

Appendix 3.2

Interceptor Sewer Route Options Report

Irish Water
**Arklow Wastewater Treatment
Plant Project**
Interceptor Sewer Route Options
Report

Final | June 2018

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job Number 247825-00. W3136

Ove Arup & Partners Ireland Ltd

Arup
50 Ringsend Road
Dublin 4
D04 T6X0
Ireland
www.arup.com

ARUP BYRNE LOOBY

Document Verification

Job title		Arklow Wastewater Treatment Plant Project		Job number	
				247825-00. W3136	
Document title		Interceptor Sewer Route Options Report		File reference	
Document ref					
Revision	Date	Filename	20180622 Inter Sewer Route Options Report.docx		
Final	June 2018	Description	Final		
			Prepared by	Checked by	Approved by
		Name	J. Pocock	E. Sweetman	E. Sweetman
		Signature			
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
Issue Document Verification with Document <input checked="" type="checkbox"/>					

Contents

1	Introduction	1
2	Project Overview	2
2.1	Background	2
2.2	Route Corridors Considered	2
2.3	Pipe Sizing	2
2.4	Utility Services	3
2.5	Listed/Protected Structures	3
2.6	Designation of Sewer Route Sections	3
3	Route Options	5
3.1	River Crossing	5
3.2	Section 1	10
3.3	Arklow Bridge	15
3.4	Section 2	19
3.5	Section 3	24
3.6	Section 4	28
3.7	Section 5	32
3.8	Section 6	36

Appendices

Appendix A

Interceptor Sewer Route Drawings

Appendix B

Utility Services Drawings

Appendix C

As-Built Piling Drawings

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.

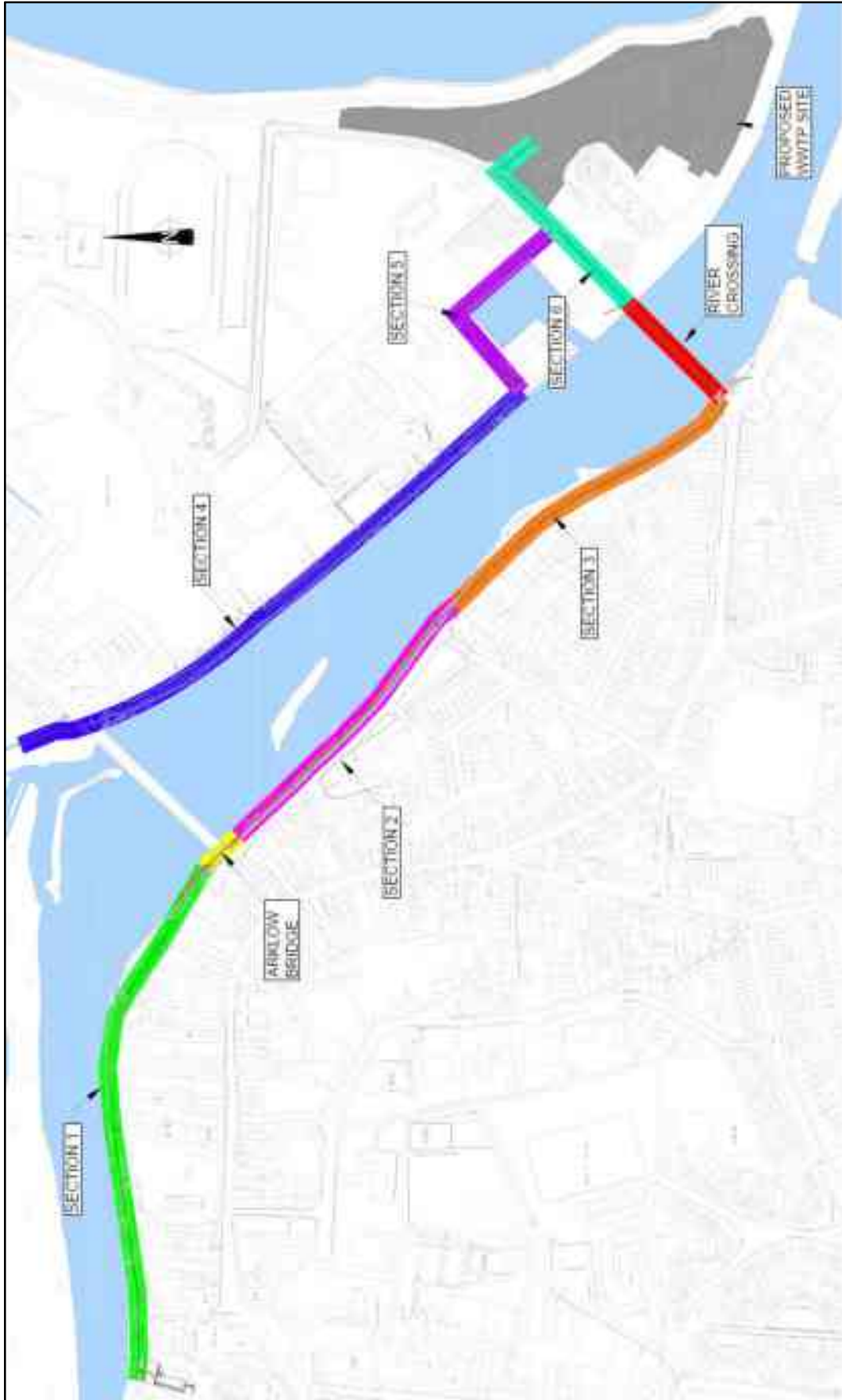


Figure 1 Interceptor Sewer Sections Overview

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 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.

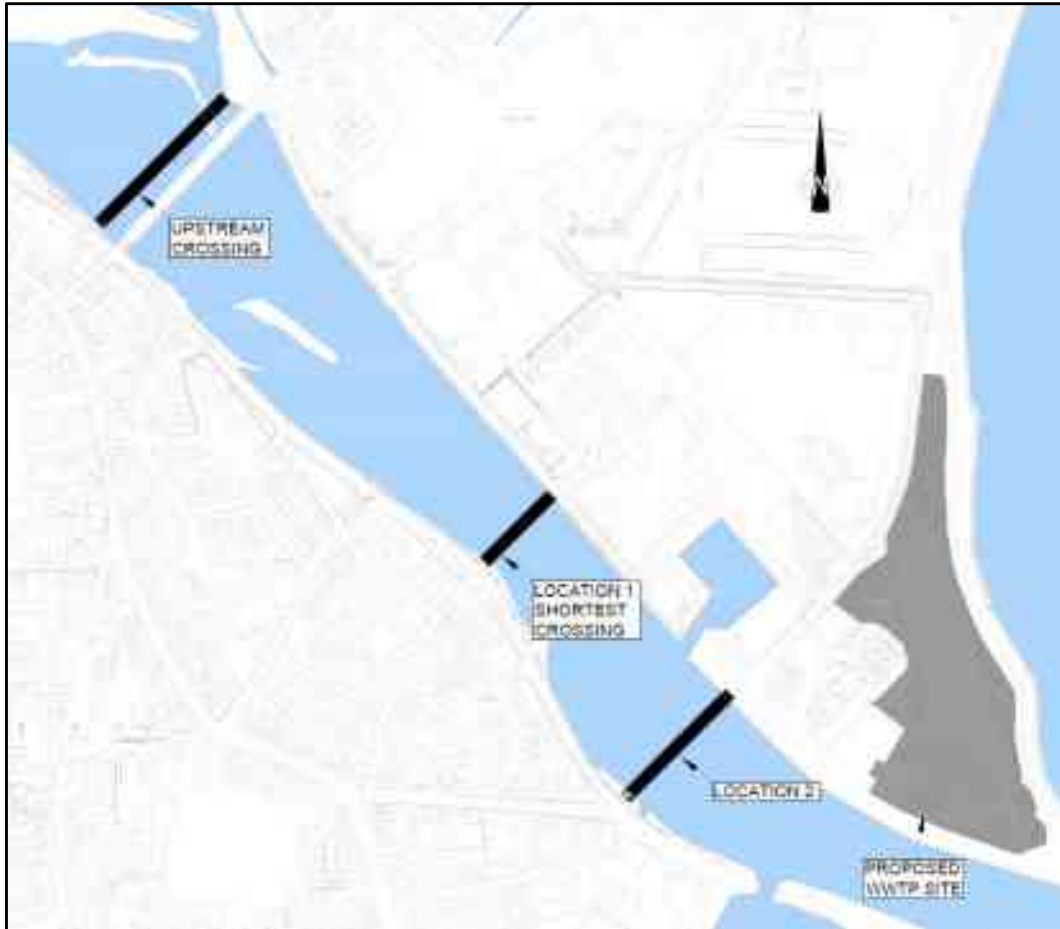


Figure 2 Sewer Crossing Points Considered

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 side 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 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.

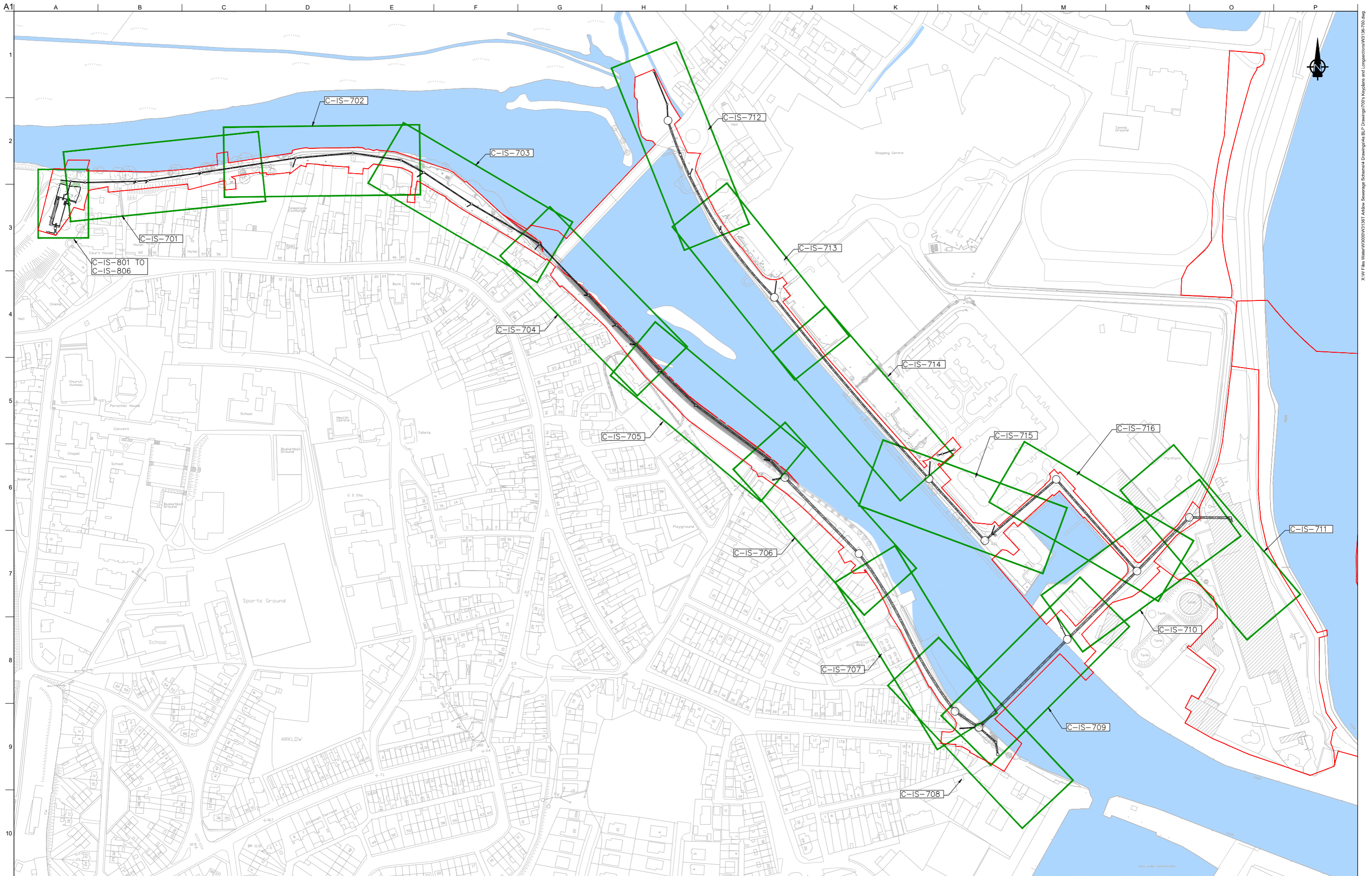
3.8.4 Preferred Construction Methodology

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 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



X:\W\Arklow\Water\00000001587\Arklow Sewerage Scheme\4 BLP Drawings\7000 Keyplans and Longsections\W01587-700.dwg

Ordnance Survey Ireland Licence No. EN 0083318
© Ordnance Survey Ireland/ Government of Ireland



Client



Job Title
**ARKLOW WASTEWATER
TREATMENT PLANT PROJECT**

Scale at A1 NOT TO SCALE

Discipline
CIVIL



CLANCY MOORE ARCHITECTS

Drawing Title
LOCATION KEY PLAN

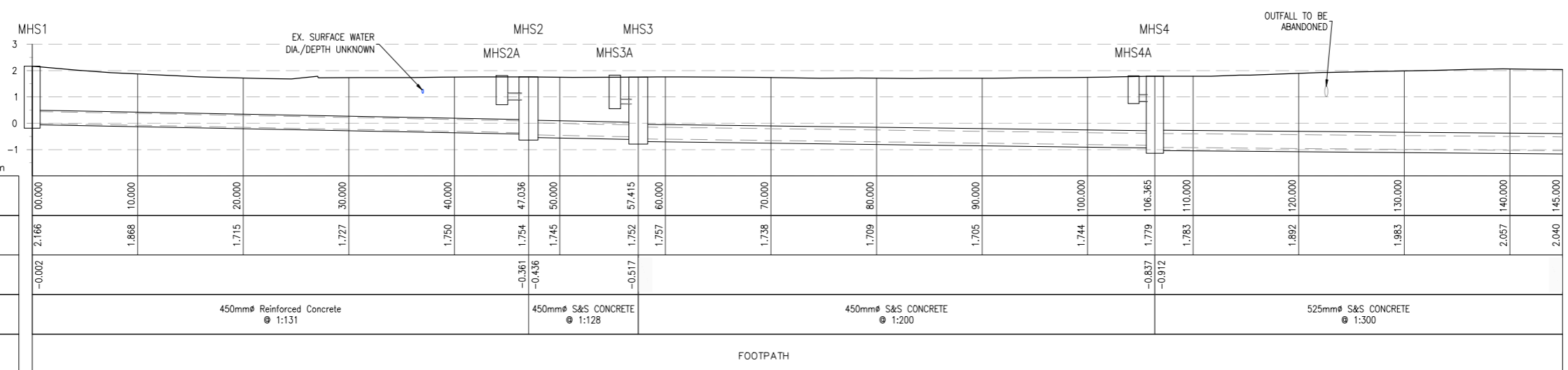
Drawing Status
PLANNING

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

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



LOCATION PLAN
SCALE: 1:250 @ A1



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

Ordnance Survey Ireland Licence No. EN 0083318
© Ordnance Survey Ireland/ Government of Ireland

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



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

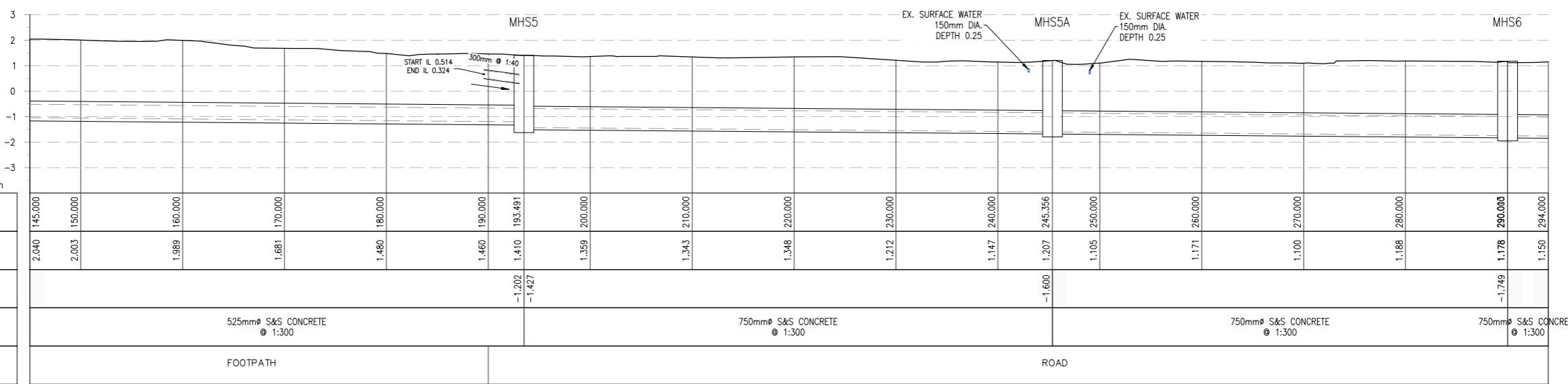
Job No
247825-00

Drawing No
C-IS-701

Issue
P1



LOCATION PLAN
SCALE: 1:250 @ A1



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

Ordnance Survey Ireland Licence No. EN 0083318
© Ordnance Survey Ireland/ Government of Ireland



Client
ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Job Title
ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1
AS SHOWN

Discipline
CIVIL

ARUP BYRNE LOOBY

CLANCY MOORE ARCHITECTS

Drawing Title
LAYOUT PLAN & LONGITUDINAL SECTION 2 OF 16

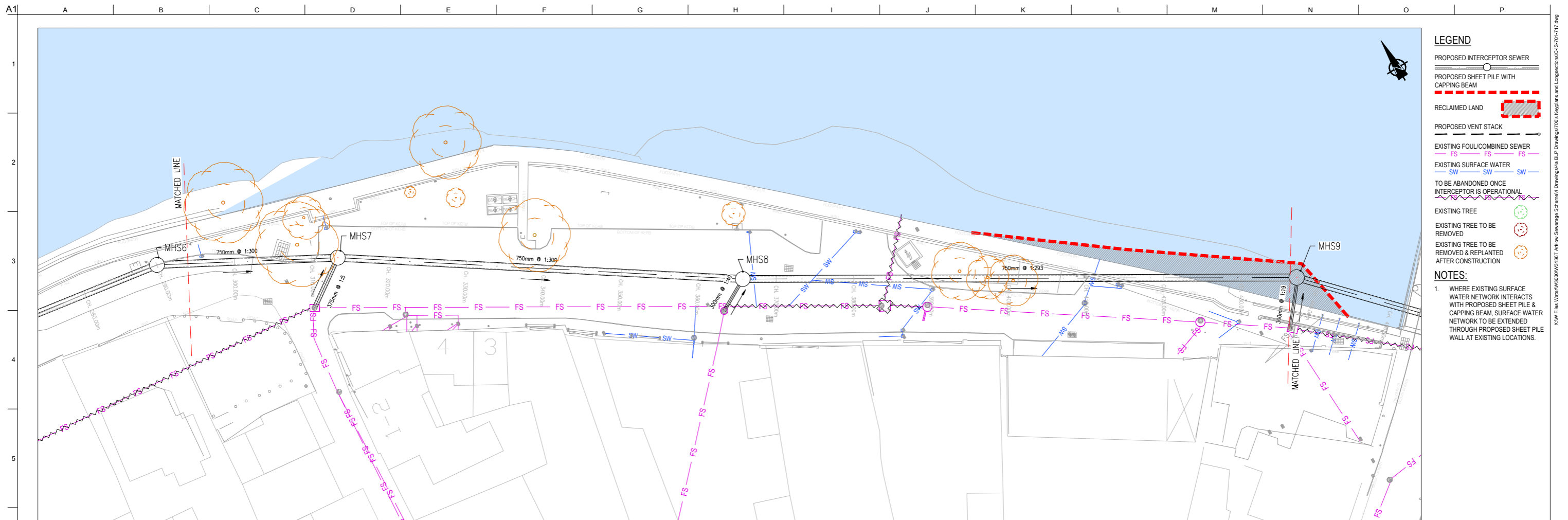
Drawing Status
PLANNING

Job No
247825-00

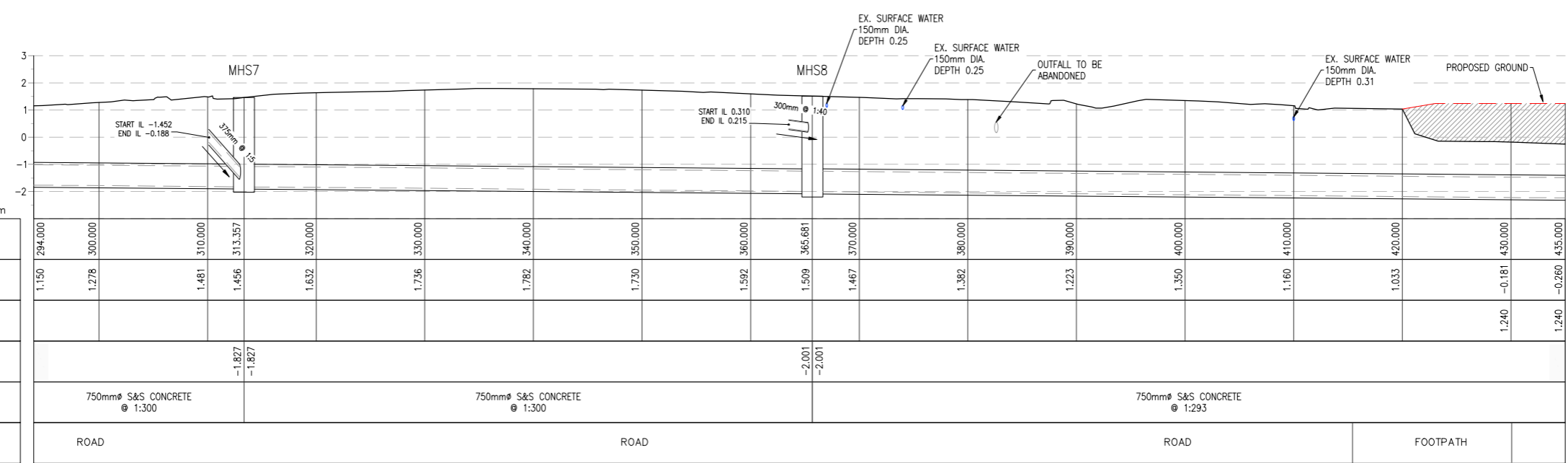
Drawing No
C-IS-702

Issue
P1

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



LOCATION PLAN
SCALE: 1:250 @ A1



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

Ordnance Survey Ireland Licence No. EN 0083318
© Ordnance Survey Ireland/ Government of Ireland

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



Client
ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1 AS SHOWN

Discipline CIVIL

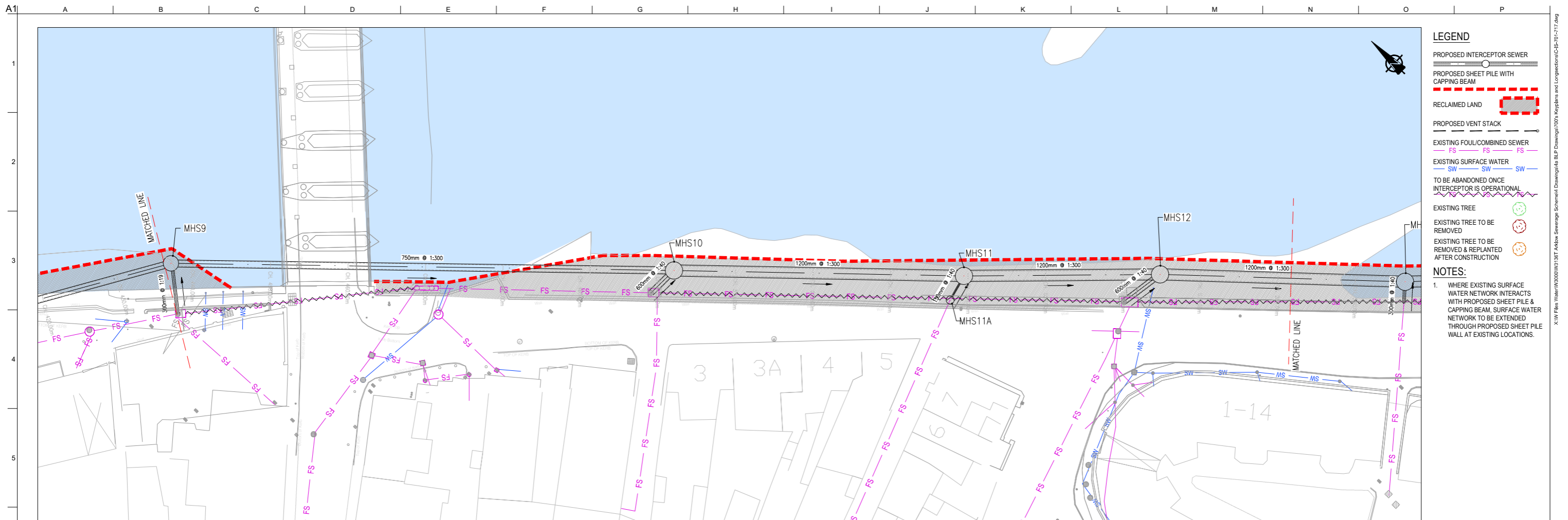
ARUP BYRNELOOBY

CLANCY MOORE ARCHITECTS

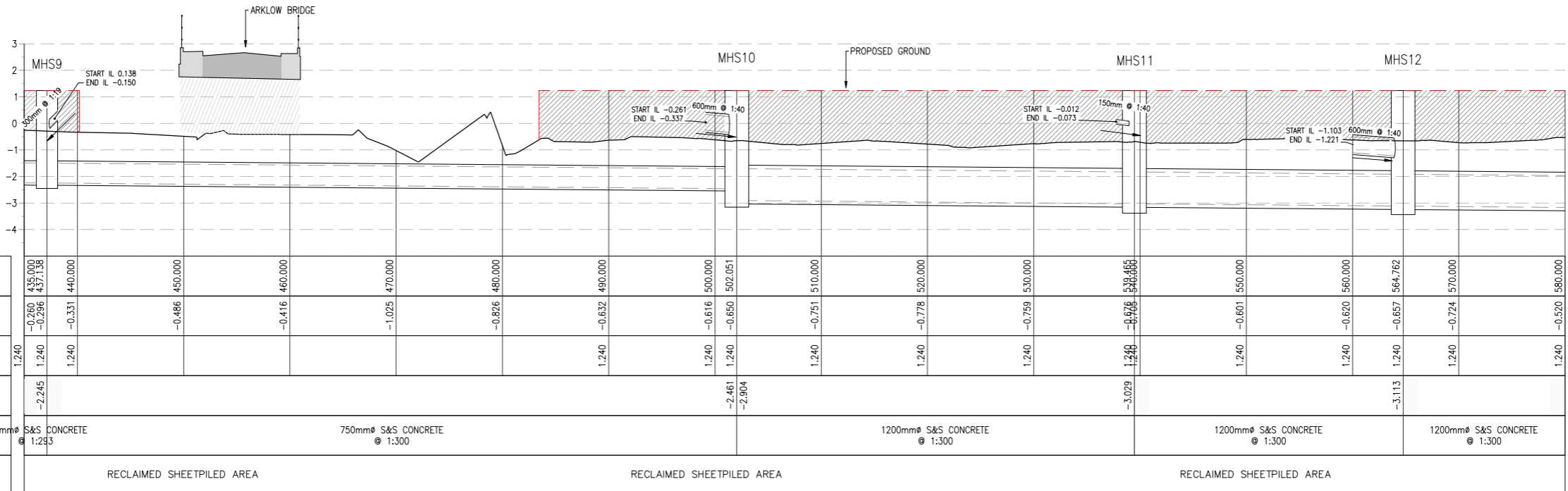
Drawing Title
LAYOUT PLAN & LONGITUDINAL SECTION 3 OF 16

Drawing Status
PLANNING

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



LOCATION PLAN
SCALE: 1:250 @ A1



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

Ordnance Survey Ireland Licence No. EN 0083318
© Ordnance Survey Ireland/ Government of Ireland

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



Client
UISCE
DUBLIN WASTEWATER
TREATMENT PLANT PROJECT

Job Title
**ARKLOW WASTEWATER
TREATMENT PLANT PROJECT**

Scale at A1 AS SHOWN

Discipline
CIVIL

Drawing Title
ARUP BYRNE LOOBY
CLANCY MOORE ARCHITECTS

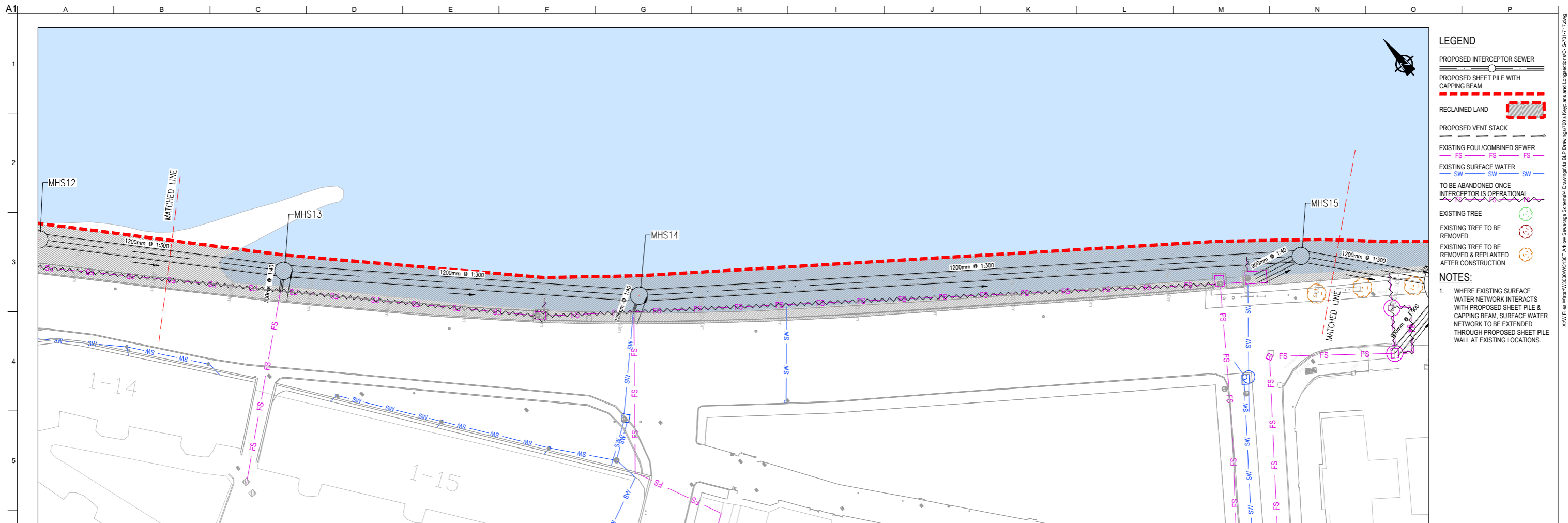
Drawing Title
**LAYOUT PLAN &
LONGITUDINAL SECTION
4 OF 16**

Drawing Status
PLANNING

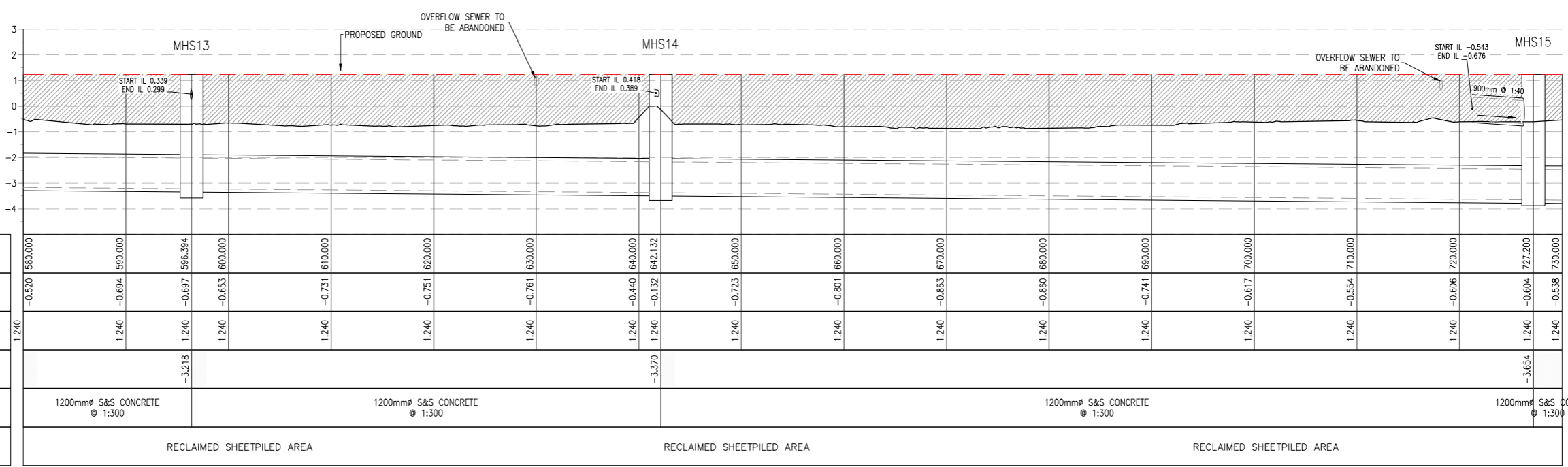
Job No
247825-00

Drawing No
C-IS-704

Issue
P1



LOCATION PLAN
SCALE: 1:250 @ A1



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

Ordnance Survey Ireland Licence No. EN 0083318
© Ordnance Survey Ireland/ Government of Ireland



Job Title
ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1 AS SHOWN

Discipline
CIVIL



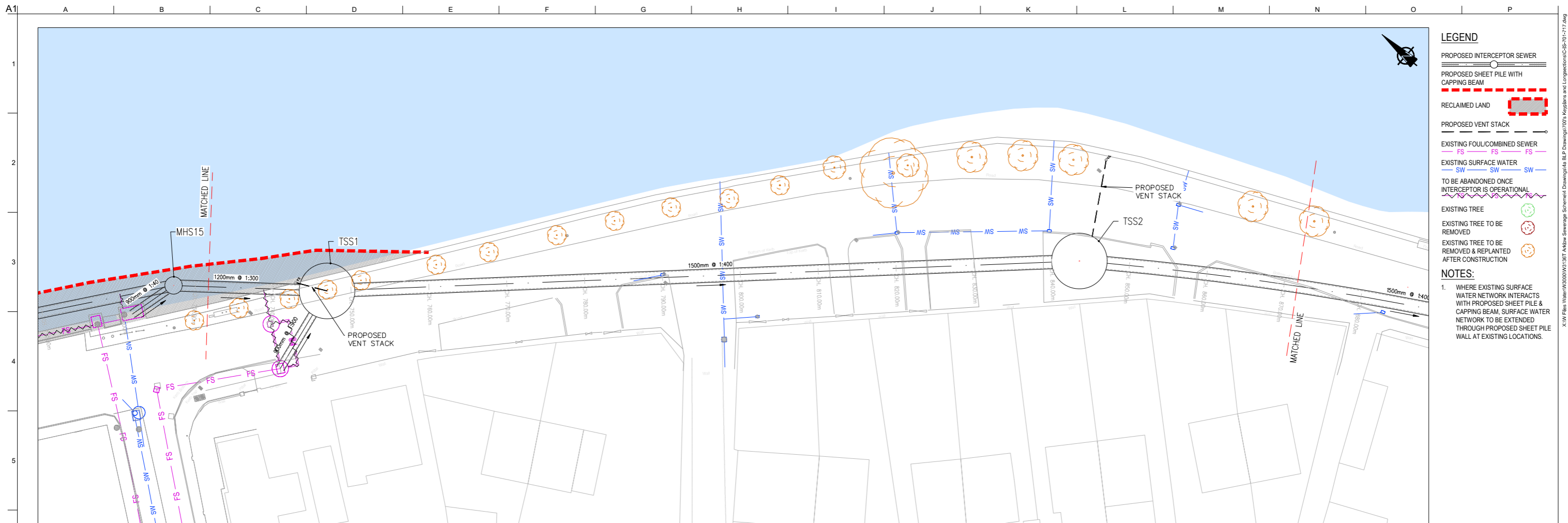
Drawing Title
LAYOUT PLAN & LONGITUDINAL SECTION 5 OF 16

Drawing Status
PLANNING

Job No
247825-00

Drawing No
C-IS-705

Issue
P1



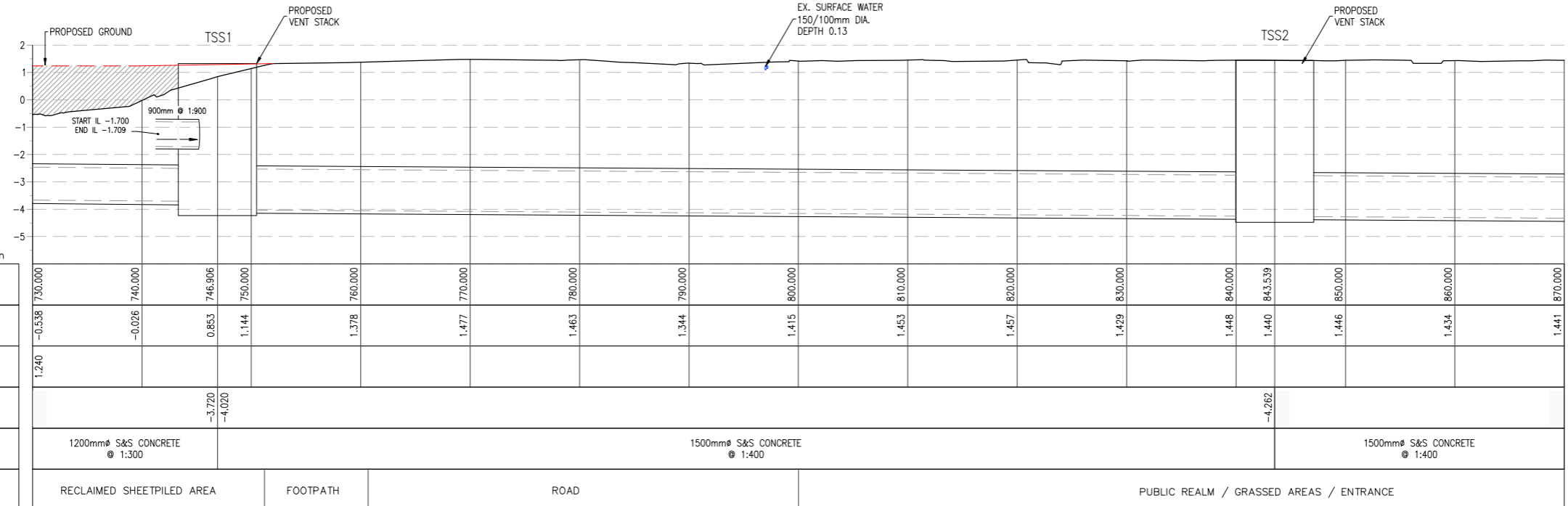
LEGEND

- 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:

- 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.

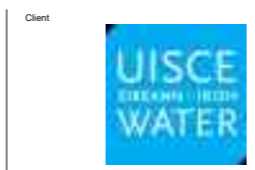
LOCATION PLAN
SCALE: 1:250 @ A1



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	1200mm S&S CONCRETE @ 1:300			1500mm 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.

Ordnance Survey Ireland Licence No. EN 0083318
© Ordnance Survey Ireland/ Government of Ireland



Job Title
ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1 AS SHOWN

Discipline CIVIL



Drawing Title
LAYOUT PLAN & LONGITUDINAL SECTION
6 OF 16

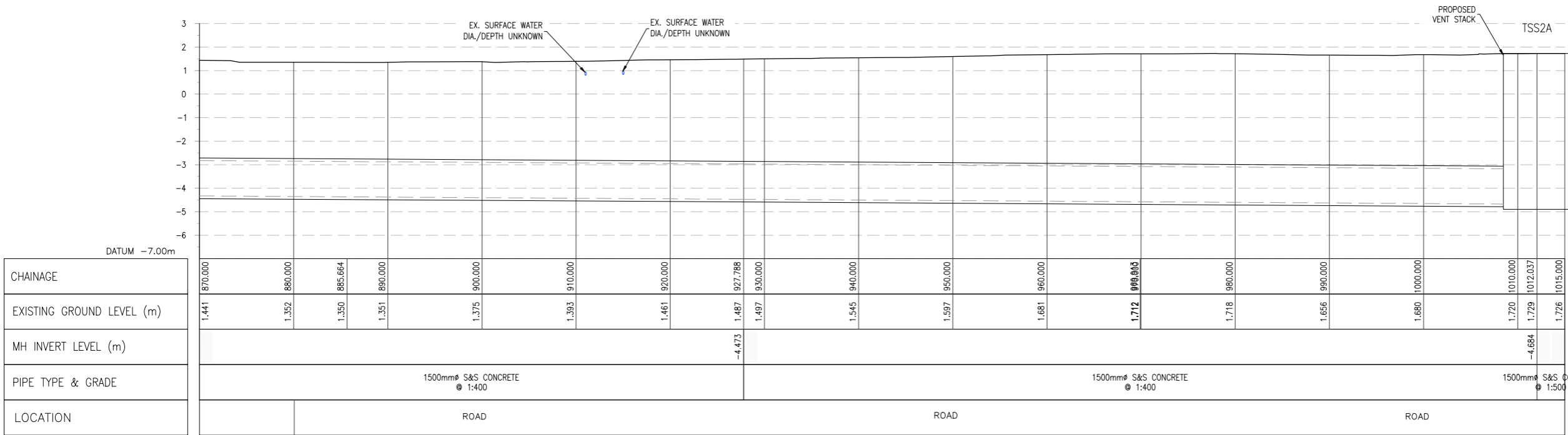
Drawing Status
PLANNING

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

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



LOCATION PLAN
SCALE: 1:250 @ A1



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

Ordnance Survey Ireland Licence No. EN 0083318
© Ordnance Survey Ireland/ Government of Ireland



Client
ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Job Title
ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1 AS SHOWN

Discipline
CIVIL



Drawing Title
LAYOUT PLAN & LONGITUDINAL SECTION 7 OF 16

Drawing Status
PLANNING

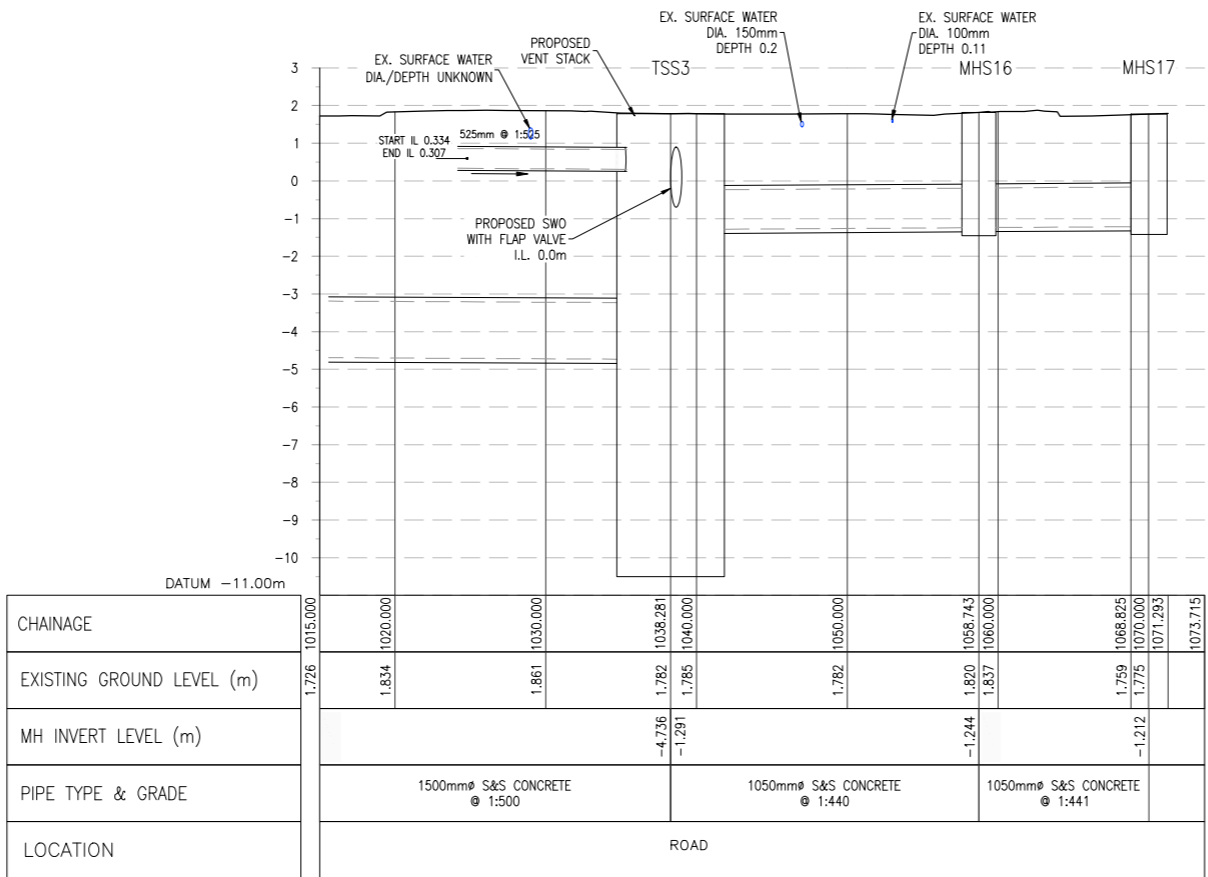
Job No
247825-00

Drawing No
C-IS-707

Issue
P1



LOCATION PLAN
SCALE: 1:250 © A1



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

Ordnance Survey Ireland Licence No. EN 0083318
© Ordnance Survey Ireland/ Government of Ireland

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



Client
ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Job Title
ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1
AS SHOWN

Discipline
CIVIL

ARUP BYRNELOOBY

CLANCY MOORE ARCHITECTS

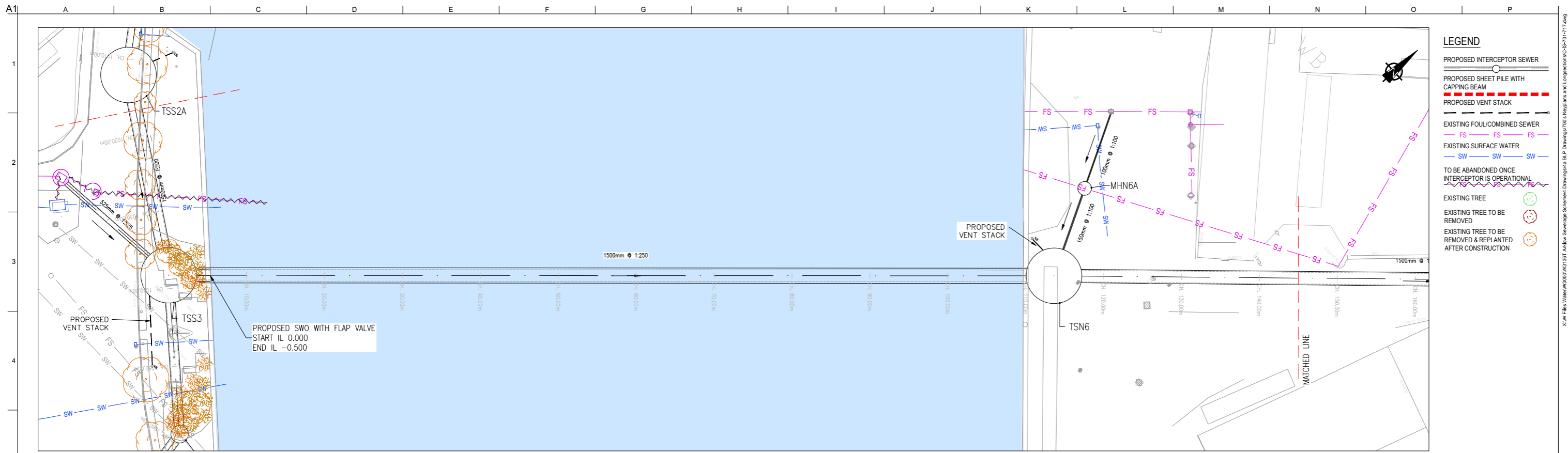
Drawing Title
LAYOUT PLAN & LONGITUDINAL SECTION
8 OF 16

Drawing Status
PLANNING

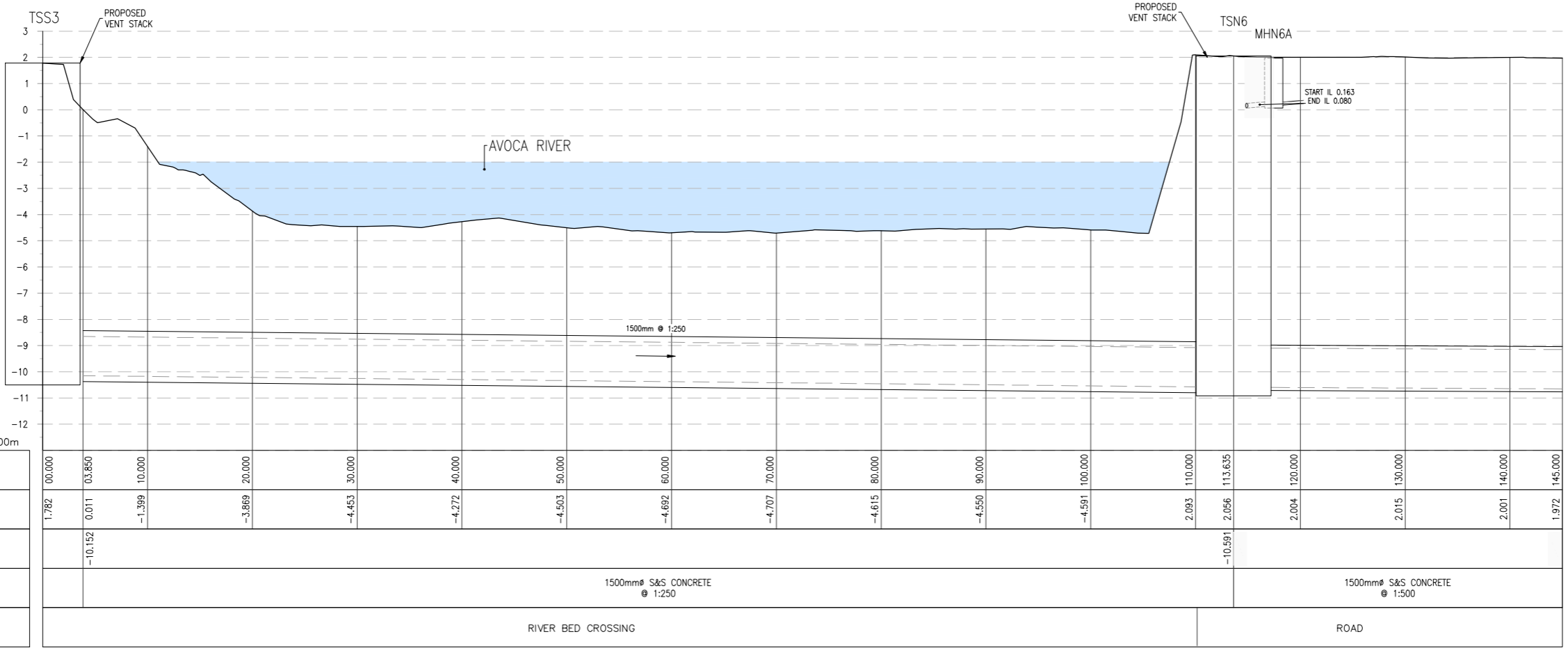
Job No
247825-00

Drawing No
C-IS-708

Issue
P1



LOCATION PLAN
SCALE: 1:250 @ A1



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

Ordnance Survey Ireland Licence No. EN 0083318
© Ordnance Survey Ireland/ Government of Ireland



Client
ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1 AS SHOWN

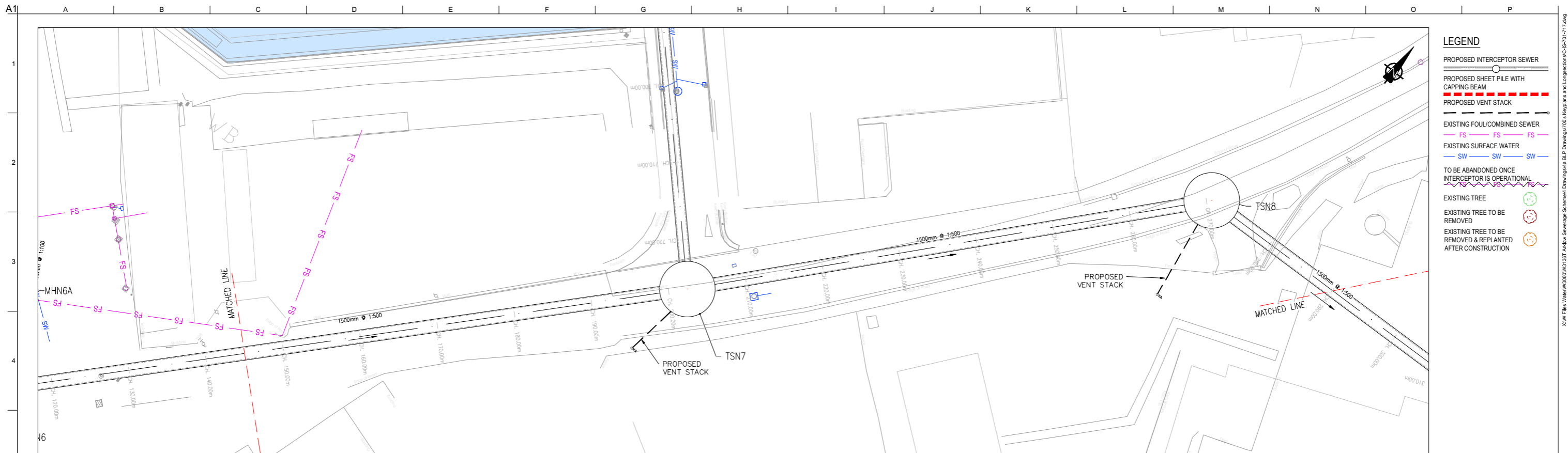
Discipline CIVIL



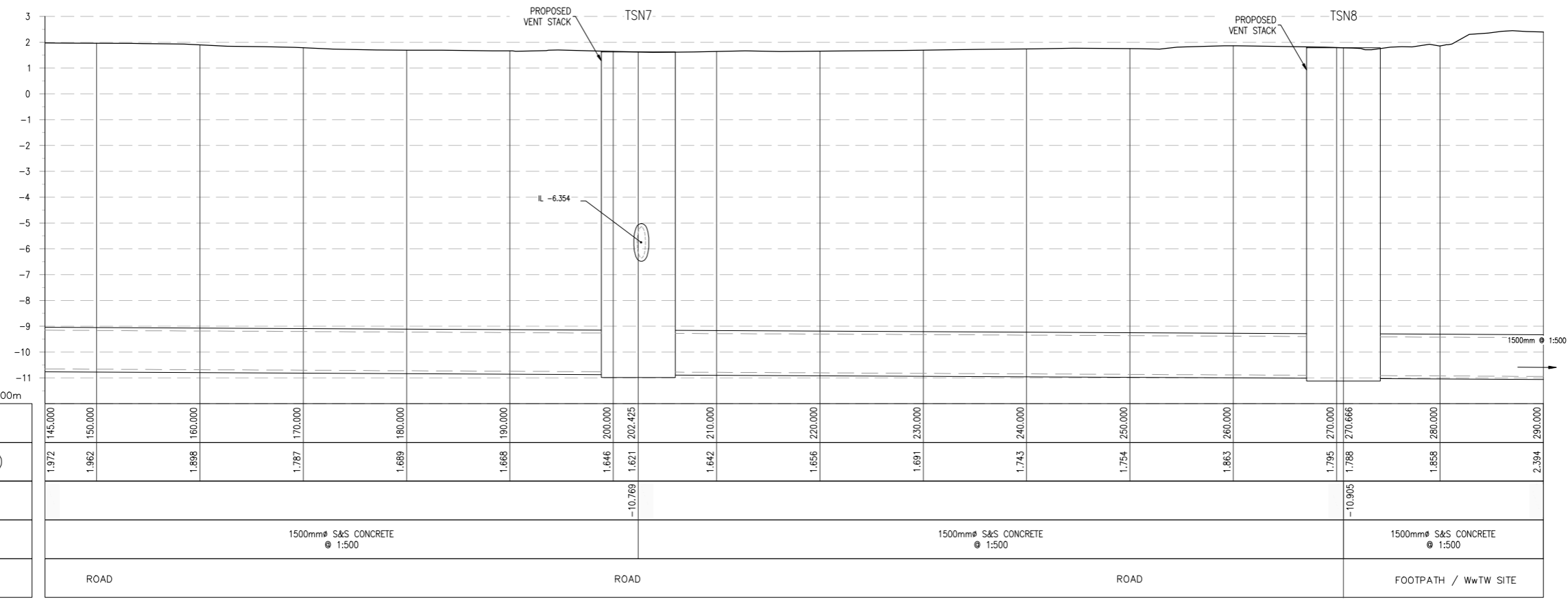
Drawing Title
LAYOUT PLAN & LONGITUDINAL SECTION
9 OF 16

Drawing Status
PLANNING

Job No 247825-00 | Drawing No C-IS-709 | Issue P1

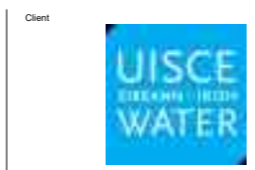


LOCATION PLAN
SCALE: 1:250 @ A1



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

Ordnance Survey Ireland Licence No. EN 0083318
© Ordnance Survey Ireland/ Government of Ireland



Client
ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1 AS SHOWN

Discipline CIVIL

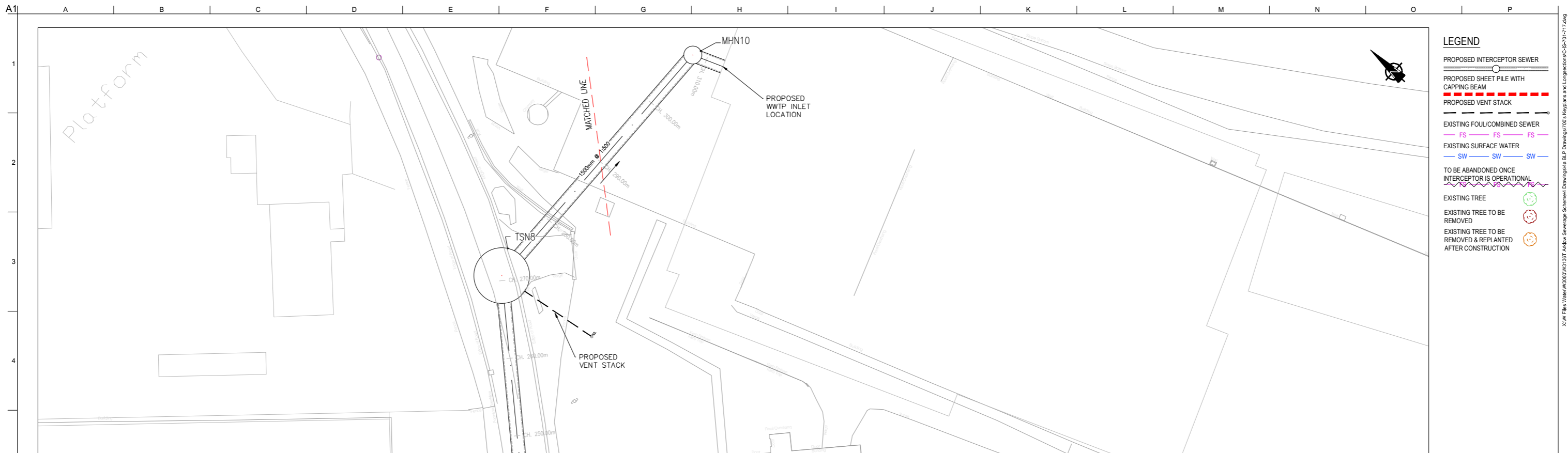
ARUP BYRNE LOOBY

CLANCY MOORE ARCHITECTS

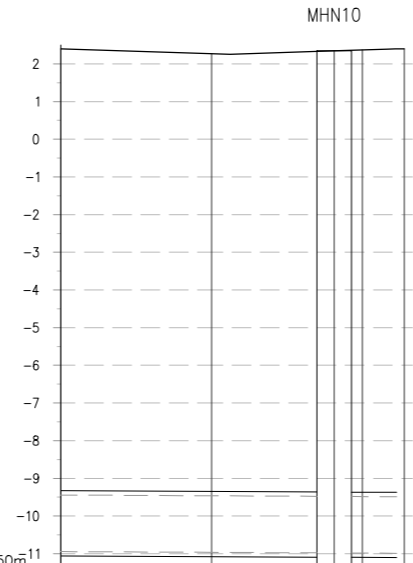
Drawing Title
LAYOUT PLAN & LONGITUDINAL SECTION 10 OF 16

Drawing Status
PLANNING

Job No 247825-00 | Drawing No C-IS-710 | Issue P1



LOCATION PLAN
SCALE: 1:250 © A1



CHAINAGE	290.000	300.000	308.128	310.000	312.775	313.345
EXISTING GROUND LEVEL (m)	2.394	2.270	2.343	2.370	2.400	2.400
MH INVERT LEVEL (m)			-10.980	-10.980	-10.988	-10.988
PIPE TYPE & GRADE	1500mm \varnothing S&S CONCRETE @ 1:500		1500mm \varnothing S&S CONCRETE @ 1:500			
LOCATION	FOOTPATH / WwTW SITE					

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

Ordnance Survey Ireland Licence No. EN 0083318
© Ordnance Survey Ireland/ Government of Ireland

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



Client
UISCE
WATER

Job Title
ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1
AS SHOWN

Discipline
CIVIL

ARUP **BYRNE LOOBY**

CLANCY MOORE ARCHITECTS

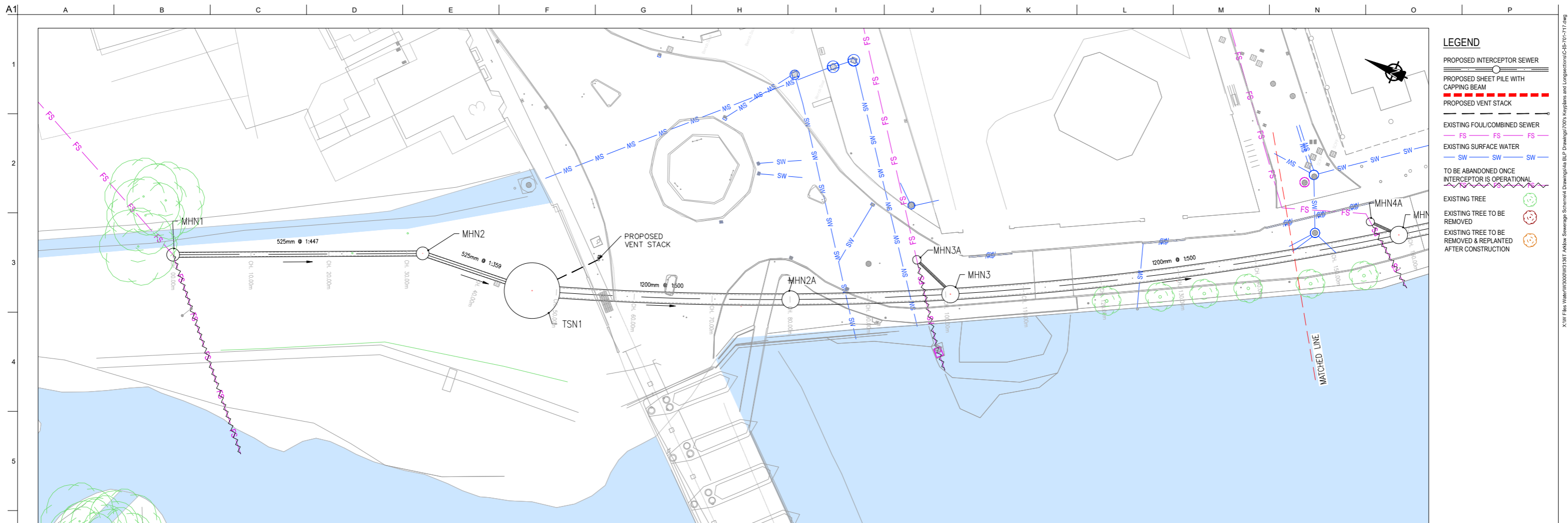
Drawing Title
LAYOUT PLAN & LONGITUDINAL SECTION 11 OF 16

Drawing Status
PLANNING

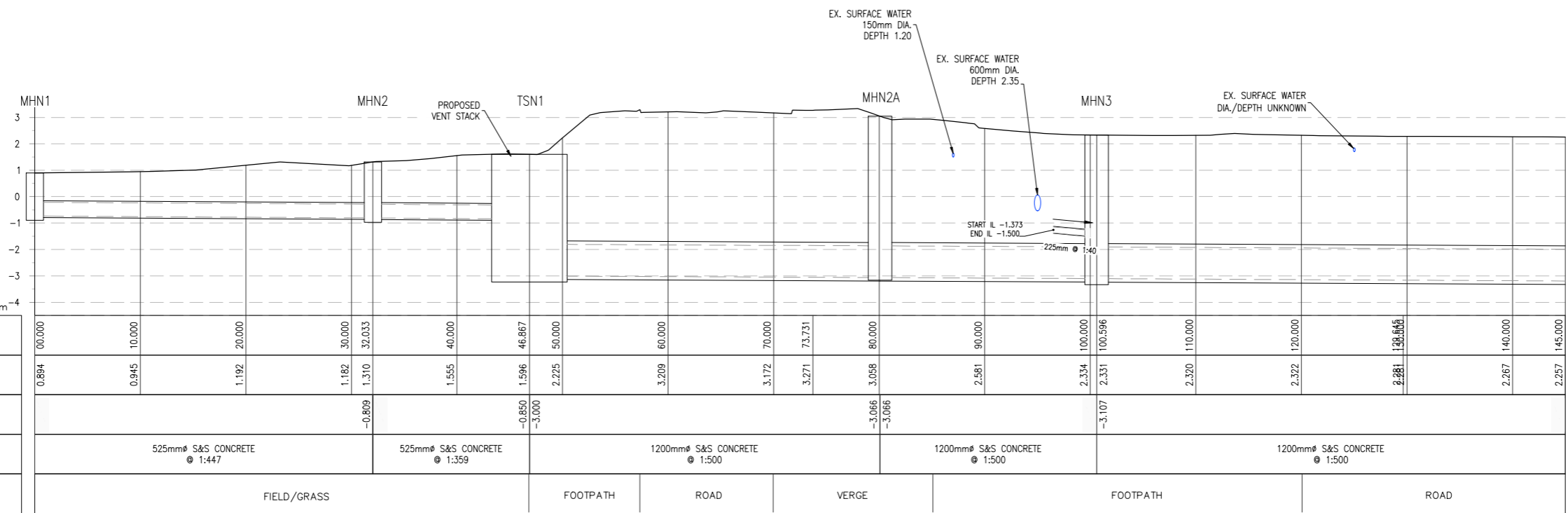
Job No
247825-00

Drawing No
C-IS-711

Issue
P1



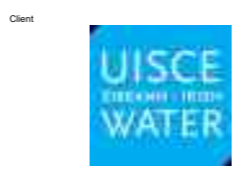
LOCATION PLAN
SCALE: 1:250 @ A1



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

Ordnance Survey Ireland Licence No. EN 0083318
© Ordnance Survey Ireland/ Government of Ireland

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



Client
ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Job Title
ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1 AS SHOWN

Discipline CIVIL

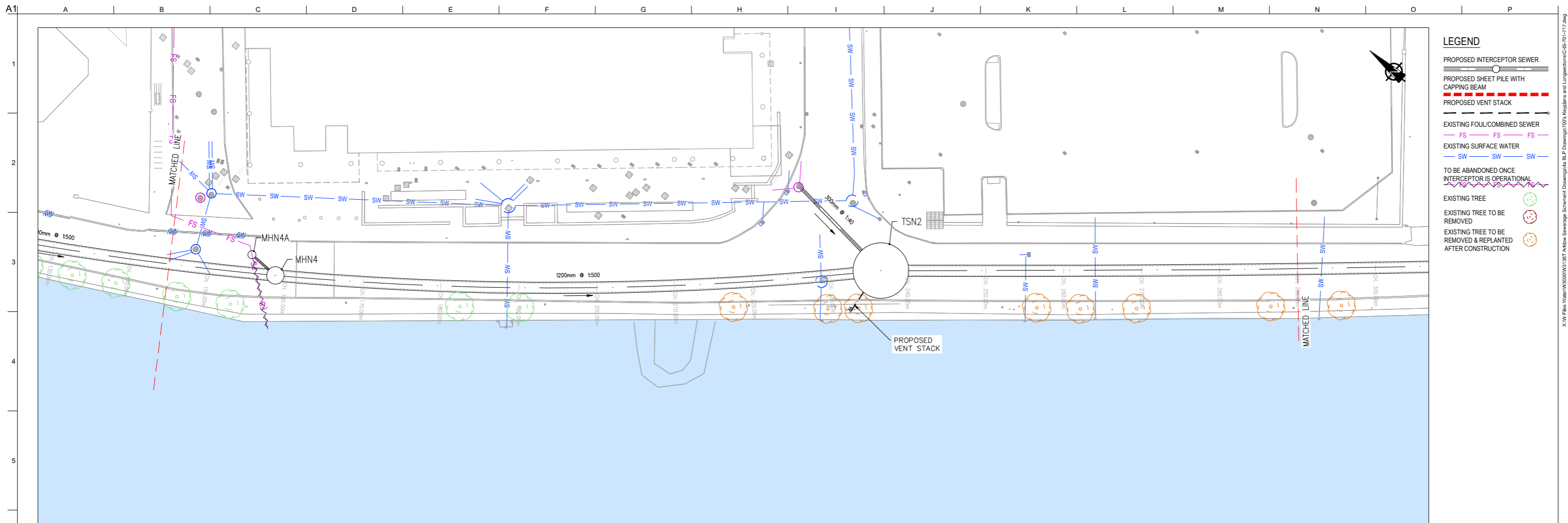
ARUP BYRNELOOBY

CLANCY MOORE ARCHITECTS

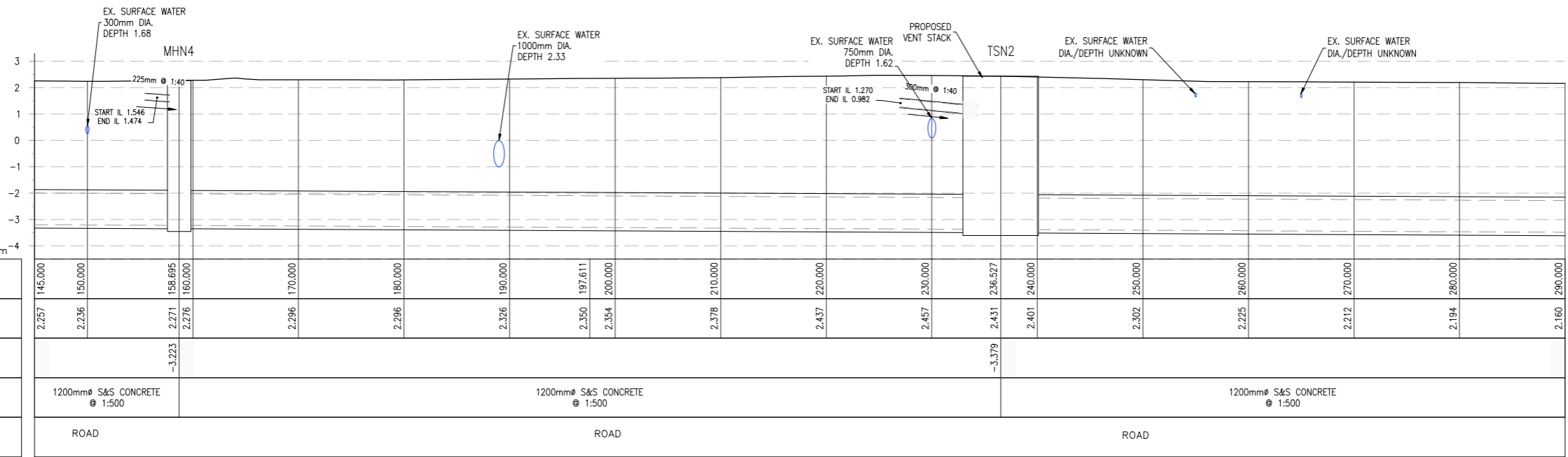
Drawing Title
LAYOUT PLAN & LONGITUDINAL SECTION 12 OF 16

Drawing Status
PLANNING

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

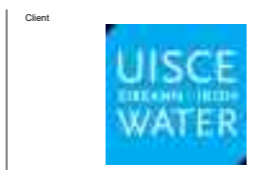


LOCATION PLAN
SCALE: 1:250 @ A1



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

Ordnance Survey Ireland Licence No. EN 0083318
© Ordnance Survey Ireland/ Government of Ireland



Job Title
ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1 AS SHOWN

Discipline
CIVIL

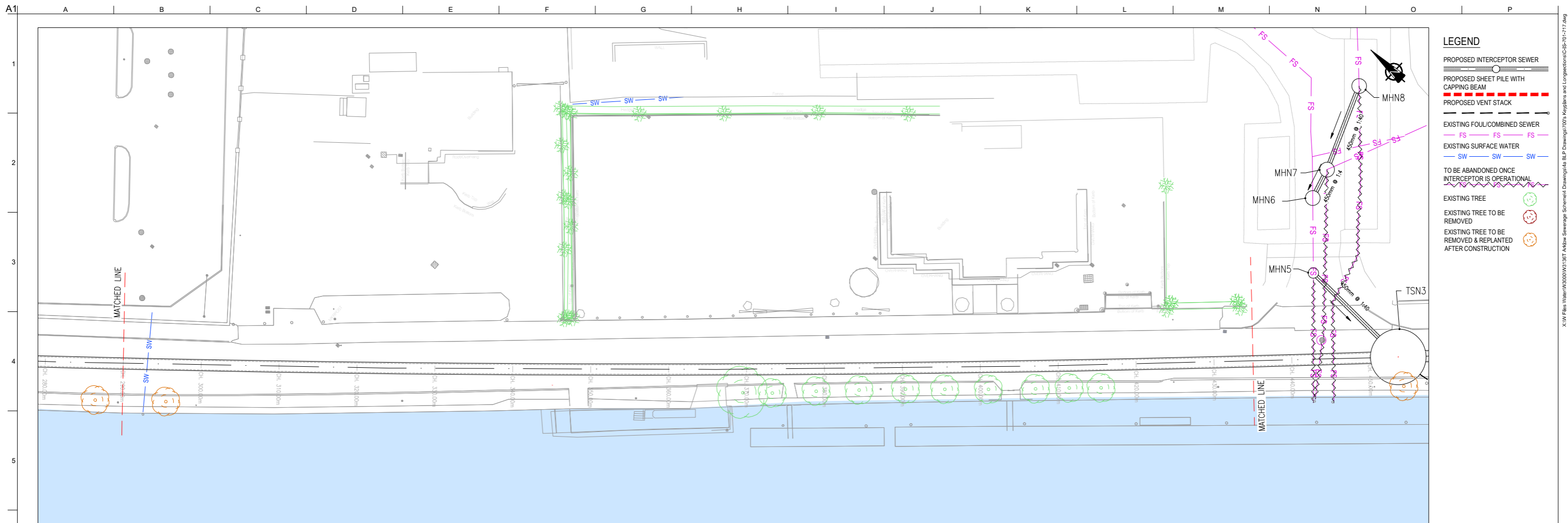
ARUP BYRNELOOBY

CLANCY MOORE ARCHITECTS

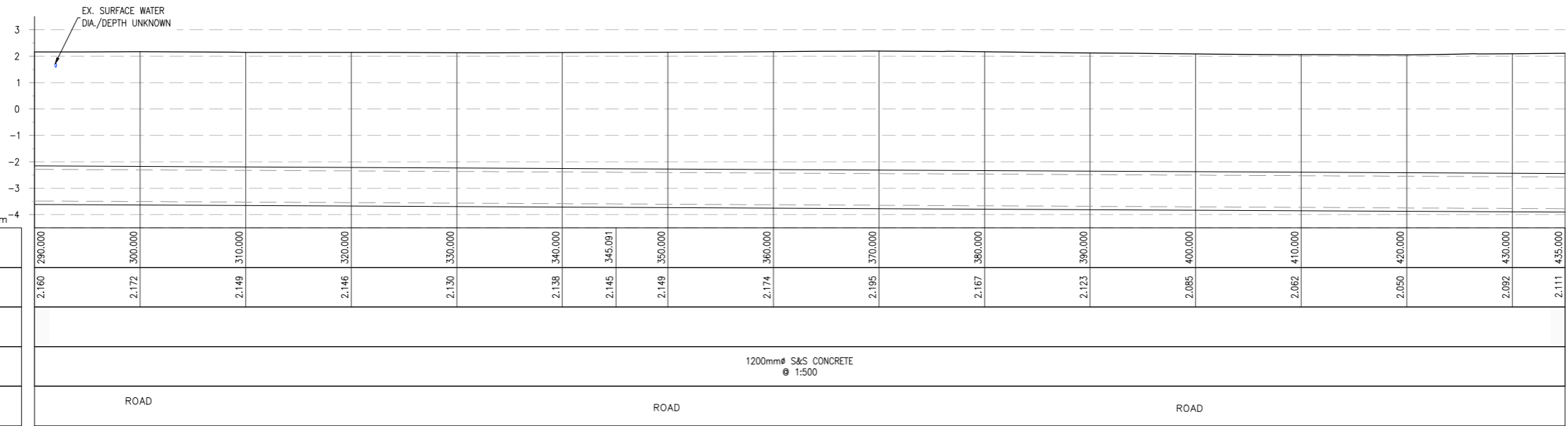
Drawing Title
LAYOUT PLAN & LONGITUDINAL SECTION
13 OF 16

Drawing Status
PLANNING

Job No. 247825-00 | Drawing No. C-IS-713 | Issue P1



LOCATION PLAN
SCALE: 1:250 @ A1



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

Ordnance Survey Ireland Licence No. EN 0083318
© Ordnance Survey Ireland/ Government of Ireland

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



Client
ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1 AS SHOWN

Discipline CIVIL

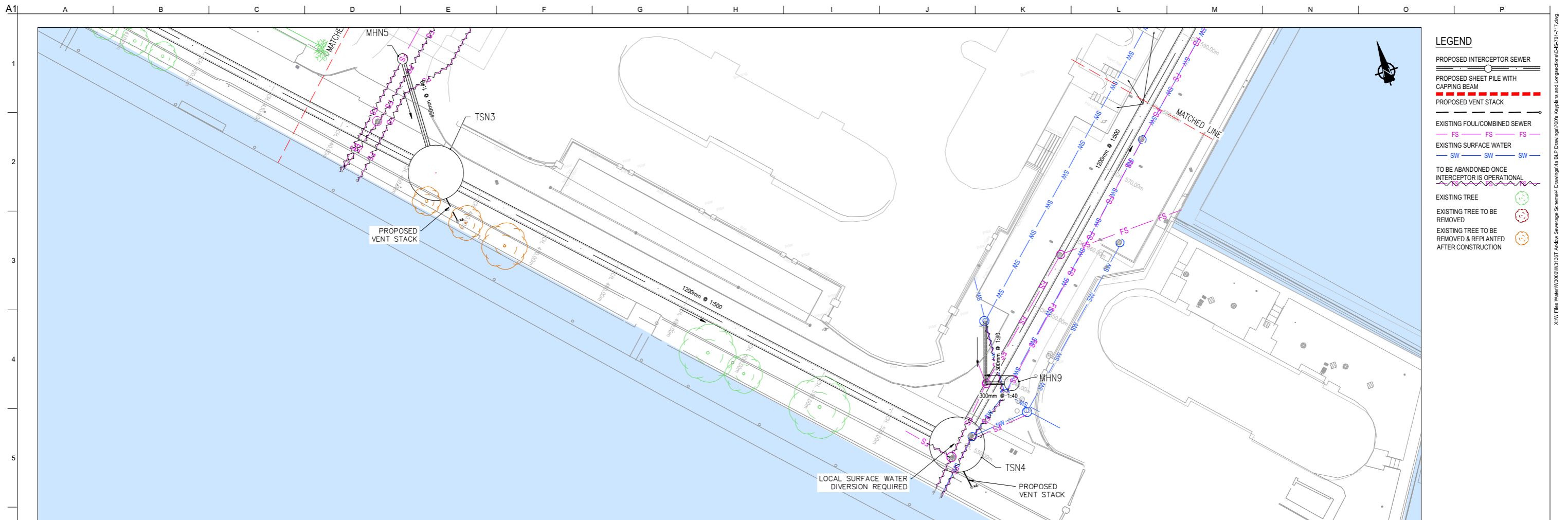
ARUP BYRNELOOBY

CLANCY MOORE ARCHITECTS

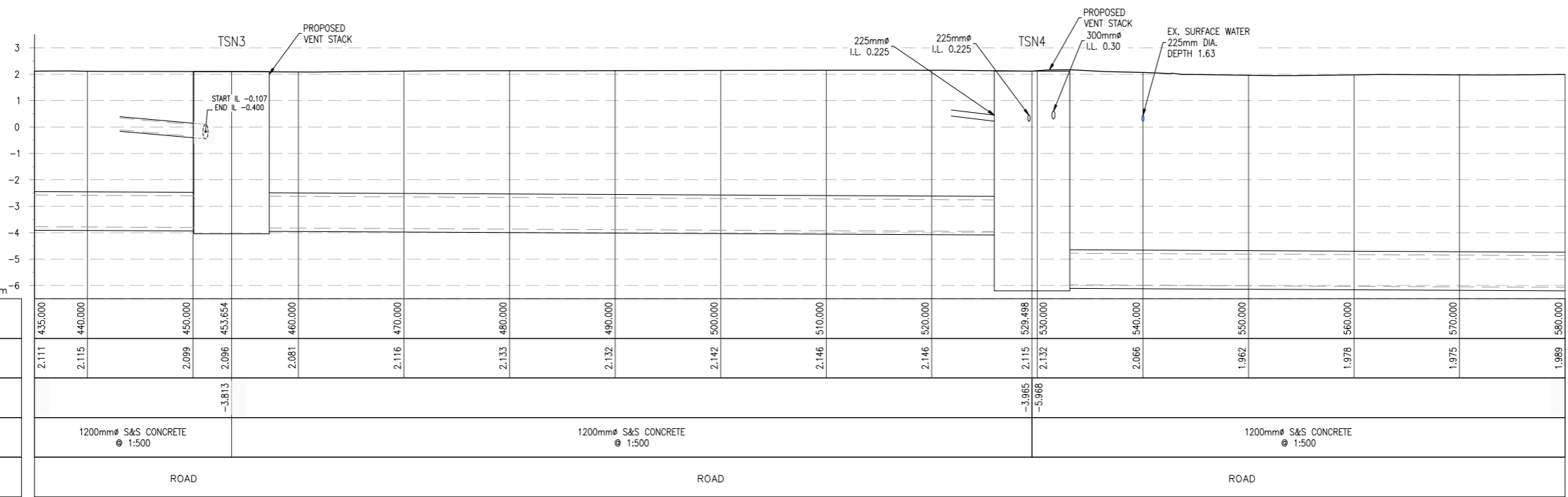
Drawing Title
LAYOUT PLAN & LONGITUDINAL SECTION 14 OF 16

Drawing Status
PLANNING

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



LOCATION PLAN
SCALE: 1:250 © A1



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

Ordnance Survey Ireland Licence No. EN 0083318
© Ordnance Survey Ireland/ Government of Ireland

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



Client
UISCE
CLEANER IRISH WATER

Job Title
ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1 AS SHOWN

Discipline
CIVIL

ARUP **BYRNELOOBY**

CLANCY MOORE ARCHITECTS

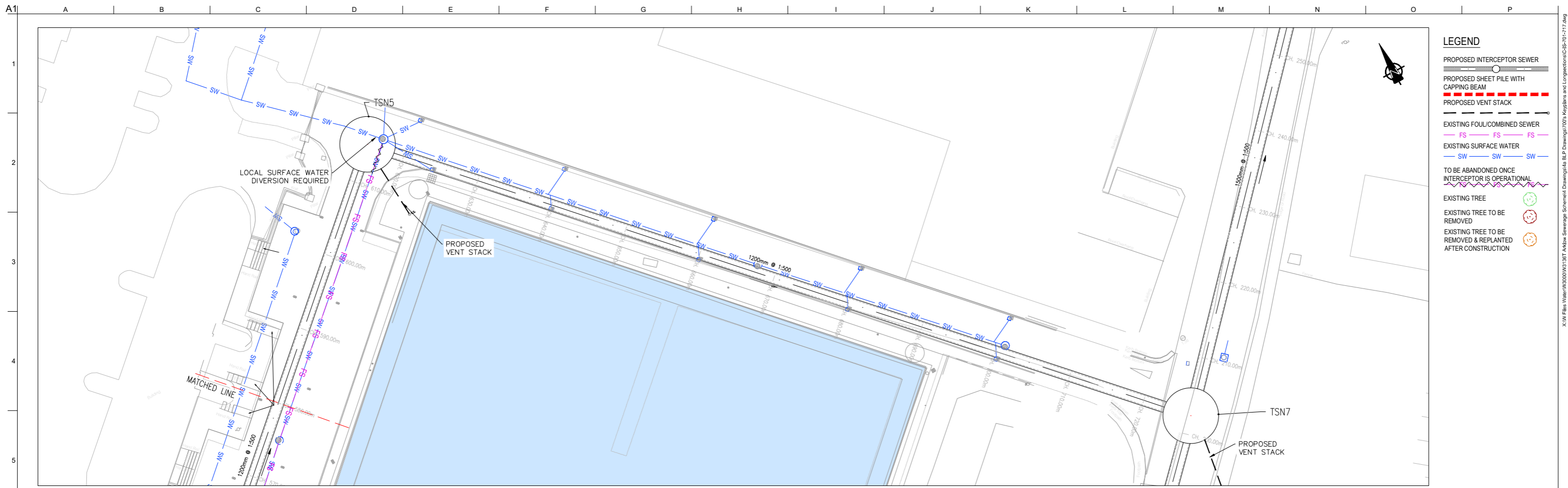
Drawing Title
LAYOUT PLAN & LONGITUDINAL SECTION
15 OF 16

Drawing Status
PLANNING

Job No
247825-00

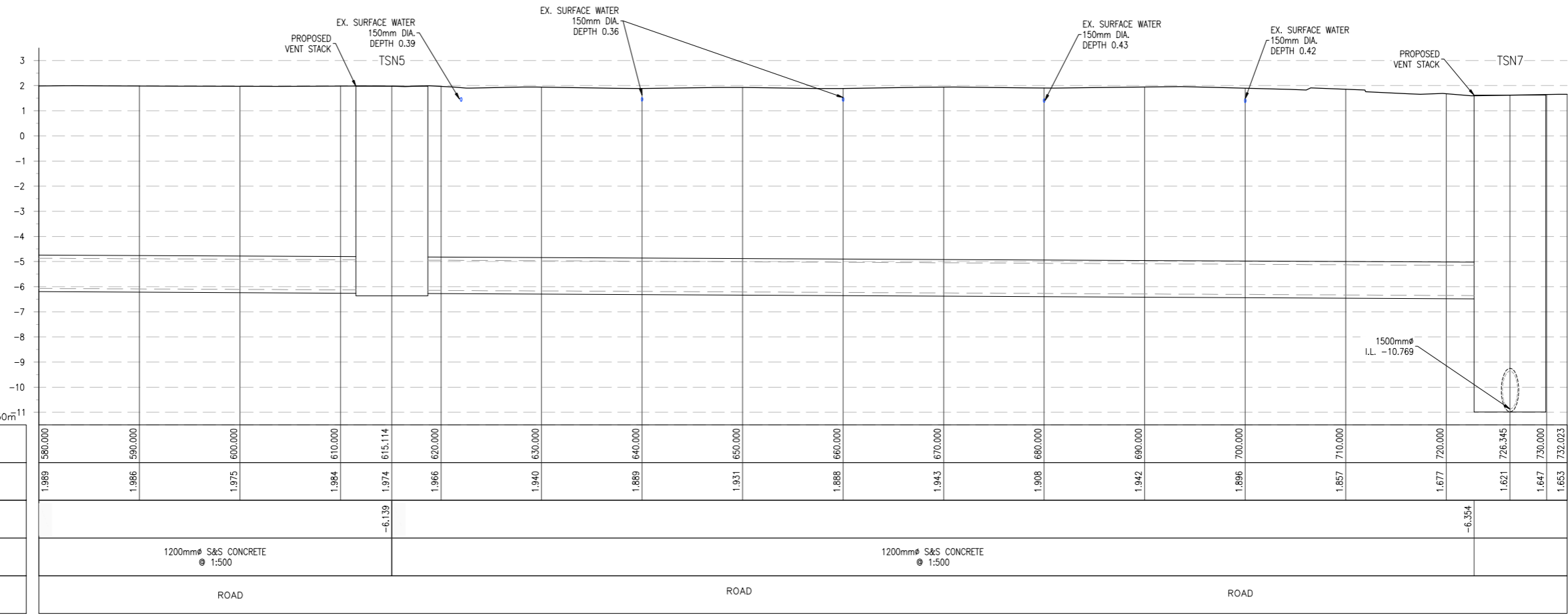
Drawing No
C-IS-715

Issue
P1



- 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



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

Ordnance Survey Ireland Licence No. EN 0083318
© Ordnance Survey Ireland/ Government of Ireland



Client
ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Job Title
ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1 AS SHOWN

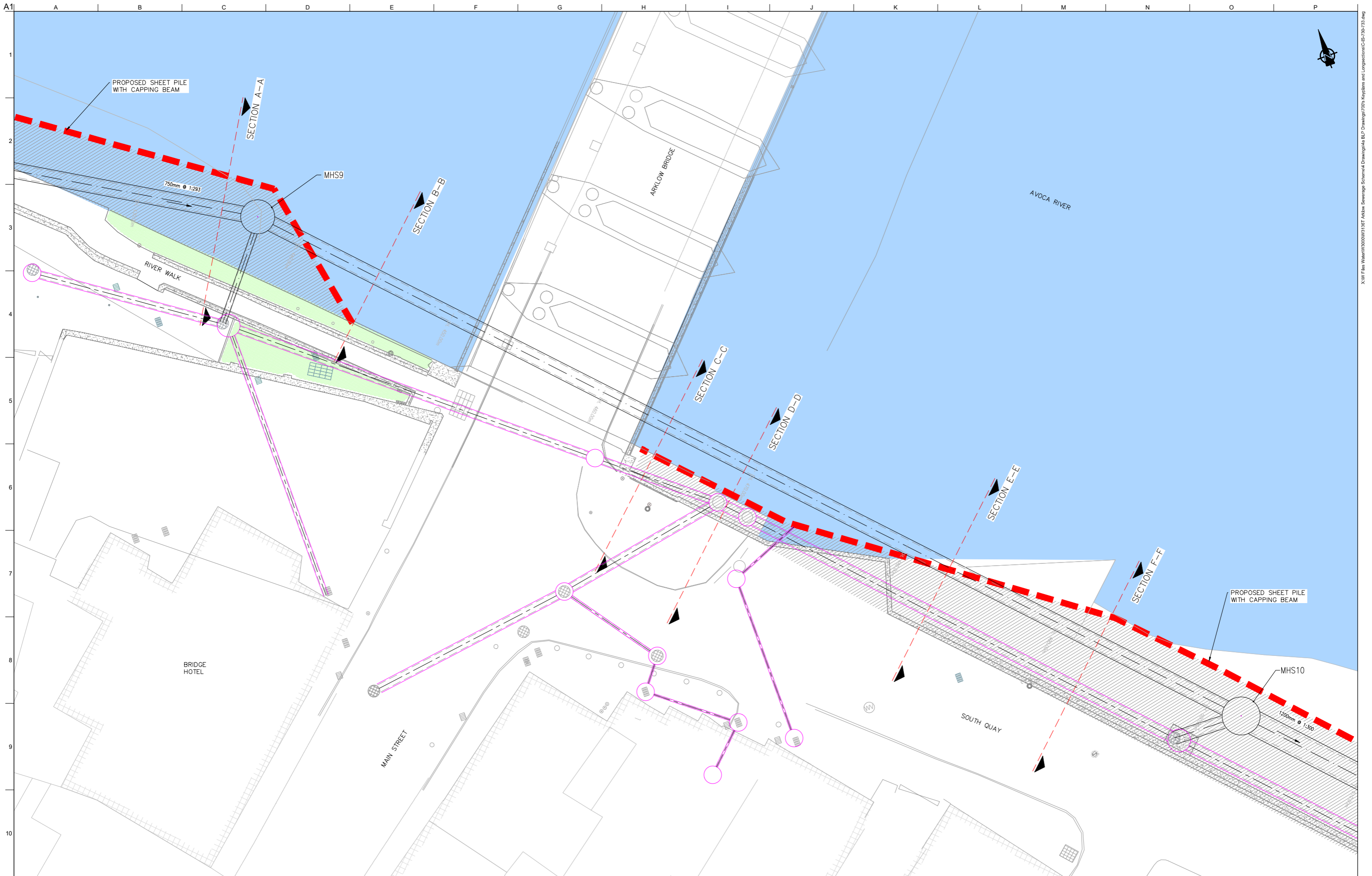
Discipline CIVIL



Drawing Title
LAYOUT PLAN & LONGITUDINAL SECTION 16 OF 16

Drawing Status
PLANNING

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

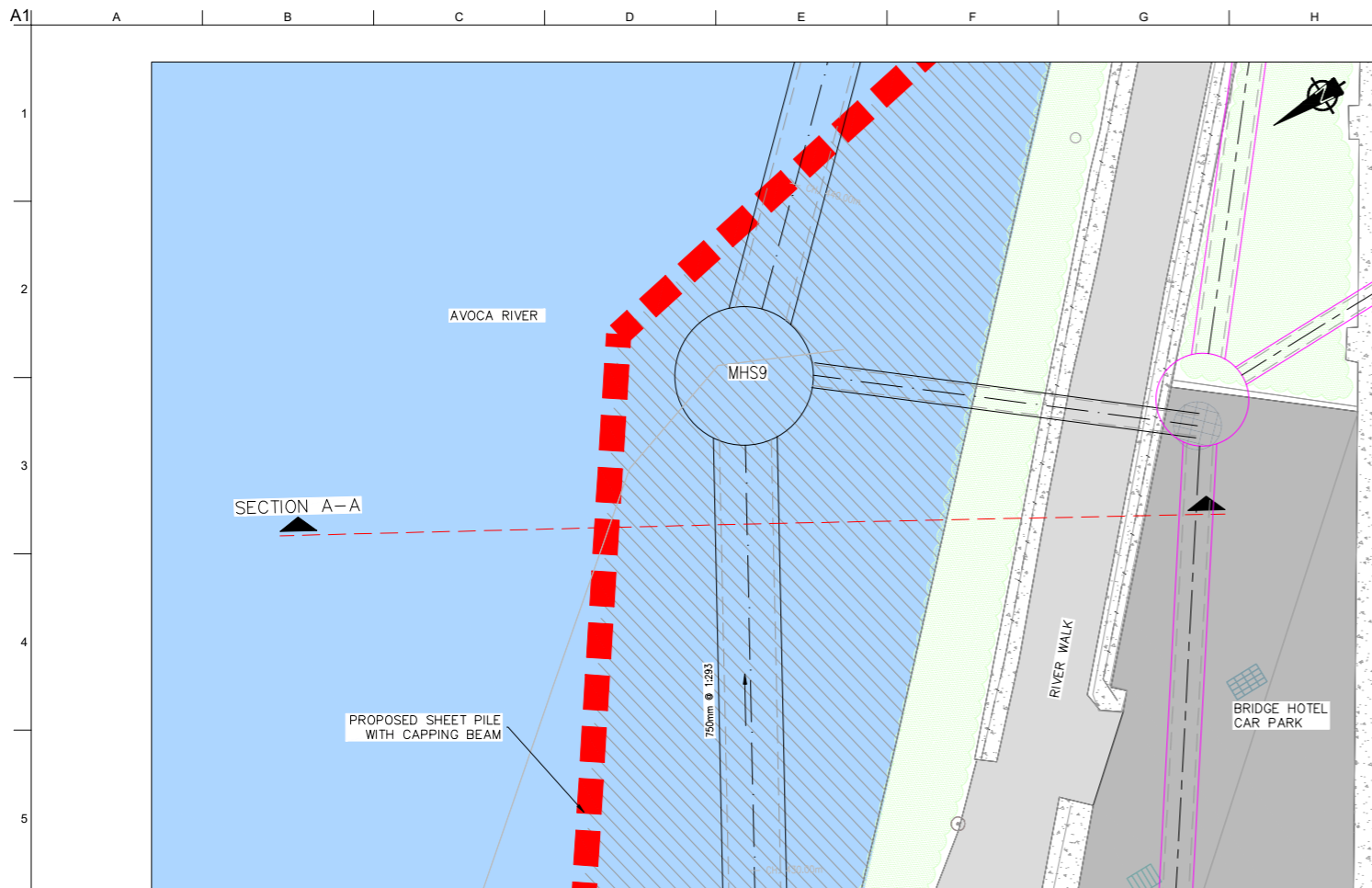


A1
1
2
3
4
5
6
7
8
9
10

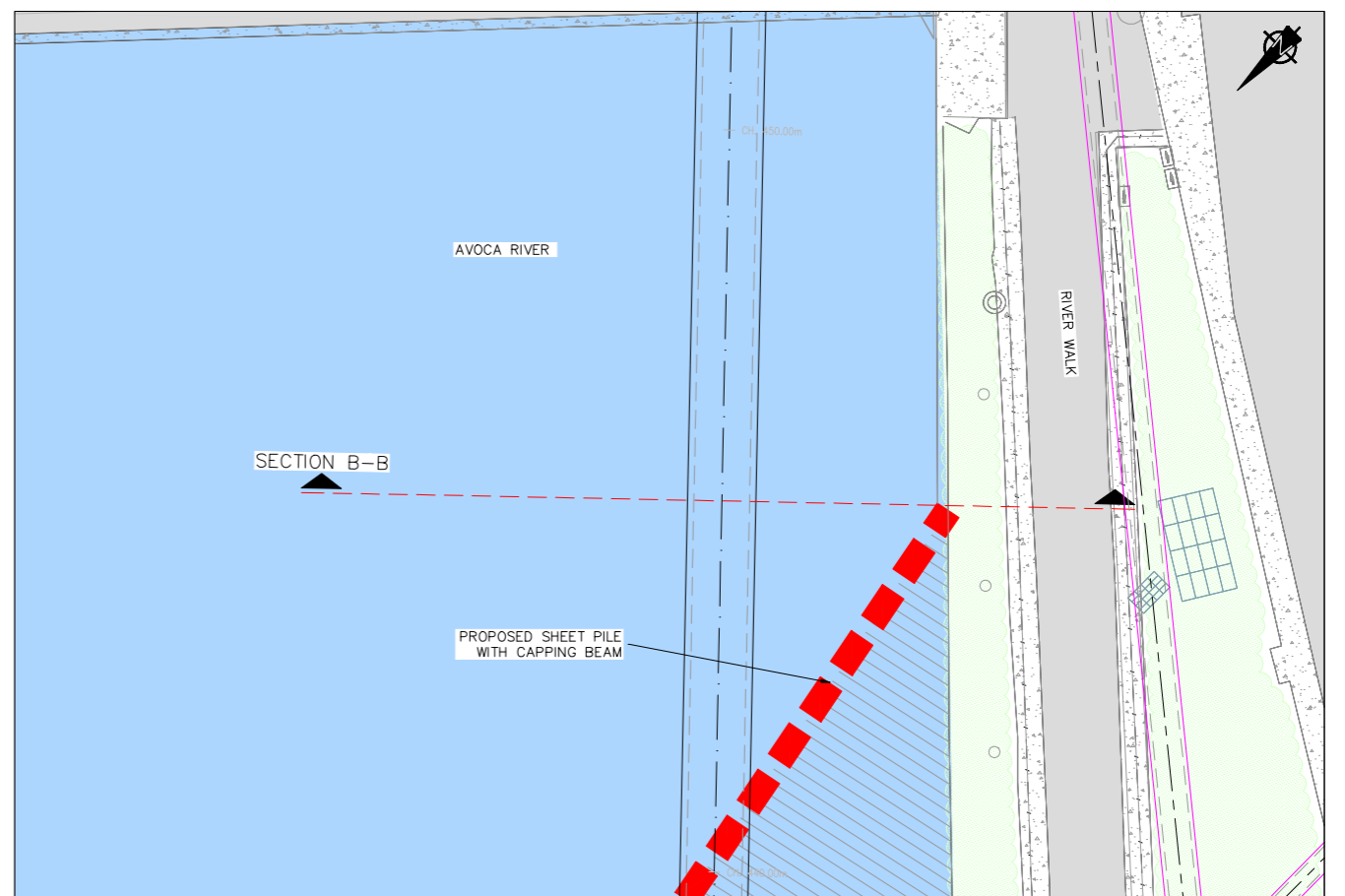
A B C D E F G H I J K L M N O P

N:\WF Files\Water\W00000310\1\01 Arklow Sewerage Scheme\Drawings\BIP Drawings\2020 Keyplans and Longsections\247825-730.dwg

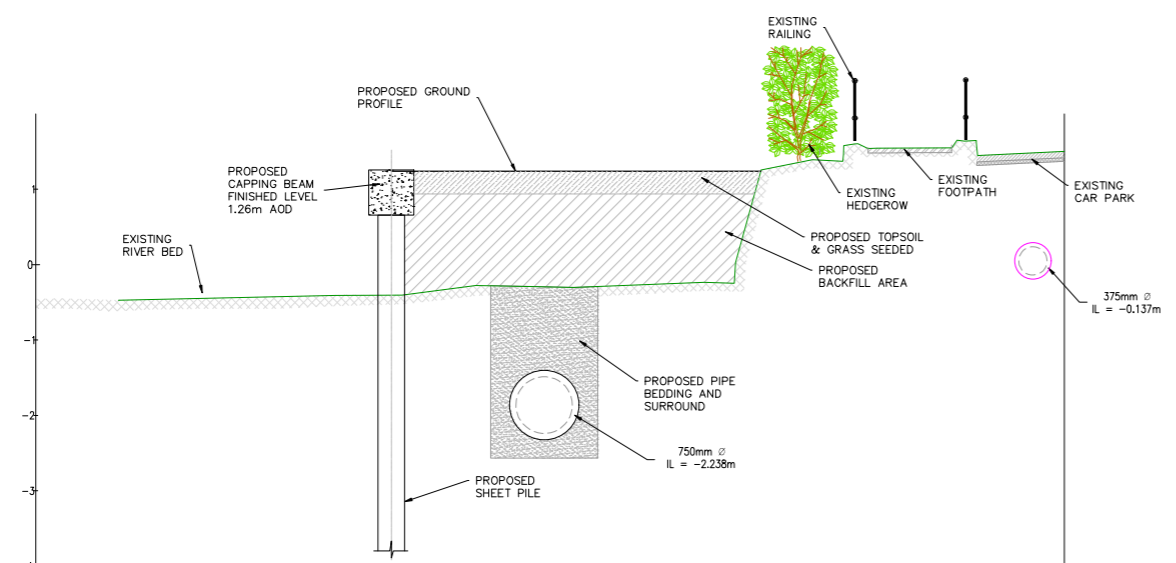
Ordnance Survey Ireland Licence No. EN 0083318 © Ordnance Survey Ireland/ Government of Ireland			Client 	Job Title ARKLOW WASTEWATER TREATMENT PLANT PROJECT		Drawing Title AVOCA RIVER SECTIONS LAYOUT PLAN 1 OF 4											
<table border="1"> <thead> <tr> <th>P1</th> <th>31/08</th> <th>MS</th> <th>DR</th> <th>ES</th> </tr> </thead> <tbody> <tr> <td>Issue</td> <td>Date</td> <td>By</td> <td>Chkd</td> <td>Appd</td> </tr> </tbody> </table>		P1	31/08	MS	DR	ES	Issue	Date	By	Chkd	Appd	Scale at A1 AS SHOWN	Discipline CIVIL	Drawing Status PLANNING	Drawing No. 247825-00	Drawing No. C-IS-730	Issue P1
P1	31/08	MS	DR	ES													
Issue	Date	By	Chkd	Appd													



SECTION A-A - PLAN
SCALE 1:50

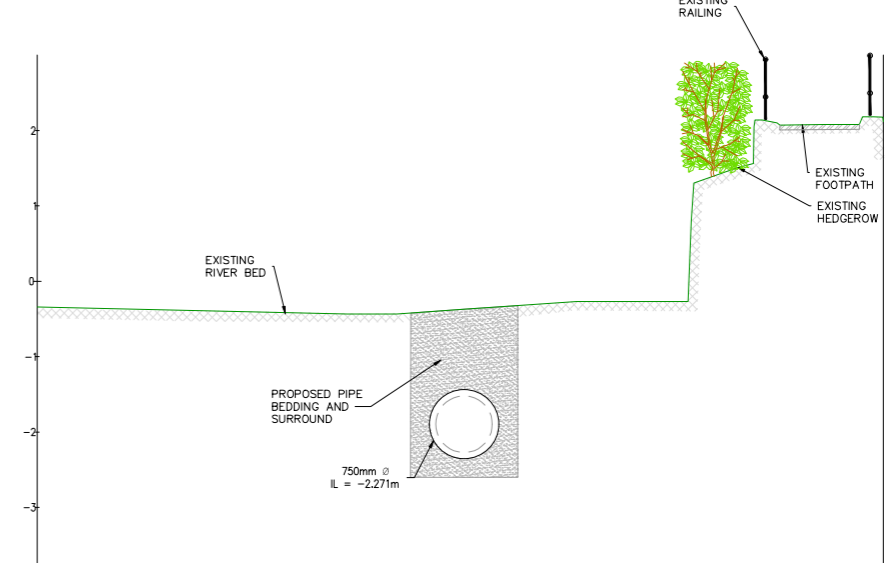


SECTION B-B - PLAN
SCALE 1:50



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					

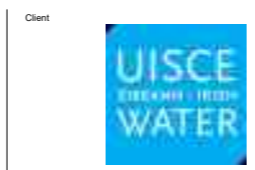
SECTION A-A
SCALE 1:50



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

Ordnance Survey Ireland Licence No. EN 0083318
© Ordnance Survey Ireland/ Government of Ireland



Client
UISCE
WATER

Job Title
ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1
AS SHOWN

Discipline
CIVIL



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

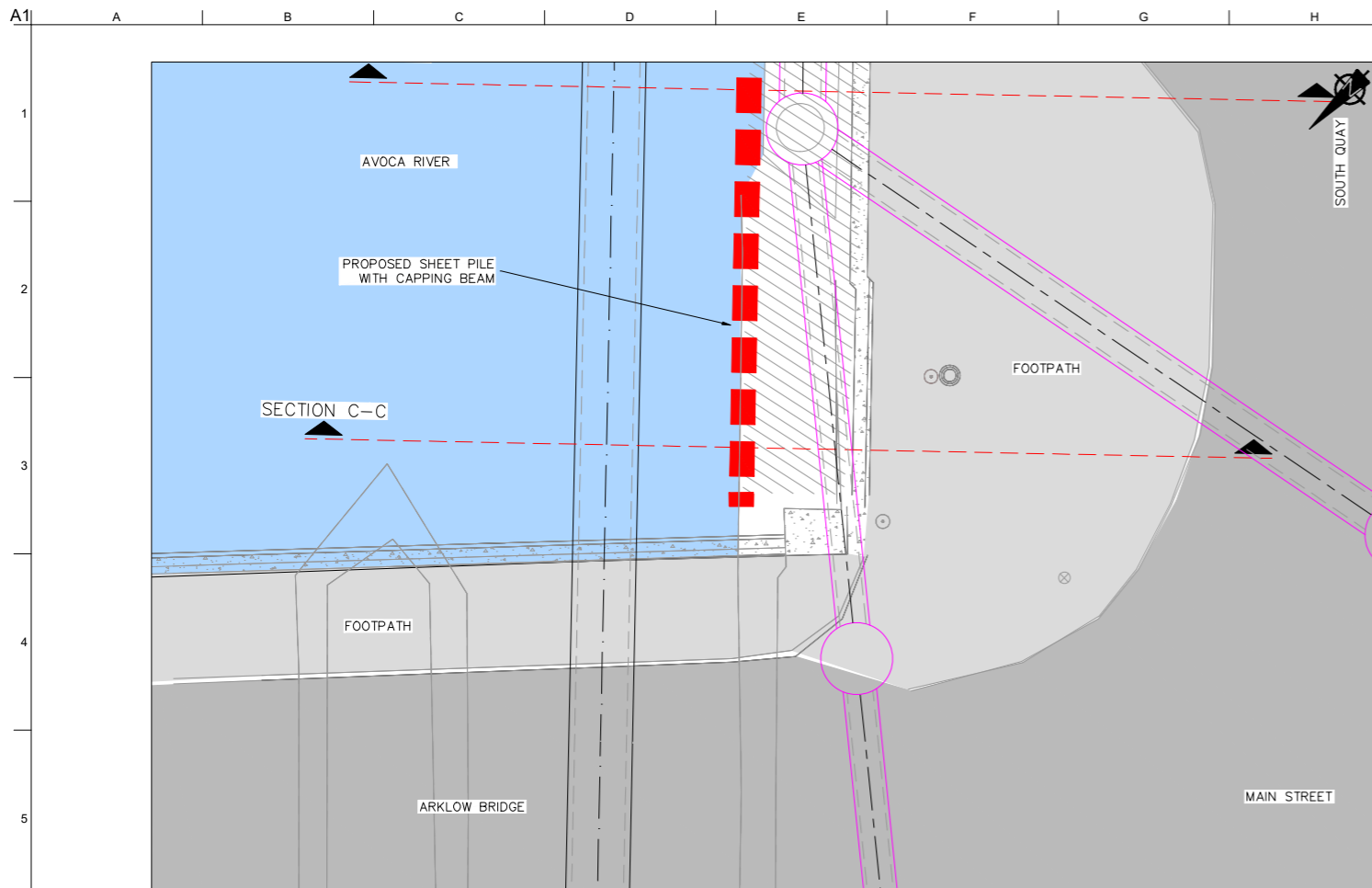
Drawing Status
PLANNING

Job No
247825-00

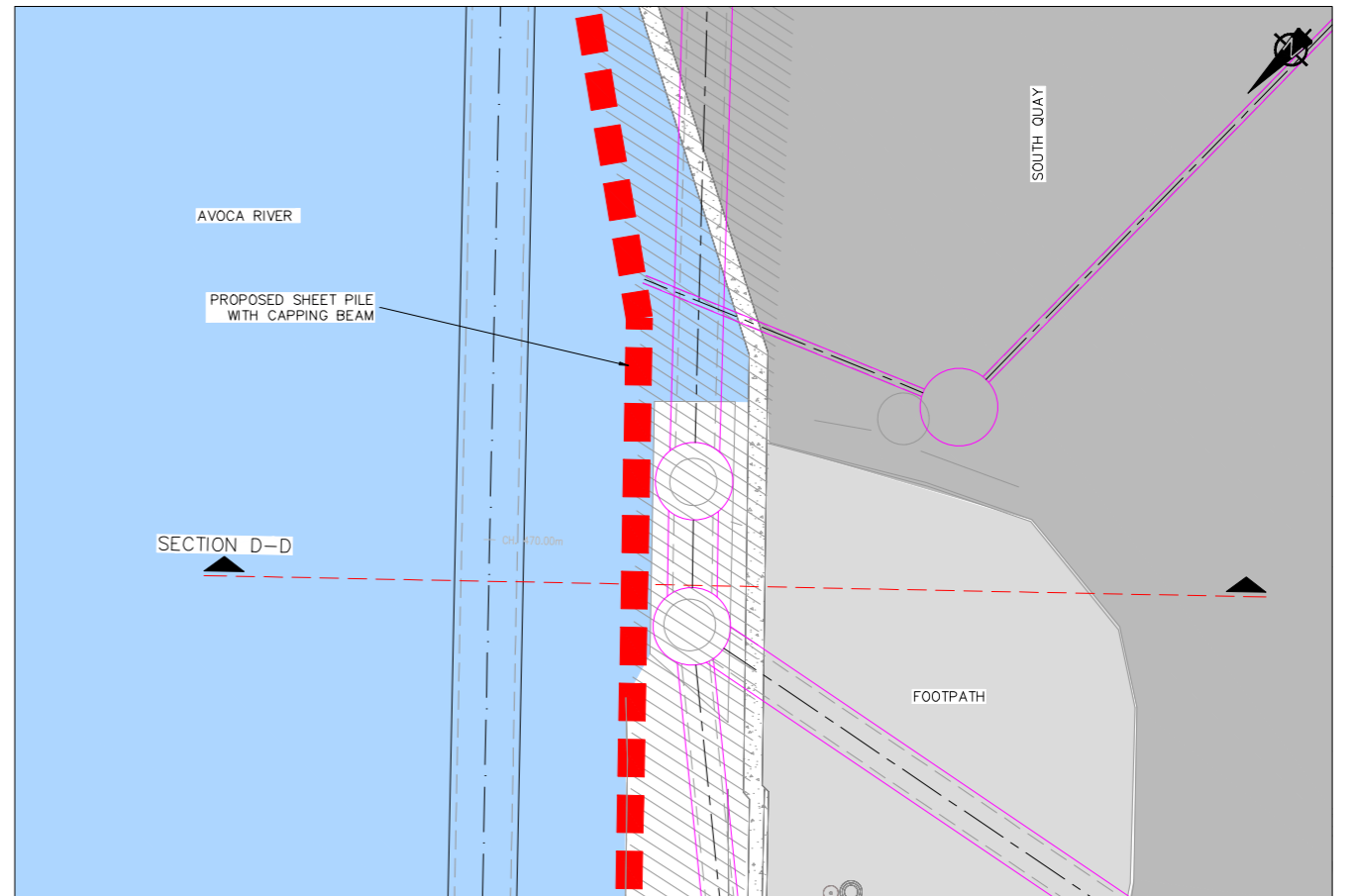
Drawing No
C-IS-731

Issue
P1

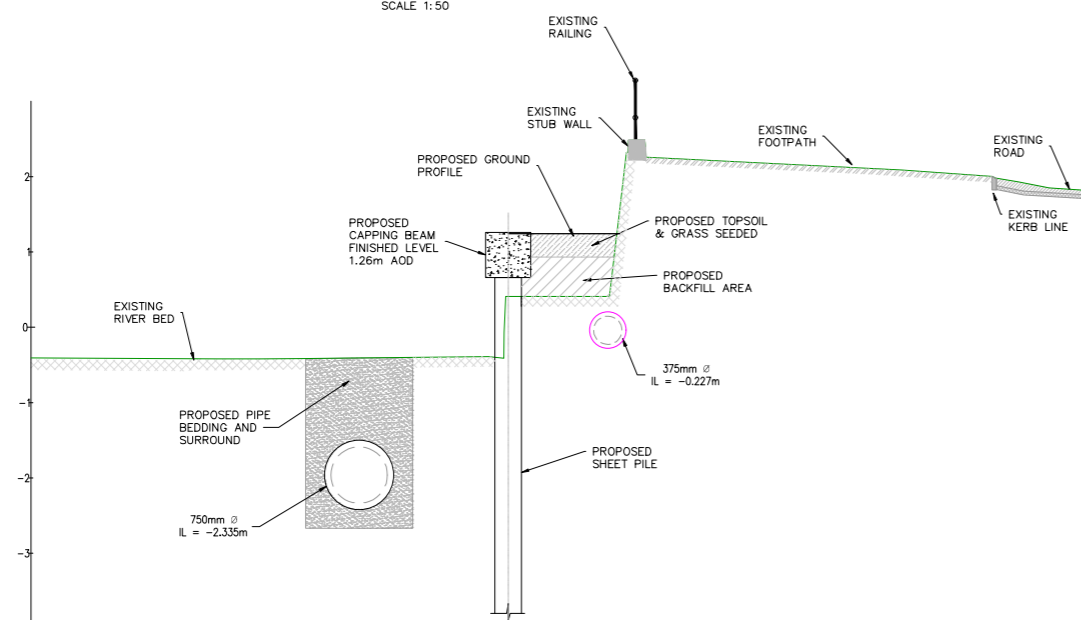
P1	31/08	MS	DR	ES
Issue	Date	By	Chkd	Appd



SECTION C-C - PLAN
SCALE 1:50

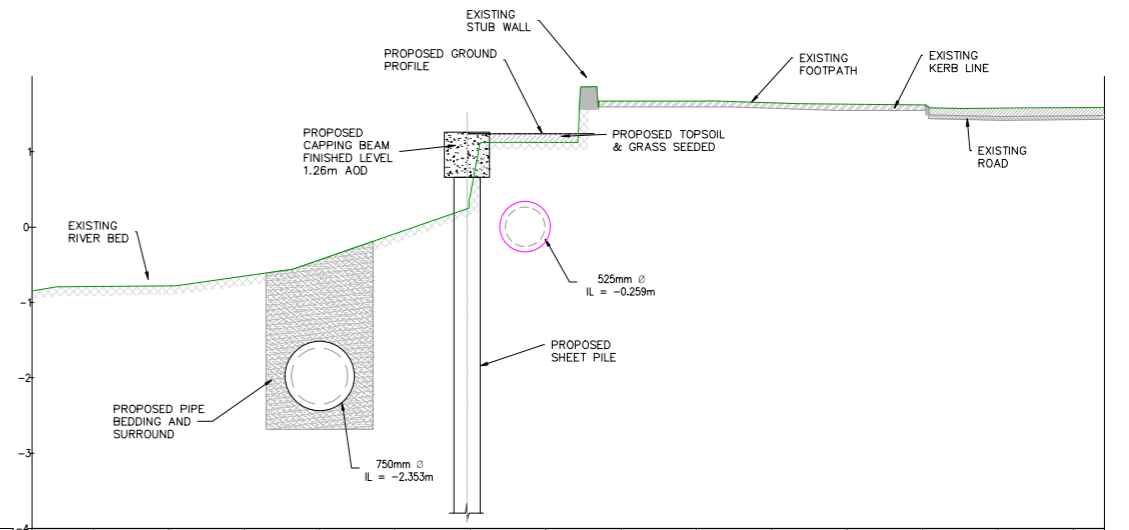


SECTION D-D - PLAN
SCALE 1:50



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	1.590	1.566
PROPOSED ELEVATIONS						1.240	1.240							

SECTION D-D
SCALE 1:50

Ordnance Survey Ireland Licence No. EN 0083318
© Ordnance Survey Ireland/ Government of Ireland



Client
UISCE
WATER

Job Title
ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1 AS SHOWN

Discipline CIVIL



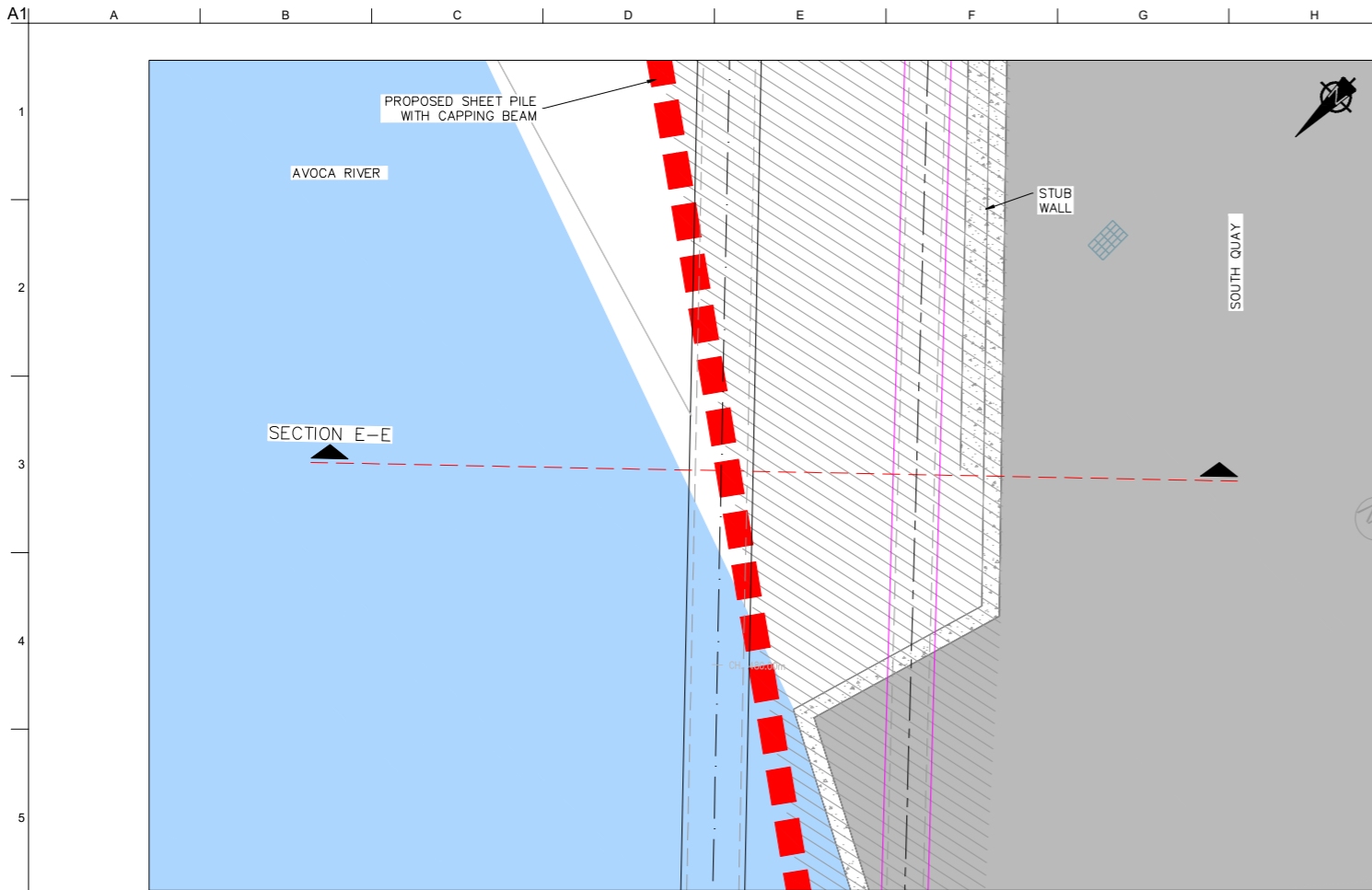
Drawing Title
AVOCA RIVER SECTIONS SECTION C-C & D-D

3 OF 4

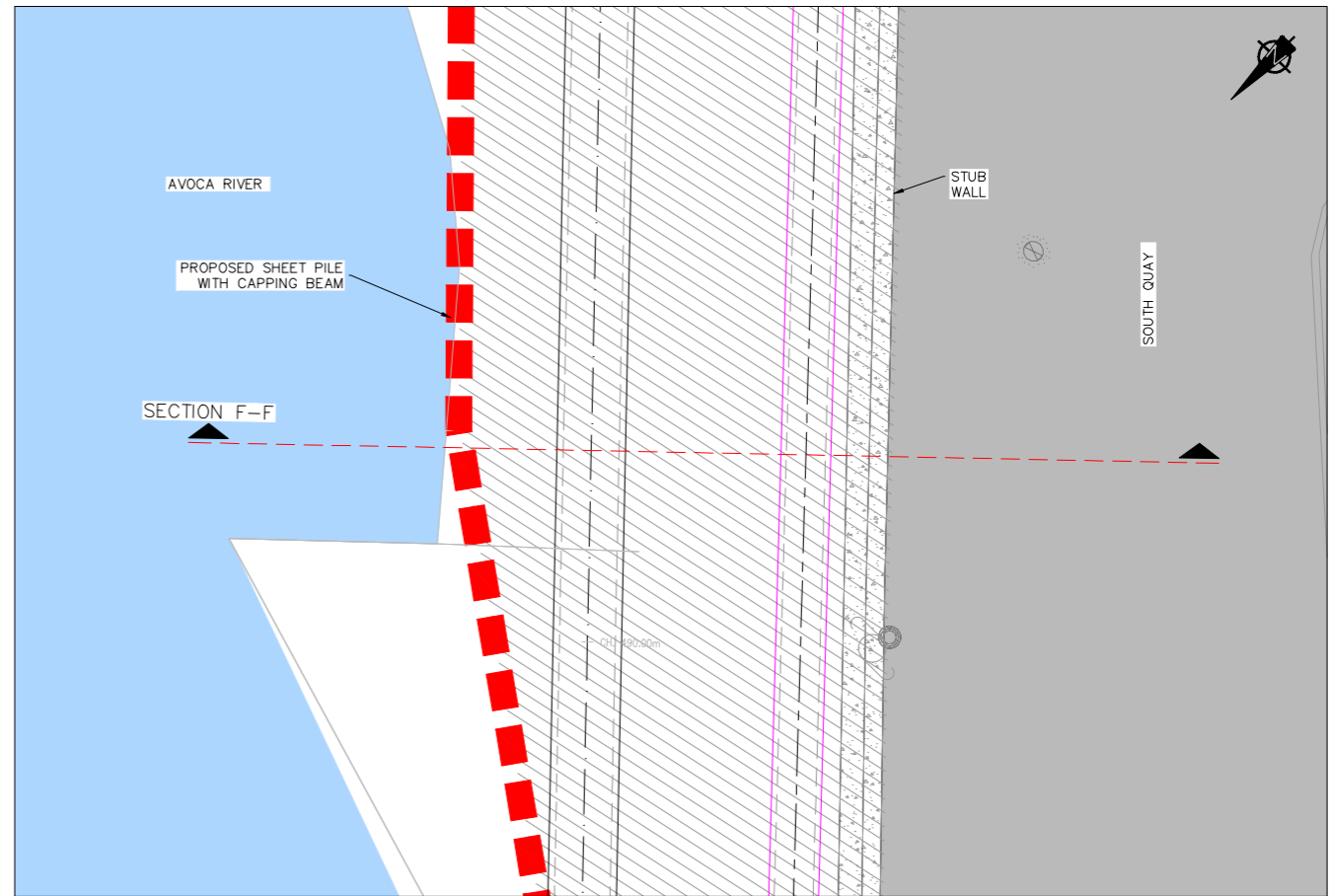
Drawing Status
PLANNING

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

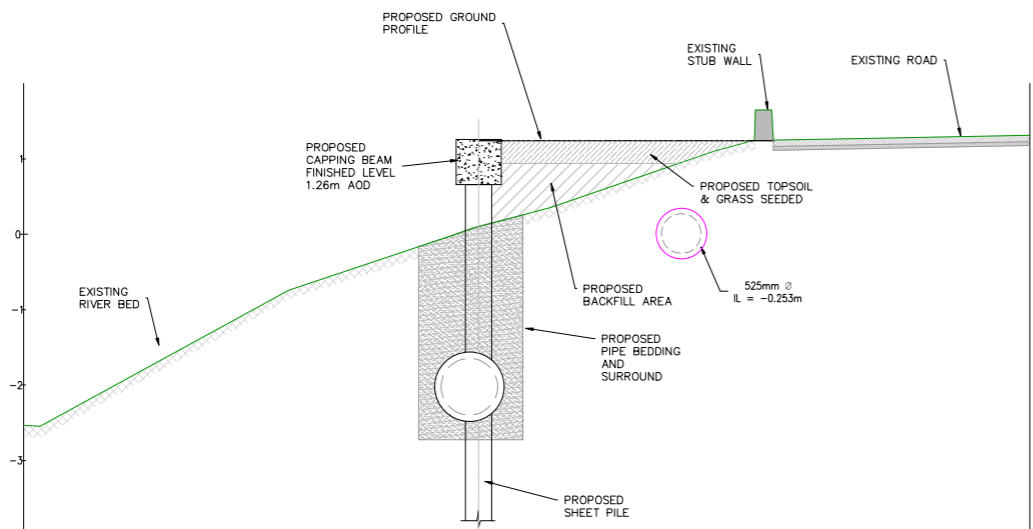
P1	31/08	MS	DR	ES
Issue	Date	By	Chkd	Appd



SECTION E-E - PLAN
SCALE 1:50

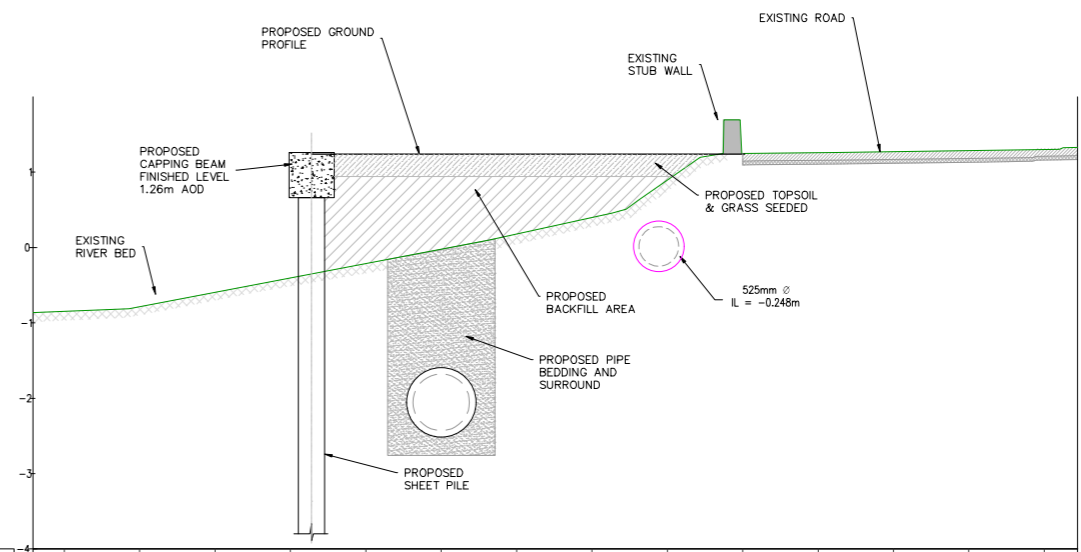


SECTION F-F - PLAN
SCALE 1:50



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	0.693	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

Ordnance Survey Ireland Licence No. EN 0083318
© Ordnance Survey Ireland/ Government of Ireland



Client
UISCE
WATER

Job Title
ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1 AS SHOWN

Discipline CIVIL

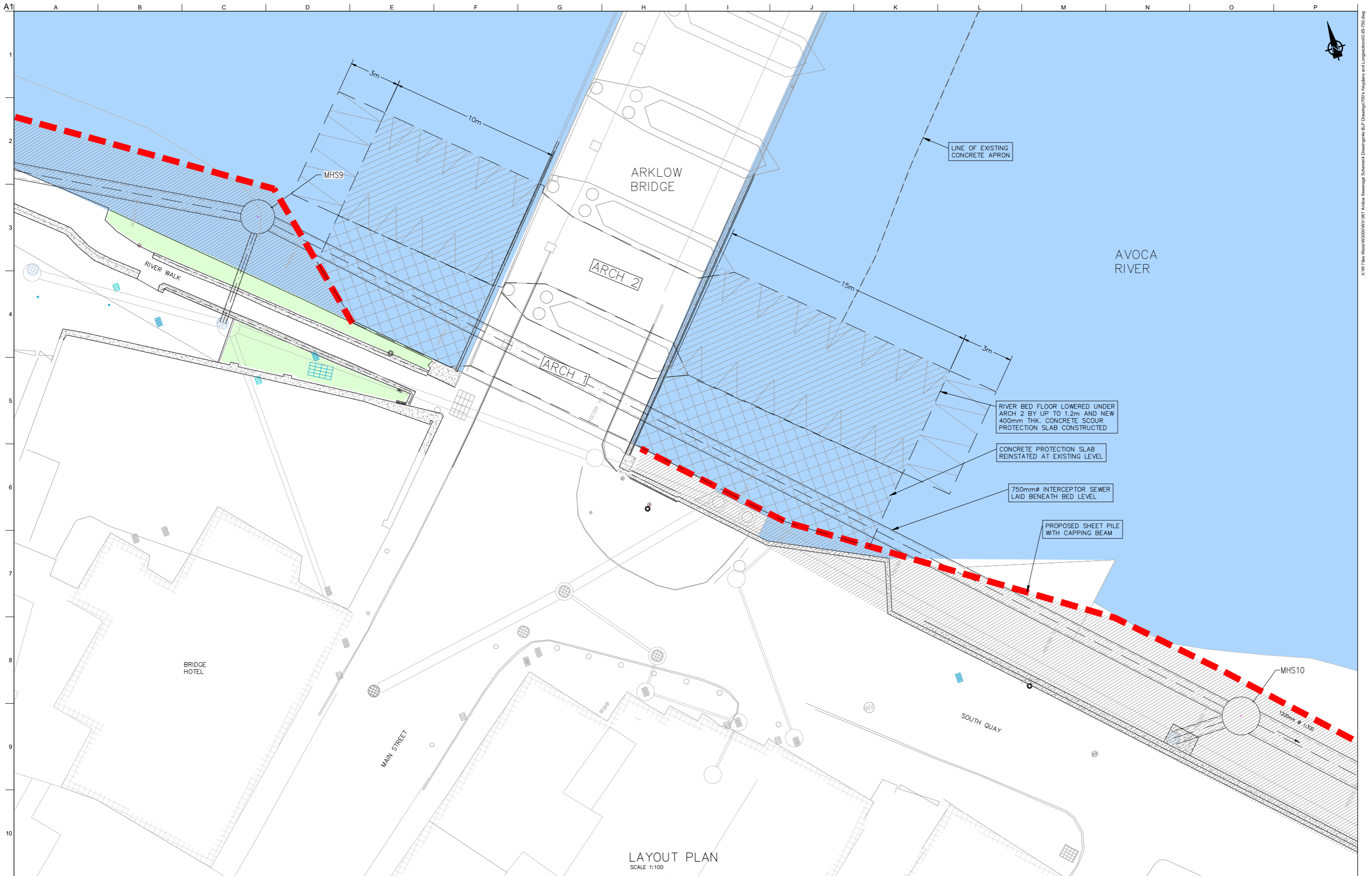


Drawing Title
AVOCA RIVER SECTIONS SECTION E-E & F-F 4 OF 4

Drawing Status
PLANNING

Job No 247825-00
Drawing No C-IS-733
Issue P1

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



LAYOUT PLAN
SCALE 1:100

Ordnance Survey Ireland Licence No. EN 0083318
© Ordnance Survey Ireland/ Government of Ireland



Client



Job Title
ARKLOW WASTEWATER
TREATMENT PLANT PROJECT

Scale at A1 AS SHOWN

Discipline CIVIL



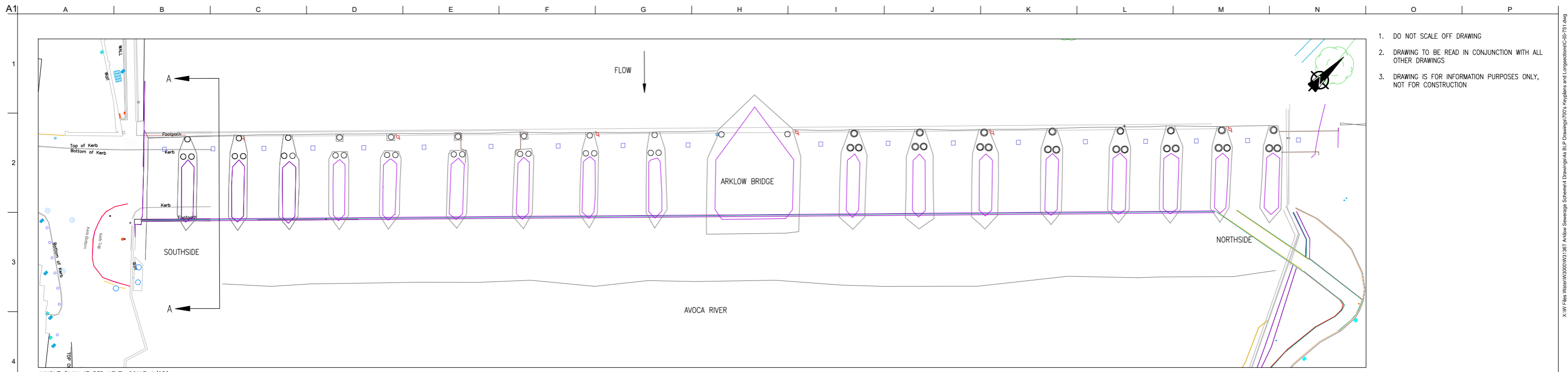
CLANCY MOORE ARCHITECTS

Drawing Title
ARKLOW BRIDGE WORKS
PLAN

Drawing Status
PLANNING

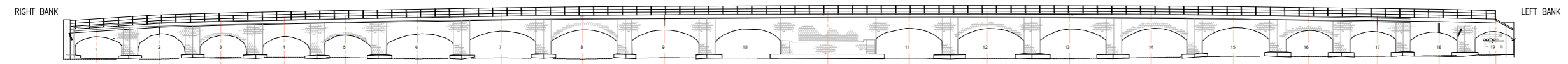
Job No	Drawing No	Issue
247825-00	C-IS-750	P1

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

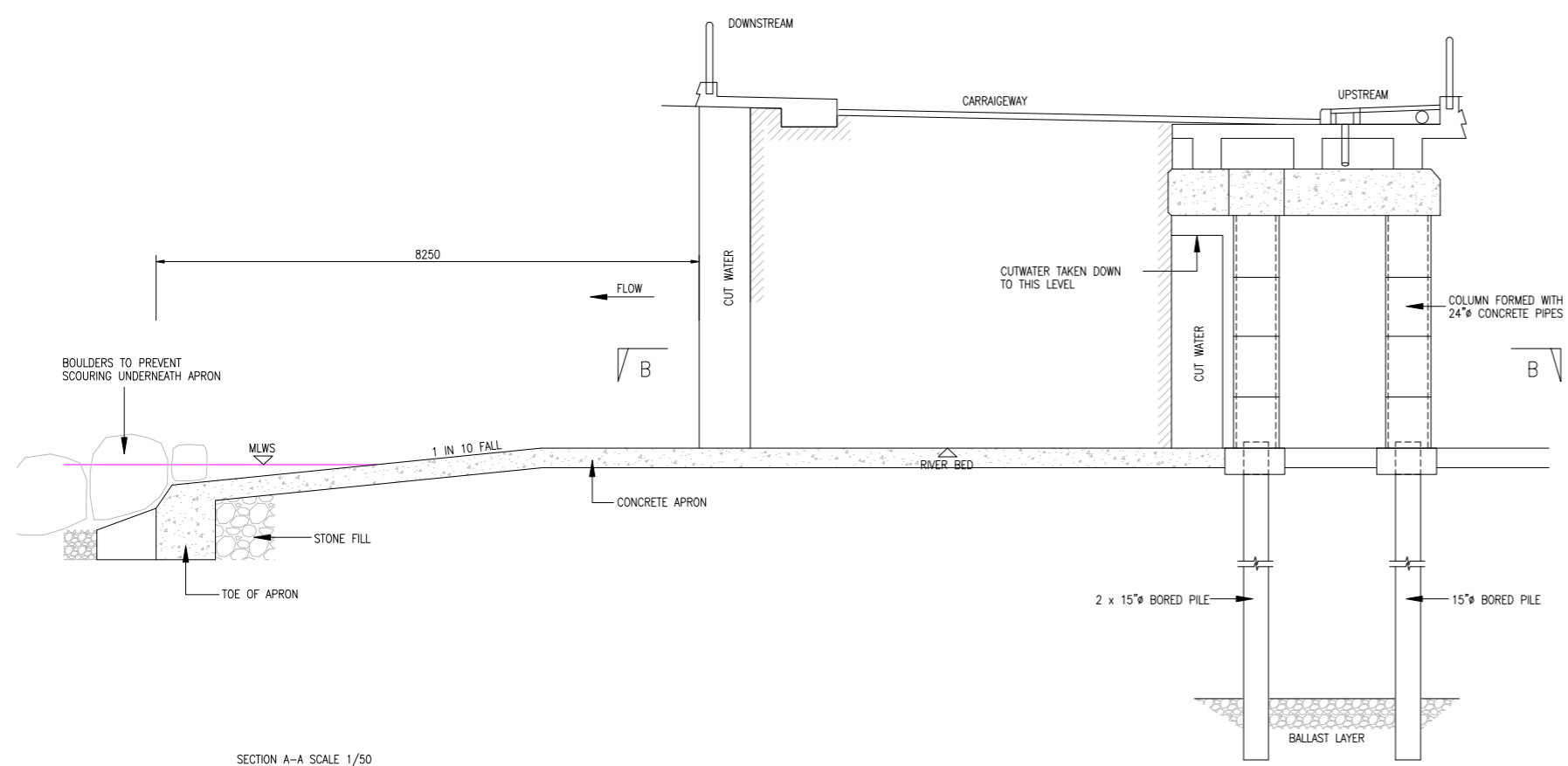


1. DO NOT SCALE OFF DRAWING
2. DRAWING TO BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS
3. DRAWING IS FOR INFORMATION PURPOSES ONLY, NOT FOR CONSTRUCTION

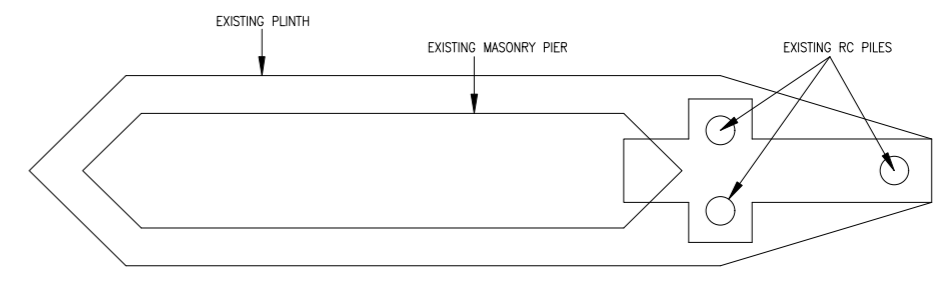
LAYOUT PLAN AT BED LEVEL SCALE 1/250



DOWNSTREAM ELEVATION SCALE 1/250



SECTION A-A SCALE 1/50



PLAN SECTION B-B SCALE 1/50

Ordnance Survey Ireland Licence No. EN 0083318
© Ordnance Survey Ireland / Government of Ireland



Client



Job Title
ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1 AS SHOWN

Discipline CIVIL

ARUP BYRNELOOBY

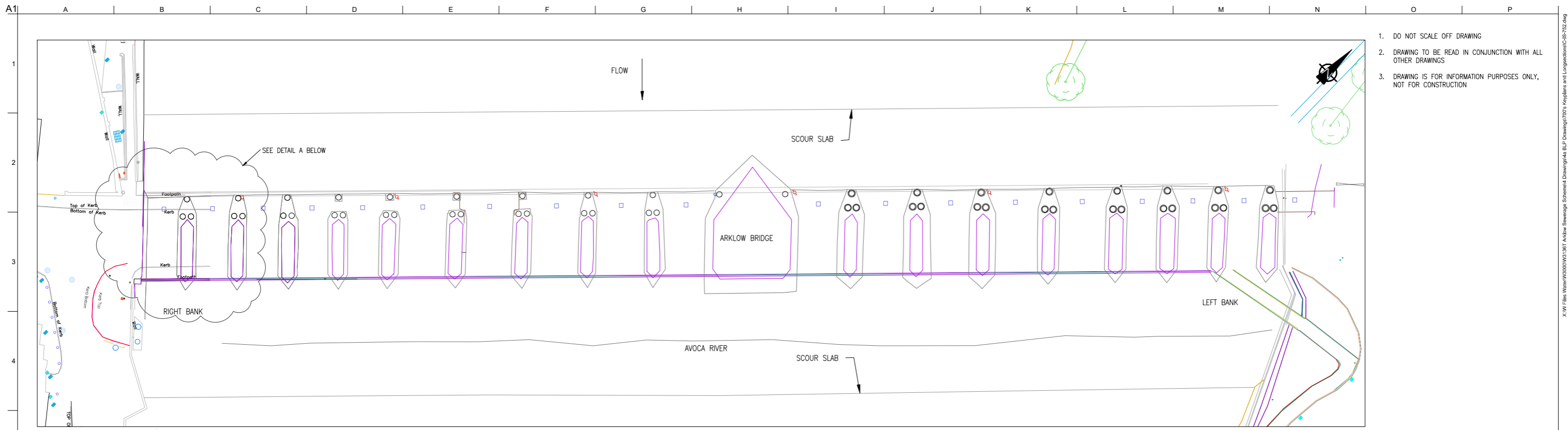
CLANCY MOORE ARCHITECTS

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

Drawing Status
PLANNING

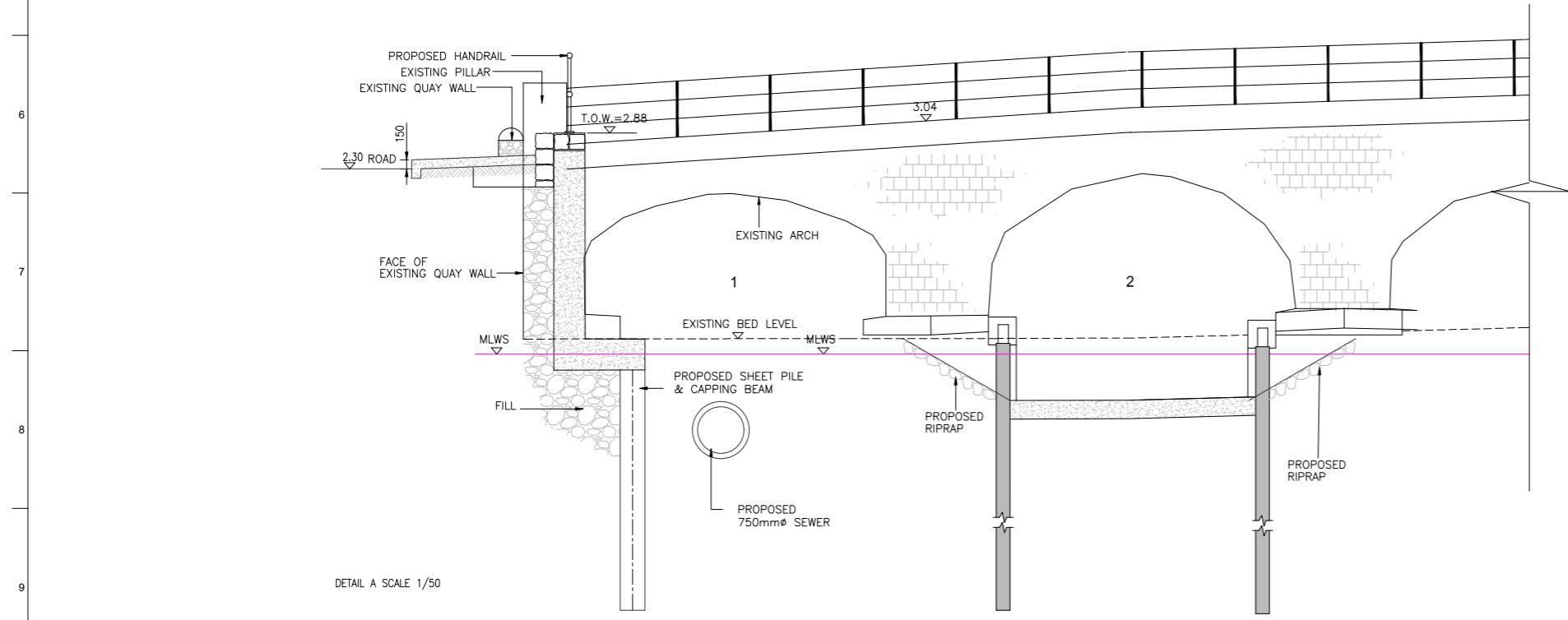
Job No 247825-00 Drawing No C-IS-751 Issue P1

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



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

LAYOUT PLAN AT BED LEVEL SCALE 1/250



DETAIL A SCALE 1/50

Ordnance Survey Ireland Licence No. EN 0083318
© Ordnance Survey Ireland / Government of Ireland



Client



Job Title
**ARKLOW WASTEWATER
TREATMENT PLANT PROJECT**

Scale at A1 AS SHOWN
Discipline CIVIL



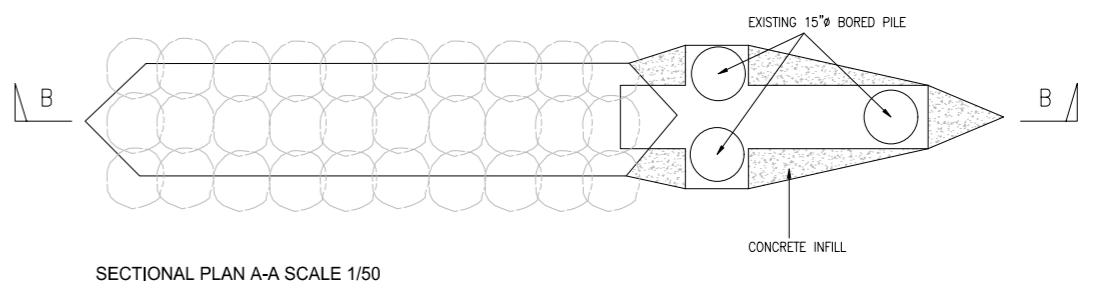
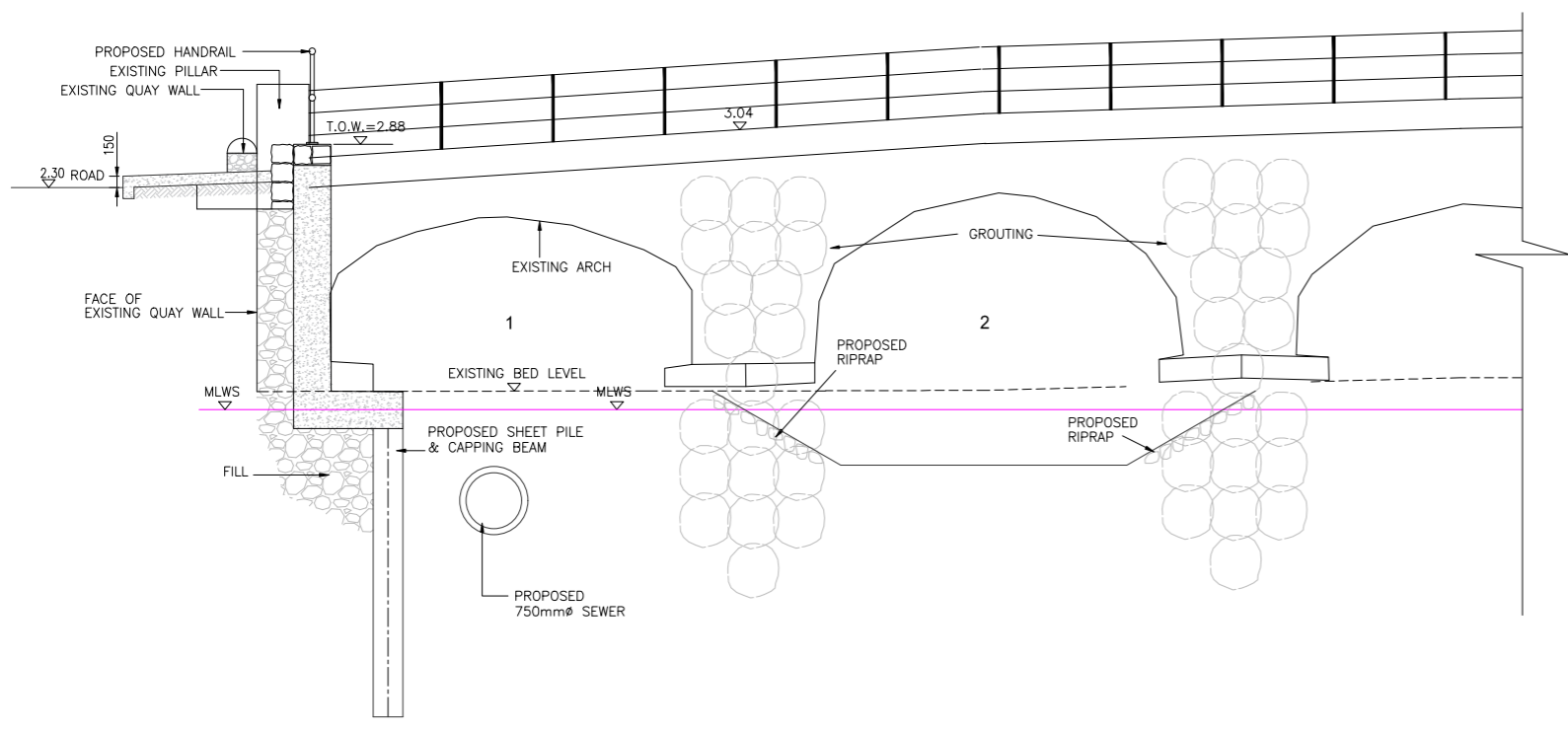
Drawing Title
**ARKLOW BRIDGE WORKS
PROPOSED LAYOUT, PLAN,
ELEVATION & SECTIONS**

Drawing Status
PLANNING

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

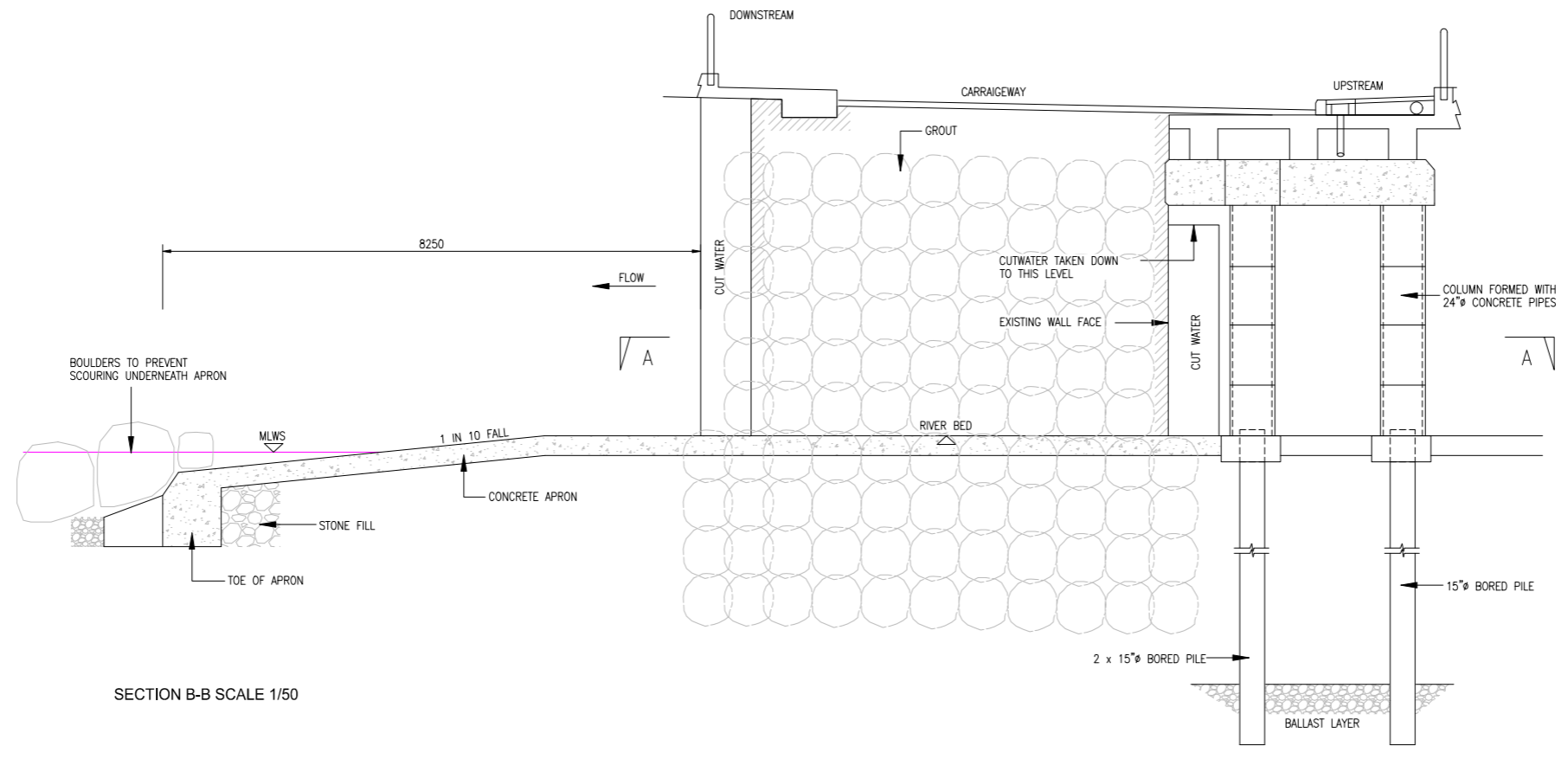
Issue	Date	By	Chkd	Appd
P1	31/08	MS	DR	ES

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

DOWNSTREAM ELEVATION SCALE 1/50



SECTION B-B SCALE 1/50

Ordnance Survey Ireland Licence No. EN 0083318
© Ordnance Survey Ireland / Government of Ireland



Client



Job Title
ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1 AS SHOWN
Discipline CIVIL



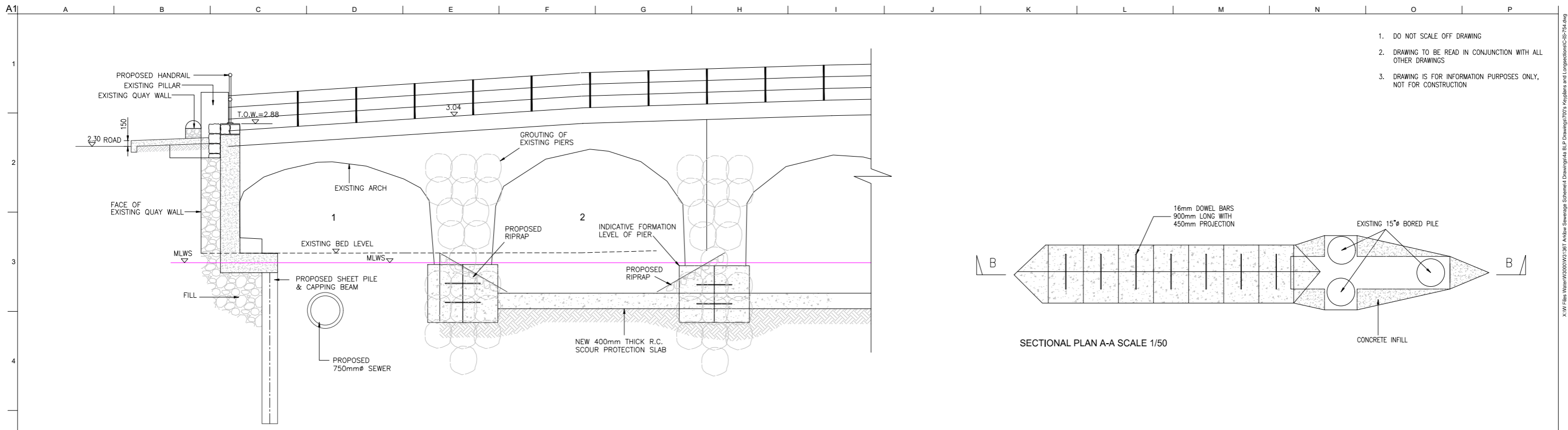
CLANCY MOORE ARCHITECTS

Drawing Title
ARKLOW BRIDGE WORKS GROUTING WORKS STAGE 1

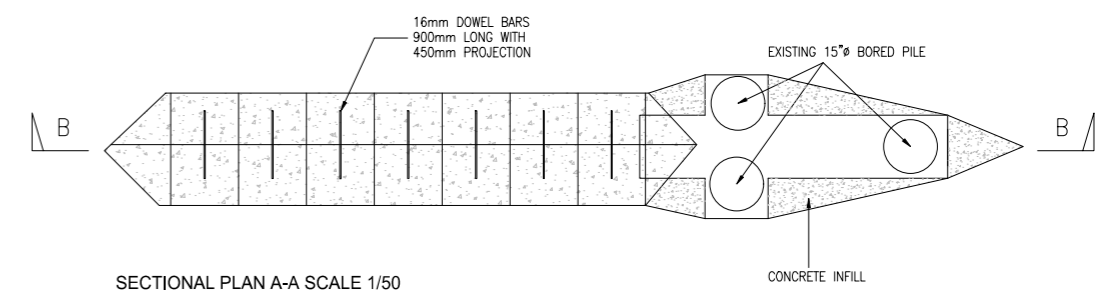
Drawing Status
PLANNING

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

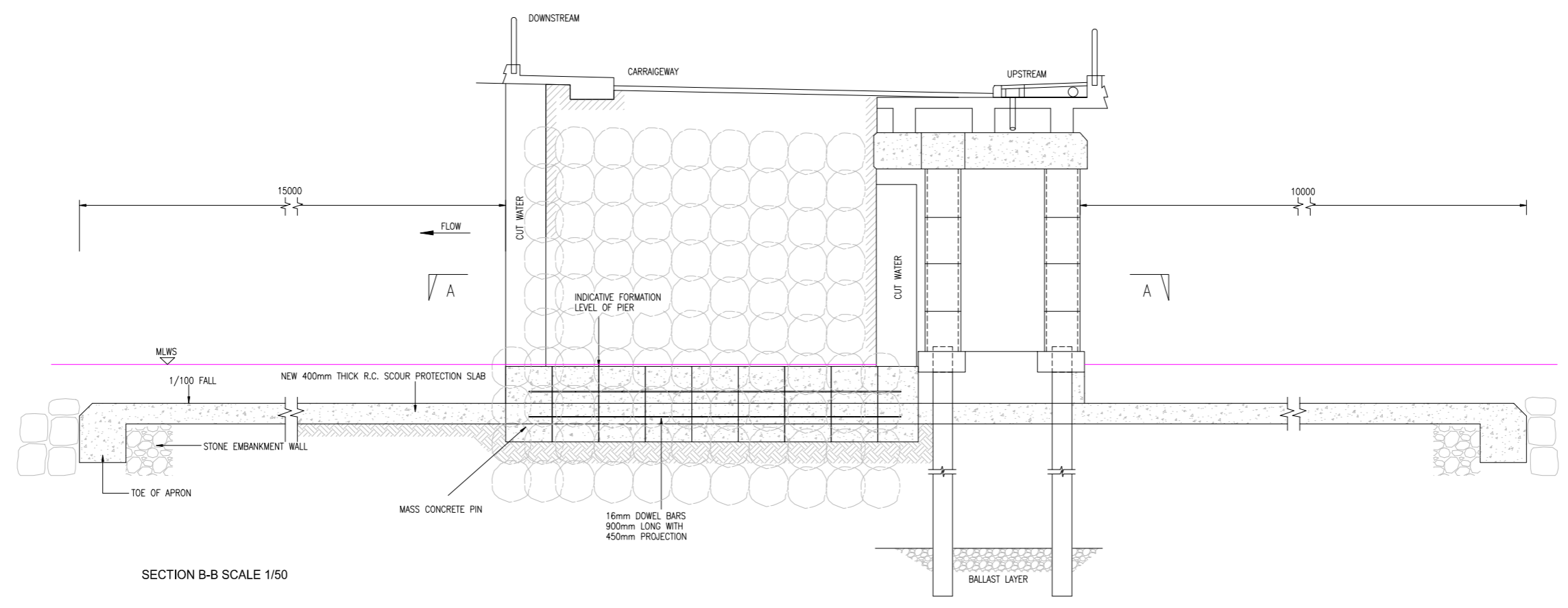
Issue	Date	By	Chkd	Appd
P1	31/08	MS	DR	ES



DOWNSTREAM ELEVATION SCALE 1/50



SECTIONAL PLAN A-A SCALE 1/50

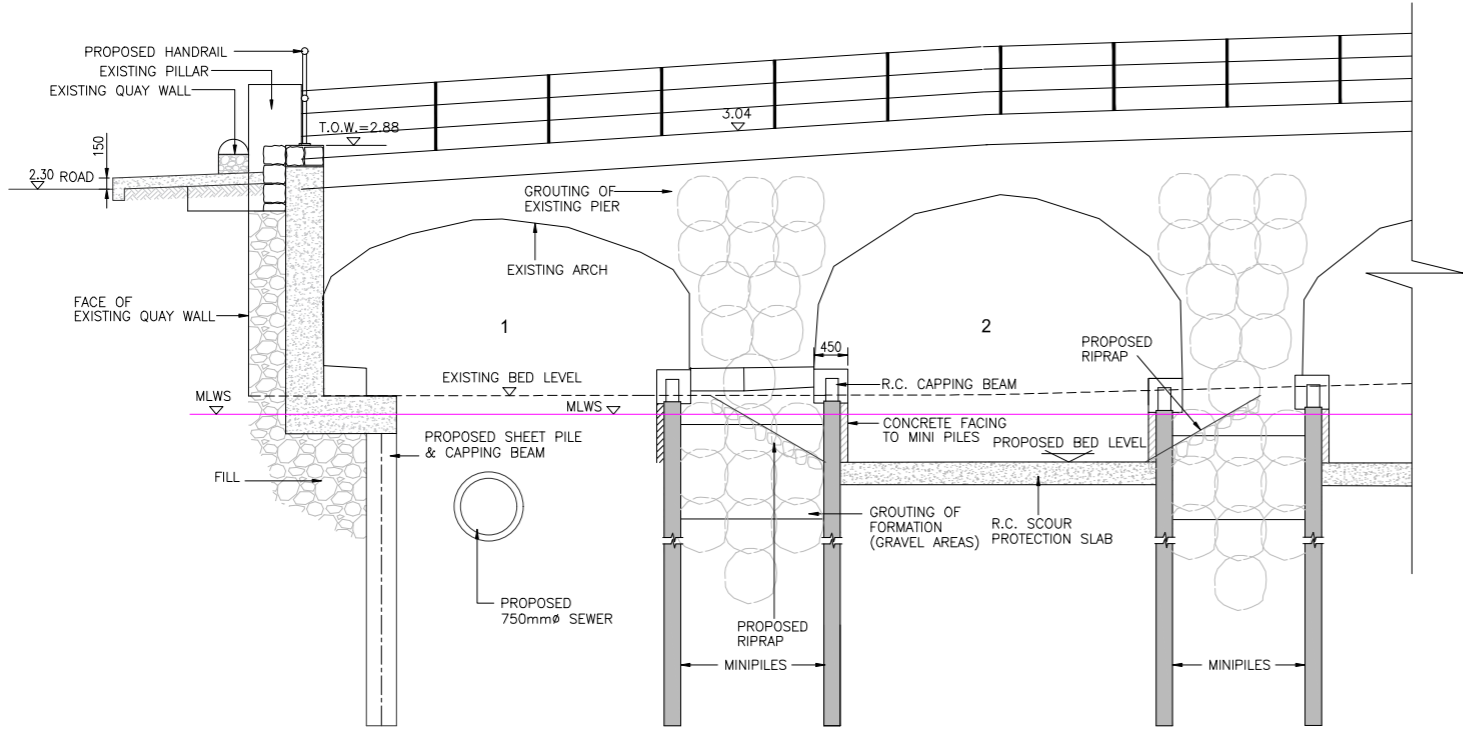


SECTION B-B SCALE 1/50

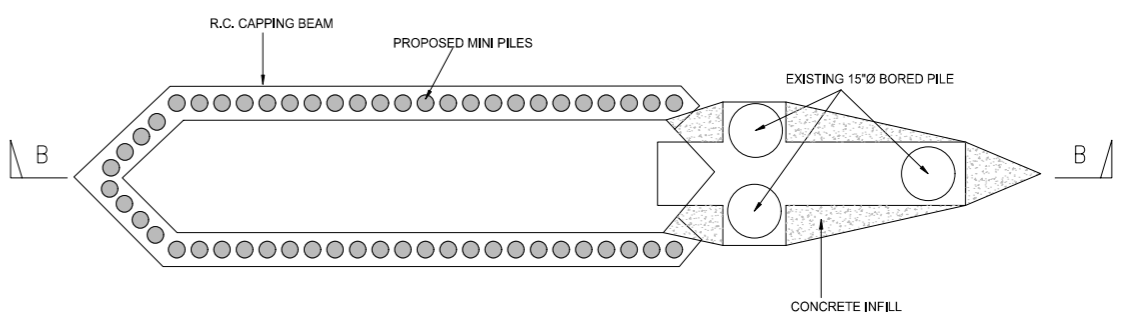
1. DO NOT SCALE OFF DRAWING
2. DRAWING TO BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS
3. DRAWING IS FOR INFORMATION PURPOSES ONLY, NOT FOR CONSTRUCTION

<p>Ordnance Survey Ireland Licence No. EN 0083318 © Ordnance Survey Ireland / Government of Ireland</p>	<p>Client</p>	<p>Job Title ARKLOW WASTEWATER TREATMENT PLANT PROJECT</p> <p>Scale at A1 AS SHOWN</p> <p>Discipline CIVIL</p>	<p>Drawing Title ARKLOW BRIDGE WORKS UNDERPINNING OPTION 1</p> <p>Drawing Status PLANNING</p> <p>Job No 247825-00 Drawing No C-IS-754 Issue P1</p>										
<table border="1" style="margin: auto; border-collapse: collapse;"> <thead> <tr> <th>Issue</th> <th>Date</th> <th>By</th> <th>Chkd</th> <th>Appd</th> </tr> </thead> <tbody> <tr> <td>P1</td> <td>31/08</td> <td>MS</td> <td>DR</td> <td>ES</td> </tr> </tbody> </table>		Issue	Date	By	Chkd	Appd	P1	31/08	MS	DR	ES		
Issue	Date	By	Chkd	Appd									
P1	31/08	MS	DR	ES									

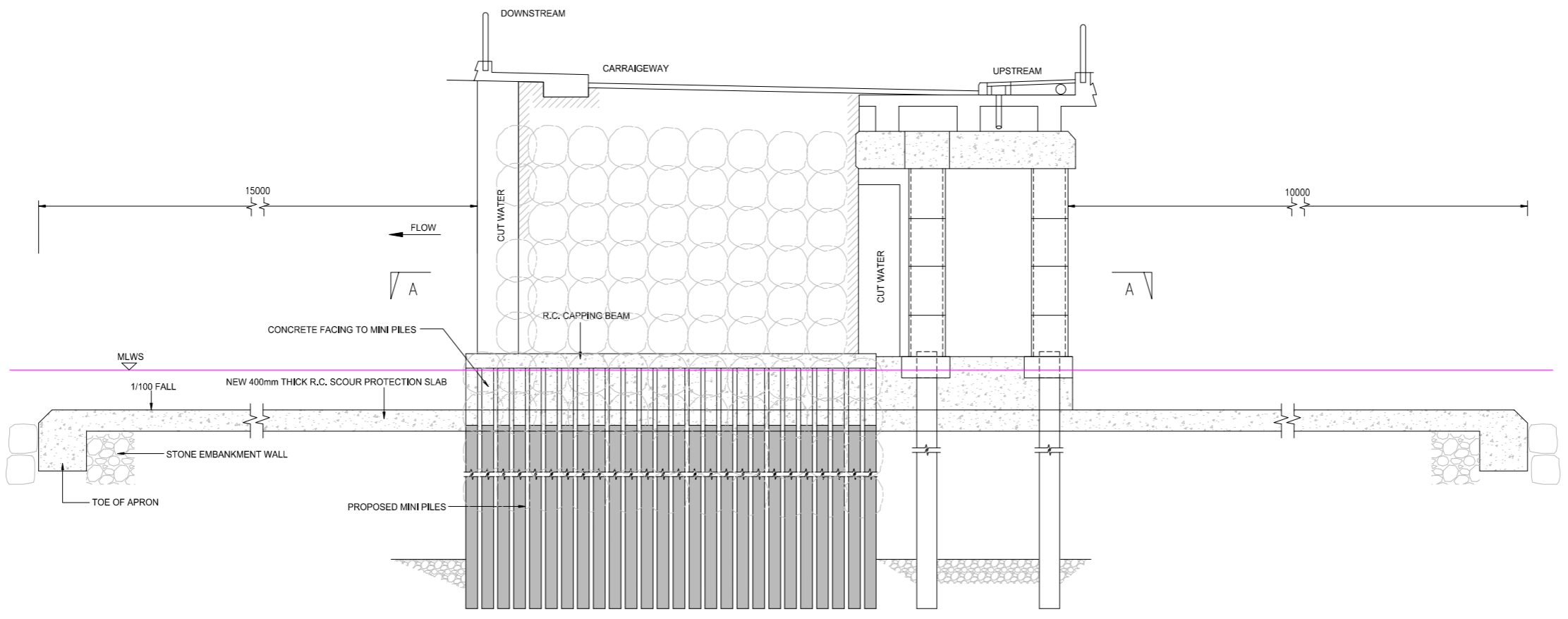
1. DO NOT SCALE OFF DRAWING
2. DRAWING TO BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS
3. DRAWING IS FOR INFORMATION PURPOSES ONLY, NOT FOR CONSTRUCTION



DOWNSTREAM ELEVATION SCALE 1/50



SECTIONAL PLAN A-A SCALE 1/50



SECTION B-B SCALE 1/50

Ordnance Survey Ireland Licence No. EN 0083318
© Ordnance Survey Ireland / Government of Ireland



Client



Job Title
ARKLOW WASTEWATER
TREATMENT PLANT PROJECT

Scale at A1 AS SHOWN
Discipline CIVIL



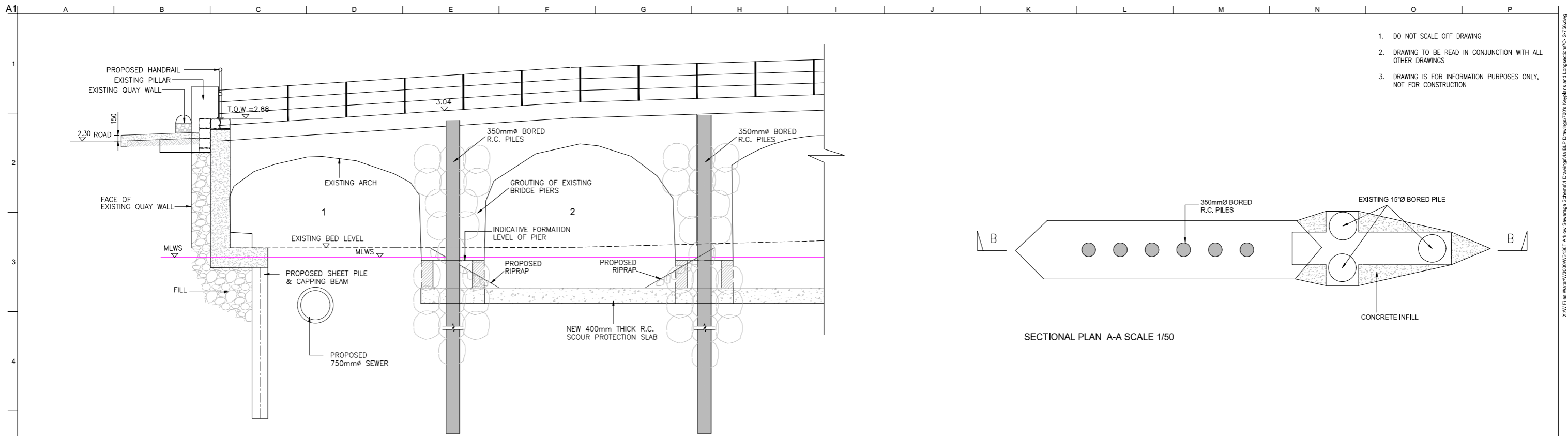
CLANCY MOORE ARCHITECTS

Drawing Title
ARKLOW BRIDGE WORKS
UNDERPINNING OPTION 2

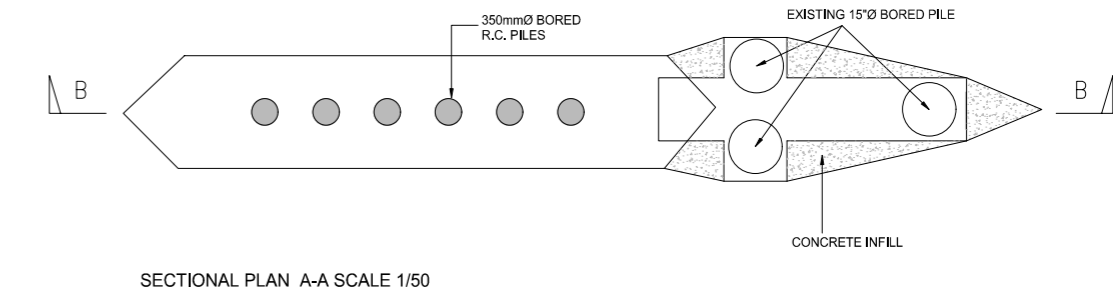
Drawing Status
PLANNING

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

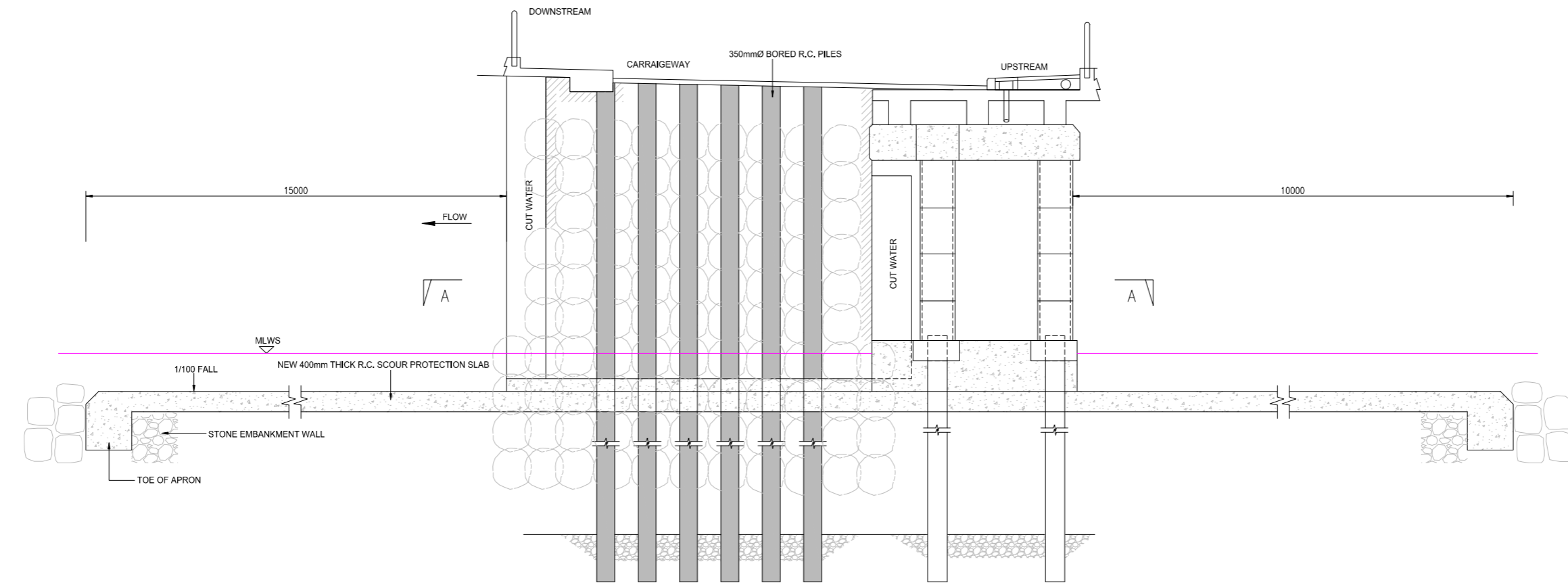
Issue	Date	By	Chkd	Appd
P1	31/08	MS	DR	ES



DOWNSTREAM ELEVATION SCALE 1/50



SECTIONAL PLAN A-A SCALE 1/50

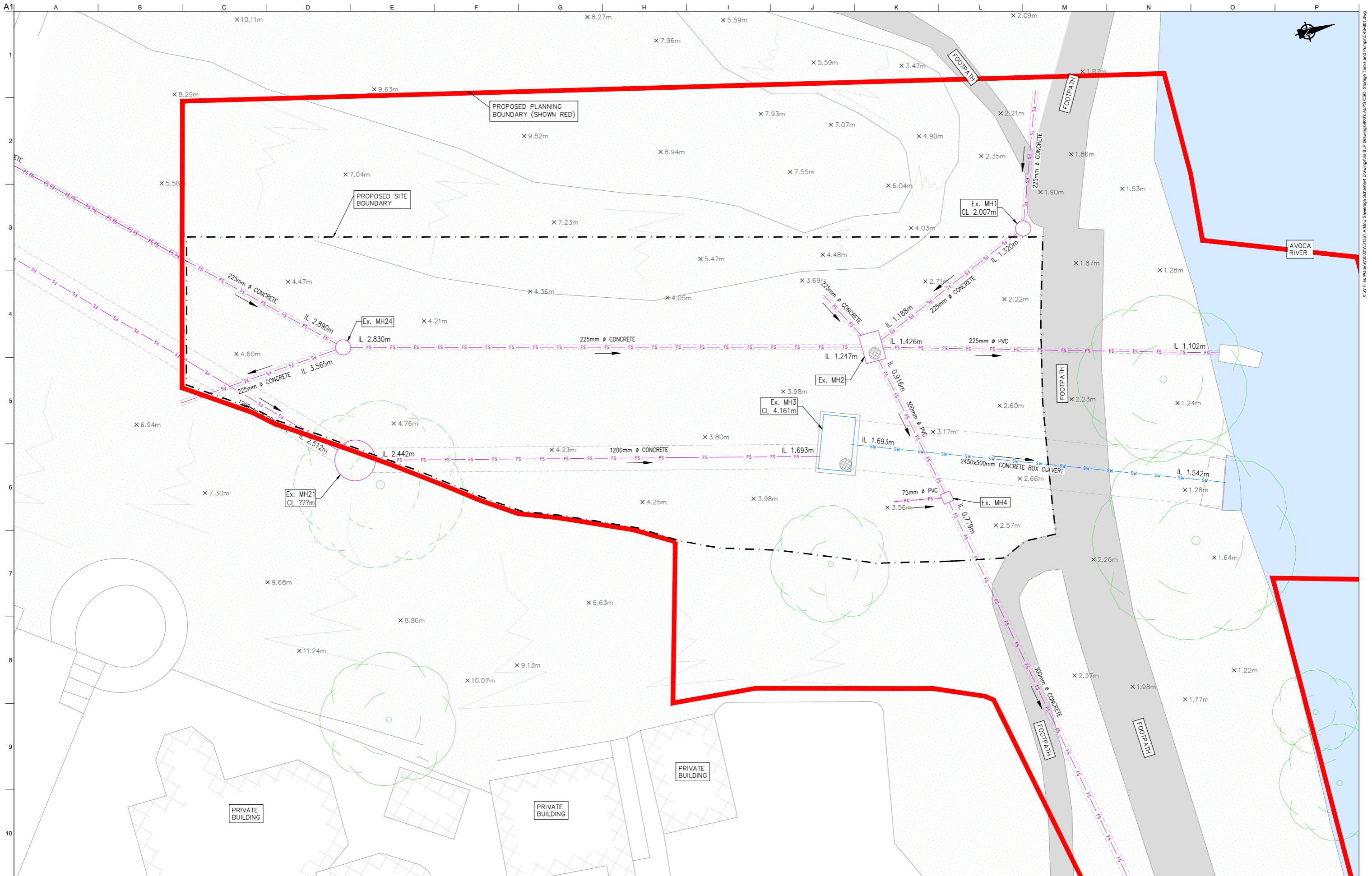


SECTION B-B SCALE 1/50

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



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

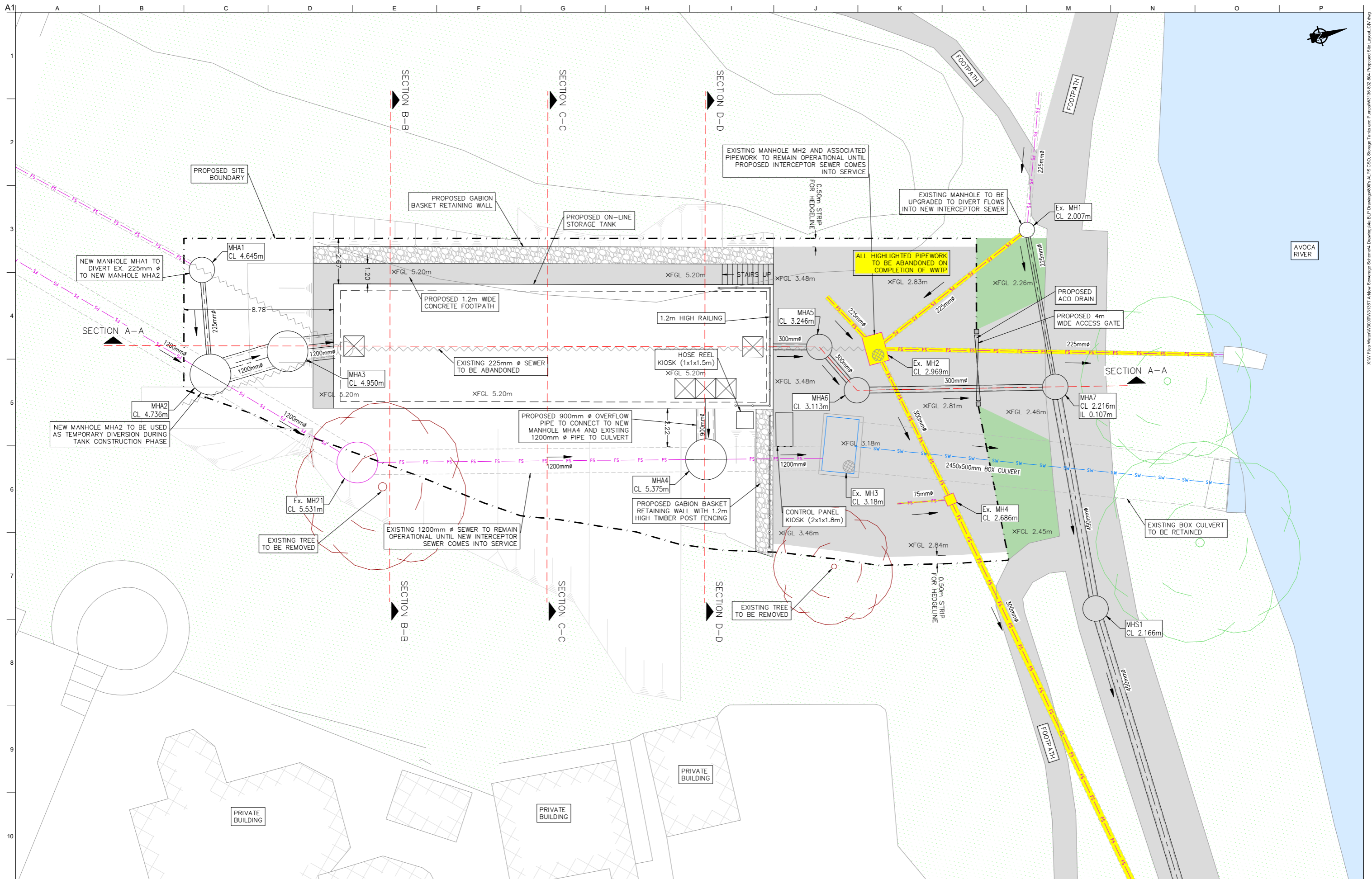


A1
1
2
3
4
5
6
7
8
9
10

A B C D E F G H I J K L M N O P

Ordnance Survey Ireland Licence No. EN 0083318 © Ordnance Survey Ireland/ Government of Ireland			Client 	Job Title ARKLOW WASTEWATER TREATMENT PLANT PROJECT	Drawing Title THE ALPS CSO EXISTING SITE LAYOUT															
<table border="1"> <thead> <tr> <th>P1</th> <th>31/08</th> <th>MS</th> <th>DR</th> <th>ES</th> </tr> <tr> <th>Issue</th> <th>Date</th> <th>By</th> <th>Chkd</th> <th>Appd</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>		P1	31/08	MS	DR	ES	Issue	Date	By	Chkd	Appd							Scale at A1 1:100	Drawing Status PLANNING	Discipline CIVIL
P1	31/08	MS	DR	ES																
Issue	Date	By	Chkd	Appd																
Do not scale			Drawing No. 247825-00	Issue No. C-IS-801	Issue P1															

X:\W Files\Water\2020\01\1301 Arklow Sewerage Schematic Drawings\444 BLP Drawings\8001 Alps CSO - Sewage Tanks and Pumps\CS-801.dwg



A1
1
2
3
4
5
6
7
8
9
10

A B C D E F G H I J K L M N O P

Ordnance Survey Ireland Licence No. EN 0083318
© Ordnance Survey Ireland/ Government of Ireland



Client
UISCE
CORK AND LIMERICK
WATER

Job Title
**ARKLOW WASTEWATER
TREATMENT PLANT PROJECT**

Scale at A1
1:100

Discipline
CIVIL

ARUP **BYRNE LOOBY**

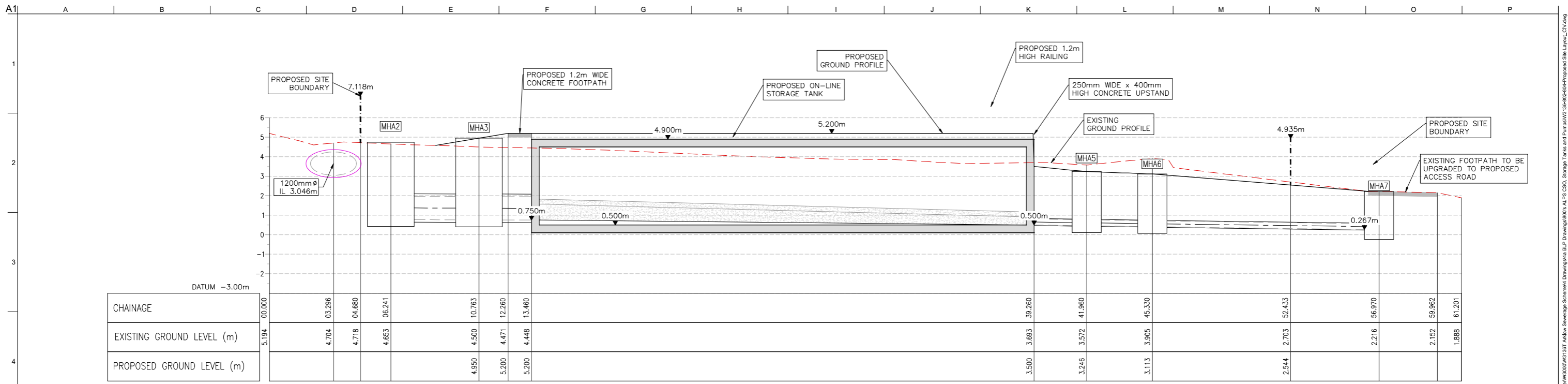
CLANCY MOORE ARCHITECTS

Drawing Title
**THE ALPS SWO
PROPOSED SITE LAYOUT**

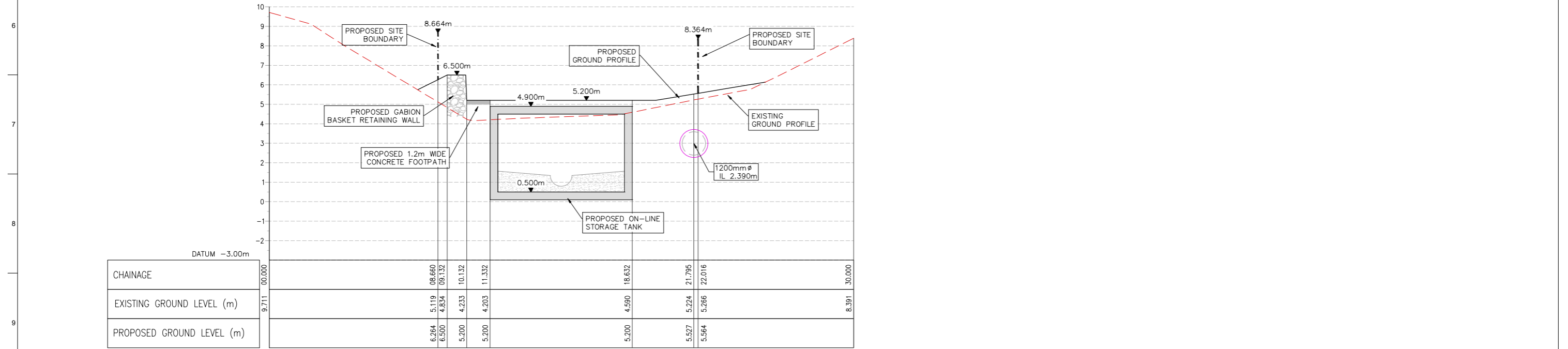
Drawing Status
PLANNING

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

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



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



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

Ordnance Survey Ireland Licence No. EN 0083318
© Ordnance Survey Ireland/ Government of Ireland



Client



Job Title
**ARKLOW WASTEWATER
TREATMENT PLANT PROJECT**

Scale at A1 AS SHOWN
Discipline CIVIL



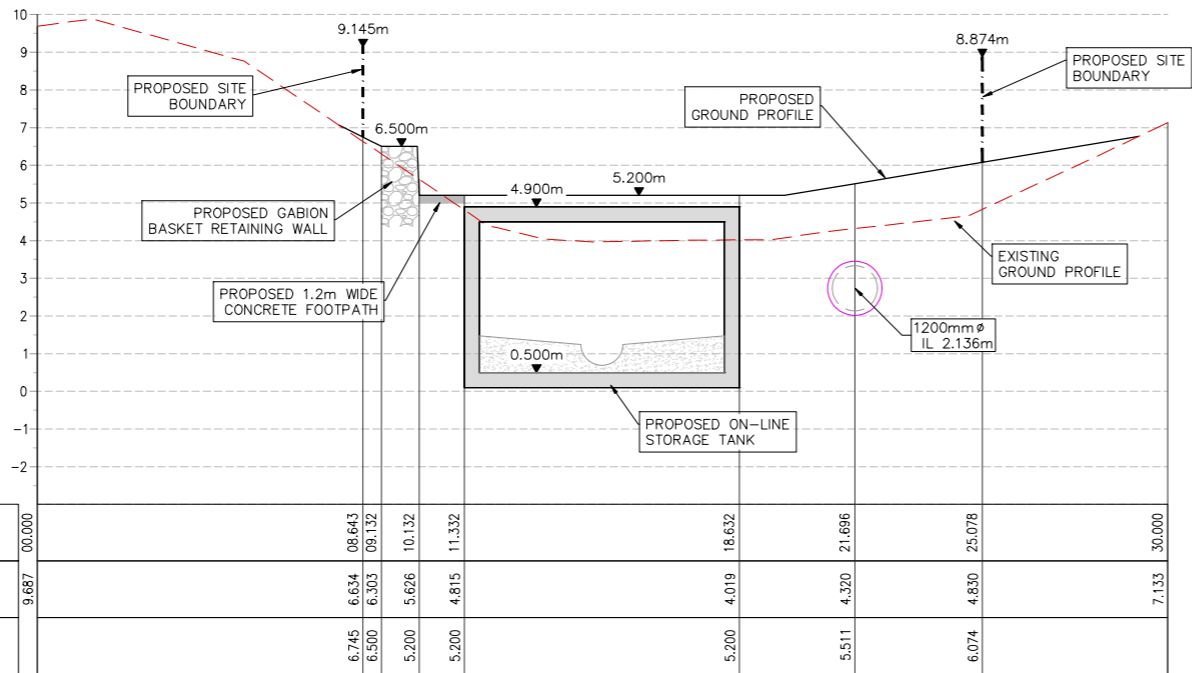
CLANCY MOORE ARCHITECTS

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

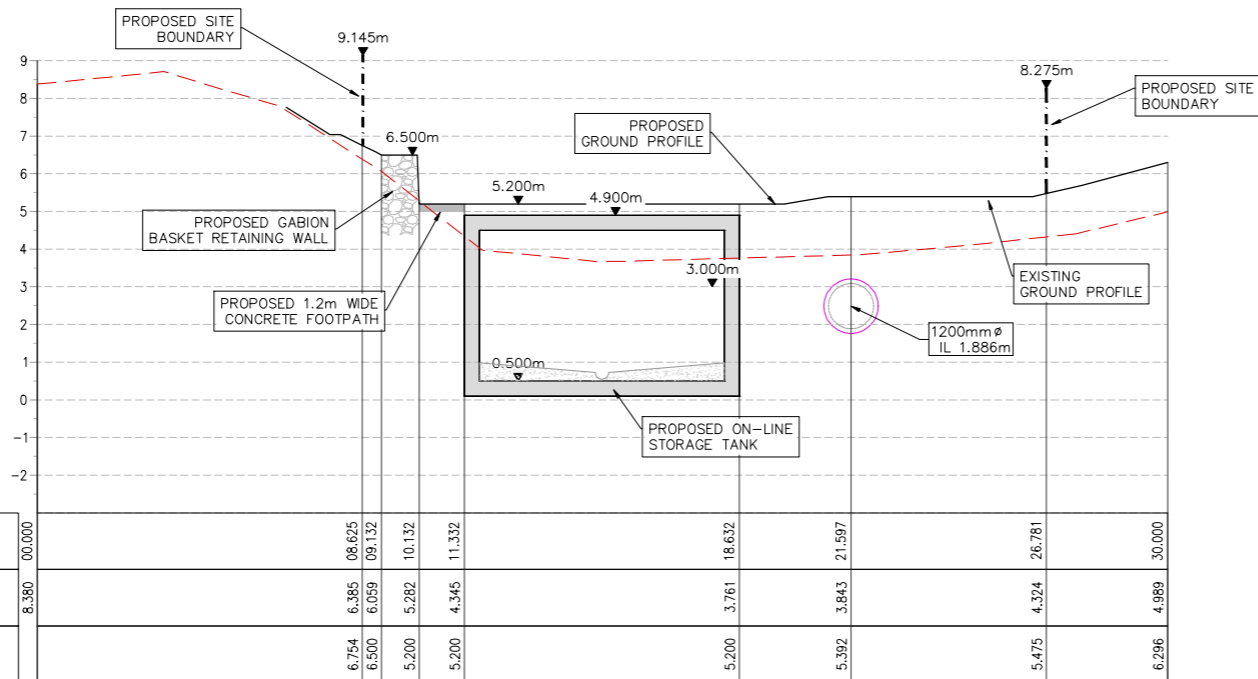
Drawing Status
PLANNING

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

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



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



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

Ordnance Survey Ireland Licence No. EN 0083318
© Ordnance Survey Ireland/ Government of Ireland



Client



Job Title
ARKLOW WASTEWATER
TREATMENT PLANT PROJECT

Scale at A1 AS SHOWN

Discipline CIVIL



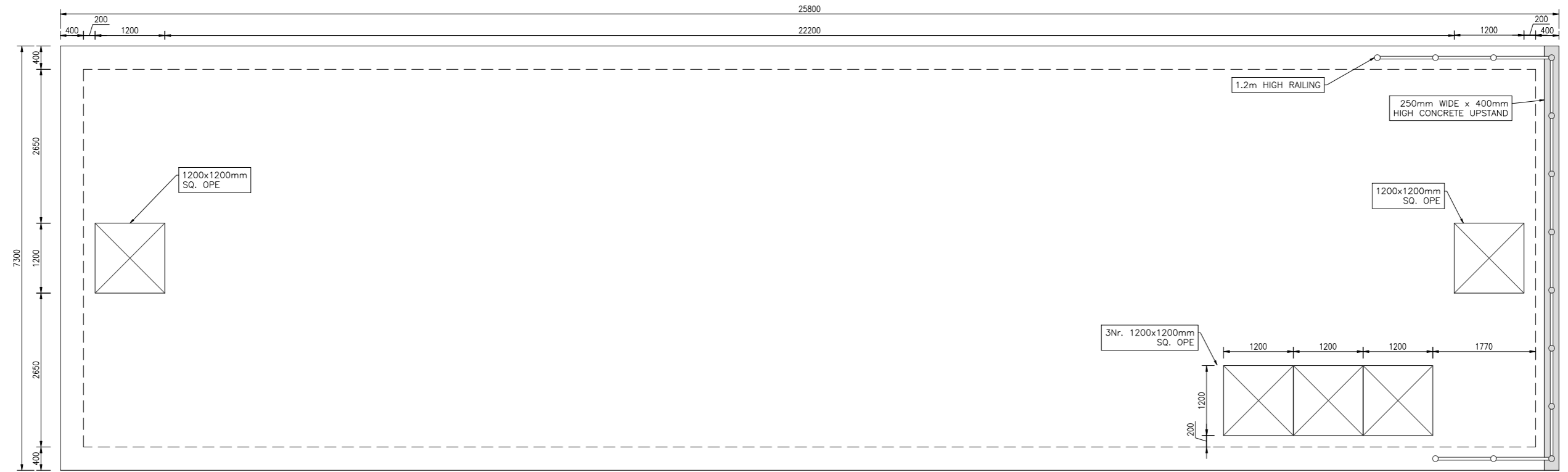
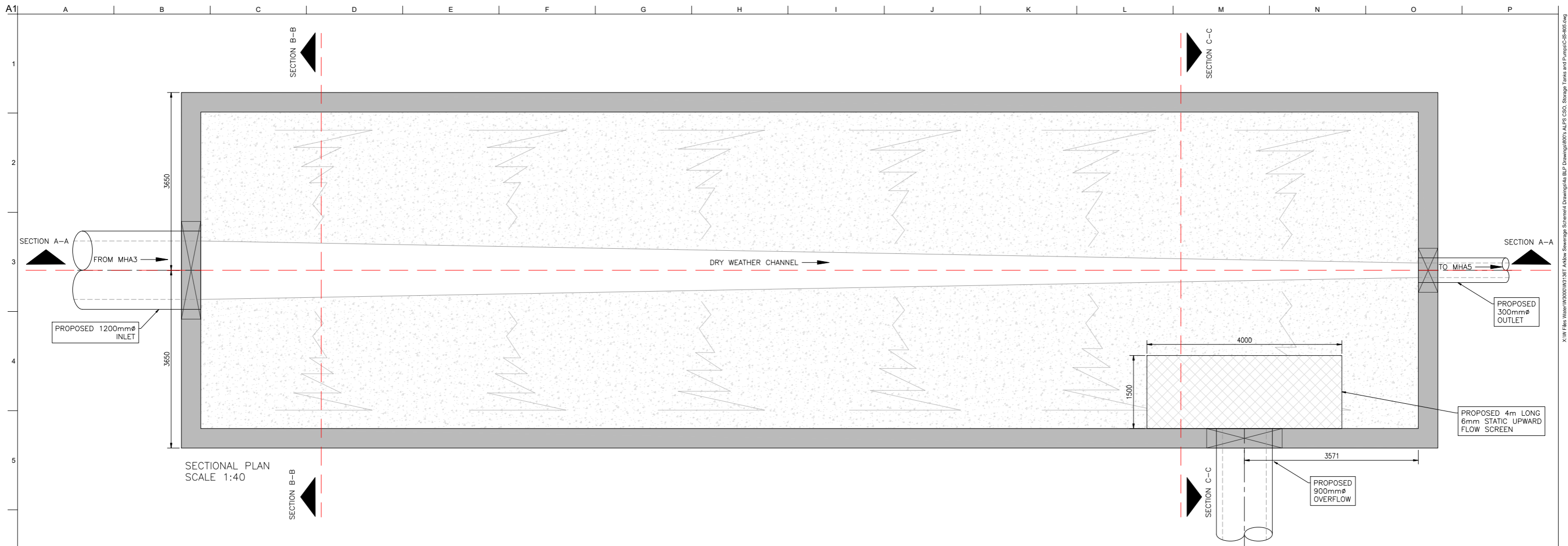
CLANCY MOORE ARCHITECTS

Drawing Title
THE ALPS SWO
PROPOSED SITE SECTIONS
2 OF 2

Drawing Status
PLANNING

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

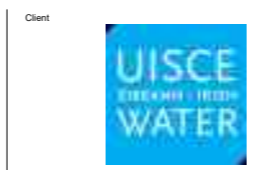
Issue	Date	By	Chkd	Appd
P1	31/08	MS	DR	ES



SECTIONAL PLAN
SCALE 1:40

ROOF PLAN
SCALE 1:40

Ordnance Survey Ireland Licence No. EN 0083318
© Ordnance Survey Ireland/ Government of Ireland



Job Title
**ARKLOW WASTEWATER
TREATMENT PLANT PROJECT**

Scale at A1
AS SHOWN

Discipline
CIVIL



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

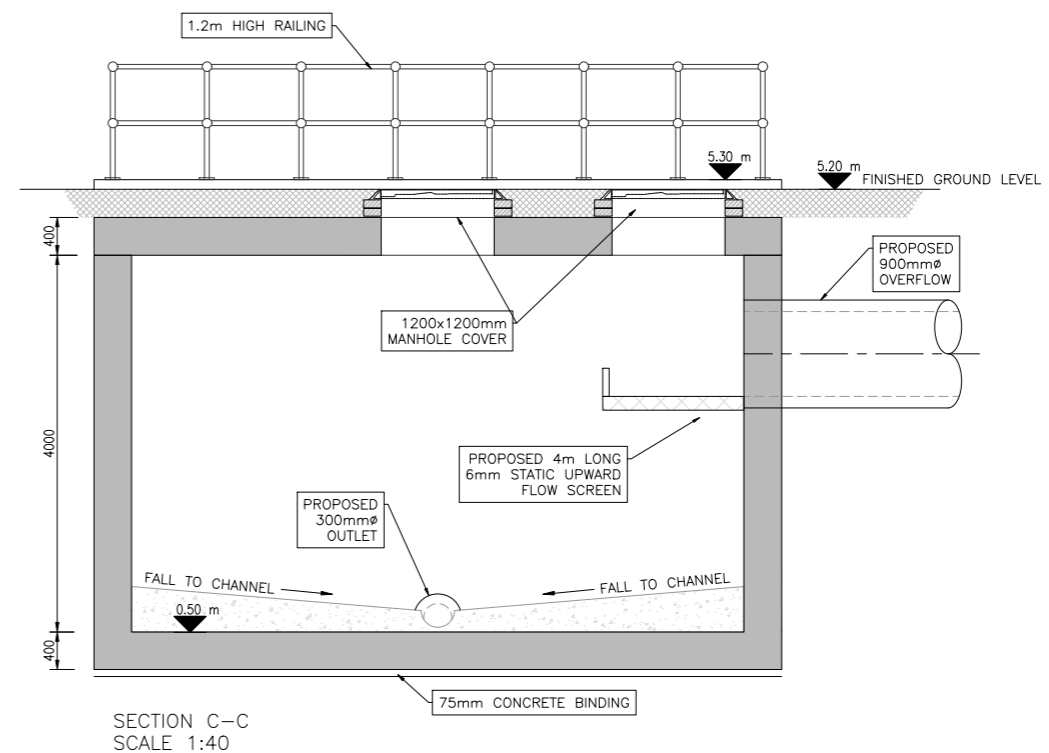
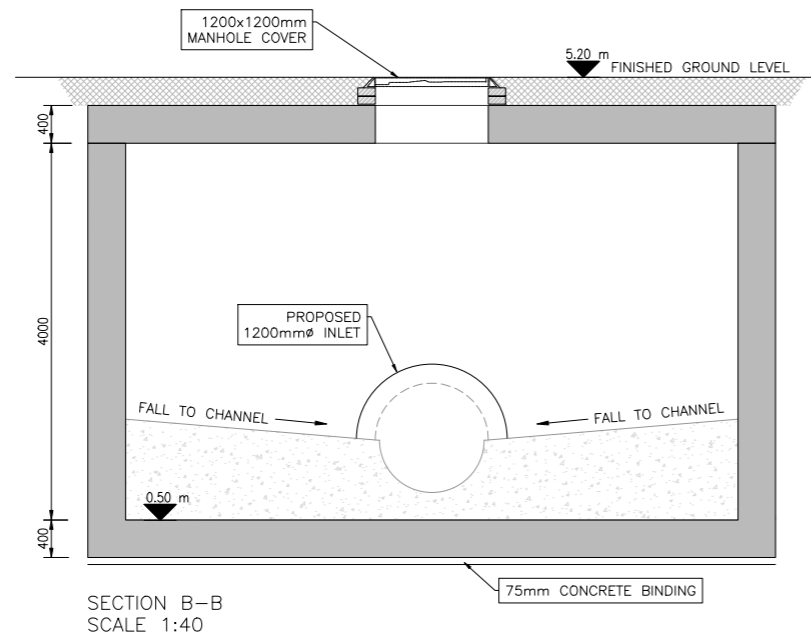
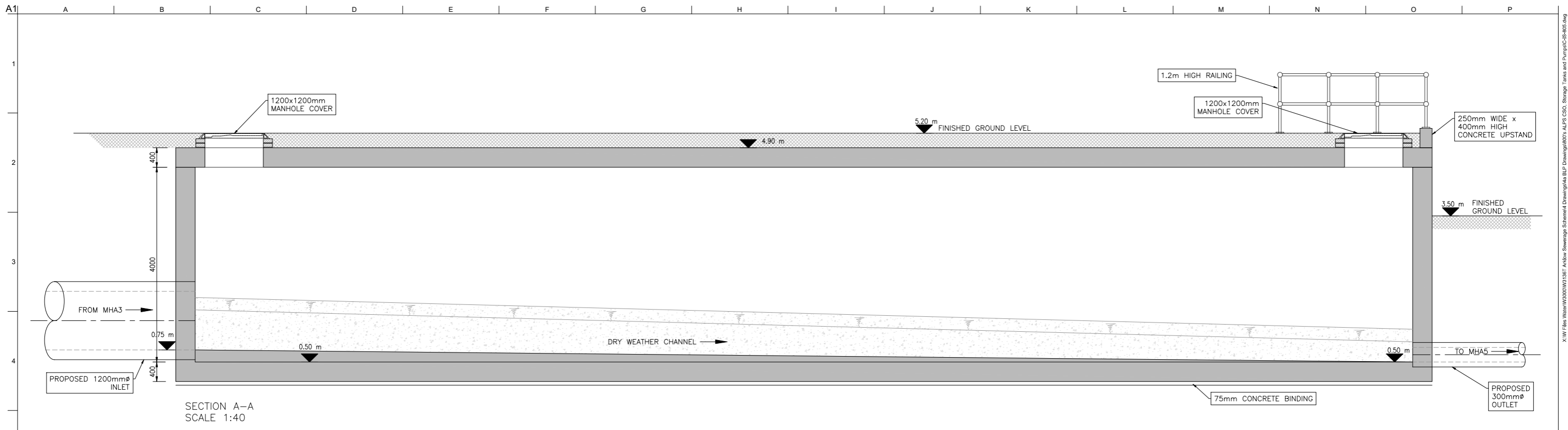
Drawing Status
PLANNING

Job No
247825-00

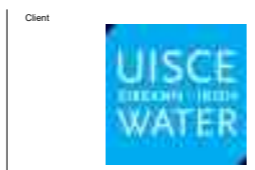
Drawing No
C-IS-805

Issue
P1

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



Ordnance Survey Ireland Licence No. EN 0083318
© Ordnance Survey Ireland/ Government of Ireland



Client
ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Job Title
ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1
AS SHOWN

Discipline
CIVIL



Drawing Title
THE ALPS CSO ONLINE STORAGE TANK GENERAL ARRANGEMENT SECTIONS

Drawing Status
PLANNING

Job No
247825-00

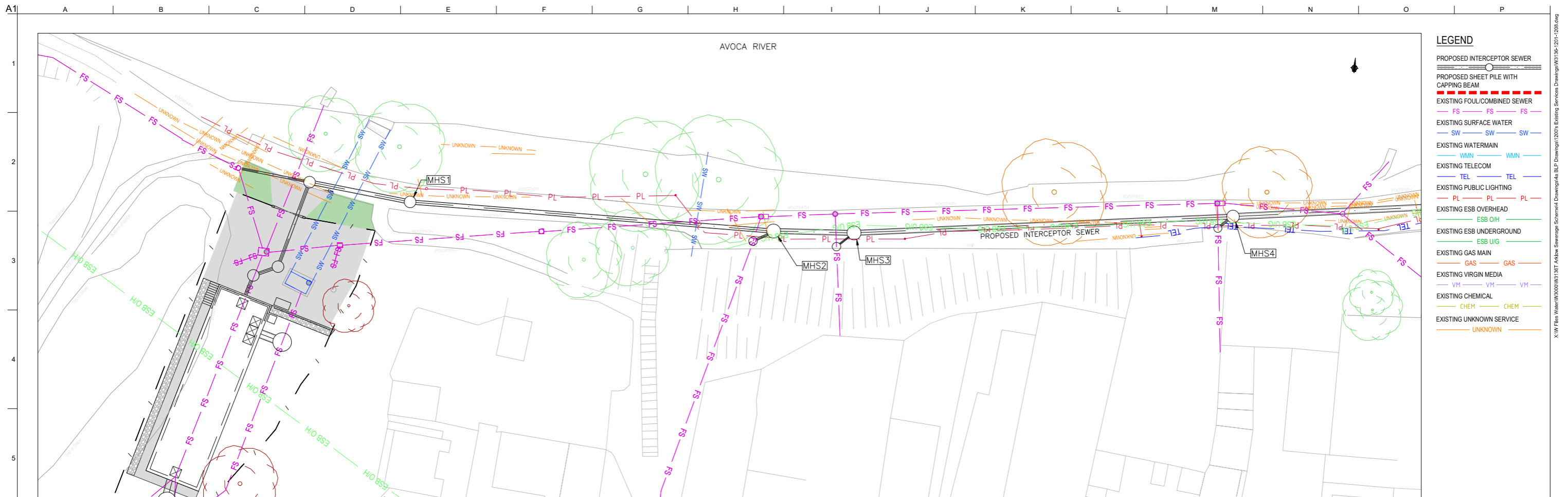
Drawing No
C-IS-806

Issue
P1

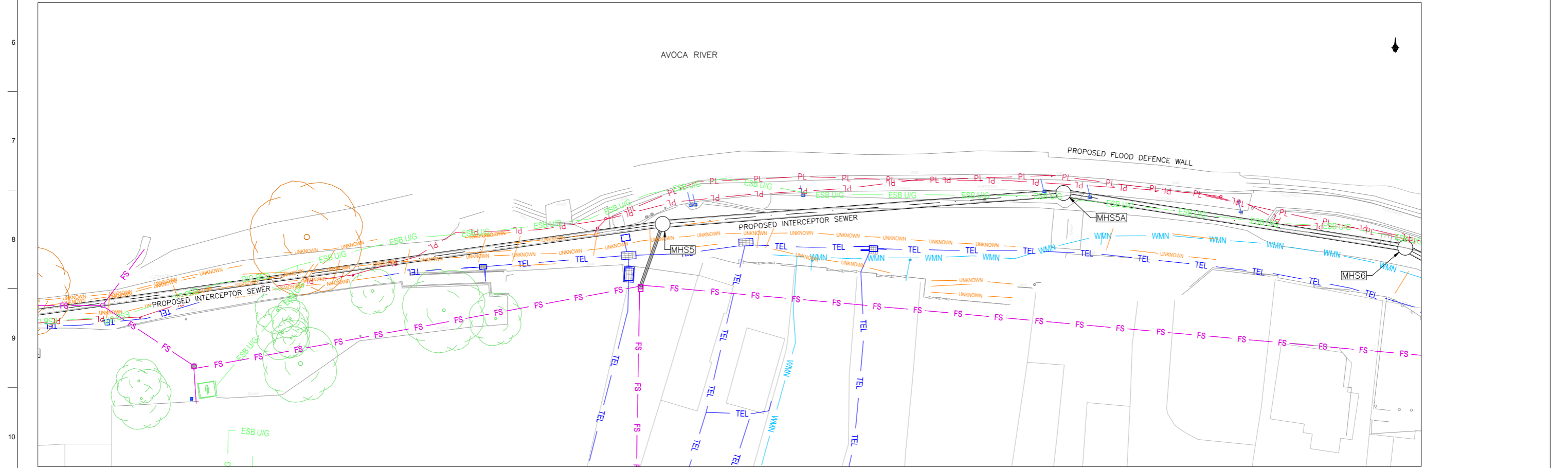
Issue	Date	By	Chkd	Appd
P1	31/08	MS	DR	ES

Appendix B

Utility Services Drawings





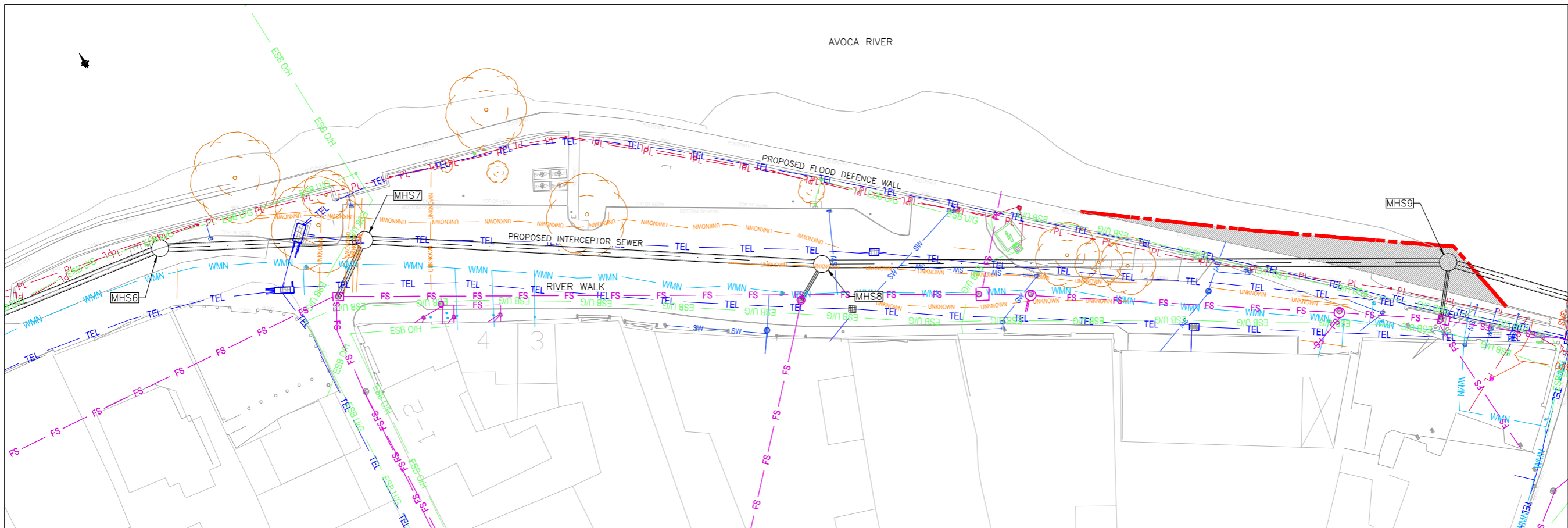
LOCATION PLAN SCALE: 1:250 © A1



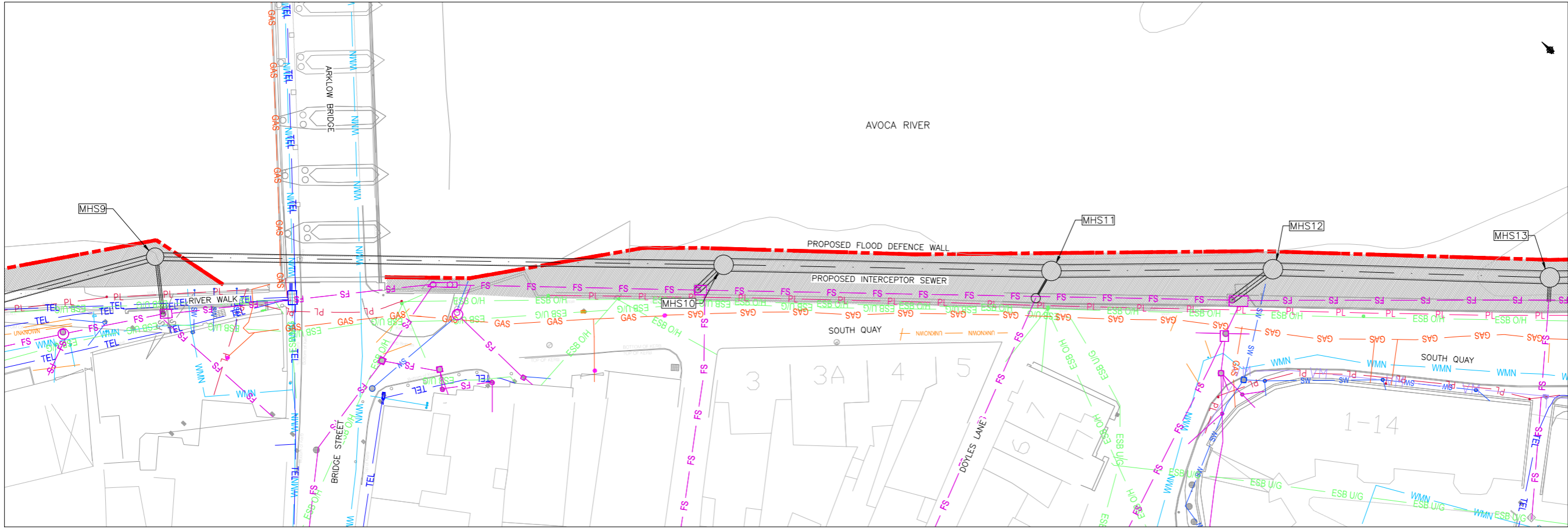
LOCATION PLAN SCALE: 1:250 © A1

- LEGEND**
- PROPOSED INTERCEPTOR SEWER
 - PROPOSED SHEET PILE WITH CAPPING BEAM
 - EXISTING FOUL/COMBINED SEWER
 - EXISTING SURFACE WATER
 - EXISTING WATERMAIN
 - EXISTING TELECOM
 - EXISTING PUBLIC LIGHTING
 - EXISTING ESB OVERHEAD
 - EXISTING ESB UNDERGROUND
 - EXISTING GAS MAIN
 - EXISTING VIRGIN MEDIA
 - EXISTING CHEMICAL
 - EXISTING UNKNOWN SERVICE

		Client ARUP BYRNELOOBY CLANCY MOORE ARCHITECTS	Job Title ARKLOW WASTEWATER TREATMENT PLANT PROJECT Scale at A1 AS SHOWN Discipline CIVIL	Drawing Title EXISTING SERVICES LAYOUT PLAN 1 OF 8 Drawing Status PLANNING Job No 247825-00 Drawing No C-IS-1201 Issue D1															
<table border="1" style="border-collapse: collapse;"> <thead> <tr> <th>P1</th> <th>31/08</th> <th>MS</th> <th>DR</th> <th>ES</th> </tr> <tr> <th>Issue</th> <th>Date</th> <th>By</th> <th>Chkd</th> <th>Appd</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	P1	31/08	MS	DR	ES	Issue	Date	By	Chkd	Appd									
P1	31/08	MS	DR	ES															
Issue	Date	By	Chkd	Appd															



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
- EXISTING SURFACE WATER
- EXISTING WATERMAIN
- EXISTING TELECOM
- EXISTING PUBLIC LIGHTING
- EXISTING ESB OVERHEAD
- EXISTING ESB UNDERGROUND
- EXISTING GAS MAIN
- EXISTING VIRGIN MEDIA
- EXISTING CHEMICAL
- EXISTING UNKNOWN SERVICE



Client

Job Title
ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1 AS SHOWN

Discipline CIVIL

ARUP BYRNE LOOBY

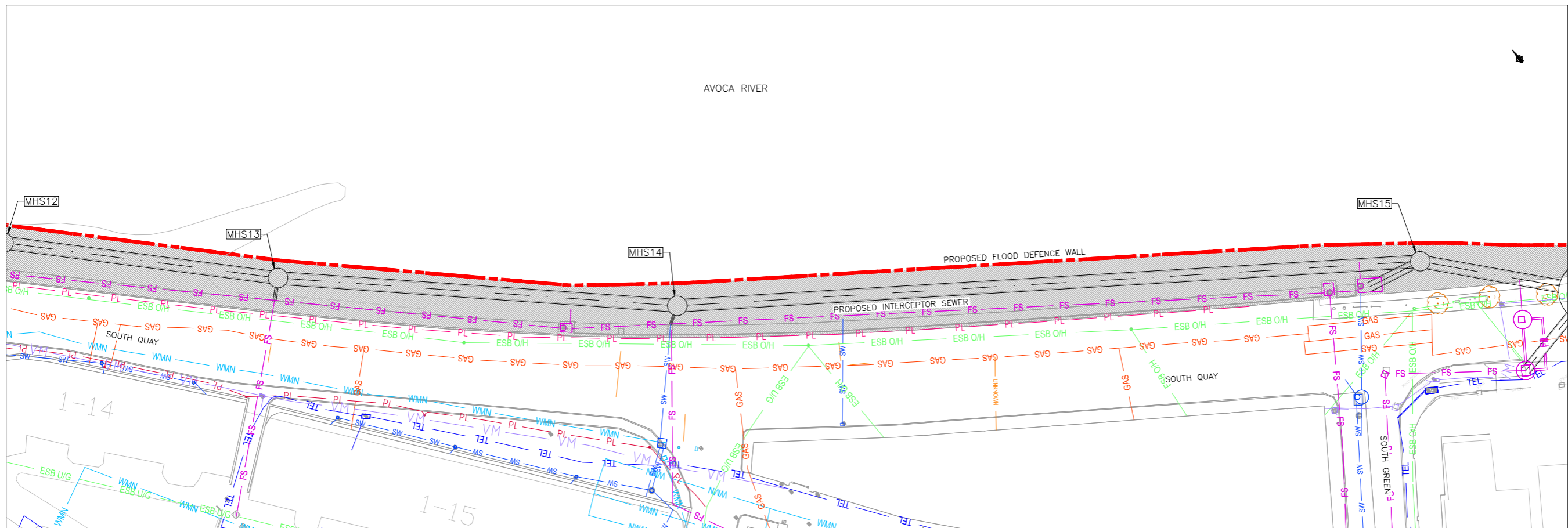
CLANCY MOORE ARCHITECTS

Drawing Title
EXISTING SERVICES LAYOUT PLAN 2 OF 8

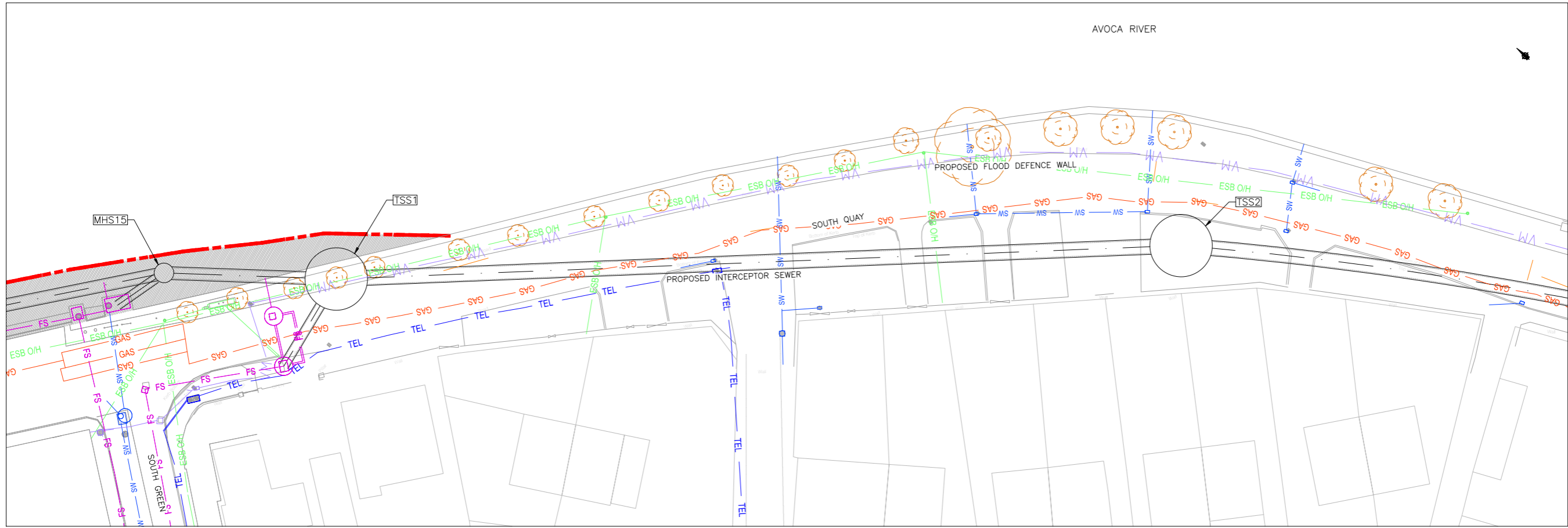
Drawing Status
PLANNING

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

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

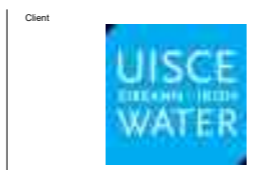


LOCATION PLAN SCALE:1:250 © A1



LOCATION PLAN SCALE:1:250 © A1

- LEGEND**
- PROPOSED INTERCEPTOR SEWER
 - PROPOSED SHEET PILE WITH CAPPING BEAM
 - EXISTING FOUL/COMBINED SEWER
 - EXISTING SURFACE WATER
 - EXISTING WATERMAIN
 - EXISTING TELECOM
 - EXISTING PUBLIC LIGHTING
 - EXISTING ESB OVERHEAD
 - EXISTING ESB UNDERGROUND
 - EXISTING GAS MAIN
 - EXISTING VIRGIN MEDIA
 - EXISTING CHEMICAL
 - EXISTING UNKNOWN SERVICE



Job Title
ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1 AS SHOWN

Discipline CIVIL

ARUP BYRNELOOBY

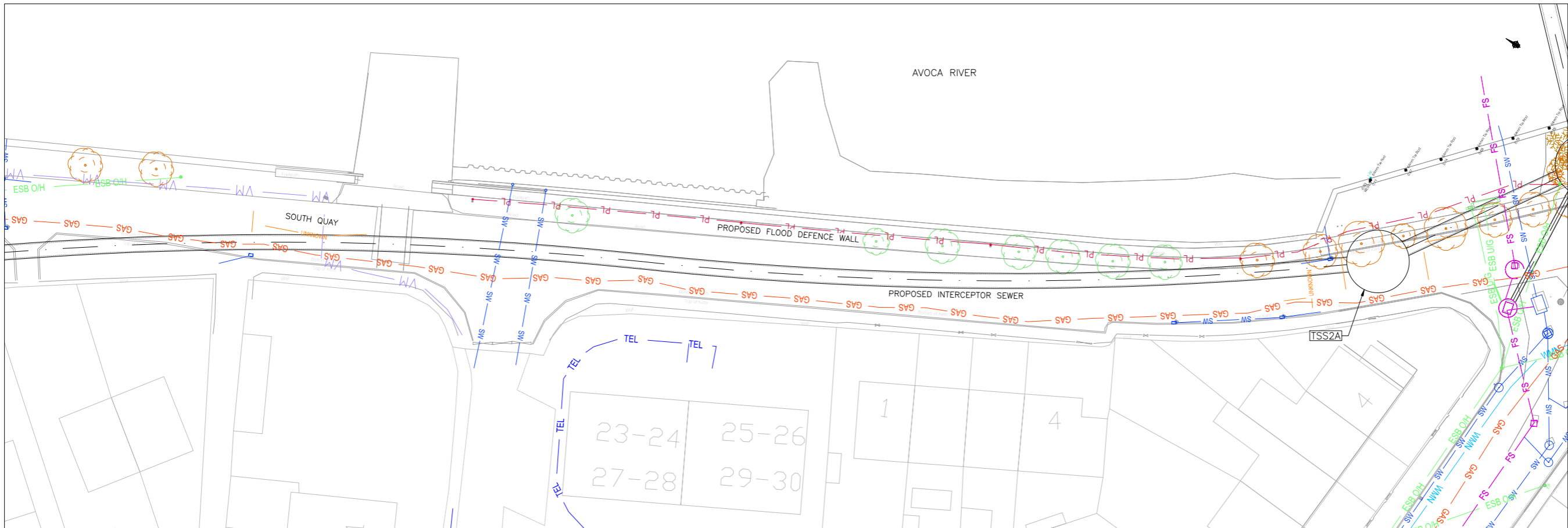
CLANCY MOORE ARCHITECTS

Drawing Title
EXISTING SERVICES LAYOUT PLAN 3 OF 8

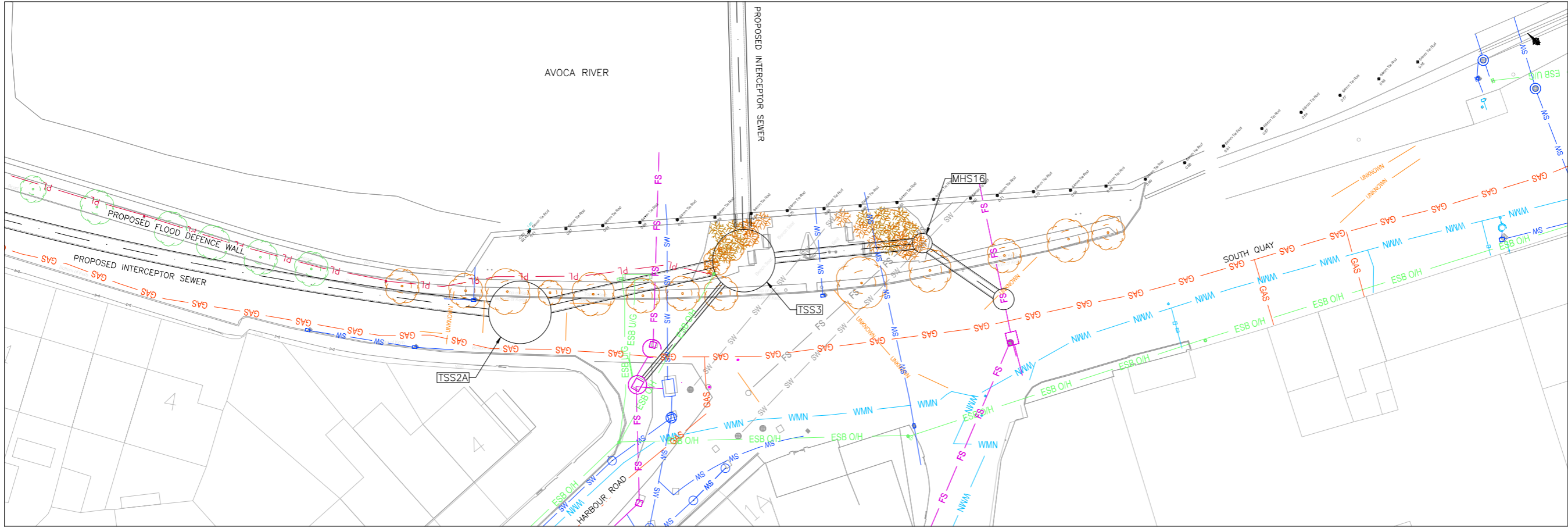
Drawing Status
PLANNING

Job No 247825-00 Drawing No C-IS-1203 Issue D1

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



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
 - EXISTING SURFACE WATER
 - EXISTING WATERMAIN
 - EXISTING TELECOM
 - EXISTING PUBLIC LIGHTING
 - EXISTING ESB OVERHEAD
 - EXISTING ESB UNDERGROUND
 - EXISTING GAS MAIN
 - EXISTING VIRGIN MEDIA
 - EXISTING CHEMICAL
 - EXISTING UNKNOWN SERVICE



Job Title
ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1 AS SHOWN

Discipline CIVIL

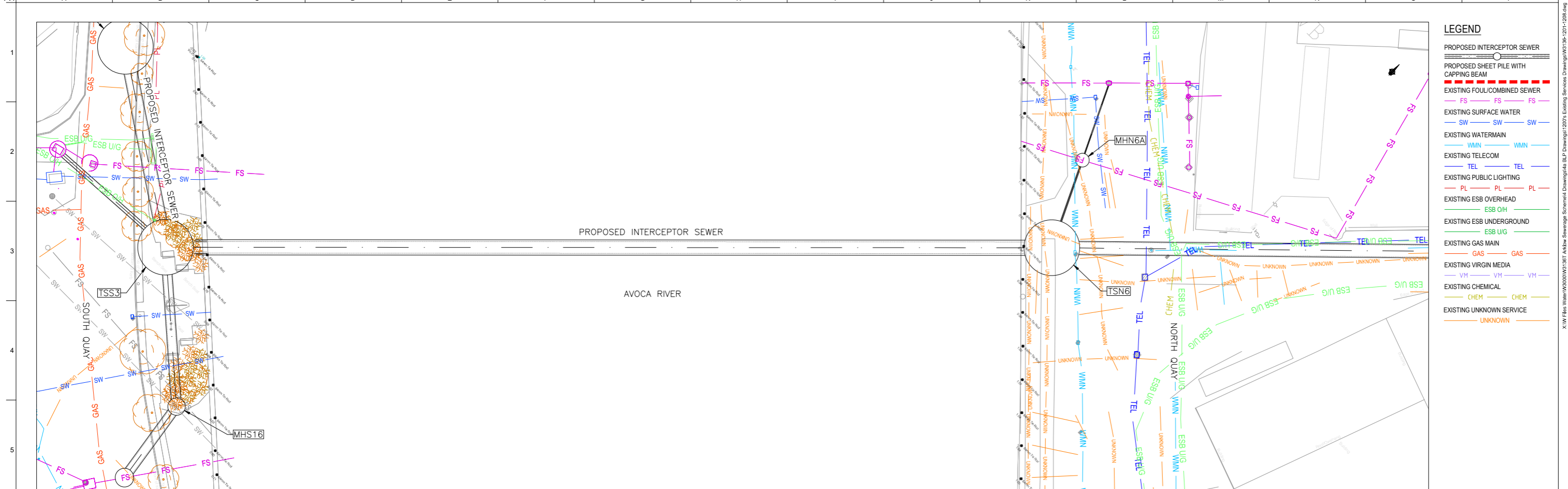


Drawing Title
EXISTING SERVICES LAYOUT PLAN 4 OF 8

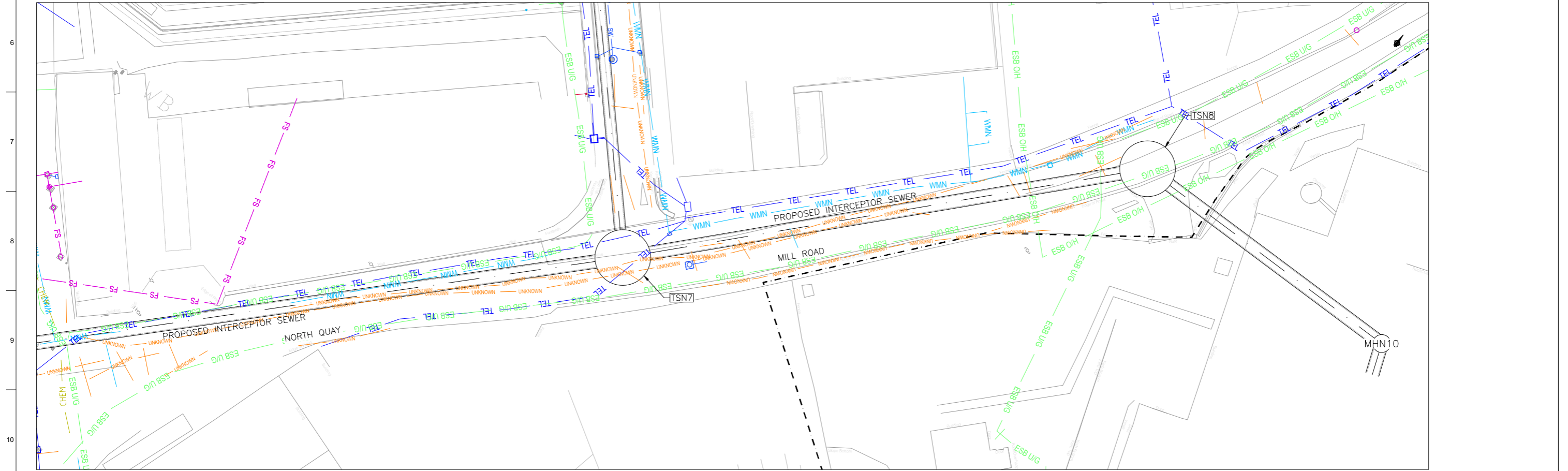
Drawing Status
PLANNING

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

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

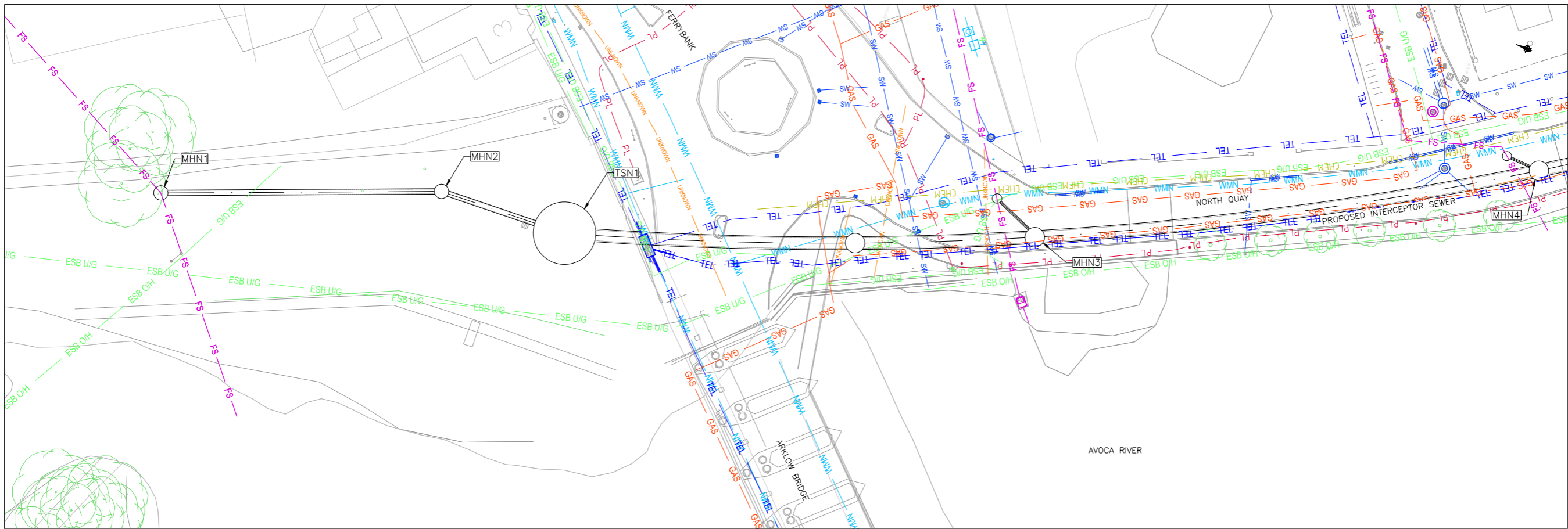


LOCATION PLAN SCALE: 1:250 © A1



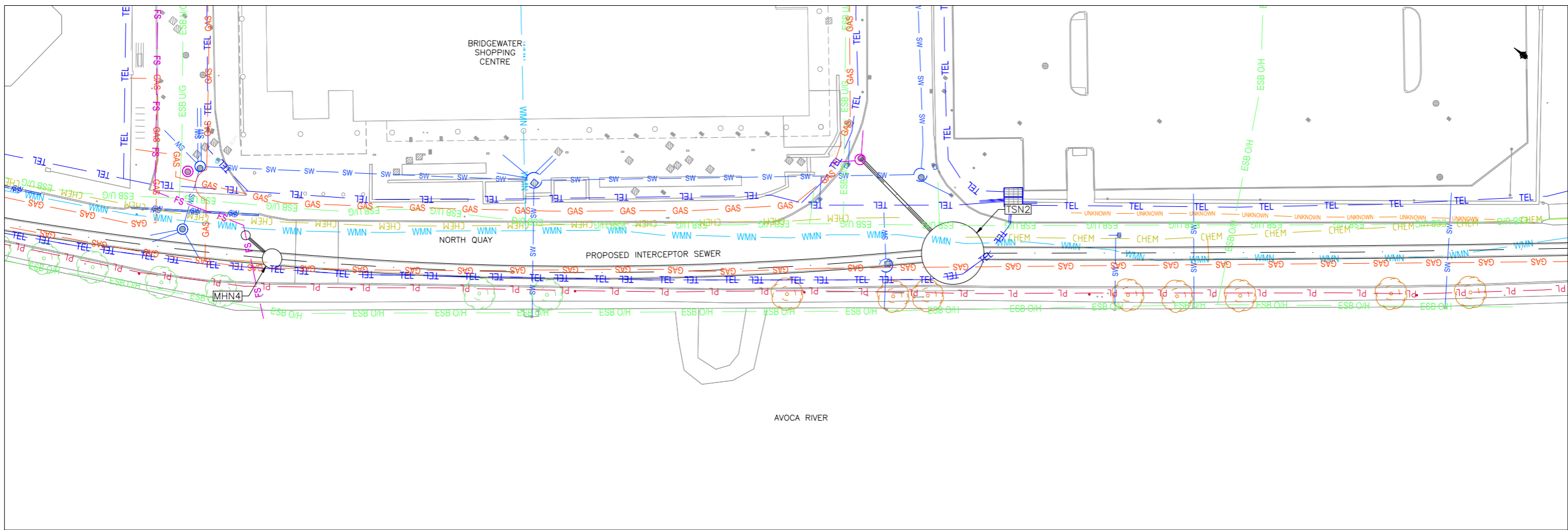
LOCATION PLAN SCALE: 1:250 © A1

<p>Client</p>		<p>Job Title</p> <p>ARKLOW WASTEWATER TREATMENT PLANT PROJECT</p>		<p>Drawing Title</p> <p>EXISTING SERVICES LAYOUT PLAN 5 OF 8</p>		<p>Drawing Status</p> <p>PLANNING</p>											
<table border="1"> <thead> <tr> <th>Issue</th> <th>Date</th> <th>By</th> <th>Chkd</th> <th>Appd</th> </tr> </thead> <tbody> <tr> <td>P1</td> <td>31/08</td> <td>MS</td> <td>DR</td> <td>ES</td> </tr> </tbody> </table>		Issue	Date	By	Chkd	Appd	P1	31/08	MS	DR	ES	<p>Scale at A1</p> <p>AS SHOWN</p>		<p>Job No</p> <p>247825-00</p>		<p>Drawing No</p> <p>C-IS-1205</p>	
Issue	Date	By	Chkd	Appd													
P1	31/08	MS	DR	ES													
		<p>Discipline</p> <p>CIVIL</p>				<p>Issue</p> <p>D1</p>											



LEGEND

- PROPOSED INTERCEPTOR SEWER
- PROPOSED SHEET PILE WITH CAPPING BEAM
- EXISTING FOUL/COMBINED SEWER
- EXISTING SURFACE WATER
- EXISTING WATERMAIN
- EXISTING TELECOM
- EXISTING PUBLIC LIGHTING
- EXISTING ESB OVERHEAD
- EXISTING ESB UNDERGROUND
- EXISTING GAS MAIN
- EXISTING VIRGIN MEDIA
- EXISTING CHEMICAL
- EXISTING UNKNOWN SERVICE



Client



Job Title
ARKLOW WASTEWATER
TREATMENT PLANT PROJECT



CLANCY MOORE ARCHITECTS

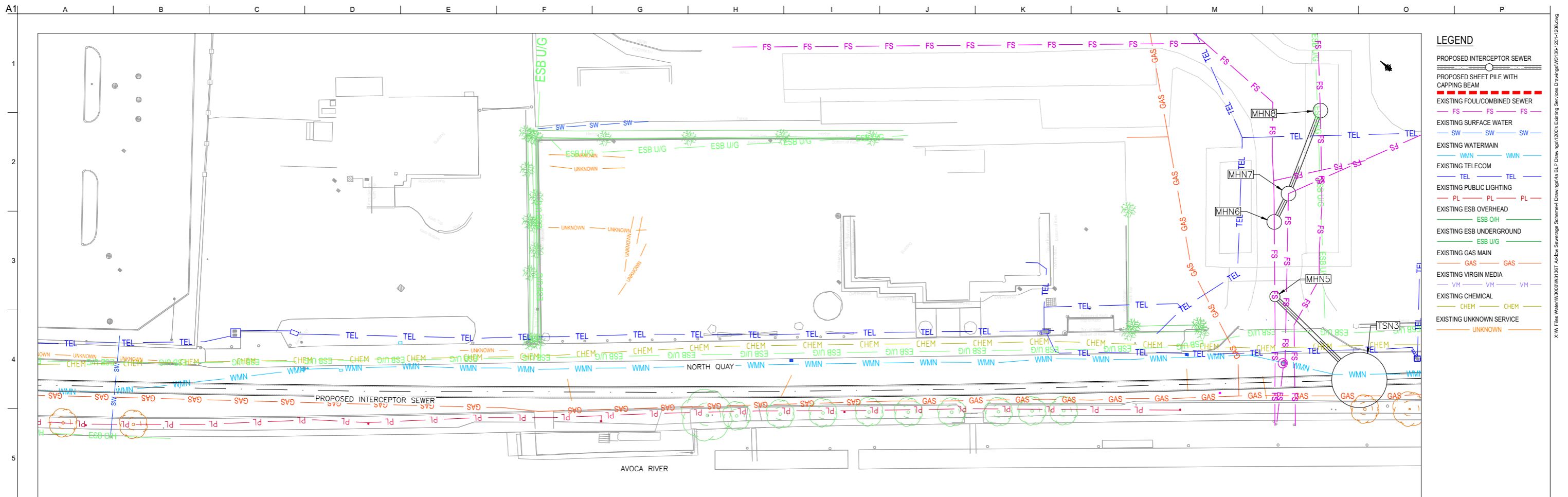
Drawing Title
EXISTING SERVICES
LAYOUT PLAN
6 OF 8

Drawing Status
PLANNING

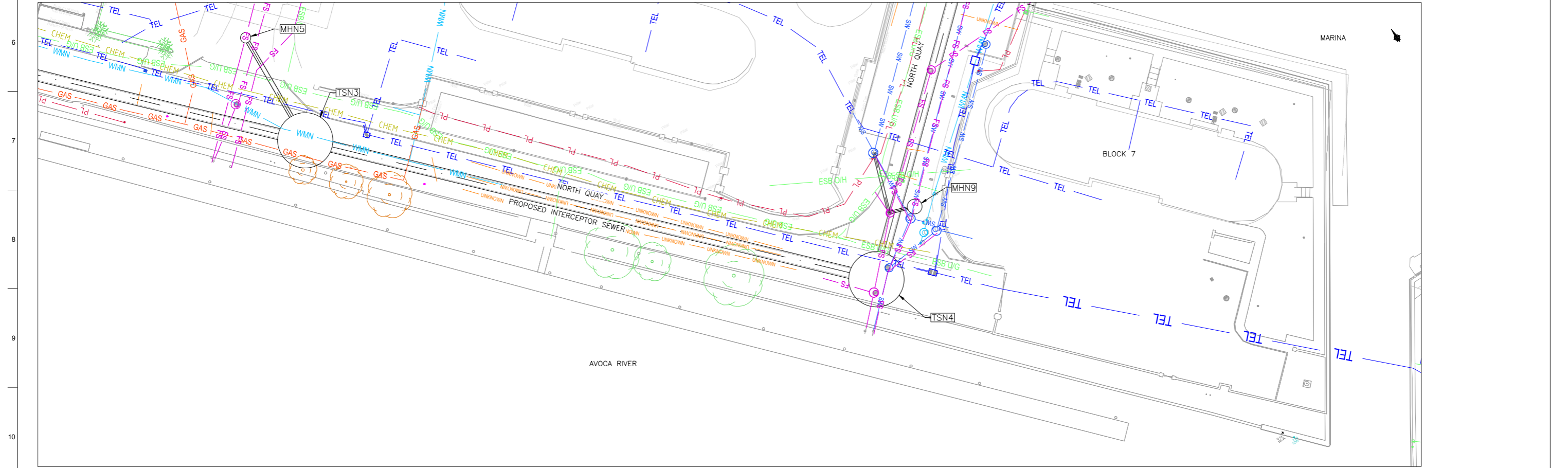
Job No	Drawing No	Issue
247825-00	C-IS-1206	D1

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

Scale at A1 AS SHOWN
Discipline CIVIL



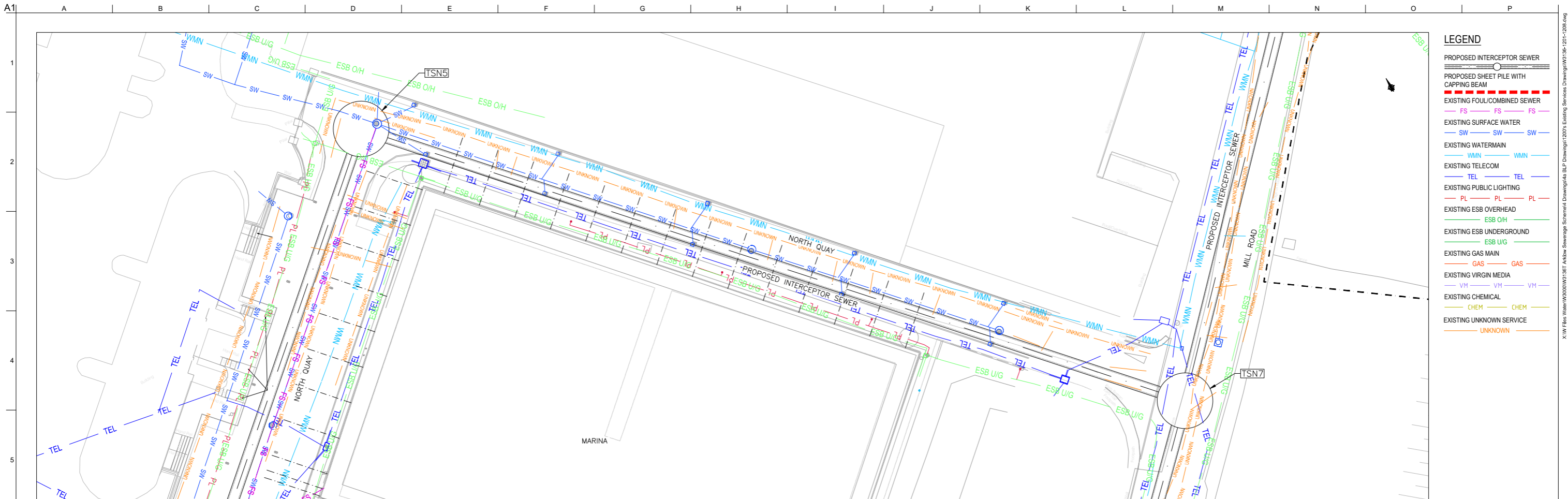
LOCATION PLAN SCALE:1:250 © A1



LOCATION PLAN SCALE:1:250 © A1

- LEGEND**
- PROPOSED INTERCEPTOR SEWER
 - PROPOSED SHEET PILE WITH CAPPING BEAM
 - EXISTING FOUL/COMBINED SEWER
 - EXISTING SURFACE WATER
 - EXISTING WATERMAIN
 - EXISTING TELECOM
 - EXISTING PUBLIC LIGHTING
 - EXISTING ESB OVERHEAD
 - EXISTING ESB UNDERGROUND
 - EXISTING GAS MAIN
 - EXISTING VIRGIN MEDIA
 - EXISTING CHEMICAL
 - EXISTING UNKNOWN SERVICE

<p>Client</p>		<p>Job Title</p> <p>ARKLOW WASTEWATER TREATMENT PLANT PROJECT</p>		<p>Drawing Title</p> <p>EXISTING SERVICES LAYOUT PLAN 7 OF 8</p>		<p>Drawing Status</p> <p>PLANNING</p>																
<table border="1"> <thead> <tr> <th>P1</th> <th>31/08</th> <th>MS</th> <th>DR</th> <th>ES</th> </tr> <tr> <th>Issue</th> <th>Date</th> <th>By</th> <th>Chkd</th> <th>Appd</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>		P1	31/08	MS	DR	ES	Issue	Date	By	Chkd	Appd						<p>Scale at A1 AS SHOWN</p>		<p>Job No</p> <p>247825-00</p>		<p>Drawing No</p> <p>C-IS-1207</p>	
P1	31/08	MS	DR	ES																		
Issue	Date	By	Chkd	Appd																		
<p>Discipline</p> <p>CIVIL</p>		<p>Issue</p> <p>D1</p>		<p> </p>		<p> </p>																



LEGEND

- PROPOSED INTERCEPTOR SEWER
- PROPOSED SHEET PILE WITH CAPPING BEAM
- EXISTING FOUL/COMBINED SEWER
- EXISTING SURFACE WATER
- EXISTING WATERMAIN
- EXISTING TELECOM
- EXISTING PUBLIC LIGHTING
- EXISTING ESB OVERHEAD
- EXISTING ESB UNDERGROUND
- EXISTING GAS MAIN
- EXISTING VIRGIN MEDIA
- EXISTING CHEMICAL
- EXISTING UNKNOWN SERVICE

LOCATION PLAN SCALE:1:250 © A1



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

Client



Job Title
ARKLOW WASTEWATER TREATMENT PLANT PROJECT

Scale at A1 AS SHOWN
Discipline CIVIL

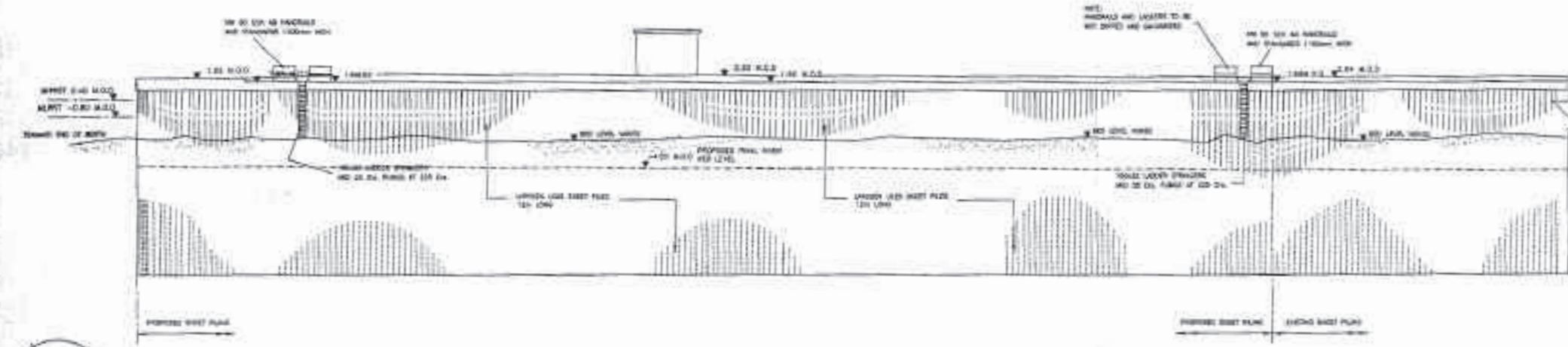
ARUP BYRNELOOBY
CLANCY MOORE ARCHITECTS

Drawing Title
EXISTING SERVICES LAYOUT PLAN
8 OF 8

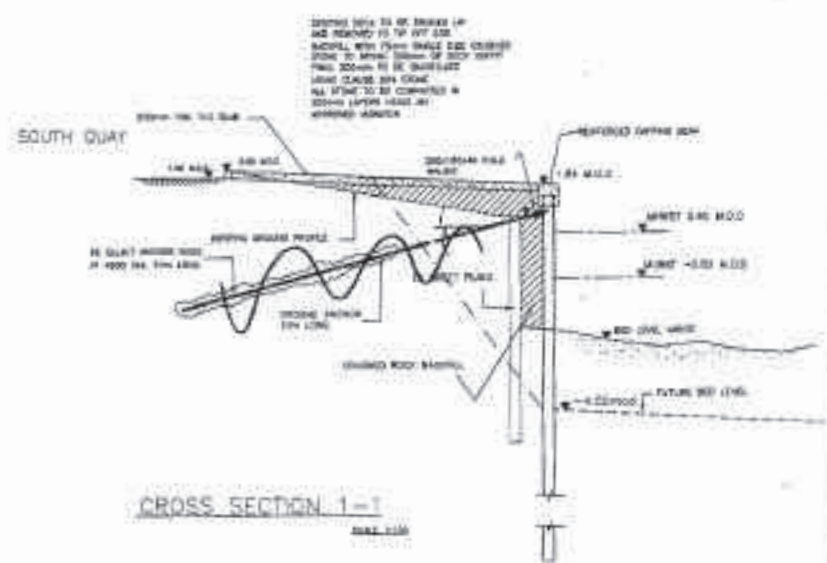
Drawing Status	Job No	Drawing No	Issue
PLANNING	247825-00	C-IS-1208	D1

Appendix C

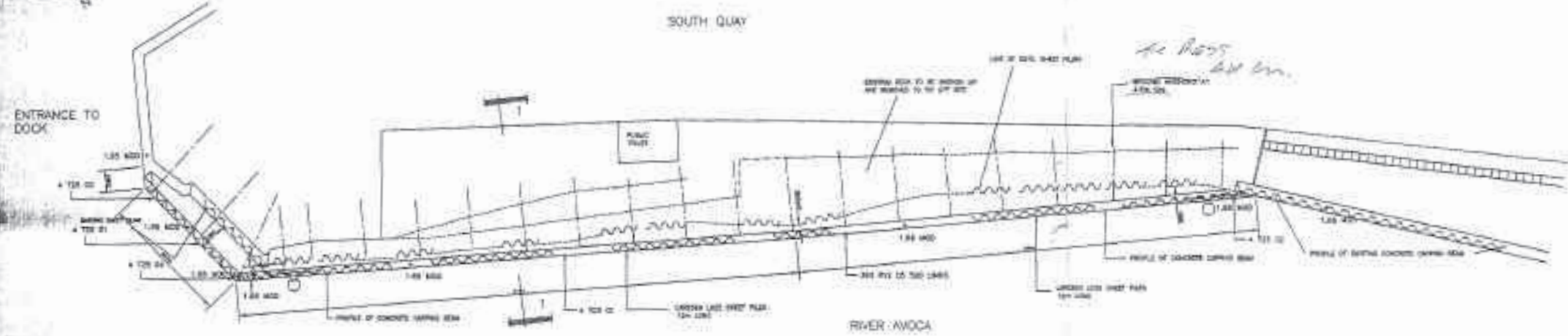
As-Built Piling Drawings



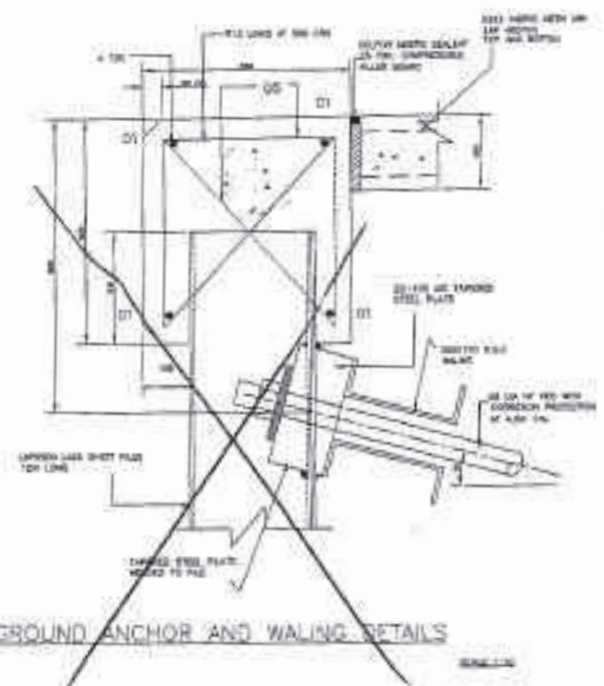
ELEVATION OF SOUTH QUAY LAY-BY-BERTH



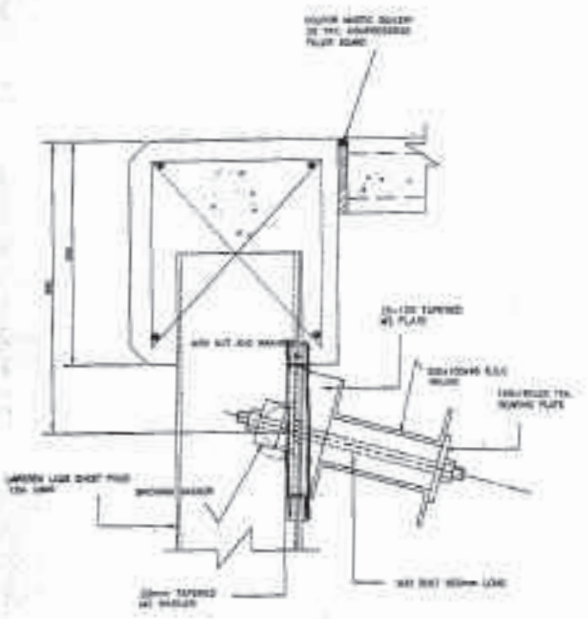
CROSS SECTION 1-1



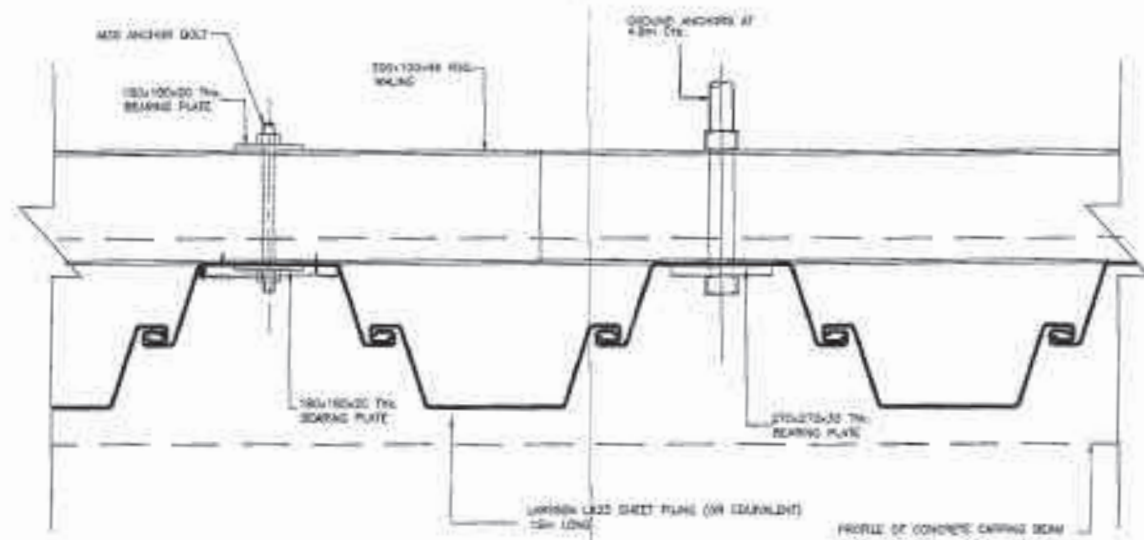
PLAN OF LAY-BY-BERTH AT SOUTH QUAY



GROUND ANCHOR AND WALING DETAILS

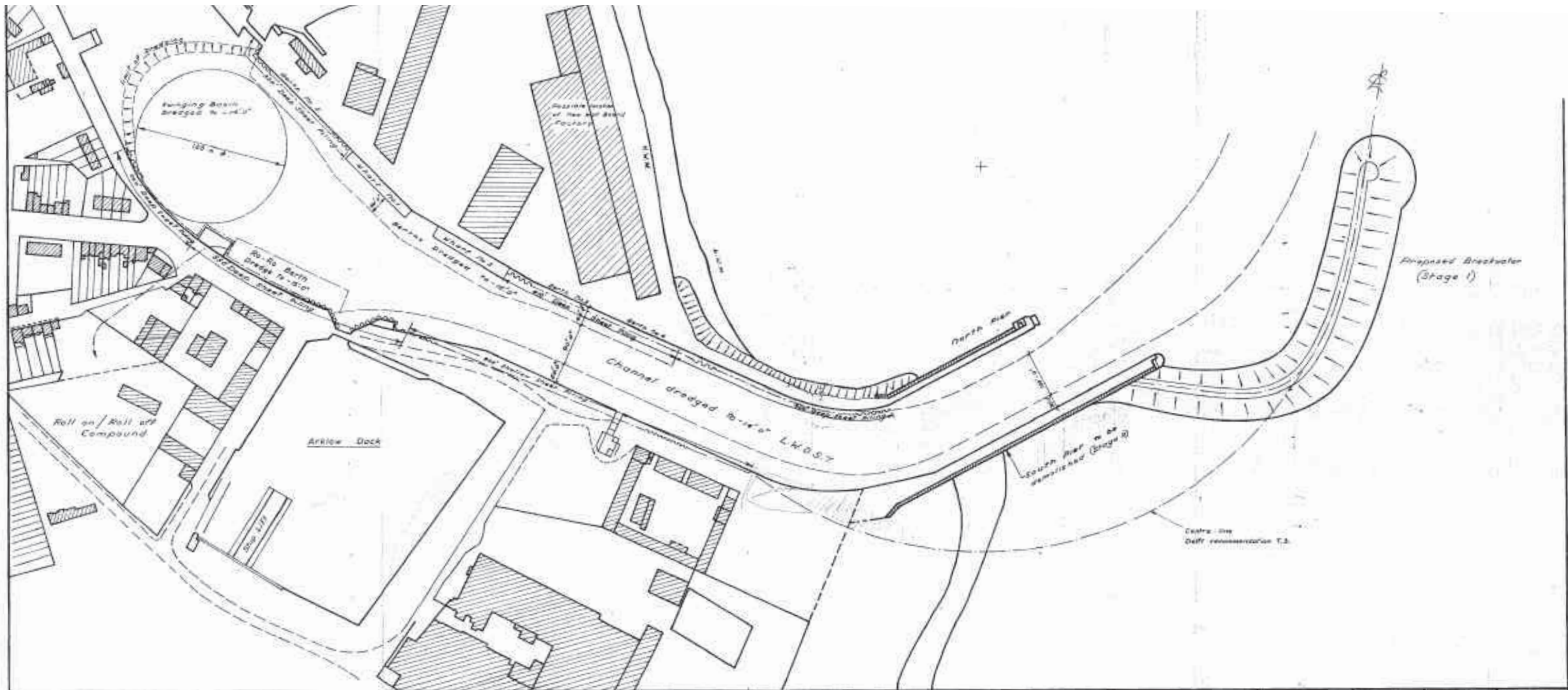


FIXING BOLT DETAILS WALING TO SHEET PILING



ENLARGED DETAILS

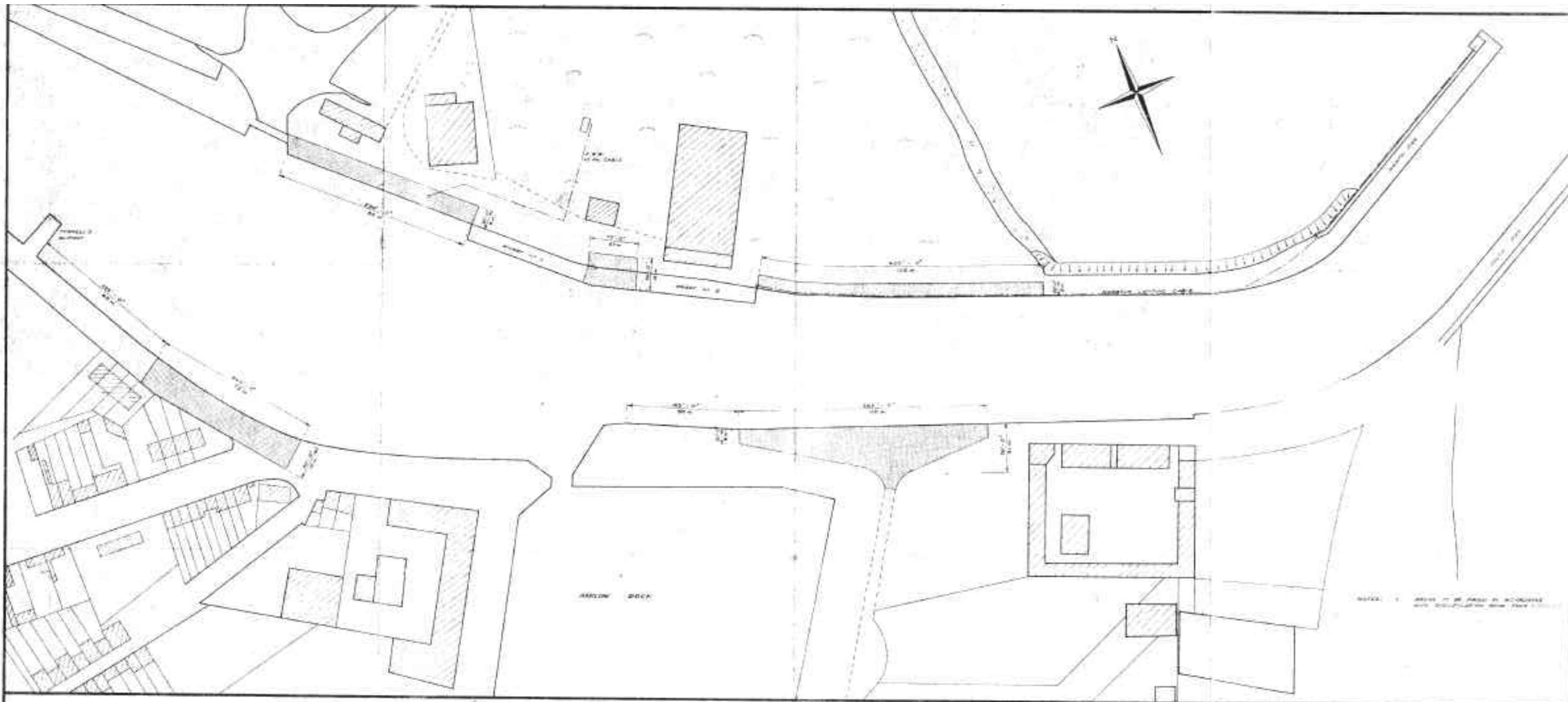
REV.	DATE	SEC.	BY	CHK
A	23.6.05	REBAR DETAILS ADDED		
J.P. BYRNE & PARTNERS CONSULTING ENGINEERS BRUNEL HOUSE, NORTH QUAY, ARKLOW.				
FAX NO. (0402) 39336		TEL. (0402) 39656/39481		
DRN	J.L.D.H.	CLIENT	ARKLOW HARBOUR BOARD	
CH	D.B.	PROJECT	REMEDIAL WORKS TO ARKLOW HARBOUR	
DATE	21.7.04	TITLE	DETAILS OF SHEET PILING TO LAY-BY BERTH AT SOUTH QUAY	
SCALE	1:200 1:20 1:10	DRG NO.	CL-S-806/06	CAD NO. 60306
				REV. A



Arklow Harbour Development
General layout Plan

M^{rs} Cobe & Delaney
Civil Engineering Consultants
21 Northumberland Road,
Dublin 4.

Drawn By	Scale	Date	Proj. No.
N. Boyle	1:1250	22 nd Aug '71	7119/5
Checked By			
Blair			



ARKLOW HARBOUR DEVELOPMENT

Paving Detail

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

Drawn by	Scale	Date	Orig. No.
<i>ML</i>	1/200	21-12-72	7225/1