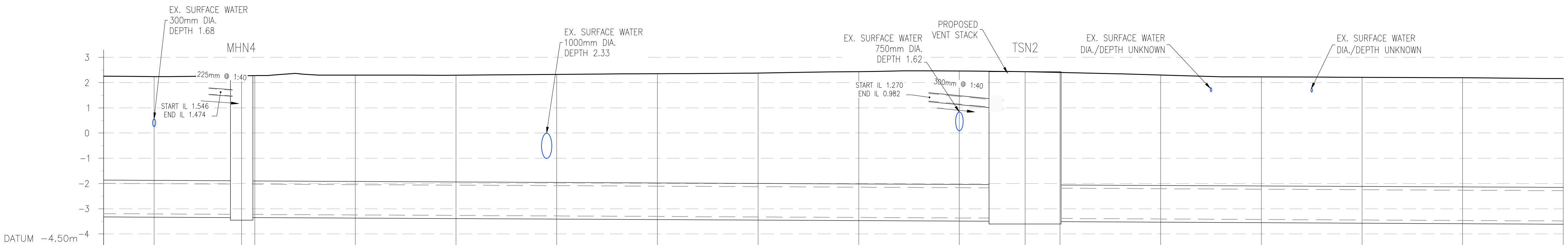


LOCATION PLAN
SCALE: 1:250 @ A1

LEGEND

- PROPOSED INTERCEPTOR SEWER
- PROPOSED SHEET PILE WITH CAPPING BEAM
- PROPOSED VENT STACK
- EXISTING FOUL/COMBINED SEWER
- EXISTING SURFACE WATER
- TO BE ABANDONED ONCE INTERCEPTOR IS OPERATIONAL
- EXISTING TREE
- EXISTING TREE TO BE REMOVED
- EXISTING TREE TO BE REMOVED & REPLANTED AFTER CONSTRUCTION



CHAINAGE	EXISTING GROUND LEVEL (m)	MH INVERT LEVEL (m)
145.000	2.257	
150.000	2.236	
158.695	2.271	-3.223
160.000	2.276	
170.000	2.296	
180.000	2.296	
190.000	2.326	
197.611	2.350	
200.000	2.354	
210.000	2.378	
220.000	2.437	
230.000	2.457	
236.527	2.431	-3.379
240.000	2.401	
250.000	2.302	
260.000	2.225	
270.000	2.212	
280.000	2.194	
290.000	2.160	

PIPE TYPE & GRADE	LOCATION
1200mmø S&S CONCRETE @ 1:500 (CH. 145.000–158.695)	ROAD
1200mmø S&S CONCRETE @ 1:500 (CH. 158.695–236.527)	ROAD
1200mmø S&S CONCRETE @ 1:500 (CH. 236.527–290.000)	ROAD

NORTHERN INTERCEPTOR CH. 145-290M - LONGSECTION SCALE: H 1:250,V 1:100.

Issue	Date	By	Chkd	Appd
P1	31/08	MS	DR	ES

Client: UISCE ÉIREANN : IRISH WATER

Job Title: ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1: AS SHOWN

Discipline: CIVIL

ARUP BYRNELOOBY CLANCY MOORE ARCHITECTS

Drawing Title: LAYOUT PLAN & LONGITUDINAL SECTION 13 OF 16

Drawing Status: PLANNING

Job No: 247825-00 Drawing No: C-IS-713 Issue: P1

Do not scale

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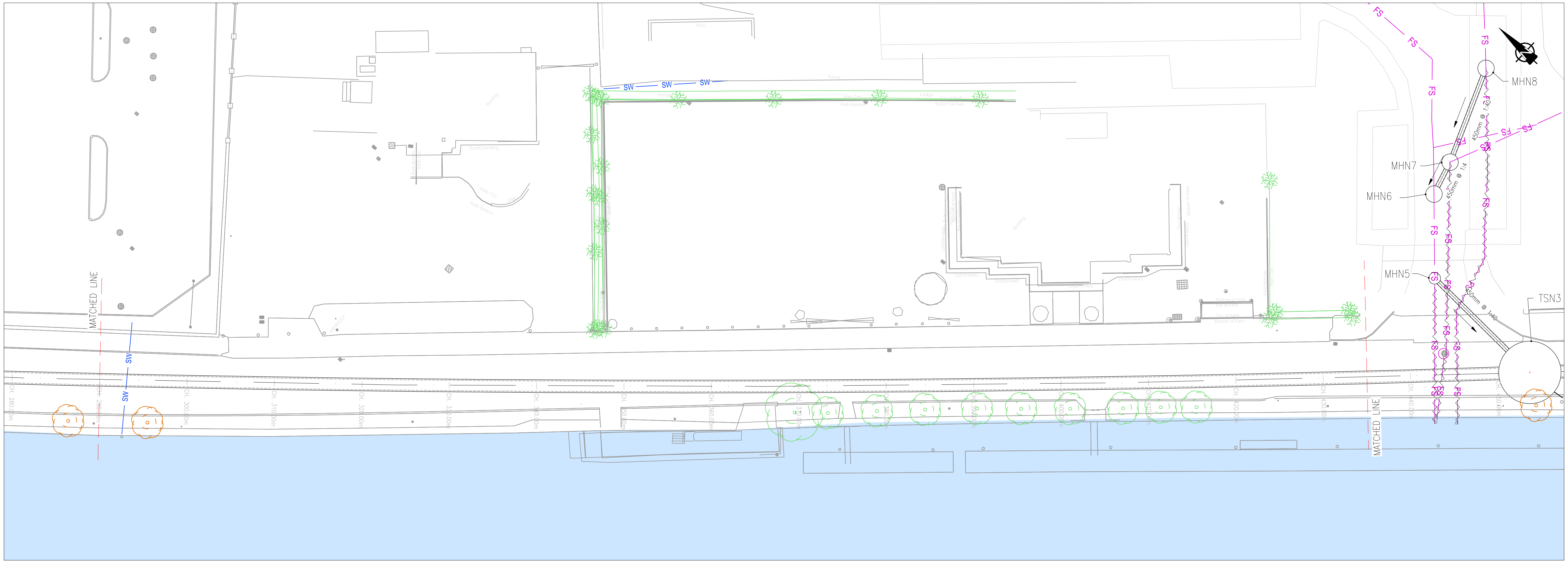
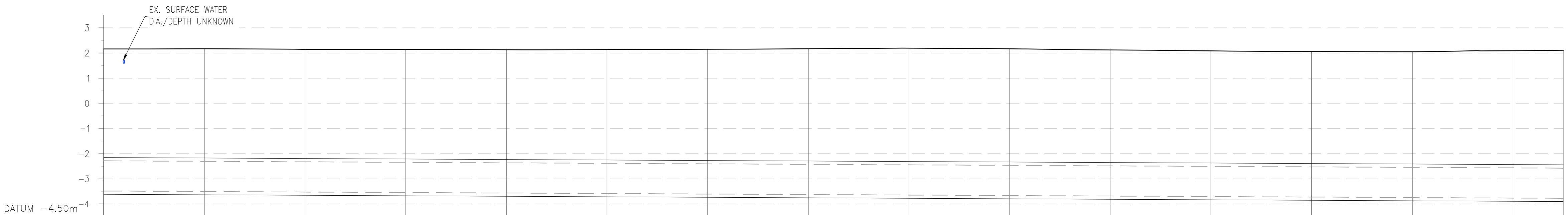


LEGEND

- PROPOSED INTERCEPTOR SEWER
- PROPOSED SHEET PILE WITH CAPPING BEAM
- PROPOSED VENT STACK
- EXISTING FOUL/COMBINED SEWER
- EXISTING SURFACE WATER
- TO BE ABANDONED ONCE INTERCEPTOR IS OPERATIONAL
- EXISTING TREE
- EXISTING TREE TO BE REMOVED
- EXISTING TREE TO BE REMOVED & REPLANTED AFTER CONSTRUCTION

LOCATION PLAN
SCALE: 1:250 @ A1



CHAINAGE	290.000	300.000	310.000	320.000	330.000	340.000	345.091	350.000	360.000	370.000	380.000	390.000	400.000	410.000	420.000	430.000	435.000
EXISTING GROUND LEVEL (m)	2.160	2.172	2.149	2.146	2.130	2.138	2.145	2.149	2.174	2.195	2.167	2.123	2.085	2.062	2.050	2.092	2.111
MH INVERT LEVEL (m)																	
PIPE TYPE & GRADE	1200mmø S&S CONCRETE @ 1:500																
LOCATION	ROAD	ROAD	ROAD														

NORTHERN INTERCEPTOR CH. 290-435M - LONGSECTION SCALE: H 1:250,V 1:100.

Issue	Date	By	Chkd	Appd
P1	31/08	MS	DR	ES

Client: UISCE ÉIREANN : IRISH WATER

Job Title: ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1: AS SHOWN

Discipline: CIVIL

ARUP BYRNELOOBY
CLANCY MOORE ARCHITECTS

Drawing Title: LAYOUT PLAN & LONGITUDINAL SECTION 14 OF 16

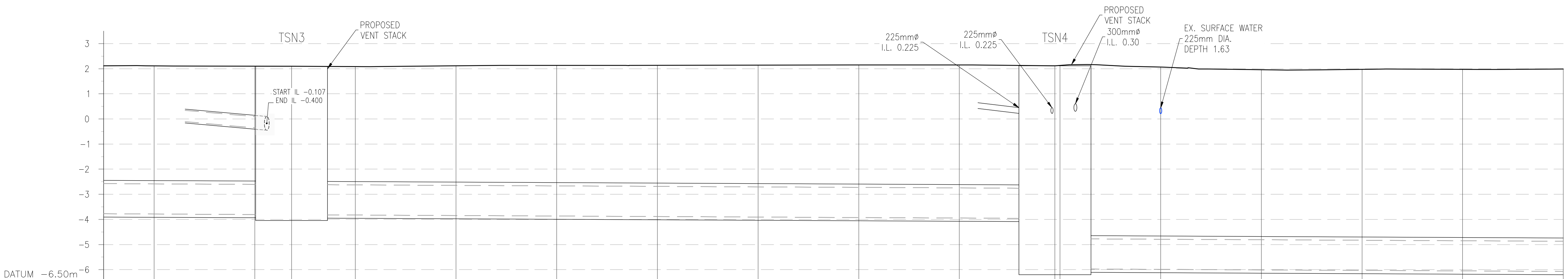
Drawing Status: PLANNING

Job No: 247825-00
Drawing No: C-IS-714
Issue: P1

Do not scale

LEGEND
PROPOSED INTERCEPTOR SEWER
PROPOSED SHEET PILE WITH CAPPING BEAM
PROPOSED VENT STACK
EXISTING FOUL/COMBINED SEWER
EXISTING SURFACE WATER
TO BE ABANDONED ONCE INTERCEPTOR IS OPERATIONAL
EXISTING TREE
EXISTING TREE TO BE REMOVED
EXISTING TREE TO BE REMOVED & REPLANTED AFTER CONSTRUCTION

LOCATION PLAN
SCALE: 1:250 @ A1



CHAINAGE	435.000	440.000	450.000	453.654	460.000	470.000	480.000	490.000	500.000	510.000	520.000	529.498	530.000	540.000	550.000	560.000	570.000	580.000
EXISTING GROUND LEVEL (m)	2.111	2.115	2.099	2.096	2.081	2.116	2.133	2.132	2.142	2.146	2.146	2.115	2.132	2.066	1.962	1.978	1.975	1.989
MH INVERT LEVEL (m)				-3.813								-3.965	-5.968					
PIPE TYPE & GRADE	1200mmø S&S CONCRETE @ 1:500				1200mmø S&S CONCRETE @ 1:500								1200mmø S&S CONCRETE @ 1:500					
LOCATION	ROAD				ROAD								ROAD					

NORTHERN INTERCEPTOR CH. 435-580M - LONGSECTION SCALE: H 1:250,V 1:100.

Issue	Date	By	Chkd	Appd
P1	31/08	MS	DR	ES

Client: UISCE ÉIREANN : IRISH WATER

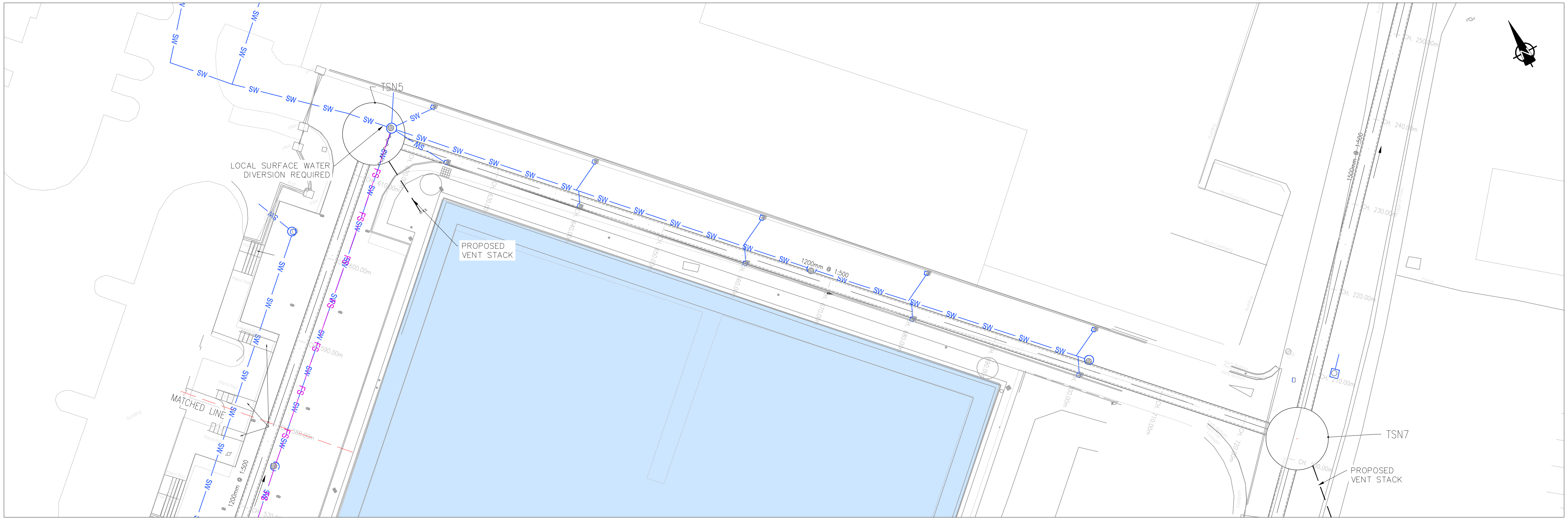
Job Title: ARKLOW WASTEWATER TREATMENT PLANT PROJECT
Scale at A1: AS SHOWN
Discipline: CIVIL

ARUP BYRNELOOBY CLANCY MOORE ARCHITECTS

Drawing Title: LAYOUT PLAN & LONGITUDINAL SECTION 15 OF 16
Drawing Status: PLANNING
Job No: 247825-00
Drawing No: C-IS-715
Issue: P1

Do not scale

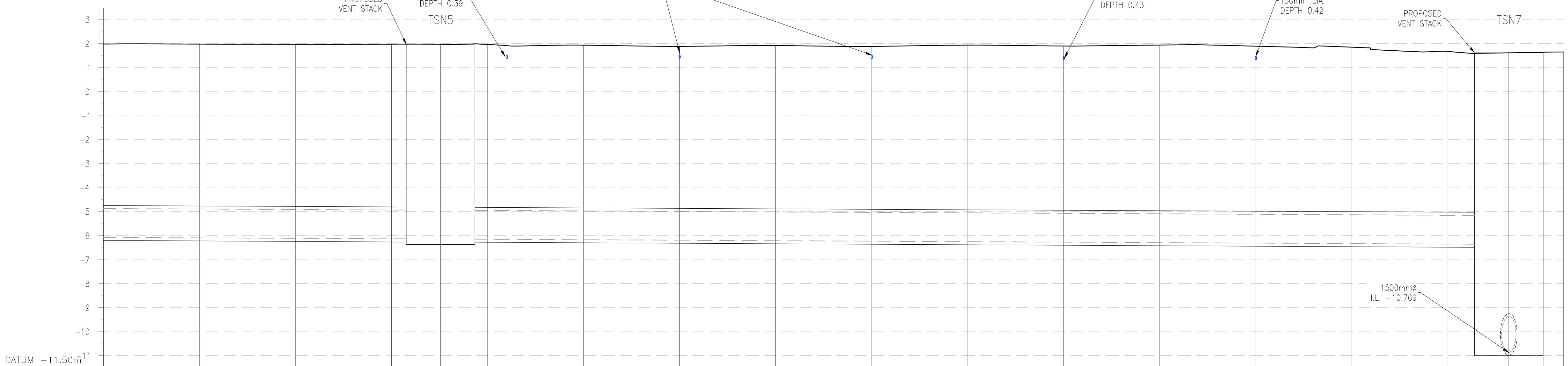
X:\W Files Water\W3000\W3136T Arklow Sewerage Scheme\4 Drawings\4a BLP Drawings\700's Keyplans and Longsections\C-IS-701-717.dwg



LEGEND

- PROPOSED INTERCEPTOR SEWER
- PROPOSED SHEET PILE WITH CAPPING BEAM
- PROPOSED VENT STACK
- EXISTING FOUL/COMBINED SEWER
- EXISTING SURFACE WATER
- TO BE ABANDONED ONCE INTERCEPTOR IS OPERATIONAL
- EXISTING TREE
- EXISTING TREE TO BE REMOVED
- EXISTING TREE TO BE REMOVED & REPLANTED AFTER CONSTRUCTION

LOCATION PLAN
SCALE: 1:250 @ A1



CHAINAGE	EXISTING GROUND LEVEL (m)	MH INVERT LEVEL (m)
580.000	1.989	
590.000	1.986	
600.000	1.975	
610.000	1.984	
615.114	1.974	-6.139
620.000	1.966	
630.000	1.940	
640.000	1.889	
650.000	1.931	
660.000	1.888	
670.000	1.943	
680.000	1.908	
690.000	1.942	
700.000	1.896	
710.000	1.857	
720.000	1.677	-6.354
726.345	1.621	
730.000	1.647	
732.023	1.653	

PIPE TYPE & GRADE: 1200mmø S&S CONCRETE @ 1:500 (ch. 580.000–615.114); 1200mmø S&S CONCRETE @ 1:500 (ch. 615.114–720.000)

LOCATION: ROAD | ROAD | ROAD

NORTHERN INTERCEPTOR CH. 580–724M – LONGSECTION SCALE: H 1:250,V 1:100.

Issue	Date	By	Chkd	Appd
P1	31/08	MS	DR	ES

Client: UISCE ÉIREANN : IRISH WATER

Job Title: ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1: AS SHOWN

Discipline: CIVIL

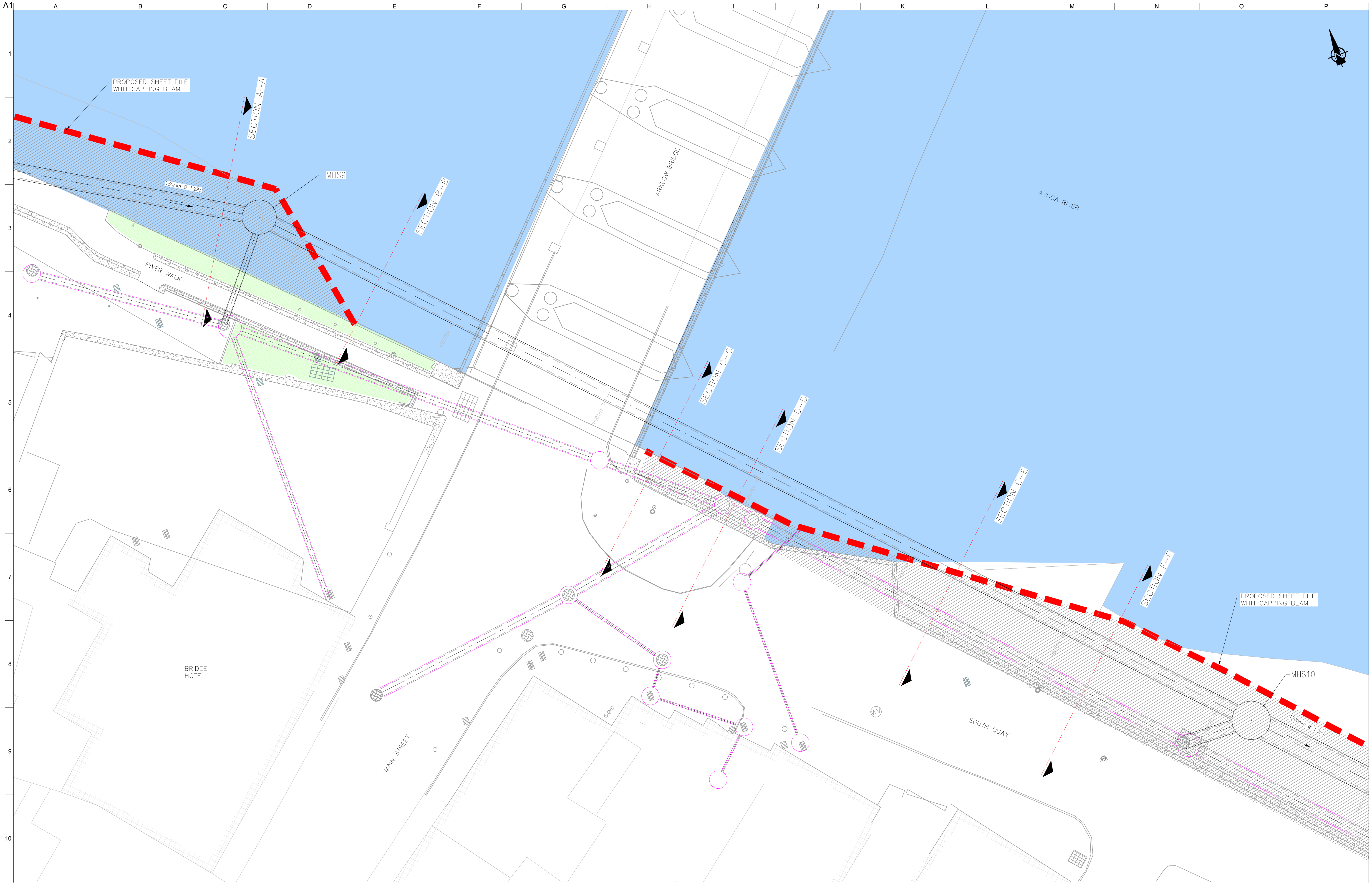
ARUP BYRNELOOBY CLANCY MOORE ARCHITECTS

Drawing Title: LAYOUT PLAN & LONGITUDINAL SECTION 16 OF 16

Drawing Status: PLANNING

Job No: 247825-00 | Drawing No: C-IS-716 | Issue: P1

Do not scale



Ordnance Survey Ireland Licence No. EN 0083318

Issue	Date	By	Chkd	Appd
P1	31/08	MS	DR	ES

Client: UISCE ÉIREANN : IRISH WATER

Job Title: ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1: AS SHOWN

Discipline: CIVIL

ARUP BYRNELOOBY

CLANCY MOORE ARCHITECTS

Drawing Title: AVOCA RIVER SECTIONS LAYOUT PLAN 1 OF 4

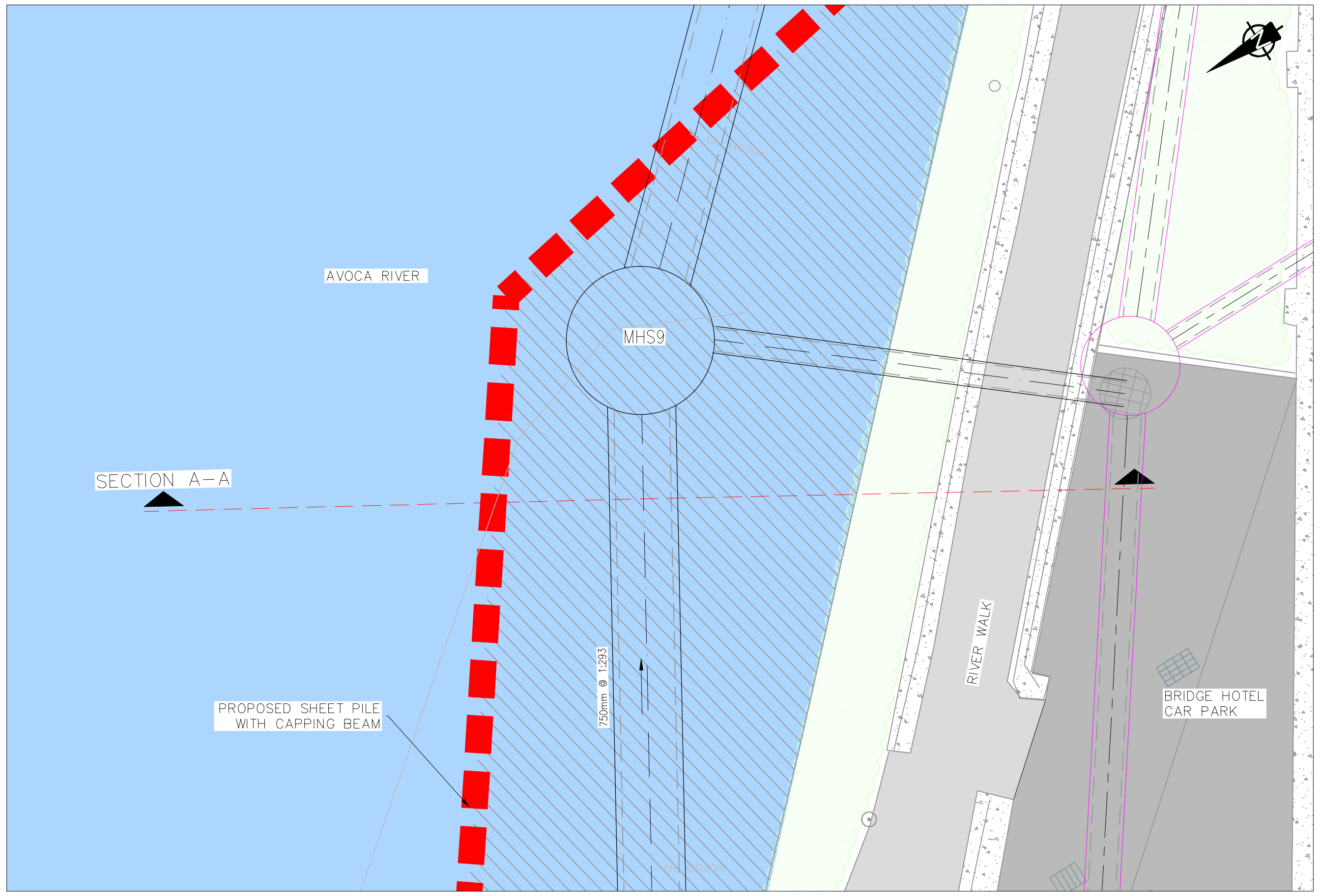
Drawing Status: PLANNING

Job No: 247825-00

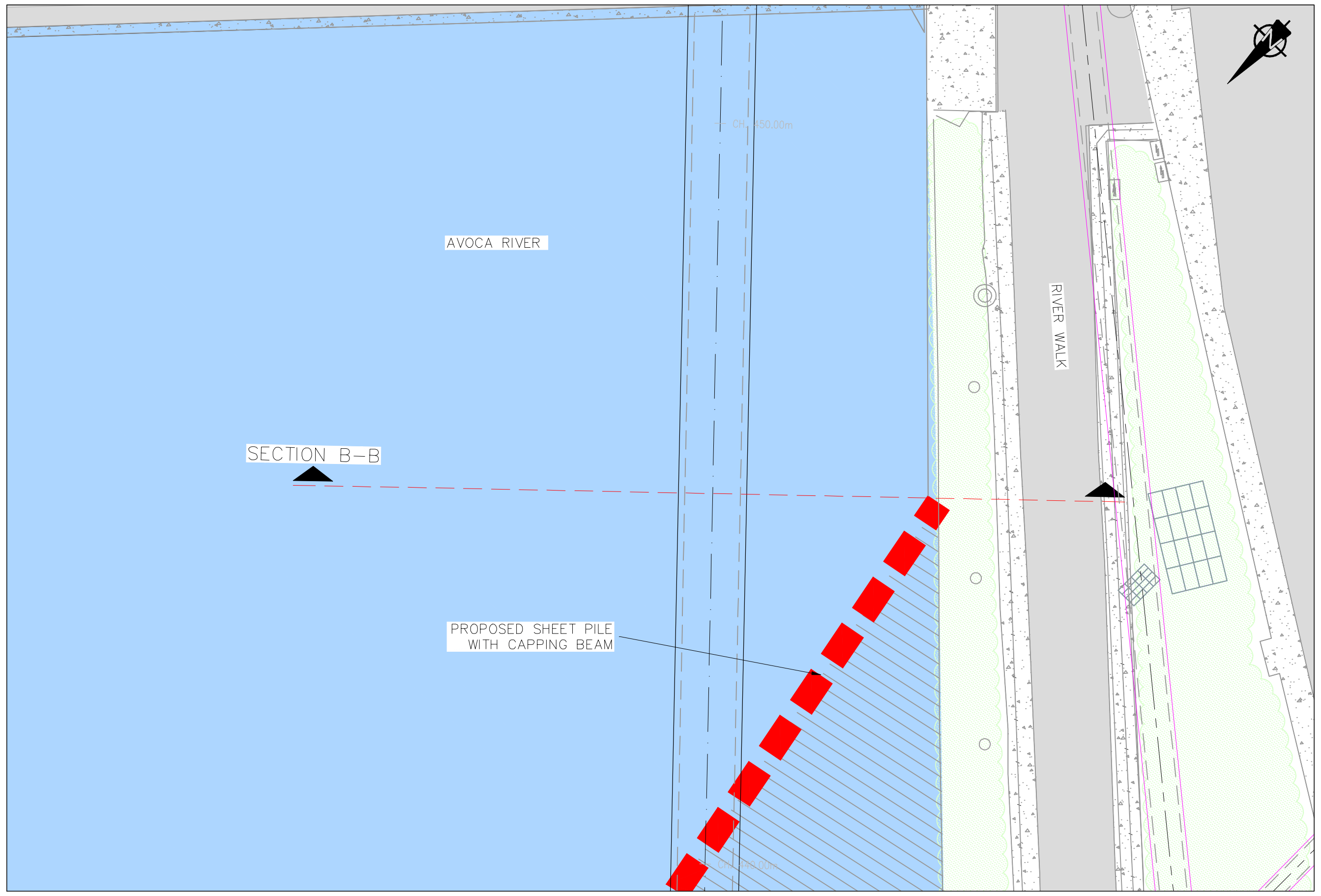
Drawing No: C-IS-730

Issue: P1

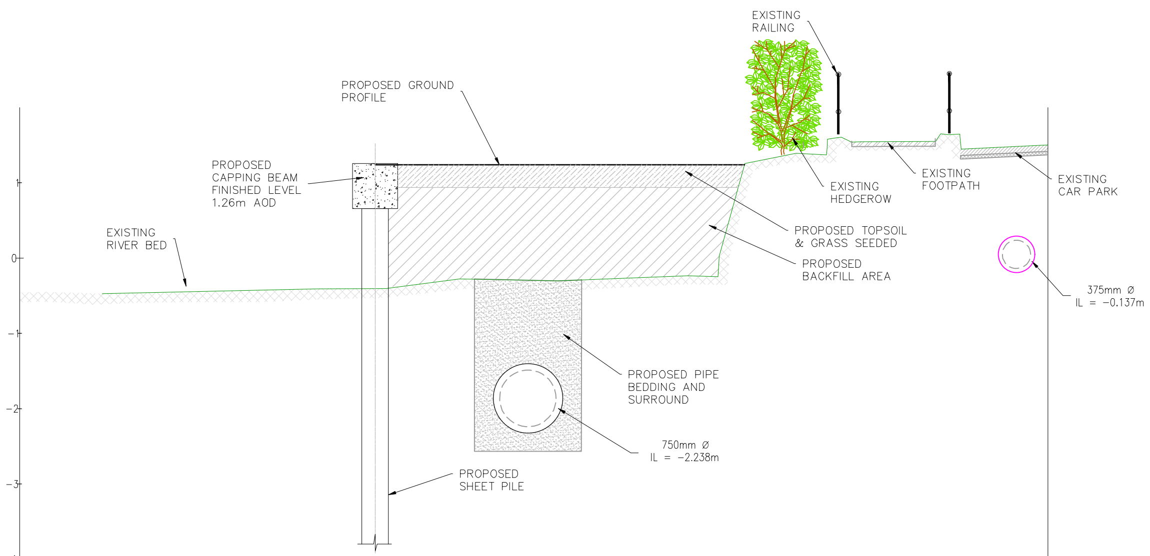
Do not scale



SECTION A—A — PLAN
SCALE 1:50

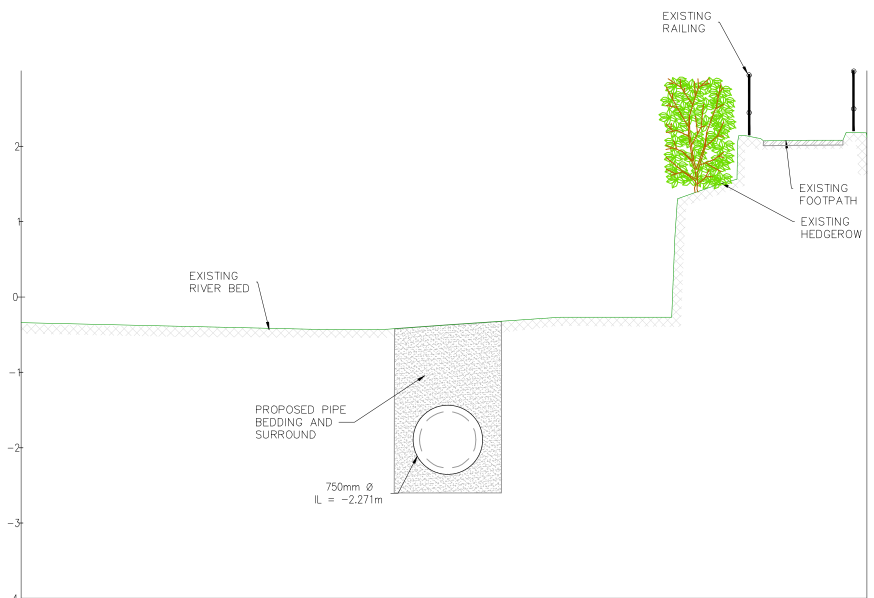


SECTION B—B — PLAN
SCALE 1:50



OFFSET	−6.75	−6.00	−5.65	−5.00	−4.00	−3.00	−2.00	−1.00	0	1.00	2.00	3.00	4.00	5.00	6.00	6.90
EXISTING ELEVATIONS			−0.473	−0.458	−0.435	−0.412	−0.403	−0.289	−0.295	−0.279	−0.238	1.281	1.582	1.548	1.461	1.502
PROPOSED ELEVATIONS							1.240	1.240	1.240	1.240	1.240	1.240				

SECTION A—A
SCALE 1:50



OFFSET	−5.66	−5.00	−4.00	−3.00	−2.00	−1.00	0	1.00	2.00	3.00	4.00	5.00	5.56
EXISTING ELEVATIONS	−0.338	−0.353	−0.377	−0.400	−0.423	−0.432	−0.371	−0.302	−0.270	0.439	2.132	2.081	2.119
PROPOSED ELEVATIONS													

SECTION B—B
SCALE 1:50

P1	31/08	MS	DR	ES
Issue	Date	By	Chkd	Appd

Client
UISCE ÉIREANN : IRISH WATER

Job Title
ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1: AS SHOWN
Discipline: CIVIL

ARUP BYRNELOOBY
CLANCY MOORE ARCHITECTS

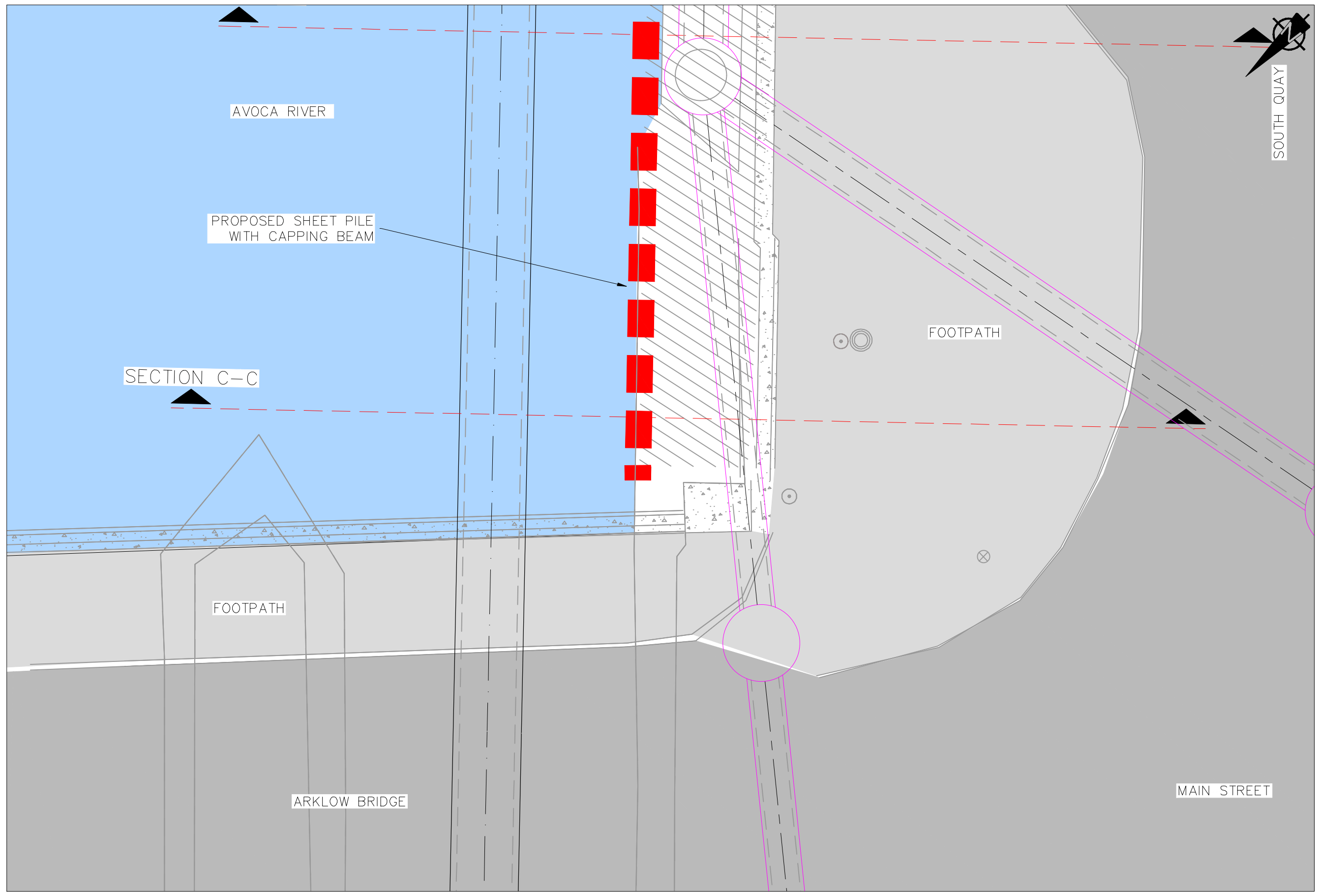
Drawing Title
AVOCA RIVER SECTIONS
SECTION A-A & B-B
2 OF 4

Drawing Status
PLANNING

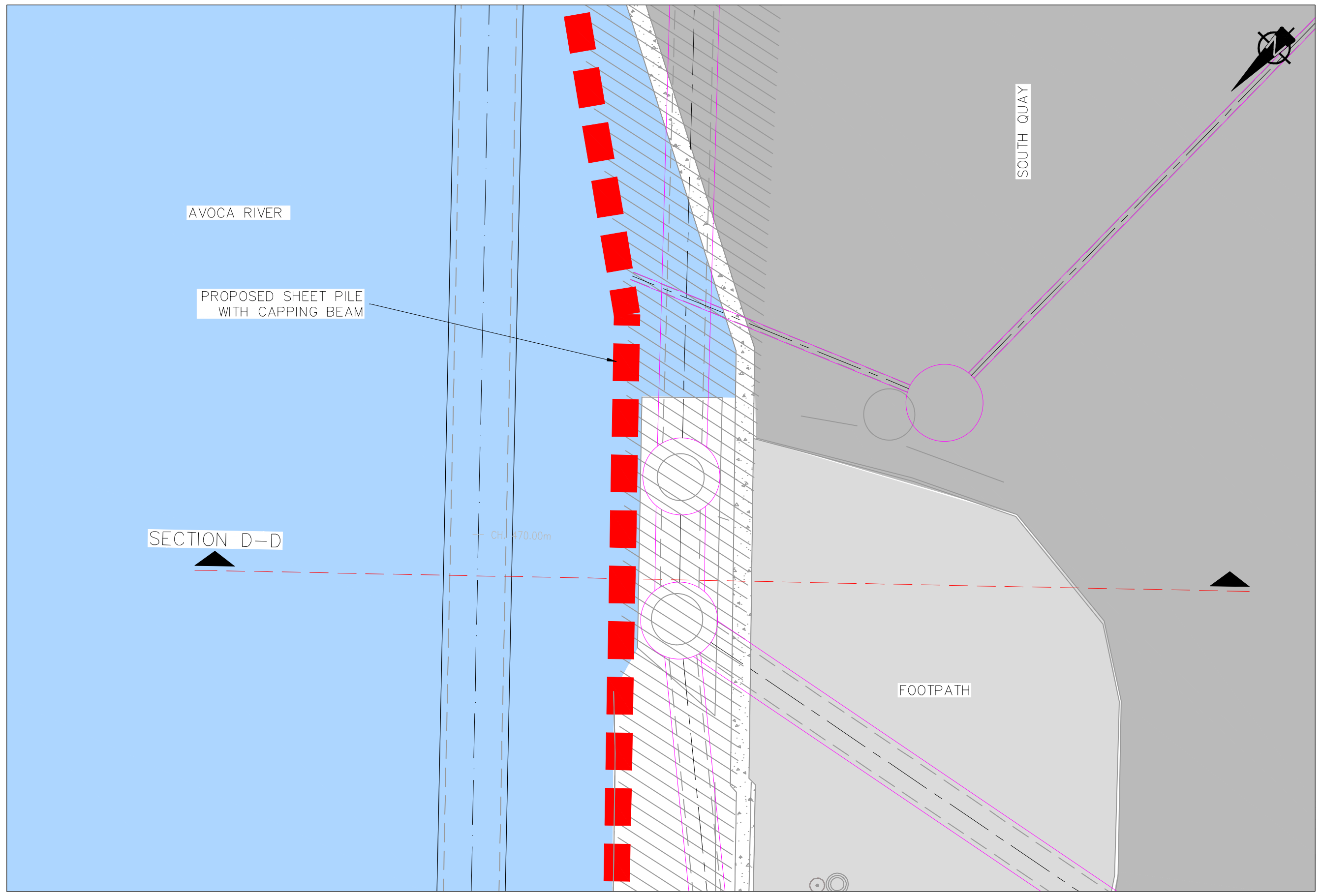
Job No: 247825-00
Drawing No: C-IS-731
Issue: P1

Do not scale

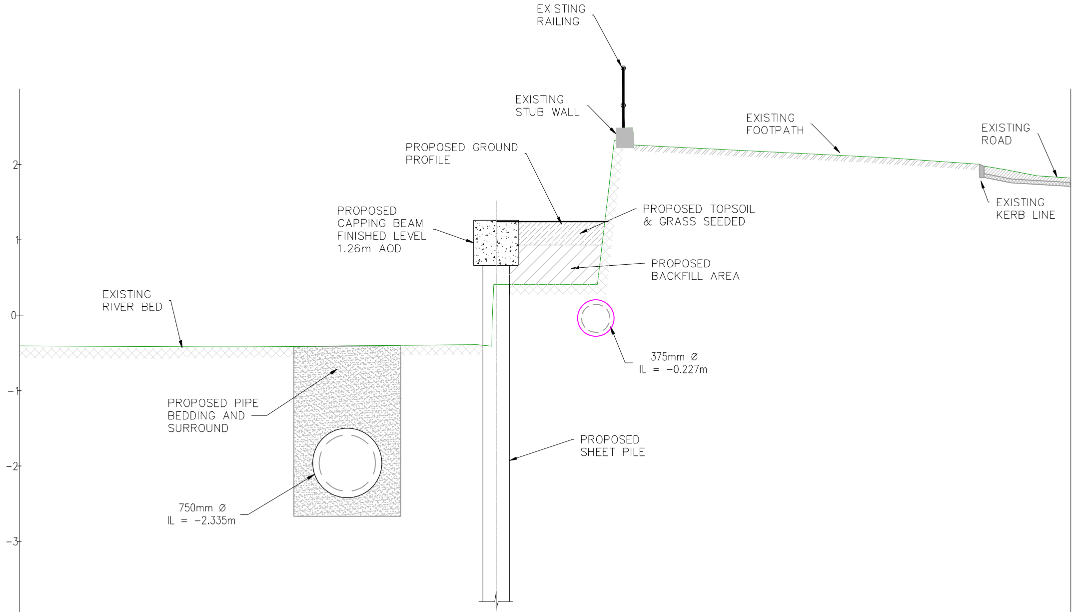
X:\W Files Water\W3000\W3136T Arklow Sewerage Scheme\4 Drawings\4a BLP Drawings\700's Keyplans and Longsections\C-IS-730-733.dwg



SECTION C–C – PLAN
SCALE 1:50

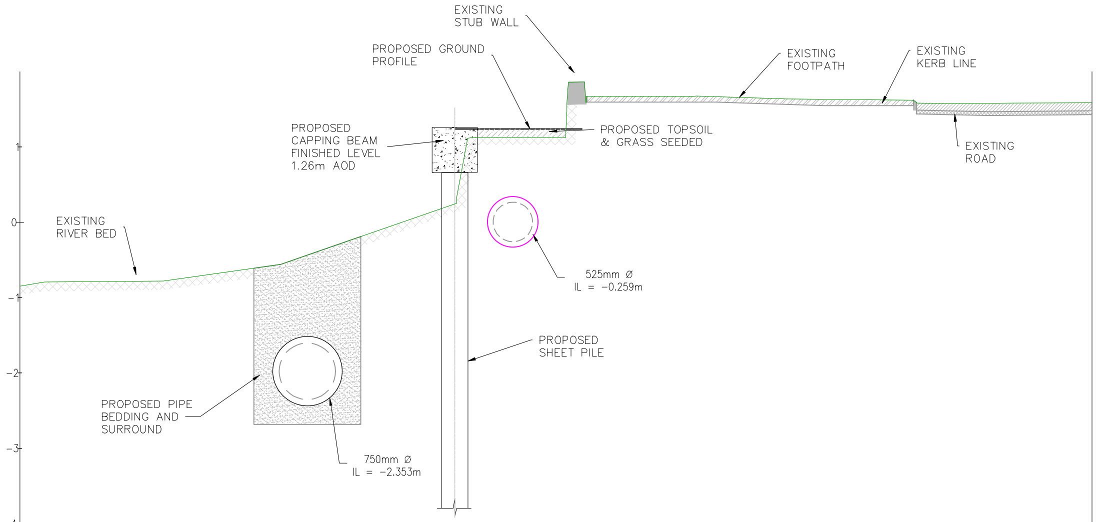


SECTION D–D – PLAN
SCALE 1:50



OFFSET	−4.00	−3.00	−2.00	−1.00	0	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00
EXISTING ELEVATIONS	−0.405	−0.411	−0.417	−0.417	−0.408	−0.397	0.411	0.411	2.246	2.196	2.147	2.097	2.031	1.879
PROPOSED ELEVATIONS							1.240	1.240						

SECTION C–C
SCALE 1:50



OFFSET	−3.00	−2.00	−1.00	0	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00
EXISTING ELEVATIONS	−0.789	−0.780	−0.649	−0.434	−0.088	0.434	1.123	1.673	1.672	1.648	1.629	1.619	1.580	1.586
PROPOSED ELEVATIONS						1.240	1.240							

SECTION D–D
SCALE 1:50

Issue	Date	By	Chkd	Appd
P1	31/08	MS	DR	ES

Client: UISCE ÉIREANN : IRISH WATER

Job Title: ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1: AS SHOWN

Discipline: CIVIL

ARUP BYRNELOOBY CLANCY MOORE ARCHITECTS

Drawing Title: AVOCA RIVER SECTIONS SECTION C-C & D-D 3 OF 4

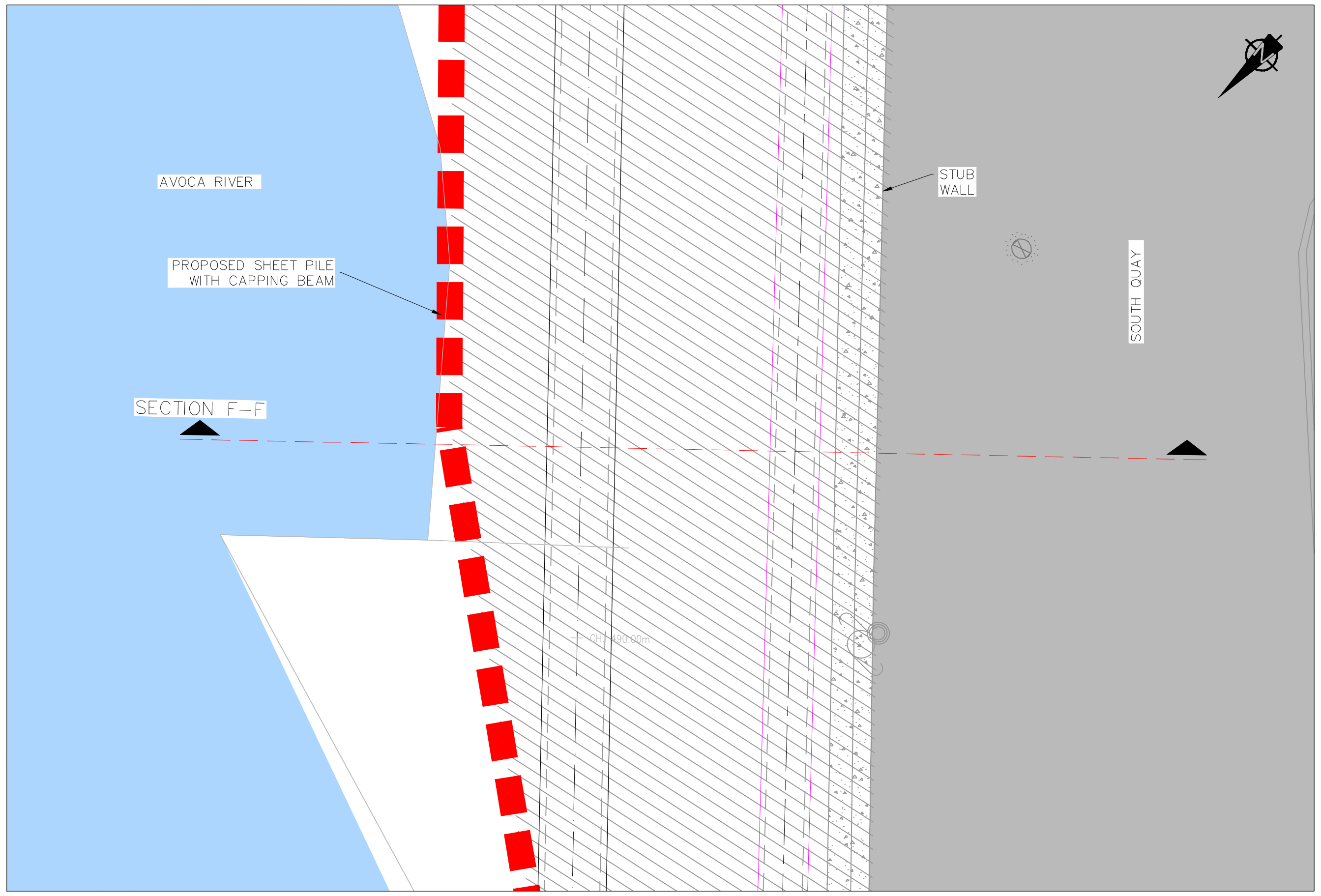
Drawing Status: PLANNING

Job No: 247825-00 | Drawing No: C-IS-732 | Issue: P1

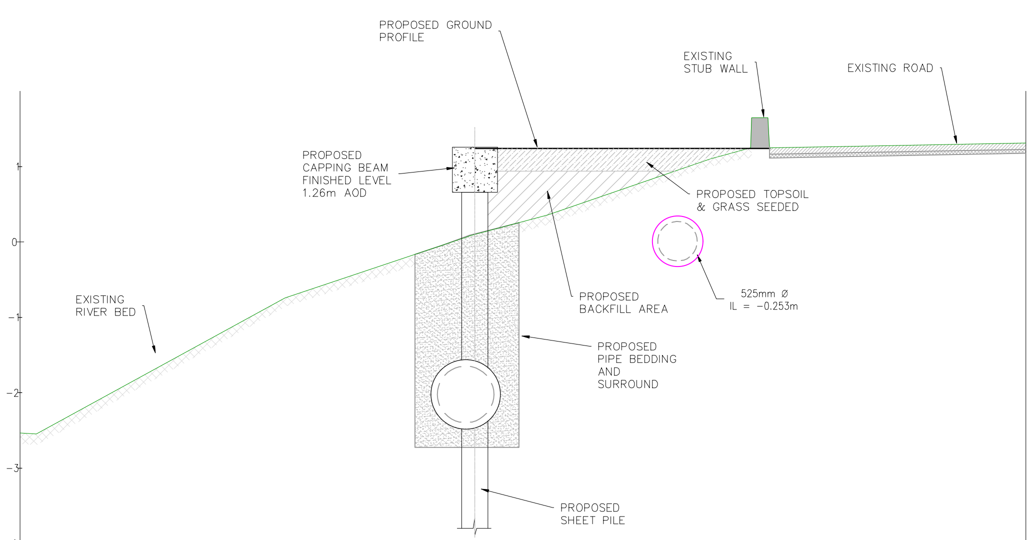
Do not scale

X:\W Files Water\W3000\W3136T Arklow Sewerage Scheme\4 Drawings\4a BLP Drawings\700's Keyplans and Longsections\C-IS-730-733.dwg

SECTION E–E – PLAN
SCALE 1:50

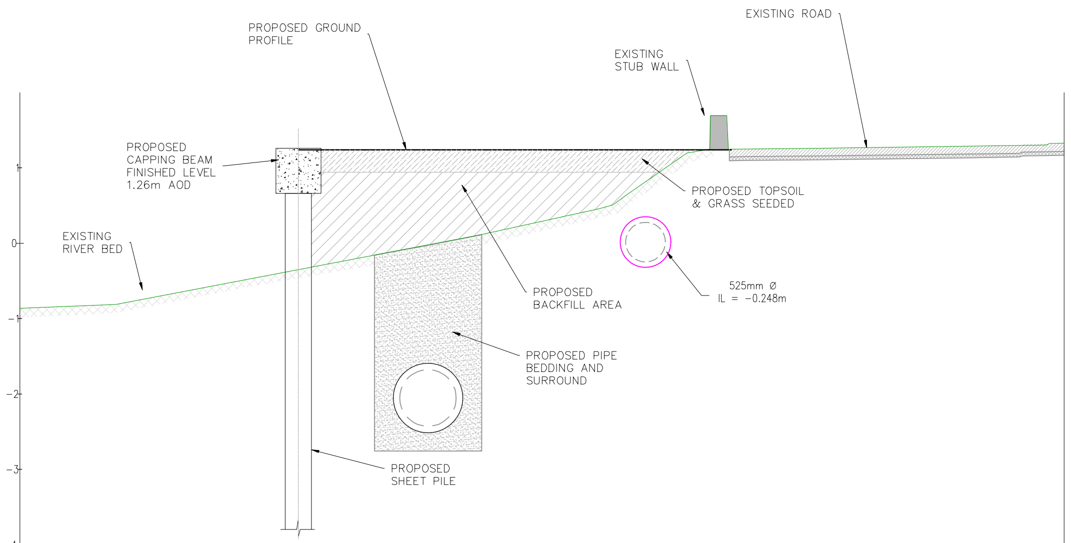


SECTION F–F – PLAN
SCALE 1:50



OFFSET	-5.00	-4.00	-3.00	-2.00	-1.00	0	1.00	2.00	3.00	4.00	5.00	6.00	7.00
EXISTING ELEVATIONS	-2.163	-1.617	-1.071	-0.609	-0.273	0.062	0.335	0.674	1.019	1.649	1.267	1.286	1.306
PROPOSED ELEVATIONS							1.240	1.240	1.240	1.240			

SECTION E–E
SCALE 1:50



OFFSET	-5.00	-4.00	-3.00	-2.00	-1.00	0	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00
EXISTING ELEVATIONS	-0.846	-0.783	-0.593	-0.404	-0.214	-0.024	0.177	0.396	0.893	1.248	1.257	1.270	1.285	1.299
PROPOSED ELEVATIONS					1.240	1.240	1.240	1.240	1.240	1.240				

SECTION F–F
SCALE 1:50

Issue	Date	By	Chkd	Appd
P1	31/08	MS	DR	ES

Client: UISCE ÉIREANN : IRISH WATER

Job Title: ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1: AS SHOWN

Discipline: CIVIL

ARUP BYRNELOOBY

CLANCY MOORE ARCHITECTS

Drawing Title: AVOCA RIVER SECTIONS SECTION E-E & F-F 4 OF 4

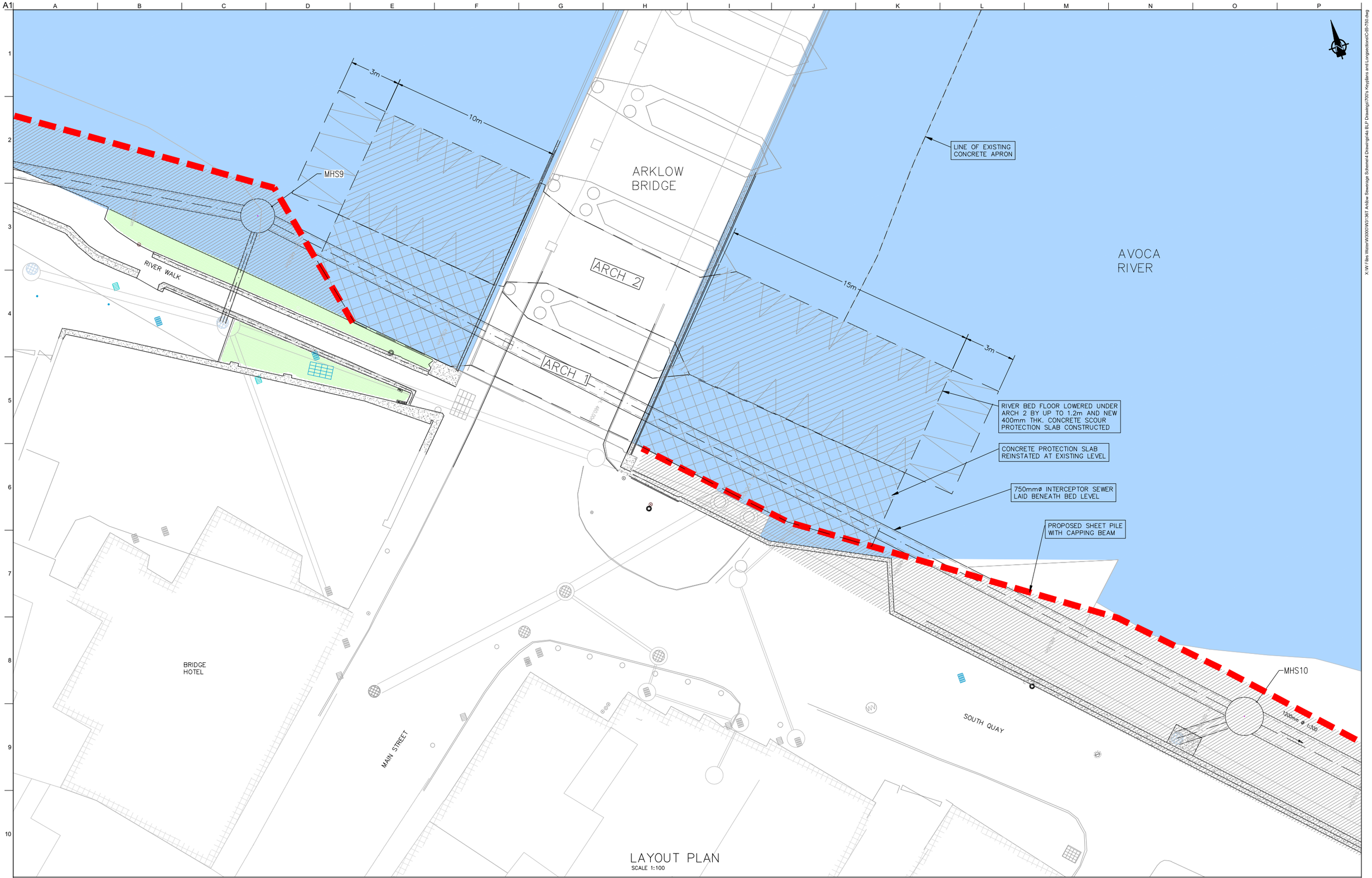
Drawing Status: PLANNING

Job No: 247825-00

Drawing No: C-IS-733

Issue: P1

Do not scale



LAYOUT PLAN
SCALE 1:100

Issue	Date	By	Chkd	Appd
P1	31/08	MS	DR	ES

Client: UISCE ÉIREANN : IRISH WATER

Job Title: ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1: AS SHOWN

Discipline: CIVIL

ARUP BYRNELOOBY

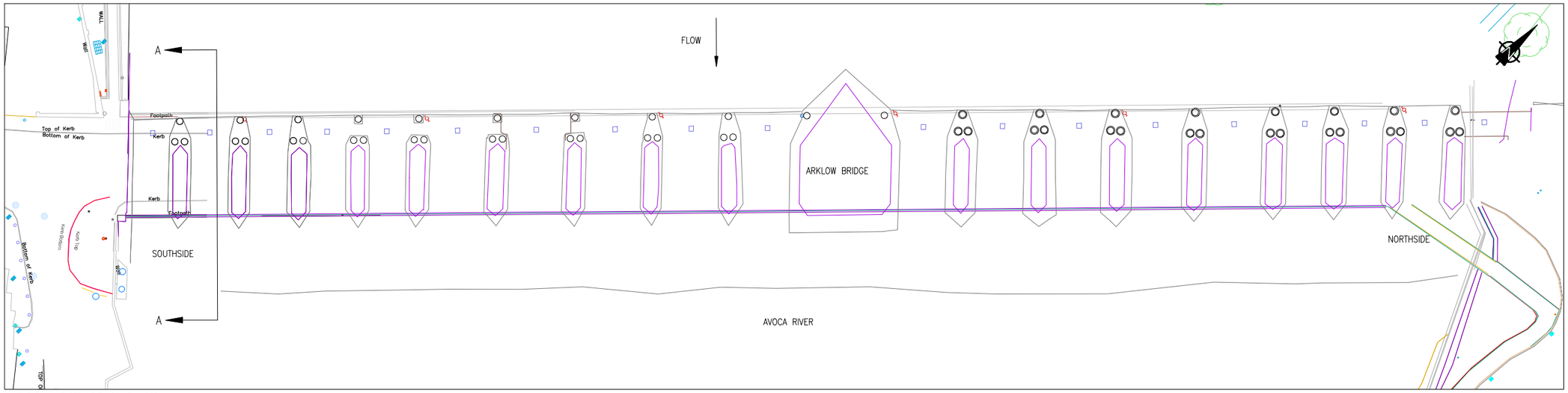
CLANCY MOORE ARCHITECTS

Drawing Title: ARKLOW BRIDGE WORKS PLAN

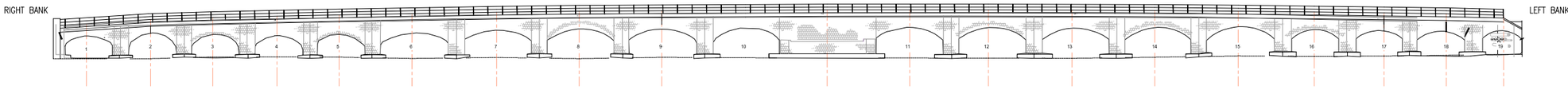
Drawing Status: PLANNING

Job No	Drawing No	Issue
247825-00	C-IS-750	P1

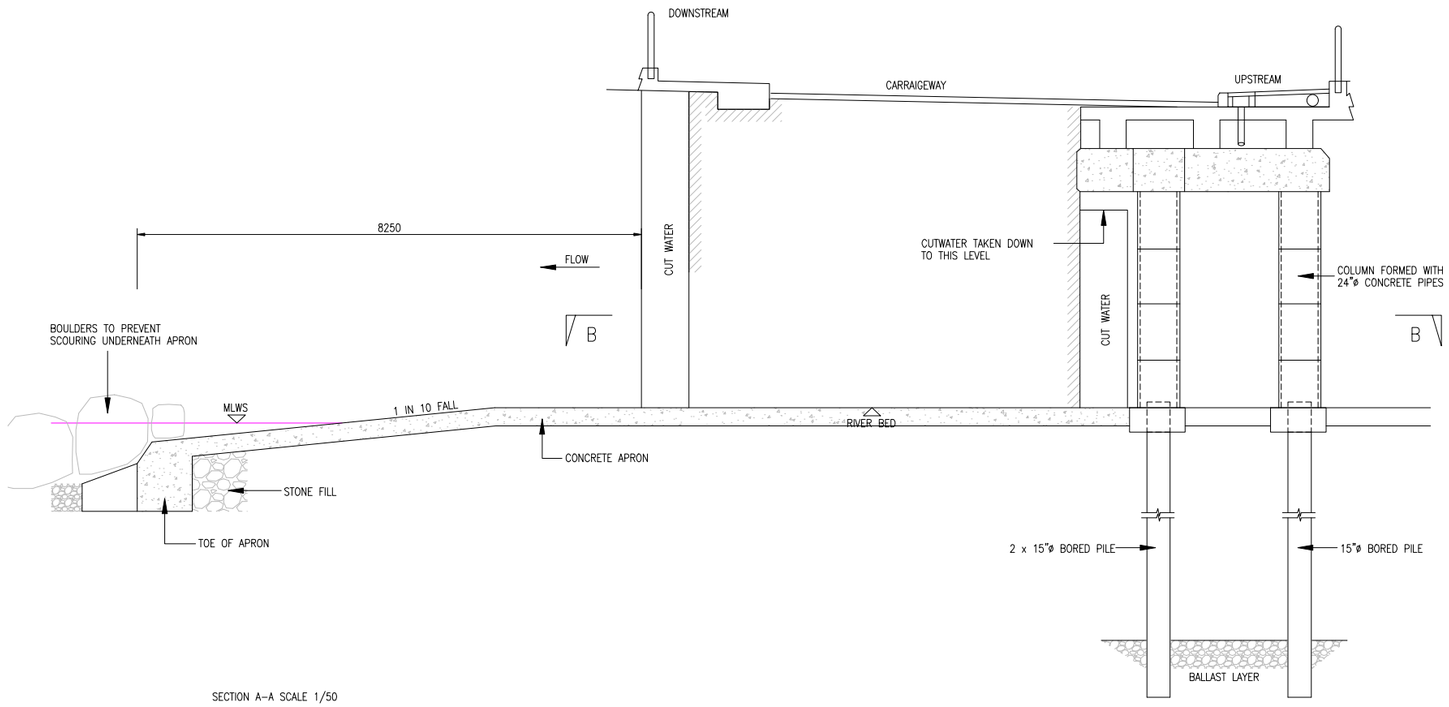
X:\W Files West\W2000\W31987 Arklow Sewerage Scheme\4 Drawings\4e BLP Drawings\700's Keyplans and Longsections\C-IS-750.dwg



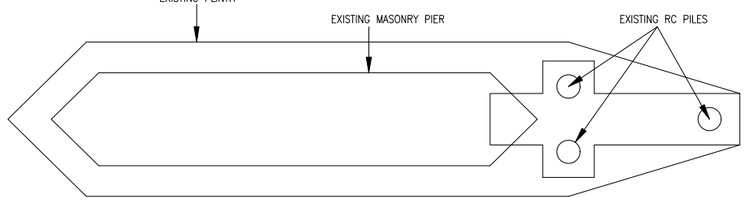
LAYOUT PLAN AT BED LEVEL SCALE 1/250



DOWNSTREAM ELEVATION SCALE 1/250



SECTION A–A SCALE 1/50



PLAN SECTION B–B
SCALE 1/50

1. DO NOT SCALE OFF DRAWING
2. DRAWING TO BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS
3. DRAWING IS FOR INFORMATION PURPOSES ONLY, NOT FOR CONSTRUCTION

X:\W Files Water\W2000\W13987 Arklow Sewerage Scheme\4 Drawings\4e BLP Drawings\700's Keyplans and Longsections\C-IS-751.dwg

Issue	Date	By	Chkd	Appd
P1	31/08	MS	DR	ES

Client: UISCE ÉIREANN : IRISH WATER

Job Title: ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1: AS SHOWN

Discipline: CIVIL

ARUP BYRNELOOBY

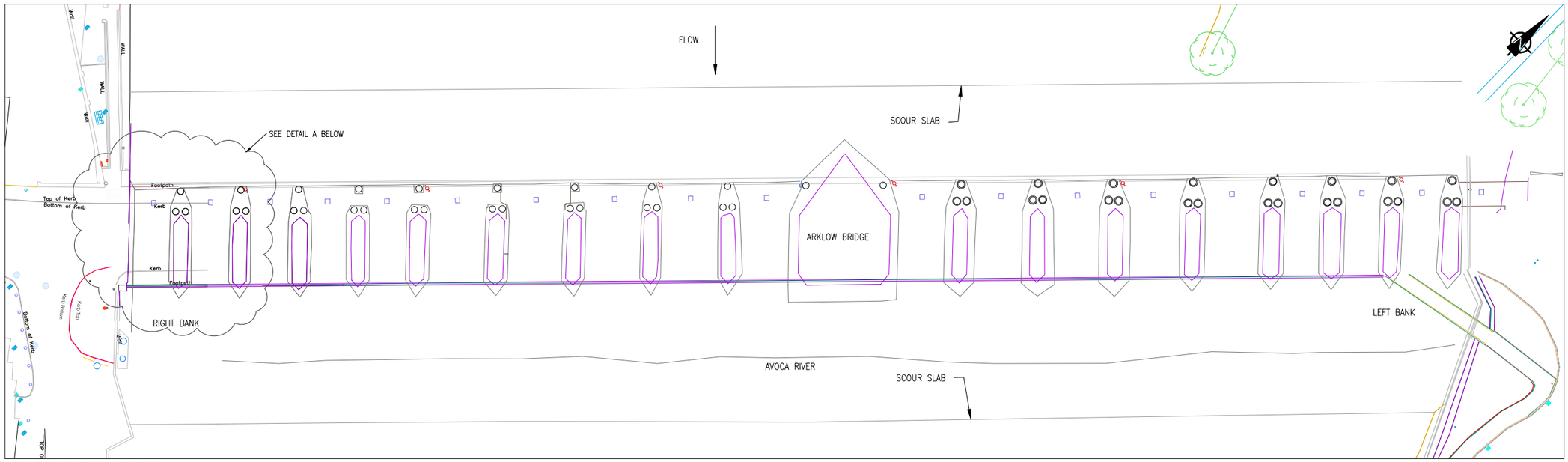
CLANCY MOORE ARCHITECTS

Drawing Title: ARKLOW BRIDGE WORKS EXISTING LAYOUT - PLAN, ELEVATIONS & SECTIONS

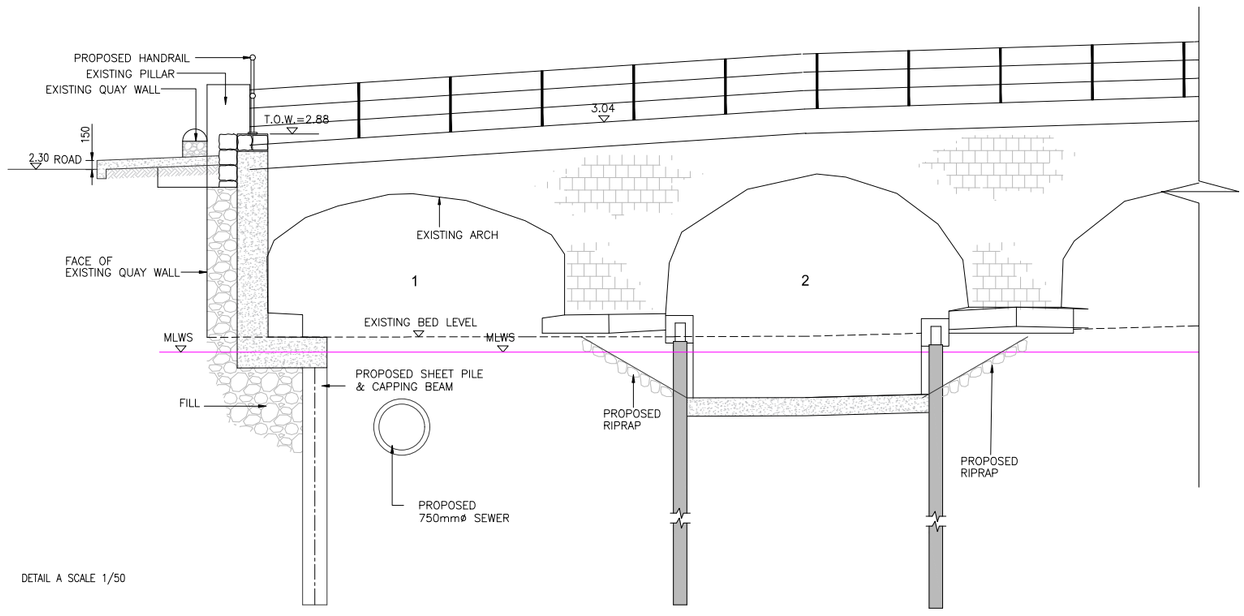
Drawing Status: PLANNING

Job No	Drawing No	Issue
247825-00	C-IS-751	P1

Do not scale



LAYOUT PLAN AT BED LEVEL SCALE 1/250



DETAIL A SCALE 1/50

1. DO NOT SCALE OFF DRAWING
2. DRAWING TO BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS
3. DRAWING IS FOR INFORMATION PURPOSES ONLY, NOT FOR CONSTRUCTION

X:\W Files Water\W2000\W13987 Arklow Sewerage Scheme\4 Drawings\4e BLP Drawings\700's Keyplans and Longsections\C-IS-752.dwg

Issue	Date	By	Chkd	Appd
P1	31/08	MS	DR	ES

Client: UISCE ÉIREANN : IRISH WATER

Job Title: ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1: AS SHOWN

Discipline: CIVIL

ARUP BYRNELOOBY

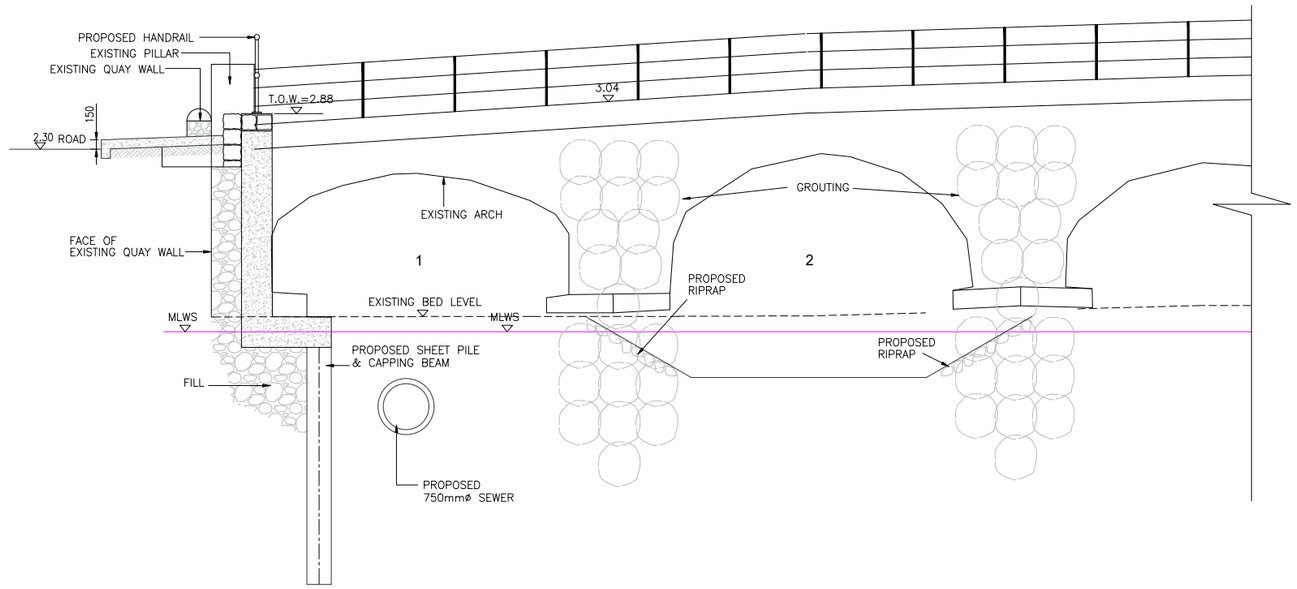
CLANCY MOORE ARCHITECTS

Drawing Title: ARKLOW BRIDGE WORKS PROPOSED LAYOUT, PLAN, ELEVATION & SECTIONS

Drawing Status: PLANNING

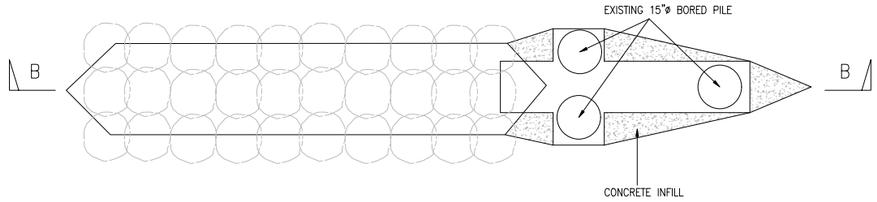
Job No	Drawing No	Issue
247825-00	C-IS-752	P1

Do not scale

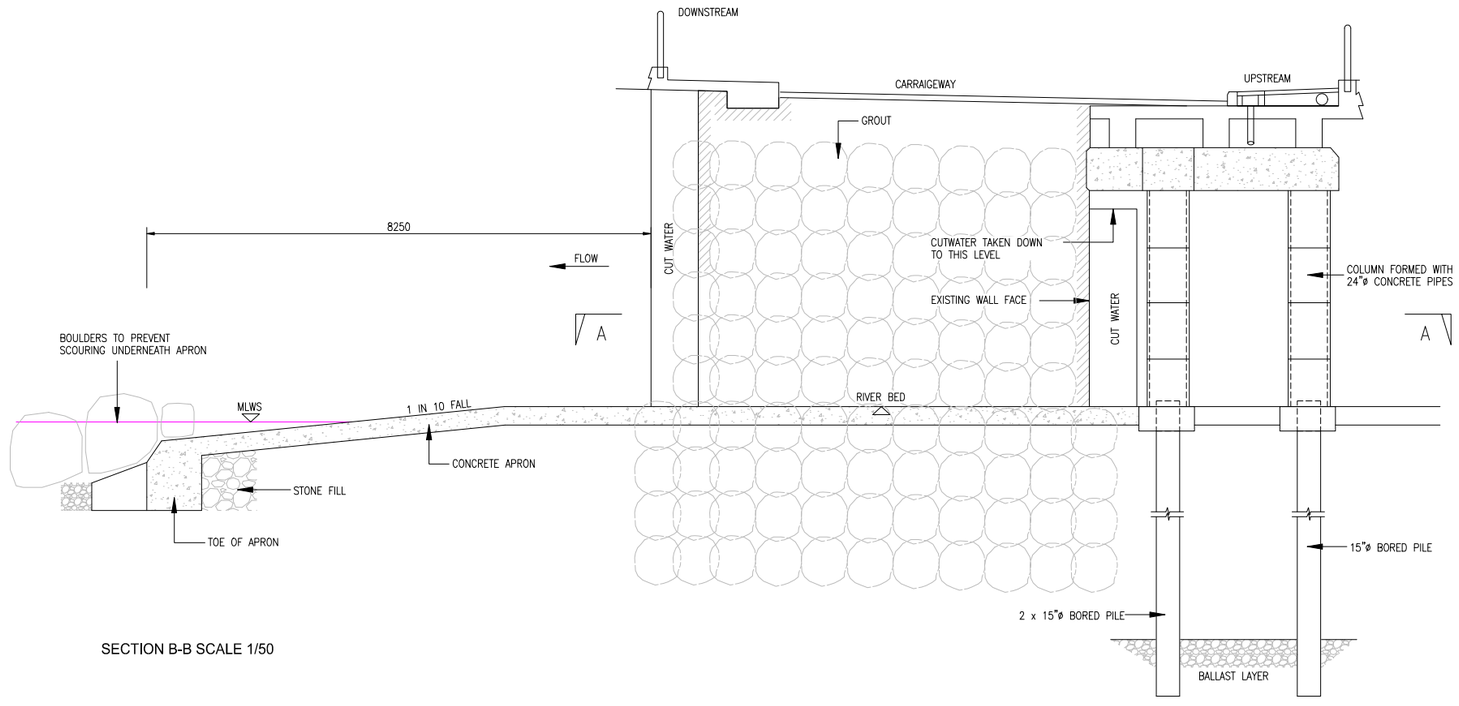


DOWNSTREAM ELEVATION SCALE 1/50

1. DO NOT SCALE OFF DRAWING
2. DRAWING TO BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS
3. DRAWING IS FOR INFORMATION PURPOSES ONLY, NOT FOR CONSTRUCTION



SECTIONAL PLAN A-A SCALE 1/50



SECTION B-B SCALE 1/50

Issue	Date	By	Chkd	Appd
P1	31/08	MS	DR	ES

Client: UISCE ÉIREANN : IRISH WATER

Job Title: ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1: AS SHOWN

Discipline: CIVIL

ARUP BYRNELOOBY

CLANCY MOORE ARCHITECTS

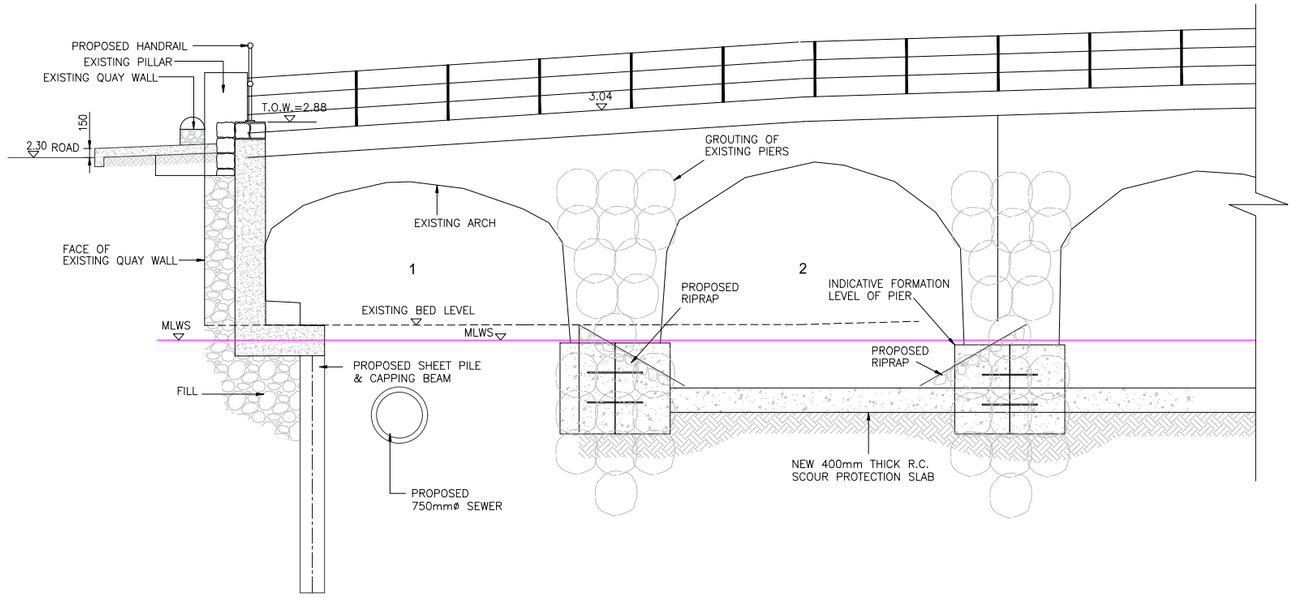
Drawing Title: ARKLOW BRIDGE WORKS GROUTING WORKS STAGE 1

Drawing Status: PLANNING

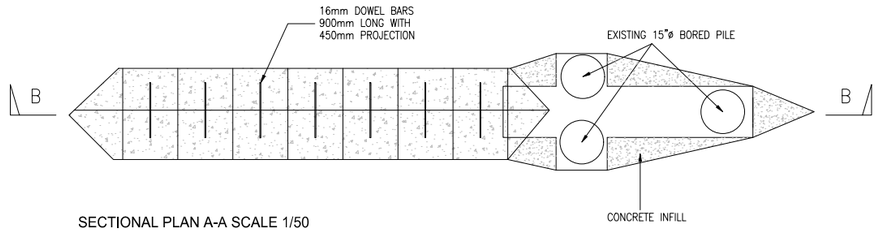
Job No	Drawing No	Issue
247825-00	C-IS-753	P1

X:\W Files Water\W2000\W13387 Arklow Sewerage Scheme\4 Drawings\4e BLP Drawings\700's Keyplans and Longsections\C-IS-753.dwg

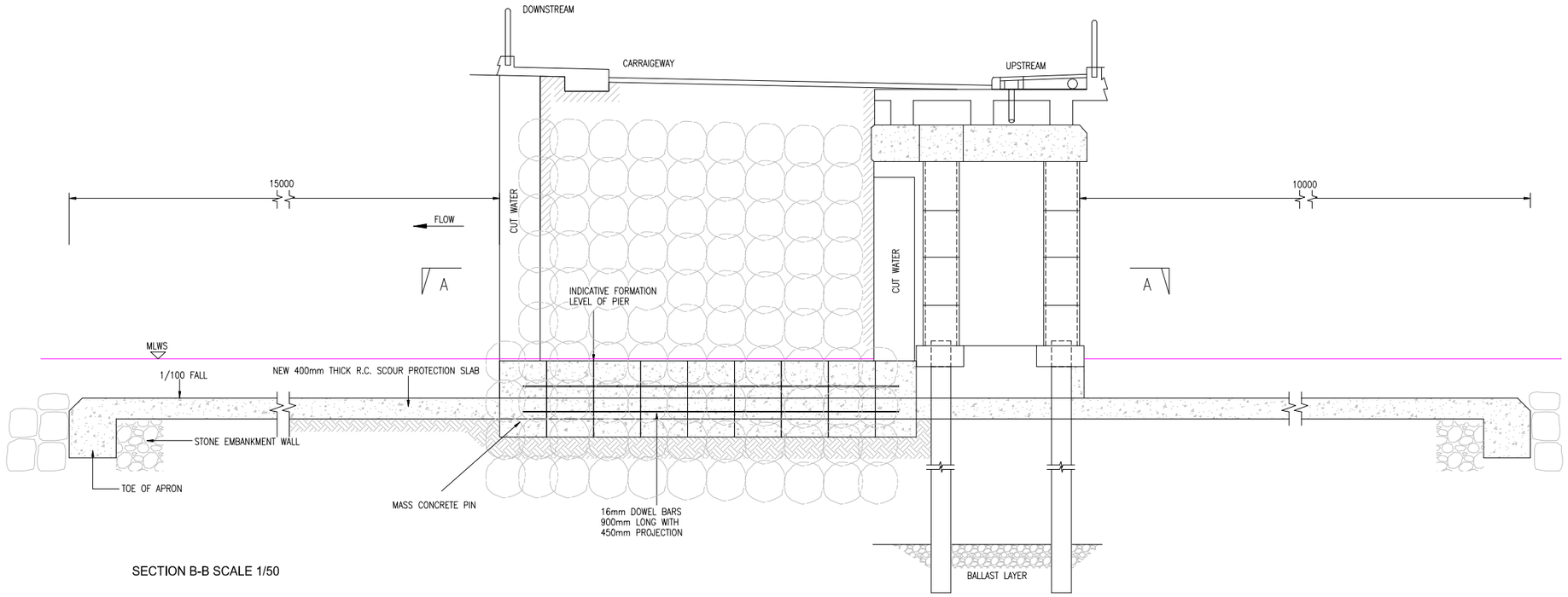
1. DO NOT SCALE OFF DRAWING
2. DRAWING TO BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS
3. DRAWING IS FOR INFORMATION PURPOSES ONLY, NOT FOR CONSTRUCTION



DOWNSTREAM ELEVATION SCALE 1/50



SECTIONAL PLAN A-A SCALE 1/50



SECTION B-B SCALE 1/50

Issue	Date	By	Chkd	Appd
P1	31/08	MS	DR	ES

Client: UISCE ÉIREANN : IRISH WATER

Job Title: ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1: AS SHOWN

Discipline: CIVIL

ARUP BYRNELOOBY

CLANCY MOORE ARCHITECTS

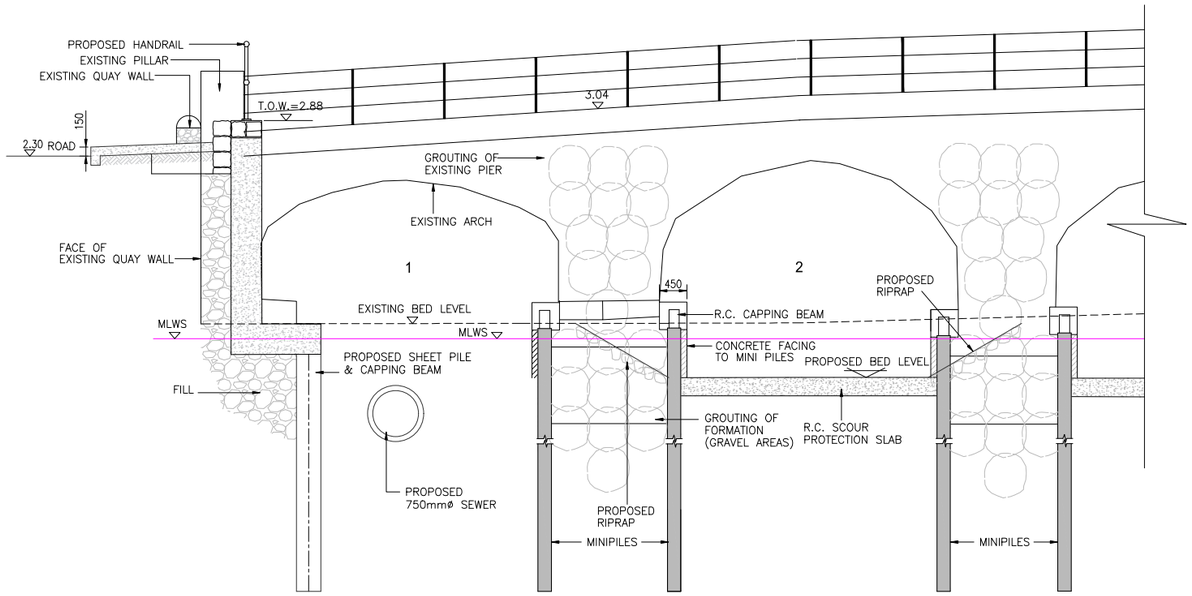
Drawing Title: ARKLOW BRIDGE WORKS UNDERPINNING OPTION 1

Drawing Status: PLANNING

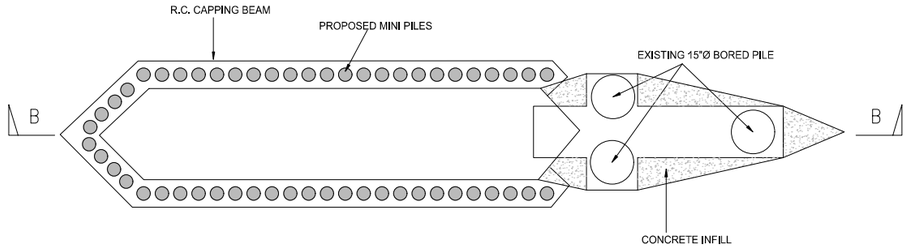
Job No	Drawing No	Issue
247825-00	C-IS-754	P1

X:\W Files Water\W2000\W13387 Arklow Sewerage Scheme\4 Drawings\4e BLP Drawings\700's Keyplans and Longsections\C-IS-754.dwg

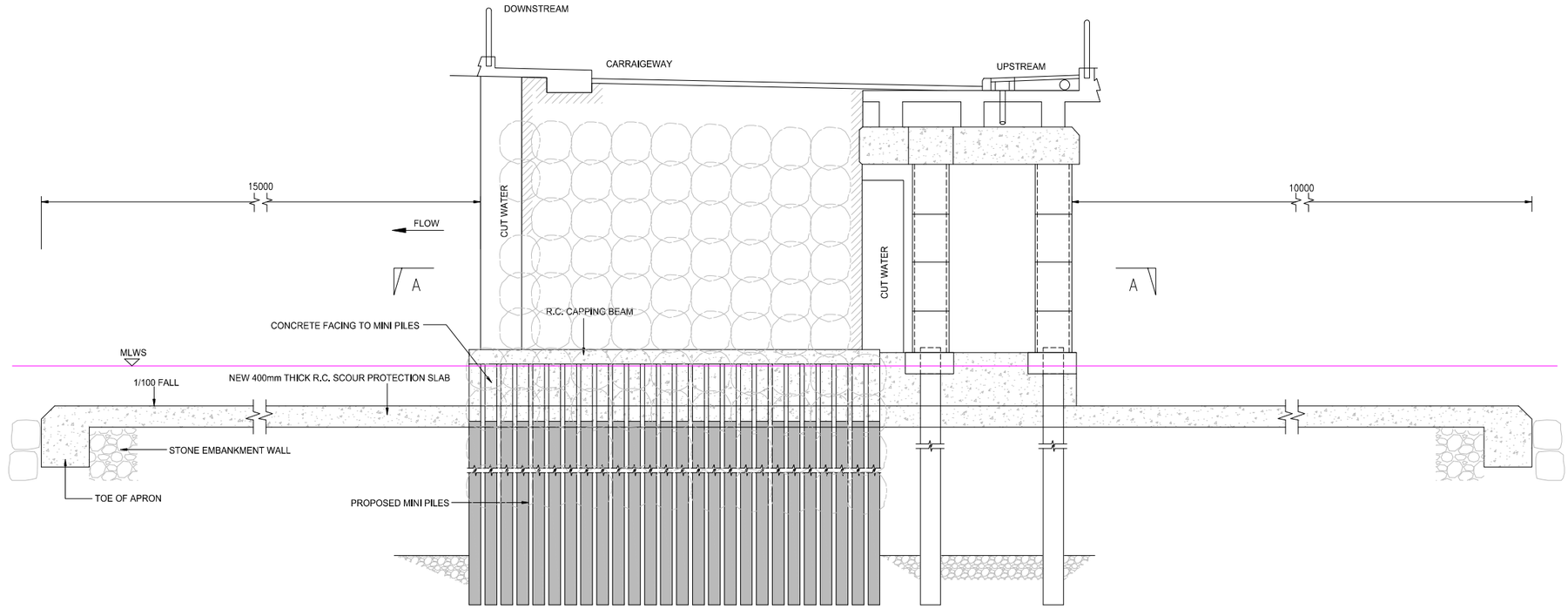
1. DO NOT SCALE OFF DRAWING
2. DRAWING TO BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS
3. DRAWING IS FOR INFORMATION PURPOSES ONLY, NOT FOR CONSTRUCTION



DOWNSTREAM ELEVATION SCALE 1/50



SECTIONAL PLAN A-A SCALE 1/50



SECTION B-B SCALE 1/50

Issue	Date	By	Chkd	Appd
P1	31/08	MS	DR	ES

Client: UISCE ÉIREANN : IRISH WATER

Job Title: ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1: AS SHOWN

Discipline: CIVIL

ARUP BYRNELOOBY

CLANCY MOORE ARCHITECTS

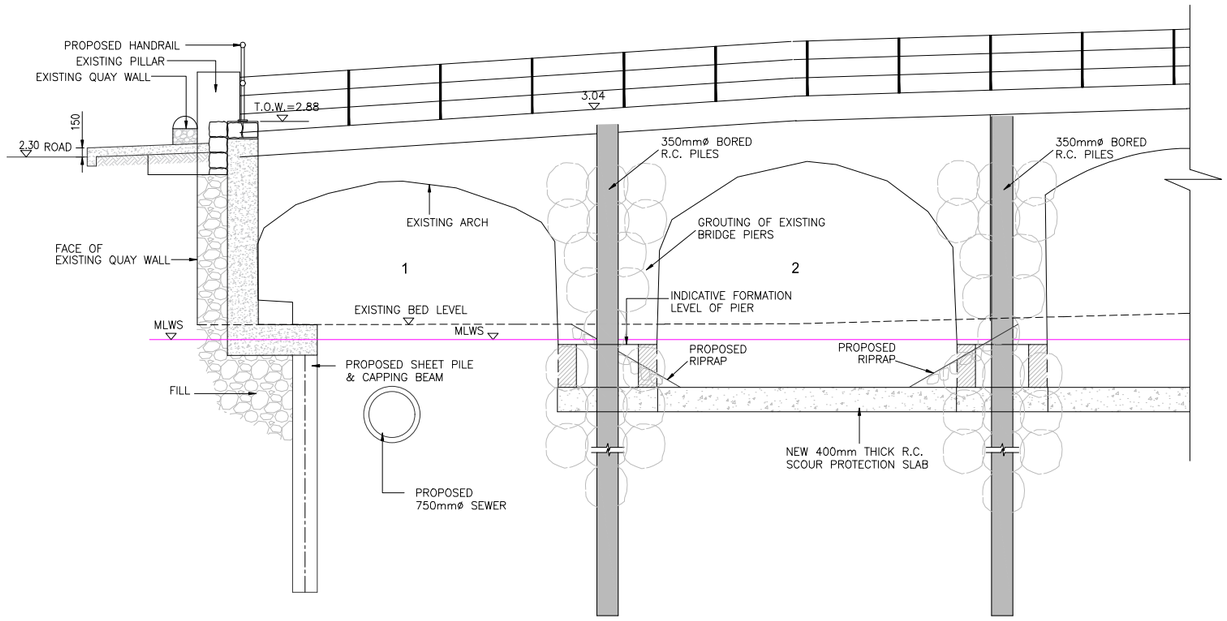
Drawing Title: ARKLOW BRIDGE WORKS UNDERPINNING OPTION 2

Drawing Status: PLANNING

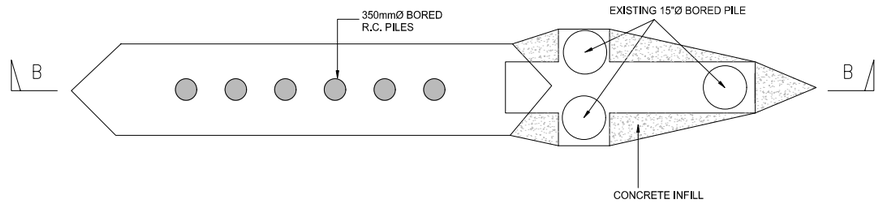
Job No	Drawing No	Issue
247825-00	C-IS-755	P1

X:\W Files Water\W2000\W13387 Arklow Sewerage Scheme\4 Drawings\4e BLP Drawings\700's Keyplans and Longsections\C-IS-755.dwg

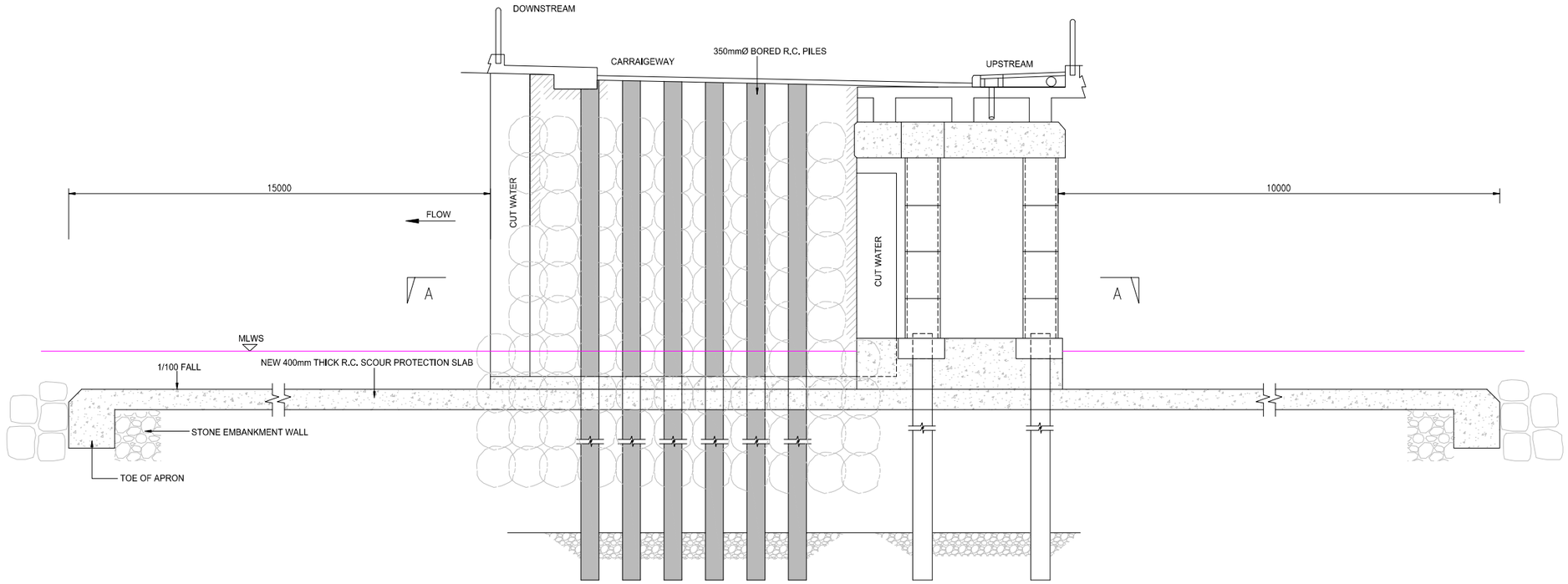
1. DO NOT SCALE OFF DRAWING
2. DRAWING TO BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS
3. DRAWING IS FOR INFORMATION PURPOSES ONLY, NOT FOR CONSTRUCTION



DOWNSTREAM ELEVATION SCALE 1/50



SECTIONAL PLAN A-A SCALE 1/50



SECTION B-B SCALE 1/50

Issue	Date	By	Chkd	Appd
P1	31/08	MS	DR	ES

Client: UISCE ÉIREANN : IRISH WATER

Job Title: ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1: AS SHOWN

Discipline: CIVIL

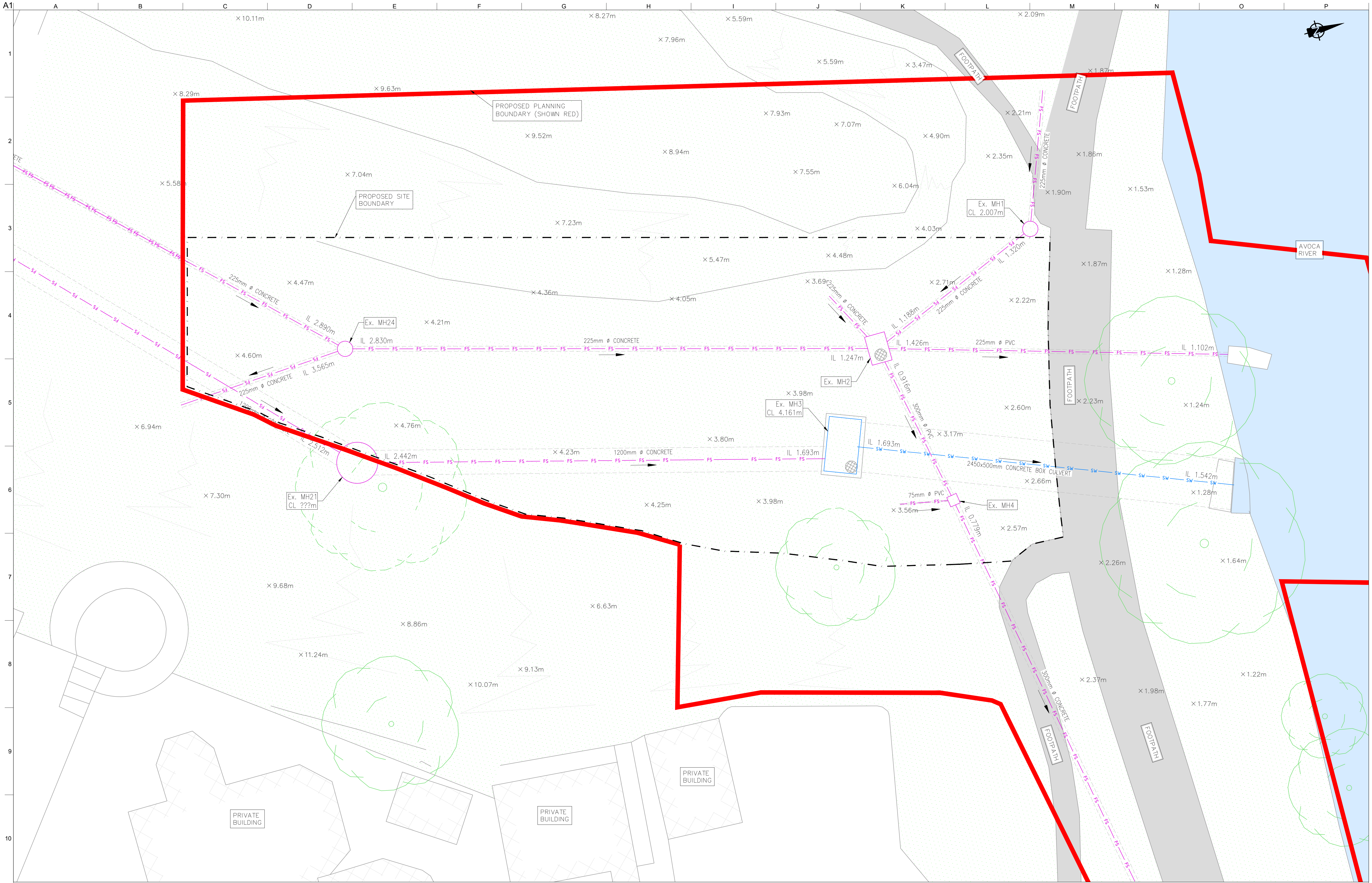
ARUP BYRNELOOBY

CLANCY MOORE ARCHITECTS

Drawing Title: ARKLOW BRIDGE WORKS UNDERPINNING OPTION 3

Drawing Status: PLANNING

Job No	Drawing No	Issue
247825-00	C-IS-756	P1



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Issue	Date	By	Chkd	Appd
P1	31/08	MS	DR	ES

Client: UISCE ÉIREANN : IRISH WATER

Job Title: ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1: 1:100

Discipline: CIVIL

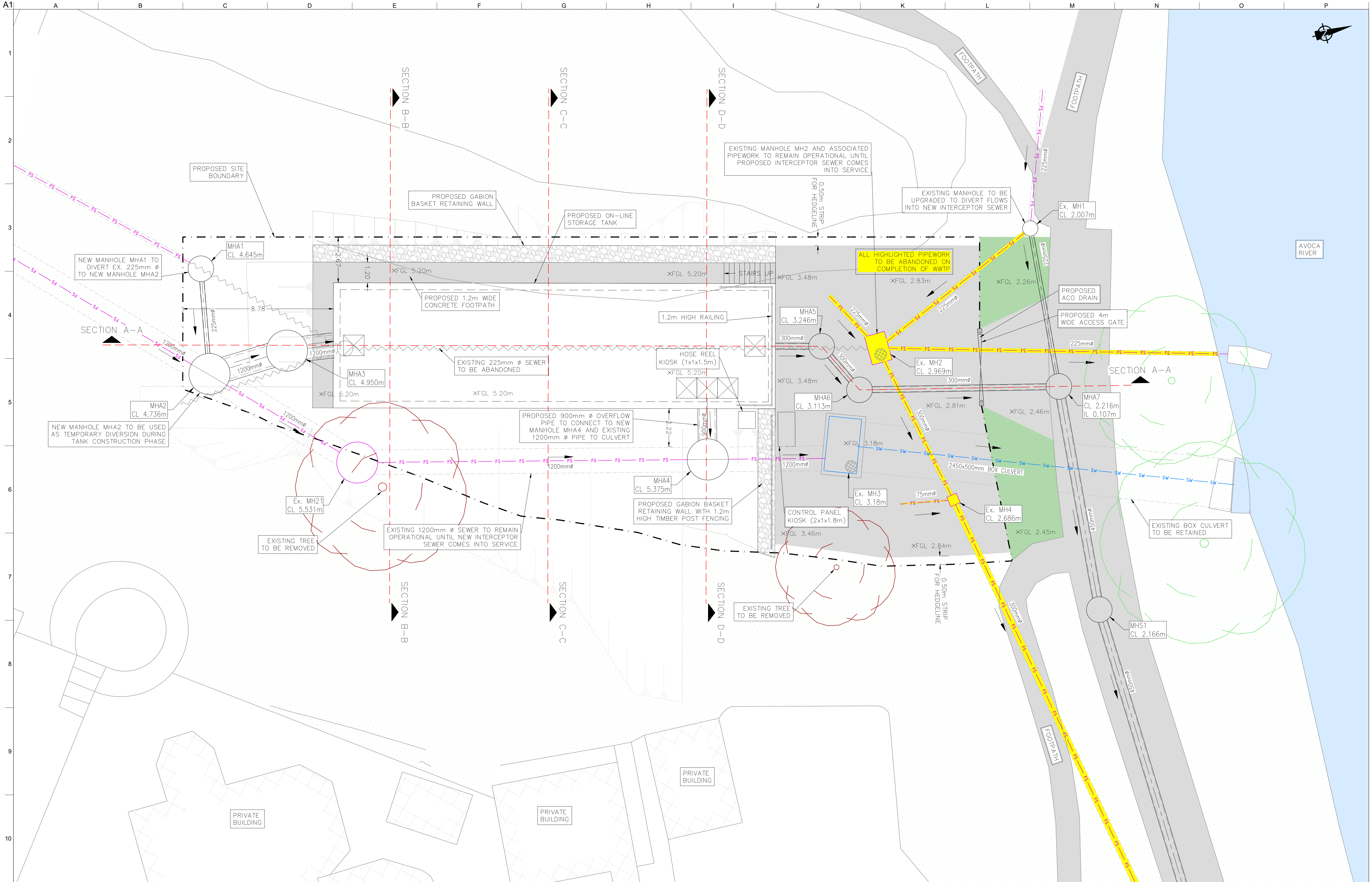
ARUP BYRNELOOBY CLANCY MOORE ARCHITECTS

Drawing Title: THE ALPS CSO EXISTING SITE LAYOUT

Drawing Status: PLANNING

Job No: 247825-00 | Drawing No: C-IS-801 | Issue: P1

Do not scale


PROPOSED SITE BOUNDARY
PROPOSED GABION BASKET RETAINING WALL
PROPOSED ON-LINE STORAGE TANK
EXISTING MANHOLE MH2 AND ASSOCIATED PIPEWORK TO REMAIN OPERATIONAL UNTIL PROPOSED INTERCEPTOR SEWER COMES INTO SERVICE
EXISTING MANHOLE TO BE UPGRADED TO DIVERT FLOWS INTO NEW INTERCEPTOR SEWER
Ex. MH1 CL 2.007m
AVOCA RIVER
FOOTPATH
MHA1 CL 4.645m
NEW MANHOLE MHA1 TO DIVERT EX. 225mm ø TO NEW MANHOLE MHA2
ALL HIGHLIGHTED PIPEWORK TO BE ABANDONED ON COMPLETION OF WWTP
PROPOSED 1.2m WIDE CONCRETE FOOTPATH
STAIRS UP
1.2m HIGH RAILING
MHA5 CL 3.246m
PROPOSED ACO DRAIN
PROPOSED 4m WIDE ACCESS GATE
SECTION A-A
SECTION B-B
SECTION C-C
SECTION D-D
0.50m STRIP FOR HEDGELINE
EXISTING 225mm ø SEWER TO BE ABANDONED
HOSE REEL KIOSK (1x1x1.5m)
MHA3 CL 4.950m
Ex. MH2 CL 2.969m
MHA6 CL 3.113m
MHA7 CL 2.216m IL 0.107m
MHA2 CL 4.736m
NEW MANHOLE MHA2 TO BE USED AS TEMPORARY DIVERSION DURING TANK CONSTRUCTION PHASE
PROPOSED 900mm ø OVERFLOW PIPE TO CONNECT TO NEW MANHOLE MHA4 AND EXISTING 1200mm ø PIPE TO CULVERT
2450x500mm BOX CULVERT
MHA4 CL 5.375m
Ex. MH21 CL 5.531m
Ex. MH3 CL 3.18m
Ex. MH4 CL 2.686m
PROPOSED GABION BASKET RETAINING WALL WITH 1.2m HIGH TIMBER POST FENCING
CONTROL PANEL KIOSK (2x1x1.8m)
EXISTING BOX CULVERT TO BE RETAINED
EXISTING TREE TO BE REMOVED
EXISTING 1200mm ø SEWER TO REMAIN OPERATIONAL UNTIL NEW INTERCEPTOR SEWER COMES INTO SERVICE
EXISTING TREE TO BE REMOVED
MHS1 CL 2.166m
PRIVATE BUILDING
PRIVATE BUILDING
PRIVATE BUILDING

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P1	31/08	MS	DR	ES
Issue	Date	By	Chkd	Appd

Client: UISCE ÉIREANN : IRISH WATER

Job Title
ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1: 1:100
Discipline: CIVIL

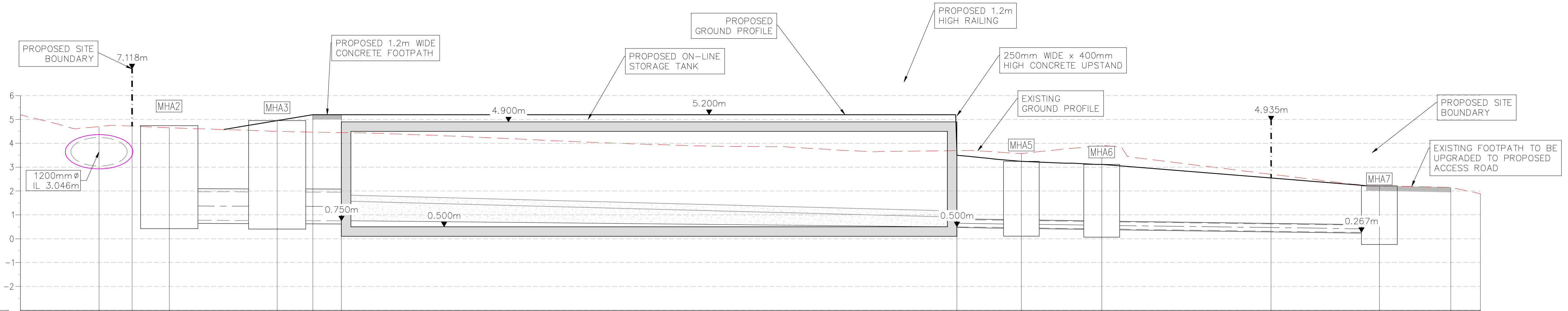
ARUP BYRNELOOBY
CLANCY MOORE ARCHITECTS

Drawing Title
THE ALPS SWO PROPOSED SITE LAYOUT

Drawing Status
PLANNING

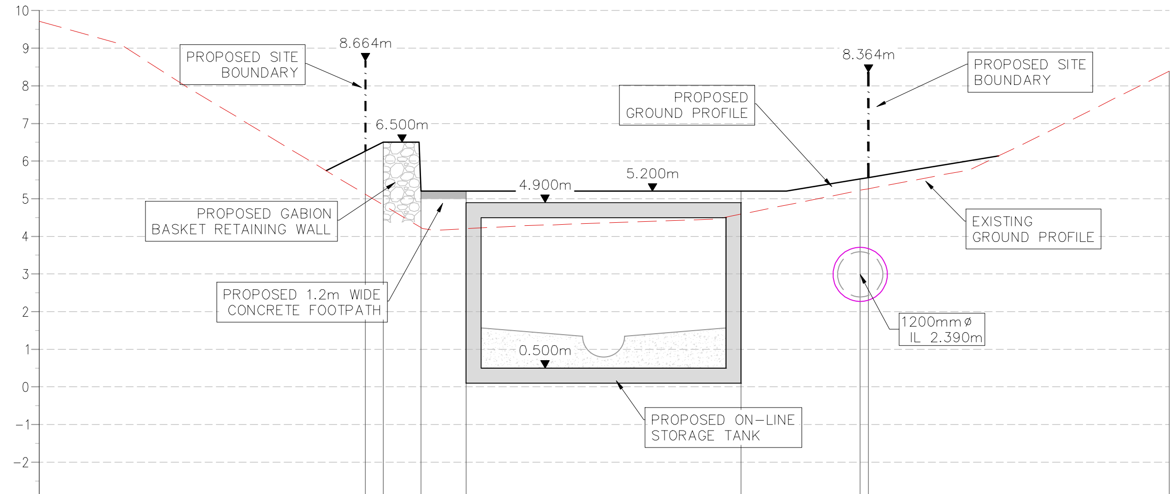
Job No: 247825-00
Drawing No: C-IS-802
Issue: P1

Do not scale



CHAINAGE	EXISTING GROUND LEVEL (m)	PROPOSED GROUND LEVEL (m)
00.000	5.194	
03.296	4.704	
04.680	4.718	
06.241	4.653	
10.763	4.500	4.950
12.260	4.471	5.200
13.460	4.448	5.200
39.260	3.693	3.500
41.960	3.572	3.246
45.330	3.905	3.113
52.433	2.703	2.544
56.970	2.216	
59.962	2.152	
61.201	1.888	

SECTION A–A – LONGSECTION
SCALE: H 1:100,V 1:100.



CHAINAGE	EXISTING GROUND LEVEL (m)	PROPOSED GROUND LEVEL (m)
00.000	9.711	
08.660	5.119	6.264
09.132	4.834	6.500
10.132	4.233	5.200
11.332	4.203	5.200
18.632	4.590	5.200
21.795	5.224	5.527
22.016	5.266	5.564
30.000	8.391	

SECTION B–B – LONGSECTION
SCALE: H 1:100,V 1:100.

Issue	Date	By	Chkd	Appd
P1	31/08	MS	DR	ES

Client: UISCE ÉIREANN : IRISH WATER

Job Title: ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1: AS SHOWN

Discipline: CIVIL

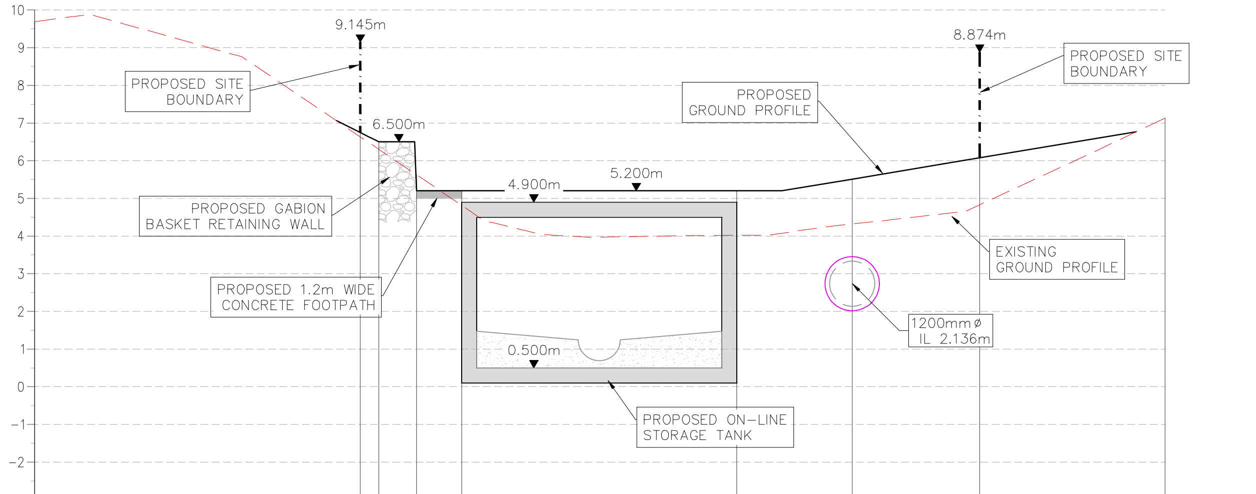
ARUP BYRNELOOBY
CLANCY MOORE ARCHITECTS

Drawing Title: THE ALPS CSO PROPOSED SITE SECTIONS 1 OF 2

Drawing Status: PLANNING

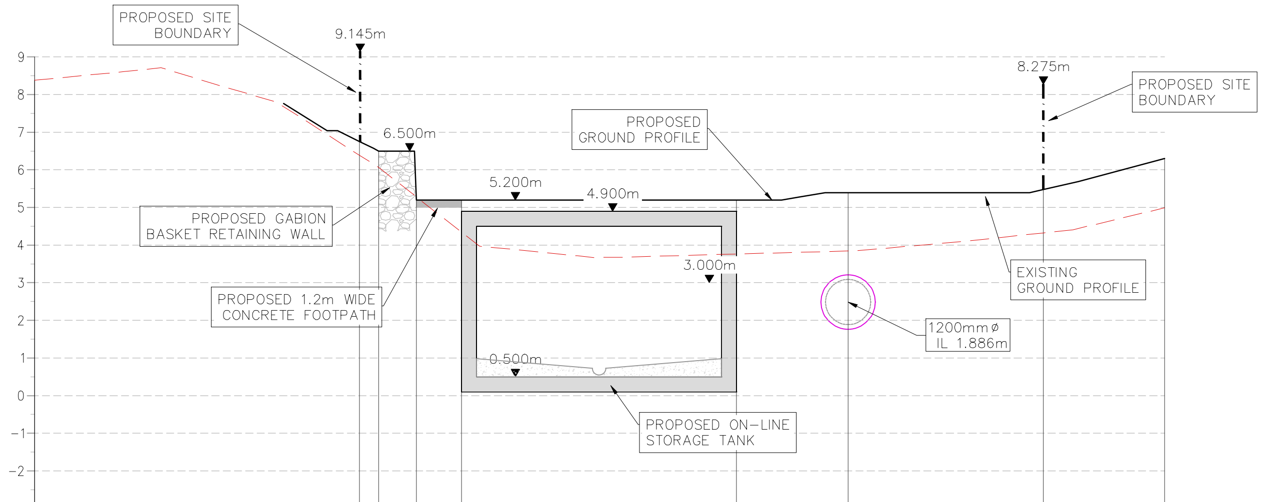
Job No: 247825-00 | Drawing No: C-IS-803 | Issue: P1

Do not scale



CHAINAGE	00.000	08.643	09.132	10.132	11.332	18.632	21.696	25.078	30.000
EXISTING GROUND LEVEL (m)	9.687	6.634	6.303	5.626	4.815	4.019	4.320	4.830	7.133
PROPOSED GROUND LEVEL (m)		6.745	6.500	5.200	5.200	5.200	5.511	6.074	

SECTION C-C - LONGSECTION
SCALE: H 1:100,V 1:100.



CHAINAGE	00.000	08.625	09.132	10.132	11.332	18.632	21.597	26.781	30.000
EXISTING GROUND LEVEL (m)	8.380	6.385	6.059	5.282	4.345	3.761	3.843	4.324	4.989
PROPOSED GROUND LEVEL (m)		6.754	6.500	5.200	5.200	5.200	5.392	5.475	6.296

SECTION D-D - LONGSECTION
SCALE: H 1:100,V 1:100.

Issue	Date	By	Chkd	Appd
P1	31/08	MS	DR	ES

Client: UISCE ÉIREANN : IRISH WATER

Job Title: ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1: AS SHOWN

Discipline: CIVIL

ARUP BYRNELOOBY CLANCY MOORE ARCHITECTS

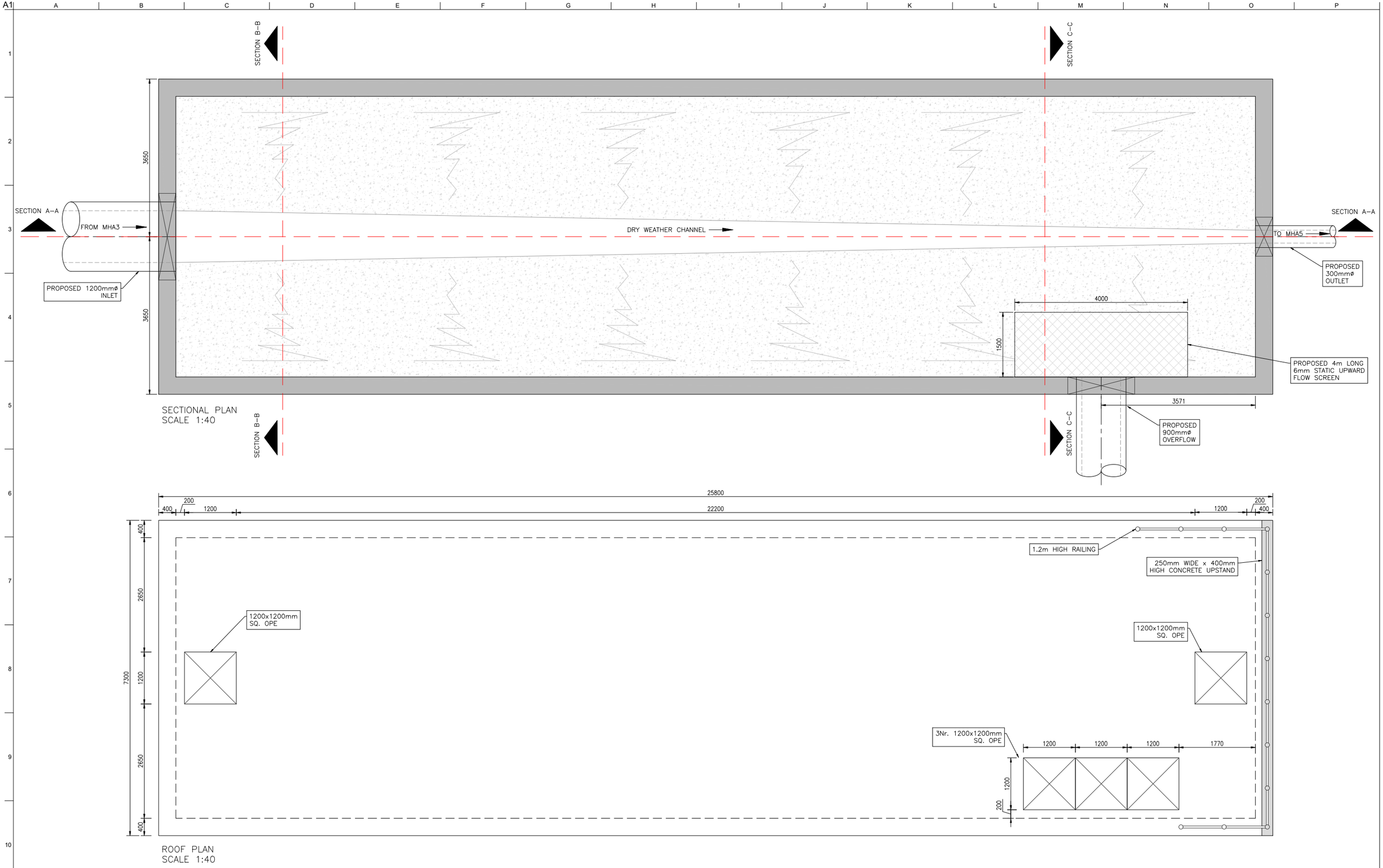
Drawing Title: THE ALPS SWO PROPOSED SITE SECTIONS 2 OF 2

Drawing Status: PLANNING

Job No: 247825-00 | Drawing No: C-IS-804 | Issue: P1

Do not scale

X:\W Files Water\W3000\W3136\T Arklow Sewerage Scheme\4 Drawings\4a BLP Drawings\800's ALPS CSO, Storage Tanks and Pumps\W3136-802-804-Proposed Site Layout_CIV.dwg



Issue	Date	By	Chkd	Appd
P1	31/08	MS	DR	ES

Client: UISCE ÉIREANN : IRISH WATER

Job Title: ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1: AS SHOWN

Discipline: CIVIL

ARUP BYRNELOOBY

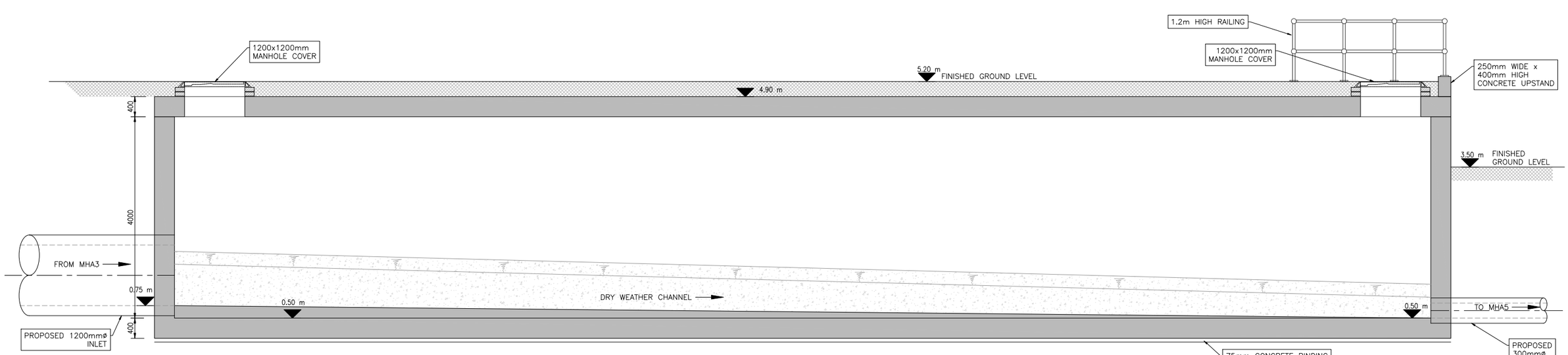
CLANCY MOORE ARCHITECTS

Drawing Title: THE ALPS CSO ONLINE STORAGE TANK GENERAL ARRANGEMENT PLANS

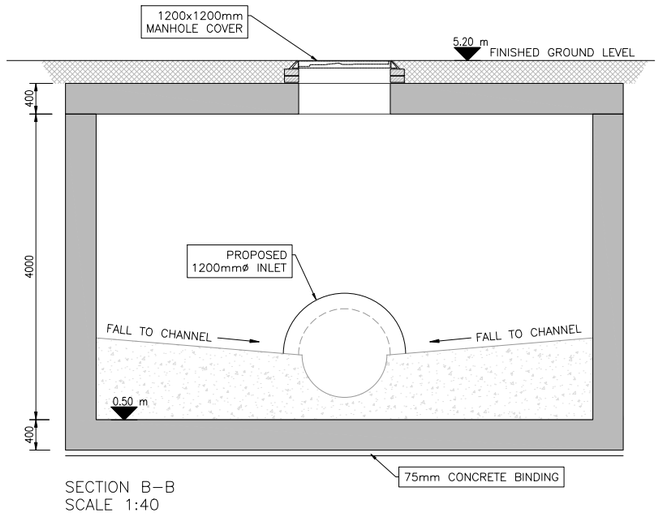
Drawing Status: PLANNING

Job No	Drawing No	Issue
247825-00	C-IS-805	P1

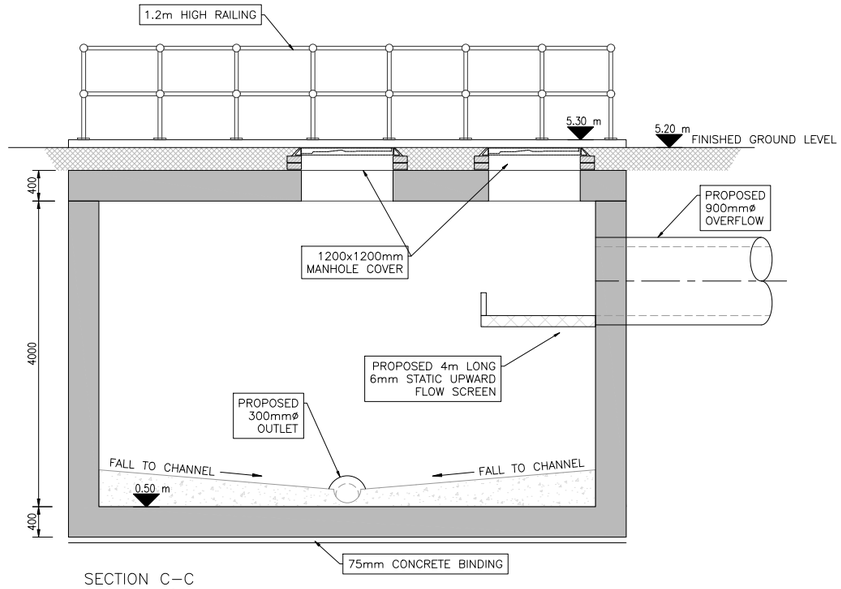
X:\IW Files Water\IW0000\IW31367 Arklow Sewerage Scheme\4 Drawings\4e BLP Drawings\800's ALPS CSO, Storage Tanks and Pumps\C-IS-805.dwg



SECTION A–A
SCALE 1:40



SECTION B–B
SCALE 1:40



SECTION C–C
SCALE 1:40

Issue	Date	By	Chkd	Appd
P1	31/08	MS	DR	ES

Client: UISCE ÉIREANN : IRISH WATER

Job Title: ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1: AS SHOWN

Discipline: CIVIL

ARUP BYRNELOOBY

CLANCY MOORE ARCHITECTS

Drawing Title: THE ALPS CSO ONLINE STORAGE TANK GENERAL ARRANGEMENT SECTIONS

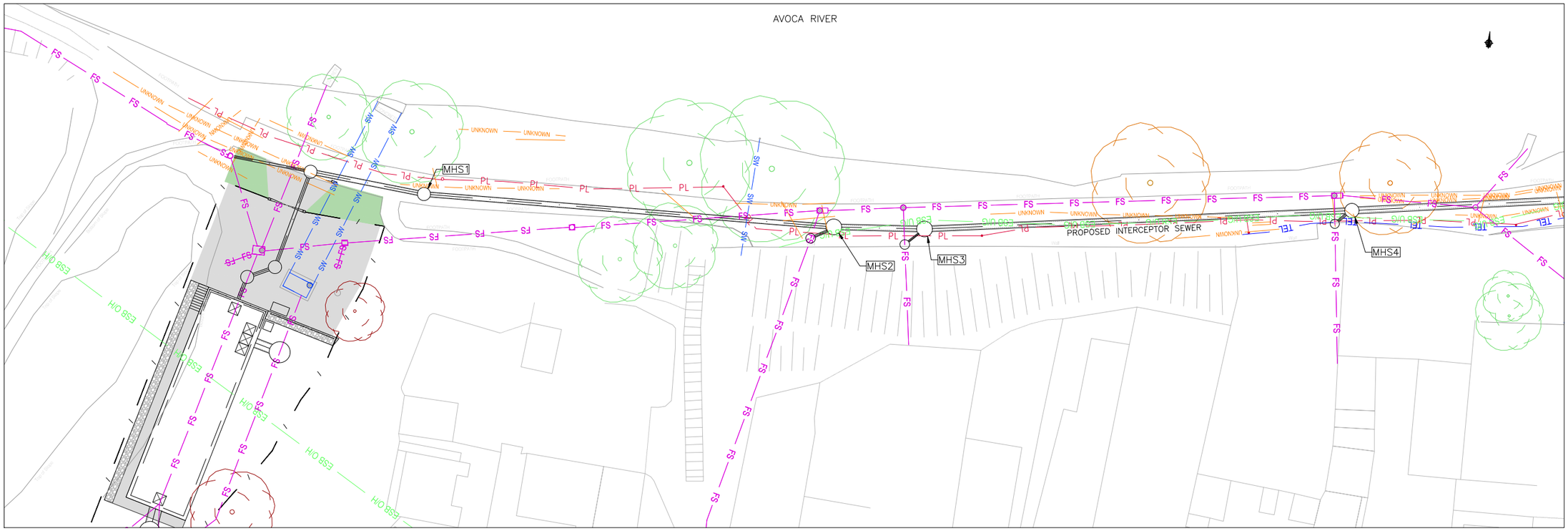
Drawing Status: PLANNING

Job No	Drawing No	Issue
247825-00	C-IS-806	P1

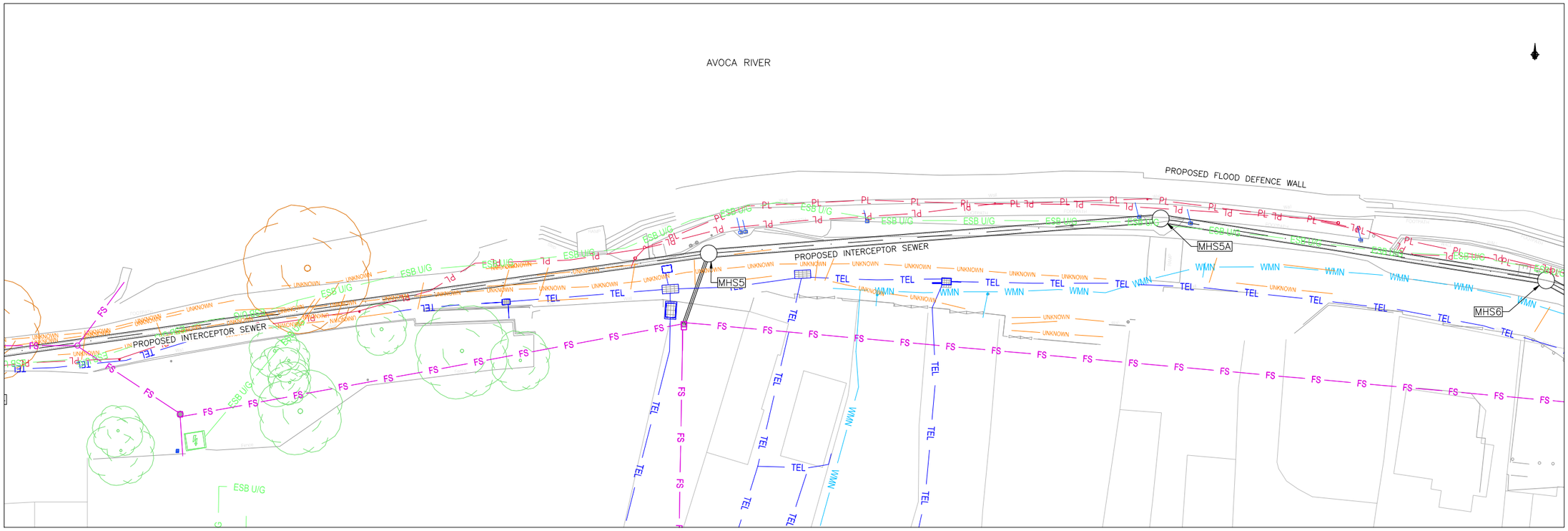
X:\W Files Water\W3000\W31367 Arklow Sewerage Scheme\4 Drawings\4a BLP Drawings\800's ALPS CSO, Storage Tanks and Pumps\C-IS-805.dwg

Appendix B

Utility Services Drawings



LOCATION PLAN SCALE: 1:250 @ A1



LOCATION PLAN SCALE: 1:250 @ A1

LEGEND

- PROPOSED INTERCEPTOR SEWER
- PROPOSED SHEET PILE WITH CAPPING BEAM
- EXISTING FOUL/COMBINED SEWER (FS)
- EXISTING SURFACE WATER (SW)
- EXISTING WATERMAIN (WMN)
- EXISTING TELECOM (TEL)
- EXISTING PUBLIC LIGHTING (PL)
- EXISTING ESB OVERHEAD (ESB O/H)
- EXISTING ESB UNDERGROUND (ESB U/G)
- EXISTING GAS MAIN (GAS)
- EXISTING VIRGIN MEDIA (VM)
- EXISTING CHEMICAL (CHEM)
- EXISTING UNKNOWN SERVICE (UNKNOWN)

X:\IN Files Water\WS000\W31367 Ark&w Sewerage Scheme\4 Drawings\4a BLP Drawings\1250's Existing Services Drawings\W31367-1201-1208.dwg

P1	31/08	MS	DR	ES
Issue	Date	By	Chkd	Appd

Client: UISCE ÉIREANN : IRISH WATER

Job Title: ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1: AS SHOWN

Discipline: CIVIL

ARUP BYRNELOOBY

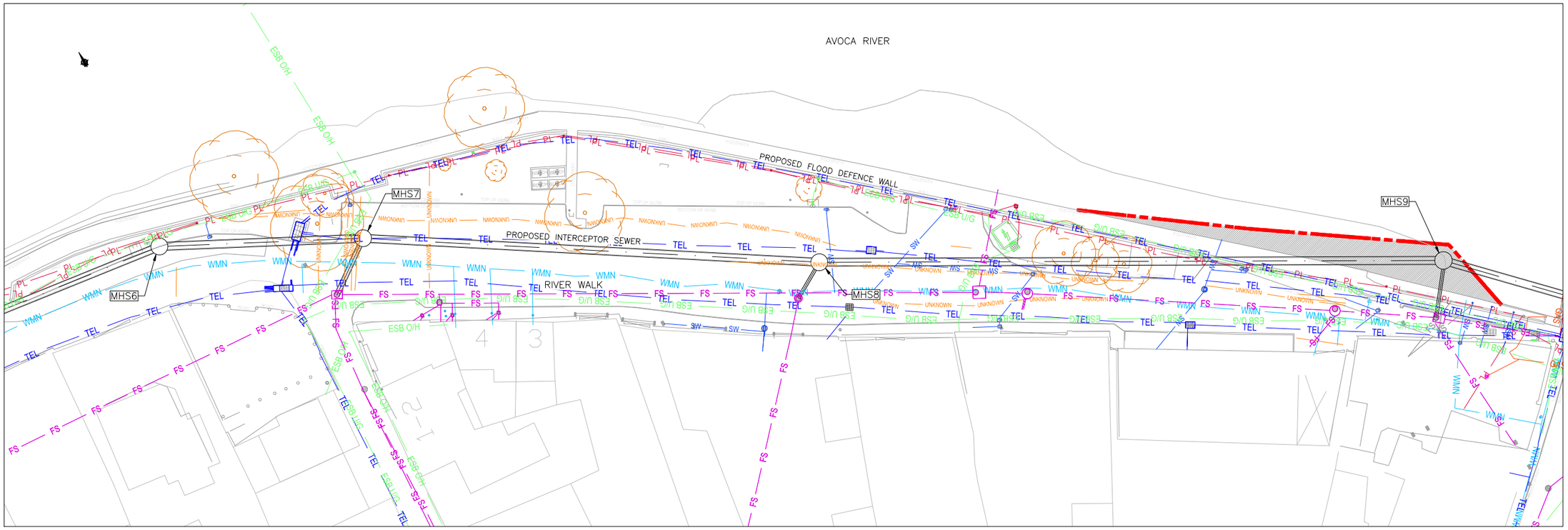
CLANCY MOORE ARCHITECTS

Drawing Title: EXISTING SERVICES LAYOUT PLAN 1 OF 8

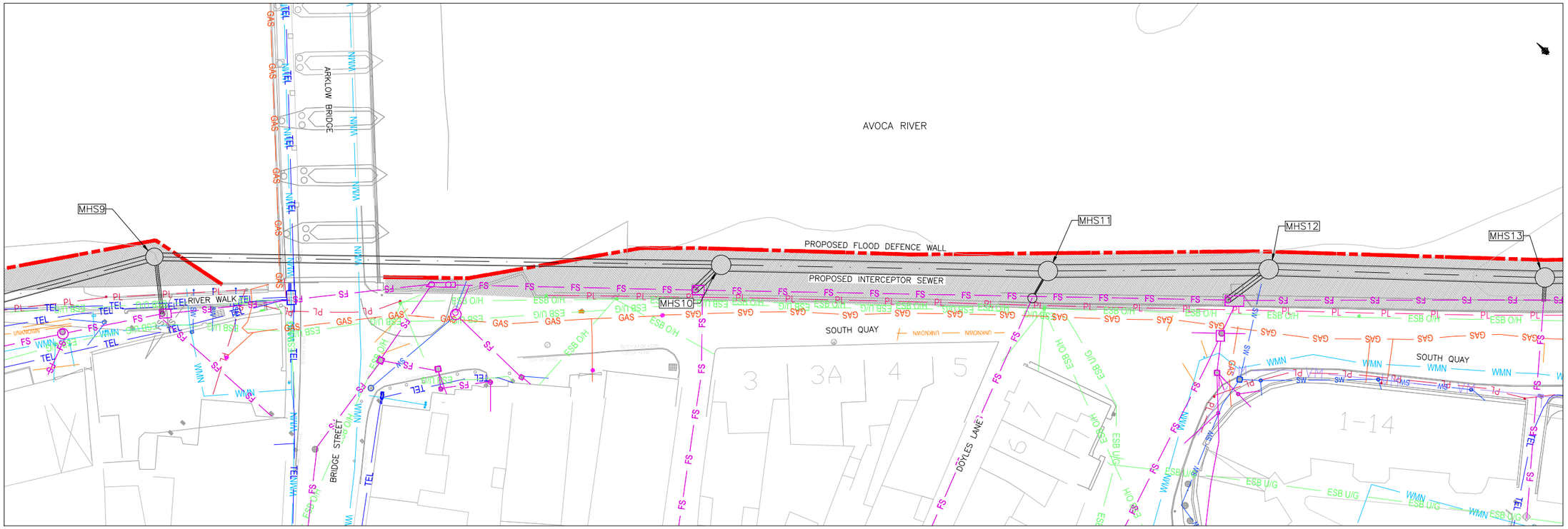
Drawing Status: PLANNING

Job No	Drawing No	Issue
247825-00	C-IS-1201	D1

Do not scale



LOCATION PLAN SCALE: 1:250 @ A1



LOCATION PLAN SCALE: 1:250 @ A1

LEGEND

- PROPOSED INTERCEPTOR SEWER
- PROPOSED SHEET PILE WITH CAPPING BEAM
- EXISTING FOUL/COMBINED SEWER (FS)
- EXISTING SURFACE WATER (SW)
- EXISTING WATERMAIN (WMN)
- EXISTING TELECOM (TEL)
- EXISTING PUBLIC LIGHTING (PL)
- EXISTING ESB OVERHEAD (ESB O/H)
- EXISTING ESB UNDERGROUND (ESB U/G)
- EXISTING GAS MAIN (GAS)
- EXISTING VIRGIN MEDIA (VM)
- EXISTING CHEMICAL (CHEM)
- EXISTING UNKNOWN SERVICE (UNKNOWN)

X:\IW Files Water\WS000\W31367 Arklow Sewerage Scheme\4 Drawings\4.6 BLP Drawings\1:250's Existing Services Drawings\W31367-C01-1202.dwg

Issue	Date	By	Chkd	Appd
P1	31/08	MS	DR	ES

Client: UISCE ÉIREANN : IRISH WATER

Job Title: ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1: AS SHOWN

Discipline: CIVIL

ARUP BYRNELOOBY

CLANCY MOORE ARCHITECTS

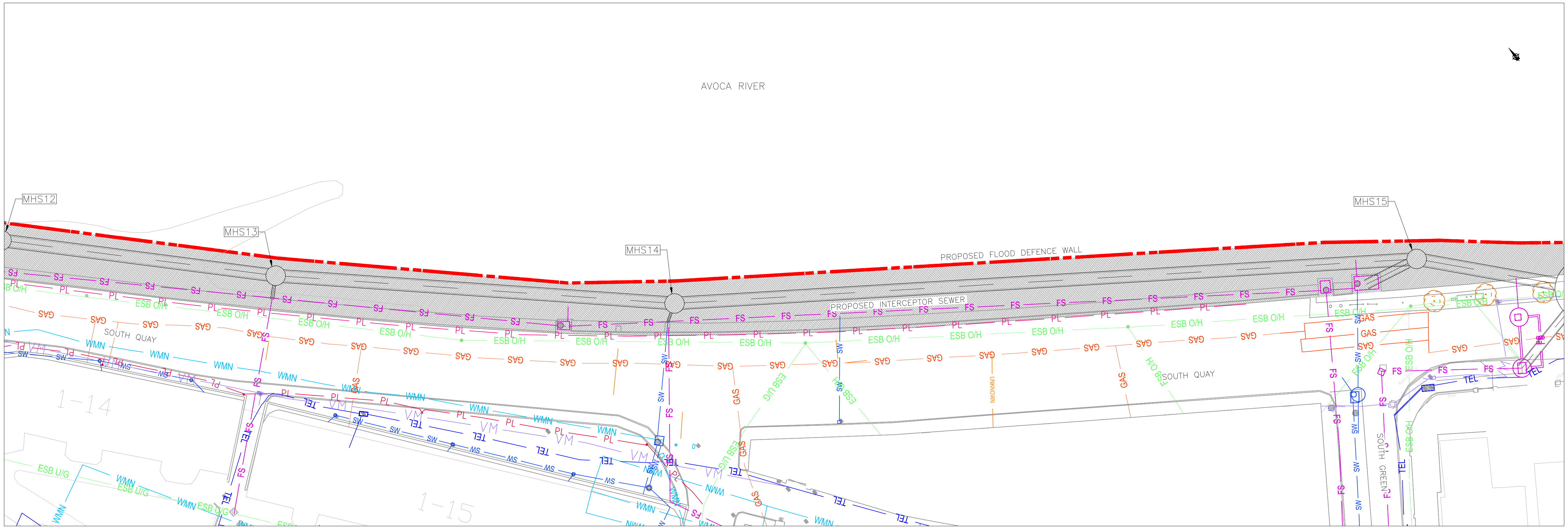
Drawing Title: EXISTING SERVICES LAYOUT PLAN 2 OF 8

Drawing Status: PLANNING

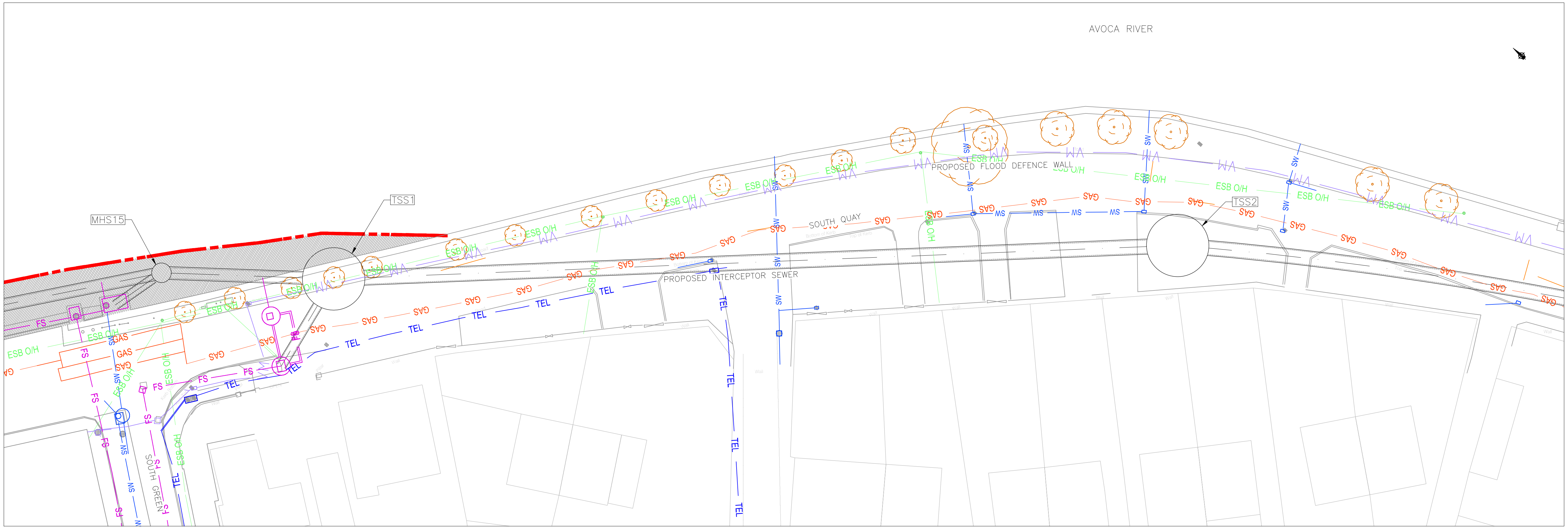
Job No	Drawing No	Issue
247825-00	C-IS-1202	D1

Do not scale

A1



LOCATION PLAN SCALE: 1:250 @ A1



LOCATION PLAN SCALE: 1:250 @ A1

LEGEND

- PROPOSED INTERCEPTOR SEWER
- PROPOSED SHEET PILE WITH CAPPING BEAM
- EXISTING FOUL/COMBINED SEWER (FS)
- EXISTING SURFACE WATER (SW)
- EXISTING WATERMAIN (WMN)
- EXISTING TELECOM (TEL)
- EXISTING PUBLIC LIGHTING (PL)
- EXISTING ESB OVERHEAD (ESB O/H)
- EXISTING ESB UNDERGROUND (ESB U/G)
- EXISTING GAS MAIN (GAS)
- EXISTING VIRGIN MEDIA (VM)
- EXISTING CHEMICAL (CHEM)
- EXISTING UNKNOWN SERVICE (UNKNOWN)

X:\W Files Water\W3000\W3136T Arklow Sewerage Scheme\4-4 Drawings\4a SLP Drawings\1200's Existing Services Drawings\W3136-1201-1208.dwg

Ordnance Survey Ireland

P1	31/08	MS	DR	ES
Issue	Date	By	Chkd	Appd

Client: UISCE ÉIREANN : IRISH WATER

Job Title: ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1: AS SHOWN

Discipline: CIVIL

ARUP BYRNELOOBY CLANCY MOORE ARCHITECTS

Drawing Title: EXISTING SERVICES LAYOUT PLAN 3 OF 8

Drawing Status: PLANNING

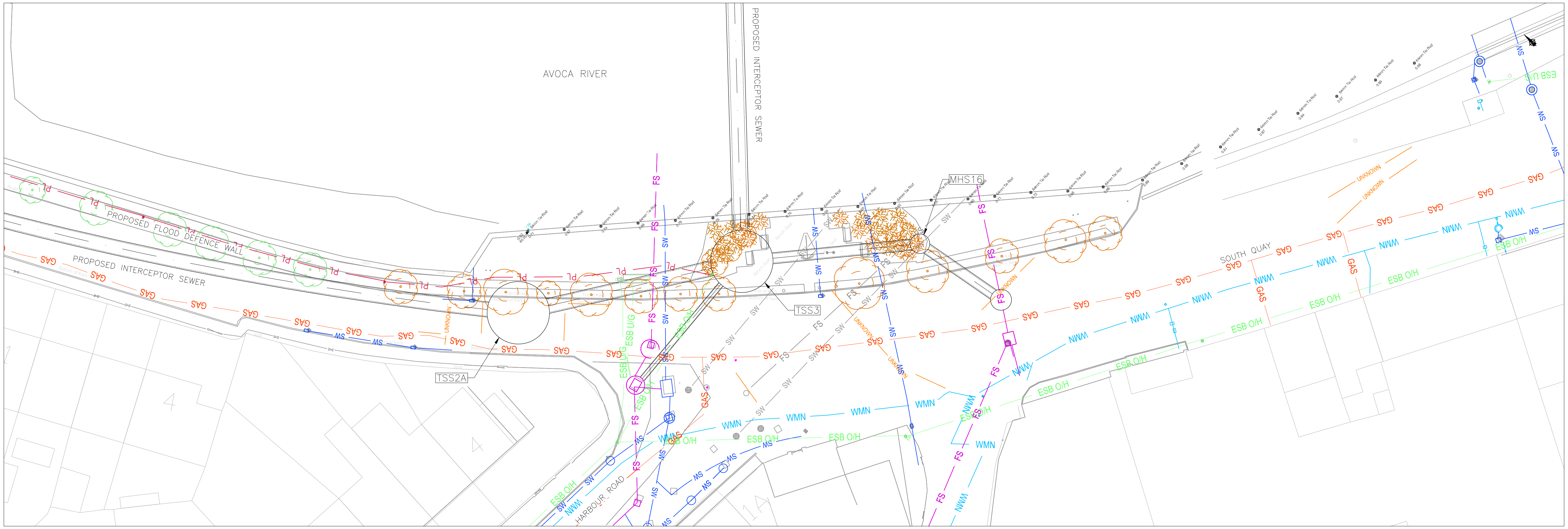
Job No: 247825-00

Drawing No: C-IS-1203

Issue: D1

Do not scale

LOCATION PLAN SCALE: 1:250 @ A1



LOCATION PLAN SCALE: 1:250 @ A1

LEGEND

PROPOSED INTERCEPTOR SEWER

PROPOSED SHEET PILE WITH CAPPING BEAM

EXISTING FOUL/COMBINED SEWER — FS

EXISTING SURFACE WATER — SW

EXISTING WATERMAIN — WMN

EXISTING TELECOM — TEL

EXISTING PUBLIC LIGHTING — PL

EXISTING ESB OVERHEAD — ESB O/H

EXISTING ESB UNDERGROUND — ESB U/G

EXISTING GAS MAIN — GAS

EXISTING VIRGIN MEDIA — VM

EXISTING CHEMICAL — CHEM

EXISTING UNKNOWN SERVICE — UNKNOWN

X:\W Files Water\W3000\W3136T Arklow Sewerage Scheme\4 Drawings\4a SLP Drawings\1200's Existing Services Drawings\W3136-1201-1208.dwg

Issue	Date	By	Chkd	Appd
P1	31/08	MS	DR	ES

Ordnance Survey Ireland

Client: UISCE ÉIREANN : IRISH WATER

Job Title: ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1: AS SHOWN

Discipline: CIVIL

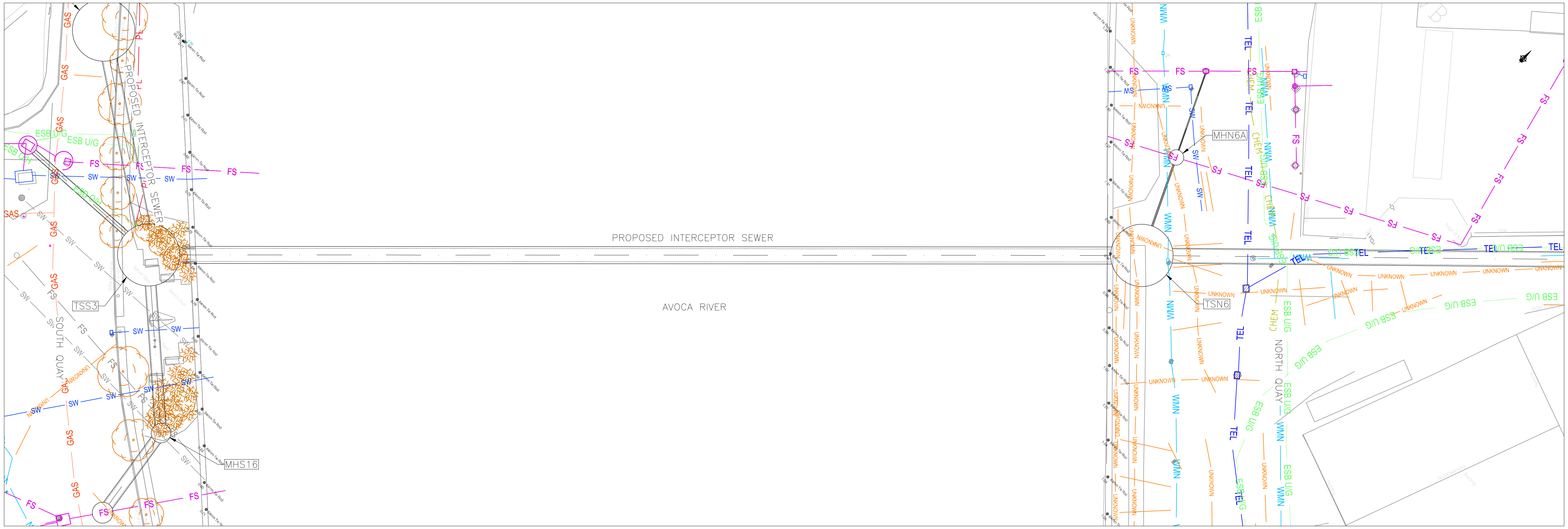
ARUP BYRNELOOBY CLANCY MOORE ARCHITECTS

Drawing Title: EXISTING SERVICES LAYOUT PLAN 4 OF 8

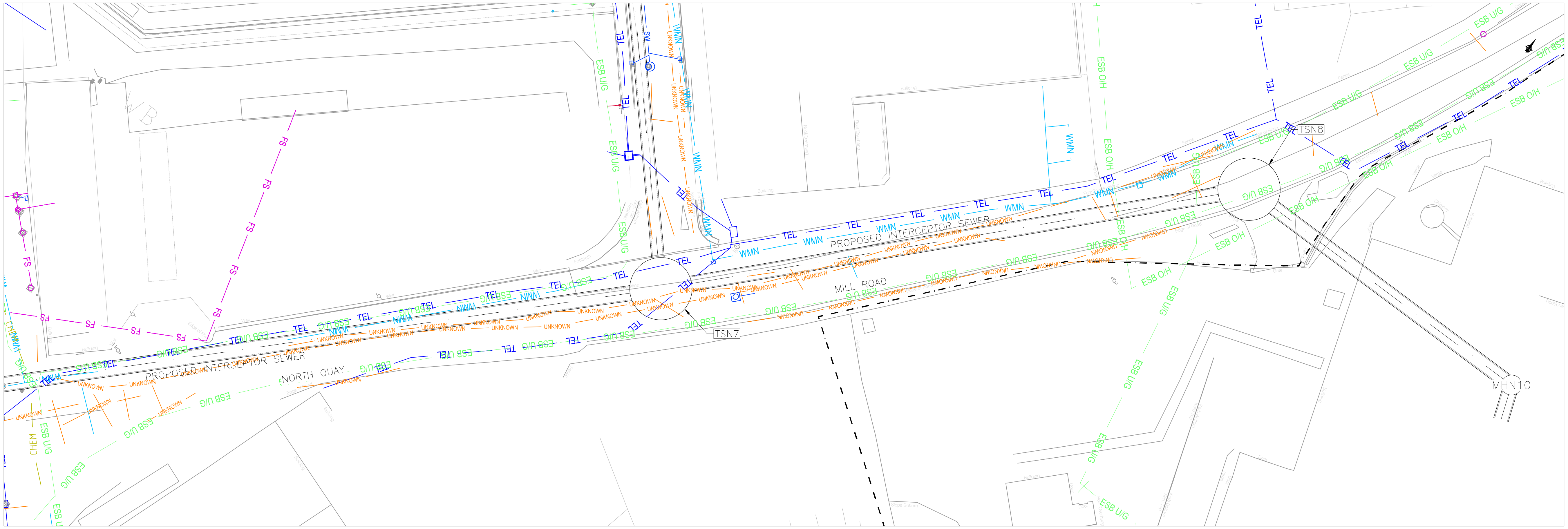
Drawing Status: PLANNING

Job No	Drawing No	Issue
247825-00	C-IS-1204	D1

Do not scale



LOCATION PLAN SCALE: 1:250 @ A1



LOCATION PLAN SCALE: 1:250 @ A1

LEGEND

- PROPOSED INTERCEPTOR SEWER
- PROPOSED SHEET PILE WITH CAPPING BEAM
- EXISTING FOUL/COMBINED SEWER — FS
- EXISTING SURFACE WATER — SW
- EXISTING WATERMAIN — WMN
- EXISTING TELECOM — TEL
- EXISTING PUBLIC LIGHTING — PL
- EXISTING ESB OVERHEAD — ESB O/H
- EXISTING ESB UNDERGROUND — ESB U/G
- EXISTING GAS MAIN — GAS
- EXISTING VIRGIN MEDIA — VM
- EXISTING CHEMICAL — CHEM
- EXISTING UNKNOWN SERVICE — UNKNOWN

Issue	Date	By	Chkd	Appd
P1	31/08	MS	DR	ES

Client: UISCE ÉIREANN : IRISH WATER

Job Title: ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1: AS SHOWN

Discipline: CIVIL

ARUP BYRNELOOBY CLANCY MOORE ARCHITECTS

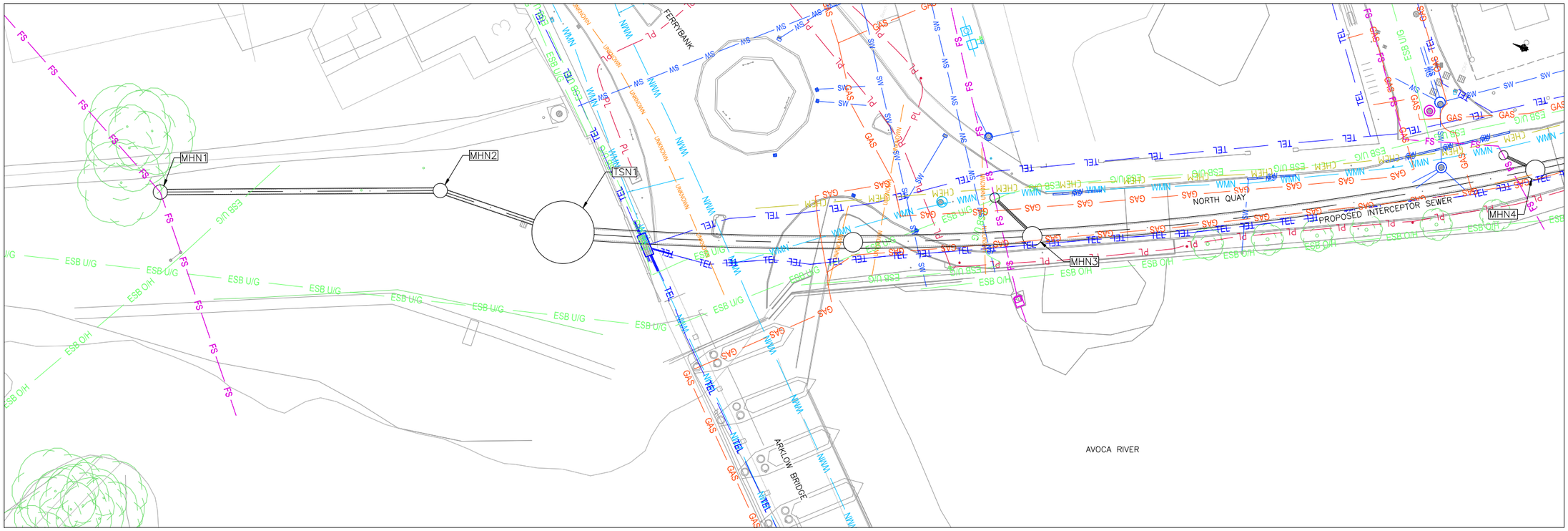
Drawing Title: EXISTING SERVICES LAYOUT PLAN 5 OF 8

Drawing Status: PLANNING

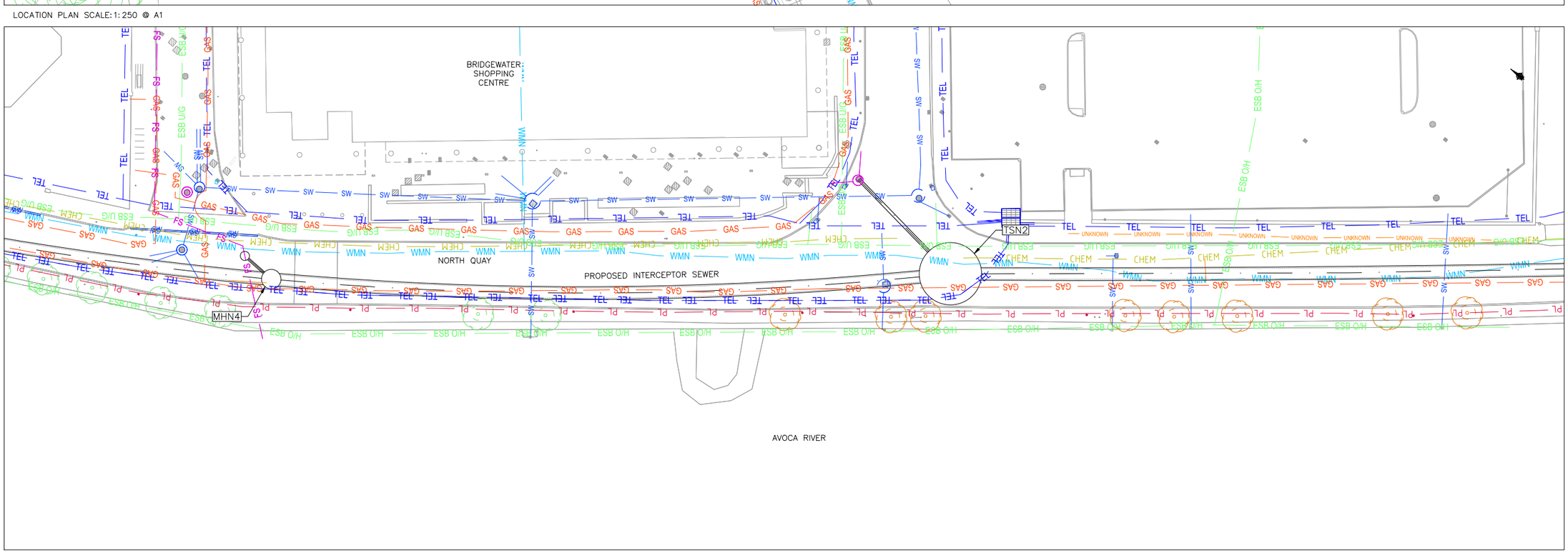
Job No	Drawing No	Issue
247825-00	C-IS-1205	D1

Do not scale

A1



LOCATION PLAN SCALE: 1:250 @ A1



LOCATION PLAN SCALE: 1:250 @ A1

LEGEND

- PROPOSED INTERCEPTOR SEWER
- PROPOSED SHEET PILE WITH CAPPING BEAM
- EXISTING FOUL/COMBINED SEWER (FS)
- EXISTING SURFACE WATER (SW)
- EXISTING WATERMAIN (WMN)
- EXISTING TELECOM (TEL)
- EXISTING PUBLIC LIGHTING (PL)
- EXISTING ESB OVERHEAD (ESB O/H)
- EXISTING ESB UNDERGROUND (ESB U/G)
- EXISTING GAS MAIN (GAS)
- EXISTING VIRGIN MEDIA (VM)
- EXISTING CHEMICAL (CHEM)
- EXISTING UNKNOWN SERVICE (UNKNOWN)

X:\IW Files Water\IW3000\IW31367 Arklow Sewerage Scheme\4 Drawings\4a BLP Drawings\1200's Existing Services Drawings\IW31367-1201-1206.dwg

P1	31/08	MS	DR	ES
Issue	Date	By	Chkd	Appd

Client: UISCE ÉIREANN : IRISH WATER

Job Title: ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1: AS SHOWN

Discipline: CIVIL

ARUP BYRNELOOBY

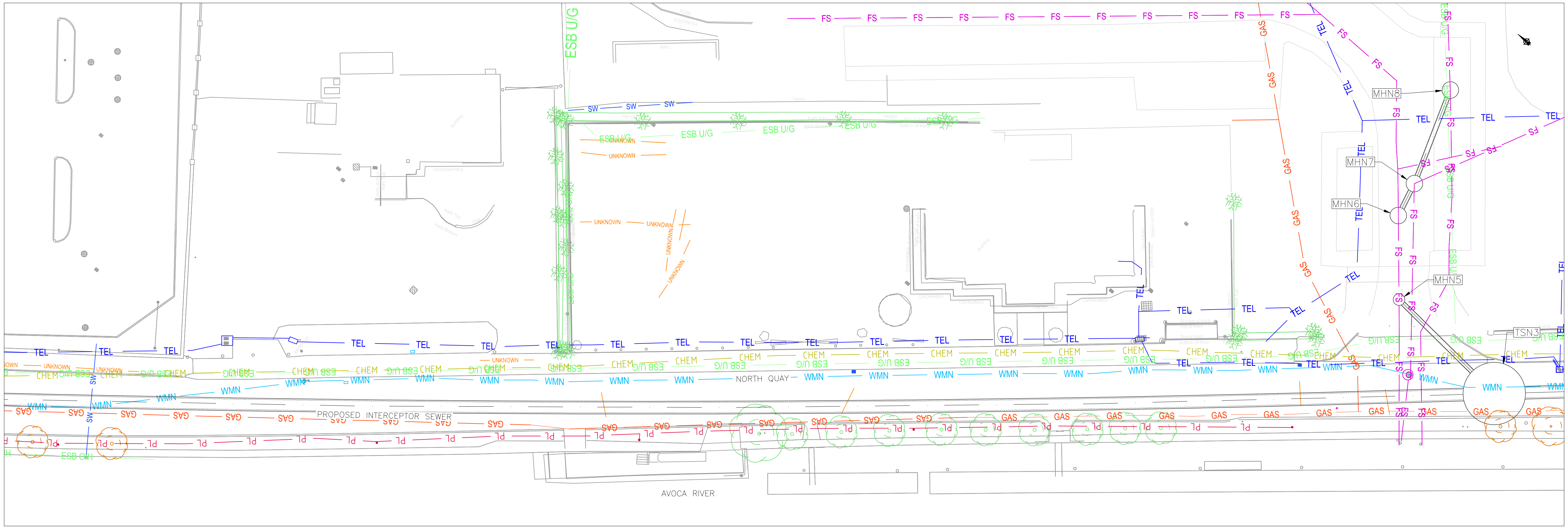
CLANCY MOORE ARCHITECTS

Drawing Title: EXISTING SERVICES LAYOUT PLAN 6 OF 8

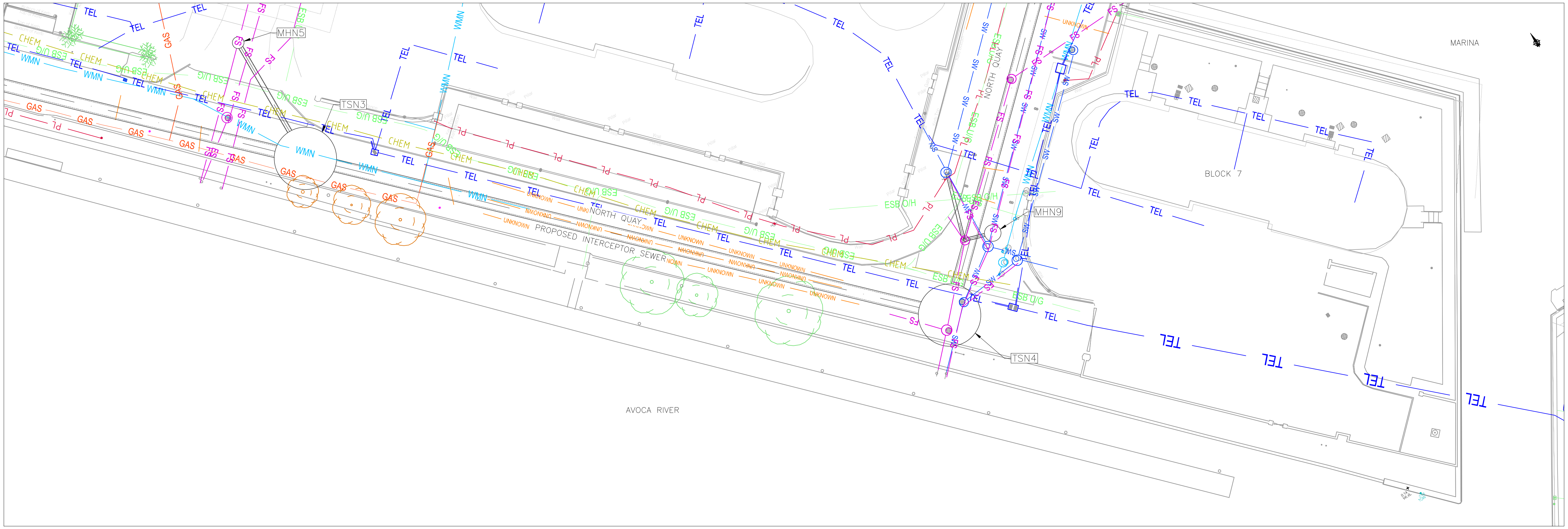
Drawing Status: PLANNING

Job No	Drawing No	Issue
247825-00	C-IS-1206	D1

Do not scale



LOCATION PLAN SCALE: 1:250 @ A1



LOCATION PLAN SCALE: 1:250 @ A1

LEGEND

- PROPOSED INTERCEPTOR SEWER
- PROPOSED SHEET PILE WITH CAPPING BEAM
- EXISTING FOUL/COMBINED SEWER — FS
- EXISTING SURFACE WATER — SW
- EXISTING WATERMAIN — WMN
- EXISTING TELECOM — TEL
- EXISTING PUBLIC LIGHTING — PL
- EXISTING ESB OVERHEAD — ESB O/H
- EXISTING ESB UNDERGROUND — ESB U/G
- EXISTING GAS MAIN — GAS
- EXISTING VIRGIN MEDIA — VM
- EXISTING CHEMICAL — CHEM
- EXISTING UNKNOWN SERVICE — UNKNOWN

Ordnance Survey Ireland

Issue	Date	By	Chkd	Appd
P1	31/08	MS	DR	ES

Client: UISCE ÉIREANN : IRISH WATER

Job Title: ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1: AS SHOWN

Discipline: CIVIL

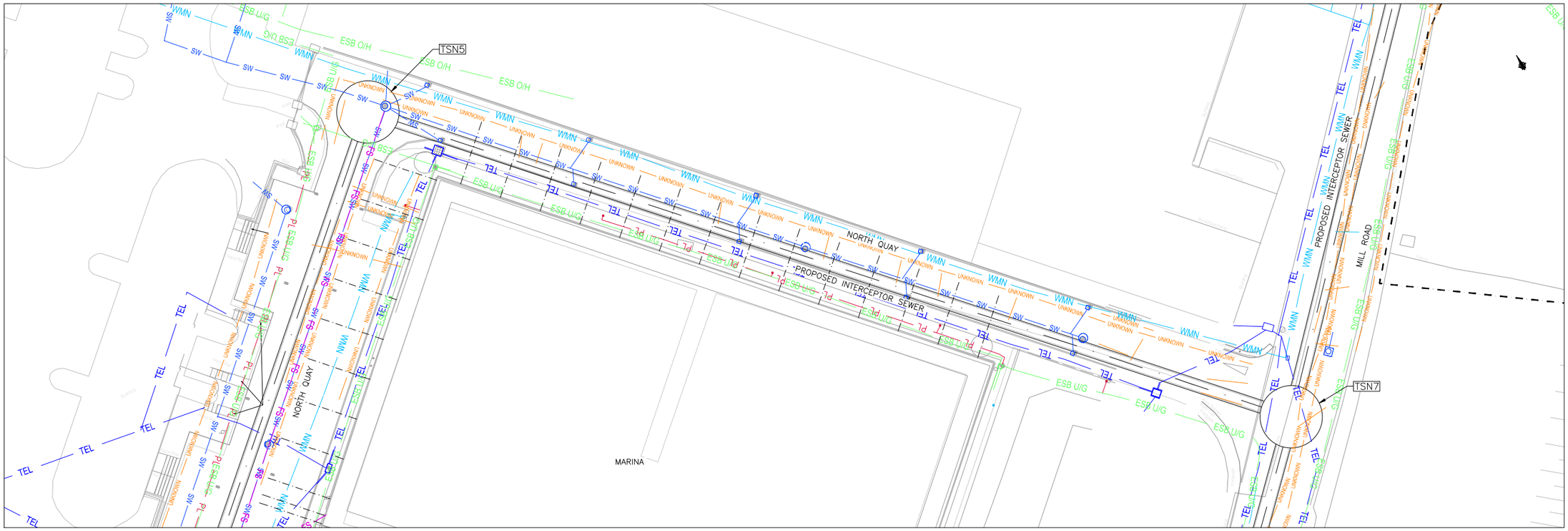
ARUP BYRNELOOBY CLANCY MOORE ARCHITECTS

Drawing Title: EXISTING SERVICES LAYOUT PLAN 7 OF 8

Drawing Status: PLANNING

Job No: 247825-00 | Drawing No: C-IS-1207 | Issue: D1

Do not scale



LOCATION PLAN SCALE: 1:250 @ A1

X:\IN Files Water\WS000\WS1367 Ark&Sw Sewerage Scheme\4 Drawings\4a BLP Drawings\1250's Existing Services Drawings\WS1367-1201-1208.dwg

Issue	Date	By	Chkd	Appd
P1	31/08	MS	DR	ES

Client: UISCE ÉIREANN : IRISH WATER

Job Title: ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1: AS SHOWN

Discipline: CIVIL

ARUP BYRNELOOBY

CLANCY MOORE ARCHITECTS

Drawing Title: EXISTING SERVICES LAYOUT PLAN 8 OF 8

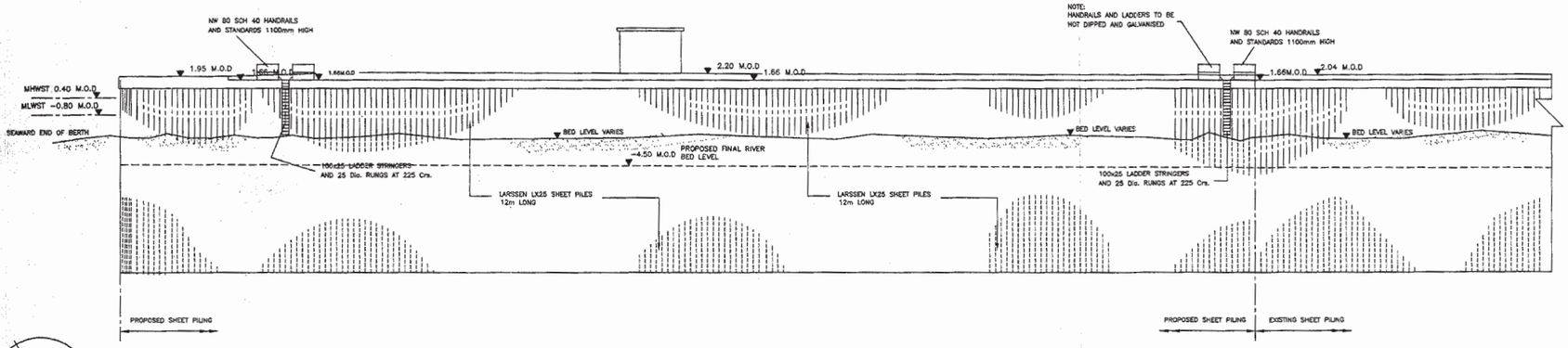
Drawing Status: PLANNING

Job No	Drawing No	Issue
247825-00	C-IS-1208	D1

Do not scale

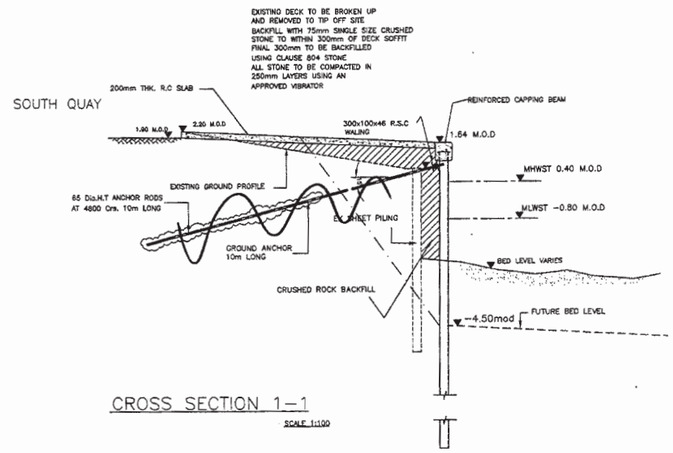
Appendix C

As-Built Piling Drawings



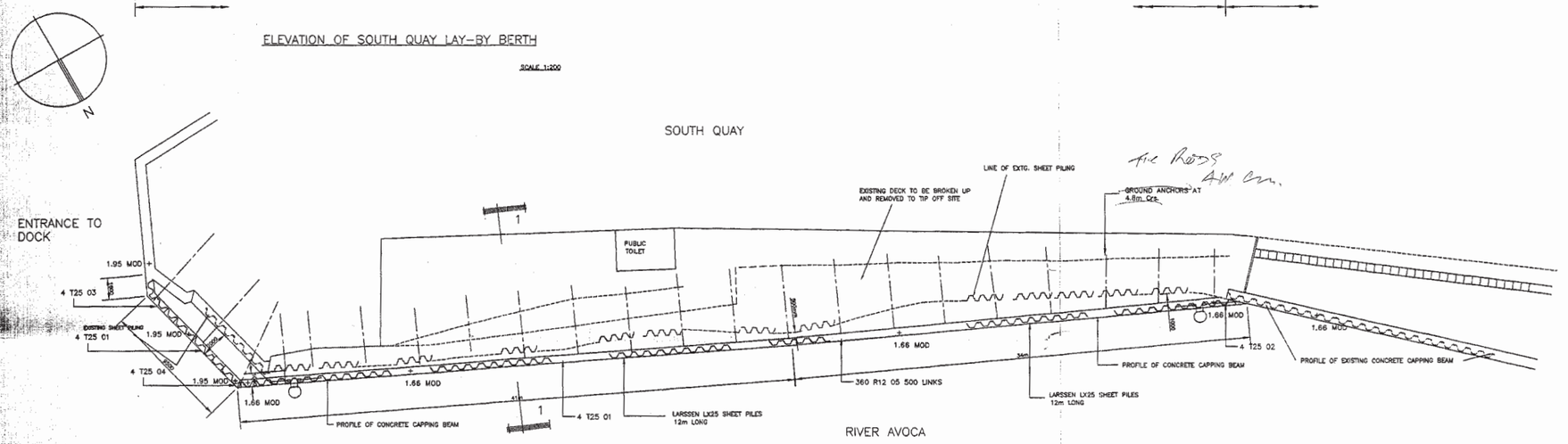
ELEVATION OF SOUTH QUAY LAY-BY BERTH

SCALE 1:200



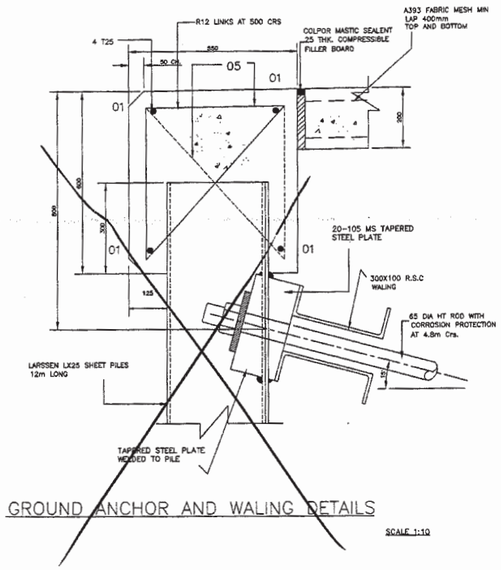
CROSS SECTION 1-1

SCALE 1:100



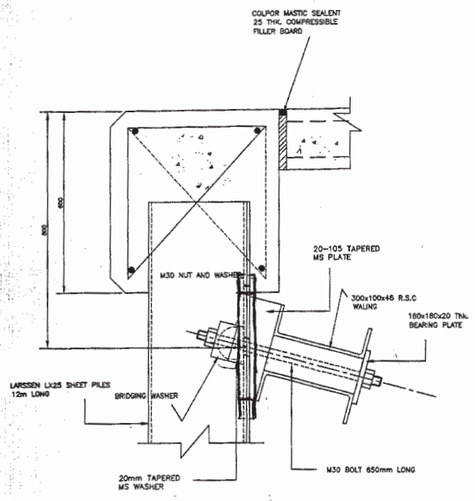
PLAN OF LAY-BY BERTH AT SOUTH QUAY

SCALE 1:200



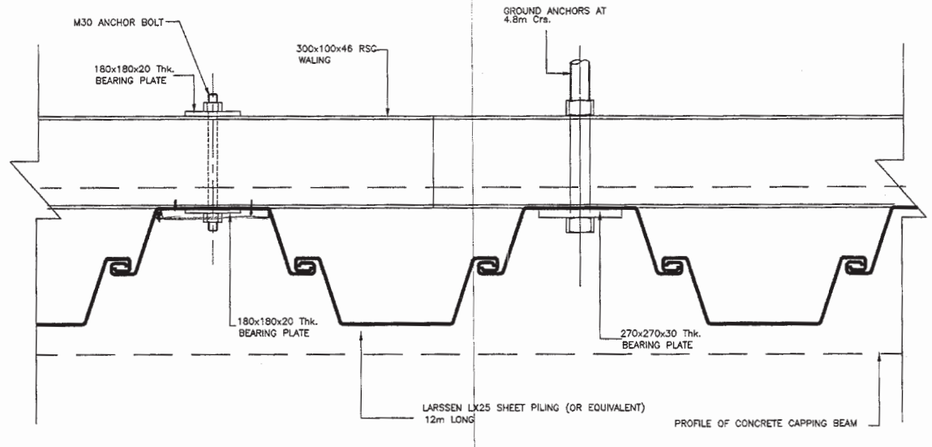
GROUND ANCHOR AND WALING DETAILS

SCALE 1:10



FIXING BOLT DETAILS WALING TO SHEET PILING

SCALE 1:10



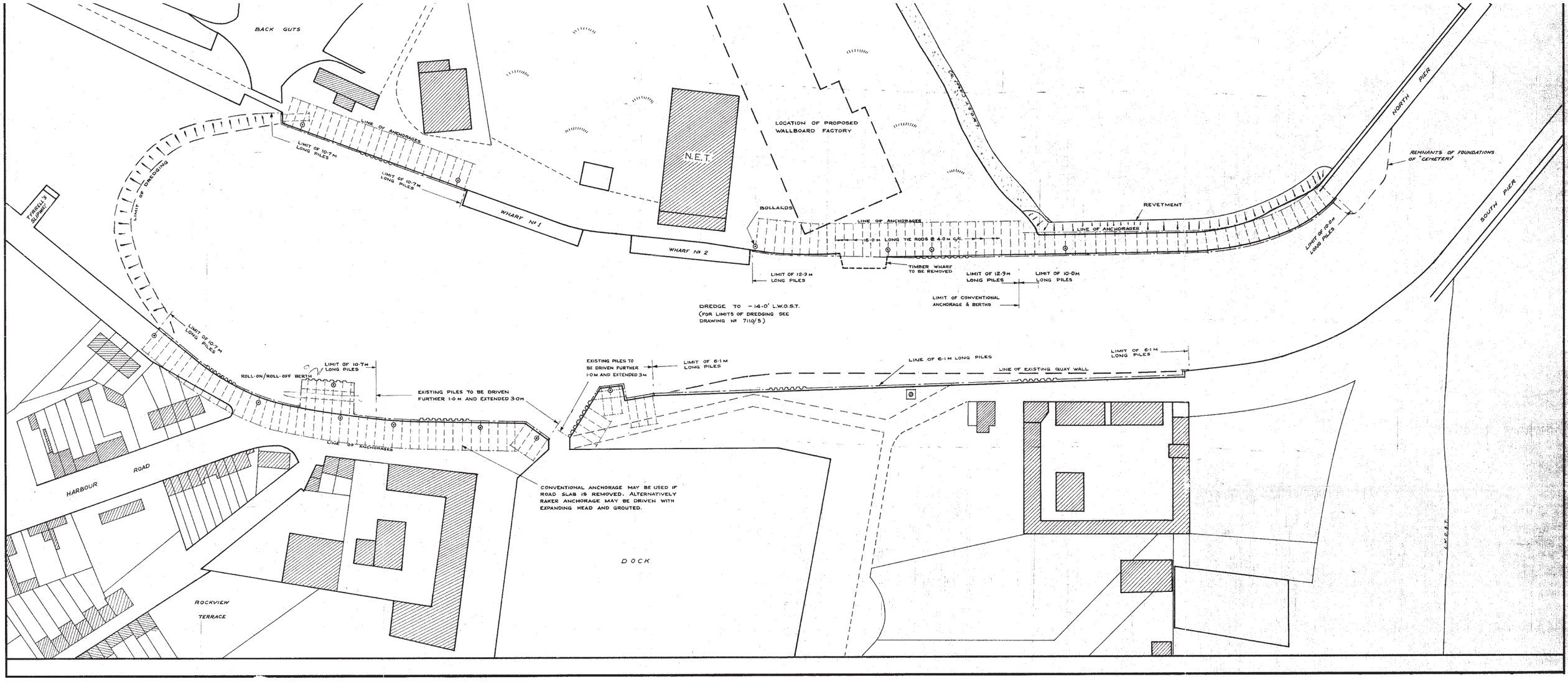
ENLARGED DETAILS

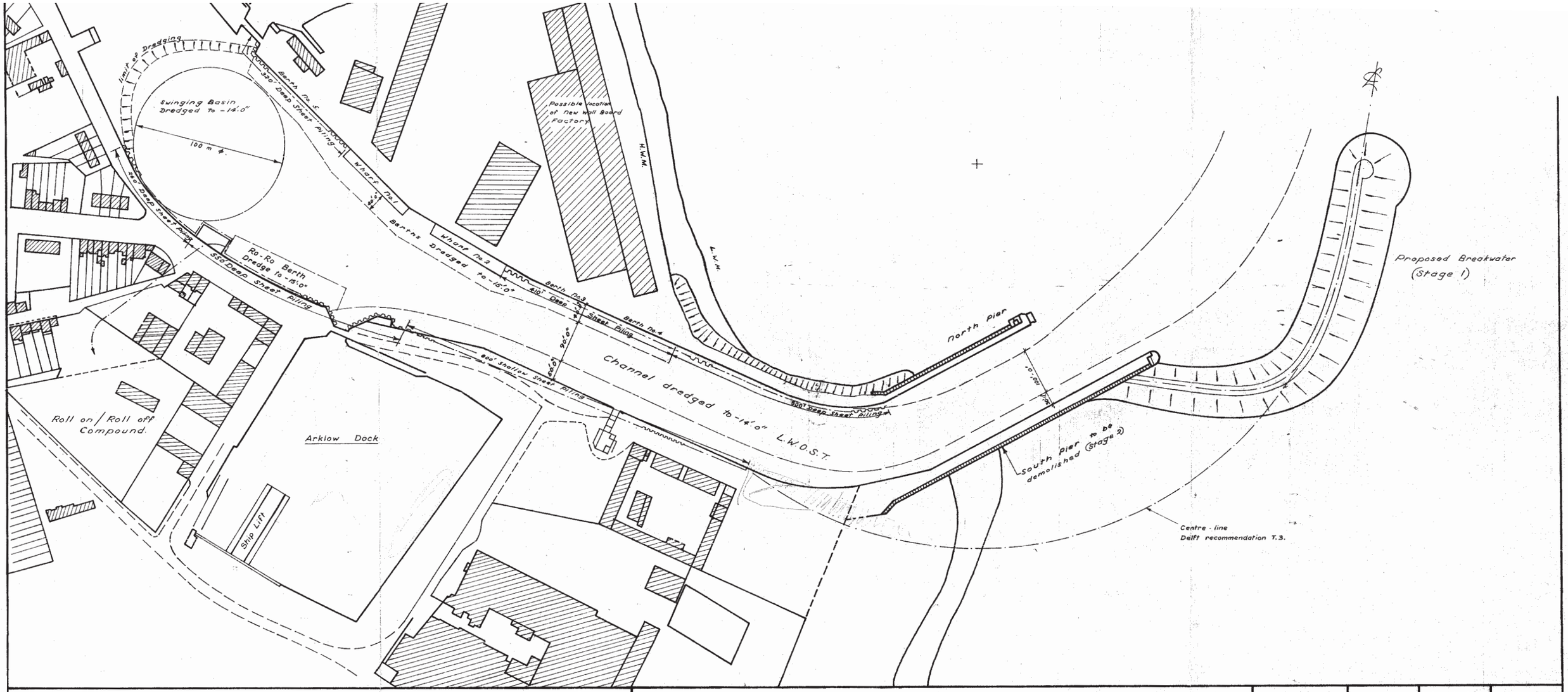
SCALE 1:10

REV.	DATE	DESC.
A	23.6.05	REBAR DETAILS ADDED

J.P. BYRNE & PARTNERS
CONSULTING ENGINEERS
BRUNEL HOUSE,
NORTH QUAY, ARKLOW.
FAX NO. (0402) 39338 TEL. (0402) 39656/39481

DRN J.L.O'H	CLIENT : ARKLOW HARBOUR BOARD
CH D.B.	
APP J.P.B.	PROJECT : REMEDIAL WORKS TO ARKLOW HARBOUR
DATE 20.7.04	
SCALE 1:200 1:20 1:10	TITLE : DETAILS OF SHEET PILING TO LAY-BY BERTH AT SOUTH QUAY
DRG NO: CL-B-806/06	CAD No. 806C06 REV. A

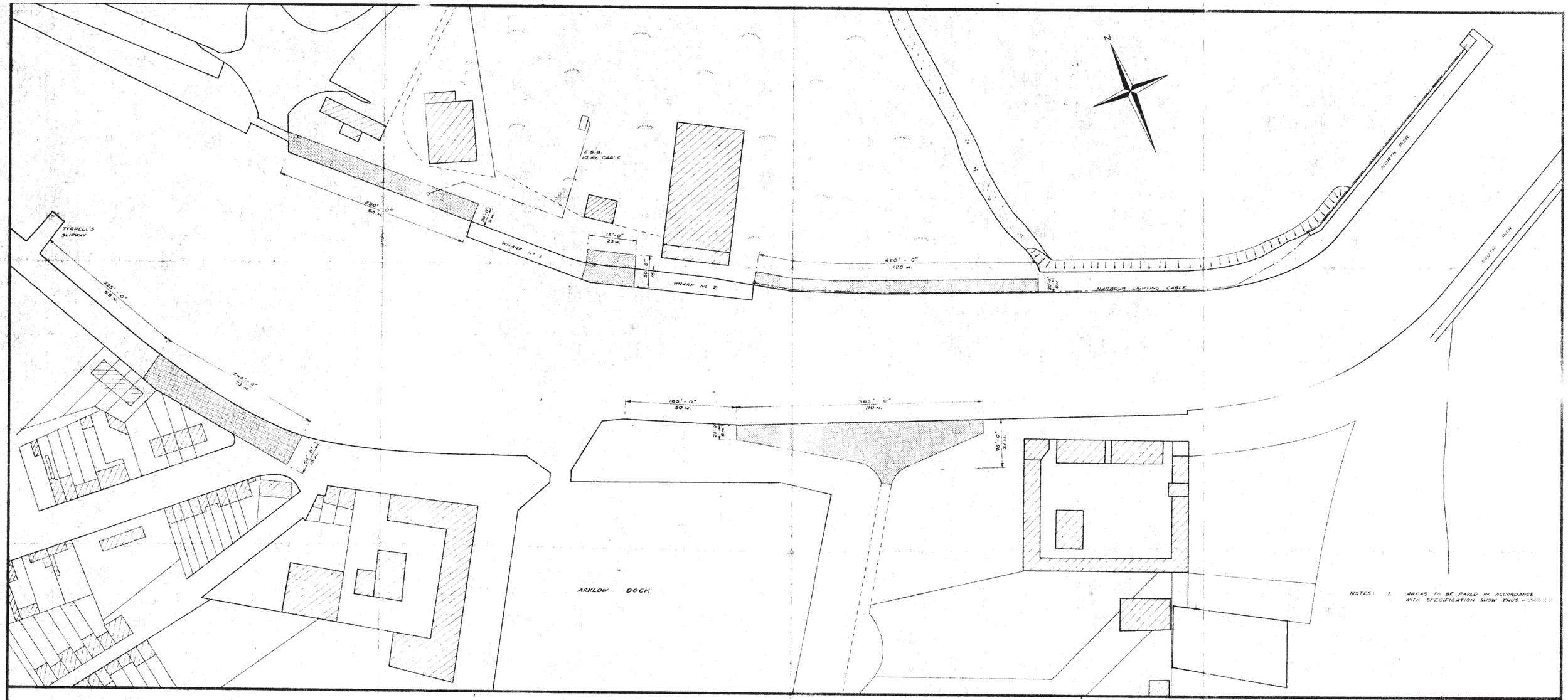

BACK GUTS
LOCATION OF PROPOSED WALLBOARD FACTORY
N.E.T.
LINE OF ANCHORAGES
LIMIT OF 10·7 m LONG PILES
LIMIT OF DREDGING
WHARF № 1
WHARF № 2
BOLLARDS
16·0 m LONG TIE RODS @ 4·0 m C/C.
REVETMENT
TIMBER WHARF TO BE REMOVED
LIMIT OF 12·9 m LONG PILES
LIMIT OF 10·0M LONG PILES
LIMIT OF CONVENTIONAL ANCHORAGE & BERTHS
DREDGE TO −14·0' L.W.O.S.T. (FOR LIMITS OF DREDGING SEE DRAWING № 7110/5)
NORTH PIER
SOUTH PIER
REMNANTS OF FOUNDATIONS OF "CEMETERY"
TYRRELL'S SLIPWAY
ROLL-ON/ROLL-OFF BERTH
EXISTING PILES TO BE DRIVEN FURTHER 1·0 m AND EXTENDED 3·0m
EXISTING PILES TO BE DRIVEN FURTHER 1·0 m AND EXTENDED 3m
LIMIT OF 6·1 m LONG PILES
LINE OF 6·1 m LONG PILES
LINE OF EXISTING QUAY WALL
CONVENTIONAL ANCHORAGE MAY BE USED IF ROAD SLAB IS REMOVED. ALTERNATIVELY RAKER ANCHORAGE MAY BE DRIVEN WITH EXPANDING HEAD AND GROUTED.
DOCK
HARBOUR ROAD
ROCKVIEW TERRACE
L.W.O.S.T.



Arklow Harbour Development
General layout Plan.

Mc Cabe & Delaney
Civil Engineering Consultants
51 Northumberland Road
Dublin 4.

Drawn By	Scale	Date	Drg. No.
N. Boyle	1 : 1250	23rd Aug. '71	7110/5
Checked By			



ARKLOW HARBOUR DEVELOPMENT

Paving Details

McCabe Delaney & Associates
Consulting Civil & Structural Engineers
51 Northumberland Road
Dublin 4

Drawn by	Scale	Date	Drg No
MH	1/720	21-12-72	7225/7