

## Contents

List of Figures.....	i
List of Plates.....	i
Abstract .....	iii
1. Introduction.....	1
1.1 General .....	1
1.2 Conventions, Legislation and Guidelines.....	1
2. Receiving Environment.....	2
2.1 Location .....	2
2.2 Soils and Geology .....	2
3. Scope of Works.....	2
4. Methodology .....	3
4.1 Desktop Study.....	3
4.2 Intertidal and Metal Detection Survey .....	4
4.3 Dive Survey .....	4
5. Desktop Study.....	5
5.1 Historical and Archaeological Overview.....	5
5.2 Recorded Monuments and known sites: RMPs and SMRs.....	13
5.3 Previous Archaeological Work.....	14
5.4 Cartographic Evidence.....	15
5.5 Ships, Shipping and Shipwrecks – Maritime Limerick .....	21
6. Site Inspection .....	23
6.1 Dive Survey .....	23
6.2 Wade and metal detection Survey .....	27
7. Impacts .....	33
Area 2: Baal’s Bridge to Absolute Hotel boardwalk .....	33
Area 3: Northwest King’s Island Outfall and Fishermen’s Access .....	33
Area 1: King John’s Castle to Curragour Boat Club.....	33
8. Mitigation Measures .....	34
Area 2: Baal’s Bridge to Absolute Hotel boardwalk .....	34
Area 3: Northwest King’s Island Outfall and Fishermen’s Access .....	34
Area 1: King John’s Castle to Curragour Boat Club.....	34
9. Bibliography.....	34
9.1 Documentary Sources .....	34
9.2 Cartographic Sources.....	36
9.2 Other Sources .....	36

10. Appendices .....	37
Appendix 1: RMPs and SMRs.....	37
Appendix 2: Shipwrecks and Underwater Cultural Heritage.....	43
Appendix 3: Previous Excavations.....	44

## List of Figures

Figure 1 View of Limerick, looking north-east, 1685, by Thomas Phillips (National Library of Ireland; Irish Historic Towns Atlas 2010).....	6
Figure 2 Plan of New Quay, c. 1764 (Leonard Collection at the University of Limerick Glucksman Library; Irish Historic Towns Atlas 2010).....	7
Figure 3 View of Arthur's Quay, c. 1860, by Charles Mills (Jim Kemmy Municipal Museum, Limerick; Irish Historic Towns Atlas 2010).....	7
Figure 4 King John's Castle and old Thomond Bridge, T. Creswick and J.J. Hinchliff (in Hall 1841-3). Note the water wheel beside the south-west castle tower to the right.....	8
Figure 5 The Newgate Brewery of Messrs Fitt and Sons from George Measom's Railway Guide (1866).....	9
Figure 6 Extract from Phillips' View, 1685, showing Thomond Bridge and King John's Castle.....	11
Figure 7 (Left) Extract from Phillips' View, 1685 showing Baal's Bridge.....	12
Figure 8 (Right) View of Baal's Bridge, c. 1820, James Henry Brocas (National Gallery of Ireland; Irish Historic Towns Atlas 2010).....	12
Figure 9 (Left) View from Bank Place, Limerick, looking north-west towards Mathew Bridge, 1821, by Turner de Long (Lowell Libson Ltd; Irish Historic Towns Atlas 2010).....	13
Figure 10 Limerick, 1587 (The National Archives: Public Record Office; Irish Historic Towns Atlas 2010).....	18
Figure 11 Limerick, 1610, by John Speed (Irish Historic Towns Atlas 2010).....	18
Figure 12 Limerick, 1633 (Pacata Hibernia 2; Irish Historic Towns Atlas 2010).....	19
Figure 13 Extract from Limerick, 1651, by William Webb (Worcester College, Oxford; Irish Historic Towns Atlas 2010).....	19
Figure 14 Phillip's plan of Limerick, 1685 (Irish Historic Towns Atlas 2010).....	20
Figure 15 Extract from Eyre's plan of Limerick, 1752 (Irish Historic Towns Atlas, 2010).....	20
Figure 16 Colles' map of Limerick, 1769 (Irish Historic Towns Atlas).....	21
Figure 17 Corbett's map of Limerick, 1865 (Irish Historic Towns Atlas).....	21

## List of Plates

Plate 1 Site location map, with the three UAIA survey areas encircled in red.....	3
Plate 2 (left) Wade survey along the foreshore, southwest of King John's Castle. Taken from north.....	4
Plate 3 (right) Dive survey underway at northwest King's Island, showing archaeologist following parallel lines within the shallow water.....	4
Plate 4 View of Limerick, looking south-east, c. 1900 (Lawrence Collection, National Library of Ireland; Irish Historic Towns Atlas).....	9
Plate 5 Thomond Bridge and King John's Castle, Limerick City, Co. Limerick by Alexander Campbell Morgan, April 1956 (NLI). Note the buildings immediately atop the quay wall to the south (right) of the King John's Castle.....	10
Plate 6 (Right) Photograph of Old Park Bridge (Old Limerick).....	13
Plate 7 Baal's Bridge taken from east.....	25
Plate 8 Quay wall between Baal's Bridge and Abbey Bridge, showing two distinct construction styles. Taken from south.....	25
Plate 9 View from Abbey Bridge to the boardwalk, taken from south.....	26
Plate 10 Vegetated stone cutwater under the boardwalk, taken from south.....	26
Plate 11 Fishermen's access over embankment, taken from west.....	27
Plate 12 View from northern end of survey area looking north towards Thomond bridge with King John's Castle and riverbank to right. Taken from southeast.....	30
Plate 13 Quay wall immediately south of King John's Castle, highly vegetated and with evidence of repairs, taken from north west.....	30

Plate 14 Access stairs and concrete cutwater, taken from northeast. .... 31  
Plate 15 Wall sections extending at right angles from quay wall, taken from northwest. .... 31  
Plate 16 Archway in quay wall, taken from west. .... 32  
Plate 17 View north from 'inlet' showing wall remains in the mid ground with outfall pipe at base, taken from south. .... 32

## Abstract

*Mizen Archaeology Ltd.* was engaged by Limerick City & County Council and the Office of Public Works (Flood Division) to carry out an Underwater Archaeological Impact Assessment (UAIA) of works associated with the King's Island Floor Relief Scheme (KIFRS) in Limerick, Co. Limerick. The UAIA encompassed a desktop study of the underwater environment surrounding the entirety of King's Island, as well as intertidal and dive surveys of three areas expected to be impacted by the works. The dive and intertidal surveys were completed in August 2020 under licence from National Monuments Service.

Three distinct areas were identified for underwater archaeological assessment:

- 1) Area 1: A section of the Shannon riverbed which will be utilized by jack-up rigs to facilitate pointing and grouting works to the quay walls, from King John's Castle to the Curragour Boat Club.
- 2) Area 2: A section of the Abbey riverbed between Baal's Bridge to the northern end of the boardwalk at the Absolute Hotel upstream from Abbey Bridge.
- 3) Area 3: A storm sewer outfall and fishermen's access ramp at the NW corner of King's Island.

The surveys identified features associated with medieval mills within the intertidal zone in Area 1 and a possible stone and wood cutwater or support in Area 2. As the anticipated impact on the riverbed in Areas 1 and 2 is to be minimal, no mitigation measures are deemed necessary. At the northwest corner of the island, at survey Area 3, excavation works will take place in the riverbed and bank; archaeological monitoring of the groundworks in that location for the works is therefore recommended. The monitoring should be carried out by an archaeologist with experience in underwater archaeology to ensure identification of any material that may be recovered from the river and be in a position to deal with that material.

## 1. Introduction

### 1.1 General

*Mizen Archaeology Ltd.* was engaged by Limerick City & County Council and the Office of Public Works (Flood Division) to carry out an Underwater Archaeological Impact Assessment (UAIA) of works associated with the King's Island Flood Relief Scheme (KIFRS) in Limerick, Co. Limerick. The UAIA encompasses a desktop study of the underwater environment surrounding the entirety of King's Island, as well as intertidal and dive surveys of sites expected to be impacted by the works. The aim of the assessment was to determine the significance of the known archaeology, identify any previously unrecorded archaeology on the riverbed, to assess the potential for discovering previously unrecorded archaeology during construction works and to recommend mitigation measures to minimise negative impacts on any archaeological or architectural heritage features. The dive and intertidal surveys were completed in August 2020 under licence from the National Monuments Service.

### 1.2 Conventions, Legislation and Guidelines

The UAIA was undertaken with due regard to the following national and international protective conventions, guidelines and legislation:

- National Monument Act, 1930, amended 1954, 1987, 1994, and 2004
- Heritage Act, 1995
- National Cultural Institutions Act, 1997
- The Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous) Provisions Act, 1999
- *Framework and Principles for the Protection of the Archaeological Heritage*, 1999, Departments of Arts, Heritage, Gaeltacht and the Islands
- Local Government (Planning and Development) Act, 2000
- European Convention on the Protection of the Archaeological Heritage (the 'Valletta Convention') ratified by Ireland in 1997
- Council of Europe Convention on the Protection of Architectural Heritage of Europe (the 'Granada Convention') ratified by Ireland in 1997
- International Council on Monuments and Sites (ICOMOS), advisory body to UNESCO concerning protection of sites and recommendation of World Heritage sites ratified by Ireland in 1992.
- UNESCO Convention on the Protection of the Underwater Cultural Heritage, 2001.

## 2. Receiving Environment

### 2.1 Location

Limerick city is situated at the lowest fording point of the River Shannon, at the head of the 113km-long Shannon estuary. The river is tidal at and below Limerick. The city is partially built on King's Island, in the great bend of the Shannon, where the river's north-south course turns west, via an inverted U-shaped loop, into the Shannon estuary. King's Island is bounded on the east by the Abbey River, c. 25m wide at its narrowest point at Baal's Bridge, and on the west bank by the Shannon c. 120m wide at its bridging point at Thomond Bridge. Below Thomond Bridge, the river is crossed by the natural barrier of the rapids of Curragour.

### 2.2 Soils and Geology

There are two common soil compositions in the region of King's Island. The first has is composed of 50% gleys, 40% acid brown earths and 10% inter-drumlin peat and peaty gleys. The second is composed of 60% gleys, 20% brown earths, and 20% peaty gleys. The bedrock types in Limerick are Viséan limestone & calcareous mudstone, and Carboniferous volcanic rocks.

## 3. Scope of Works

The Flood Relief Scheme envisages raising the embankments around the north of the island and raising the height of the walls along the quays. Generally, there are no works on the foreshore or river, except at one location at the NW of the island. However, barges or jack-up rigs will be used to facilitate pointing and grouting works to the quay walls, from King John's Castle to the Curragour Boat Club and from Baal's Bridge to the northern end of the boardwalk at the Absolute Hotel, upstream from the Abbey Bridge within the Abbey River. The stretch in the Abbey River from Baal's Bridge to the Potato Market is not included as it was subject to archaeological investigation during the Main Drainage Scheme 1999. Works at the third area of investigation consist of a storm sewer outfall and a fishermen's access ramp at the NW corner of King's Island.

The proposed jack-up barge has four supporting legs, each with a 1.5m x 1.5m base plate, which will be placed on the riverbed in order to provide support to the barge. A netting apron will be suspended off the side of the barge, in order to prevent debris from falling into the river. The barge does not require any anchoring. As the works progress the rig will be moved along the defence walls, requiring the legs to be repositioned.

Three distinct areas were identified for underwater archaeological assessment (Plate 1):

- 1) Area 1: A section of the Shannon riverbed which will be utilized by jack-up rigs to facilitate pointing and grouting works to the quay walls, from King John's Castle to the Curragour Boat Club
- 2) Area 2: A section of the Abbey riverbed between Baal's Bridge to the northern end of the boardwalk at the Absolute Hotel upstream from Abbey Bridge.

3) Area 3: A storm sewer outfall and fishermen's access ramp at the NW corner of King's Island.

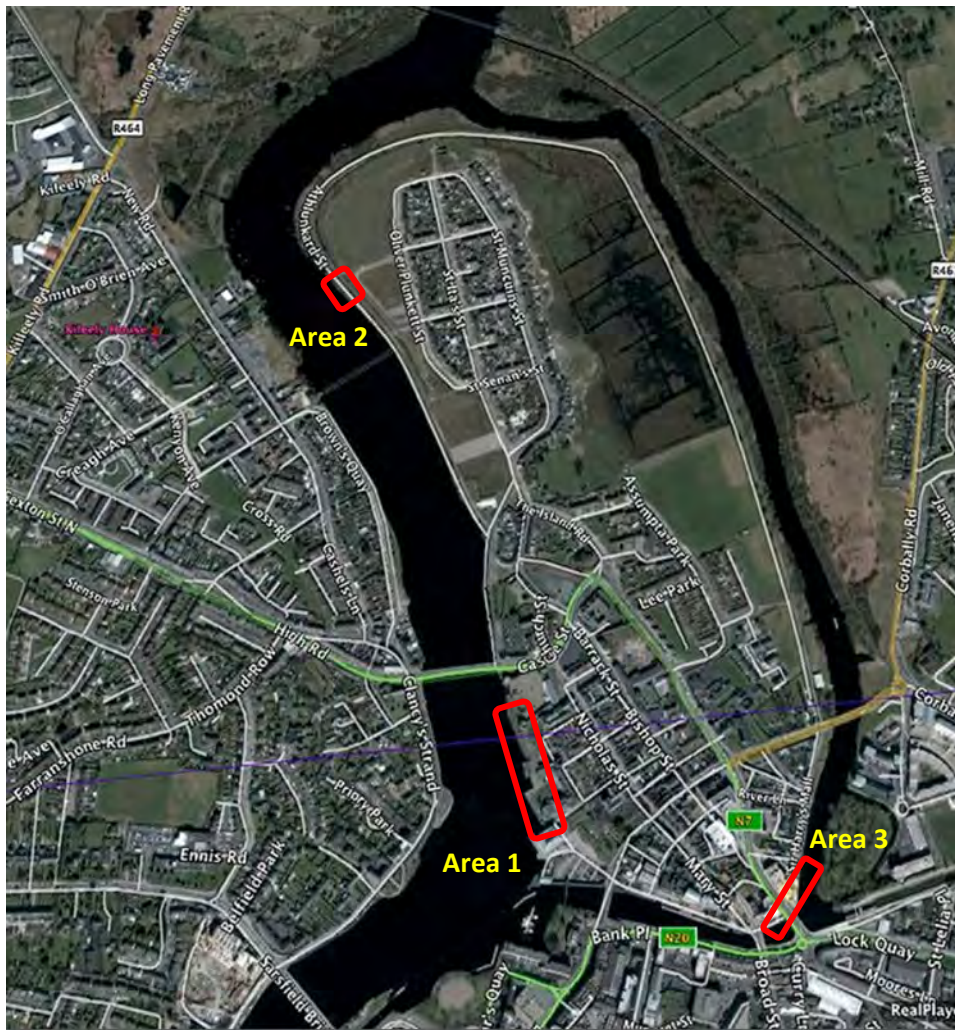


Plate 1 Site location map, with the three UAIA survey areas encircled in red.

## 4. Methodology

### 4.1 Desktop Study

The desktop study comprises an evaluation of the foreshore of the whole island. The following were consulted to complete the desktop study (refer to Bibliography for full list):

- **The Record of Monuments and Places (RMP)** compiled by the Archaeological Survey of Ireland contains lists, classifications of monuments and maps of all recorded monuments with known locations and zones of archaeological significance. The monument records are accessible online from the National Monuments Section (NMS) of the Department of Arts, Heritage and Gaeltacht (DAHG) at [www.archaeology.ie](http://www.archaeology.ie). These were used to establish the wider archaeological context of the site.
- **OSI:** Ordnance Survey Ireland historic and contemporary maps were examined to measure the changing landscape of the riverbank and the development of the island.



- **The Excavations Bulletin** online database ([www.excavations.ie](http://www.excavations.ie)), which contains summaries of all archaeological excavations in Ireland, was consulted to review archaeological investigations done previously in the area.
- **Cartography:** Relevant historic maps and charts were assessed to inform the areas under assessment.
- **Aerial Photography:** A variety of low and high-altitude aerial photography was examined.
- **Documentary sources:** Key journalistic, historical and local sources were examined.
- **Shipwrecks:** The National Monuments Service’s Wreck Inventory of Ireland Database (WIID) and Wreck Viewer were assessed to inform any known or potential locations for wreck archaeology or associated material from the areas under assessment.

#### 4.2 Intertidal and Metal Detection Survey

Wade and metal detection survey was carried out by two experienced underwater archaeologists, including along the riverbanks and areas to be impacted by the jack-up rigs/spud-leg barges and any other works that will impact the riverbed. The survey was carried out on the stretch from Curragour Boat Club to King John’s Castle at low tide.

#### 4.3 Dive Survey

Mizen dive team comprised a four-person team with lead diver and three support archaeological personnel. All divers hold HSA parts III and IV commercial diving qualifications and HSA in-date dive medicals. Diving operations complied with the Health and Safety Authority’s ‘Safety, Health and Welfare at Work (Diving) Regulations 2018 & 2019’. The methodology employed entailed the archaeologists following parallel lines 4m apart that ensured full overlap and 100% coverage of the entire area that is to be used by the spud-leg barges.



*Plate 2 (left) Wade survey along the foreshore, southwest of King John's Castle. Taken from north.*

*Plate 3 (right) Dive survey underway at northwest King's Island, showing archaeologist following parallel lines within the shallow water.*

## 5. Desktop Study

### 5.1 Historical and Archaeological Overview

In AD 922, a Viking raid by Tomar Mac Elgi landed on '*Inish Sibthón*' and set up camp on the modern King's Island, which has been accredited historically as representing the origins of the city of Limerick. '*Inis Sibthón*' later became known as King's Island (Wiggins 2000, 13). From his base at '*Inis Sibthón*', Tomar raided all the holy places on the Shannon from Lough Derg to Lough Ree. Eight years after Tomar set up camp, another Danish fleet, led by Ivar (Imar) landed and joined forces with the established camp to subdue the surrounding country. Hodkinson imagines King's Island as it would have appeared to the Viking settlers: "...probably more or less empty of settlement, the Abbey River, now canalised by George's and Charlotte's Quays, would have been much wider, while the Shannon shoreline would have been back towards the Cathedral side of Merchant's Quay." The Annals refer to two harbours in the 10<sup>th</sup> century, *cuan Lumnigh* and *cun iartarach Lumnigh*. It is possible that these refer to the two settlements at Limerick: an earlier *longphort* upriver at Athlunkard and the settlement on King's Island (2002, 1).

Viking control of King's Island waned in the mid-10<sup>th</sup> century AD, and the Ua Briain dominated the region from AD 967 to 1199 (O'Flaherty 2010, 1). In the year 1175 AD, the arrival of the Anglo-Normans, under Raymond le Gros, led to further conflict. When the Anglo-Normans first reached Limerick, they found it surrounded by a river, a wall and a moat, which could only be reached by a difficult ford. The town walls overhung the riverbank. A contour survey of the Abbey riverbed carried out in connection with archaeological works for the Limerick Main Drainage has shown that the shallowest point is in the Baal's Bridge area. This fact, along with the concentration of finds in the riverbed there, points to it potentially being the location of the fording point (Ibid., 2).

The first Anglo-Norman occupation lasted only a year, but they did seem to have built a wooden bridge, thought to be located where Baal's Bridge stands now. Although accounts record that the Anglo-Normans entered the town in 1175 by fording the river, it was said that they left in 1176 by a bridge (O'Flaherty 2010, 2). After they were besieged by Domnall Mór O'Brien, the Anglo-Normans fled Limerick and the Irish broke the wooden bridge behind them. The Anglo-Normans did not return until after the death of Domnall Mór in 1194 (*ibid.*). The town was granted a charter shortly afterwards, in 1197 AD (*ibid.*).

In the 13<sup>th</sup> century, the core settlement area around King John's castle on King's Island became known as English town, largely due to the re-fortifying of the town and wall by the Normans. Production in the medieval town focused mainly on milling and fisheries, making the most of the riverine resources surrounding the settlement (O'Flaherty 2010, 3). The rapids at Curragour supported a fishery and a system of watermills were to be found at Merchant's Quay. The mills and fisheries were sufficiently well established to have been the

source of contention between the church and the state around 1200 AD. Excavations revealed a two-stage construction process, with the earlier phase of quays and piers dating to the 13<sup>th</sup> century. The mills were in close proximity to the harbour and cathedral precinct, in what would have been the centre of the town (Ibid.). A local story featuring the Abbey River in the 14<sup>th</sup> century relates that, prior to John Budston gifting the cathedral bells in 1401 to the city, the former bells of St. Mary's had been thrown into the river to save them from being plundered. Those original silver bells, tradition tells, remain to be discovered (Westropp 1916, 20). By the 1680s, the site of Merchant's Quay - then known as the Quay or Great Quay - had an entrance that was one hundred feet across and was guarded by two towers, the taller of which was to the south. It was the only quay which fronted onto the Long Dock. It possessed a quay wall that extended 600 feet westwards from Quay Lane Gate and which was built in two levels (Spellissy 1998, 119; Fig. 1).



*Figure 1 View of Limerick, looking north-east, 1685, by Thomas Phillips (National Library of Ireland; Irish Historic Towns Atlas 2010).*

By 1752, drainage works had taken place east of the old Franciscan friary, reclaiming land at the south-east of King's Island. The drainage and reclamation works are shown on Eyre's plan of Limerick (O'Flaherty 2010, 8). In 1760, the town walls were in disrepair. Limerick was stripped of its status as a garrison town and demolition of its wall began, accompanied by an extensive building programme (IWTN). The initial focus of the building programme was on the construction of a regular line of quays on either side of Baal's Bridge. The c. 1764 new quay plan shows the development at a halfway stage (Fig. 2). From 1760, the walls and gates between Baal's Bridge and Merchants Quay had been removed and a new quay, George's Quay was partially built. By 1769, the early 18<sup>th</sup>-century quays and medieval mills had been replaced by the regular line of Charlotte's Quay and Custom House Quay (O'Flaherty 2010).



Figure 2 Plan of New Quay, c. 1764 (Leonard Collection at the University of Limerick Glucksman Library; Irish Historic Towns Atlas 2010)

In the early 19th century, a costly plan to canalise the Abbey River by building an enormous weir and lock at Hellsgate Island had been adopted. By 1840, when the construction was already quite advanced, the plan was abandoned. In 1843, the Potato Market was built on the site of the medieval Long Dock by the Reformed Corporation. A view of Arthur's Quay, c. 1860, done by Charles Mills, shows how heavily the channels and intertidal banks of the rivers were utilised well into the 19<sup>th</sup> century (Fig. 3).



Figure 3 View of Arthur's Quay, c. 1860, by Charles Mills (Jim Kemmy Municipal Museum, Limerick; Irish Historic Towns Atlas 2010).

## Mills

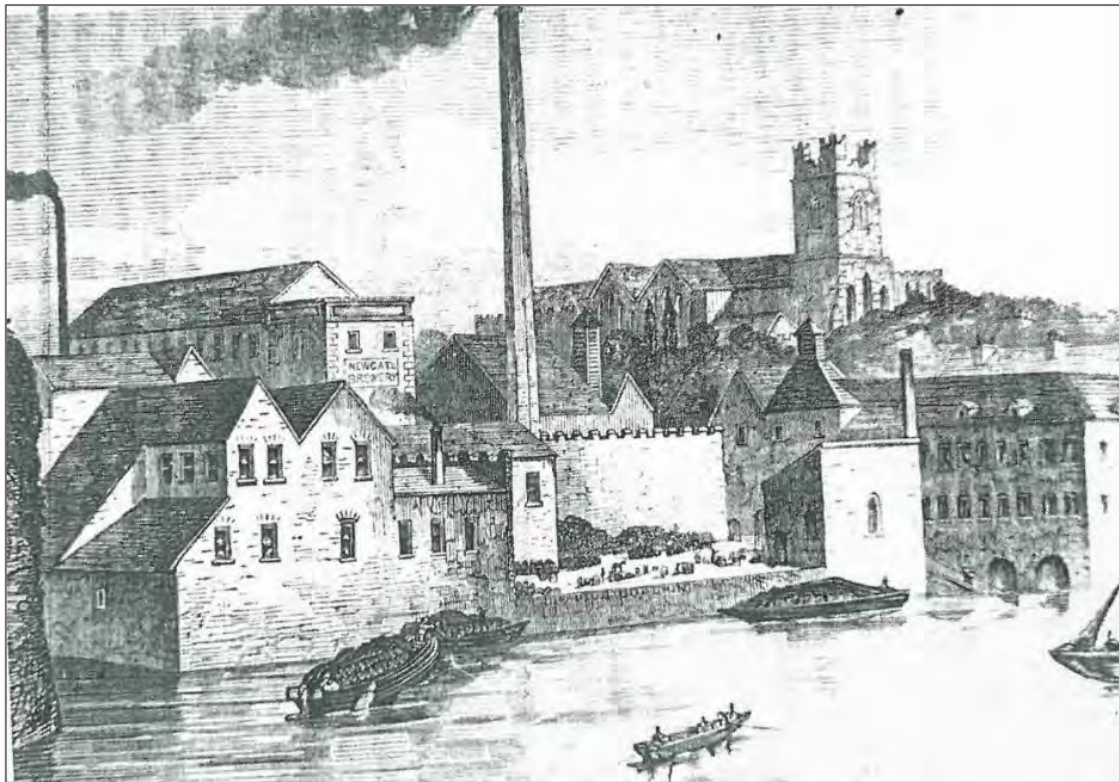
There is ample evidence for mills along the courses of both the Shannon and the Abbey Rivers. Mills extending into the Abbey River south of King's Island, visible on the Hardiman map, were referenced as the 'little mills' as early as 1477, while the mills at Newgate Lane, beside the Shannon, were likely even earlier (O'Flaherty 2010, 4; Fig. 4).

O'Flaherty (2010) makes numerous references to mills along the Shannon which, despite changing in name over the years, seem to refer to a single site. Some of the names include: King's mills, Royal Mills, Queen's Mill, Bentley's Mills, Upper Mills, Curragour Mills, Earl's Mills, Golding's Mills, Thomas Arthur's Mills, Maurice Joy's Mill, and Golden Mill. An inquisition of 1615 mentions, 'two mills called the King's Mills' under one roof in the west part of the city walls betwixt the said city weir and the rock called Corrogower upon the R. Shannon, near the King's Castle of Limerick.' In 1654, the mill along the Shannon was described as a: 'stone house or castle of Curragowre with two mills therein seated' (O'Flaherty 2010, 27). Around 1739, the Newgate City Brewery was partly incorporated into these mills (Fig. 5).

By 1900, the mills that were on either side of the Shannon for hundreds of years were gone. Nolan's Cottages were constructed on the foundations of one of the breweries to the east of the former mill on the eastern side of the Shannon. These cottages and other quayside structures are visible on photographs from c. 1900 and from 1956 (Plates 4 & 5). Notably portions of the former mill walls, which were recorded during the wade survey, are visible below the cottages, extending out from the quay wall.



*Figure 4 King John's Castle and old Thomond Bridge, T. Creswick and J.J. Hinchliff (in Hall 1841-3). Note the water wheel beside the south-west castle tower to the right.*



*Figure 5 The Newgate Brewery of Messrs Fitt and Sons from George Measom's Railway Guide (1866).*



*Plate 4 View of Limerick, looking south-east, c. 1900 (Lawrence Collection, National Library of Ireland; Irish Historic Towns Atlas).*



*Plate 5 Thomond Bridge and King John's Castle, Limerick City, Co. Limerick by Alexander Campbell Morgan, April 1956 (NLI). Note the buildings immediately atop the quay wall to the south (right) of the King John's Castle.*

## **Bridges**

Prior to its replacement in 1840, the Old Thomond Bridge had 14 arches (Fig. 6), which were turned on wicker work, a system adopted by both Norman and native castle builders. The bridge was a little over 150 yards in length and there was a fortified gatehouse at the city end, which was known as Thomondgate. The date of construction of the Old Thomond Bridge is typically given as 1210 AD, but both the date of construction and the construction type are subject to scholarly debate. Lenihan, Barry and O'Keeffe & Simington attribute the stone bridge removed in 1840 - or portions of it - to the time of King John (Barry 1909, 9; O'Keeffe & Simington 1991). Leask and Stalley, on the other hand, suggest that at least one wooden predecessor was erected in the 13<sup>th</sup> century and the stone bridge followed in the 14<sup>th</sup> or 15<sup>th</sup> century. Hodkinson offers a third alternative: that the bridge mentioned in the 13<sup>th</sup> century records was a trestle bridge on stone pillars and that the tower, first mentioned in the later 13<sup>th</sup> century, was a free-standing structure within the river (Hodkinson 2005). This interpretation relies on a petition by the Corporation of King's Council, translated from medieval French, which refers to a bridge of Thomond which had, 'no fully completed arches' and, 'stone pillars.' Although the petition had no date, Hodkinson assigned it to the reign of Edward III, on the basis of a reference to the Irish occupying Bunratty, which they took in 1332 AD.

Gwynn (1915, 203) records that, during the 1691 siege, the Clare end of Thomond Bridge was held by a fort, the possession of which was the cause of much conflict. After a breach in the walls, the garrison evacuated it and regained the city, blowing up the bridge behind them. O'Keeffe and Simington (1991, 143) suggest that the 11<sup>th</sup> pier from the west was the destroyed arch. The Cromwellian forces, led by General Ireton, then

bombarded the Confederate garrison in King John's Castle from the foot of Thomond Bridge. They succeeded in breaching the castle's walls and forcing a surrender (Spellissy 1998, 135). On September 22<sup>nd</sup>, 1691, a tragedy occurred during the siege. The English had taken the outworks and had driven back the garrison; a French Major, in command, ordered the drawbridge to be raised before the fugitives could enter, resulting in the death of 600 defenders through slaughter or drowning. The next day, the city parleyed for its surrender, forging the Treaty of Limerick (Westropp 1916, 21). When the present bridge was erected in 1840, on the same site as the old bridge, many artefacts dating to this tragic event were found. These included a quantity of King James II brass money found in the riverbed, near the centre arch, at the site of the former drawbridge (Barry 1909, 9; Westropp 1916, 21).



Figure 6 Extract from Phillips' View, 1685, showing Thomond Bridge and King John's Castle.

It is likely that the fording point south of King's Island had been bridged at some point prior to the construction of Baal's Bridge (Barry 1909, 11). Its situation indicates its importance as a crossing: the *Boher Mhór* - or great highway- commenced there and another road, *Boher Glas* - the green road, connected to it. Folklore tells of a 5<sup>th</sup>-century bridge on the site, which owed its name and construction to Ball, a Singland man who was converted to Christianity by St Patrick. At the very least, sources indicate that the ford was the site of the 1176 AD bridge by which the Anglo-Normans made their escape. The 14<sup>th</sup> century bridge - later called Baal's Bridge - was first mentioned in the Annals of 1361, when John de Burgh (of Galway) defeated the O'Briens and took the bridge (Barry 1909, 10; Fig. 7). The Abbey River was narrowed at Baal's Bridge through land reclamation, upon which houses were constructed, in the late-14th and early-15th centuries. By the late 16<sup>th</sup>/early 17<sup>th</sup> century, Baal's Bridge is labelled with the name 'Tide Bridge' or 'Thye Bridge', as it appeared in Speed's map of 1610 (Spellissy 1998, 168).



In 1902, the Board of Works presented a shell and large stone, both evidently fired from mortars, to the (then) new Limerick Museum. These had been taken up from the riverbed at 'Ball's Bridge' and were believed to be associated with the 1691 siege (*Limerick Chronicle*, 1902). Viscount Shannon obtained the grant of Baal's Bridge from the king and, after the surrender, leased both sides for building. It was at this time that Baal's Bridge gained 'two rows of brick house ... leaving just enough room for a horseman to pass' (Barry 1909, 10; O'Keefe & Simington 1991, 167). By the year 1759, the houses of the east side had been purchased and torn down (Barry 1909, 11; O'Flaherty 2010, 8). Early 19<sup>th</sup> century artistic renderings of the bridge show houses on the western side (Fig. 8). The houses were three storeys high, only one room in breadth, and overhung the river to their rear (Barry 1909, 10). They were purchased by the government and taken down in 1830 (*ibid.*). The following year, the Limerick Navigation Company replaced the 14<sup>th</sup>-century Baal's Bridge with a single-arch structure.



Figure 7 (Left) Extract from Phillips' View, 1685 showing Baal's Bridge.

Figure 8 (Right) View of Baal's Bridge, c. 1820, James Henry Brocas (National Gallery of Ireland; Irish Historic Towns Atlas 2010).

Prior to the erection of Mathew Bridge - originally known as New Bridge - there was a ferry between Bank Place and Quay Lane (Fig. 9). In 1762, a bridge of three arches was erected in place of the ferry, but it was considered dangerous to traffic. It was re-built between 1844 and 1864. While it was being re-built, a temporary wooden bridge was apparently put in place, as an article in the *Limerick Chronicle* dated June 1845, refers to two boys clinging to, 'the wooden pillars of the temporary bridge', after their boat had overturned upstream.



Figure 9 (Left) View from Bank Place, Limerick, looking north-west towards Mathew Bridge, 1821, by Turner de Long (Lowell Libson Ltd; Irish Historic Towns Atlas 2010).

Plate 6 (Right) Photograph of Old Park Bridge (Old Limerick).

The old Park Bridge, built c. 1798, was originally privately owned under the Corbally and Park Estate of Colonel Maunsell of Tervoe (Plate 6). It connected Sir Harry's Mall with Corbally on the eastern bank of the Abbey River. In 1830, it became public property when Athlunkard Bridge was built. Park Bridge was replaced by Bishop O'Dwyer bridge in 1931. There is reason to believe that further up the Abbey River an older bridge of plain structure with three arches was the forerunner to the Old Park Bridge. The older bridge would have connected Pennywell Lane and Hymie's Boreen, thus connecting St Patrick's and St Mary's parishes (*Limerick Chronicle*).

## 5.2 Recorded Monuments and known sites: RMPs and SMRs

There are numerous recorded monuments along the course of the rivers and along the banks of King's Island. These are detailed in Appendix A. Those directly connected with the survey areas are discussed below:

### **Baal's Bridge to the Absolute Hotel Boardwalk**

There is one recorded monument within the survey Area 2 from Baal's Bridge to the Absolute Hotel Boardwalk and that is Baal's Bridge itself (LI005-017001-), which is also registered on the National Inventory of Architectural Heritage (Reg. No. 21513031).

### **North-west King's Island**

There are no recorded monuments within Area 3 surveyed for the outfall at north-west King's Island. However, there is a bastioned, star-shaped fort (LI005-018) located c. 227m to the west, now underneath a housing estate. Historical sources record an encampment outside of the star-shaped fort and it is possible that troops from the encampment or the fort itself were utilising the river at this location.

### **King John's Castle to Curragower Boat Club**

The survey Area 1 between King John's Castle and Curragower Boat Club includes several recorded monuments. Thomond Bridge (LI005-017002-; NIAH Reg. No. 21508001) crosses the River Shannon c. 105m to the north of the survey area. King John's Castle (LI005-017014-) is located immediately northeast of the survey area. Both Thomond Bridge and King John's Castle are also National Monuments under public ownership. Direct access to the river from King John's Castle would have been via a sally port, with cartographic and visual evidence showing that there was an accessway via an arched doorway and a staircase descending to the riverbank. Contained within the survey area, there are the remains of two mills (LI005-017074- and LI005-017075) and an unclassified castle, known as Curragour Castle (LI005-017101-). Within the river itself there is a 13<sup>th</sup>-century fish weir (LI-005-110----). Approx. 45m south of the Curragour Boat Club, is located the recorded monument of a medieval battery (LI005-017073-).

### **5.3 Previous Archaeological Work**

Significant archaeological work has been carried out on King's Island previously, including works in the Shannon and Abbey Rivers. In this section, relevant reported archaeological fieldwork for the in-water impacts of the flood relief scheme are summarised. In May 2016, the mechanical excavation of 37 geotechnical trial pits was archaeological monitored by *Mizen Archaeology Ltd.*, which identified features of potential archaeological significance in 9 of the pits (O'Donoghue 2016; O'Donoghue and Hawkes 2016). These features were 'composed mainly of remnants of earlier quay walls and were found in areas alongside and underlying existing quays at Merchant's Quay/Potato Market, George's Quay and Sir Harry's Mall' (O'Donoghue 2016). This confirms the cartographic and documentary sources that show that land reclamation and the construction of the current quays in the 1760's resulted in most of the original riverbank now being located significantly inland.

Artefacts recovered from the 50 trenches excavated within the bed of the Abbey River between Matthew Bridge to Baal's Bridge, as part of the Main Drainage works, recovered objects dating from the prehistoric period (worked flint) to the post-medieval period. Several pre-Viking Age artefacts have also been recovered, including a possible Iron Age horse bit, an Early Christian bronze zoomorphic object and a spiral-headed pin. A number of Viking Age stick-pins and a coin (c. 1035 AD) minted in London for King Cnut, were also found. Medieval and post-medieval artefacts included beads, coins, horse equipment, pins, brooches, tools and weapons were recovered from the riverbed, along with a small assemblage of locally manufactured and imported medieval pottery. Fifty medieval coins dating from 1200 to 1540, largely Irish, although Scottish, French and English coins were also included. An early post-medieval (c. 1600) seal bearing the 'Lymerick Port' coat of arms, with ship depicted, was also recovered from the riverbed. Objects dating from the Williamite

siege of the city, including iron and stone cannonballs, musket balls of various sizes, gun flints, spurs, fragments of iron mortar bombs, grenades, iron bayonets and coins (Jacobite gun money), were retrieved during the archaeological excavation for the Limerick Main Drainage Scheme (O'Donovan, 2003).

Archaeological test trenching was undertaken by Celie O'Rahilly after the demolition of the City Gaol and prior to the construction of the new City and County Council's Offices. Relevant to this survey, O'Rahilly found a two arched bridge which was to the west of, and connected to, the City Wall. The bridge likely provided access to the mill, shown on cartographic records from the 16<sup>th</sup> century, which stood out in the stream of the Shannon River. A return at the end of the section of bridge may have been associated with the mill. Associated with the westernmost arch of the bridge O'Rahilly also found a tunnel that appears to be indicated on Eyres' Map of 1752 (Wiggins 2016). These features are likely associated with the mill walls identified in the wade survey (See section 6B).

The archaeological potential of the subject area is thus well documented, historically, archaeologically and cartographically (see below). Artefacts recovered from the Shannon and the Abbey Rivers numbers in their thousands and range in date from the pre-historic times to the recent past.

#### 5.4 Cartographic Evidence

The City of Limerick is well recorded in cartographic sources from the late-16<sup>th</sup> century onwards. These maps record the changes and development of the banks, inter-tidal zone, and rivers surrounding King's Island. Prominent features on the maps include the town walls, mills in the Shannon and Abbey Rivers, Thomond Bridge and Baal's Bridge. The town walls appear on some of the earliest maps of Limerick City, from the late 16<sup>th</sup> until the late 18<sup>th</sup> centuries, when the walls were dismantled. All maps show the wall extending along the riverbank to the north of Thomond Bridge, although some depictions (Hardiman, c. 1590; Goubet, 1690; Eyre, 1752; Colles, 1769) show it as veering slightly eastward, leaving a small bank between the wall and the Shannon, while others show it with the Shannon at its base (1587; Hunt, c. 1590; Speed, 1610; *Pacata Hibernia*, 1633; Webb, 1651; Phillips, 1685; White, 1760). This seems to be a common variation, likely a result of the tidal range of the river. Later maps show an increasing landmass to the east of the wall with a corresponding narrowing of the Abbey River's channel, which likely corresponds to progressive land reclamation. See figures 10-14 below for images of maps discussed. From the mid-18<sup>th</sup> century, Eyre's plan of Limerick (1752; Fig. 15) shows the reclaimed land with evidence of settlement, which continues to be shown on later maps. The dismantling of the town walls is reflected in the cartographic evidence with Colles (1769; Fig. 16) showing that the southern portion of the wall, along the east-west flowing section of the Abbey River, was the first to go. By the time of Corbett's map (1865; Fig. 17), none of the wall was left upstanding.

In addition to the wall, the defences on King's Island included a star-shaped fort outside the walls in the otherwise uninhabited northern half of the island. The fort appeared on maps as early as 1651 (Webb; Fig. 13) but was labelled as the 'Site of' a fort by Corbett in 1865, indicating that it had been taken down. Changes to Thomond Bridge and its own defences can be followed on the maps. Depictions of the bridge from the late 16<sup>th</sup> and early 17<sup>th</sup> centuries show towers at either end (1587; Hardiman, c. 1590; Hunt, c. 1590; Speed, 1610; *Pacata Hibernia*, 1633; Webb, 1651). By the late 17<sup>th</sup> century, there is no longer a fortification shown on the eastern end of the bridge (Phillips, 1685; Goubet, 1690). By the 18<sup>th</sup> century, the only tower depicted on the bridge was the toll tower (Eyre, 1752; Fig. 15), which itself was last depicted on White's map (1760). A bastion is shown protecting the western approach from c. 1590 (Hunt) through to the mid-17<sup>th</sup> century. Steps are shown leading down to the river south of eastern end of the bridge on the 1587 map, although these are not shown again until the *Pacata Hibernia* map, which is notably similar to the 1587 map in overall style, with minor differences in the details. By 1865 (Corbett), the bridge is depicted with fewer arches, reflecting the replacement of the bridge in the 1840s.

The cartographic history of Baal's Bridge is of particular interest, as the cartographic sources are often cited in determining a date of construction for the houses which sat on it. While some sources argue that the houses were not constructed prior to the 1691 siege, some of the cartographic evidence contradicts this. However, the cartographic evidence varies, even when the sources are roughly contemporary. The 1587 map (Fig. 10) and the Hardiman map (c. 1590) both show structures on the bridge; the former depicting only one in the middle, while the latter shows a row along either side of the bridge. In contrast, no structures are shown on the bridge in the Hunt map (c. 1590). However, structures are relatively consistently shown on the bridge through the 17<sup>th</sup> and 18<sup>th</sup> centuries. In 1769, Colles shows structures only on the western side of the bridge and by Corbett's 1865 map, the structures on both sides had been taken down.

The bridge is first given a name on the Hardiman map (c. 1590), which calls it 'The Tide Bridge' and is labelled as the 'Thye' Bridge by Speed (1610). Eyre (1752) calls the bridge 'Ball's Bridge', the name which has stuck, in some form, through to modern times. Although it has been argued that the name 'Baal's Bridge' is a reference to its lack of fortifications, there were towers guarding the bridge at one point. Towers are shown on one or both ends from the 1587 through to Webb (1651). New Bridge - now known as Mathew Bridge - was marked for the first time by Colles in 1769, connecting the two new quays. Park Bridge - now O'Dwyer Bridge - was first marked by Corbett in 1865. However, White (1760) marked a ferry crossing at the location.

A mill or mills are shown extending out into the Shannon from the western walls from the late-16<sup>th</sup> century maps through to the early 20<sup>th</sup> century, although the shape changes slightly over time. Generally, the early maps agree that there was one structure just outside the west wall and one structure in the river, with an arched bridge connecting the two. Hardiman (c. 1590) labels the eastern structure 'Queen's Mill' and the western structure 'Thomas Arthurs Mill'. Speed (1610; Fig. 11) shows the western structure with a water wheel. Late-17<sup>th</sup> century (Phillips, 1685; Goubet, 1690) and 18<sup>th</sup> century depictions (Eyre, 1752) show a v-shaped weir in the river terminating at the mill to the east. White (1760) and Colles (1769) both refer to the eastern structure as 'City Brewery', while White calls the western structure 'Mill' and Colles refers to it specifically as 'Golden Mill'. The beginnings of land reclamation surrounding the mill can be seen from Corbett (1865), with further evidence visible on the 1<sup>st</sup> and 2<sup>nd</sup> edition OSI maps. The mill and brewery are gone by the time of the 2<sup>nd</sup> edition OSI map in the 1880s. The *Pacata Hibernia* (1633; Fig. 12), is the only instance where another mill is shown, which extends out from the curtain wall of the castle.

From the late 16<sup>th</sup> century, mills are also visible between Baal's bridge and the mouth of the Abbey River. Most commonly shown is a mill extending out from the south bank of the Abbey River (1587; Hardiman; c. 1590; Speed, 1610; *Pacata Hibernia*, 1633; Webb, 1651; Phillips, 1685; Goubet, 1690; Eyre, 1752; White, 1760), labelled 'The Comhon Mill' on the Hardiman map (c. 1590). A mill extending almost directly opposite this mill from the north bank is sometimes shown (Hardiman, c. 1590; Hunt, c. 1590; *Pacata Hibernia*, 1633; Phillips, 1685; Eyre, 1752; White, 1760), and the Hardiman map calls it 'Nicholas Arthurs Mill'. The mills are entirely gone by 1769 (Colles) with the major reclamation works associated with the construction of the new quays along both banks.

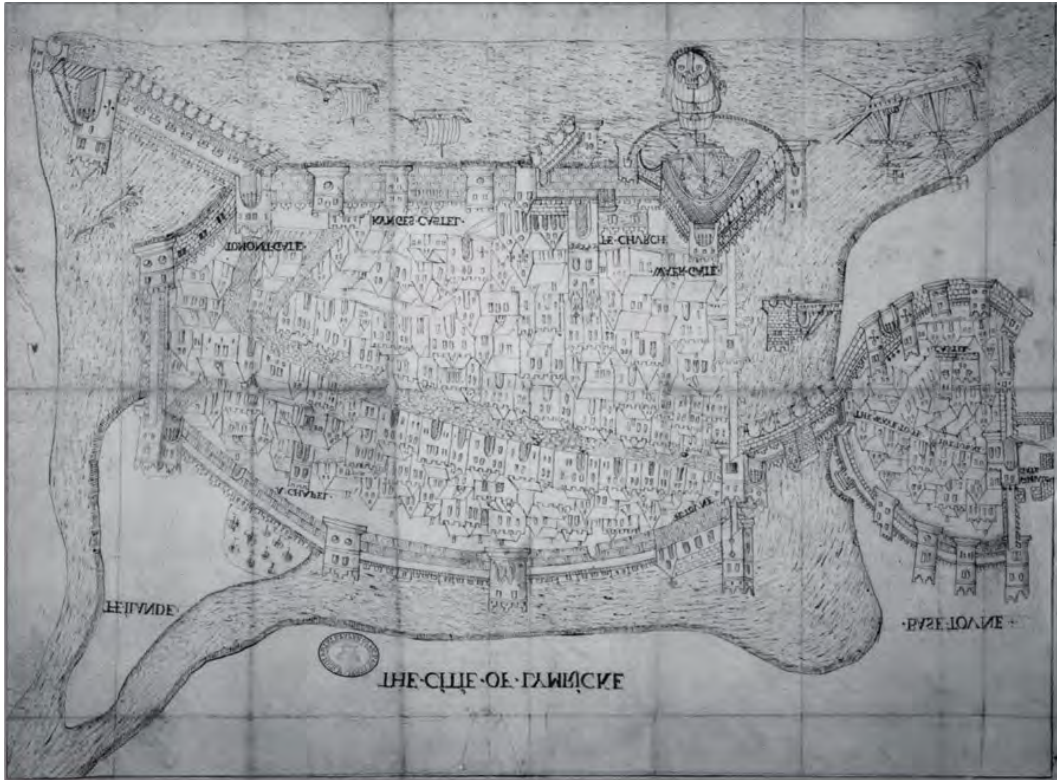


Figure 10 Limerick, 1587 (The National Archives: Public Record Office; Irish Historic Towns Atlas 2010).

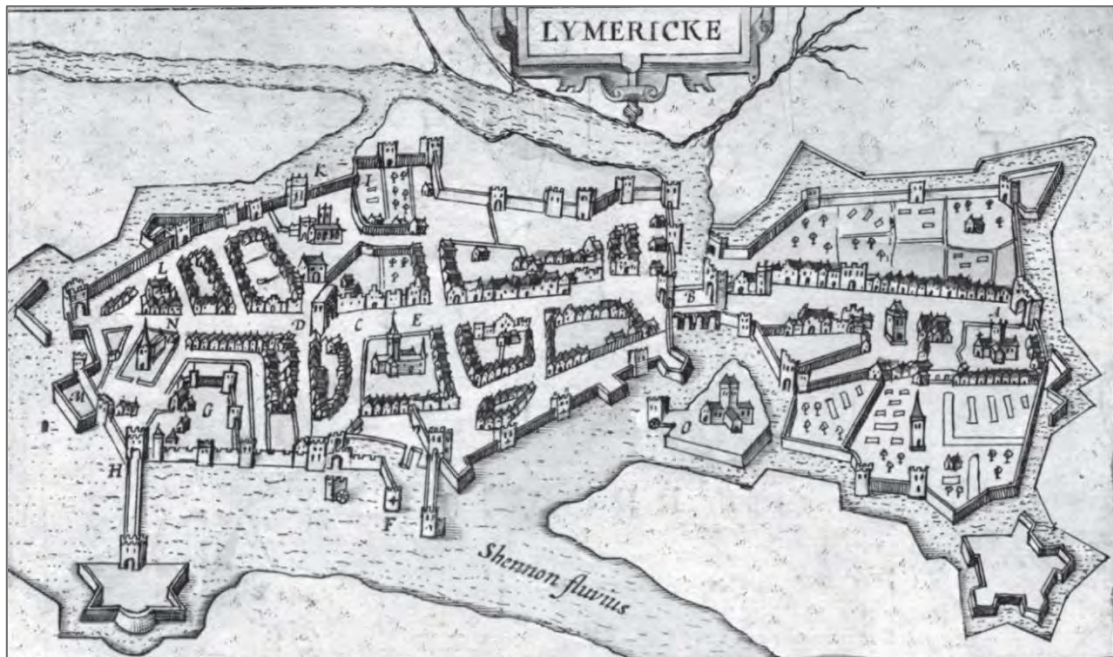


Figure 11 Limerick, 1610, by John Speed (Irish Historic Towns Atlas 2010).

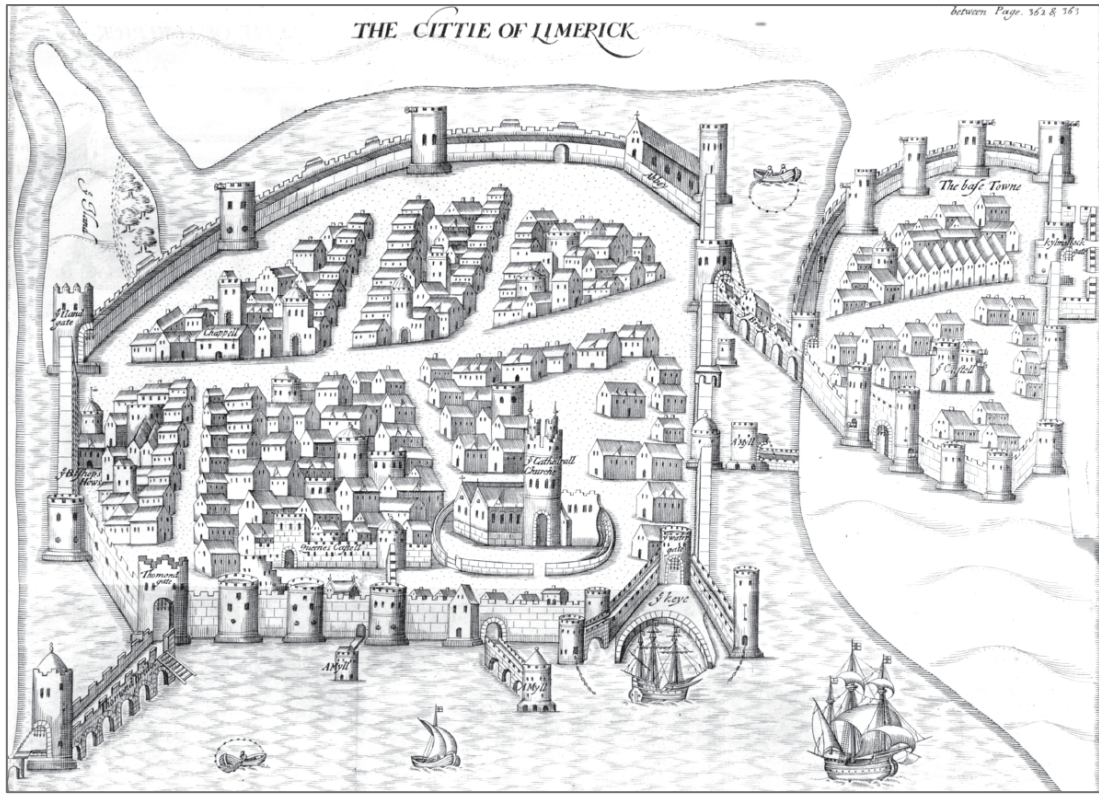


Figure 12 Limerick, 1633 (Pacata Hibernia 2; Irish Historic Towns Atlas 2010).



Figure 13 Extract from Limerick, 1651, by William Webb (Worcester College, Oxford; Irish Historic Towns Atlas 2010).





Figure 14 Phillip's plan of Limerick, 1685 (Irish Historic Towns Atlas 2010).

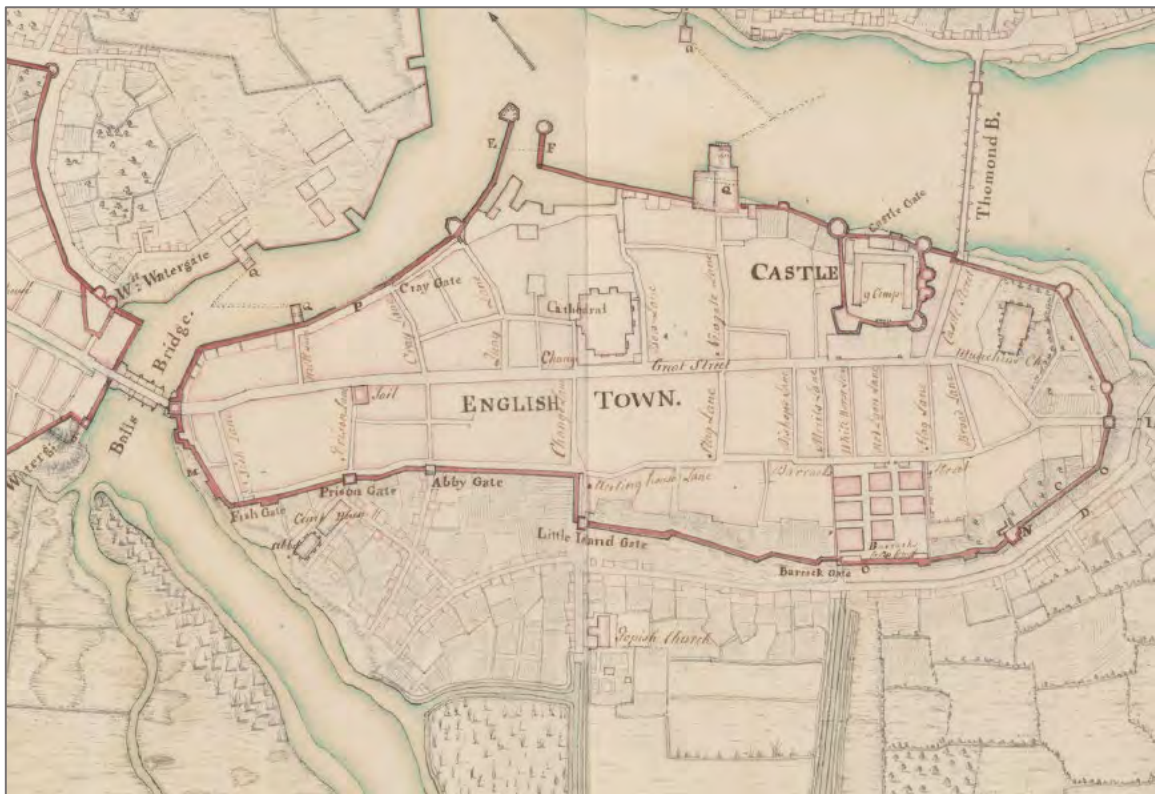


Figure 15 Extract from Eyre's plan of Limerick, 1752 (Irish Historic Towns Atlas, 2010).



Figure 16 Colles' map of Limerick, 1769 (Irish Historic Towns Atlas).



Figure 17 Corbett's map of Limerick, 1865 (Irish Historic Towns Atlas).

### 5.5 Ships, Shipping and Shipwrecks – Maritime Limerick

From the earliest times, dating back to pre-history, the waters around and within Limerick would have been the focus of coastal and riverine traffic, for transport, trade and settlement, including everyday personal use,

with the Shannon and its tributaries acting as conduits to the hinterland and interior of the country. Early craft like logboats would have been able to navigate the smaller river systems and would have continued in use until boat and shipbuilding came into its own in medieval times. Alongside Dublin, from the 10<sup>th</sup> century, Limerick became an international trading centre under the Vikings, who developed it as a major port, and central to this was its watercourses – in particular the Abbey River and Shannon River and around its island centre – King’s Island. While it traded nationally, between the ports of Dublin, Waterford and Cork, trade also expanded across the seas to Britain and Europe at that time with small to medium wooden sailing vessels plying the waters (De Courcy Ireland, 1986, 73).

From the 1400s, as sources suggest, barges assisted the larger vessels that sailed up the Shannon to dock at quaysides to load and offload cargo, with the wreck remains of barges elsewhere in the same waterways attesting to this – the later remains of two barge wrecks are located in the Shannon on the southern side of Lough Derg (W11614 & W11383; NMS Wreck Viewer). Limerick imported grain and corn, with merchant Maurice de la Noe, for instance, issued with a three-year licenced from 1449-1450, to victual Limerick with corn, honey, salt and other merchandise, much coming from Bristol. Around the same time Spanish and Portuguese wine came via Bristol to Limerick in 1475, each with fifty tuns of ‘fine Portuguese wines called Oseys’. In the sixteenth century, as a direct result of raids by pirates, the merchants of Limerick built ‘a great tri-oared galley well fitted with all things necessary.’ Galleys, based on a Mediterranean tradition, were used by the Gaelic-Irish maritime lords of the time and carried three oarsmen to a bench, usually under 40 metres long. Large galleys could have up to 24 benches to each side and were fitted with a single mast carrying a lateen sail (O’Neill, 1987, 29, 49). This reference suggests that as early as the 1500s Limerick had its own shipbuilding capability.

In the 17<sup>th</sup> century piracy was an ongoing issue in the port of Limerick with the 4<sup>th</sup> earl of Thomond, Donogh O’Brien accused in 1607 of being too lenient, as English pirates were cruising the reaches of the River Shannon right up to Limerick City. The pirates targeted shipping along the Shannon and landed booty on the docks in Limerick, including a Captain John Jennings who had a rich cargo that he plundered from a Dutch ship (Kelleher, 2020, 112).

In the 18<sup>th</sup> and 19<sup>th</sup> centuries the port of Limerick expanded, as discussed above, with reclamation and new quays being built in response to growth in trade, immigration and continued overseas colonial expansion, but also improvements in infrastructure along the reaches of the Lower Shannon, including the milling industry. Ships of all sizes continued to navigate the waters of the Shannon into Limerick, with larger quays now in place to facilitate this increase in maritime enterprise. Steamships and sailing ships were overseen by the Limerick Chamber of Commerce, established in 1815 to control pilotage in the River Shannon. The commissioners petitioned for a new ‘floating dock’ to further facilitate trade and this was realised in 1849, when the foundation stone was first laid and the dock was completed in 1853, with a new dock gate and entrance

completed in 1955 to accommodate increasing size of vessels (Shannon Foynes Port Company: History of Limerick).

The Shannon and Abbey Rivers and Limerick City itself therefore has witnessed maritime traffic from the earliest of times, for a variety of reasons – both legal and illicit. Boats and ships of all sizes have plied the waters in and around Limerick, with many inevitably lost for multiple reasons or remains of cargoes lost or jettisoned. The potential is therefore high for the remains of vessels lost, their cargo or other associated material or artefacts, to lie buried within these water courses and which await discovery. The recovery of the City Seal during the Limerick Main Drainage Scheme not only provides evidence for Limerick's direct ties to the sea, with a three masted ship represented on it, but the potential for even the smallest of artefacts to be found within the waters that surround King's Island.

## 6. Site Inspection

### 6.1 Dive Survey

#### **Area 2: Baal's Bridge to northern end of the Absolute Hotel Boardwalk**

The section of the Abbey River from Baal's Bridge (Plate 7) to the northern end of the Absolute Hotel boardwalk is c. 135m long. The section of quay wall alongside Baal's Bridge is 4.5m high and is constructed of large rectangular ashlar masonry for the most part with only the uppermost section constructed with varying smaller squared stone and topped with a heavy rounded coping. This continues for a length of c. 16.5 m from Ball's Bridge upstream to the east. The remaining c. 25m all the way to Abbey Bridge is of a distinctly different construction style and is slightly lower at 3.70m in height from the riverbed (Plate 8). It is composed of small to large squared and dressed random rubble. Large stones (c. 20cm x 60cm x 25cm) are horizontally laid as coping for 16.5m before returning to a rounded concrete coping for the remaining 8.5m up to Abbey Bridge. The coping slopes down from the higher section of the quay wall to transition to the lower height and the seam between the two styles is jagged, rather than straight, likely as a result of the random rubble style of the apparently older section of wall. Vegetation is visible on both the older and newer portions of the wall and algae has built up along the lower half of it.

The quay wall immediately east of the Abbey Bridge is of roughly the same height as that to the west: 3.60m (Plate 9). The quay wall here is composed of rectangular and square limestone coursed blocks, from which the bonding is missing and there are voids. This section of walls stretches for c. 4m and has a return at its north-easternmost end, angling more to the north. It has a rounded concrete coping which is overtopped by metal and wood security railing. The entire length is covered by moss and algae. After the return, the stone construction is visible behind the vegetation in the lower portion of the quay wall, however, it is overtopped by concrete for the rest of the survey area. The stone wall survives to a height of 1.50m from the riverbed and

the concrete wall rises another 2.10m. This section also has a rounded coping overtopped by a metal and wood security railing. There is a concrete cutwater or support protruding from the quay wall into the river, c. 13m upstream of Abbey Bridge. The cutwater is trapezoidal in shape with its larger face, c. 4m wide alongside the quay wall, and its narrower face, c. 2m wide, c. 2m out into the river. The stone quay wall continues, unbroken, behind the cutwater. The boardwalk is stepped out from the quay wall at its northern end for a length of c. 43m and 33m from the eastern end of Abbey Bridge. It is supported by 6 vertical metal posts c. 3m out from the quay wall, which continues in the same construction style described above. The quay wall at the northern end of the survey area is battered.

Under the boardwalk, the riverbed is fairly level and composed of small, compact cobbles extending up to 4m outwards from the quay wall. From here the riverbed slopes steeply towards the centre of the channel. On the northern-most 16m of the survey area, there is a bank which extends c. 3m out from the wall. Cut stones, similar to those in the stone quay wall face, were noted on the bank at this location. An outfall pipe cuts through an eroded section of the bank c.10m from the northern end of the survey area. At 7.50m from the northern end of the boardwalk, there is a stone cutwater or support abutting the wall, but not joined to it, similar to the concrete cutwater mentioned above (Plate 10). The bank immediately to the south of the cutwater was eroded. The cutwater rises 1m from the bank, at its western side, where it meets the quay wall. It is composed of an upper course of stone above a significantly worn timber frame. Below the timber frame another 3 courses of rectangular, dressed stone blocks were visible. At the south-eastern corner, an upright timber pole, c. 0.20m diameter, was just visible above the water level, supporting the lowest stone course. The whole cutwater was heavily vegetated, and the lower portion is covered in algae. It is c. 4m in length at its widest point and joined with the bank to the north.

The metal detection survey produced objects only of modern origin. The bank at the northern end of the survey area was not subjected to metal detection, as there was a high quantity of modern metal debris visible on the surface, thus compromising results. No other archaeological objects or features were noted on the riverbed.



*Plate 7 Baal's Bridge taken from east.*



*Plate 8 Quay wall between Baal's Bridge and Abbey Bridge, showing two distinct construction styles. Taken from south.*



*Plate 9 View from Abbey Bridge to the boardwalk, taken from south.*



*Plate 10 Vegetated stone cutwater under the boardwalk, taken from south.*

### **Area 3: North-west King's Island**

This survey area is located at a river access point over the embankment on the north-west side of Kings Island and is known locally as the 'Fisherman's Access' (Plate 11). The area inspected included the embankment, riverbank and a 10m section of the riverbed. The embankment is c.2m in height and from its base the riverbank slopes gently towards the river. This section of the river was shallow at the time of survey with a maximum depth of 1.6m. Roughly squared stone cobbles are visible in the base of the embankment at the access point where it was void of vegetation, but it could not be determined if they continued in either direction. The bank is heavily vegetated, except for the access point itself. The riverbed material is composed of mid-grey firmly compacted alluvial silt. Broken red brick and modern debris - including plywood and concrete – was identified in the riverbed. The base of a metal frame, likely from a gate, was identified c. 2.7m in the river. No archaeological objects or stratigraphy of features were noted on the riverbed.



*Plate 11 Fishermen's access over embankment, taken from west.*

## **6.2 Wade and metal detection Survey**

### **Area 1: King John's Castle to Curragour boat club.**

The wade survey extended from the southeast corner of King John's Castle down to the Curragour Boat Club, a distance of c. 165m (Plate 12). From the south end of the castle, heading southwards, the riverbed was composed of angular to subangular stones, measuring from 0.05 x 0.02 x 0.03m up to 0.40 x 0.23 x 0.25m, with occasional inclusions of shell and frequent inclusions of modern debris. The quay wall protrudes out into the channel c. 9m from the base of the southwest tower. It is composed of limestone, overgrown with ivy, and



is overtopped by metal handrails. At its northern end, the wall is roughly coursed with nine courses of roughly dressed stone, with no visible bonding material. The face of the stones measure, on average, c.0.60 x 0.25m. At c.10m from the northern edge of the wall, there is a repair in a different construction style (Plate 13). The quay wall here is composed of roughly squared, rusticated, uncoursed stone bonded with lime mortar. The stones range from 0.15 x 0.23m up to 0.25 x 0.70m. The quay wall rises c. 3m from the riverbank. The bank itself extends out c. 8m from the quay wall. It is heavily vegetated and gently slopes towards the river. It is eroded along its western edge and rises c. 65cm above the riverbed in the same location. The bank disappears c. 9m to the north of the next protruding section of quay wall.

The next section of quay wall extends c.15.5m out to the west. Along its northern wall are a set of stone masonry access stairs or steps, which have been blocked on the quay side (Plate 14). The corner, where the quay turns southwards again, is protected by a cutwater. This extends out c. 1m on both the northern and western sides of the corner and stands 2.5m above the bank. It is composed of large, uniform concrete blocks, measuring c. 0.80 x 0.80 x 1.00, and had a wedge-shaped top which rises to meet the quay wall (Plate 13). At the base of the cutwater, on both sides, there are cylindrical concrete pipes set vertically and filled with silt. There are two on the western side, as well as the remains of a third at the southernmost end of the cutwater. On the northern side, there are an additional three more cylinders, not including the one at the outermost corner, which it shares with the western side.

The quay wall here is composed of large, dressed stone blocks in courses. The stones average c. 0.15 x 0.85m. The wall rises to c. 4m above the riverbed and is partially vegetated. At the base of the western quay wall, the riverbed is littered with large, angular stones, some of which were cut, which measured from 0.20 x 0.20 x 0.05m to 0.45 x 0.80 x 0.15m. There is a thin layer of mid-brown alluvial silt on the riverbed, over a limestone bedrock outcrop, with lots of sandbags and modern building debris littering the surface. Two broken sections of wall extend at right angles to the quay wall; the northernmost being c. 14.2m to the south of the corner (Plate 15). A wedge of stone masonry begins to emerge from the base of the stone wall at c. 9m from the corner, widening to meet the base of the northern wall section. This wedge is in poor condition and remains to a height of c. 0.55-0.60m above the riverbed. Three rough courses of stone, without bonding material, are visible.

The northern wall section has a north face of stone blocks, averaging 0.40 x 0.60 x 0.40m, which survives in an area 1.2m high by 1.3m wide, and is partially vegetated. This wall is heavily undercut by erosion, with the upper portion extending c. 4m out from the quay wall, while the lower portion only extends out 1.3m. The wall is c. 2.5m wide and has rubble fill between its north and south faces, although less of the south face

survives. The base of the wall is also protected to the south by c. 1m of unbonded rubble. Between the northern and southern wall sections, in the face of the quay wall, is an arched entranceway (Plate 16). This is located closer to the northern wall, only about 1m to the south of it, while it is c. 3m north of the southern wall. The arch has uniform voussoirs and one keystone, which is slightly narrower, but otherwise uniform to the voussoirs. It has a 2.3m span at its entrance, but it narrows as it extends back, until it is blocked at 2m into the quay. There are four courses of the stone quay wall overtopping the arch.

To the south of the arch, there is a feature of rubble stone rising c. 1.2m above the riverbed, which, given its relation to the arch and the southern wall, appears to have been a floor or pavement. The southern wall is faced in the same manner as the northern wall but has not suffered from the same severe undercutting. It extends 3.1m out from the quay. The southern face of this wall is joined to a portion of the quay wall running east-west for 8.7m. At the base of this section of wall, there is an outfall pipe, rising 0.60m from the riverbed (Plate 17). The quay wall then turns back to the south for another 18m before turning east again for 20m, forming an inlet. The quay wall along this inlet is consistent in construction type with that described above, although it is in poor condition and the stone facing is unstable in places, bulging outwards.

The riverbed in this area is composed of small and medium stones with and modern debris visible on the surface. The southeast corner of the inlet rises c. 2.5m above the rest of the riverbed from which another outfall pipe angles down along the quay wall running east-west. The quay wall turns back in a southerly direction to continue onwards for 60.5m before turning to the southwest and extending out another 27m alongside the Curragour boat club. Metal detection along the survey area produced frequent returns of modern metal debris. No other archaeological objects or features were noted on the riverbed.



*Plate 12 View from northern end of survey area looking north towards Thomond bridge with King John's Castle and riverbank to right. Taken from southeast.*



*Plate 13 Quay wall immediately south of King John's Castle, highly vegetated and with evidence of repairs, taken from north west.*



*Plate 14 Access stairs and concrete cutwater, taken from northeast.*



*Plate 15 Wall sections extending at right angles from quay wall, taken from northwest.*



*Plate 16 Archway in quay wall, taken from west.*



*Plate 17 View north from 'inlet' showing wall remains in the mid ground with outfall pipe at base, taken from south.*

## 7. Impacts

### Area 2: Baal's Bridge to Absolute Hotel boardwalk

This quay area was reclaimed. The quay wall alongside Baal's Bridge probably represents the wall put in place after the removal and replacement of the 14<sup>th</sup>-century bridge in 1830. The stone quay walls which extend to the east and west of Abbey Bridge may represent the quay walls put in place at the end of the 18<sup>th</sup> century, during a period of land reclamation along the river.

The Impact of the proposed scheme in this area will arise from the spud legs of a barge being placed on the riverbed during the repointing of the quay wall. No other damage expected on the riverbed. Since it has a small footprint, the impact is perceived as minimal.

### Area 3: Northwest King's Island Outfall and Fishermen's Access

The northern half of King's Island saw comparatively little development, despite the long-standing development to the south. As part of the 1690s sieges, a star-shaped fort was established in the northern half of the island. Although the fort itself is c. 227m away from the proposed works area, cartographic evidence indicates that troops were camped outside of the fort and cultural remains relating to their activities may be present in the area. The dive assessment did not identify any archaeological remains on the riverbank or to a distance of c. 10m out into the river. However, the alluvial silt bed of the river retains the potential for preserving archaeological remains.

The proposed works in this area involve the installation of an outfall pipe, which necessitates groundworks to the bank, intertidal zone and into the riverbed. There is potential therefore that the works could impact previously unknown archaeological remains.

### Area 1: King John's Castle to Curragour Boat Club

The riverside in this section has seen continual development from at least 1175 onwards, if not earlier. Significantly, there were mills utilising the river here, possibly as early as 1200 (SMR LI005-017074- & LI005-017075-), which were described as being housed in Curragour Castle (LI005-017101-) and had an associated weir (LI005-110----). The two wall sections and an archway that were identified along the quay wall during the wade survey were likely associated with these mills. The wall and arch feature include poorly preserved stone foundations and scour protection on the riverbed.

The Impact of the proposed scheme in this area will arise from the spud legs of a barge being placed on the riverbed during the repointing of the quay wall. No other impact is expected on the riverbed. As a portion of

the features from the mill lays on the riverbed, there is the chance that the legs will negatively impact the features. In addition, there is the potential for further subsurface material associated with the mill and its weir or other artefactual material to remain in the riverbed, which the works, i.e. placement and movement of the spud-legs, may negatively impact.

## 8. Mitigation Measures

### Area 2: Baal's Bridge to Absolute Hotel boardwalk

While the archaeological potential of the Abbey River is high, as demonstrated by previous excavations downstream of the proposed works, the impact on the riverbed from the legs of the barge will be minimal. No other mitigation is deemed necessary.

### Area 3: Northwest King's Island Outfall and Fishermen's Access

The dive survey at this location did not identify any archaeological material or features. However, the potential for archaeological material to be preserved in the riverbed is high. As groundworks are to be carried out along the intertidal zone and into the river at this location, the potential impact is also high. It is recommended that archaeological monitoring by a suitably qualified underwater archaeologist is undertaken for all groundworks from the terrestrial/banks, along the intertidal zone and into the river at this location.

### Area 1: King John's Castle to Curragour Boat Club

The wade survey in this location identified the remains of a mill abutting the quay wall. It is most likely that further remains of the mill and its associated weir are preserved within the riverbed at this location.

The impact of the spud legs on the riverbed is anticipated to be minimal. However, the repair, pointing, and grouting of the quay walls is intended to include the features associated with the mill identified in the survey. The works carried out on these features should be undertaken by those with a proven track record in historic building works. In addition, the repairs should include efforts to protect the features from further scour damage. A detailed methodology for the works concerning these features should be submitted to the National Monuments Service for approval prior to commencement.

*All mitigation measures are recommendations only. The ultimate decision rests with the National Monument Service of the Department of Housing, Local Government & Heritage.*

## 9. Bibliography

### 9.1 Documentary Sources

Barry, J.G. 1909. 'Old Limerick Bridges', *The Journal of North Munster Archaeological Society*, vol. 1 (1). pp.

7-13.

- Crowe, F. Winter 1984. 'The bells of Saint Mary's', *The Old Limerick Journal*. Vol. 17. pp 17-20.
- De Courcy Ireland, J. 1986. *Ireland and the Irish in Maritime History* (The Glendale Press, Dublin).
- Gwynn, S. 1915. *The Famous Cities of Ireland*. Maunsel & Company, Ltd: Dublin.
- Hodkinson, B. 2002. 'The Topography of Pre-Norman Limerick', *The North Munster Antiquarian Journal*. Vol. 42, pp. 1-6.
- Hodkinson, B. 2005a. 'The Topography of Pre-Norman Limerick', *The North Munster Antiquarian Journal*. Vol. 42, pp.127-8.
- Hodkinson, B. 2005b. 'Old Thomond Bridge', *The North Munster Antiquarian Journal*, vol. 45.
- Keane, J. Autumn 1981. 'Limerick Breweries', *The Old Limerick Journal*. Vol. 8.
- Kelleher, C. 2020. *The Alliance of Pirates: Ireland and Atlantic Piracy in the Early Seventeenth Century* (Cork University Press).
- Leask, H. 1964. *Irish Castles and Castellated Houses*. Dundalgan Press: Dundalk.
- Lenihan, M. 1866. *Limerick: its history and antiquities, ecclesiastical civil and military*. Dublin.
- Limerick Chronicle* Newspaper, 18/6/1845.
- O'Donoghue, J. *Underwater Archaeological Impact Assessment Report: Thomond Bridge and Abbey River Quay Walls, Limerick*. July 2015. [unpublished report submitted to National Monuments Service]
- O'Donoghue, J. 2016. 'King's Island, Limerick', *Excavations Bulletin* 2016: 643. <http://excavations.ie/report/2016/Limerick/0026040/>
- O'Donoghue, J. and Hawkes, A. 2016. Archaeological Monitoring Report, Site Investigation Phase 2 (2016), King's Island Flood Relief Scheme, Limerick. Report by Julianna O'Donoghue Archaeological Services for Priority Geotechnical.
- O'Donovan, E. (2003) 'Limerick: New Discoveries in an Old City', *Medieval History Special Edition, History Ireland*, vol 11(1); Accessed online.
- O'Donovan, E. 1999. Broad Street/Georges Quay. *Excavations Bulletin*, 1999, 475. Wordwell
- O'Flaherty, E. 2010. *Irish Historic Towns Atlas, no. 21, Limerick*. Royal Irish Academy: Dublin.
- O'Keefe, P. & Simington, T. 1991. *Irish Stone Bridges: History and Heritage*. Irish Academy Press: Kildare.
- O'Neill, T. 1987. *Merchants and Mariners in Medieval Ireland* (Irish Academic Press).
- Shannon Foynes Port Company: History of Limerick: <https://www.sfpc.ie/about-us/history/>
- Spellissy, S. 1998. *The History of Limerick City*. The Celtic Bookshop: Limerick City.
- Stalley, R. 'William of Prene and the Royal Works in Ireland', *Journal of the British Archaeological Association*, 81 (1978), pp. 30-49.
- Steward, D. March 1980. 'Mills and Millers', *The Old Limerick Journal*, vol. 2, pp. 22-23.
- 'Stroller' Old City Bridges', *Limerick Chronicle* Newspaper, 3/2/1902.



Tierney, M. Winter 1995. 'The Construction of the Floating Docks', *The Old Limerick Journal*. Vol. 32. pp. 105-108.

Wiggins, K. 2000. *Anatomy of a Siege, King John's Castle Limerick, 1642*. Wordwell Books: Bray.

Wiggins, K. 2016. *A Place of Great Consequence: Archaeological Excavations at King John's Castle*. Wordwell. Dublin.

Westropp, T.J. 1916. *The antiquities of Limerick and its neighbourhood*. Dublin: Hodges, Figgis & Co.,

## 9.2 Cartographic Sources

'A plan for continueing the new kay of Limerick to the point of the abby....', c. 1764. University of Limerick.

Colles, C. 'Plan of the city and suburbs of Limerick', with inset 'A north-west view of the city of Limerick', 1769. British Library, Add. MS 27391/E

Corbett, W.E. *Map of the city of Limerick*. Dublin, 1865. In Lenihan, frontispiece.

Eyres, W. 'A plan of Limerick', 1752. British Library, Maps K Top 54 21.

Goubet, J. 'Plan de la ville de Limmericque'. 1690. National Library of Ireland, MS 2472.

Map of Limerick, c. 1590. Hunt Museum, Limerick.

Phillips, T. 'The ground planne of Limrick', 1685. National Library of Ireland, MS 3137 (36). Another version, British Library, Maps K top 54 8.

Speed, J. 'Lymericke', [1610]. In *The theatre of the empire of Great Britaine....*, London, 1611 [1612], inset to map following p. 139.

Strattford, T. 1633. 'The cittie of Limerick', *Pacata Hibernia*, Vol. II, in 2 vols. London, 1633. Reprinted Dublin, 1810, pp 362-3.

The National Archives, London: 'The citie of Lymricke', 1587, MPF 1/96.

Trinity College Dublin, Hardiman Collection: 'The citie of Limrick', c. 1590, MS 1209/57.

Webb, W. 'The mappe of Lymericke and of the works about it ... 1651'. Oxford, Worcester College, MS.206.18.

White, J. 'A map of the Englishtown of the city of Limerick', c. 1760; with annotations by Bishop Young, c. 1794. In White, J. 'Annals of Limerick'. Photostatic copy in National Library of Ireland, MS 2714; copies by Maurice Lenihan in RIA, MS 24 D 21; British Library, Add. MS 31888, p. 171.

## 9.2 Other Sources

*Excavations Bulletin*: [www.excavations.ie](http://www.excavations.ie)

Historic Environment Viewer (HEV), National Monuments Service; [www.archaeology.ie](http://www.archaeology.ie)

Irish Placenames website: [www.logainm.ie](http://www.logainm.ie)

ITWN: Irish Walled Towns Network; <https://irishwalledtownsnetwork.ie/>

Ordnance Survey of Ireland (OSI): [www.osi.ie](http://www.osi.ie)

National Inventory of Architectural Heritage (NIAH): <http://www.buildingsofireland.ie/niah/>

National Monuments Service (NMS): [www.archaeology.ie](http://www.archaeology.ie)

The National Monuments Service's Wreck Inventory of Ireland Database (WIID) and Wreck Viewer:

<https://www.arcgis.com/apps/webappviewer/index.html?id=89e50518e5f4437abfa6284ff39fd640>

## 10. Appendices

### Appendix 1: RMPs and SMRs

Number	Type	ITM	Description
LI005—110----	Weir- fish	557623 657656	According to O'Flaherty (2010, 2) 'the rapids at Curragour supported a fishery...sufficiently well established to have been a bone of contention between church and state around 1200.'
LI005-019----	Water mill- unclassified	557568 657615	Annotated 'Mill' on the 1840 ed. OS 6-inch map where it is depicted standing on the River Shannon at the S end of a V-shaped salmon weir (LI005-110----). This building was Curragour Mill, which was built in 1672, destroyed by fire and ruins removed in 1858 (O'Flaherty 2010, 30; Fitzgerald and McGregor 1826, 507). A second 'Mill' (LI005-017074-) is depicted on this map directly opposite on the E bank of the River Shannon. Curragour Mill was shown on a map called "A Plan of the city and suburbs of Limerick", by Christopher Colles 1769 (Ferrar 1787, xviii; BL, Add. MS 27391/E). Test excavation was carried out by Edmond O'Donovan on behalf of Margaret Gowen under licence No. 98E0578 near the site of Curragour Mill which is depicted at the western edge of Curragour Falls on Phillip's map of 1685. A single test-trench was opened at the manhole shaft on Clancy's Strand. It was 10m long and revealed a 19 <sup>th</sup> -century soil profile over natural. The deposits were interpreted as ground reclamation for the construction of the road adjacent

to the River Shannon. No walls or other archaeological indicators suggesting the presence of a structure were found during the assessment (O'Donovan 2000, 171; [www.excavations.ie](http://www.excavations.ie))

LI005- 017002-	Bridge	557575  657846	<p>The present 19<sup>th</sup> century Thomond Bridge (NIAH Reg. No. 21508001) crossing the River Shannon overlooked by King John's Castle (LI005-017014-) was described by the National Inventory of Architectural Heritage as 'Seven-arch rock-faced limestone road bridge, built in 1836, spanning the River Shannon, with pointed curved breakwaters and short quadrant abutments. Inscription to commemorative plaque on road side of parapet reads: 'This bridge was built A.D. 1840 at the Expense of the Corporation of the Borough of Limerick. This tablet was placed there by order of the town council A.D. 1843. The Right Worshipful Martin Honan Mayor John F. Raleigh Esq. Town Clerk Francis O'Neil Esq. Treasurer James and G.R. Pain Architects.' The building of a wider and more accessible Thomond Bridge, which was constructed between 1836-1838 to the design of James Pain and George Pain, gave better access to the agricultural districts of Clare. It replaced a series of previous bridges dating to the twelfth or thirteenth century, linking the west side of the River Shannon with King's Island. The previous medieval bridge was of fourteen arches. It is believed to incorporate pier foundations from the bridge which it replaced, as survey drawing dated to 1814, demonstrating the re-use of existing historic fabric by James Pain' (<a href="http://www.buildingsofireland.ie">www.buildingsofireland.ie</a>). Thomond medieval bridge crossing the River Shannon was described in the Urban Survey of Limerick (Bradly et. Al. 1989, 256) as following; 'The reference to the destruction of a bridge by Domhnall Mor Ua Briain in 1176 indicates that there</p>
-------------------	--------	----------------------	--

has been a bridge at Limerick since Viking times. The location of this bridge, however, is not absolutely certain. From the context in which the reference occurs it is most unlikely that it is a bridge which straddles the Shannon but rather a bridge linking King's Island with Irish Town or the mainland probably on the site of the present Baal's Bridge (LI005-017001-) (Scott and Martin 1978, 167). The bridge across the Shannon appears to have been built in the reign of John (1199-1216). In 1358 the citizens received a grant to assist them in extending this bridge and adding towers to it in order to repel the Irish (Tresham 1828, 74; no. 82). Both Baal's Bridge and Thomond Bridge are shown many times on sixteenth and seventeenth century maps and there can be little doubt that both are ancient crossing points'.

LI005- 017186-	Weir- fish	557880  657493	Excavations carried out in the Abbey River under licence No. 98E0581 ext. by Ed O'Donovan on behalf of Margaret Gowen & Co. Ltd were summarised as following; 'Over the past year and a half, excavations in advance of construction work associated with the Limerick Main Drainage Scheme have been carried out. The report on the first phase of these excavations (Excavations 1999, 169-171) included brief reports on excavations along George's Quay and at Broad Street. The Phase I excavations also included an account of the various artefacts recovered from the bed of the Abbey River between Matthew Bridge and Baal's Bridge. This year the excavations in the riverbed extended from Matthew Bridge to the mouth of the Abbey River, with its junction with the Shannon at Curragour Point, and from Curragour Point in the Shannon to Sarsfield Lock, and also included a short programme of excavation on George's Quay. Town wall along George's Quay Two
-------------------	------------	----------------------	--

further sections of the medieval town wall were uncovered along George's Quay (at Manholes E and F). Deep excavation was not required as the construction work was relatively shallow; however, the laying of new pipes along the quay at the junction of Creagh Land and George's Quay did reveal a substantial wall running parallel to the quay. The preliminary interpretation of the structure suggested that it formed part of a bastion or building standing proud of the line of the town wall. Structures standing proud of the town wall along the Abbey River are illustrated on the early historic maps of the city (Pacata Hibernia map, Hardiman's map and Speed's map). Organic deposits of 16<sup>th</sup>-century date abutting the structure contained the grain weevil *Sitophilus granaries*. This insect is a pest of stored grain in particular and is entirely dependent on humans for its dispersal (Eileen Reilly, pers. comm.). These deposits are possibly related to grain stored around Nicholas Arthur's Mill, depicted on Hardiman's map (c. 1590) ([www.excavations.ie](http://www.excavations.ie)). 16<sup>th</sup>/17<sup>th</sup> century weir in the Abbey River. The foundations of an early weir (LI005-017186-) were identified in the Abbey River. The structure pre-dates Charlotte's Quay and Bank Place and is thought to form a head-race for two mills on either side of the river, one under Bank Place (LI005-017098-) and the other (LI005-017069-) at the junction of Creagh Lane and George's Quay. This again may relate to Nicholas Arthur's Mill depicted on Hardiman's map, c. 1590. (TCD, MS 1209/57).

LI005-017001-	Bridge	558054 657423	19 <sup>th</sup> century Balls (Baals) Bridge (NIAH Reg. No. 21513031) traversing the Abbey River was built on the site of the four arched medieval Baal's Bridge. The medieval bridge was described in the Urban Survey of Limerick (Bradley et. al. 1989, 256) as following; 'The
---------------	--------	------------------	---

reference to the destruction of a bridge by Domhnall Mor Ua Briain in 1176 indicates that there has been a bridge at Limerick since Viking times. The location of this bridge, however, is not absolutely certain. From the context in which the reference occurs it is most unlikely that it is a bridge which straddles the Shannon but rather a bridge linking King's Island with Irish Town or the mainland probably on the site of the present Baal's Bridge (Scott and Marting 1978, 167). Baal's bridge may retain a medieval core although rebuilt in 1830 (Leask 1941, 102). Both Baal's Bridge and Thomond Bridge (LI005-017002-) are shown many times on sixteenth and seventeenth century maps and there can be little doubt but that both are ancient crossing points'. In 1998 three cuttings were excavated under licence No. 98E0581 on George's Quay and one at Broad Street before construction activity associated with the Limerick Main Drainage Scheme. In addition, a programme of excavation (50 trenches) was initiated in the Abbey River before the first phase of pipe-laying in the riverbed. Phase II of the construction work will see river gravels being investigated for archaeological structures and artefacts at the mouth of the Abbey River at its confluence with the River Shannon and another short programme of land-based excavation in the Potato market. The summary of these excavations were described by Edmond O'Donovan for Margaret Gowen & Co. Ltd as following; 'Broad Street Excavations at Broad Street (Cutting 3) uncovered two medieval bridge piers under the junction of Broad Street and Charlotte Quay. These structures formed part of the medieval bridge (on the site of Baal's Bridge) that formed the vital link between the Irishtown and the Englishtown on King's Island. When

the Anglo-Normans launched their assault on Limerick in 1175 there was no bridge in the location later occupied by Baal's Bridge. Giraldus Cambrensis records that the attackers found a ford across the Abbey River and he 'hurled himself headlong into the swiftly flowing river...' and managed to cross to the opposite bank. It would appear that the bridge linking King's Island to the mainland to the south, on the site of what is now called Baal's Bridge, was non-existent when the Anglo-Normans arrived in Limerick in 1175. The excavation at Broad Street indicated a long archaeological sequence commencing in the mid-13<sup>th</sup> century up to the present day. The cutting measured 35m east-west by between 5m and excavated to a depth of 5m below the street level. Three samples from oak timbers that revetted one of the bridge piers were submitted for dendrochronological dating (David Brown, The Queen's University of Belfast). The results suggested that the bridge piers were constructed in the early 13<sup>th</sup> century. Organic deposits were identified abutting the bridge piers. Environmental analysis of macrofossil plant and insect remains (by Eileen Reilly and Penny Johnston of Margaret Gowen & Co.) has demonstrated that the deposits around the bridge piers accumulated slowly as a result of the dumping of organic refuse and the accumulation of river silts. The organic deposits originated from natural silting and contemporary settlement in the medieval city during the 13<sup>th</sup> and 14<sup>th</sup> centuries. The excavation revealed evidence for the growth and development of Broad Street, with evidence of house floors dating from the 14<sup>th</sup>/early 15<sup>th</sup> century built on top of ground reclaimed from the riverbed. This expansion of the Irishtown towards the Abbey River is likely to have been

associated with renewed town wall building extending into the Abbey River. The uppermost archaeological deposits

LI005-017098	Mill- unclassified	557868 657442	The Prior's or Common Mill, located nearly opposite Nicholas Arthur's Mill (LI005-017069-) on the Abbey River (Leask 1941, 107). These two mills are depicted standing on opposite sides of the Abbey River on a late 16 <sup>th</sup> century map of Limerick City (TCD, MS 1209/57). Excavations carried out in the Abbey River under licence No. 98E0581 ext. by Ed O'Donovan on behalf of Margaret Gowen & Co. Ltd were summarised as following; 'Over the past year and a half, excavations in advance of construction work associated with the Limerick Main Drainage Scheme have been carried out. The report on the first phase of these excavations (Excavations 1999, 169-71) included brief reports on excavations along George's Quay and at Broad Street. The Phase I excavations also included an account of the various artefacts recovered from the bed of the Abbey River between Matthew Bridge and Baal's Bridge. This year the excavations in the riverbed extended from Matthew Bridge to the mouth of the Abbey River, with its junction with the Shannon at Curragour Point, and from Curragour Point in the Shannon to Sarsfield Lock, and also included a short programme of excavation on George's Quay. Town wall along George's Quay
--------------	-----------------------	------------------	--

## Appendix 2: Shipwrecks and Underwater Cultural Heritage

No record of wrecks for the immediate area of works were found apart from the remains of an oar lock recovered during archaeological monitoring of repair and conservation works to Thomond Bridge in 2015. Wrecks are known in the lower reaches of the Shannon and into the Shannon Estuary, including ??? while upriver, on the southern side of Lough Derg, the remains of 8 wrecks are located – two barges (W11614 & W11383), a paddle steamer *Lady Lansdowne* (W06220) and four unknown wrecks (W11386; W11387; W11311; W11385; W11384). The discovery of the City Seal in 1998 during the main drainage work as well as



an oar lock in 2015 during archaeological monitoring at Thomond Bridge provided evidence for Limerick's maritime history and its connections with the sea as an active port from medieval times to the modern era.

### Appendix 3: Previous Excavations

#### **2016 – Thomond Bridge Mizen finds**

Site type: Bridge, National Monument

ITM: E 557999m, N 657442m

*Mizen Archaeology Ltd.*

In 2015 an Underwater Archaeological Impact Assessment was undertaken at Thomond Bridge in advance of repair and conservation works (Licenses 15D0048 & 15R0058). Results of the UAIA and the waters immediate to Thomond Bridge included the recovery of a small selection of post-medieval pottery, primarily dating to the 19<sup>th</sup> century. During the subsequent archaeological monitoring, however, a much larger assemblage of material was recovered that included glass, metal and pottery, dating from the 15<sup>th</sup> century to modern times, including bottle glass, North Devon ware ceramic, cannon balls, coinage, oar lock (denoting maritime use of the river), and two revolvers from the period of the War of Independence.

#### **2016:643- King's Island, Limerick, Limerick (from *Excavations Bulletin*)**

Sites and Monuments Record No.: N/A

Licence No.: E004645

Site type: Post-medieval urban

ITM: E 557999m, N 657442m

*Mizen Archaeology Ltd.*

Monitoring took place of site investigation work associated with King's Island Flood Relief Scheme, Limerick. A total of 37 trial pits were excavated under archaeological supervision between 4 and 27 May 2016. Features of potential archaeological significance were identified in nine of the trenches. These composed mainly of remnants of earlier quay walls and were found in areas alongside and underlying existing quays at Merchant's Quay/Potato Market, George's Quay and Sir Harry's Mall. The site inspection pits containing archaeological remains were positioned along some of the existing quay wall on the south-west side of King's Island, stretching from St John's Castle at Merchant's Quay to Sir Harry's Mall. These existing quay walls vary considerably, and some were of more recent origin incorporating modern railings, such as at the County Courthouse near Merchant's Quay. At George's Quay, the walls are of squared ashlar limestone construction and survive to a height of 1.2m above ground level with moulded coping stones.

At Merchant's Quay, the walls are of a similar composition but only survive to present ground height, where they are topped with concrete pillars and iron railings. The walls at Sir Harry's Mall are composed of modern rubble limestone but overlie earlier 19<sup>th</sup>- or 20<sup>th</sup>- century limestone ashlar walls. Sections of earlier quay wall were revealed in nine of the inspection pits along the line of the existing quay walls. In some instances, it was difficult to ascertain whether the walls were underlying the existing quays or were abutting against them. In most cases, the earlier quay walls consisted of rubble mortared construction and survived to considerable depths; up to 4.4m beneath present road surfaces. Some sections were battered while others had visible step features.

**2000:0589- Abbey River/George's Quay, Limerick, Limerick** (from E. O'Donovan, *Excavations Bulletin*)

Licence No.: 98E0581 ext.

Site type: Urban medieval

ITM: E 557957m, N 657465m

*Ed O'Donovan for Margaret Gowan Ltd.*

Excavations in the Abbey River:

Over the past year and a half, excavations in advance of construction work associated with the Limerick Main Drainage Scheme have been carried out. The report on the first phase of these excavations (Excavations 1999, 169–71) included brief reports on excavations along George's Quay and at Broad Street. The Phase I excavations also included an account of the various artefacts recovered from the bed of the Abbey River between Matthew Bridge and Baal's Bridge. This year the excavations in the riverbed extended from Matthew Bridge to the mouth of the Abbey River, with its junction with the Shannon at Curragour Point, and from Curragour Point in the Shannon to Sarsfield Lock, and also included a short programme of excavation on George's Quay.

Artefacts from the Abbey River:

The excavation phase of the project is now complete, and the post-excavation work is beginning in earnest. To date, 10,000 finds have been retrieved from the Abbey and Shannon rivers. These range from a small number of finds dating to before the foundation of Limerick by the Vikings to finds from the present day. The finds reflect the civic history of the city, in terms of trade, commerce, wars and everyday life. The extensive number and variety in the collection are a unique reflection of the city's wide and varied history. Some of the special finds are a Viking Age zoomorphic mount and coin minted for King Cnut (1035); a 15th-century spur

and silver groat minted in Calais in France, Henry VI, Annulet Issue, 1422–7; a previously unrecorded port seal dating from 1500–1600; Williamite mortar bombs and cannonballs and an officer's sword hilt; anti-Treaty Civil War arms (c. 1922), revolvers and hand grenades.

#### Town wall along George's Quay:

Two further sections of the medieval town wall were uncovered along George's Quay (at Manholes E and F). Deep excavation was not required as the construction work was relatively shallow; however, the laying of new pipes along the quay at the junction of Creagh Lane and George's Quay did reveal a substantial wall running parallel to the quay. The preliminary interpretation of the structure suggested that it formed part of a bastion or building standing proud of the line of the town wall. Structures standing proud of the town wall along the Abbey River are illustrated on the early historic maps of the city (Pacata Hibernia map, Hardiman's map and Speed's map). Organic deposits of 16th-century date abutting the structure contained the grain weevil *Sitophilus granarius*. This insect is a pest of stored grain in particular and is entirely dependent on humans for its dispersal (Eileen Reilly, pers. comm.). These deposits are possibly related to grain stored around Nicholas Arthur's Mill, depicted on Hardiman's map (c. 1590).

#### Riverbed at Matthew Bridge:

The archaeological excavations at Matthew Bridge uncovered the remains of the 18th-century bridge piers that pre-dated the present 19th-century bridge. A number of important Civil War artefacts such as revolvers, hand grenades, an unexploded Civil War shell and bullet rounds were found around the base of the bridge piers during the excavation.

#### Hellsgate Island at Curragour Point:

In the 18th century, a phase of canalisation of the Abbey River included the attempted construction of a lock gate at the mouth of the river at its junction with the Shannon. The foundations of the structure were constructed but never finished and were rediscovered with the de-watering in this location.

#### 16<sup>th</sup>/17<sup>th</sup>-century weir in the Abbey River:

The foundations of an early weir were identified in the Abbey River. The structure pre-dates Charlotte's Quay and Bank Place and is thought to form a head-race for two mills on either side of the river, one under Bank Place and the other at the junction of Creagh Lane and George's Quay. This again may relate to Nicholas Arthur's Mill depicted on Hardiman's map, c. 1590.

### **1998:404- Broad Street/George, Limerick**

Licence No.: 98E0581

Site type: Urban

ITM: E 557957m, N 657466m

*Ed O'Donovan for Margaret Gowan Ltd.*

Monitoring of pre-development engineering site investigations associated with Limerick Main Drainage was carried out from 7 to 9 June 1998 by John O'Neill and this writer. Three test-trenches were opened in areas where their location corresponded to the supposed location of the town defences. Two were dug at both ends of Baal's Bridge on Broad Street and George's Quay. The final trench was excavated at the foot of Creagh Lane on George's Quay. All three trenches yielded evidence of the survival of masonry structures between 0.45m and 1.3m below the existing street level, under surviving road surfaces. At Baal's Bridge, the masonry structures were interpreted as being portions of the gates on either side of the bridge. The trench at the foot of Creagh Lane on George's Quay revealed the location of the town wall running parallel to the river along the centre of the present road. The trench depth never exceeded 1.4m below the present ground level, the specified depth limit in the engineering site investigations contract. It was not possible to fully identify evidence of archaeological deposits, with a distinct potential for archaeological deposits to occur both inside and outside the town wall at a level below the bottom of the trial-pit trenches. Eighteenth-century fill was identified outside (Abbey River side) of the 'town wall' along George's Quay. This suggests that an area of relatively low archaeological potential may lie outside the town wall, between it and the present quay. Test excavations were carried out at Nos. 4-5 George's Quay (C. O'Rahilly, *pers. Comm.*) A single trench was excavated into the deposits on the site, where 0.8m of demolition rubble was identified over two layers of black, sticky, silty clay. The clay and silt deposits are highly likely to be archaeological derived. These deposits give an indication of the type and nature of the archaeological deposits inside the 'town wall' on George's Quay.

#### **1998:409- Verdant Place/Island Gate, Limerick**

Licence No.: E433, 98E0026, 98E0557

Site type: Historic town

ITM: E 557560m, N 658144m

*Celie O'Rahilly for Limerick Corporation, City Hall, Limerick.*

This site was tested before development for local authority housing, with an additional area at the northern end where the proposed pumping station for the Main Drainage Scheme will be built. The site lies at the northern end of the Englishtown, just outside the town walls, and is within the zone of archaeological potential as defined by the Urban Archaeological Survey. It is defined on the western side by the River Shannon and by Verdant Place (north-south). To the south is a lane (also called Verdant Place but running East-West) linking

the former with Dominick Street. On the east side of the southern end is the continuation of Dominick Street, now called Island View Terrace; at the northern end are the back gardens of Nos 6 and 7. To the north is a row of north-facing structures, now in use as a garage.

Today the site consists of a walled enclosure or paddock to the north-west (A) and a central section that was the site of two cottages, Victoria and Albert (B), with open ground at the southern end (C). Some low perimeter walls are still in situ, but no buildings remain. As the site lies outside the town wall, there is very little written history. There is, however, a considerable amount of information provided by the cartographic evidence. Two adjacent sites were also tested, Verdant Place (E433), and the Orchard site (98E0026). Town wall. The standing remains of two turrets survive on Verdant Place (north-south). There is evidence that the wall survives behind these. The wall along Verdant Place (east west) may also be a rebuild, with the original wall surviving south of it (see 1840s plan). At the eastern end it also curves, but is of a different build. This was thought to be the remains of another turret/tower. Testing the Orchard site, on the eastern side of Old Dominick Street, provided evidence that the ditch external to the town wall extended to just north of the kink in the boundary wall opposite the Villiers building.

Island Gate: This presumably stood on the line of Dominick Street, between the two stretches of town wall. All of the cartographic evidence, pre-1800, supports this. The maps show the gate a square tower, which is in conflict with the curving section of wall on the west side of the street. On the 1840s plan Island Gate is marked to the west of the street and north of the town wall line. The later OS maps do the same with the addition of 'Site of' and a cross pommee. The gate served as access to the northern end of the King's Island, but this was not a main thoroughfare to the hinterland. It was rebuilt in 1685 by Mayor Robert Smythe (Lenihan, A history of Limerick, 210). The external ditch lay in the Orchard site at the north-western end, where it was c. 3m from the remains of the town wall. Two property entries in the Civil Survey (1654-6) presumably refer to the areas to the east of the road extending north from Dominick Street and to the east of the Island Road. Judging by both the 1752 and 1840 OS plans the ground between the road and the riverbank was open.

After 1800 land to the north of the Island Gate was developed following the demolition of the town walls in the 1760s. By 1827 Franklin's Quay was in place, fronting the riverbank. By 1840 there were buildings fronting Franklin's Quay. By 1870 there was a row of eleven houses fronting the east side of the site. The Quay was replaced by two residences: Victoria Cottage to the north and Albert Cottage to the south. These fronted eastwards onto a narrow lane at the rear of the houses mentioned above with gardens onto the riverbank and survived to 1941, but the houses on the street had undergone some change. Verdant Place (north-south) was put in place sometime between 1840 and 1870.

Five cuttings of varying lengths were made across the site. They were 1.2m wide except where collapse occurred and in Cut 5, which was widened to exposed the masonry. Area (A), 'Paddock': Cuts 1/A, 1/B, 2/A and 2/B. This walled area was, presumably, a garden with a layout of thin concrete paths. None of the maps available showed the paths, but neither do they identify any separate structure with which the garden could be associated. It is, therefore, presumed to have been the northern cottage (Victoria). The surface was a very soggy, black soil, supporting no growth. In three of the cuttings, 1/A, 2/A, and 2/B, was a very similar fill: garden soil, debris and mixed fill, overlying a mixture of brick and stones associated with severe flooding. In all three cases the work was abandoned.

In 1/B, to the east side of the area, was evidence of an accumulation of dumped material that produced a sizeable assemblage of sherds etc., of late 17<sup>th</sup>/early 18<sup>th</sup>-century date. This, together with the cartographic evidence, implied that this area was reclaimed somewhat later than that to the south, (B) and (C).

Area (B), Victoria Cottage and Albert Cottage: Cut 3/A-G. No structural evidence of the buildings fronting Franklin Quay survived in the cut; presumably they were destroyed by the construction of the cottages. Of these, two walls were noted: Wall (45) was probably the remains of the west wall, and Wall (53) the remains of the east. The insubstantial Wall (35) is probably one of the garden walls. It is unclear what the brick layer in 3/B and D was. Given that the bricks were not bonded together but just set in the sand, they may have served as an anti-tidal sealing layer. Below the level of the walls and the various deposits of overburden and debris was an extensive accumulation of dumped material across the cut, in which no structural features were noted. The lowest level of this was superimposed on the original foreshore, identified by sand and gravel deposits and occasional decayed vegetation and mud. This began close to the eastern limit of the site and sloped down towards the west.

Area (C), open area: Cut 4/A-E and Cut 5

No structural remains were identified in Cut 4/A-E. There was a similar accumulation of dumped material and sloping foreshore as identified in Cut 3. At the eastern end, in 4/E, a natural clay was noted, as opposed to sand/gravel and rock. Judging by the various distinct differences in the dumped material in both Cuts 3 and 4 it appears that the dumping occurred in stages, as it was not a homogeneous layer. There was obviously time for the sand and gravel, presumably by tidal/river action, to become incorporated into the layers and even separate them; some of what appeared to be pure, natural layers of sand and gravel had finds filtered through. It is reasonable to assume that the area west of the access to the Island Gate was gradually reclaimed by using

it as a 'town dump' from the mid-17th century, just as the area around St Francis's Abbey was used in the medieval period. By the early 19th century, however, the reclaimed area was built on, with the quay in place. As structural remains were identified 0.6m below the surface, possibly of the gate or a building associated with it, further work in Cut 5 was deferred until a larger area could be opened up and investigated.

### **1999L 516 - Charlotte's Quay, Limerick**

Licence No.: 99E0094

Site type: Urban Medieval

ITM: E 557969m, N 657344m

*Ken Hanley director*

Monitoring and excavation work were carried out before construction of a multi-storey carpark and ancillary works at the rear of Charlotte's Quay, Limerick. The site is between St Michael's graveyard and an extant portion of the medieval town wall. Some previous archaeological investigation in this area revealed large-scale post-medieval disturbance, with limited pockets of archaeological activity (Lynch 1984).

Monitoring and testing in February 1999 identified only two areas of archaeological activity. Area A was outside the south-eastern end of the existing graveyard boundary wall, within an area of substantial post-medieval disturbance. Skeletal remains were identified (at c. 5.45m OD and 5.8m OD), within pockets of an undisturbed clay horizon. Area B was a small area in the extreme north-eastern corner of the site. This consisted of an extremely thin band of charcoal-flecked, grey clay overlying natural boulder clay. No datable finds were recovered; however, the deposit appeared to be a residual, undisturbed archaeological layer.

The monitoring and testing suggested that c. 95% of the site had been disturbed by post-medieval activity, caused principally by 19th-century gasworks. The only archaeology of any substance was in a small area at the south-west corner of the site. Several design changes were made to the proposed development, in consultation with the NMHPS, the NMI and the developer, which minimised the impact on the areas of known archaeology.

In March 1999 a limited archaeological excavation was carried out at the extreme south-western corner of the site (Area A). This revealed that St Michael's graveyard continued well beyond the south-eastern limit of the existing boundary wall. In situ burial remains were identified in shallow, earth-cut graves. A maximum of eight individuals were identified, both articulated and disarticulated (specialist report by Clare Mullins). Pottery associations suggested a 13th/14th-century date. Reference: Lynch, A. 1984 PRIA 84C, 281-331.

### **1980-84:0132- Limerick (Charlotte's Quay), Limerick**

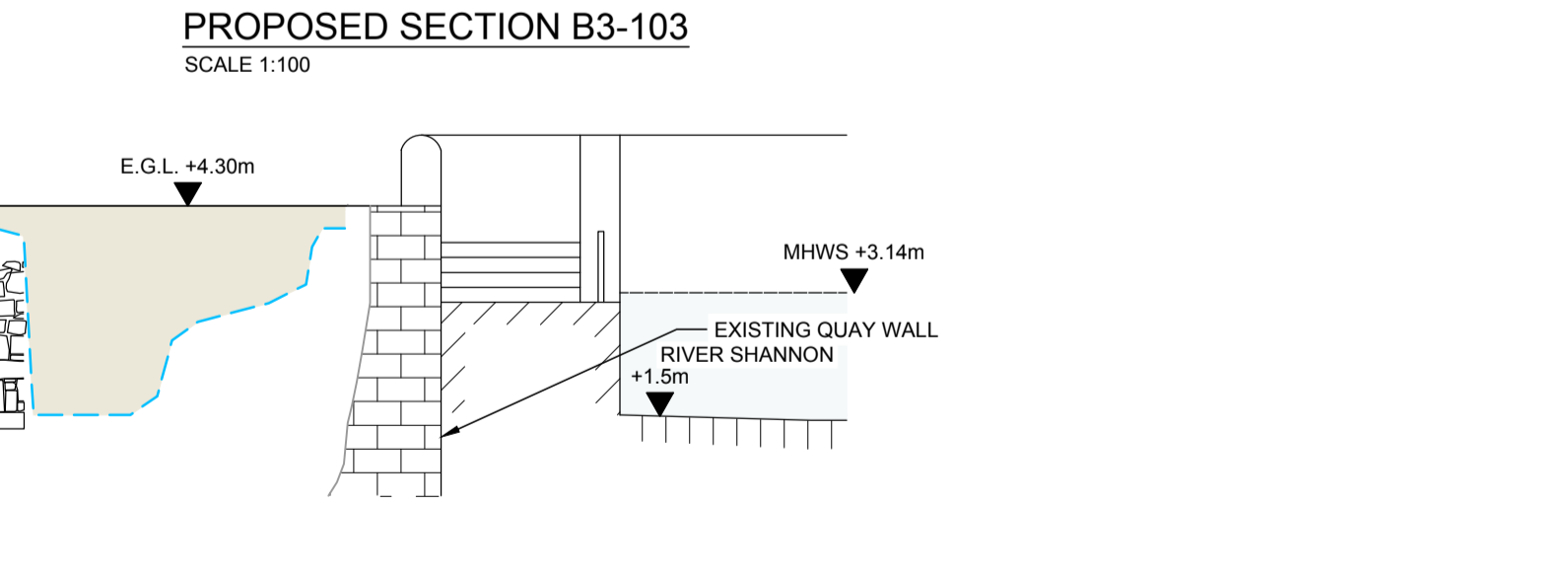
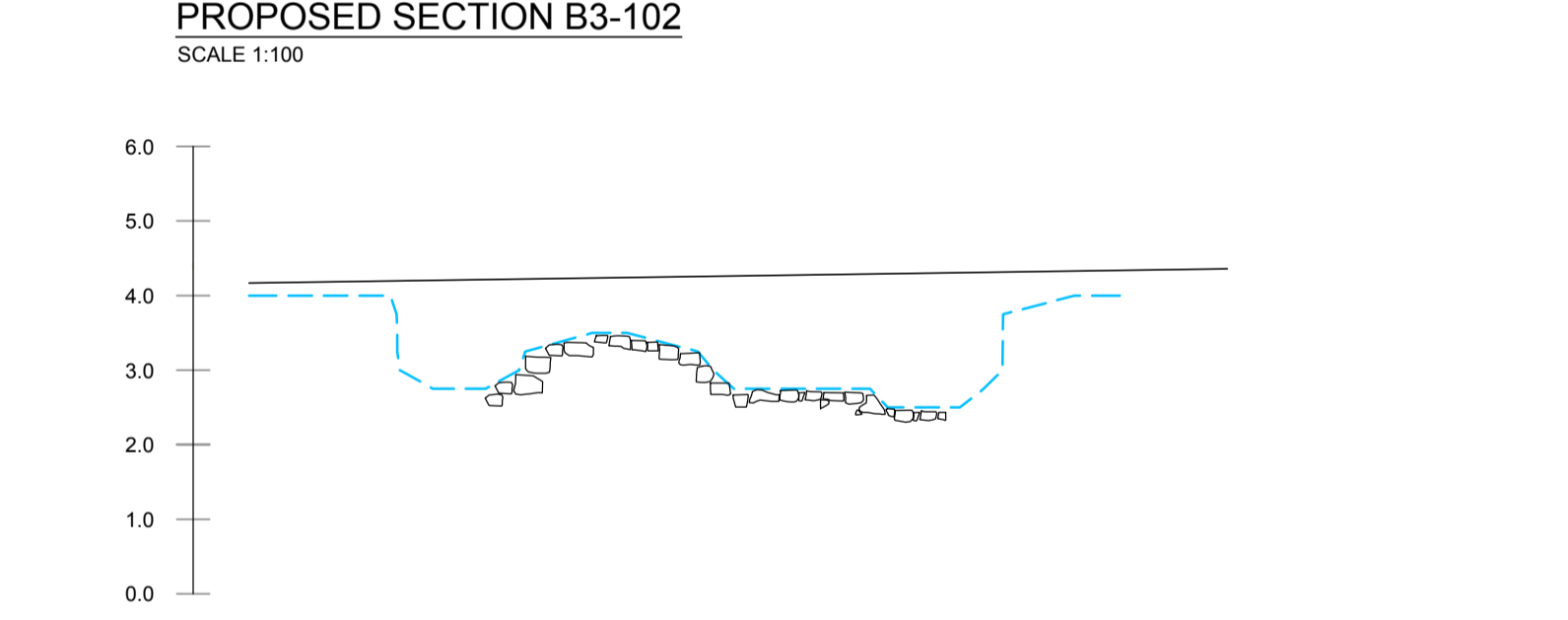
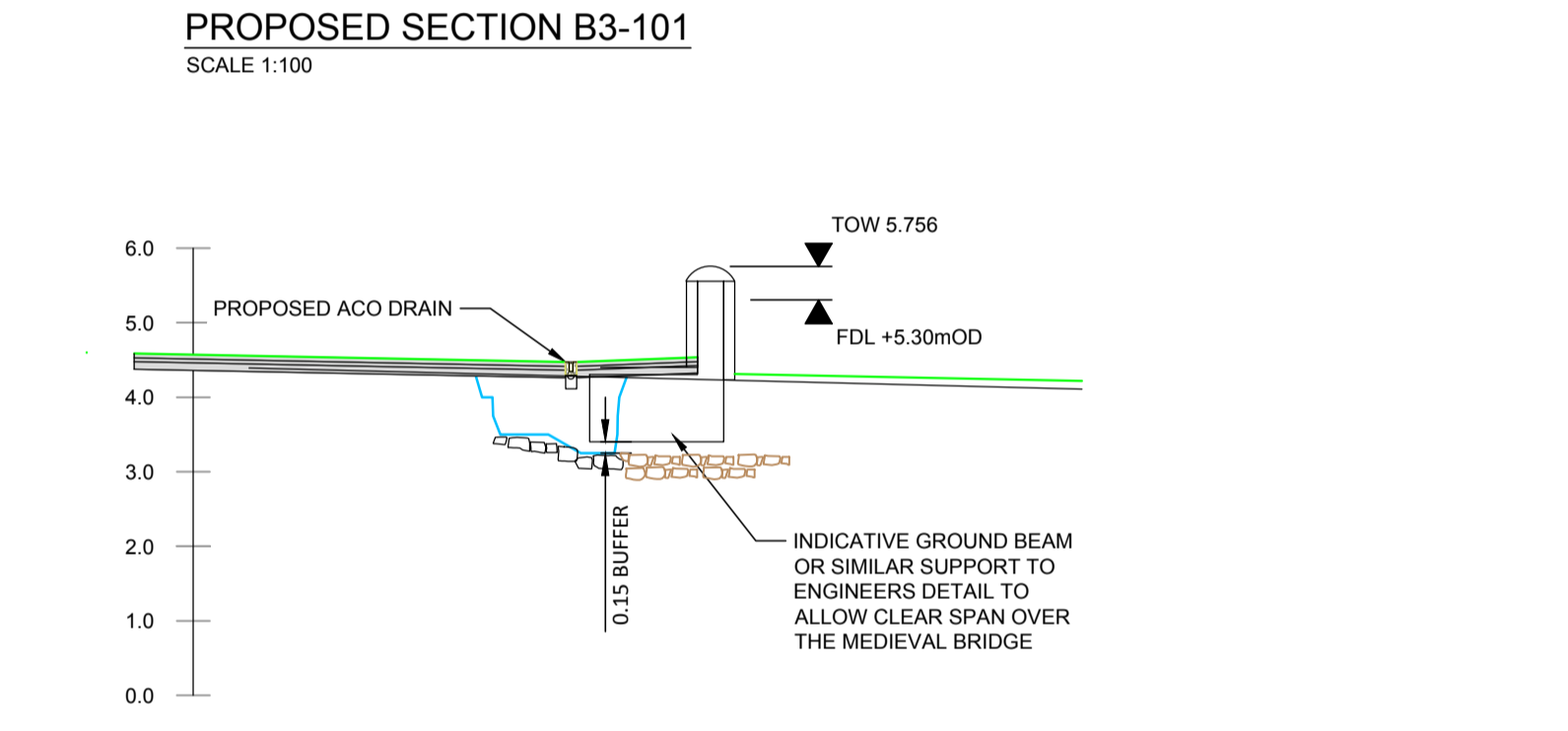
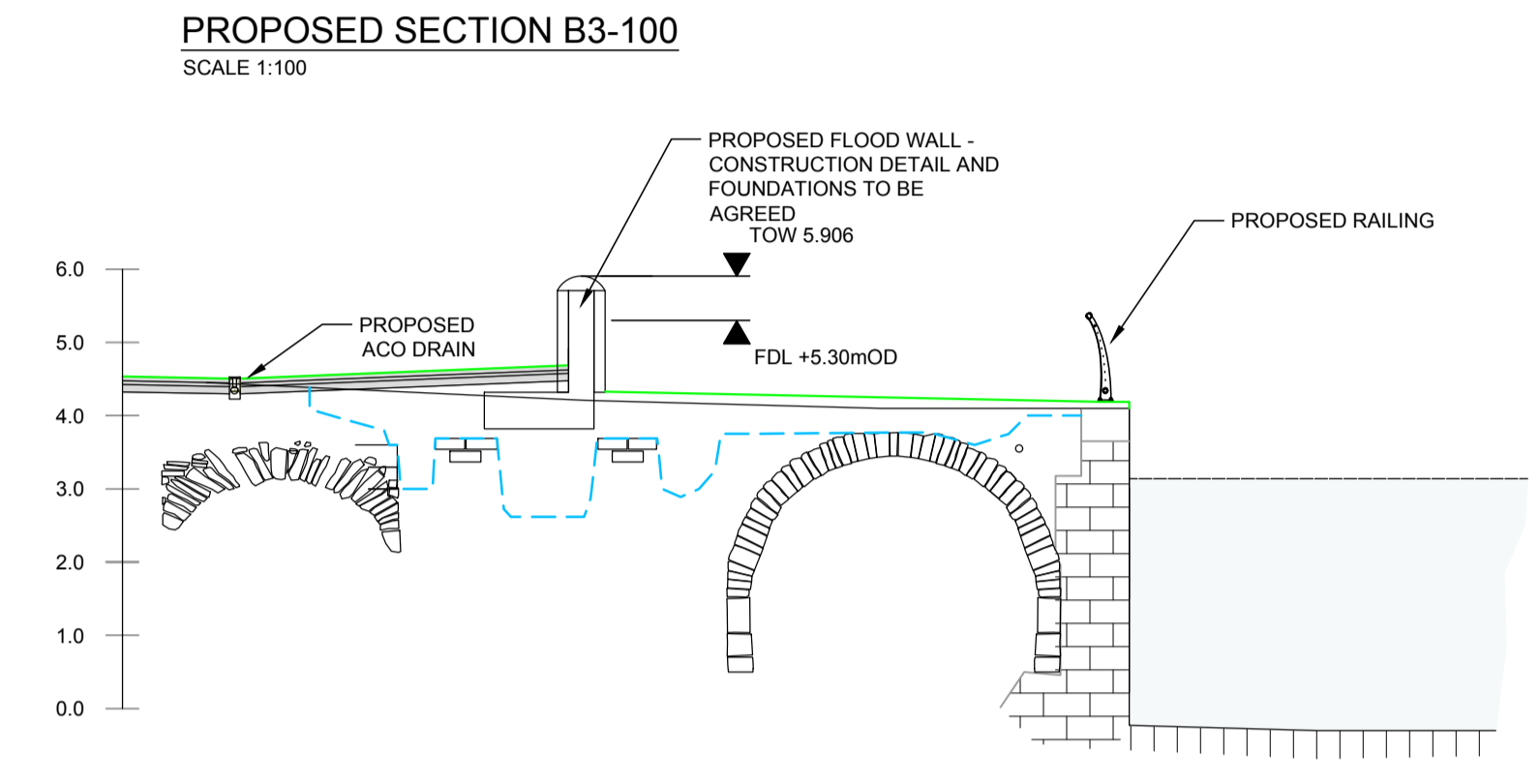
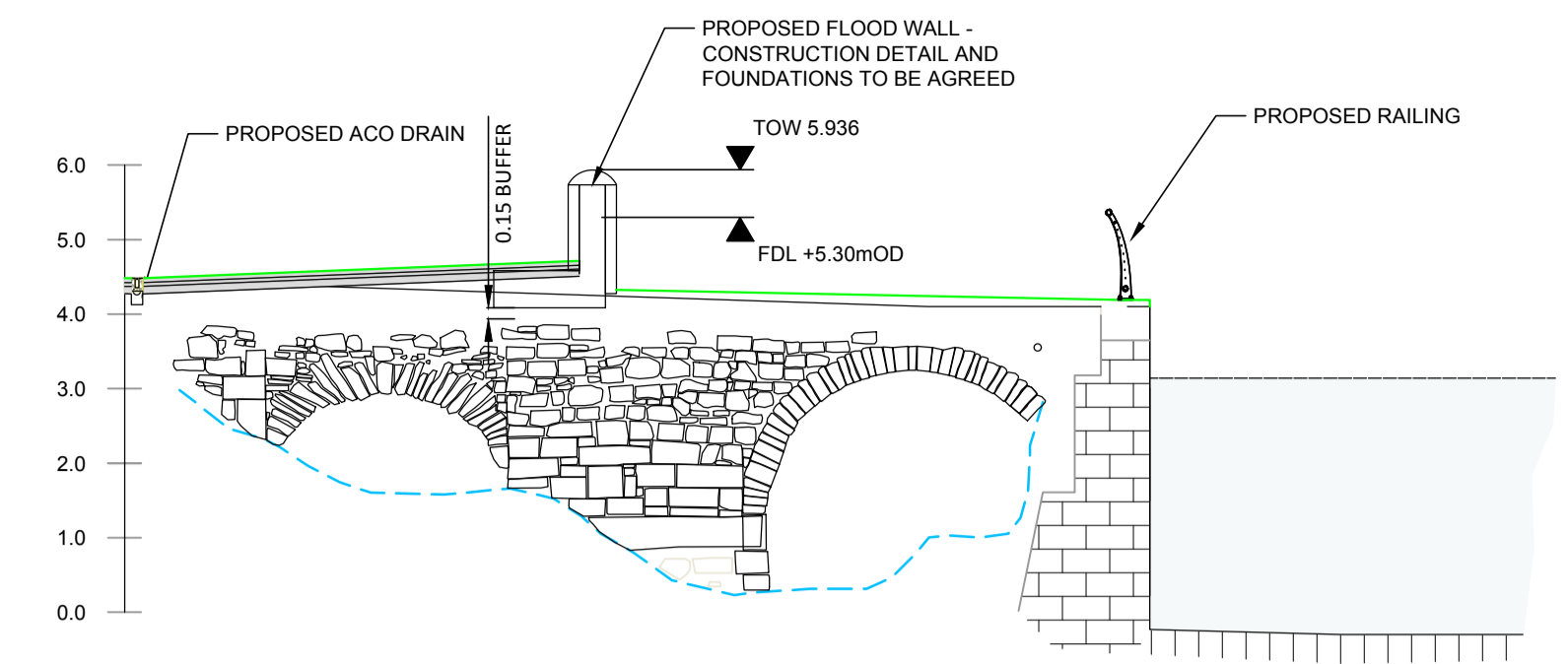
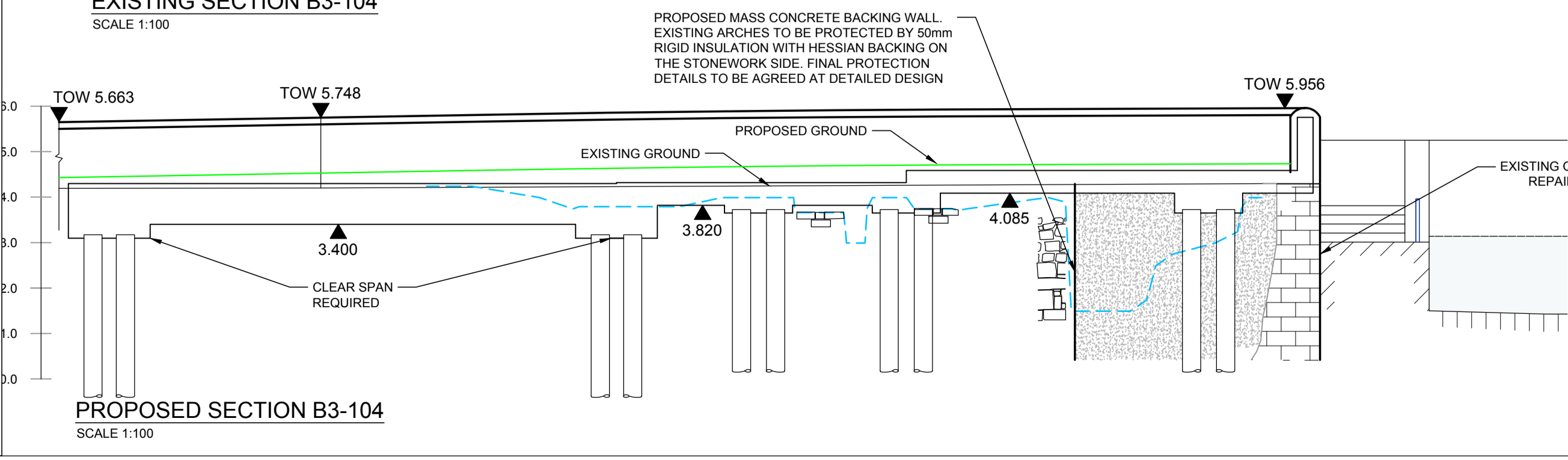
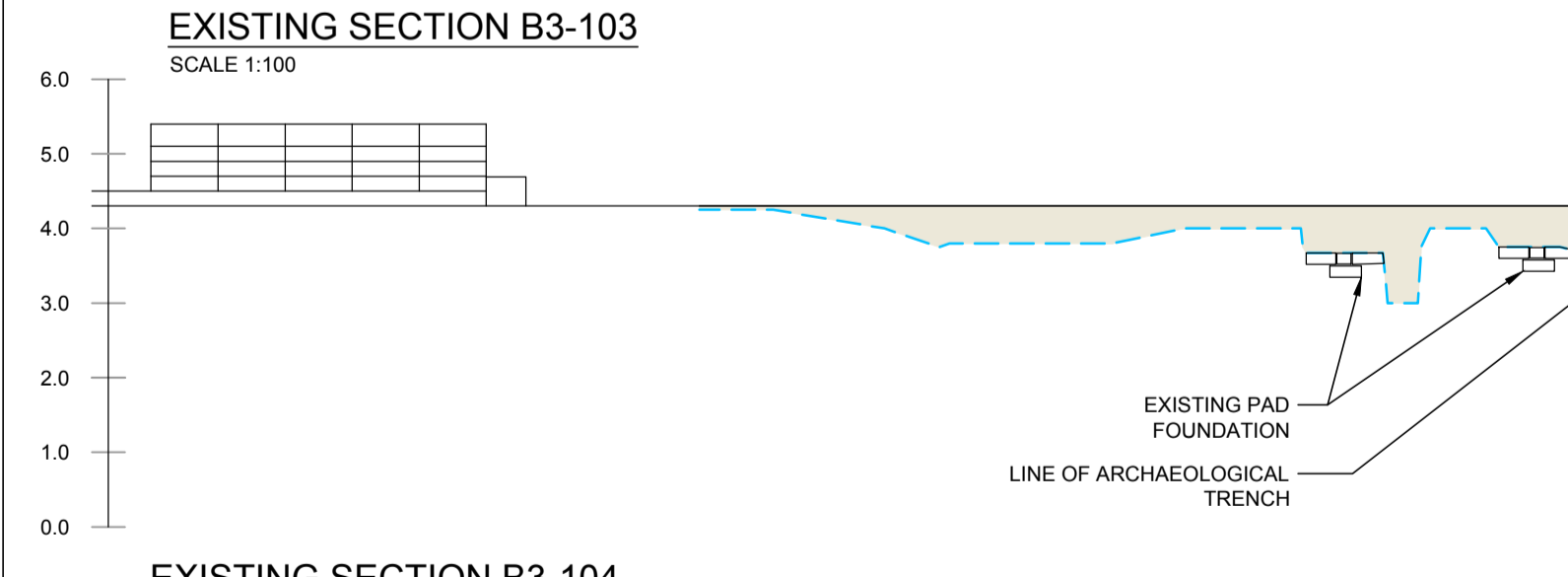
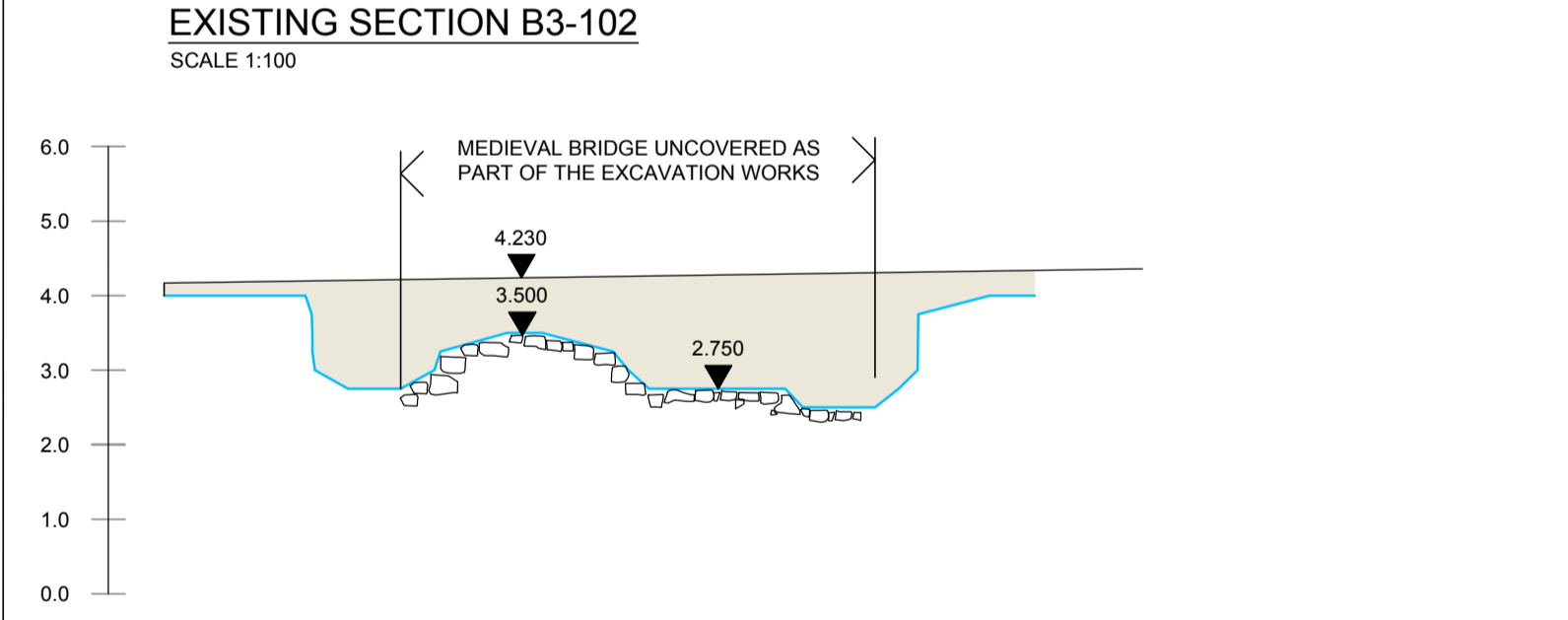
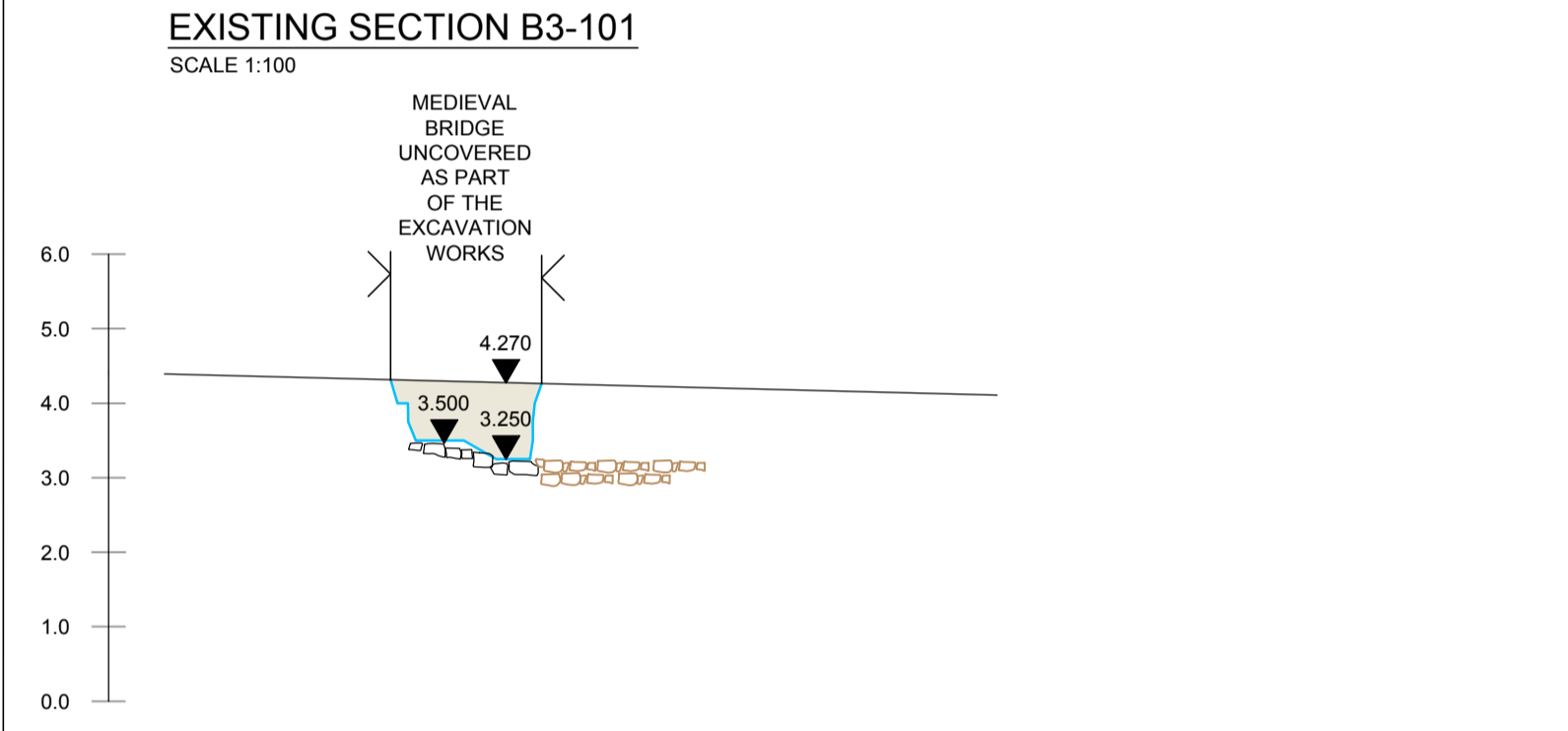
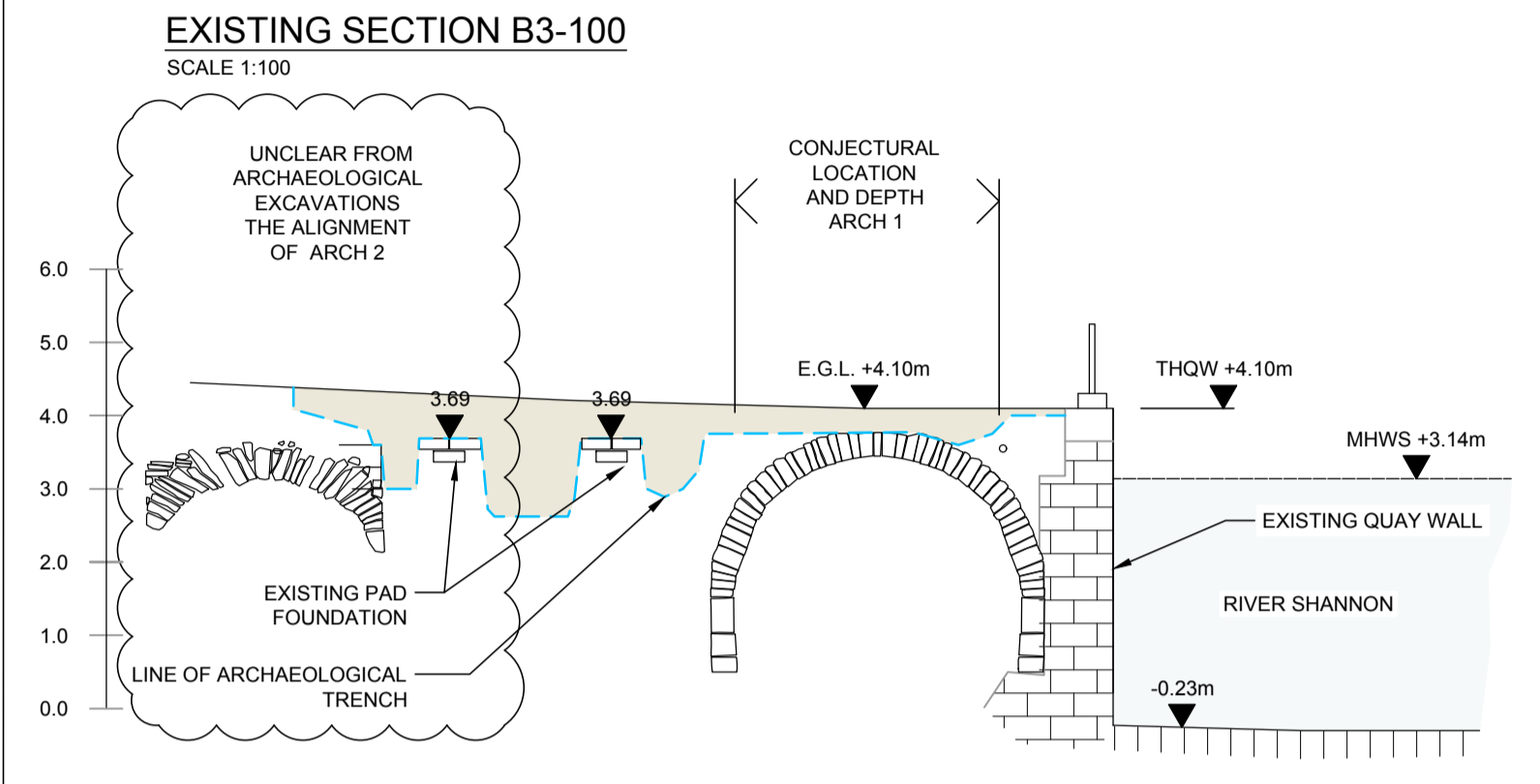
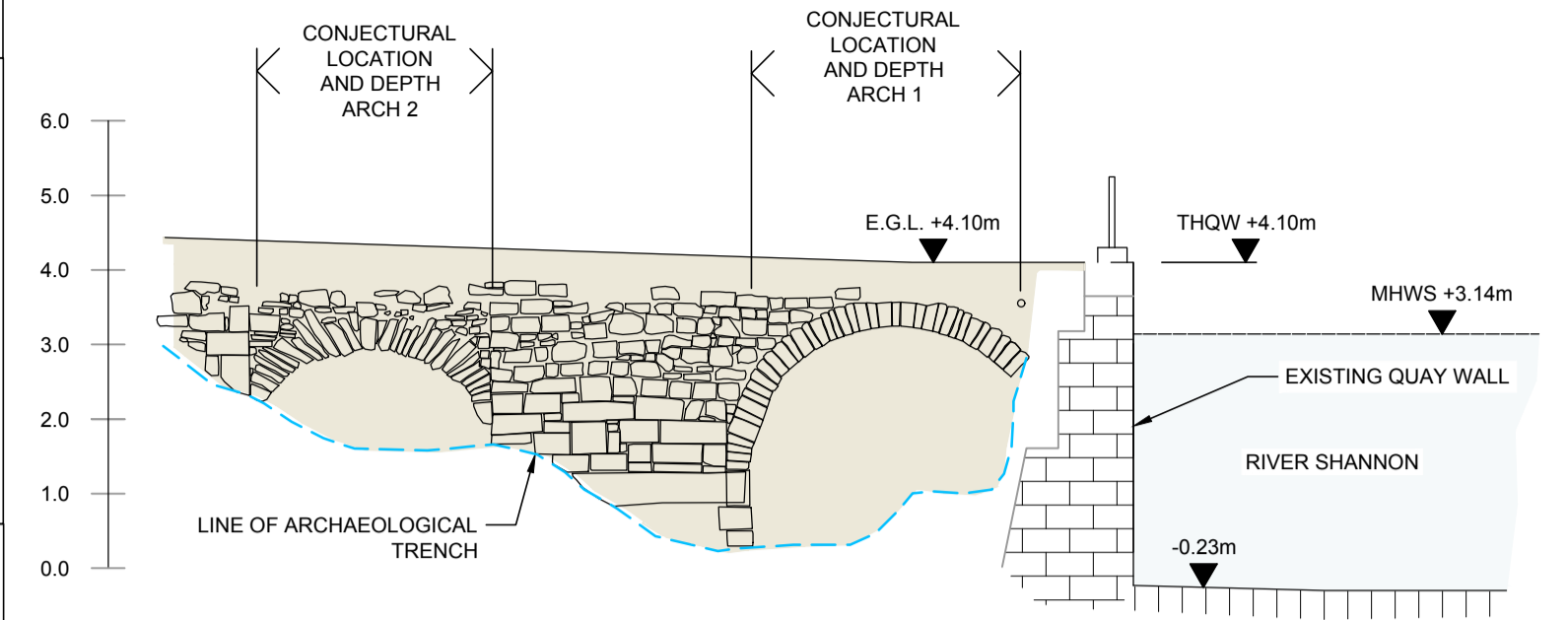
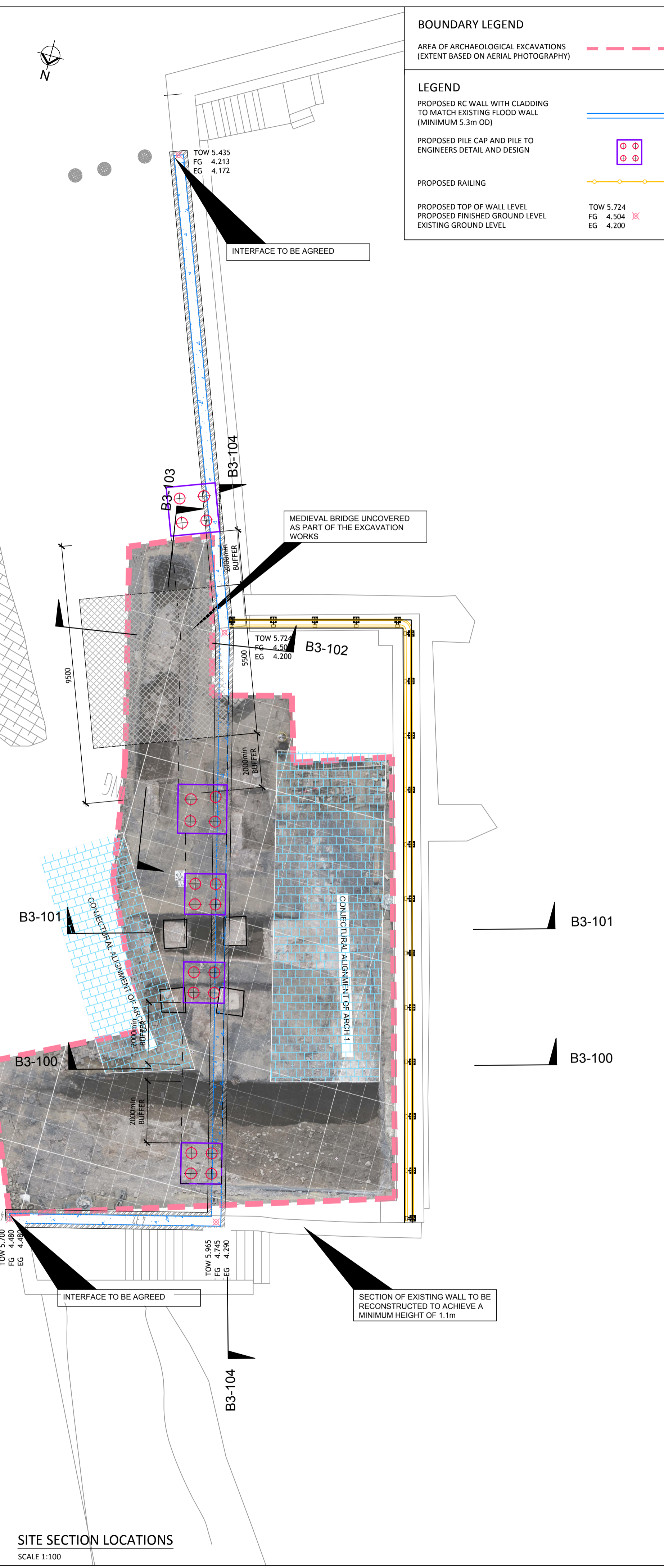
Licence No.: N/A for that time.

Site type: Medieval town defences

ITM: E 557660m, N 657544m

Lynch, A. (1984) 'Excavations of the medieval town defences at Charlott's Quay, Limerick' *Proc. Roy. Irish Acad.* 84c, 281-331.





**COPYRIGHT:**  
The design and details shown on this drawing are applicable to their project only and may not be reproduced in whole or in part or be used for any other project or purpose without the written permission of Limerick City and County Council with whom copyright resides.

**DO NOT SCALE** from this drawing. Use figured dimensions. Contractor to check all dimensions on site prior to commencement of works. Any discrepancies are to be referred to the ARCHITECT.

- NOTE**
1. ARCHAEOLOGICAL INFORMATION BASED ON DATASET SUPPLIED BY MOORE ARCHAEOLOGICAL & ENVIRONMENTAL SERVICES LTD.
  2. EXISTING FEATURES WHERE SHOWN ARE CONJECTURAL AND ARE NOT TO BE USED FOR SETTING OUT.
  3. PILING LOCATIONS ARE SUBJECT TO DETAILED DESIGN BY THE CONSULTANT.

© Ordnance Survey Ireland. All rights reserved.  
Licence No. 2018/09/CCMA/Limerick City & County Council

**REVISIONS**

NO.	DATE	REV.	BY	CHECKED	DESCRIPTION

20-10-20 | A | KOBKOG | ISSUED FOR CULTURAL HERITAGE RESPONSE

Comhairle Cathrach & Contae Luimnigh  
Limerick City & County Council

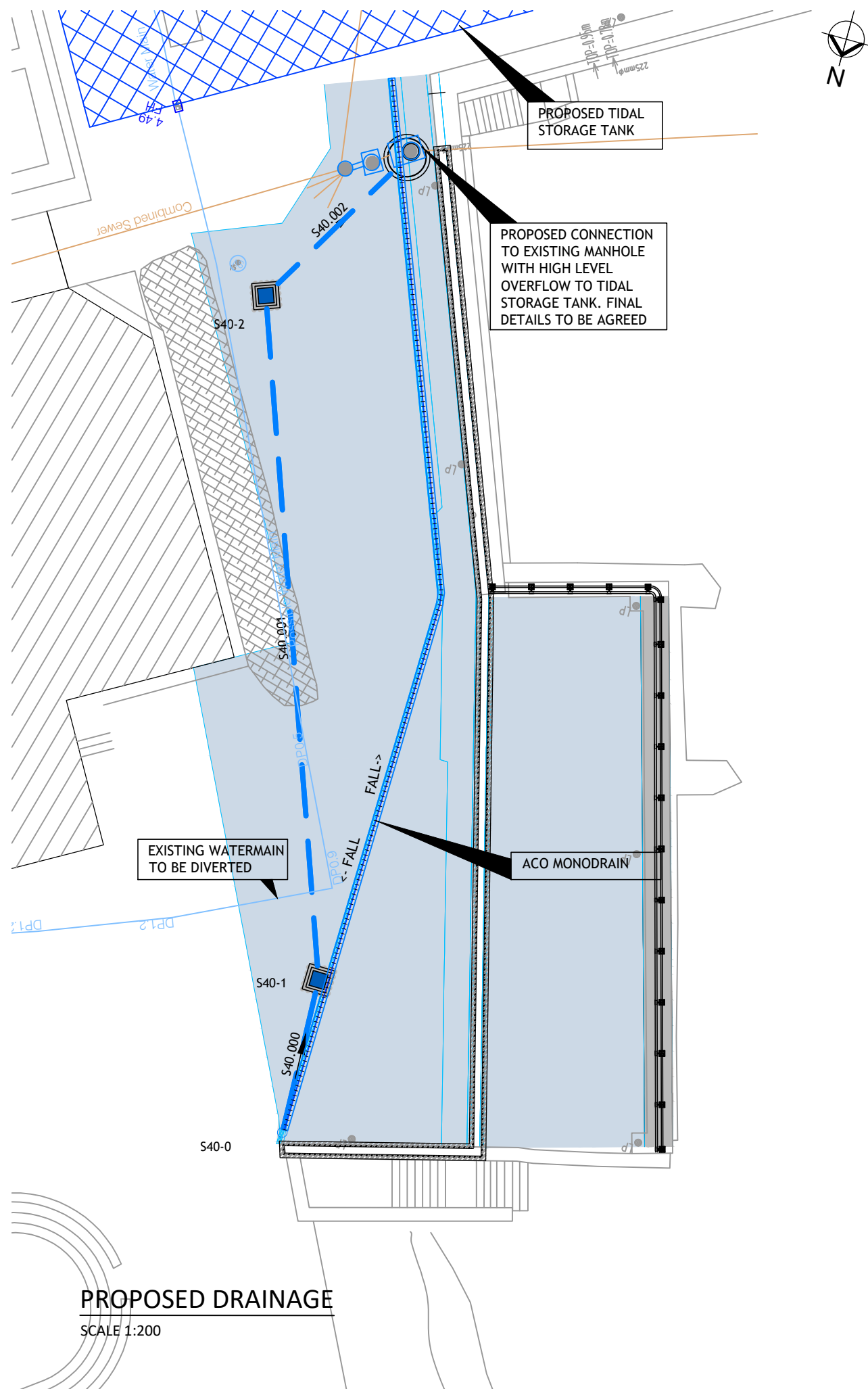
Limerick City and County Council  
Design & Delivery Services  
Merchants Quay  
Limerick

PROJECT:  
KING'S ISLAND FLOOD RELIEF SCHEME

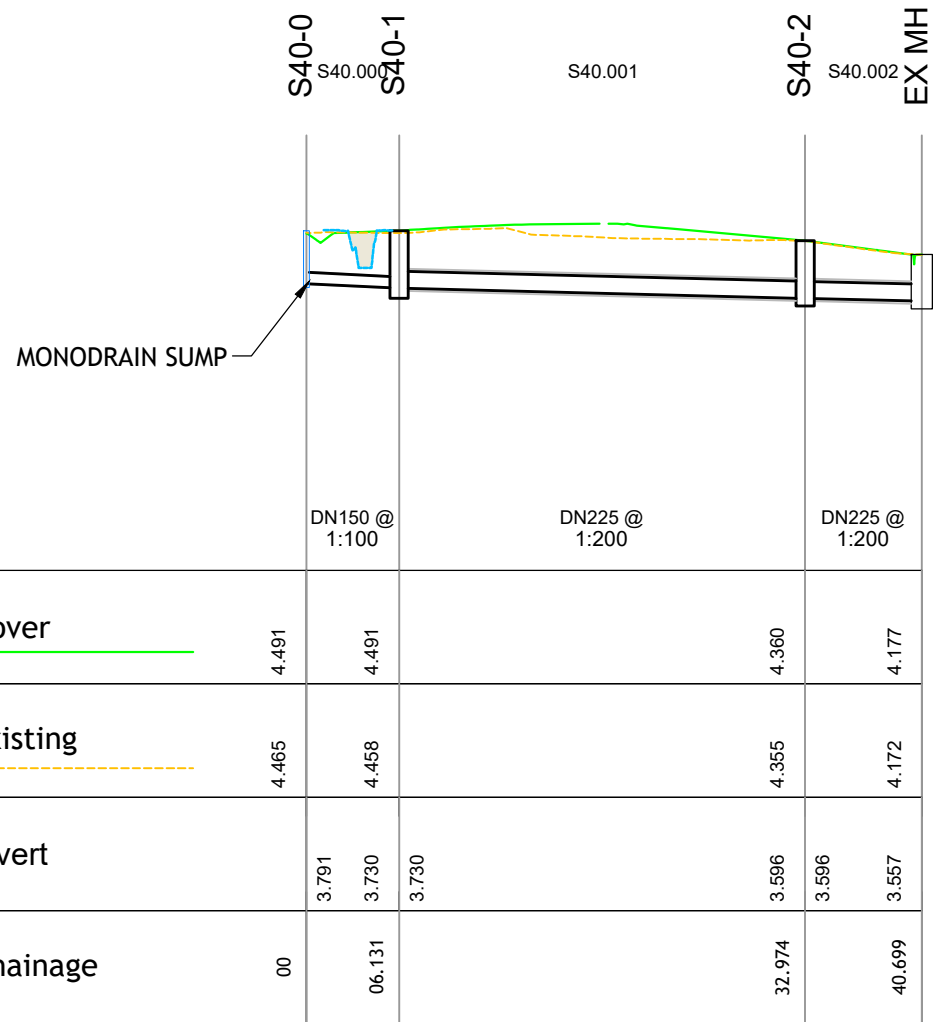
STAGE:  
PRELIMINARY

DRAWING TITLE:  
CULTURAL HERITAGE DRAWING 1  
AREA B3  
ARCHAEOLOGICAL TEST AREA 1  
REVISED FLOOD WALL LOCATION

DATE: 2020-09-13	DRAWING NO:
SCALE: AS SHOWN	DRAWING 1
DRAWN: KOBrien	SHEET SIZE: A1
CHECKED: KOGorman	REVISION: A
JOB NO: KIFRS	
FILE NAME: KIFRS-CHD-01	



**PROPOSED DRAINAGE**  
SCALE 1:200



**STORM DESIGN**  
SCALE: H 1:500, V 1:100. DATUM: 0.000

**COPYRIGHT:**  
The design and details shown on this drawing are applicable to their project only and may not be reproduced in whole or in part or be used for any other project or purpose without the written permission of Limerick City and County Council with whom copyright resides.  
**DO NOT SCALE** from this drawing. Use figured dimensions. Contractor to check all dimensions on site prior to commencement of works. Any discrepancies are to be referred to the ARCHITECT.

© Ordnance Survey Ireland. All rights reserved.  
Licence No. 2018/09/CCMA/Limerick City & County Council

REVISIONS				
DATE	REV	BY	CH	DESCRIPTION
20-10-20	A	KOB	KOG	ISSUED FOR CULTURAL HERITAGE

Limerick City and County Council  
Design & Delivery Services  
Merchants Quay  
Limerick

PROJECT:  
**KING'S ISLAND FLOOD RELIEF SCHEME**  
STAGE:  
**PRELIMINARY**

DRAWING TITLE:  
**CULTURAL HERITAGE DRAWING 2  
AREA B3  
ARCHAEOLOGICAL TEST AREA 1  
DRAINAGE PROPOSAL**

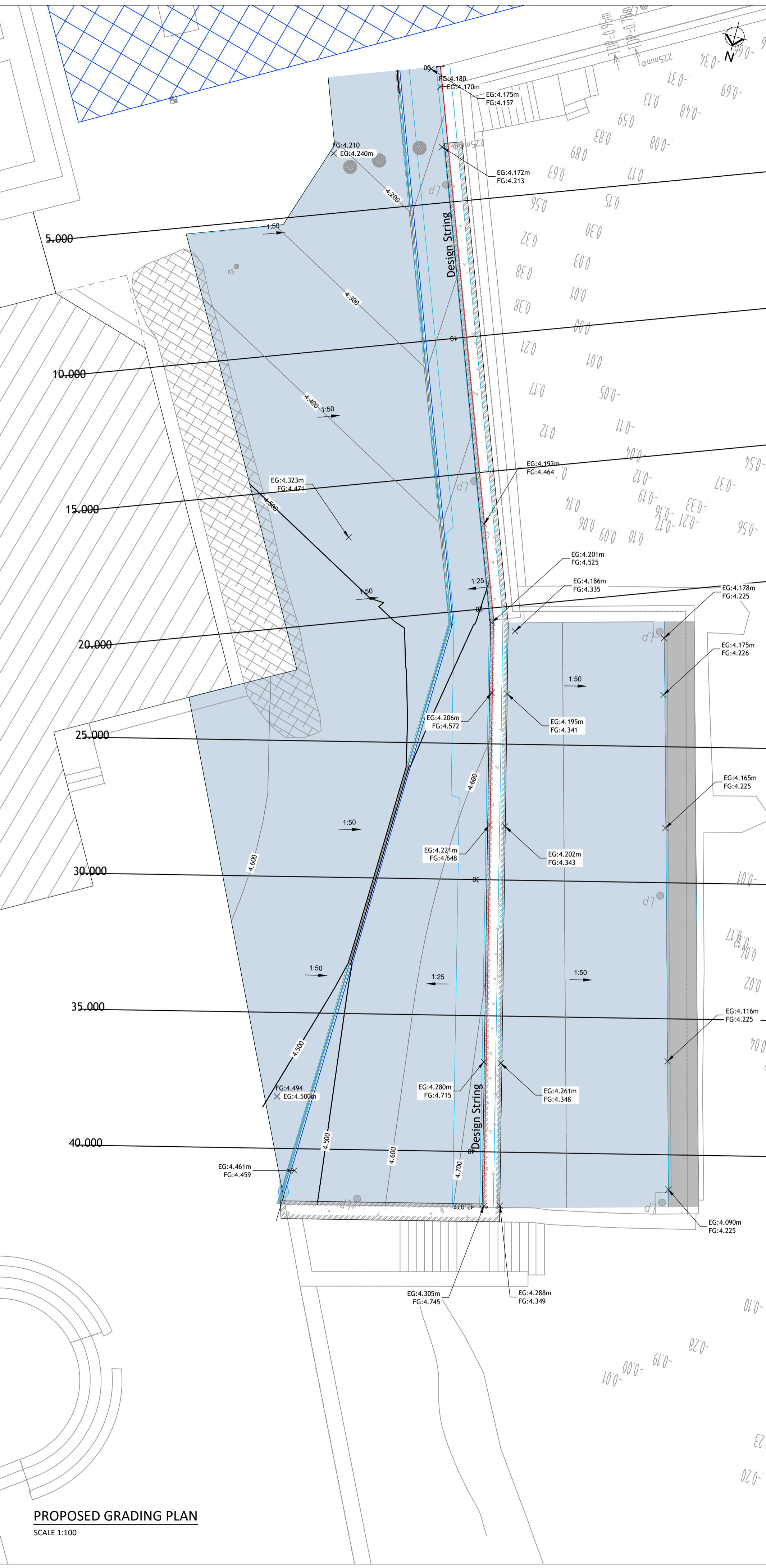
DATE: 2020-10-13	DRAWING NO: DRAWING 2
SCALE: AS SHOWN	
DRAWN: KOBrien	
CHECKED: KOGorman	SHEET SIZE: A3
JOB NO: KIFRS-MQ	REVISION: A

**COPYRIGHT:**  
The design and details shown on this drawing are applicable to their project only and may not be reproduced in whole or in part or be used for any other project or purpose without the written permission of Limerick City and County Council with whom copyright resides.

DO NOT SCALE from this drawing. Use figured dimensions. Contractors to check all dimensions on site prior to commencement of works. Any discrepancies are to be referred to the ARCHITECT.

- NOTE**
1. ARCHAEOLOGICAL INFORMATION BASED ON DATASET SUPPLIED BY MOORE ARCHAEOLOGICAL & ENVIRONMENTAL SERVICES LTD.
  2. EXISTING FEATURES WHERE SHOWN ARE CONJECTURAL AND ARE NOT TO BE USED FOR SETTING OUT.
  3. PILING LOCATIONS ARE SUBJECT TO DETAILED DESIGN BY THE CONSULTANT.

**ABBREVIATION**  
EG - EXISTING GROUND  
FG - FINISHED GROUND



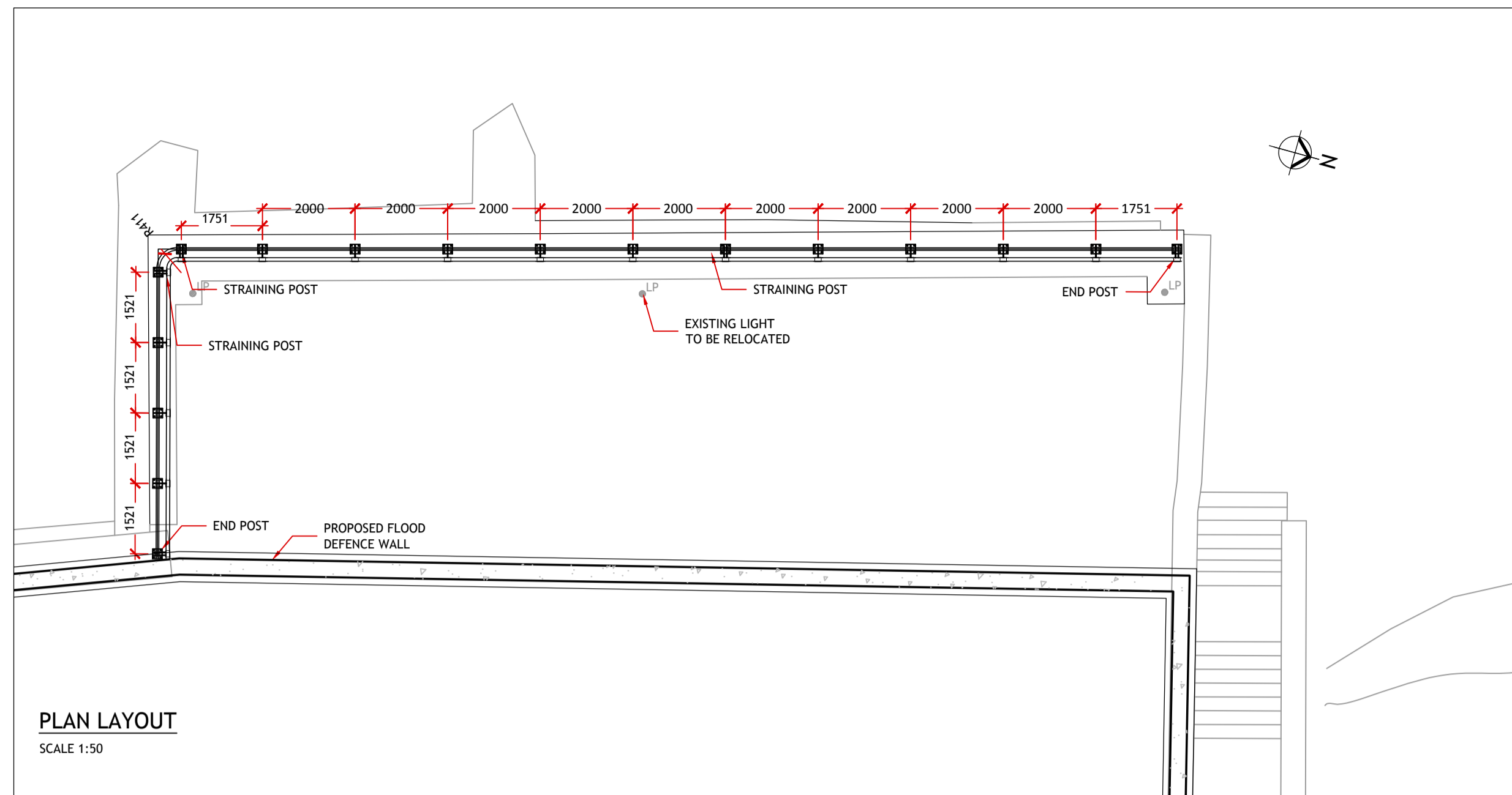
Proposed Levels																					
Existing Levels	4.803	4.47	13.00	4.47	4.45	4.43	4.41	4.39	4.38	4.36	4.33	4.30	4.284	4.264	4.244	4.224	4.204	4.184	4.17	4.217	4.237
Offset	15.00	14.00	13.00	12.00	11.00	10.00	9.00	8.00	7.00	6.00	5.00	4.00	3.00	2.00	1.00	0.00	-1.00	-1.00	-1.00	-1.00	-1.00

Design String - Cross Section @ Chainage 5.000

Proposed Levels																														
Existing Levels	4.796	4.77	4.75	4.69	4.62	4.58	4.56	4.48	4.42	4.396	4.376	4.356	4.336	4.316	4.296	4.276	4.256	4.236	4.216	4.196	4.176	4.156	4.136	4.116	4.096	4.076	4.056	4.036	4.016	4.000
Offset	15.00	14.00	13.00	12.00	11.00	10.00	9.00	8.00	7.00	6.00	5.00	4.00	3.00	2.00	1.00	0.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00

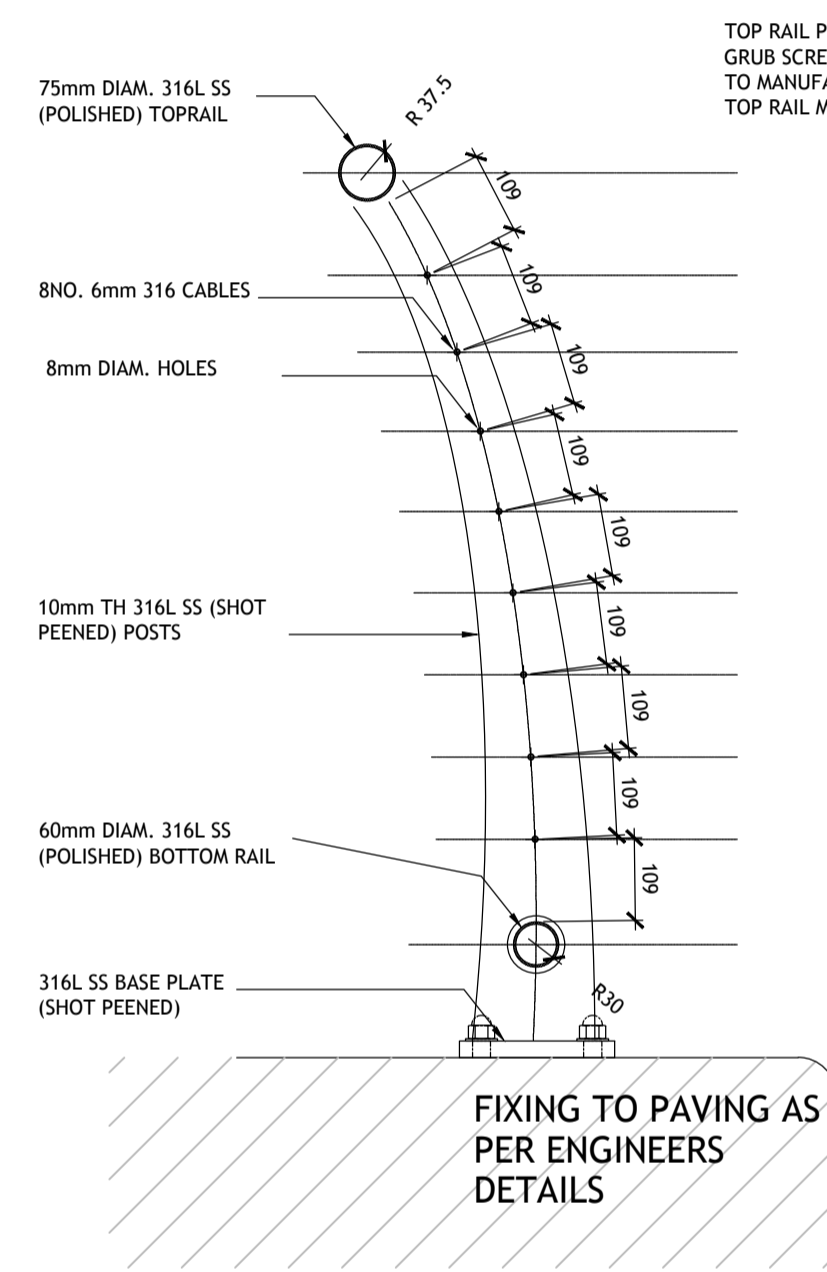
Design String - Cross Section @ Chainage 25.000

Proposed Levels																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
Existing Levels	5.45	4.39	4.385	4.381	4.377	4.373	4.369	4.365	4.361	4.357	4.353	4.349	4.345	4.341	4.337	4.333	4.329	4.325	4.321	4.317	4.313	4.309	4.305	4.301	4.297	4.293	4.289	4.285	4.281	4.277	4.273	4.269	4.265	4.261	4.257	4.253	4.249	4.245	4.241	4.237	4.233	4.229	4.225	4.221	4.217	4.213	4.209	4.205	4.201	4.197	4.193	4.189	4.185	4.181	4.177	4.173	4.169	4.165	4.161	4.157	4.153	4.149	4.145	4.141	4.137	4.133	4.129	4.125	4.121	4.117	4.113	4.109	4.105	4.101	4.097	4.093	4.089	4.085	4.081	4.077	4.073	4.069	4.065	4.061	4.057	4.053	4.049	4.045	4.041	4.037	4.033	4.029	4.025	4.021	4.017	4.013	4.009	4.005	4.001	3.997	3.993	3.989	3.985	3.981	3.977	3.973	3.969	3.965	3.961	3.957	3.953	3.949	3.945	3.941	3.937	3.933	3.929	3.925	3.921	3.917	3.913	3.909	3.905	3.901	3.897	3.893	3.889	3.885	3.881	3.877	3.873	3.869	3.865	3.861	3.857	3.853	3.849	3.845	3.841	3.837	3.833	3.829	3.825	3.821	3.817	3.813	3.809	3.805	3.801	3.797	3.793	3.789	3.785	3.781	3.777	3.773	3.769	3.765	3.761	3.757	3.753	3.749	3.745	3.741	3.737	3.733	3.729	3.725	3.721	3.717	3.713	3.709	3.705	3.701	3.697	3.693	3.689	3.685	3.681	3.677	3.673	3.669	3.665	3.661	3.657	3.653	3.649	3.645	3.641	3.637	3.633	3.629	3.625	3.621	3.617	3.613	3.609	3.605	3.601	3.597	3.593	3.589	3.585	3.581	3.577	3.573	3.569	3.565	3.561	3.557	3.553	3.549	3.545	3.541	3.537	3.533	3.529	3.525	3.521	3.517	3.513	3.509	3.505	3.501	3.497	3.493	3.489	3.485	3.481	3.477	3.473	3.469	3.465	3.461	3.457	3.453	3.449	3.445	3.441	3.437	3.433	3.429	3.425	3.421	3.417	3.413	3.409	3.405	3.401	3.397	3.393	3.389	3.385	3.381	3.377	3.373	3.369	3.365	3.361	3.357	3.353	3.349	3.345	3.341	3.337	3.333	3.329	3.325	3.321	3.317	3.313	3.309	3.305	3.301	3.297	3.293	3.289	3.285	3.281	3.277	3.273	3.269	3.265	3.261	3.257	3.253	3.249	3.245	3.241	3.237	3.233	3.229	3.225	3.221	3.217	3.213	3.209	3.205	3.201	3.197	3.193	3.189	3.185	3.181	3.177	3.173	3.169	3.165	3.161	3.157	3.153	3.149	3.145	3.141	3.137	3.133	3.129	3.125	3.121	3.117	3.113	3.109	3.105	3.101	3.097	3.093	3.089	3.085	3.081	3.077	3.073	3.069	3.065	3.061	3.057	3.053	3.049	3.045	3.041	3.037	3.033	3.029	3.025	3.021	3.017	3.013	3.009	3.005	3.001	2.997	2.993	2.989	2.985	2.981	2.977	2.973	2.969	2.965	2.961	2.957	2.953	2.949	2.945	2.941	2.937	2.933	2.929	2.925	2.921	2.917	2.913	2.909	2.905	2.901	2.897	2.893	2.889	2.885	2.881	2.877	2.873	2.869	2.865	2.861	2.857	2.853	2.849	2.845	2.841	2.837	2.833	2.829	2.825	2.821	2.817	2.813	2.809	2.805	2.801	2.797	2.793	2.789	2.785	2.781	2.777	2.773	2.769	2.765	2.761	2.757	2.753	2.749	2.745	2.741	2.737	2.733	2.729	2.725	2.721	2.717	2.713	2.709	2.705	2.701	2.697	2.693	2.689	2.685	2.681	2.677	2.673	2.669	2.665	2.661	2.657	2.653	2.649	2.645	2.641	2.637	2.633	2.629	2.625	2.621	2.617	2.613	2.609	2.605	2.601	2.597	2.593	2.589	2.585	2.581	2.577	2.573	2.569	2.565	2.561	2.557	2.553	2.549	2.545	2.541	2.537	2.533	2.529	2.525	2.521	2.517	2.513	2.509	2.505	2.501	2.497	2.493	2.489	2.485	2.481	2.477	2.473	2.469	2.465	2.461	2.457	2.453	2.449	2.445	2.441	2.437	2.433	2.429	2.425	2.421	2.417	2.413	2.409	2.405	2.401	2.397	2.393	2.389	2.385	2.381	2.377	2.373	2.369	2.365	2.361	2.357	2.353	2.349	2.345	2.341	2.337	2.333	2.329	2.325	2.321	2.317	2.313	2.309	2.305	2.301	2.297	2.293	2.289	2.285	2.281	2.277	2.273	2.269	2.265	2.261	2.257	2.253	2.249	2.245	2.241	2.237	2.233	2.229	2.225	2.221	2.217	2.213	2.209	2.205	2.201	2.197	2.193	2.189	2.185	2.181	2.177	2.173	2.169	2.165	2.161	2.157	2.153	2.149	2.145	2.141	2.137	2.133	2.129	2.125	2.121	2.117	2.113	2.109	2.105	2.101	2.097	2.093	2.089	2.085	2.081	2.077	2.073	2.069	2.065	2.061	2.057	2.053	2.049	2.045	2.041	2.037	2.033	2.029	2.025	2.021	2.017	2.013	2.009	2.005	2.001	1.997	1.993	1.989	1.985	1.981	1.977	1.973	1.969	1.965	1.961	1.957	1.953	1.949	1.945	1.941	1.937	1.933	1.929	1.925	1.921	1.917	1.913	1.909	1.905	1.901	1.897	1.893	1.889	1.885	1.881	1.877	1.873	1.869	1.865	1.861	1.857	1.853	1.849	1.845	1.841	1.837	1.833	1.829	1.825	1.821	1.817	1.813	1.809	1.805	1.801	1.797	1.793	1.789	1.785	1.781	1.777	1.773	1.769	1.765	1.761	1.757	1.753	1.749	1.745	1.741	1.737	1.733	1.729	1.725	1.721	1.717	1.713	1.709	1.705	1.701	1.697	1.693	1.689	1.685	1.681	1.677	1.673	1.669	1.665	1.661	1.657	1.653	1.649	1.645	1.641	1.637	1.633	1.629	1.625	1.621	1.617	1.613	1.609	1.605	1.601	1.597	1.593	1.589	1.585	1.581	1.577	1.573	1.569	1.565	1.561	1.557	1.553	1.549	1.545	1.541	1.537	1.533	1.529	1.525	1.521	1.517	1.513	1.509	1.505	1.501	1.497	1.493	1.489	1.485	1.481	1.477	1.473	1.469	1.465	1.461	1.457	1.453	1.449	1.445	1.441	1.437	1.433	1.429	1.425	1.421	1.417	1.413	1.409	1.405	1.401	1.397	1.393	1.389	1.385	1.381	1.377	1.373	1.369	1.365	1.361	1.357	1.353	1.349	1.345	1.341	1.337	1.333	1.329	1.325	1.321	1.317	1.313	1.309	1.305	1.301	1.297	1.293	1.289	1.285	1.281	1.277	1.273	1.269	1.265	1.261	1.257	1.253	1.249	1.245	1.241	1.237	1.233	1.229	1.225	1.221	1.217	1.213	1.209	1.205	1.201	1.197	1.193	1.189	1.185	1.181	1.177	1.173	1.169	1.165	1.161	1.157	1.153	1.149	1.145	1.141	1.137	1.133	1.129	1.125	1.121	1.117	1.113	1.109	1.105	1.101	1.097	1.093	1.089	1.085	1.081	1.077	1.073	1.069	1.065	1.061	1.057	1.053	1.049	1.045	1.041	1.037	1.033	1.029	1.025	1.021	1.017	1.013	1.009	1.005	1.001	0.997	0.993	0.989	0.985	0.981	0.977	0.973	0.969	0.965	0.961	0.957	0.953	0.949	0.945	0.941	0.937	0.933	0.929	0.925	0.921	0.917	0.913	0.909	0.905	0.901	0.897	0.893	0.889	0.885	0.881	0.877	0.873	0.869	0.865	0.861	0.857	0.853	0.849	0.845	0.841	0.837	0.833	0.829	0.825	0.821	0.817	0.813	0.809	0.805	0.801	0.797	0.793	0.789	0.785	0.781	0.777	0.773	0.769	0.765	0.761	0.757	0.753	0.749	0.745	0.741	0.737	0.733	0.729	0.725	0.721	0.717	0.713	0.709	0.705	0.701	0.697	0.693	0.689	0.685	0.681	0.677	0.673	0.669	0.665	0.661	0.657	0.653	0.649	0.645	0.641	0.637	0.633	0.629	0.625	0.621	0.617	0.613	0.609	0.605	0.601	0.597	0.593	0.589	0.585	0.581	0.577	0.573	0.569	0.565	0.561	0.557	0.553	0.549	0.545	0.541	0.537	0.533	0.529	0.525	0.521	0.517	0.513	0.509	0.505	0.501	0.497	0.493	0.489	0.485	0.481	0.477	0.473	0.469	0.465	0.461	0.457	0.453	0.449	0.445	0.441	0.437	0.433	0.429	0.425	0.421	0.417	0.413	0.409	0.405	0.401	0.397	0.393	0.389	0.385	0.381	0.377	0.373	0.369	0.365	0.361	0.357	0.353	0.349	0.345	0.341	0.337	0.333	0.329	0.325	0.321	0.317	0.313	0.309	0.305	0.301	0.297	0.293	0.289	0.285	0.281	0.277	0.273	0.269	0.265	0.261	0.257	0.253	0.249	0.245	0.241	0.237	0.233	0.229	0.225	0.221	0.217	0.213	0.209	0.205	0.201	0.197	0.193	0.189	0.185	0.181	0.177	0.173	0.169	0.165

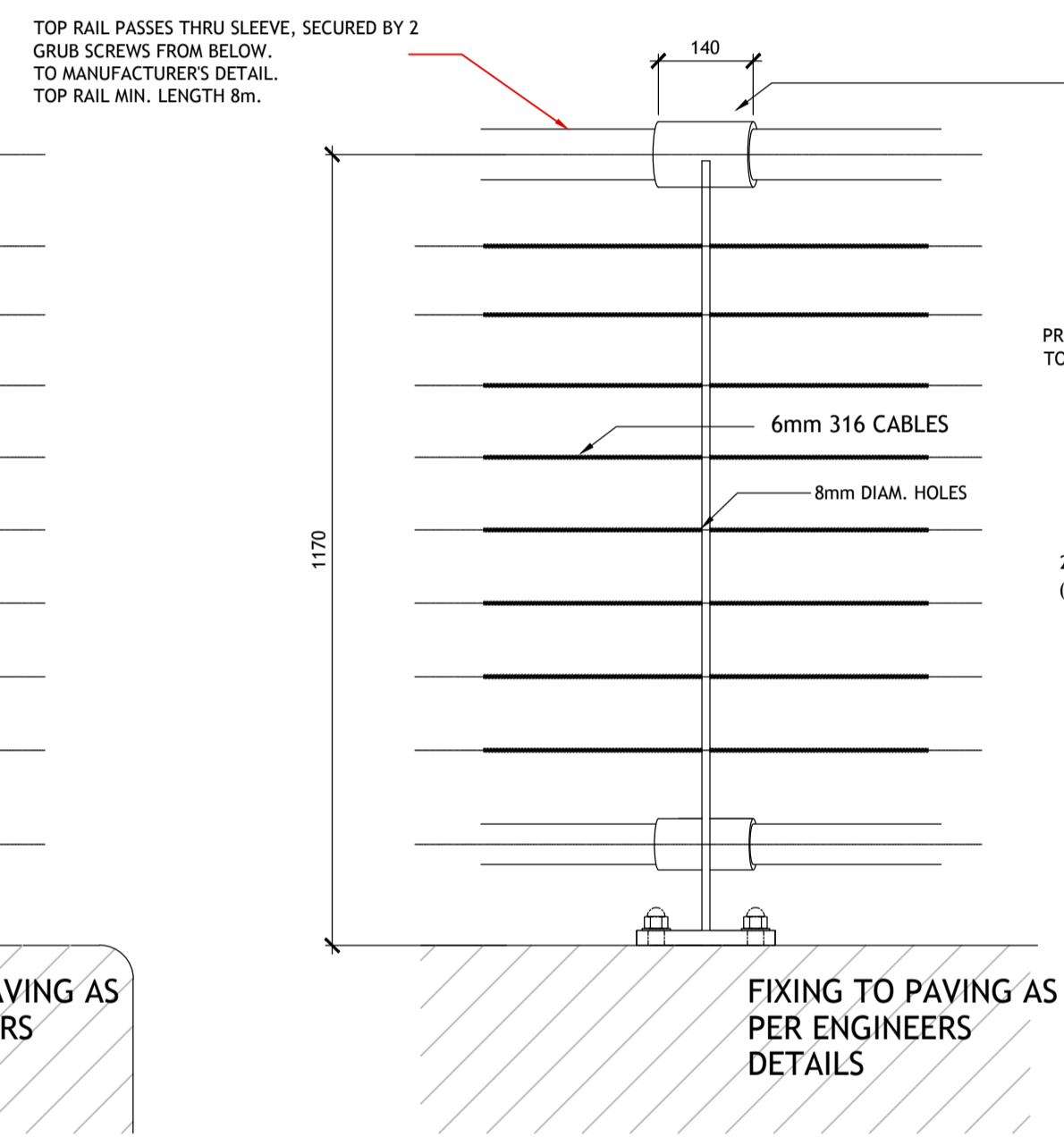


ARTISTIC VIEW ONLY - FOR INFORMATION ONLY

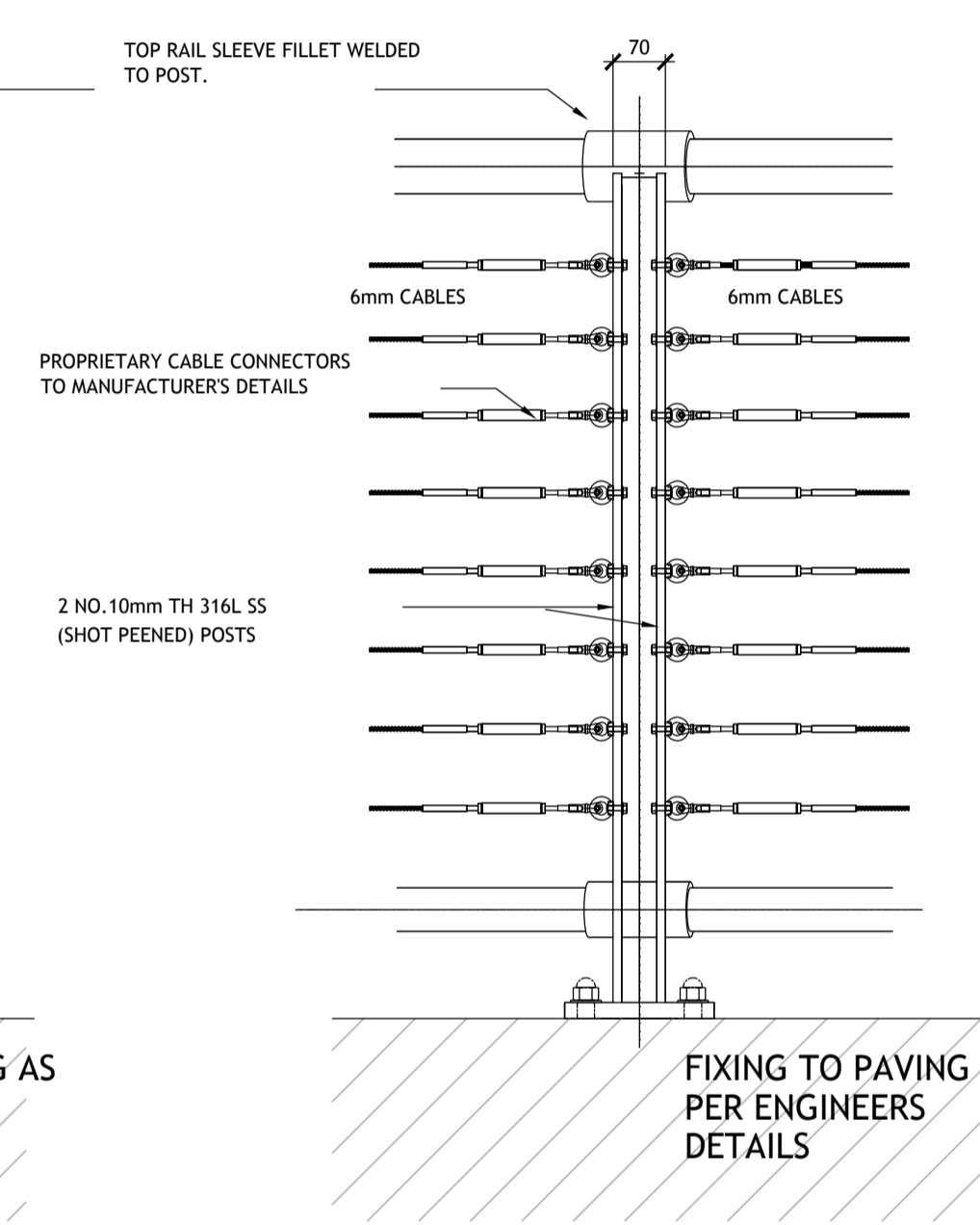
**COPYRIGHT:**  
The design and details shown on this drawing are applicable to their project only and may not be reproduced in whole or in part or be used for any other project or purpose without the written permission of Limerick City and County Council with whom copyright resides.  
**DO NOT SCALE** from this drawing. Use figured dimensions. Contractor to check all dimensions on site prior to commencement of works. Any discrepancies are to be referred to the ARCHITECT.



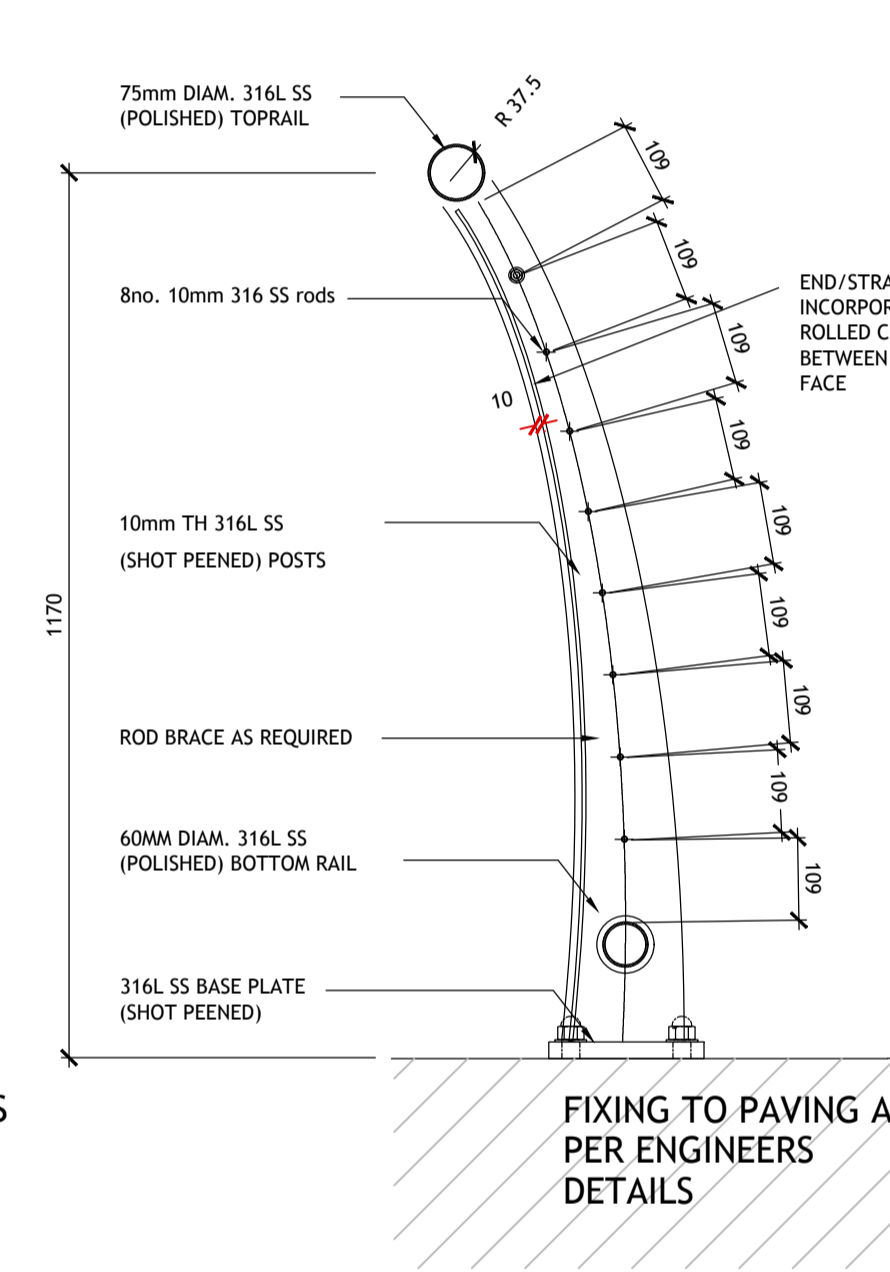
TYPICAL POST ELEVATION



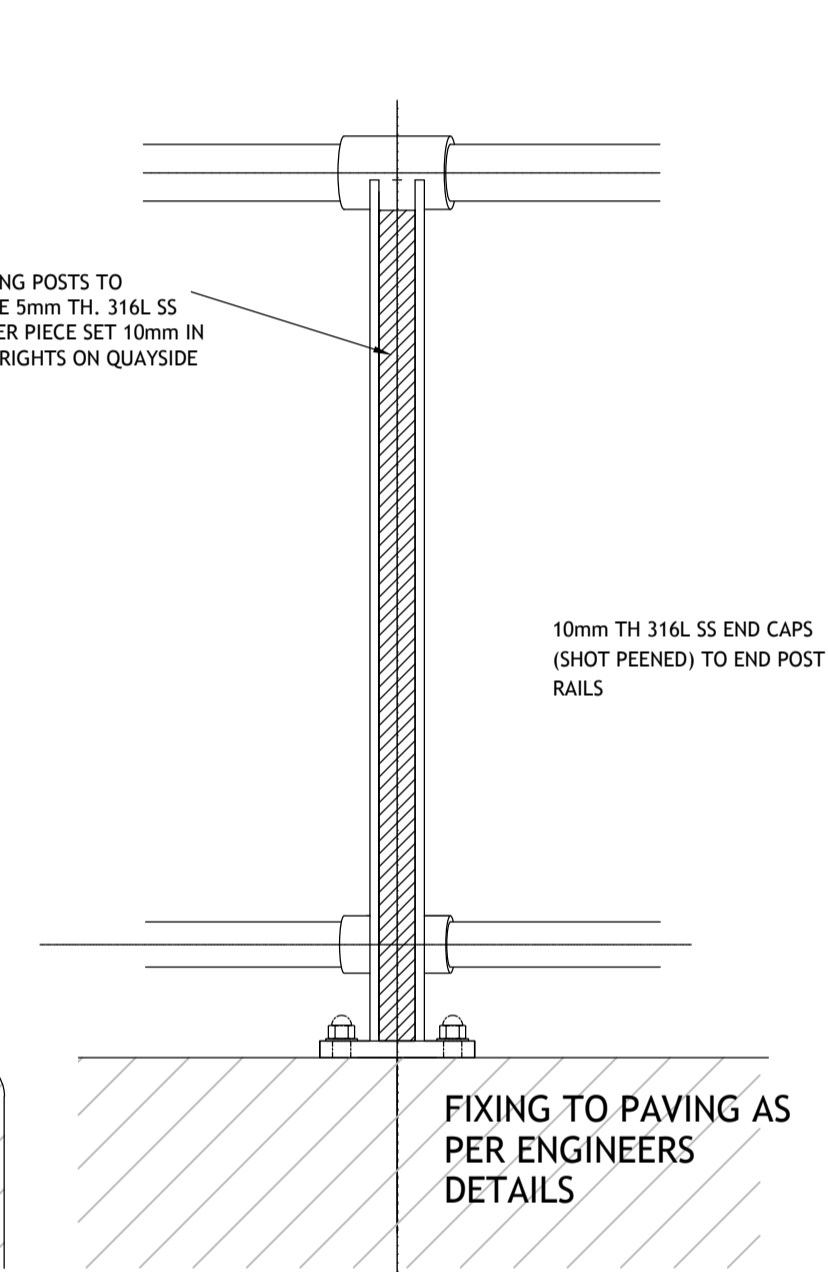
INTERMEDIATE POST  
SINGLE MAX. 2.0M  
SPACING



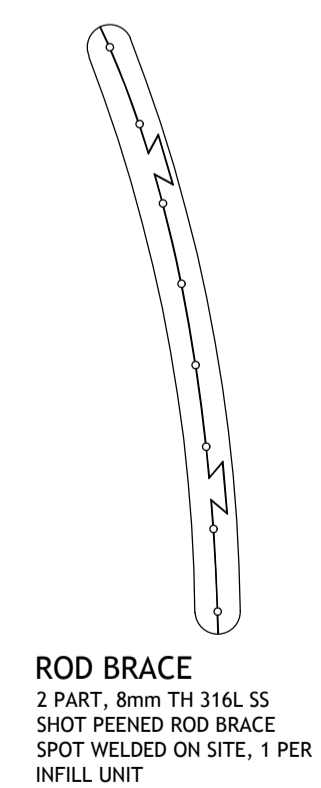
END/STRAINING POST  
DOUBLE MAX. 14M  
SPACING



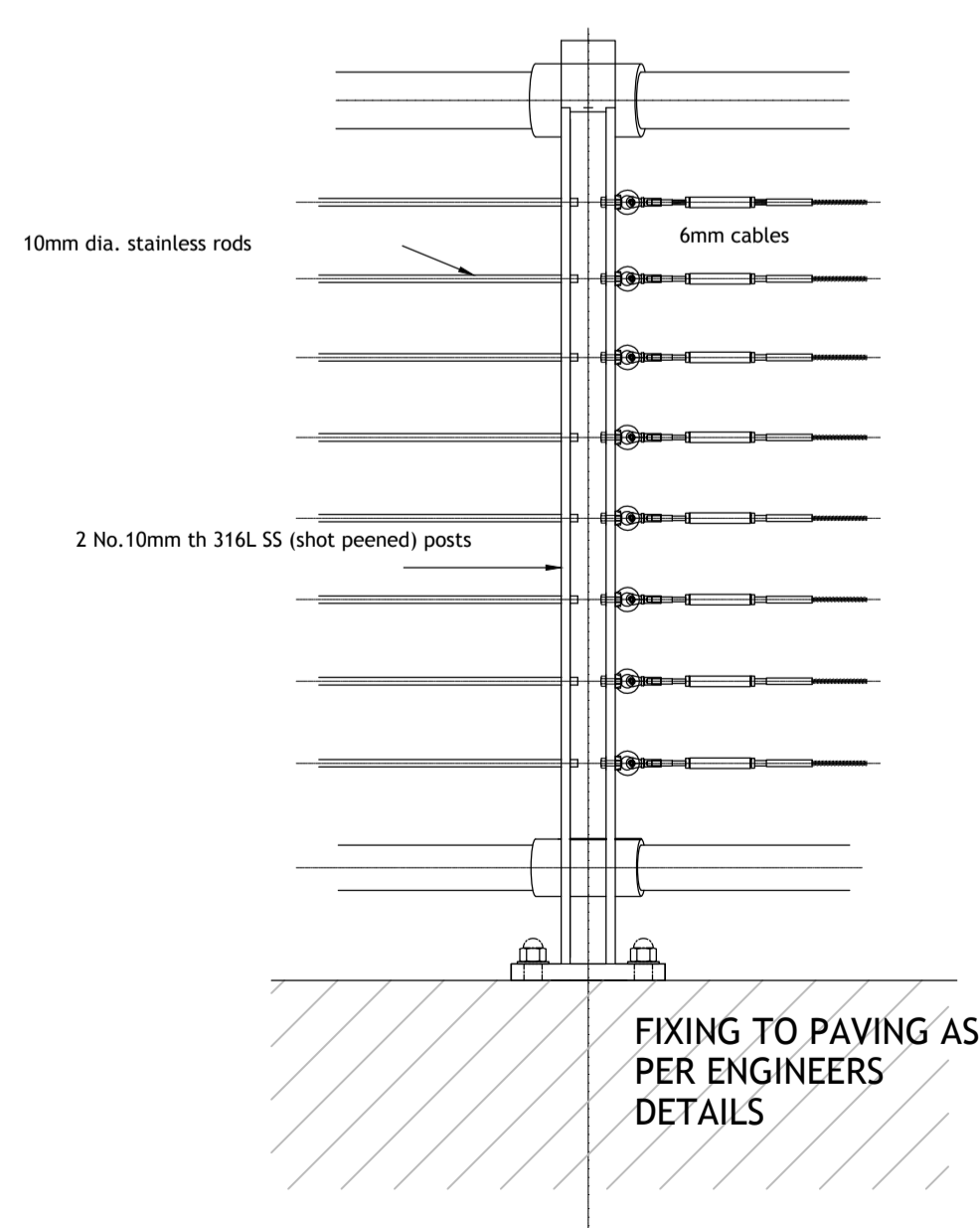
END/STRAINING POSTS  
COVER PIECE



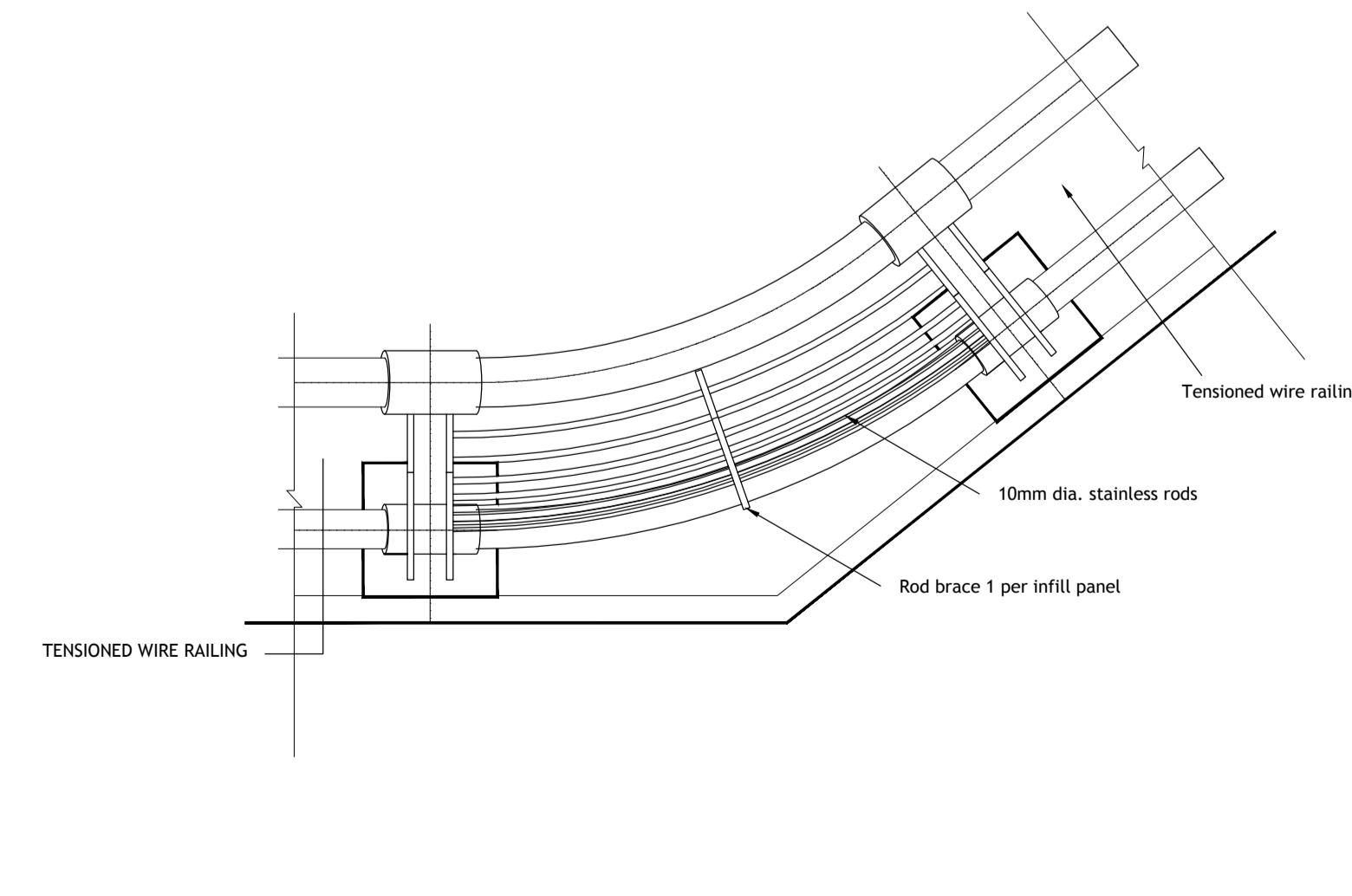
FIXING TO PAVING AS  
PER ENGINEERS  
DETAILS



ROD BRACE  
2 PART, 8mm TH 316L SS  
SHOT PEENED ROD BRACE  
SPOT WELDED ON SITE, 1 PER  
INFILL UNIT

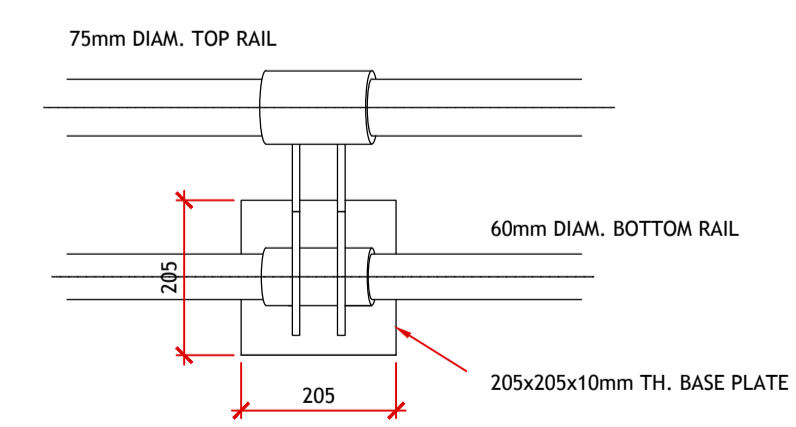


TYPICAL STRAINING POST  
FRONT ELEVATION

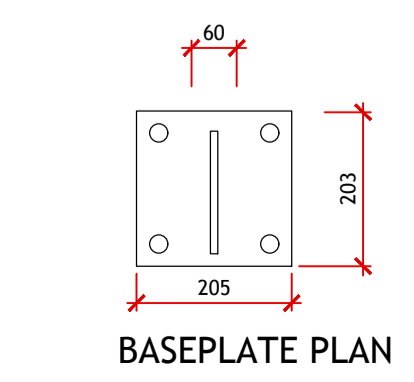


TYPICAL CONVEX CORNER  
INFILL PANEL PLAN

1. RAILING COMPONENTS AND TENSIONING SYSTEM TO MANUFACTURER'S DETAILS.
2. RAILING POSTS AND CABLE HARDWARE TO WITHSTAND LOADS ENCOUNTERED WITHOUT EXCESSIVE DEFLECTION OR DISTORTION WHEN CABLES ARE TENSIONED.
3. RAIL AND WIRE SYSTEM TO MEET THE REQUIREMENTS OF BSEN 1317/BS7818 SPECIFICATION FOR PEDESTRIAN RESTRAINT SYSTEMS IN METAL.
4. FIXING OF POSTS TO EXISTING CONCRETE PLINTH TO ENGINEER'S DETAILS.



Plan  
END/STRAINING POSTS



BASEPLATE PLAN

© Ordnance Survey Ireland. All rights reserved.  
Licence No. 2018/09/CCMA/Limerick City & County Council

**REVISIONS**

NO.	DATE	REV.	BY	CHECKED	DESCRIPTION

20-10-20 A KOB/KOG ISSUED FOR CULTURAL HERITAGE RESPONSE



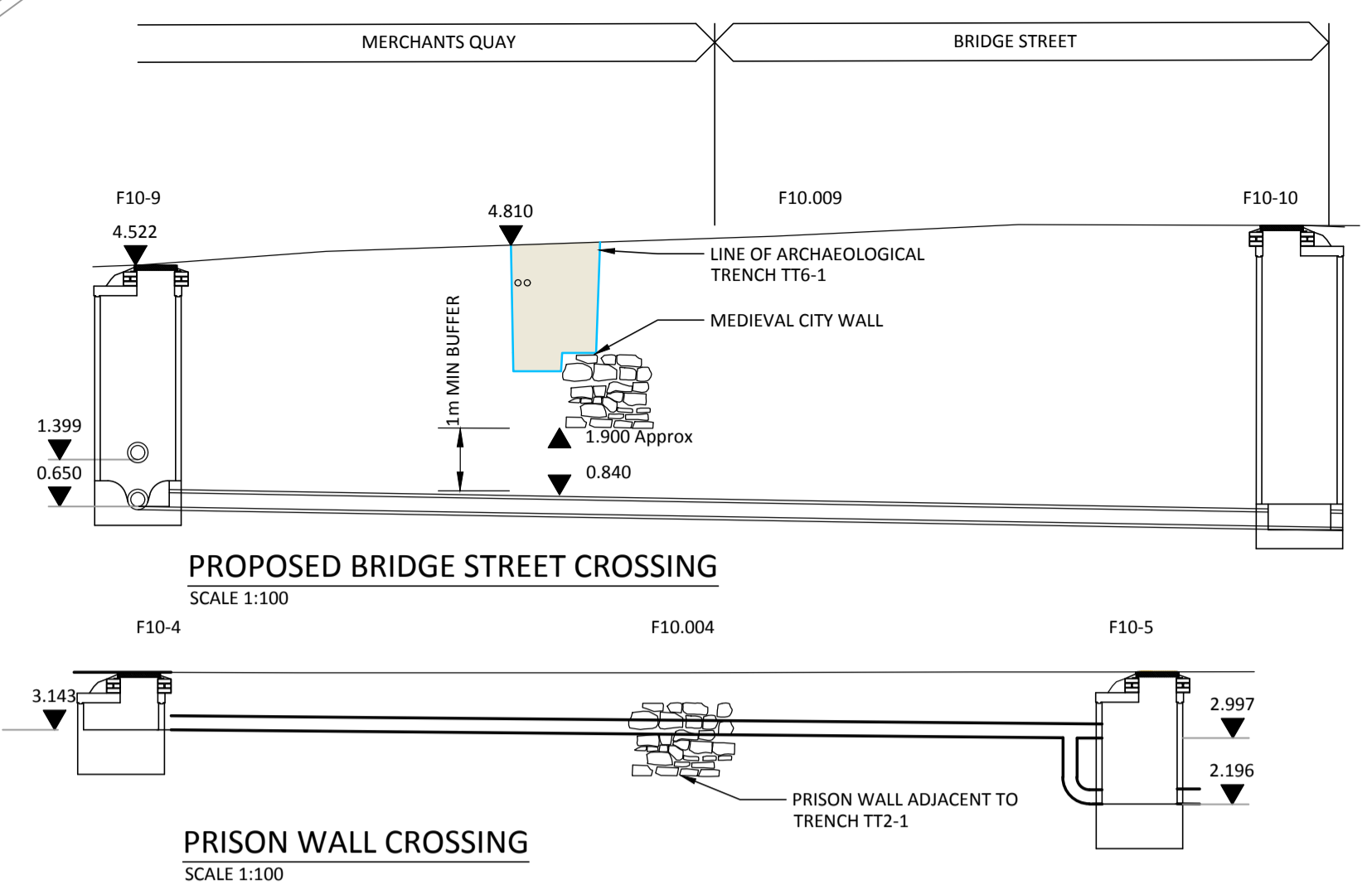
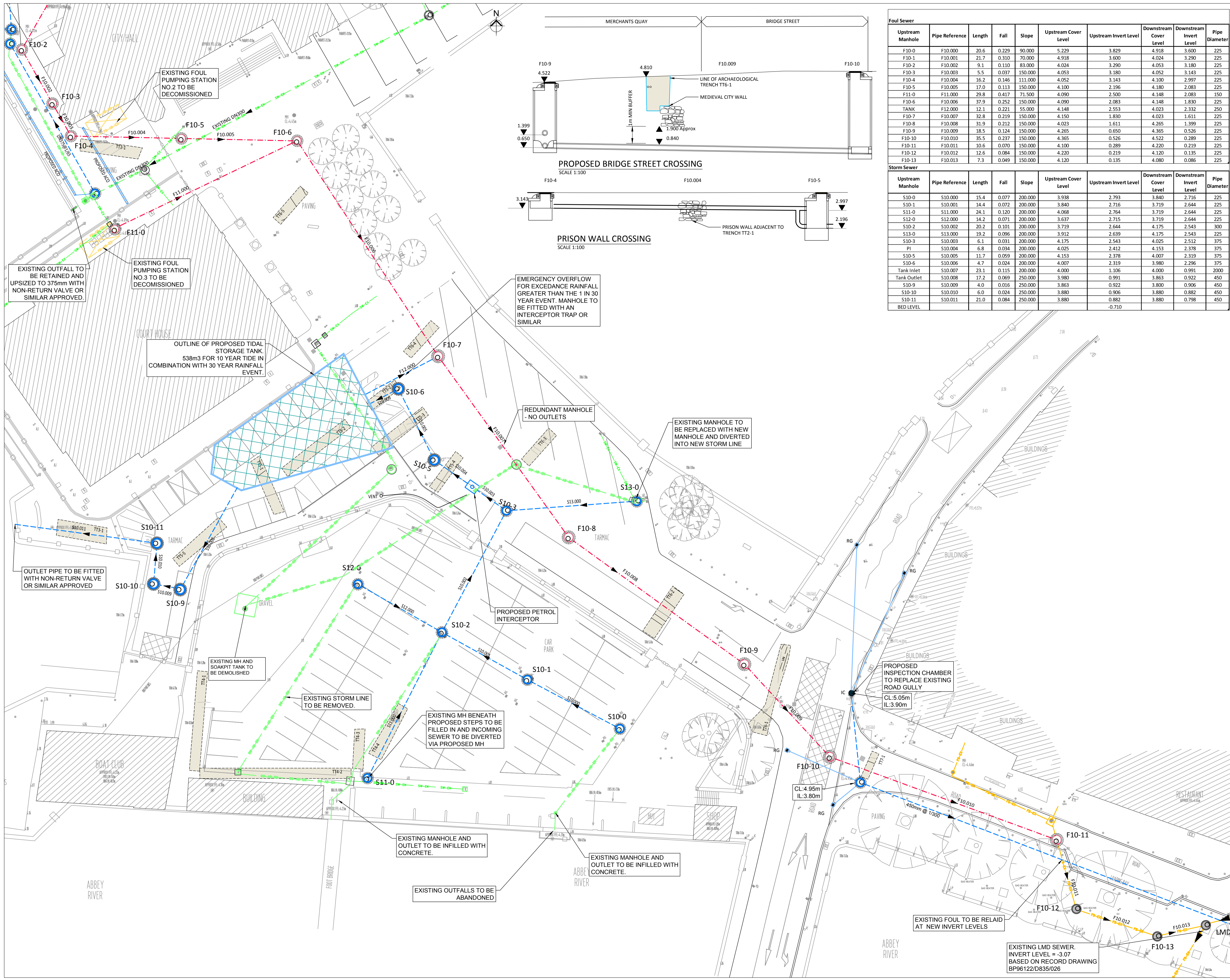
Limerick City and County Council  
Design & Delivery Services  
Merchants Quay  
Limerick

PROJECT:  
KING'S ISLAND FLOOD RELIEF SCHEME

STAGE:  
PRELIMINARY

DRAWING TITLE:  
CULTURAL HERITAGE DRAWING 4  
AREA B3  
ARCHAEOLOGICAL TEST AREA 1  
RAILING DETAIL

DATE: 2020-10-13	DRAWING NO:
SCALE: AS SHOWN	DRAWING 4
DRAWN: KOBrien	SHEET SIZE:
CHECKED: KOGorman	REVISION:
JOB NO: KIFRS-MQ	A1
FILE NAME: KIFRS-CHD-04	A



Foul Sewer										
Upstream Manhole	Pipe Reference	Length	Fall	Slope	Upstream Cover Level	Upstream Invert Level	Downstream Cover Level	Downstream Invert Level	Pipe Diameter	
F10-0	F10.000	20.6	0.229	90.000	5.229	3.829	4.918	3.600	225	
F10-1	F10.001	21.7	0.310	70.000	4.918	3.600	4.024	3.290	225	
F10-2	F10.002	9.1	0.110	83.000	4.024	3.290	4.053	3.180	225	
F10-3	F10.003	5.5	0.037	150.000	4.053	3.180	4.052	3.143	225	
F10-4	F10.004	16.2	0.146	111.000	4.052	3.143	4.100	2.997	225	
F10-5	F10.005	17.0	0.113	150.000	4.100	2.196	4.180	2.083	225	
F10-6	F10.006	29.8	0.417	71.500	4.090	2.500	4.148	2.083	150	
F10-7	F10.007	37.9	0.252	150.000	4.090	2.083	4.148	1.830	225	
F10-8	F10.008	32.8	0.219	150.000	4.150	1.830	4.023	1.611	225	
F10-9	F10.009	31.9	0.212	150.000	4.023	1.611	4.265	1.399	225	
F10-10	F10.010	35.5	0.237	150.000	4.265	0.650	4.522	0.526	225	
F10-11	F10.011	10.6	0.070	150.000	4.100	0.289	4.220	0.219	225	
F10-12	F10.012	12.6	0.084	150.000	4.220	0.219	4.120	0.135	225	
F10-13	F10.013	7.3	0.049	150.000	4.120	0.135	4.080	0.086	225	

Storm Sewer										
Upstream Manhole	Pipe Reference	Length	Fall	Slope	Upstream Cover Level	Upstream Invert Level	Downstream Cover Level	Downstream Invert Level	Pipe Diameter	
S10-0	S10.000	15.4	0.077	200.000	3.938	2.793	3.840	2.716	225	
S10-1	S10.001	14.4	0.072	200.000	3.840	2.716	3.719	2.644	225	
S10-2	S10.002	14.2	0.120	200.000	4.068	2.764	3.719	2.644	225	
S10-3	S10.003	14.2	0.071	200.000	3.637	2.715	3.719	2.644	225	
S10-4	S10.004	20.2	0.101	200.000	3.719	2.644	4.175	2.543	300	
S10-5	S10.005	19.2	0.096	200.000	3.912	2.639	4.175	2.543	225	
S10-6	S10.006	6.1	0.031	200.000	4.175	2.543	4.025	2.512	375	
S10-7	S10.007	6.8	0.034	200.000	4.025	2.412	4.153	2.378	375	
S10-8	S10.008	11.7	0.059	200.000	4.153	2.378	4.007	2.319	375	
S10-9	S10.009	4.7	0.024	200.000	4.007	2.319	3.980	2.296	375	
S10-10	S10.010	23.1	0.115	200.000	4.000	1.106	4.000	0.991	2000	
S10-11	S10.011	17.2	0.069	250.000	3.980	0.991	3.863	0.922	450	
PI	S10.012	4.0	0.016	250.000	3.863	0.922	3.880	0.906	450	
Tank Inlet	S10.013	6.0	0.024	250.000	3.880	0.906	3.880	0.882	450	
Tank Outlet	S10.014	21.0	0.084	250.000	3.880	0.882	3.880	0.798	450	
Bed Level								-0.710		

**DRAINAGE LEGEND**

EXISTING FOUL:

EXISTING SURFACE WATER:

PROPOSED FOUL:

PROPOSED SURFACE WATER:

PROPOSED STORM INSPECTION CHAMBER:

PROPOSED FOUL INSPECTION CHAMBER:

PROPOSED ACO DRAIN:

EXISTING FOUL TO BE ABANDONED:

EXISTING STORM TO BE ABANDONED:

PROPOSED TIDAL STORAGE TANK:

PROPOSED GULLY:

**LEGEND**

LOCATION OF ARCHAEOLOGICAL TRENCH EXCAVATION SHOWN THUS:

**NOTE**

1. ARCHAEOLOGICAL INFORMATION BASED ON DATASET SUPPLIED BY MOORE ARCHAEOLOGICAL & ENVIRONMENTAL SERVICES LTD.
2. EXISTING FEATURES WHERE SHOWN ARE CONJECTURAL AND ARE NOT TO BE USED FOR SETTING OUT.

© Ordnance Survey Ireland. All rights reserved.  
Licence No. 2018/09/CCMA/Limerick City & County Council

**REVISIONS**

NO.	DATE	REV.	BY	CHECKED	DESCRIPTION
1	20-10-20	A	KOB/KOG		ISSUED FOR CULTURAL HERITAGE RESPONSE

20-10-20 A KOB/KOG ISSUED FOR CULTURAL HERITAGE RESPONSE

DATE REV. BY CHECKED DESCRIPTION

Limerick City & County Council  
Design & Delivery Services  
Merchants Quay  
Limerick

PROJECT:  
KING'S ISLAND FLOOD RELIEF SCHEME

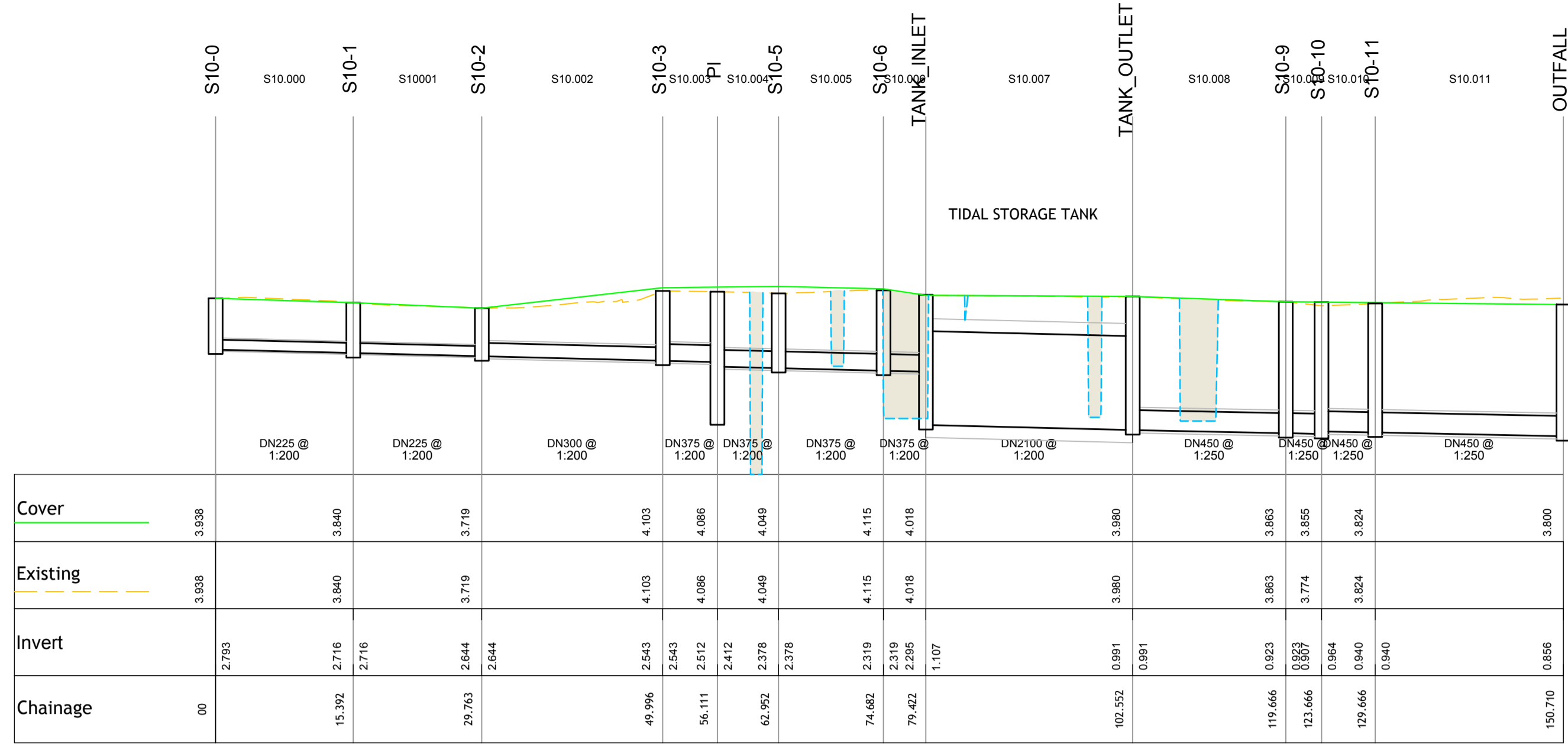
STAGE:  
PRELIMINARY

DRAWING TITLE:  
CULTURAL HERITAGE DRAWING 5  
AREAS B3 & B2  
ARCHAEOLOGICAL TEST AREAS 2-7  
MERCHANTS QUAY DRAINAGE LAYOUT

DATE: 2020-10-13	DRAWING NO: DRAWING 5
SCALE: 1:250	SHEET SIZE: A1
DRAWN: KOB/rien	REVISION: A
CHECKED: KOG/Gorman	
JOB NO: KIFRS	
FILE NAME: KIFRS-CHD-05	

COPYRIGHT:  
The design and details shown on this drawing are applicable to their project only and may not be reproduced in whole or in part or be used for any other project or purpose without the written permission of Limerick City and County Council with whom copyright resides.  
DO NOT SCALE from this drawing. Use figured dimensions.  
Contractor to check all dimensions on site prior to commencement of works. Any discrepancies are to be referred to the ARCHITECT.

LEGEND  
LOCATION OF ARCHAEOLOGICAL TRENCH EXCAVATION SHOWN THUS

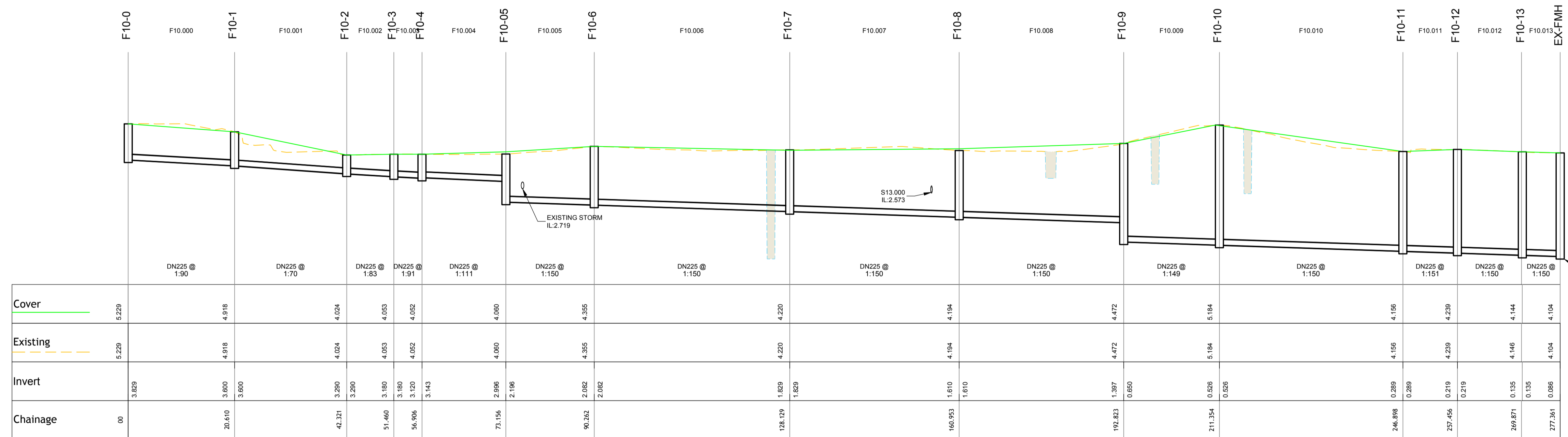


STORM RUN 10  
SCALE: H 1:500, V 1:100. DATUM: 0.000

STORM DESIGN 11 - LONGSECTION  
SCALE: H 1:500, V 1:100. DATUM: 0.000

STORM 12 - LONGSECTION  
SCALE: H 1:500, V 1:100. DATUM: 0.000

STORM RUN 13 - LONGSECTION  
SCALE: H 1:500, V 1:100. DATUM: 0.000



FOUL DESIGN - LONGSECTION  
SCALE: H 1:500, V 1:100. DATUM: -1.000

REVISIONS

DATE	REV	BY	CHECKED	DESCRIPTION
20-10-20	A	KOB/KOG		ISSUED FOR CULTURAL HERITAGE RESPONSE

20-10-20 A KOB/KOG ISSUED FOR CULTURAL HERITAGE RESPONSE

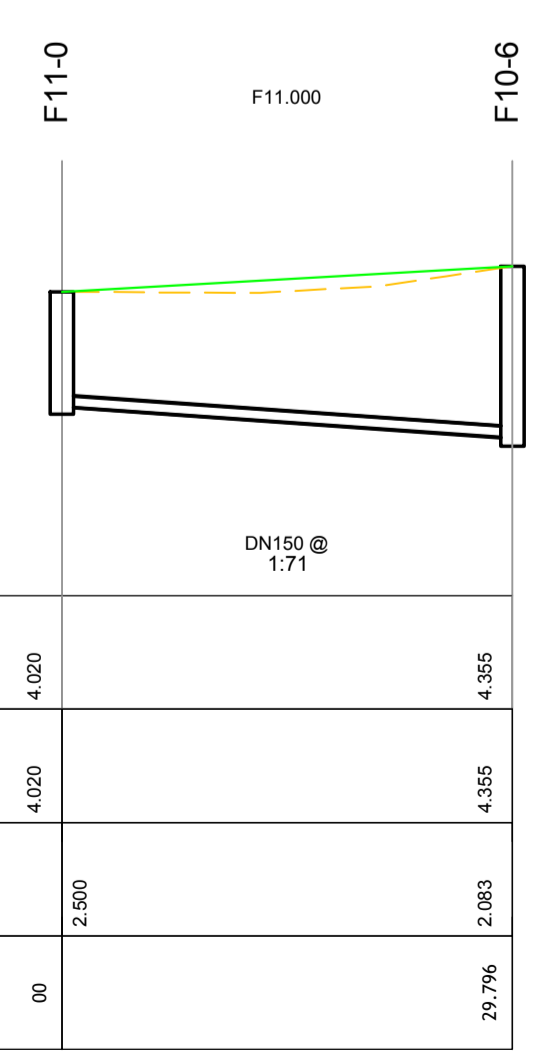


PROJECT:  
KING'S ISLAND FLOOD RELIEF SCHEME

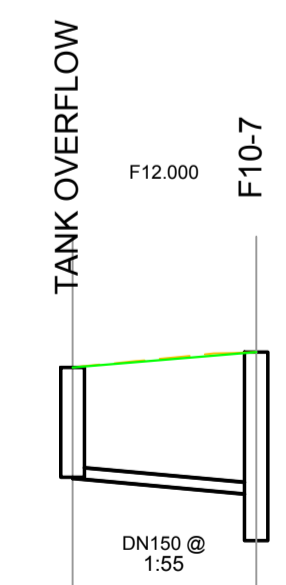
STAGE:  
PRELIMINARY

DRAWING TITLE:  
CULTURAL HERITAGE DRAWING 6  
AREAS B3 & B2  
ARCHAEOLOGICAL TEST AREAS 2-7  
MERCHANTS QUAY DRAINAGE SECTIONS

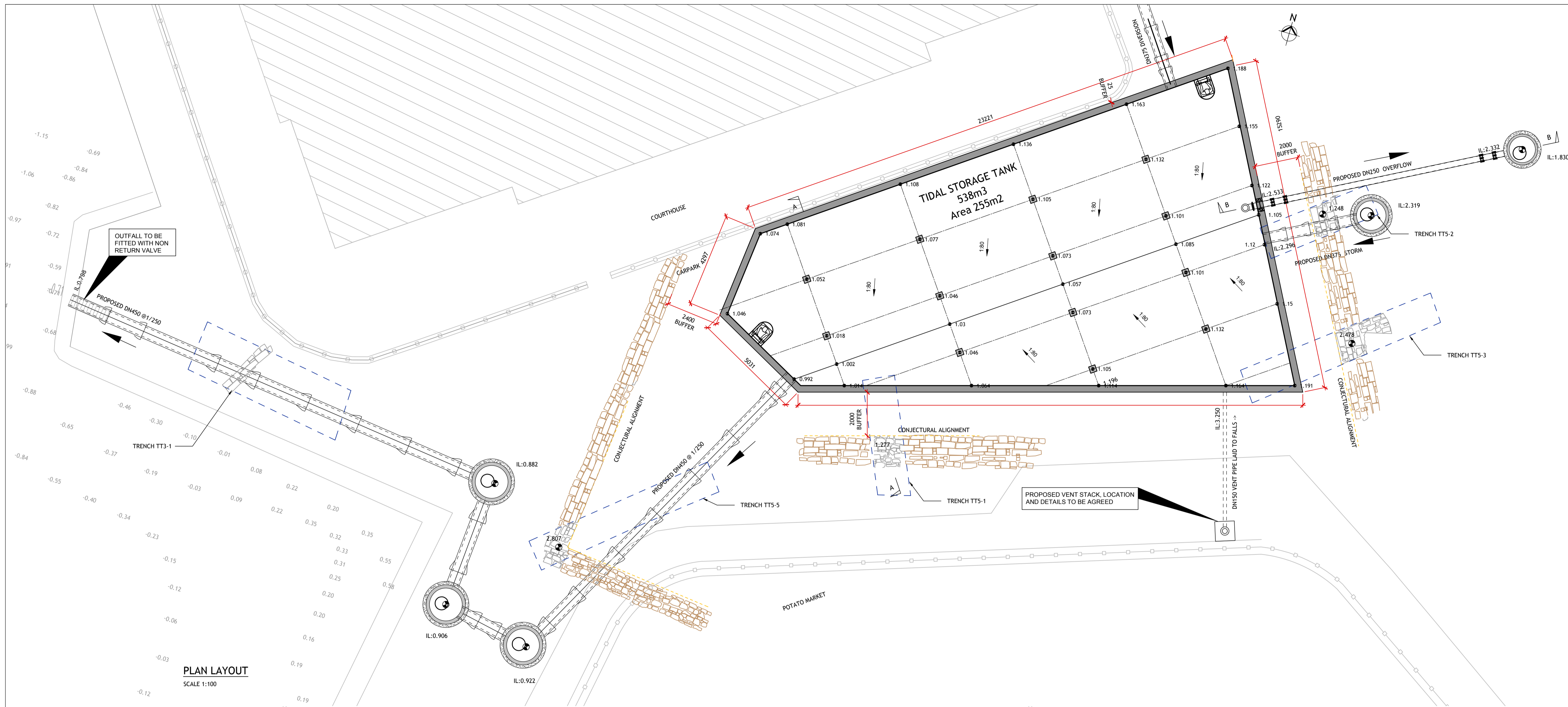
DATE: 2020-09-11	DRAWING NO:
SCALE: AS SHOWN	DRAWING 6
DRAWN: KOBrien	SHEET SIZE: A1
CHECKED: KOGoman	REVISION: A
JOB NO: KIFRS	
FILE NAME: KIFRS-CHD-06	



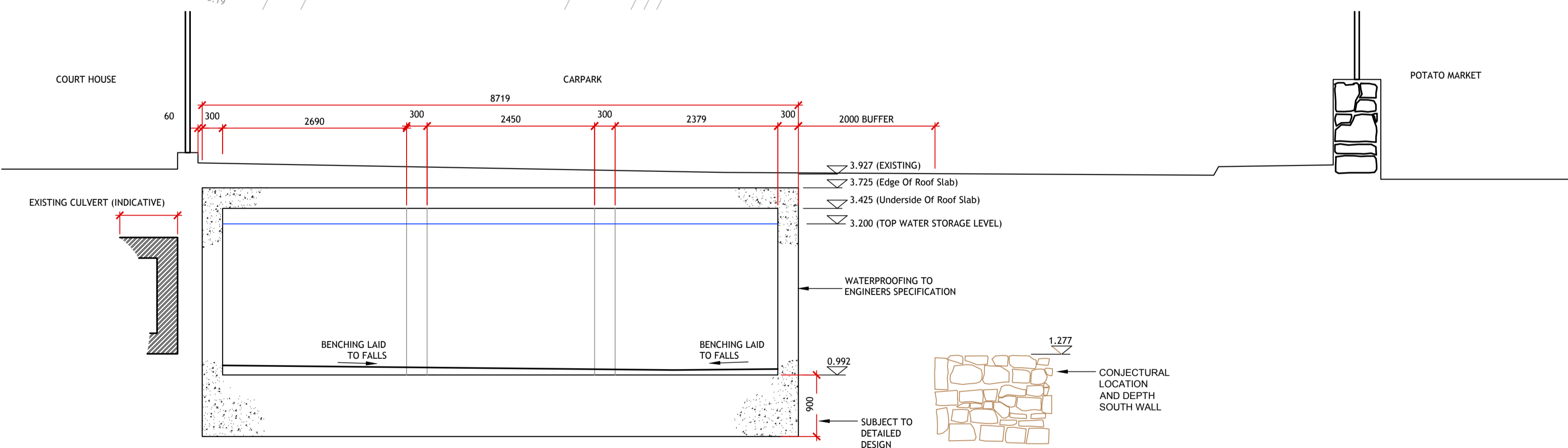
FOUL DESIGN 11  
SCALE: H 1:500, V 1:100. DATUM: 0.000



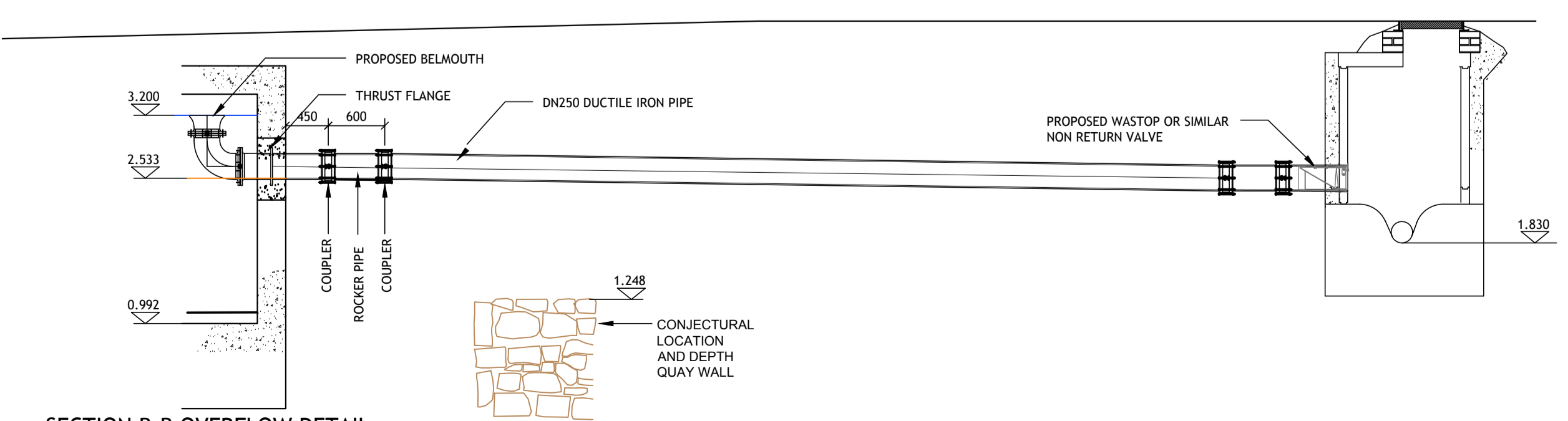
TANK OVERFLOW  
SCALE: H 1:500, V 1:100. DATUM: 1.000



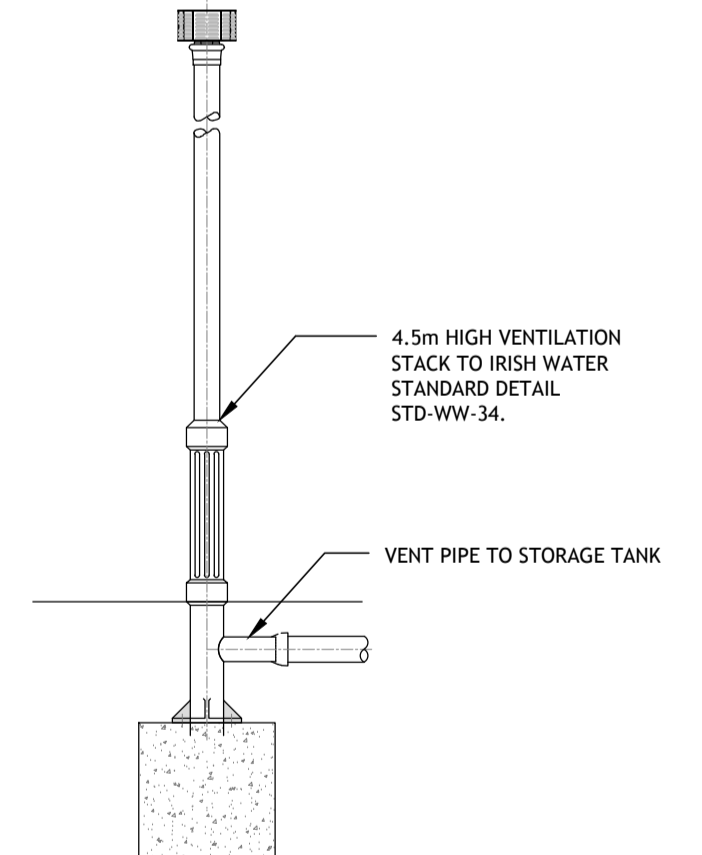
**PLAN LAYOUT**  
SCALE 1:100



**SECTION A-A**  
SCALE 1:50



**SECTION B-B OVERFLOW DETAIL**  
SCALE 1:50



**PROPOSED VENT STACK**  
SCALE 1:50

**COPYRIGHT:**  
The design and details shown on this drawing are applicable to their project only and may not be reproduced in whole or in part or be used for any other project or purpose without the written permission of Limerick City and County Council with whom copyright resides.

**DO NOT SCALE** from this drawing. Use figured dimensions. Contractor to check all dimensions on site prior to commencement of works. Any discrepancies are to be referred to the ARCHITECT.

- NOTE**
1. ARCHAEOLOGICAL INFORMATION BASED ON DATASET SUPPLIED BY MOORE ARCHAEOLOGICAL & ENVIRONMENTAL SERVICES LTD.
  2. EXISTING FEATURES WHERE SHOWN ARE CONJECTURAL AND ARE NOT TO BE USED FOR SETTING OUT.
  3. STORAGE TANK SUBJECT TO DETAILED DESIGN BY THE CONSULTANT.
  4. STORAGE VOLUME CALCULATION IS TO A TOP WATER LEVEL OF 3.2m OD. 538m³ INCLUDES A DEDUCTION OF 25m³ FOR TANK BENCHING BUT EXCLUDES INTERNAL COLUMNS WHICH ARE SUBJECT TO DETAILED DESIGN.

© Ordnance Survey Ireland. All rights reserved.  
Licence No. 2018/09/CCMA/Limerick City & County Council

**REVISIONS**

DATE	REV.	BY	CHECKED	DESCRIPTION
20-10-20	A	KOB/KOG		ISSUED FOR CULTURAL HERITAGE RESPONSE



Limerick City and County Council  
Design & Delivery Services  
Merchants Quay  
Limerick

PROJECT:  
KING'S ISLAND FLOOD RELIEF SCHEME

STAGE:  
PRELIMINARY

DRAWING TITLE:  
CULTURAL HERITAGE DRAWING 6  
AREA B3  
ARCHAEOLOGICAL TEST AREAS 3 & 5  
TIDAL STORAGE TANK

DATE: 2020-10-13	DRAWING NO: DRAWING 7
SCALE: AS SHOWN	SHEET SIZE: A1
DRAWN: KOBrien	REVISION: A
CHECKED: KOGorman	
JOB NO: KIFRS	
FILE NAME: KIFRS-CHD-07	