

The background is a vibrant yellow color. It is decorated with several abstract geometric shapes in shades of blue and teal. These shapes include circles, teardrop-like forms, and rounded rectangles, some of which are partially cut off by the edges of the page. The shapes are arranged in a way that creates a sense of movement and depth.

## **Appendix A15.5**

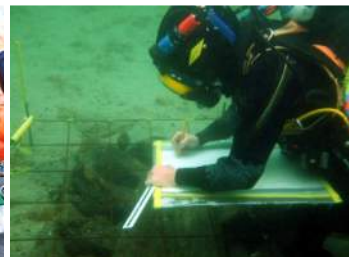
Underwater Archaeological  
Impact Assessment (UAIA)  
Dodder Public Transport  
Opening Bridge Project,  
River Dodder / River Liffey,  
Dublin City (ADCO 2020)



**Underwater Archaeological Impact Assessment (UAIA)  
Dodder Public Transport Opening Bridge Project  
River Dodder/ River Liffey, Dublin City**

**19D0022, 19R0052**

**Report Update, November 2020**





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09 December 2020

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## LIST OF ABBREVIATIONS

ADCO	The Archaeological Diving Company Ltd
ACA	Architectural Conservation Area
DCC	Dublin City Council
DCHG	Department of Culture, Heritage, and the Gaeltacht
DHLGH	Department of Housing, Local Government, and Heritage
DGPS	Differential Geographic Positioning System
HAS	Health and Safety Authority (Ireland)
HSE	Health and Safety Executive (UK)
IAC	Irish Archaeological Consultancy
ING	Irish National Grid
ITM	Irish Transverse Mercator
E	Easting
N	Northing
NGR	National Grid Reference
NIAH	National Inventory of Architectural Heritage
OD	Ordnance Datum
OS	Ordnance Survey
RMP	Record of Monuments and Places
RPS	Record of Protected Structures
ROD	Roughan and O'Donovan
SDZ	Strategic Development Zone
SMR	Sites and Monuments Record
UAIA	Underwater Archaeological Impact Assessment
UAU	The Underwater Archaeology Unit

## EXECUTIVE SUMMARY

The Archaeological Diving Company Ltd (ADCO) was appointed by IAC Ltd., on behalf of Roughan & O'Donovan/ Dublin City Council, to undertake an Underwater Archaeological Impact Assessment (UAIA) of two sections of the River Liffey, close to the confluence of the River Dodder/ River Liffey, upstream of the East Link Bridge. The assessment has been carried out as part of the planning process for the Dodder Public Transport Opening Bridge project; a project that replaces development plans previously explored as part of the Dublin Bridges project. The latter project comprised plans to construct four new bridges, crossing the River Liffey/ River Dodder between Samuel Becket Bridge and Tom Clarke Bridge (also known as the East Link Bridge). ADCO carried out a detailed UAIA for this project in 2016 and also undertook a programme of Geotechnical Testing at sixteen riverbed areas within the footprint of the proposed bridge locations. The current assessment absorbs the archaeological work previously undertaken and includes additional recent (2019) onsite assessment.

The Dodder Public Transport Opening Bridge project has been developed to improve the pedestrian, cyclist, and public transportation accessibility between the Poolbeg Peninsula and the rest of the city. This will also facilitate development of the proposed Poolbeg West Strategic Development Zone (SDZ). The proposed bridge will feature an opening bascule span to allow the passage of boat traffic using the waterway and will connect Sir John Rogerson's Quay/ Britain Quay to a new junction with the East Link Road (R131). Associated development will comprise the construction of approach roads, the construction of a new bridge control building, a new club house and facilities for St Patrick's Boat Club, reclamation of land to the west of the East Link Bridge, and the landscaping of the area between York Road/Thorncastle Street and the R131.

Comprehensive assessment of the riverbed locations impacted by the proposed bridge development, extending the survey beyond the proposed construction footprint, has been completed. The assessment recorded riverbed topography and provides a detailed account of the existing riverine environment. On-site work comprised the systematic non-disturbance inspection of the river channel, its attendant quays, and any associated quayside features encountered.

The on-site work was carried out on 9th April 2019, under licence from the Department of Culture, Heritage, and the Gaeltacht (now the Department of Housing, Local Government, and Heritage); licence numbers 19D0022 and 19R0052. A UAIA report was subsequently submitted, as per the licencing requirement, in July 2019.

The Dodder Public Transport Opening Bridge project has now reached a design freeze and the project EIA and AA are being progressed, as of October 2020. The present report constitutes an updated version of the assessment previously submitted the DCHG (now DHLGH); one that absorbs any design changes that have arisen in the meantime. Principle changes relate to the design of the proposed bridge structure across the Dodder, a preliminary bridge design having now been finalised. In addition, a proposed pedestrian footbridge, crossing the River Liffey on the upstream side of the East Link Bridge (included as part of the 2019 UAIA), does not form part of the scope of works identified for the Dodder Public Transport Opening Bridge project; this element being progressed by Dublin City Council as a separate development. As such, there will be no impacts to the North Wall Quay as part of the current project. This item aside, the in-water/quayside impacts associated with the project design remains largely the same to that previously identified. In addition, site extents have been finalised and a small section of this falls outside the limits of the original UAIA. However, this area will not be subject to any primary/direct or secondary/in-direct impacts arising from the construction of the proposed bridge. Therefore, additional underwater assessment across this area, identified as Area C in the present report, is not deemed necessary.

The project assessment area lies within a historically rich landscape, highlighted by the development of this section of the River Liffey for maritime use in the late eighteenth- and early/mid-nineteenth century; Sir John Rogerson's Quay and the North Wall Quay forming tangible reminders of that maritime industrial past.

The present report, based on the current level of information available, recommends that further onsite archaeological assessment of the primary/direct riverbed impact locations in advance of construction is not required. However, it is recommended that additional archaeological recording of a number of historic quayside structures impacted by the proposed development is to take place in advance of construction. This should include elevation/ cross-section drawings of the quayside impact locations to provide preservation by record of the quayside areas affected.

In addition, archaeological monitoring of ground/ riverbed disturbances during construction is to be undertaken. This is to be carried out by a suitably qualified and experienced marine archaeologist, with the proviso to resolve fully any archaeological material observed at that point. In particular, archaeological monitoring of any quayside disturbances is required; allowing a full record of those sections of quayside to be impacted by the bridge development to be made. In addition, any quayside masonry or



associated fixtures and fittings that are to be removed as part of the development should be retained and subject to additional recording.

The recommendations in the report are subject to the approval of the National Monuments Service at the Department of Housing, Local Government, and Heritage (DHLGH); formerly the Department of the Culture, Heritage, and the Gaeltacht (DCHG).

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## 1.0 INTRODUCTION

The Archaeological Diving Company Ltd was appointed by IAC Ltd, on behalf of Roughan & O'Donovan and Dublin City Council, to carry out an Underwater Archaeological Impact Assessment (UAIA) at two (2) locations within the River Liffey, upstream of the East Link Bridge (Tom Clarke Bridge), Dublin City (Figure 1). This work was carried out as part the planning process for the Dodder Public Transport Opening Bridge Project.

Much of the riverbed/ quayside areas impacted by the proposed Dodder Public Transport Bridge have been subject to comprehensive assessment by ADCO in 2016, as part of the Dublin Bridges Project.<sup>1</sup> As such, there are only two (2) riverbed areas that required further assessment, where the current design footprint falls outside those riverbed areas previously subject to assessment. The centrepoint coordinates for these areas are as follows:

- Area A, ITM 717944E, 734247N [ING 318022E, 234221N]
- Area B, ITM 718011E, 734247N [ING 318089E, 234221N]

The larger of the two areas (Area A) is roughly triangular in shape in shape, measuring 111m x 101m x 80m, and extends across both the intertidal and subtidal zones on the south side of the river channel. The smaller area (Area B), measuring 18m x 7m, is also located on the south side of the channel, immediately upstream of the East Link Bridge.

The assessment comprised systematic visual inspection of the intertidal and subtidal components at the two identified locations; undertaken on a Spring Low Water tide cycle. The assessment sought to record riverbed topography, assess the potential of riverbed deposits to retain archaeological material, and identify any additional features/structures of archaeological or historic significance that are present. In addition, targeted metal-detection was employed to help assess the riverbed and highlight any metallic concentrations present within these deposits.

The UAIA was carried out in accordance with Section 5 of the National Monuments Act (2004 Amendment) by a team of underwater archaeologists and a certified surveyor on the 9th April 2019, under licence from the Department of Housing, Local Government and Heritage (formerly DCHG); licence numbers 19D0022 and 19R0052.

The Dodder Public Transport Opening Bridge project has now reached a design freeze and the EIA and AA are being progressed, as of October 2020. The present report constitutes an updated version of the assessment previously submitted to the DHLGH;

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<sup>1</sup> Rex Bangerter MA, 'Underwater Archaeological Impact Assessment (UAIA) & Environmental Sampling Report, Dublin Bridge Project, Dublin City', 16E0495, 16D0070, 16R0175, ADCO Ltd. [unpublished report issued to DCHG on 14th November 2016].

one that absorbs any design changes that have arisen in the meantime. It presents the findings from the UAIA, absorbs relevant information from ADCO's previous work in the river area, assesses the potential level of impact arising from the proposed development, and identifies a set of specific mitigation measures relating to the construction of the proposed Dodder Public Transport Opening Bridge structure.

## **2.0 PROPOSED DEVELOPMENT**

The current bridge project has been developed to improve the pedestrian, cyclist, and public transportation accessibility between the Poolbeg Peninsula and the city centre (Figure 2). This will also facilitate development of the proposed Poolbeg West Strategic Development Zone (SDZ). The bridge will feature an opening bascule span to allow the passage of boat traffic using the waterway and will connect Sir John Rogerson's Quay/Britain Quay to a new junction with the East Link Road (R131) (Figures 2-3). Associated development will comprise the construction of approach roads, the construction of a new bridge control building, a new club house and facilities for St Patrick's Boat Club, reclamation of land to the west of Tom Clarke Bridge (also referred to as the East-link Bridge), and the landscaping of the area between York Road/Thorncastle Street and the R131.

## **3.0 RECEIVING ENVIRONMENT**

The River Liffey rises at an elevation of 540m above sea level near Kippure in the Wicklow Mountains, c. 20km south of Dublin. The river forms a large arc as it flows westward, then northward, and finally eastwards through Dublin City to its confluence with the Irish Sea at Dublin Bay. It flows over a range of different geological formations; from granite, to sandstone, to sandstone-limestone and finally pure limestone. The River Liffey has a drainage catchment area of just over 1380 km<sup>2</sup>. Extensive reclamation of the river floodplain has been undertaken since the seventeenth-century. This reclamation and adaptation of the natural environment was extended to the river as it flowed through the city; the river currently being delineated by a series of eighteenth and nineteenth-century quayside structures.

Maritime activity within the River Liffey is documented from the eighth-century onwards and it is clear that the area under assessment has a long history of human landscape intervention, adapting the topography of the river to conditions favourable for navigation and anchorage of vessels within the area. City Centre excavations at Winetavern Street and Wood Quay uncovered large wooden revetments dating to around 1200AD. These structures are thought to form part of an early reclamation and dockside area at Wood Quay.<sup>2</sup> In addition, extensive seventeenth to nineteenth-century land reclamation was undertaken, dramatically changing the landscape along the river's mouth. Indeed, this reclamation process coupled with the

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<sup>2</sup> Halpin, Andrew, *The Port of Medieval Dublin*, Four Courts Press, Dublin, pp.179-80

eastward shift in bridge construction across the Liffey resulted in the movement of port and shipping activity from the city centre to the easternmost parts of the river. Early maps of Dublin, including John Speed's Map of 1610 and Hermon Moll's of 1714, show a largely unaltered estuary environment. In contrast, it is evident in John Roque's map of 1756 that extensive reclamation has taken place with the construction of the north wall (1710-1718), facing the river channel, and the East Wall (1718-1729); running northwards along the line of the present day East Wall Road. These constructions provided a tidal barrier behind which extensive land reclamation could take place, a process that lasted until the early part of the nineteenth-century and significantly extended the land mass on the north side of the River Liffey. As a result, a total of 263 plots of land, ranging in size from an acre to three-and-a-half acres, were created and sold by the City Council.<sup>3</sup>

This historic reclamation process has been highlighted by recent excavations undertaken along Ormond Quay and Custom House Quay. These excavations have produced evidence of seventeenth-century reclamation deposits with eighteenth-century structures built above (see Section 3.6). Moreover, excavations at the site of Building C, Spencer Dock, North Wall Quay (Excavations Bulletin Entry 2004:565) identified three principle phases of activity.<sup>4</sup> These included a series of Late Mesolithic fish traps located on the old shoreline of the Liffey channel, artefacts from the eighteenth and nineteenth-century reclamation of that area, and structures from the nineteenth and twentieth-century development of that reclamation land.

Further development within the vicinity included the construction of a new Custom House in 1791, Custom House Dock in 1796 (DU18-020564A), a boat-building/repair yard and Patent Slipway, completed in 1833, and the construction of Dublin's first dry-dock, completed in 1860. Prior to these constructions, the majority of the port trade took place on the south side of the river, however, the establishment of the Custom House and associated quayside structures facilitated a lasting shift in port development to the north side of the waterway.

Construction of the Grand Canal began in 1755 to link Dublin with the River Shannon to the west and the River Barrow to the southeast. It forms the southernmost of two waterways that almost encircle the inner city of Dublin; the other being the Royal Canal located on the north side of the River Liffey. The canal reached Ringsend in 1791 and the Grand Canal Docks were completed in 1796. Great Britain Quay was also constructed in the 1790s as part of the Grand Canal Docks development.

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<sup>3</sup> De Courcy, J.W., *Anna Liffey, The River of Dublin*, (O'Brien Press, Dublin 1988), p.47.

<sup>4</sup> McQuade, Melanie, '*Building C, Spencer Dock, North Wall Quay, Dublin*', in Isabel Bennett (ed.), *Excavations 2004*, (Dublin, 2007), 128-9.565; McQuade, Melanie, '*Gone Fishing*', *Archaeology Ireland*, (2008), 22 (1), 8-11.

The present day river assessment area is delineated by three quayside structures, constructed at the end of the eighteenth and in the early part of the nineteenth-century. Britain Quay (formerly Great Britain Quay) and the eastern terminus of Sir John Rogerson's Quay delineate the west side of the River Dodder. An unnamed quay is located on the east side of the Dodder (south side of the River Liffey). A chronology relating to the construction of the various quay structures located along the River Liffey is tabulated in Appendix 1.<sup>5</sup>

### 3.1 Cartographic Information

John Rocque's Map of 1756 shows extensively reclaimed areas of river estuary with increased use/development of water-frontage along the river.<sup>6</sup> Aston Quay, Georges Quay, and Sir John Rogerson's Quay delineate the south side of the river, with Bachelors Walk and the North Wall Quay to the north. A large amount of shipping is depicted along these quays, alluding to the navigable nature and concentrated use of the river at this time. In addition, large scale reclamation works are evident on the north side of the river estuary with the construction of the North Wall (1710-1718) and the East Wall (1718-1729), behind which the port of Dublin was to be developed in the nineteenth-century.

However, it is John Roque's subsequent map of 1760 that provides the earliest dependable mapping for the specific area under assessment (Figure 4).<sup>7</sup> This map depicts the assessment area prior to construction of the Grand Canal Docks, at a time when little or no development had taken place on the southern side of the Liffey. According to this map, the eastern side of the River Dodder was largely undeveloped and no housing or warehouse plots were present along the south side of the River Liffey; the present day location of Sir John Rogerson's Quay. However, the mapping does depict a quay wall at this location, constructed in 1716 in order to prevent flooding and allow reclamation of the adjacent mudflats; a process of reclamation that is clearly evident by 1760. The existing quay structure is later in date and was constructed in the latter part of the nineteenth-century.

Greater development is depicted along the north side of the Liffey; the river channel being delineated by a quayside that runs the length of the North Wall, behind which the reclaimed land has been subdivided by the insertion of a grid-iron street pattern.

Extracts from the Port of Dublin Archives (PDA), Drawing Nos. 7199-7200 (1870-1875), provide a detailed record of Sir John Rogerson's Quay and the North Wall Quay. The archive provides details of both the original quayside structure at Rogerson's Quay, built in the eighteenth-century, and its subsequent nineteenth-century replacement (Figures 5-6). The

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<sup>5</sup> De Coursey, J.w., *Anna Liffey: The River of Dublin*, O'Brien, Dublin, 1988, 16

<sup>6</sup> John Roque, *Exact Survey of the City and Suburbs of Dublin, 1756*.

<sup>7</sup> John Roque, *Survey of the City, Harbour, Bay, and Environs of Dublin, 1760*.



present day quayside structures remain largely unchanged to that shown within these drawings, the PDA section-drawings providing the best record of these quayside structures to date.

The First Edition (1837) OS mapping shows wide-scale development across the south side of the River Liffey, depicting a similar ground plan and street layout to that of the present day (Figure 7). However, comparison between the First Edition and subsequent OS mapping shows reclamation of the riverbed on the west side of the River Dodder, adjacent to '*Great Britain Quay*'. This reclamation work was undertaken in the late 1800s to facilitate the eastward expansion of the quayside; forming a triangular area of reclamation extending from the downstream side of the Grand Canal lock-gates to a point c. 30m within the original river channel, located at the Dodder's confluence with the River Liffey.

By the late 1700s a tradition of boat-building had been established along Sir John Rogerson's Quay, Ringsend, and within the Grand Canal Basin. This activity is highlighted by the presence of three substantial graving docks located on the basin's east side, as shown on the OS First Edition map. The Dublin Dockyard Company leased two of these docks between 1851 and 1881, subsequently being leased to the Ringsend Dockyard Ltd, who built/ repaired boats in the Grand Canal Basin up until the 1960s.

Examination of the present day street pattern and that of the OS Third Edition mapping of Dublin from 1911 (RMP Dublin Sheet 2364) shows the inclusion of two new streets, Asgard Road and Blood Stoney Road, that run parallel to Forbes Street and provide access from Hanover Quay to Sir John Rogerson's Quay (Figure 8). These streets represent modern insertions between two recently constructed developments along Sir John Rogerson's Quay.

### **3.2 Known Sites and Monuments**

The Record of Monuments and Places (RMP) is a list of archaeological sites based on the Sites and Monuments Record (SMR) files, maintained by the National Monuments Section at the DHLGH (formerly the DCHG). SMR entries include detailed descriptions of archaeological sites based on site visits and historic studies and associated mapping where available. The SMR focuses on sites that are pre-1700AD in date. While later buildings are not well represented in the archive, all structures that are more than 100 years old are considered as archaeological sites today.

A number of historically significant structures are listed in the Record of Monuments and Places (RMP) within the vicinity of the proposed bridge development (Figure 8). These include, North Quay Wall (Du018-020-564), Sir John Rogerson's Quay (Du018-020-201) and the upstream City Quay (Du018-020-479), a Sea Wall (Du018-066), and a Fort and Revenue

House Site (Du018-053-1), located at the junction between Thorncastle Street and York Road. The area under assessment is located within the zone of archaeological potential defined for the historic city of Dublin, RMP (Du018-020). Another site is located, c. 100m east of the River Dodder (Du018-053) and is listed as an early settlement site in the RMP inventory.

RMP Number:	Classification	ING	Townland
Du018-053	Settlement Cluster	718005E, 23396N	Ringsend
Du018-053-1	Fort/ Revenue House [Site of]	717998E, 734164N	Poolbeg
Du018-053-1	Fort/ Revenue house [site of]	717998E, 734164N	Poolbeg
Du018-020-066	Sea Wall	718506E, 734063N	Poolbeg
Du018-020-021	Quay [Sir John Rogerson's]	716772E, 734373N- 717805E, 734273N	Dublin City, South
Du018-020-479	Quay [City Quay]	716406E, 734450N- 716772E, 734374N	Dublin City, South
Du018-020-564	Quay [North Wall Quay]	717148E, 734461N- 718021E, 734384N	Dublin City, North

**Table 1:** Known sites and monuments listed in the RMP within a 500m radius of the area under assessment.

### 3.3 National Inventory of Architectural Heritage

The National Inventory of Architectural Heritage (NIAH) is a county-by-county database that identifies, records, and evaluates the post-1700 architectural heritage of Ireland as an aid to the protection and conservation of the nations' built heritage. The NIAH surveys provide the basis for the recommendations of the Minister for the DHLGH to the planning authorities for the inclusion of particular structures in their Record of Protected Structures (RPS).

A total of twelve (12) entries are listed in the NIAH within the vicinity of the proposed development, as tabulated below in Table 2 (Figure 8). Seven (7) entries, directly relating to Industrial Period developments along the River Liffey, are listed for the area between Samuel Beckett Bridge and the East Link Bridge. These include North Wall Quay, a *Scherzer* rolling lift-bridge, and a number of nineteenth-century buildings that run along the North Wall Road. A further five (5) entries relate to the Grand Canal Basin, including its associated sea locks, its two (2) remaining graving (dry) docks, and a former warehouse on Hanover Quay. Britain Quay (formerly Great Britain Quay), remains absent from the NIAH inventory at present.

Registration Number	Date	ITM	Description
50010009 [Bridge]	1930-1940	717143E, 734482N	Pair of wrought-iron <i>Scherzer</i> rolling-lift bascule bridges, erected c.1935, modelled on bridges of 1911-12 on North Wall Quay, and carrying east and west carriageways over Royal Canal as it meets the River Liffey.

Registration Number	Date	ITM	Description
50010011 [Quay]	1780-1820	717358E, 734456N	Stretch of quay wall, erected c.1800, along north embankment of Liffey between Convention Centre and New Wapping Street. Coursed squared granite ashlar quay walls with granite coping, flush to embankment with bull-nosed edges. Several paired iron mooring hooks set into coping and three shallow recesses containing iron ladders.
50010012 [Railway Station]	1890-1910	717355E, 734483N	Detached symmetrical thirteen-bay two-storey brick and stone former North Wall Railway Station, built c.1900, with central three-bay block flanked by matching taller five bay wings and single-storey curved wing to east.
50010014 [Hotel]	1870-1900	717417E, 734493N	Former hotel was built by the London and North Western Railway to replace an earlier hotel called the Prince of Wales Hotel, with two rear wings incorporated into the present structure. The rail company had been operating a steam packet service across the Irish Sea and moved its terminus from Dún Laoghaire in 1861 to North Wall Quay.
50011167 [Warehouse]	1890-1910	717685E, 734454N	Attached gable-fronted three-storey warehouse, built c.1900, having three-bay front and eight-bay east side elevation. Now derelict.
5001168 [Industrial Building]	1860-1900	717895E, 734433N	Detached three-bay two-storey industrial building, built c.1880. Now derelict.
50020499 [Dam/ Reservoir/ Basin]	1795-1800	717603E, 734016N	L-plan canal basin, built 1796, as docks for Grand Canal, having trio of sea locks to north-east and dry docks to east end. Roughly coursed Calp limestone walls, with squared Calp coping and tooled granite coping, some replacement coping, having cast-iron bollards and mooring posts. Dressed granite and recent render steps. Recent road bridge, replacing earlier drawbridge, carrying Pearse Street over basin. Situated to east of city centre, south of River Liffey.
50020465 [Quay]	1860-1880	717407E, 734316N	Ashlar granite quay wall, erected c.1870, with ashlar granite coping. Cast-iron mooring hooks and mooring rings. Timber fenders to north of B. J. Marine building. Granite steps with cast-iron railings. Stone setts and inset cast-iron rails to campshire. Raised in height to east and west of Samuel Beckett Bridge as part of recent works.
50020468 [Diving Bell]	1860-1880	717288E, 734320N	Cast-iron and riveted plate-iron diving bell, fabricated c.1870, with chamber 23 feet square by 6.5 feet high, accessed by vertical shaft with iron rungs, incorporating air lock. Located to quay side of Sir John Rogerson's Quay, mounted on modern display structure.
50020495 [Warehouse]	1880-1900	717768E, 734095N	Attached triple-gable-fronted nine-bay single-storey former warehouse, built c.1890, now disused. Pitched corrugated roof with recent half-dormer windows, carved limestone coping having metal flashing to parapets to front (south) elevation, yellow brick eaves course with coggled brick, and cast-iron rainwater goods. Brown brick, laid in Flemish bond, to wall to front, carved granite string course and raised dressed granite and dressed Calp limestone plinth course, roughly

Registration Number	Date	ITM	Description
			coursed rubble limestone to east elevation.
50020496 [Sea Locks]	1795-1800	717817E, 734074N	Group of three sea locks, built 1796, connecting Grand Canal Dock with the River Liffey. Two central dock platforms having tooled granite walls and coping, inscribed lettering to walls showing names and dates, notches for machinery, and lock-gate emplacements to each elevation. Sign marking locks with name 'Grand Canal Docks'. Some cast-iron ladders and rings inset to walls. Three sets of double-leaf timber gates, with timber beams and some recent metal panels, to lock to west, pair of replacement gates to central and east lock. Stone sets and limestone paving to surface of platforms, winch mechanisms to platforms to east and centre. Adjoining south bank of River Liffey.
50020497 [Dry Docks]	1795-1800	717821E, 733972N	Two former graving docks, built 1796, now disused. Cut limestone retaining walls. Recent smooth rendered enclosing wall to north, east and south boundaries. Situated on east side of Grand Canal Basin.

**Table 2:** NIAH entries associated with the nineteenth and twentieth-century development of the River Liffey.

### 3.4 Shipwreck Inventory

The Shipwreck Inventory in the DHLGH archive is a list of recorded instances of wrecking since 1750. The details provided describe the type of vessel, the journey it foundered on, and information on the ultimate plight of the vessel and its crew, where possible. In describing the wrecking event, the records will locate the incident in relation to the nearest headland or other topographic marker where known. This is not however a record of where the wreckage lies, since the historic records generally only deal with the vessel before it sank. Such finer details emerge from other sources, such as fishermen's records of snag points and diver records of sites located underwater. These are included in the Inventory wherever possible but it is true to say that most entries lack this final level of data. Finally, it should be pointed out that while the Inventory provides a record of wrecking incidents since 1750, it does not claim to be a comprehensive record for earlier events, and therefore the medieval and prehistoric periods are not represented in this archive.

A total of four-hundred and sixty-three (463) shipwrecks are listed in the inventory for the Dublin Bay. Topographic references from the list include: The Horrocks, west side of Dublin Harbour, Old pier at Dublin, Behind the piles at Dublin, 1 mile off Dun Laoghaire east pier, Near Dublin, Dublin Bay, Dublin Bar, Dublin Harbour/Port, Dublin, McCarthy's wharf, River Liffey/Dublin River, Quay Wall/River Liffey, North Wall, South Wall, St John's Quay, Pigeon House (Fort), Bailey Light, Poolbeg (Harbour), North Bull, South Bull, Bull Island, Clontarf, Sutton, Blackrock, Ringsend (Point), Howth (off Howth, Howth Head, near Howth and Howth harbour), Dalkey.

A total of twenty-six (26) wrecks are listed in the inventory for the River Liffey and surrounding area (Appendix 2). This includes: seventeen listed as River Liffey/Dublin River, five for Ringsend, one for Sir John's Quay, one for the South Wall, one for Pigeon Hole, one for Halpin's Pond, and one for Pigeon House. The earliest of the listed wrecks date from the 1760s, with the latest recorded dating to 1892. There are no entries listed for the River Dodder or the River Liffey at North Wall Quay or at Sir John Rogerson's Quay.

### **3.5 Topographic Archive**

The National Museum of Ireland Topographical Files is the national archive of all known antiquities recorded by the National Museum. These files relate primarily to artefacts but also include references to monuments and also contain a unique archive of records of previous archaeological excavations. The Museum's files present an accurate catalogue of objects reported to that institution from 1928. There is a computerised database of finds from the 1980s onwards. They are categorised by their location into county and further into townland, town, city, street or river where they come from. There are rarely any grid co-ordinates to precisely locate find-spots. However, where find-spots of artefacts are established they can prove an important indication of the archaeological potential of the related or surrounding area.

A large number of artefacts have been recovered from excavations undertaken close to the existing River Liffey. Among the earliest artefacts encountered were those recovered from excavations at Fishamble Street, these included: two flint blades of Larnian style (similar pieces dated to about 3350BC at Sutton and on Dalkey Island), a Neolithic polished stone axe-head, and a barbed and tanged flint arrowhead of Early Bronze Age type.<sup>8</sup> However, only a total of twenty-six artefacts have been listed in the topographic files for the River Liffey and its associated quay structures (Appendix 3). Listed artefacts range in date from the early Bronze Age (axe-head, 1922:4) to nineteenth-century material (clay pipe fragments, etc., 1937: 2379-2416). Only eleven artefacts are listed as coming from the River Liffey itself, the rest being recovered during quayside excavation works. One artefact, an iron sword (1964:1), is listed as coming directly from riverbed deposits; recovered from the River Liffey, c.10ft from the edge of Arran Quay.

While there is no specific reference to archaeological material being recovered from the riverbed areas under assessment, it should be noted that the systematic recording of maritime/ riverine data is a recent phenomenon. Moreover, it is clear that the River Liffey has a long history of maritime activity and has been of importance from at least the medieval period. However, this is counter-balanced by the fact that both the River Liffey and the River

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<sup>8</sup> Mitchell, G.F., *Archaeology and Environment in Early Dublin*, Royal Irish Academy, Dublin, p.7.

Dodder would have undergone successive dredging works from the nineteenth-century onwards, an activity that could greatly limit the archaeological potential of the riverbed.

### 3.6 Excavations Bulletin

The *excavations bulletin* provides a published and online summary of accounts of archaeological excavations undertaken throughout Ireland.<sup>9</sup> Summaries may also be submitted for inter-tidal survey, underwater assessments, and the archaeological monitoring of marine dredging works. The majority of the entries relate to development-led archaeological work. Appendix 4 summarizes the entries relating to the River Liffey and its surrounding environs, including: River Liffey, River Liffey Quays, and the North Wall. There are no entries relating to the River Dodder. There are also a number of underwater archaeological assessments that were undertaken (by ADCO) within the vicinity of the present assessment area.<sup>10,11</sup> However, no archaeologically significant material/ deposits/ objects were encountered as part of these endeavours.

As previously discussed, one entry is of particular interest and refers to the excavations at the site of Building C, Spencer Dock, North Wall Quay (Bulletin entry 2004: 565). The excavation identified three principle phases of activity. These included a series of Late Mesolithic fish traps located on the old shoreline of the Liffey channel, artefacts from the eighteenth and nineteenth-century reclamation of that area, and structures from the nineteenth and twentieth-century development of that reclamation land.

### 3.7 Conclusion

It is evident that significant maritime activity has taken place within the city to stimulate river adaptation, the Liffey providing an essential artery for trade imports and exports to and from the city. This activity is reflected in the number of shipwreck events listed in shipwreck inventory, which records 464 wrecks around Dublin and includes twenty-six wrecks near or from the River Liffey; the majority dating from the eighteenth and nineteenth century when river use by shipping was at its peak.

The current study attests to this long history of river adaptation, and river area under assessment retains a number of historic features that correspond with this river development, namely: four nineteenth-century quayside structures (Sir John Rogerson's Quay, North Wall Quay, Brittan Quay, and one unnamed quay). These structures are to be considered of

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<sup>9</sup> Isabel Bennett (ed.) *Excavations Bulletin: summary accounts of archaeological excavations in Ireland*, Wordwell./ [www.excavations.ie](http://www.excavations.ie)

<sup>10</sup> Rex Bangerter, 03D027, 03R046, 'Underwater Archaeological Assessment, South Link Bridge, Grand Canal Basin, Ringsend, Co. Dublin', unpublished report, ADCO, April 2003.

<sup>11</sup> Rex Bangerter, 16E0495, 16D0070, 16R0175, 'Underwater Archaeological Impact Assessment (UAIA) and Environmental Sampling Report, Dublin Bridges Project, Bridge Sites 1-4, River Liffey, Dublin City', unpublished report, ADCO, November 2016.

historic/ industrial archaeological value. No other structures of archaeological significance were identified in the desktop study for this area. However, the potential that features, deposits, and artefacts of archaeological significance remain buried within riverbed and reclamation deposits should be considered high. This potential is highlighted by the Mesolithic fish-traps encountered as part of recent excavations at Spencer Dock (Bulletin entry 2004: 565).

#### **4.0 SURVEY METHODOLOGY**

A team of four maritime archaeologists, a dive supervisor, and a certified supervisor carried out the non-disturbance survey at the identified locations within the River Liffey/ River Dodder. The survey was undertaken in a systematic manner and particular attention was paid to the intertidal/ subtidal environment present with detailed descriptions of riverbed topography and riverside environment being made. Underwater visibility within the sub-tidal areas ranged between 200mm to 500mm. A maximum depth of 3m was recorded.

A DGPS Unit was used to assist in the position-fixing/recording of any features present. In addition, a detailed photographic record will be made of the existing river environment along the river assessment area.

A metal detection survey of the exposed intertidal area was also undertaken, but the amount of metallic debris and the nature of the riverbed stratigraphy present mean this endeavour was of limited value.

The dive operations were carried out to HSA/HSE standard using surface supplied equipment, supported with suitable boat and mobile/ VHF communications to the Port Operations Centre at Dublin Port, in accordance with the Safety in Industry (Diving Operations) Regulations 1981, SI 422 and the recently updated HSA Diving at Work Regulations 2018. The on-site work was carried out on the 9th April 2019, under licence from the DHLGH (formerly the DCHG); licence numbers 19D0022 (Dive Survey) and 19R0052 (Detection Device).

#### **4.1 Onsite Assessment**

The assessment recorded riverbed topography across the proposed bridge location and along a section of intertidal foreshore on the south side of the River Liffey, where proposed reclamation works are to take place. The assessment sought to provide a detailed account of the existing riverine environment. On-site work comprised a detailed and systematic non-disturbance inspection of identified Areas A and B; where previous archaeological impact assessment had not taken place. Any features encountered were subject to written and photographic record and positioned according to Irish Transverse Mercator (ITM).

The survey at Area A extended across a 35m (north-south) x 80m (east-west) area of intertidal river channel and a 25m (north-south) x 111m (east-west) area of the subtidal channel. The survey at Area B extended across 13m (north-south) x 8m (east-west) of intertidal channel and 8m (north-south) x 8m (east-west) area of subtidal channel (Figures 9-10).

A metal detection survey was undertaken in an attempt to plot the distribution of metallic objects across the two survey areas in an attempt to highlight any material concentrations present. A Fisher *Aquanaut* 1280U metal detector was used for the magnetometer survey. A finds retrieval strategy dealing with conservation issues, cataloguing, and locational recording was in place to deal with any artefacts recovered during the survey.

In addition to the above, the full extent of the exposed foreshore was re-surveyed (visual inspection), as indicated in Figure 9. This was undertaken to assess if there were any topographic changes or new features that might have become exposed since the area was last assessed.

## 4.2 Terminology

When referring to the degree of compaction observed for the riverbed deposits under inspection, the terms loose, medium, and hard are relative and do not relate to the measured properties of these deposits. All dimensions in this report are provided in either millimetres or meters according to scale. When referring to sediment grain size, the Wentworth scale has been adopted, as detailed in Table 3.

Size (mm)	Grade
>256	Boulder
>64	Cobble
>4	Pebble
>2	Granule (gravel)
>1	Very coarse sand
>1/2	Coarse sand
>1/4	Medium sand
>1/8	Fine sand
>1/16	Very fine sand
>1/32	Coarse silt
>1/64	Medium silt
>1/128	Fine silt
>1/256	Very fine silt
<1/256	Clay

**Table 3:** Sediment grain size categories as applied to the riverbed deposits discussed in this report.



## 5.0 ARCHAEOLOGICAL ASSESSMENT

The section details both the 2019 assessment work and the information gathered as part of the previous archaeological assessment of the area, carried out by ADCO in 2016 (Figure 9).

### 5.1 River Topography

**River Dodder:** recent dredging is evident along the west side of the Dodder channel, adjacent to Britain Quay. This endeavour has removed a large amount of metallic debris that remained in-river following the decommissioning (in the mid-1990s) of a scrap-metal processing works situated on Britain Quay. This dredging work removed c. 3m of riverbed immediately adjacent to the quayside, spanning an area that measures 15m in width (max.) by over 100m in length. The remaining riverbed is composed of a dark grey/black silty-clay of medium compaction with a deposit depth of c. 1m (Plates 1-2). The riverbed within this location is largely free from visible surface debris, although a number of small trees and tree-branch material was noted; having been washed into the dredged area. A steep-sided dredge slope remains visible, measuring between 50 and 70 degrees along its extent.

The riverbed to the east of the dredged area is composed of an upper layer of organic material comprising leaf-litter, twigs, and tree branch material (Plate 3). This layer measures in excess of 200mm and constitutes material washed down-river during flood-water events. The substratum is composed of dark grey/black silty-clay with frequent leaf-litter inclusions and semi decomposed organic material. Fragments from plastic bags and sanitary products were also noted inclusions from this layer.

Sediment deposition is evident along the east side of the channel, adjacent to the slipway and Larson (clutch) piles at that location. Modern dumped material is frequent within this area and includes glassware, bicycles, shopping trolleys, traffic cones, and miscellaneous metallic debris.

**River Liffey:** No tangible changes to the foreshore environment/ topography were observed as part of the 2019 assessment (intertidal foreshore extent and Areas A-B). The riverbed across this area is composed of a light-grey to white silt (50mm-100mm sediment depth) overlaying a compact dark-grey silty-clay that measures 1m+ in depth (Plates 4-5). The central channel slopes gently to the southeast. Frequent drag-lines are visible within this area and occasional modern debris is evident. The riverbed on the southern side of the channel is intertidal for a distance of c. 30m (Plates 6-7). This area is composed of a deep deposit of grey-black silty-clay of medium compaction with frequent organic inclusions (leaf-litter, etc.). Dumped modern debris is frequent and includes a shopping trolley, traffic cones, mooring chain, reinforcing bar, bicycle parts, etc. A number of pronounced ridges, running east-west, are located immediately north of the aforementioned intertidal zone. These are consistent with

marks left from boat traffic using the adjacent pontoons at that location. On the north side of the waterway, the riverbed extending from the North Wall Quay slopes gently (c. 20 degree angle) towards the channel's centre point.

## 5.2 Visual Survey and Assessment

Previous archaeological assessment of the wider area was undertaken by ADCO in 2016. This included significant stretches of the River Liffey and River Dodder. The assessment was undertaken as part of a feasibility study for the Dublin Bridges project. No archaeologically significant material was encountered within the intertidal/subtidal areas assessed at that time. A significant portion of the present development falls within those areas previously assessed. Onsite survey was concentrated on the areas located outside the boundaries of the original assessment; namely Areas A and B. However, an overlap was also included in the onsite survey to form a buffer zone between the two assessments. In addition, visual inspection was undertaken across the full extent of intertidal foreshore on the south side of the Liffey/ east side of the Dodder. The onsite assessment did not reveal any archaeologically significant material within Areas A-B or the wider intertidal area.

Britain Quay delineates the west side of the River Dodder, while an unnamed masonry quay, located adjacent at Thorncastle Court, delineates the east side. The interface between Britain Quay and the eastern terminus of Sir John Rogerson's Quay also falls within proposed development footprint. These structures were inspected as part of the past/present assessment work and constitute the only known historic features of interest within the limits of the UAIA area. Part of the North Wall Quay (RMP Du018-020-684) was also inspected at the location of a potential future development. This development constitutes a possible pedestrian footbridge, placed on the upstream side of the East Link Bridge, running between the proposed reclamation area on the south side of the channel, and the North Wall Quay to the north.

**Britain Quay:** The eastern limit of Sir John's Rogerson's Quay forms the northern terminus of Britain Quay which runs north-south along the west side of the River Dodder at its confluence with the River Liffey (Plate 8). A construction line is clearly visible where the two structures conjoin at ITM 717836E, 734265N. Two (2) large granite mooring bollards are set into the top of Sir John Rogerson's Quay, immediately before it joins Britain Quay ITM 717833E, 734269N and ITM 717833E, 734266N (Plate 9).

The quayside is composed of neatly-cut regular shaped granite masonry, measuring between 500mm and 1m in length x 300mm in height. The capping stones measure 400mm in height. A recess to accommodate a mooring hoop, no longer *in-situ*, is located at ITM 717836E, 734263N, c. 1.5m from the northern limit of Britain Quay. A set of Larsen (clutch) piles have

been inserted a short distance downstream of this feature. These piles are flush with the quay wall at the high water mark and stepped out by 300mm at the riverbed level. A pair of wrought-iron mooring hooks is located c. 20m downstream of the Larson Piles, at ITM 717832E, 734240N.

**Unnamed Quayside, Thorncastle Court:** An historic quayside is located adjacent to the Thorncastle Court apartment block (Plates 10-11). This structure is located along the east side of the River Dodder (70m+ section) and the south side of the River Liffey (12m visible section); rock-armour obscuring its true eastward extent (Plate 12). A slipway, built in the 1920's, measuring 27m in length, obscures much of the quayside structure to the east; only a 4m section of the northernmost limit of the quay structure being visible (Plate 13).<sup>12</sup> A wooden ladder with iron rungs has been retro-fitted to the quayside at this location (Plate 14).

The quayside is composed of neatly cut granite blocks measuring between 500mm and 1m in length x 300mm in height. The structure measures 3.60m in height from the Low Water Mark and curves eastward to run along the south side of the Liffey for a distance of 12m, at which point it becomes hidden behind rock armour (Plate 15). A large, heavily worn, mooring-hoop is located at the interface between the quayside and the rock armour at ITM 717934E, 734206N (Plate 16). Another, large, oval-shaped mooring (wrought-iron) ring is located at ITM 717924E, 734210N and measures 500m in length x 250mm in width x 100mm in thickness (Plate 17). A flight of steps (12 in total), providing access to the River Liffey, is located 9m along the quay wall at ITM 717932E, 734207N (Plates 18-19). Each of the steps has a small wrought-iron tying-point inset on its outer side.

### 5.3 Metal-detection Survey

A metal-detection survey was undertaken across the intertidal foreshore on the south side of the River Liffey and the east side of the River Dodder (Plate 20). However, metal-detection proved impractical due to the large number of targets encountered. The survey revealed an almost constant hit ratio and it was not possible to tune out the background metallic signature generated by the volume of modern metallic debris present.

### 5.4 Environmental Sampling

A series of riverbed samples were taken as part of the feasibility study for the former Dublin Bridges project. This work was undertaken by ADCO in 2016. A number of samples were recovered from within, or close to, the construction footprint of the current bridge development. As such the details of these sample locations are provided below in Table 4 and in Figure 9 of this report.

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<sup>12</sup> Note; this 1920s slipway has recently been included in the Dublin City Industrial Heritage Record.

Number	ING Coordinates	ITM Coordinates	Sample Depth	Reduced Level
SA008	317979.60, 234181.91	717901.09, 734208.06	800mm	-1.59m OD
SA009	317959.26, 234200.68	717880.77, 734226.82	350mm	-1.99m OD
SA010	317932.84, 317932.84	717854.81, 817938.03	850mm	-6.09m OD
SA011	317914.87, 234224.78	717836.40, 734250.91	850mm	-7.57m OD
SA012	318073.81, 234358.85	717995.31, 734384.95	700mm	-6.28m OD
SA013	318073.35, 234324.68	717994.86, 734350.79	700mm	-7.96m OD
SA014	318066.61, 234284.15	717988.12, 734310.27	600mm	-6.75m OD
SA015	318046.18, 234238.07	717967.71, 734264.20	700mm	-3.12m OD
SA016	318055.66, 234215.86	717977.19, 734241.99	350mm	-1.73m OD

**Table 4:** Sample location, retrieval depth, and reduced levels for Samples SA008-SA016 that are located within or close to the current bridge development [reduced levels shown to Malin Head OD].

## 5.5 Assessment Conclusion

The archaeological assessment was systematic and comprehensive, extending beyond the construction footprint associated with the proposed bridge development and associated reclamation work. No archaeologically significant material, structures, or deposits were encountered as part of the underwater/ intertidal surveys. However, given that deep deposits of silty-clay have been observed forming the riverbed across these areas, within which frequent modern debris is present at depth, it is likely that any potential archaeological material present is limited to deeper/older layers, located at c. 2m+ in depth below the existing riverbed surface.<sup>13</sup>

Known features of archaeological interest are restricted to the historic quaysides that delineate the waterways under assessment. These include Britain Quay, delineating the east side of the River Dodder, and an unnamed masonry quay that delineates south side of the River Liffey/ West side of the Dodder at Thorncastle Court. These structures are not currently listed in the RMP or NIAH, although they are likely to be included in any revisions to those inventories. In addition, the potential of an earlier quayside, as depicted on the OS First Edition Map, located behind the existing extent of Britain Quay should also be given consideration.

The identified quay structures, including their associated fixtures and fittings, form an important part of Dublin's industrial and maritime heritage; charting the eastward movement of maritime trade from the city centre to its eventual home in Dublin Port; and should not be undervalued as a result.

<sup>13</sup> Observation made as part of geotechnical sampling of the riverbed within the River Liffey and River Dodder carried out by ADCO in 2016 as part of the Dublin Bridges project.

## 6.0 PREDICTED IMPACTS<sup>14</sup>

The Dodder opening bridge will be supported by two (2), pre-cast concrete, in-water pier structures, which in turn will be supported by a series of 800mmØ tubular steel piles. The larger of the two piers will be located immediately to the east of the bridge opening (ITM 717857E, 734242; centrepiece), where the bridge cantilevers over the navigation channel. The pier will measure 24.6m length (north-south), 16.7m width (east-west), and will extend to a depth of -5.4m OD (Malin Head); c. 3m below the existing bed-level of the river. Twelve (12) tubular piles will be used to secure the pier structure, bored into the bedrock that underlies the softer deposits that form existing riverbed, reaching to a depth in excess of -25m OD. The second in-water pier will be located 21m to the east and will measure 12.5m length (north-south) by 5.4m width (east-west), located at ITM 717879E, 734236N. It will extend to a depth of -4.0m OD, c. 2.4m below the existing bed-level. Eight (8) tubular piles will be used to support the smaller bridge pier.

An abutment-type pier will be located on the west side of the dodder, inset into the existing quayside at that location (Britain Quay). The structure will measure 20m length (north-south) by 8.25m (east-west). The structure will be supported by twelve (12) tubular piles. In addition, a series of piles be driven into the ground on the east side of the waterway and across the adjacent intertidal zone to accommodate the proposed reclamation area on the south side of the River Liffey.

It is clear the above constitutes a considerable impact to the existing quayside/ riverside environment and that additional archaeological mitigation measures will be required as a result. A list of potential impacts and associated classification from an underwater archaeological perspective, based on the available information, has been tabulated below in Table 5. The associated archaeological mitigation measures that are likely to be required have been detailed in Section 7.0 of this report.

### 6.1 Impact Categories

Impact/effect categories will typically have regard to those set out in the following documents:

- EPA (2002), *Guidelines on the information to be contained in Environmental Impact Statements*;
- EPA (2003), *Advice notes on Current Practice (in preparation of Environmental Impact Statements)*;
- Strategic Environmental Assessment (SEA), 2010;
- EPA (2015), *Draft Advice Notes for preparing Environmental Impact Assessment*;
- EPA (2017), *Draft Guidelines on the Information to be Contained in Environmental Assessment Reports*;

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<sup>14</sup> This section does not purport to relate to precise engineering details but is rather an attempt to understand the nature of the impact on the potential archaeological environment, based on the supplied data.

- and *Guidelines for the Assessment of Archaeological Heritage Impacts of National Road Schemes*, no date, National Roads Authority.

Impacts are generally categorised as either being a direct impact, an indirect impact or as having no predicted impact:

**A direct impact** occurs when an item of archaeological or architectural heritage is located within the centreline of the proposed route alignment and entails the removal of part, or all, of the monument or feature.

**An indirect impact** may be caused where a feature or site of archaeological or architectural interest is located in close proximity of the proposed development.

**No predicted impact** occurs when the proposed route option does not adversely or positively affect an archaeological or architectural heritage site.

These impact categories are further assessed in terms of their quality i.e. positive, negative, neutral (or direct and indirect).

**A negative impact** is a change that will detract from or permanently remove an archaeological or architectural monument from the landscape.

**A neutral impact** is a change that does not affect the archaeological or architectural heritage.

**A positive impact** is a change that improves or enhances the setting of an archaeological or architectural monument.

A significance rating for these impacts is then given i.e. slight, moderate, significant or profound.

**'Profound'** applies where mitigation would be unlikely to remove adverse effects. This is reserved for adverse, negative effects only. These effects arise where an archaeological or architectural site is completely and irreversibly destroyed by a proposed development.

**A significant impact** is that which, by its magnitude, duration or intensity alters an important aspect of the environment. An example would be a case in which part of a site is permanently impacted upon leading to a loss of character, integrity and data about the archaeological or architectural feature/site.

**A moderate impact** arises where a change to the site is proposed which, though noticeable, is not such that the archaeological integrity of the site is compromised and which is reversible. This arises where an archaeological or architectural feature can be incorporated into a modern day development without damage and where all procedures used to facilitate this are reversible.

**A slight impact** is that which causes changes in the character of the environment that are not significant or profound and do not directly impact or affect an archaeological or architectural feature or monument.

**An imperceptible impact** is that which is capable of measurement but without noticeable consequences.

In addition, the duration of Impacts is assessed and has been sub-divided into the following categories:

- **Temporary Impact**, where an impact lasts for one year or less
- **Short-term Impacts**, where an impact lasts one to seven years
- **Medium-term Impact**, where an impact lasts seven to fifteen years
- **Long-term Impact**, where an impact lasts fifteen to sixty years.
- **Permanent Impact**, where an impact lasts over sixty years.

Structure	Description	Potential Impact	Classification of Impact
Britain Quay	Nineteenth-century masonry quayside built on reclamation on west side of the River Dodder	Upper courses (c. 1m) of quayside masonry removed to facilitate the west terminus/abutment of bridge structure.	Direct, negative, impact; moderate and permanent in nature.
Great Britain Quay (potential site of)	Eighteenth-century quay, thought to be buried behind Britain Quay	Existing ground levels changed (removal to depth of c. 1m) to facilitate west terminus of bridge structure.	Direct, negative, impact; moderate and permanent in nature.
Un-named Masonry Quay	Nineteenth-century masonry quayside on south side of River Liffey, adjacent to Thorncastle Court	Area subject to reclamation works which will permanently bury the structure	Direct, negative, impact; moderate and permanent in nature.

**Table 5:** Nature and classification of impacts to historic quay structures arising from the proposed Dodder Public Transport Opening Bridge project.

## 7.0 MITIGATION MEASURES

### 7.1 Pre-construction Measures

A set of mitigation measures relating each of the identified impact arising from the bridge structure and associated works is provided below in Table 6. Additional archaeological recording of the quayside structures at the various impact locations will be required in advance of construction. This will include elevation/ cross-section drawings of the quayside impact locations to provide preservation by record of the quayside areas affected.

Structure	Potential Impact	Required Archaeological Mitigation
Britain Quay	Upper courses of quayside masonry removed to facilitate the west terminus/abutment of bridge structure.	Detailed, metrically accurate, stone-by-stone record of quayside to be made, to include elevation/ cross-section drawings and photomosaic elevation.
Un-named Masonry Quay	Area subject to reclamation works which will permanently bury the structure.	Detailed, metrically accurate, stone-by-stone record of quayside to be made, to include elevation/ cross-section drawings and photomosaic elevation.

**Table 6:** Pre-construction archaeological mitigation for historic quay structures impacted by the proposed development.

No further ameliorative measures are recommended in advance of construction commencing with regard to any of the in-river works (pier locations).

### 7.2 Construction Phase Measures

#### ARCHAEOLOGICAL MONITORING

Archaeological monitoring in accordance with the terms of Section 5 of the National Monuments Act (2004 Amendment) will take place during any riverbed and quayside

disturbances associated with the proposed works. These measures will ensure that any sub-surface remains of archaeological or historic value are dealt with in an appropriate manner.

The removal of any quayside masonry will be carried out under archaeological supervision, allowing the archaeologist to obtain additional information and undertake supplementary recording, as may be required during that process. Any masonry, identified to be of particular interest, is to be retained and removed to suitable storage as part of the removal process. In addition, any quayside fixtures and fittings are to be removed under archaeological supervision and retained (where possible) as part of the development.

The potential to uncover components of an earlier quayside, buried beneath the existing surface levels behind of Britain Quay will be considered within the archaeological monitoring strategy. In the event that structural remains of this quayside are uncovered, these are to be subject to robust archaeological record; recording the structure in plan and cross-section (where possible), and this information is to be supplemented by a detailed written and photographic record.

#### RETAINING AN ARCHAEOLOGIST/S

An archaeologist will be retained for the duration of the relevant works. The archaeologist will be familiar with and experienced in river/estuarine environments and have a good understanding of riverine archaeology and its associated features.

#### TIMESCALE

The timescale for the construction phase will be made available to the archaeologist, with information on where and when ground disturbances and/or dredging will take place.

#### SUFFICIENT NOTICE

It is essential for the developer to give sufficient notice to the archaeologist/s in advance of the construction works commencing. This will allow for prompt arrival on site to monitor the ground disturbances. As often happens, intervals may occur during the construction phase. In this case, the successful contractor and/or consulting project engineers will be required to inform the archaeologist/s as to when ground disturbance works will recommence.

#### DISCOVERY OF ARCHAEOLOGICAL MATERIAL

In the event of archaeological features or material being uncovered during the construction phase, it is crucial that any machine work cease in the immediate area to allow the archaeologist/s to inspect any such material.



#### ARCHAEOLOGICAL MATERIAL

Where the presence of archaeologically significant material is established, full archaeological recording of such material is required. If it is not possible for the construction works to avoid the material, full excavation is recommended. The extent and duration of excavation would be a matter for discussion between the client and the statutory authorities.

#### ARCHAEOLOGICAL TEAM

The core of a suitable archaeological team will be on standby to deal with any necessary rescue excavation. This is to be complimented in the event of a full excavation.

#### SECURE SITE OFFICES/ FENCING

Facilities will be provided on or near those sites where excavation is required and fencing of any archaeological areas will be necessary once discovered and during excavation.

#### ADEQUATE FUNDS

Suitable funds to cover excavation, post-excavation analysis, and any testing or conservation work required will be made available.

#### MACHINERY TRAFFIC/ SPOIL

Site traffic during construction must be restricted to avoid any archaeological excavation areas and their environs. Construction spoil will not be dumped or stockpiled within any area of excavation or its environs.

**PLEASE NOTE: All of the above recommendations are based on the information supplied for the proposed Dodder Public Transport Opening Bridge project. Should any alteration occur, further assessment may be required.**

**PLEASE NOTE: Mitigation measures are subject to the approval of The Department of the Housing, Local Government, and Heritage (DHLGH) and of the National Museum of Ireland (NMI).**

#### 8.0 ACKNOWLEDGEMENTS

Thanks are extended Faith Bailey (Senior Archaeologist, IAC Ltd.), Christine Murphy (Environmental Scientist, ROD), and Lorraine Guerin (Graduate Environmental Scientist, ROD). The Survey Team comprised Rex Bangerter (Archaeological Director), Daniel Lenehan (Archaeologist), Feargal Morrissey (Archaeological Diver/ Diving Engineer), Kyle McCoy (Archaeological Diver), Brian McAllister (Diver Supervisor), and Derek Copeland (Surveyor). The report was written by Bangerter and edited by Dr. Niall Brady.

**Appendix 1:** Chronological List of Quay Structures built along the River Liffey on the North and South sides of the river.

Location	Name	Approximate Construction Date
South Quay	Wood Quay (Coal Quay)	900
South Quay	Merchants Quay (Bridge Street Quay and, jointly with Wood Quay, Dublin Quay)	1300
South Quay	Blind Quay	Early 1700s
South Quay	Old Custom House Quay	1620
South Quay	Usher's, Quay	1650
South Quay	Usher's, Quay	1650
South Quay	Essex Quay	1680
South Quay	Aston Quay	1700
South Quay	Saint George's Quay; known as Georges Quay and included Whites Quay.	1700
South Quay	City Quay	1700
<b>South Quay</b>	<b>Sir John Rogerson's Quay</b>	<b>1720 [replaced c. 1875]</b>
<b>South Quay</b>	<b>Great Britain Quay</b>	<b>1790s</b>
<b>South Quay</b>	<b>Britain Quay (reclamation)</b>	<b>1800s</b>
South Quay	Burgh Quay	1800
South Quay	Wellington Quay	1820
South Quay	Victoria Quay	1850
South Quay	South Quay; South Bank Quay.	1960
North Quay	Inns Quay; developed in 1700 (King's Inns Quay)	1250
North Quay	Ormond Quay Lower	1700
North Quay	Ormond Quay Upper	1700
North Quay	Arran Quay	1700
North Quay	Bachelors Walk; this originally included part of Eden Quay.	1700
North Quay	North Wall Quay (North Quay)	1800
North Quay	Ellis Quay, eastern part built 1760 and called Black Quay.	1750
North Quay	Eden Quay; included the earlier Iron Quay.	1800
North Quay	Custom House	1800
North Quay	Custom House Quay	1820
North Quay	Sarsfield Quay; built Pembroke Quay and included earlier Sand Quay.	1830
North Quay	Wofle Tone Quay (Albert Quay).	1800
North Quay	North Quay (North Wall Extension)	1890
North Quay	Alexandra Quay	1935
North Quay	Alexandra Quay East	1955

**Appendix 2:** Shipwrecks listed in the Shipwreck Inventory for the River Liffey Area.

Location	Name	Date	Ship Type	Information
Opposite the old coastguard station at Ringsend, River Liffey	<i>Argo</i>	10/12/1892	31-year old, 46-ton, Dublin, wooden fishing smack	Moored in the River Liffey.
Between the walls at Dublin	<i>Britannia</i>	6/5/1774	----	This vessel was en route from London, under Captain Williams, when she hit an anchor. She went ashore.
River Liffey	<i>Carolina</i>	5/10/1799	Galliot of Oporto	Ran aground and sank.
Dublin River	<i>Commerce</i>	25/10/1811		En route from Dublin when sank.
Between the city of Dublin Company's jetty and breakwater head	<i>Edith</i>	8/9/1875	London and Noth-Western Railway Company Steamer aboard.	En route from the company's wharf to Greenore. She departed at around 1.25am but collided with another London and North-Western Railway Company vessel, the Duchess of Sutherland. This vessel was under the command of Captain Beaumont and was en route from North Wall Dublin. The Edith was violently struck on the starboard bow and sank within a quarter of an hour. A fireman called Jones and his brother who slept in the fore-castle were drowned. The weather was clear and calm at the time of the incident. Cargo: 60 to 80 passengers
Sir John's Quay, Dublin	<i>Emma</i>	17/06/1851	Smack	En route from Liverpool ran aground and listed on her beam ends. She was seriously strained and brought to Eden Quay where she filled. The cargo was damaged. Cargo: Wheat and staves
South Wall	<i>Henry</i>	23/11/1798	Brig of Liverpool	Wrecked
River Liffey	<i>Hibernia</i>	22/03/1776	----	Vessel was burnt
Pigeon Hole, Dublin River	<i>James and Ann</i>	7/2/1812	----	En route from Drogheda was hit by a collier brig and sank.
'Dublin River'	<i>Langston</i>	21/03/1812	----	Portsmouth vessel was reported lost.
River Liffey, Dublin	<i>Leonard</i>	10/01/1853	----	Struck by a steamer.
Entrance to Dublin River	<i>Maria Carolina</i>	16/8/1799	----	En route from Oporto to Dublin when she sank. The cargo was landed.
Abreast of No. 2 Buoy, River Liffey	<i>Mermaid</i>	16/07/1892	Unregistered wooden yacht/cutter was 5 yrs old and weighed 1 ton.	The master and owner was P. Carolan, Clontarf, Dublin. She was en route from Clontarf to Dublin, in ballast, with 6-crew. She sank in an easterly force 6 wind but was later raised. 4 lives were lost
The Liffey	<i>Newport</i>	20/05/1851	Montrose schooner	En-route up the Liffey when she came in contact with Hebden from Barbados, which made a hole in her stern.

Location	Name	Date	Ship Type	Information
Dublin River	<i>Nosha Squera de Bonamo</i>	28/06/1798	Brig of Oporto	Ran onto a bank.
Ringsend, R. Liffey	<i>Pelican</i>	8/4/1889	37-ton 32-year old wooden smack of Dublin	At anchor at Ringsend when burnt. Vessel in ballast
Behind piles at Dublin	<i>Providence</i>	5/02/1771	----	En route from London, under Capt Mayne, when she was lost
Opposite Halpin's Pond, River Liffey	<i>Rat</i>	25/05/1891	10-year old wooden pleasure sailing boat	Capsized and was wrecked during pleasure trip.
River Liffey	<i>Times</i>	1-2/06/1853	Dublin vessel	En route from Dublin to Liverpool encountered easterly wind. Her boilers burst while in river. Cargo: Passengers
Off Pigeon House	<i>Times</i>	13/09-29/11/1851	Steamer	Steamer plying to and from Dublin went ashore but got off again after discharging some cargo.
Dublin River	<i>William</i>	10/01/1812	----	Went aground.
Ringsend	Unknown	1760s (Oct.)	----	A severe gale in Dublin Bay wrecked two ships.
Dublin River	<i>Usk</i>	8/10/1856	----	This vessel, en route from Dublin to Wexford, became stranded.

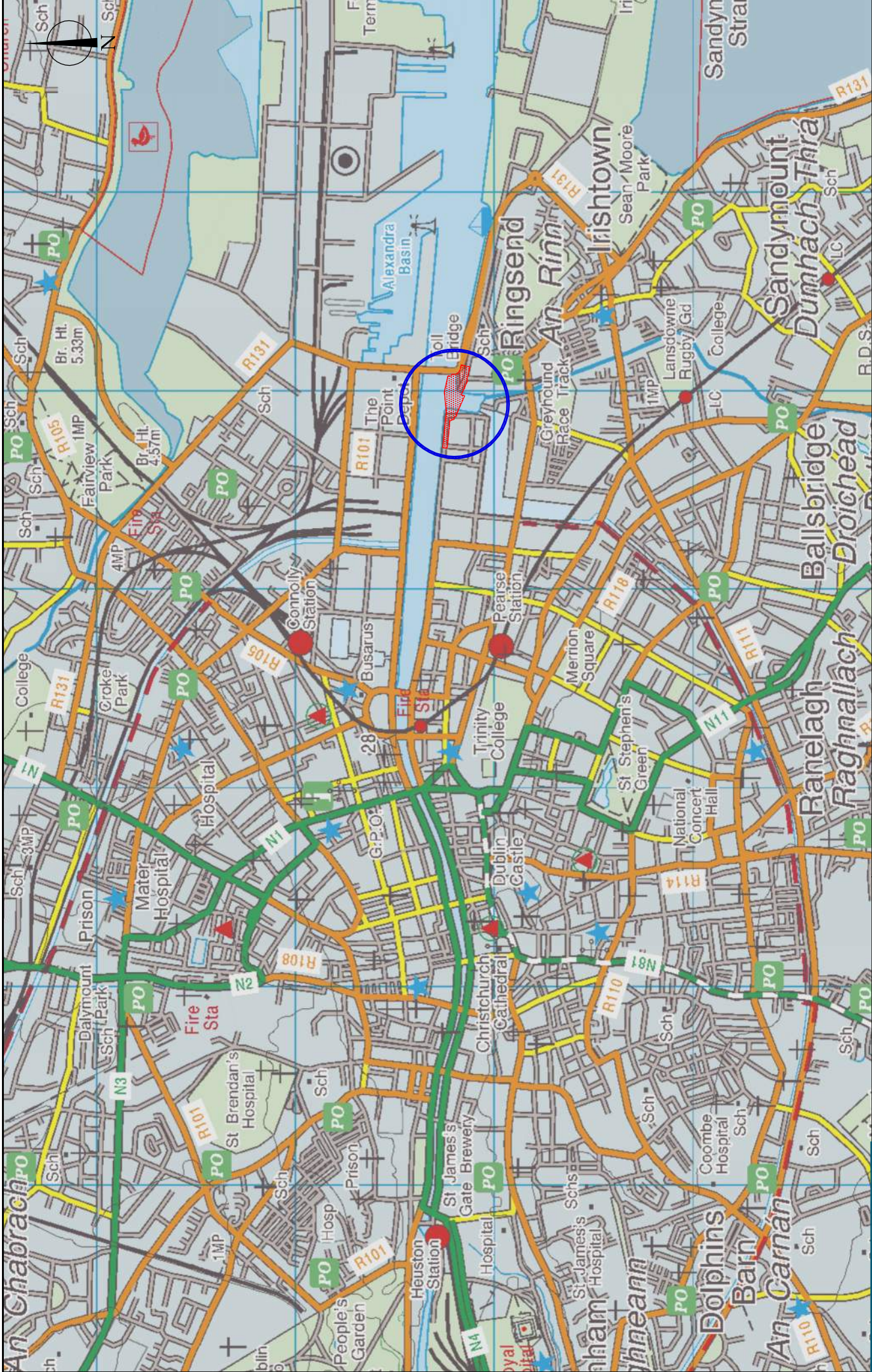
**Appendix 3:** Artefact Entries from the Topographic Files at the National Museum of Ireland listed for the River Liffey.

Artefact	Find place	NMI Reg. No.	Description
Glass Bead	River Liffey	4042:WK428	Found with other beads and an iron sword pommel
Glass Bead	River Liffey	4041:WK427	Found with other beads and an iron sword pommel
Glass Bead	River Liffey	4034:WK420	Found with other beads and an iron sword pommel
Glass Bead	River Liffey	4034:WK419	Found with other beads and an iron sword pommel
Glass ring	River Liffey	4031:WK417	Found with other beads and an iron sword pommel
Glass Bead	River Liffey	4030:WK416	-----
Glass Bead	River Liffey	4029:WK415	-----
Iron sword, Sudanese?	River Liffey at Arran Quay	1964:1	Found in the bed of the River Liffey about 10ft out from the edge at Arran Quay. It is Sudanese dating from fourteenth to nineteenth century. Length 100cm, length of blade 88cm, width across cross-guard 15.5cm. The blade is long tapered and flexible tapering to a blunt rounded point.

**Appendix 4:** Summary of Excavations Bulletin entries for River Liffey, River Liffey Quays, the North Wall, and the Grand Canal Docks [note, Underwater Archaeological Impact Assessments are highlighted in blue].

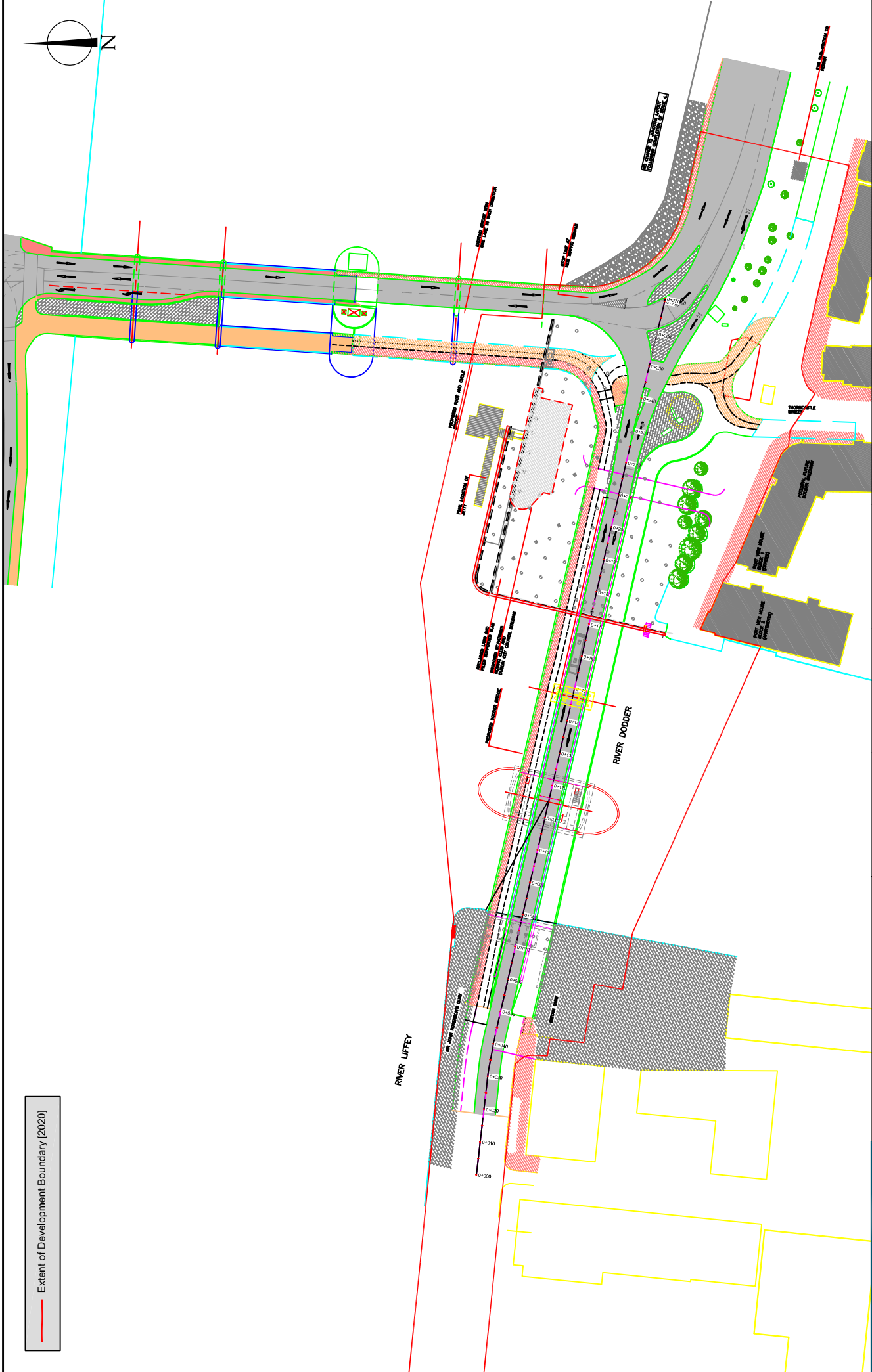
Entry Number	Location	Irish National Grid	Licence Number	Summary Description
2000:0245	River Liffey, Blackhall Place	31413E, 23429N	00E0733	Riverbed with Medieval and later artefacts. Site of eighteenth-century slipway.
2001:365	River Liffey, Blackhall Place	31413E, 23429N	01E0246	Post-medieval/early modern quays
2002:0518	River Liffey, Blackhall Place	31413E, 23429N	01E0246ext.	Post-medieval/early modern quays
2002:0543	River Liffey, Guild Street/Macken Street	-----	02E1811	No archaeological significance
2003:509	River Liffey, City Quay/Custom House Quay	31665E, 23440N	03E1060	No archaeological significance
2003:520	River Liffey, Custom House Quay/City Quay	-----	03D0363	Riverbed deposits and associated quayside features/walls
2003:527	7-8 Eden Quay, Dublin	31603E, 23447N	SMR 18:20 02E1713	Human skull and 13th–18th-century finds in river gravels.
2002:0516	14-18 Aston Quay	311580E, 233435N	02E1621	Urban, eighteenth-century
2003:495	14-18 Aston Quay, Dublin	31489E, 23336N	02E1621	Urban post-medieval
2003:509	River Liffey, City Quay/Custom House Quay	31665E, 23440N	03E1060	No archaeological significance
2003:520	River Liffey, Custom House Quay/City Quay	-----	03D0363; 03R107	Riverbed deposits and associated quayside features/walls
2003:0576	Spencer Dock, Sheriff Street	317169E, 234711N	03E0654	Post-medieval industrial
2004:0565	Building C, Spencer Dock, North Wall	317169E, 234711N	03E0654	Late Mesolithic fish traps and post-medieval structures
1995:080	8 Ormond Quay Lower, Dublin	31550E, 23430N	95E063	Mid to late seventeenth-century reclamation, eighteenth-century houses
1996:106	22-23 Ormonde Quay, Dublin	31530E, 23420N	96E272	River shoreline up to the seventeenth century when land was reclaimed. Houses are eighteenth century
1997:155	40 Ormond Quay, Dublin	315550E, 234250N	97E013	Urban, eighteenth century
1997:156	15 Ormond Quay Lower, Dublin	315550E, 234250N	97E265	Urban, post-medieval reclamation
1999:222	31A-36 Ormond Quay Upper/Charles Street West, Dublin	315250E, 234200N	99E0126	Urban post-medieval
2000:280	24-27 Ormond Quay Lower, Dublin	315600E, 234208N	00E0162	Urban post-medieval
2003:520	River Liffey, Custom House Quay/City Quay, Dublin	316650E, 234400N	03D063; 03R107	Riverbed deposits and associated quayside features/walls
2003:527	7-8 Eden Quay, Dublin	316030E, 234470N	02E1713	Human skull in river gravels
2003:562	14 Ormond Quay/11-14 Strand Street,	315500E, 234300N	03E0964	Urban post medieval

	Dublin			
2003:563	14 Ormond Quay/11-14 Strand Street, Dublin	31550E, 23430N	03E0964 ext.	Urban post-medieval
2004:0569	31-36 Ormond Quay Upper/Ormond Place/Charles Street West/Ormond Square, Dublin	31540E, 234230N	04E1206	Urban post-medieval
2008:412	Grand Canal Docks/ Sir John Rogerson's Quay [GCSWO project].	317607E, 233022N	07D0061, 07R0249	Riverine/ Quayside [nineteenth-century]
2006:427	River Liffey, 100m upstream of O'Connell Bridge to Butt Bridge [Metro North project]	315869E, 234346	08D0094, 08R0310	Riverine/ Quayside [nineteenth-century]
2008:484	River Liffey, Harbour Quay, Poolbeg.	320020E,233717N	08D0067, 08R0206	Riverine/ Quayside
2016:499	River Liffey, North Wall Quay/ Sir John Rogerson's Quay [Dublin Bridges project]	317768E, 234325N	16E0495, 16D0070, 16R0175	Riverine/ Quayside [nineteenth-century]
2019:505	River Liffey, North Wall Quay/ Sire John Rogerson's Quay. [Blood Stoney Pedestrian Bridge project].	317546E, 234344N	19D0063, 19R0156	Riverine/ Quayside [nineteenth-century]
2019:508	River Dodder and River Liffey [Dodder Public Transport Opening Bridge project].	318021E, 234221N	19D0022, 19R0052	Riverine/ Quayside [nineteenth-century]



<b>Notes</b> Source: OSi Discovery Series mapping — Extent of Development Boundary [2020]	<b>A4</b> Job/Exc No. 19D0022	Compiled by R.Bangster	CAD reference Dodder_Bridge	Client IAC Ltd./ ROD Consulting Engineers	<b>Title</b> Figure 1- Extract from OS Discovery Series Map showing location of proposed bridge development at the mouth of the River Dodder.
	Date 23.10.20	Scale 1: 25,000	Drawing No. Figure 1	Project Dodder Public Transportation Opening Bridge	

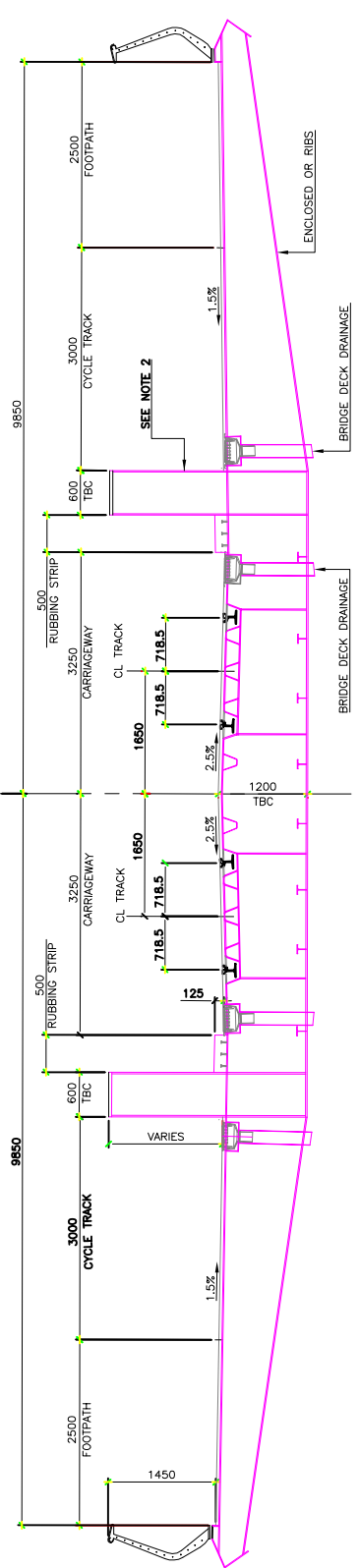
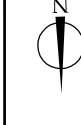




<b>Notes</b> Extract from Project Dwg. No. DPFTB-ROD-C-H-21011, Sep. 2020 [Drawing supplied by Roughan & O' Donovan Consulting Engineers].	<b>A4</b>	<b>Job/Exc. No.</b> 19D0022	<b>Compiled by</b> R. Bangenter	<b>CAD reference</b> Dodder_Bridge	<b>Client</b> IAC Ltd./ ROD Consulting Engineers	<b>Title</b> Figure 2- Extract from ROD Project Drawing showing the proposed Dodder Public Transport Opening Bridge and associated works.
	<b>Date</b> 23.10.20	<b>Scale</b> 1: 1,500	<b>Drawing No.</b> Figure 2	<b>Project</b> Dodder Public Transportation Opening Bridge		



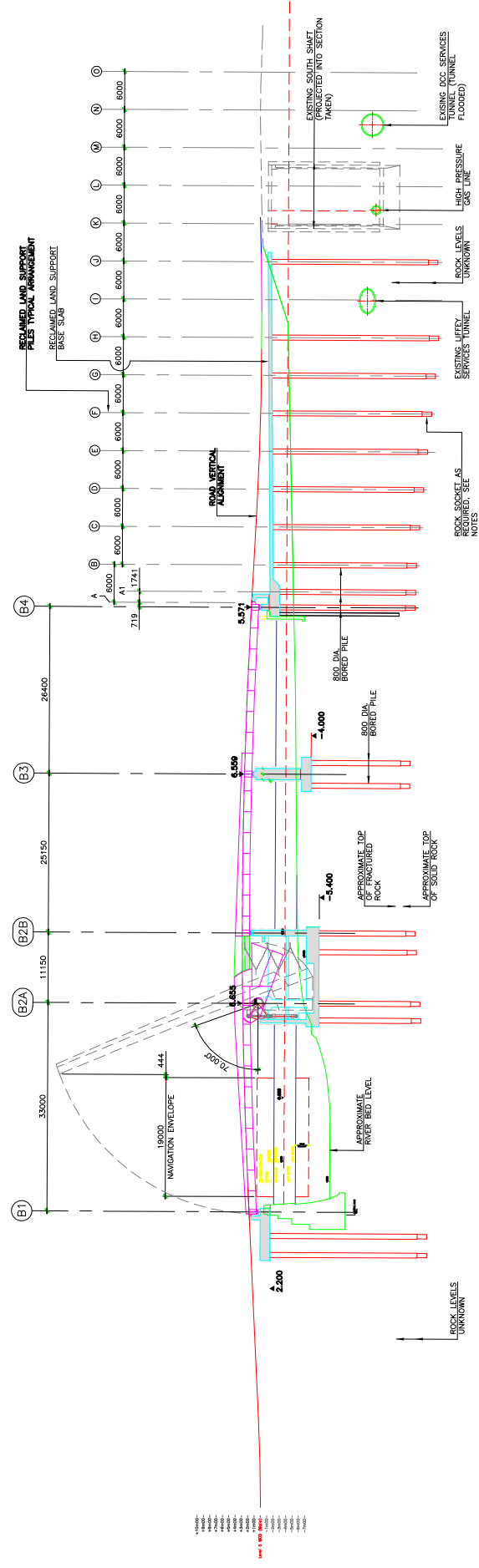




**BRIDGE DECK CROSS SECTION**  
SCALE 1:100

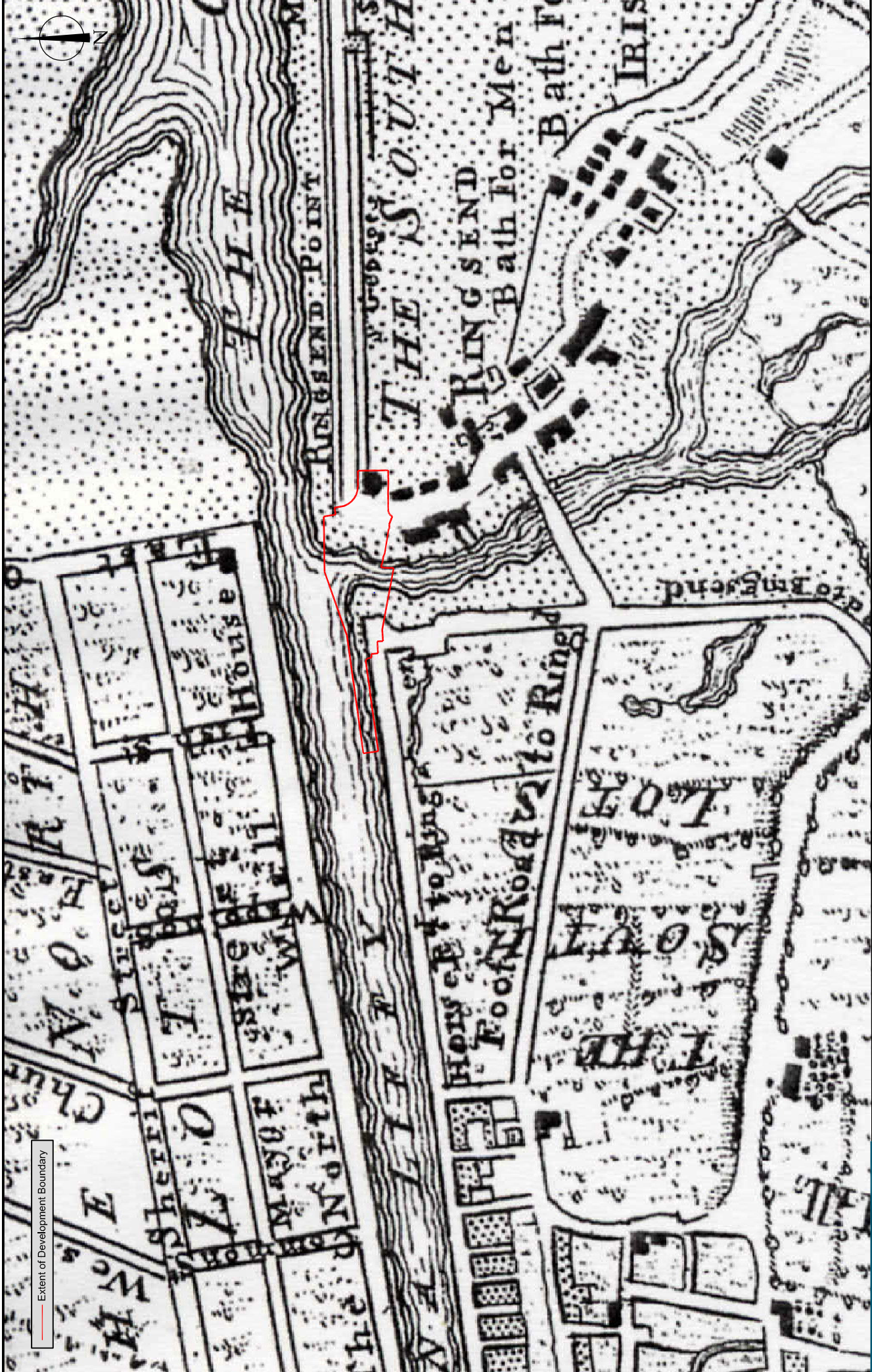


**BRIDGE ELEVATION**  
SCALE 1:1000



<b>Notes</b> Source: Extract from Project Dwg. No. DPFTB-ROD-CH-21011, Sep. 2020 [Drawing supplied by Roughan & O' Donovan Consulting Engineers].	<b>A4</b>	<b>Job/Exc No.</b> 19D0022	<b>Compiled by</b> R. Bangerter	<b>CAD reference</b> Dodder_Bridge	<b>Client</b> IAC Ltd./ ROD Consulting Engineers	<b>Title</b> Figure 3- Extract from ROD Project Drawing showing the proposed Dodder Public Transport Opening Bridge in elevation and deck cross-section.
		<b>Date</b> 23.10.20	<b>Scale</b> 1:1000/ 1:100	<b>Drawing No.</b> Figure 3	<b>Project</b> Dodder Public Transportation Opening Bridge	

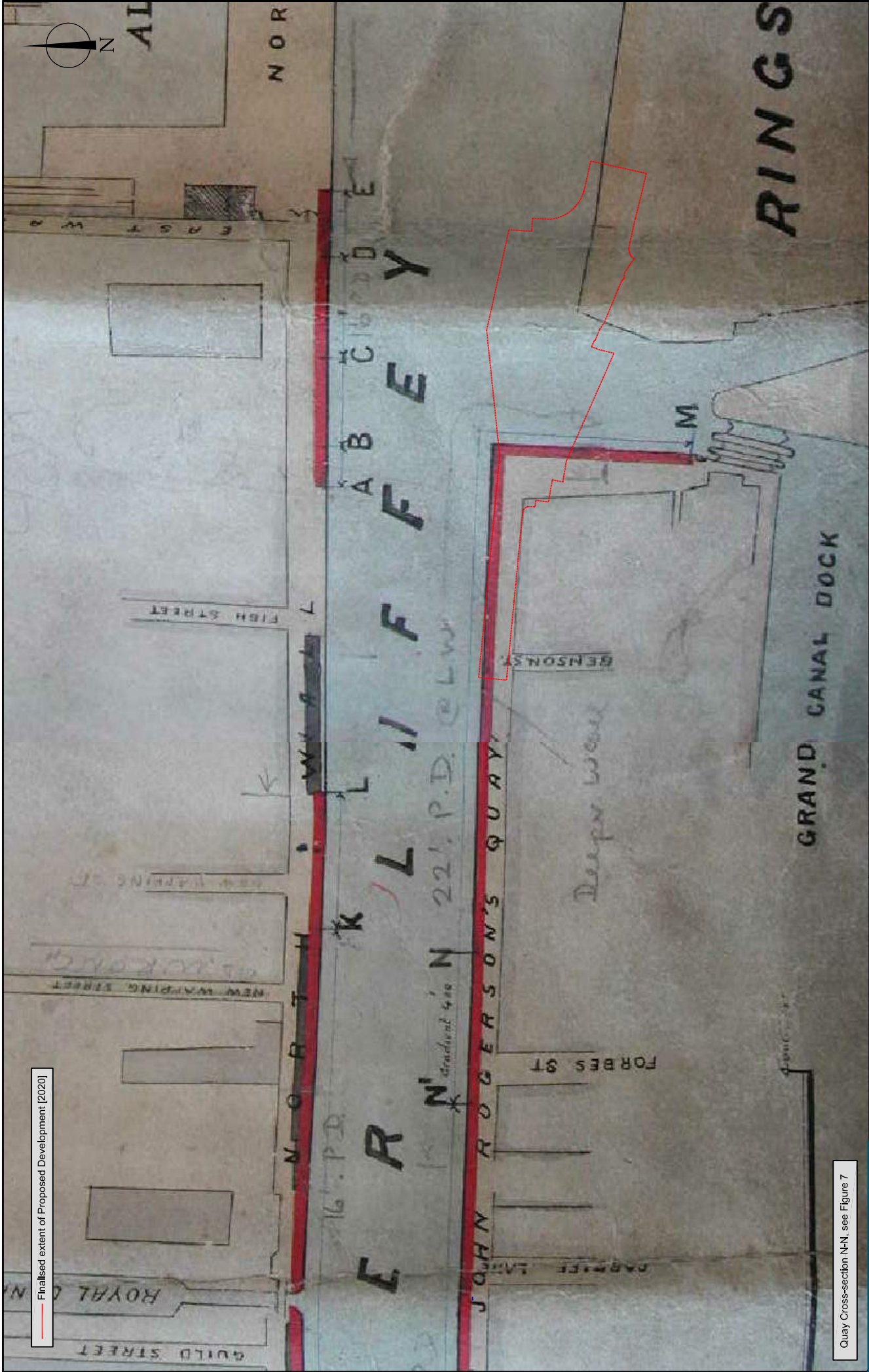




Extent of Development Boundary

<p><b>Notes</b>          Source: John Rocque's Map of the City, Harbour, Bay &amp; Environs of Dublin 1760.</p>		<p><b>Job/Exc. No.</b>          19D0022</p>	<p><b>Compiled by</b>          R. Bangster</p>	<p><b>CAD reference</b>          Dodder_Bridge</p>	<p><b>Client</b>          IAC Ltd./ ROD Consulting Engineers</p>	<p><b>Title</b>          Figure 4- Extract from John Rocque's Map of County Dublin (1760) with approximate location of proposed development superimposed.</p>
<p><b>A4</b></p>	<p><b>Date</b>          23.10.20</p>	<p><b>Scale</b>          1: 7,500</p>	<p><b>Drawing No.</b>          Figure 4</p>	<p><b>Project</b>          Dodder Public Transportation Opening Bridge</p>		



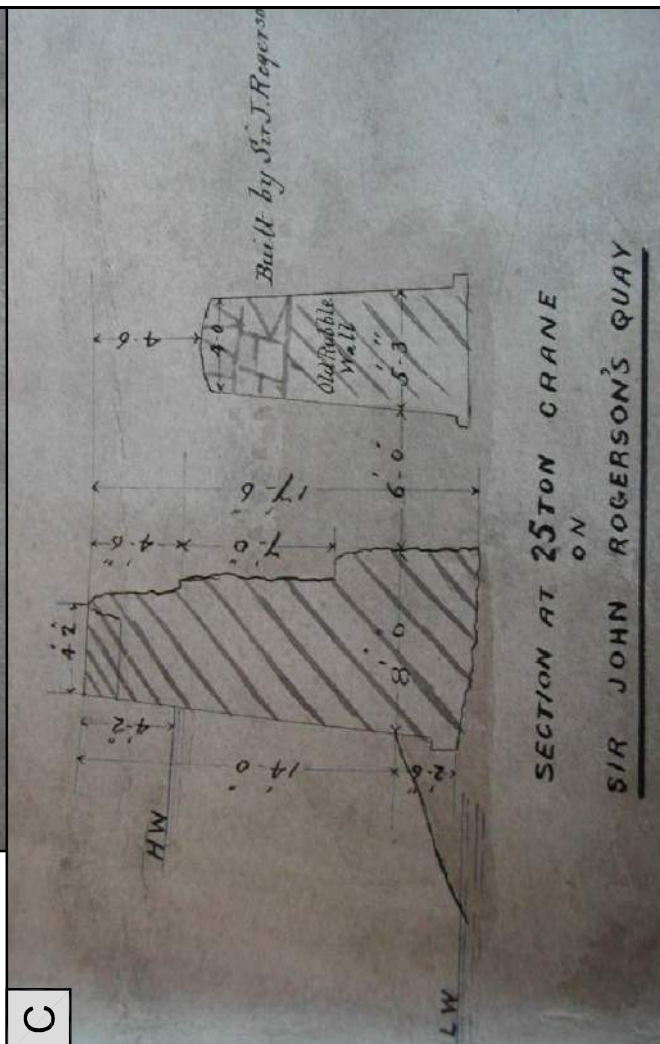
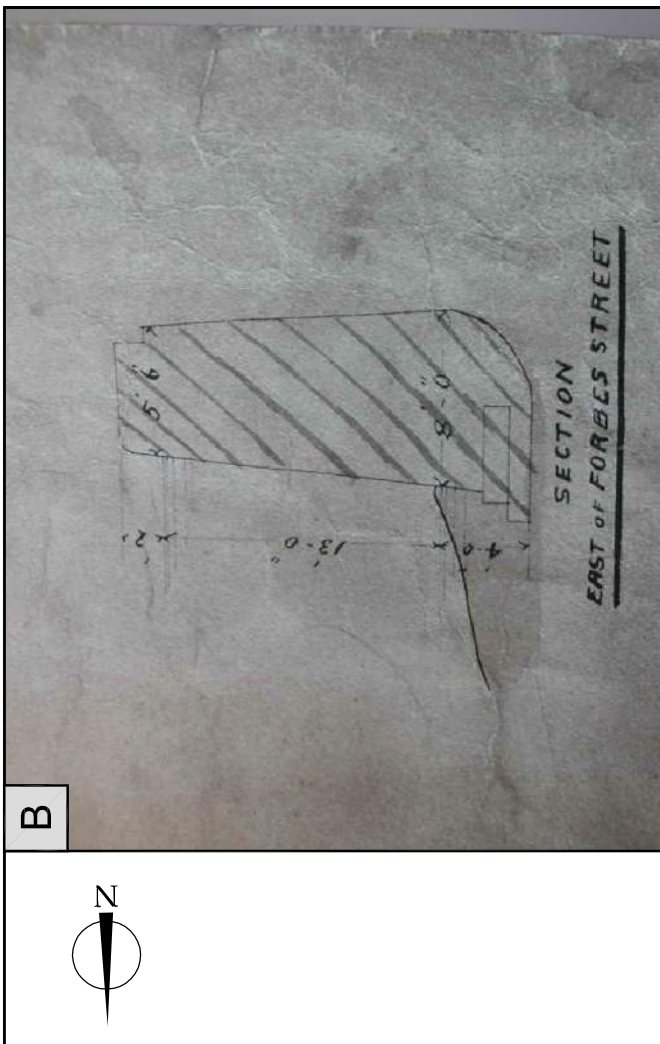
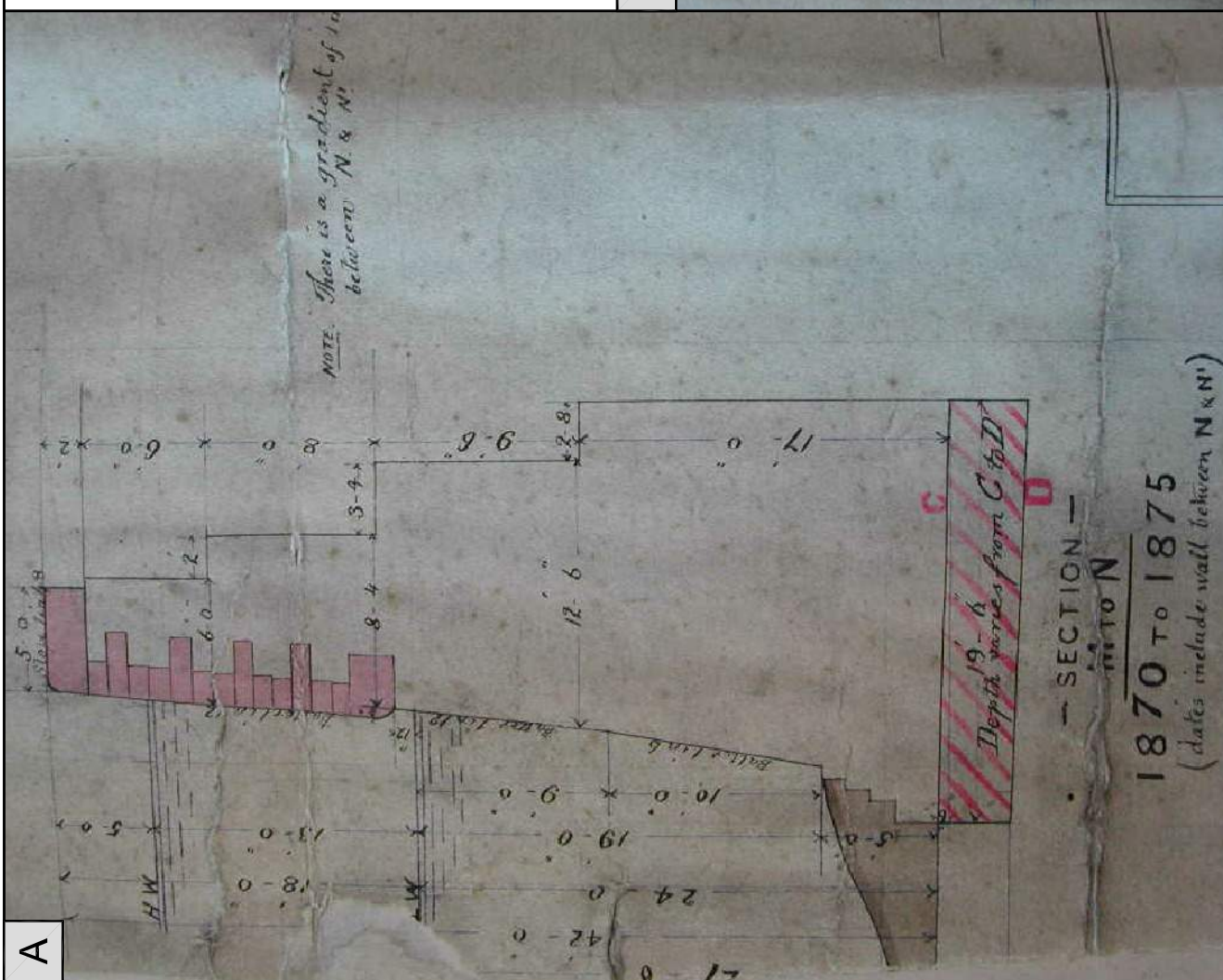


Finalised extent of Proposed Development [2020]

Quay Cross-section N-N, see Figure 7

<b>Notes</b> Source: Dublin Port Company Archive, Drawing No. 7199. [see Figures 6 for cross-section drawings]	<b>A4</b>	<b>Job/Exc. No.</b> 19D0022	<b>Compiled by</b> R. Bangster	<b>CAD reference</b> Dodder_Bridge	<b>Client</b> IAC Ltd./ ROD Consulting Engineers	<b>Title</b> Figure 5- Extract from Dublin Port Map Archive showing the location of nineteenth-century quay section drawings with extent of proposed development superimposed.
		<b>Date</b> 23.10.20	<b>Scale</b> 1:4000	<b>Drawing No.</b> Figure 5	<b>Project</b> Dodder Public Transportation Opening Bridge	





A4	Notes	Source: Dublin Port Company Archive, Drawing No. 7199. [see Figure 5 for cross-section locations]
	Job/Exc No.	19D0022
A4	Compiled by	R. Bangster
	Date	23.10.20
A4	CAD reference	Dodder_Bridge
	Scale	1:100
A4	Client	IAC Ltd./ ROD Consulting Engineers
	Project	Dodder Public Transportation Opening Bridge
Title		Figure 6-
		A). Section drawing [Section M-N] of existing structure comprising Sir John Rogerson's Quay. B/C). Section drawings of original quay wall.

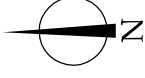


ITM CENTRE PT. COORDS  
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DESCRIPTION

MAP SHEETS

6 inchBE1  
DN018



Arna thléise agas ama thléise ag Suibhéireacht Ordánais Éireann, Páirc an Phearsaigh, Baile Átha Cliath 8, Éire. Compiled and published by Ordnance Survey Ireland, Phoenix Park, Dublin 8, Ireland.

Stairiún aitheasc agas ama thléise ag Suibhéireacht Ordánais Éireann, Páirc an Phearsaigh, Baile Átha Cliath 8, Éire. Comhcheangailte agus foilsíodh ag Ordnance Survey Ireland, Phoenix Park, Dublin 8, Éire.

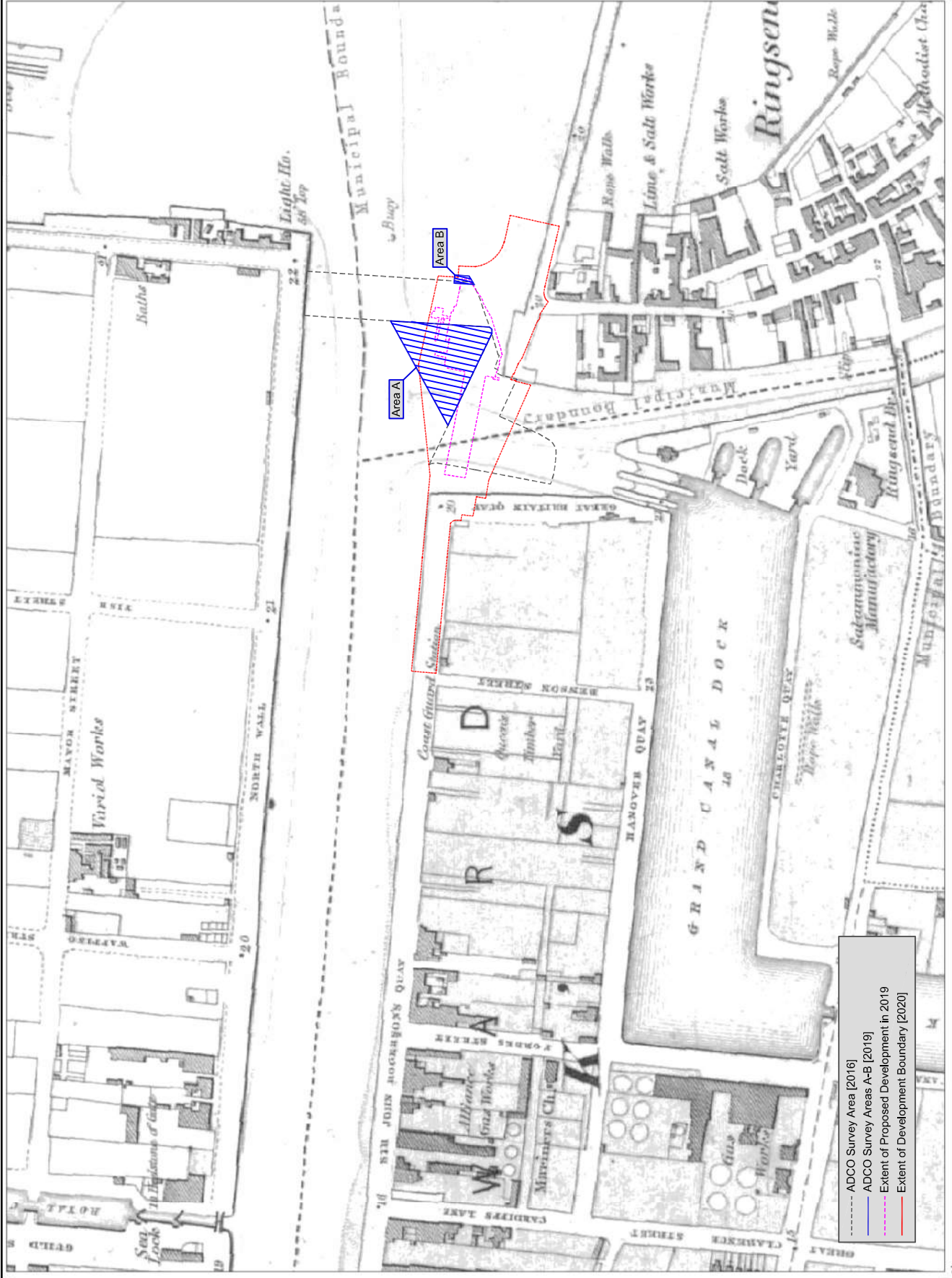
Each ceán ar cois na h-áirde. Níl cois na h-áirde ar fáil ar an bhfadhb seo. Níl aon tairiscint ar fáil ar an bhfadhb seo. Níl aon tairiscint ar fáil ar an bhfadhb seo.

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Title  
Figure 7- Extract from OS First Edition (1837) map with approximate location of proposed development superimposed.

Client	IAC Ltd./ ROD Consulting Engineers
Project	Dodder Public Transportation Opening Bridge

CAD reference	Dodder_Bridge
Drawing No.	Figure 7

Compiled by	R.Bangster
Scale	1:5000

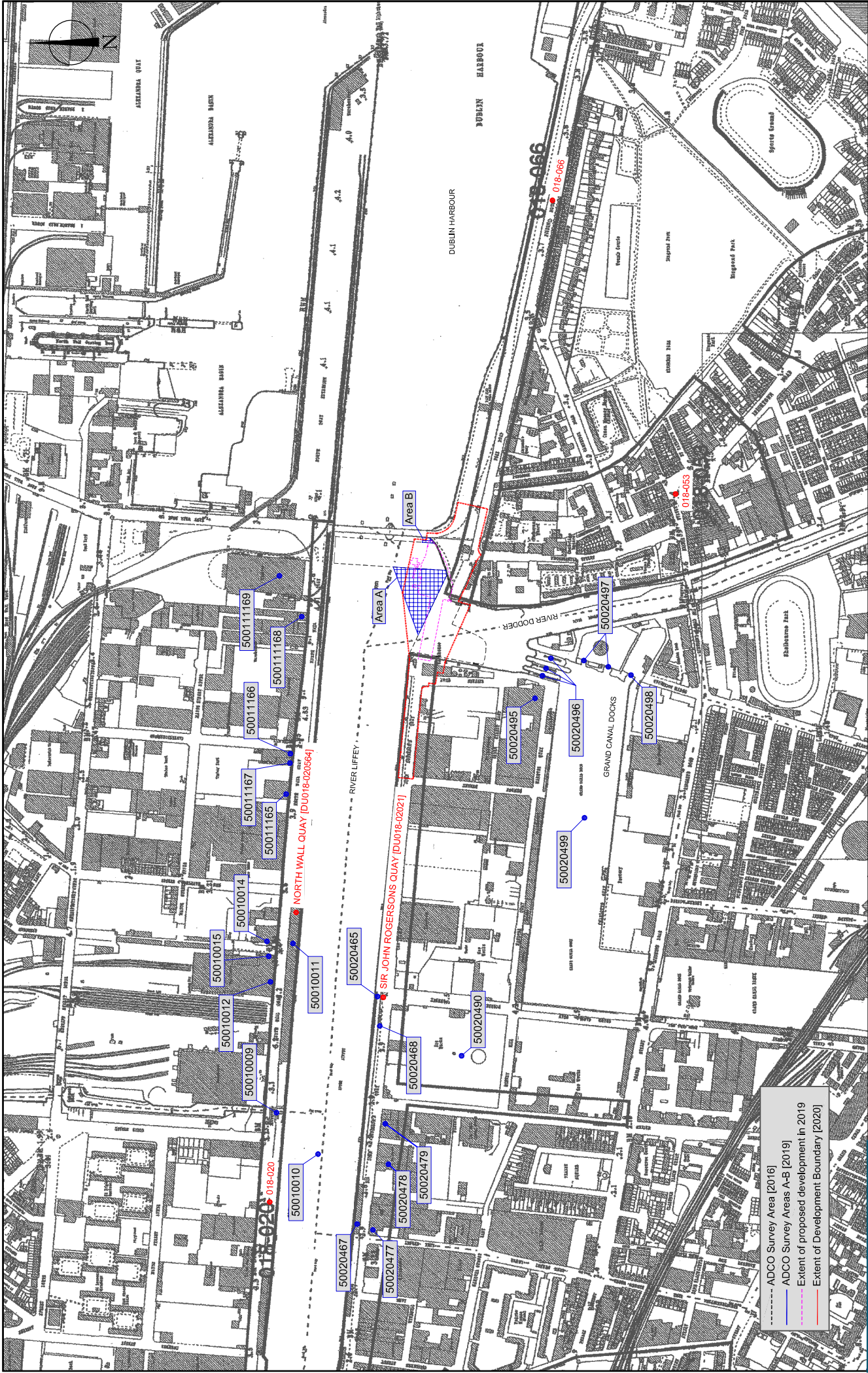
Job/Exc. No.	19D0022
Date	23.10.20

A4	Notes
Source: OSI Historic Map Archive [www.osi.ie]	

Notes	Source: OSI Historic Map Archive [www.osi.ie]
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- - - - - ADCCO Survey Area [2016]
- - - - - ADCCO Survey Areas A-B [2019]
- - - - - Extent of Proposed Development in 2019
- - - - - Extent of Development Boundary [2020]

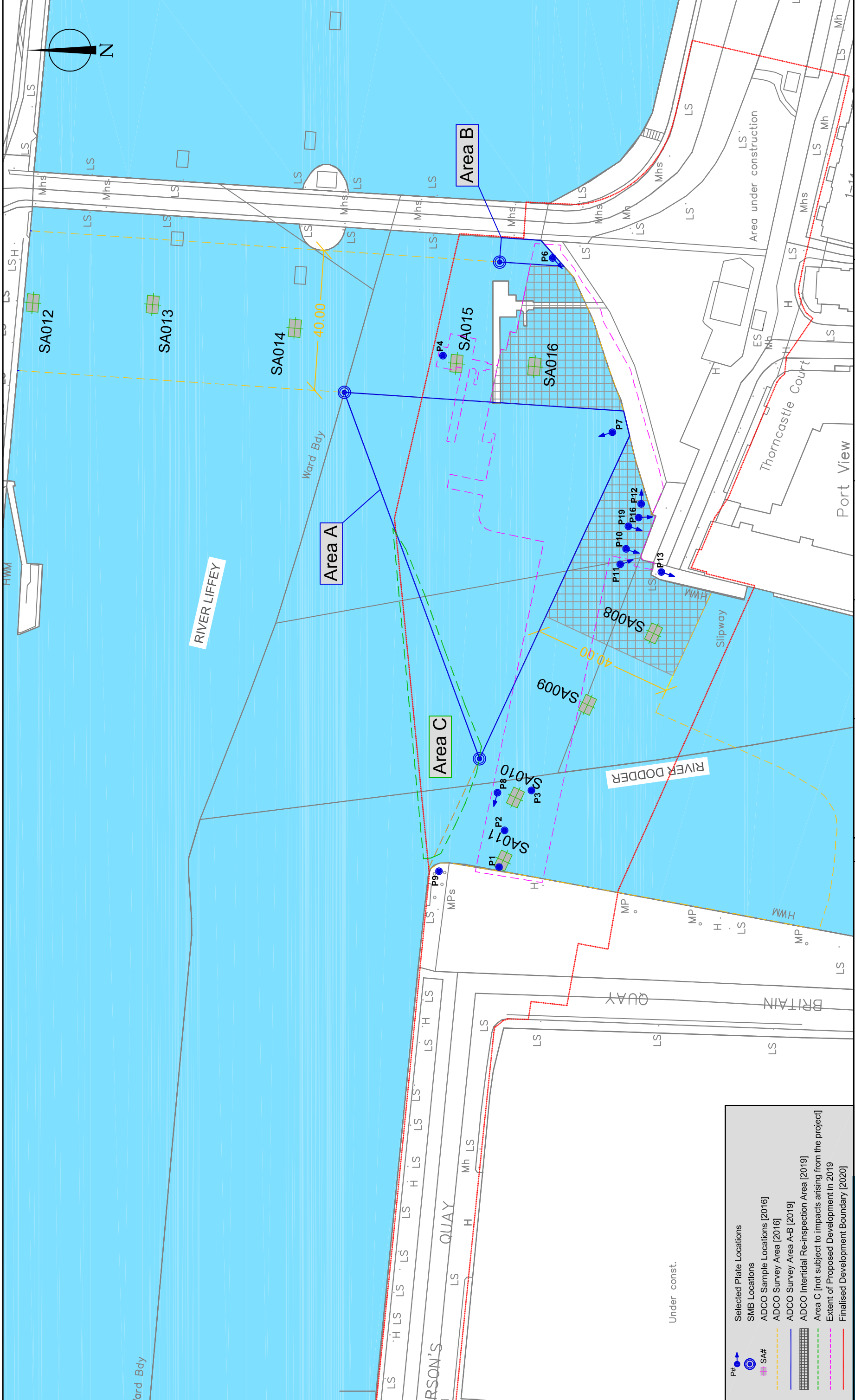


- ADCO Survey Area [2016]
- ADCO Survey Areas A-B [2019]
- Extent of proposed development in 2019
- Extent of Development Boundary [2020]
- Site listed in the RMP
- Site listed in the NIAH

**Notes**  
 Source: RMP Map, Dublin Sheet 3284  
 ● Site listed in the RMP  
 ● Site listed in the NIAH



A4	Job/Exc No. 19D0022	Completed by R. Bangerter	CAD reference Dodder_Bridge	Client IAC Ltd./ ROD Consulting Engineers	Title Figure 8- Extract from RMP mapping with extent of proposed development, location of ADCO Survey Areas, and RMP/NIAH sites superimposed.
	Date 23.10.20	Scale 1:7500	Drawing No. Figure 8	Project Dodder Public Transportation Opening Bridge	



- P# Selected Plate Locations
- SMB Locations
- SA# ADCO Sample Locations [2016]
- SA# ADCO Survey Area [2016]
- SA# ADCO Survey Area A-B [2019]
- SA# ADCO Intertidal Re-inspection Area [2019]
- SA# Area C [not subject to impacts arising from the project]
- SA# Extent of Proposed Development in 2019
- SA# Finalised Development Boundary [2020]

<b>A3</b>	<b>Notes</b>	<b>Job/Exc No.</b> 19D0022	<b>Compiled by</b> R.Bangerter	<b>CAD reference</b> Dodder_Bridge	<b>Client</b> IAC Ltd./ ROD Consulting Engineers	<b>Title</b> Figure 9- OS Background Mapping with Final Development Boundary and extent of UA/A undertaken by ADCO in 2016 and 2019 superimposed.
	Source: Project data superimposed onto OS Background Mapping. ADCO Data gathered in 2016 [DGPS and Total Station Recording] as part of Dublin Bridges Project [Client: IAC/ AECOM/ Dublin CC]. Licence No.: 18E0495 [2019 Extent of proposed development taken from ROD Project drawing: DFTB-ROD-C1-SWE-DRG-EN-00103]	<b>Date</b> 23.10.20	<b>Scale</b> 1:1000	<b>Drawing No.</b> Figure 9	<b>Project</b> Dodder Public Transportation Opening Bridge	





**Plate 1:** Underwater shot of riverbed at base of Britain Quay, located within footprint of proposed bridge development.



**Plate 2:** Underwater shot of riverbed taken at a point within the dredged area located alongside Britain Quay.





**Plate 3:** Underwater shot of riverbed at a point c. 20m from Britain Quay, ING 317932E, 234225N.



**Plate 4:** Underwater shot of riverbed at a point c. 44m from the south side of the River Liffey, ING 318059E, 234242N.



**Plate 5:** Underwater shot of riverbed at a point c.16m south of North Wall Quay, ING 318078E, 234343N.



**Plate 6:** West-facing view along intertidal foreshore adjacent to Thorncastle Court on the south side of the River Liffey (1m scale).



**Plate 7:** North-facing view of intertidal foreshore taken at a point on the southern extent of Area A.



**Plate 8:** East-facing view of Britain Quay and terminus of Sir John Rogerson's Quay at proposed bridge landfall on the west side of the River Dodder.



**Plate 9:** Pair of granite mooring-bollards inset into eastern terminus of Sir John Rogerson's Quay (150mm scale).



**Plate 10:** South-facing view of northern façade of an historic masonry quay located on the south side of the River Liffey, adjacent to Thorncastle Court (1m scale).



**Plate 11:** East-facing view of rounded corner of a historic masonry quay at Thorncastle Court (1m scale). Note *Larson* pile quay obscures much of western faced of the structure.



**Plate 12:** East-facing view of rock-armour that delineates much of the south side of the River Liffey on upstream side of the East Link Bridge. Note the placement of which obscures the true extent of the historic masonry quay at Thorncastle Court (1m scale).



**Plate 13:** South-facing view of slipway (built in the 1920s) at proposed bridge landfall on the east side of the River Dodder.



**Plate 14:** Timber and iron ladder that has been retro-fitted to the historic masonry quay at Thorncastle Court (1m scale).



**Plate 15:** East-facing view of masonry quayside with flight of river-access steps in background. Note rock-armour obscuring original line of quayside.



**Plate 16:** Southeast-facing view at interface between the masonry quays and the rock-armour that has been placed up against the structure. A large, wrought-iron, mooring hoop is positioned near the top of the quay's north facing façade at this location (1m scale).



**Plate 17:** Oval-shaped mooring hoop inset into the quay wall at ING 318001E, 234185N (150mm scale).

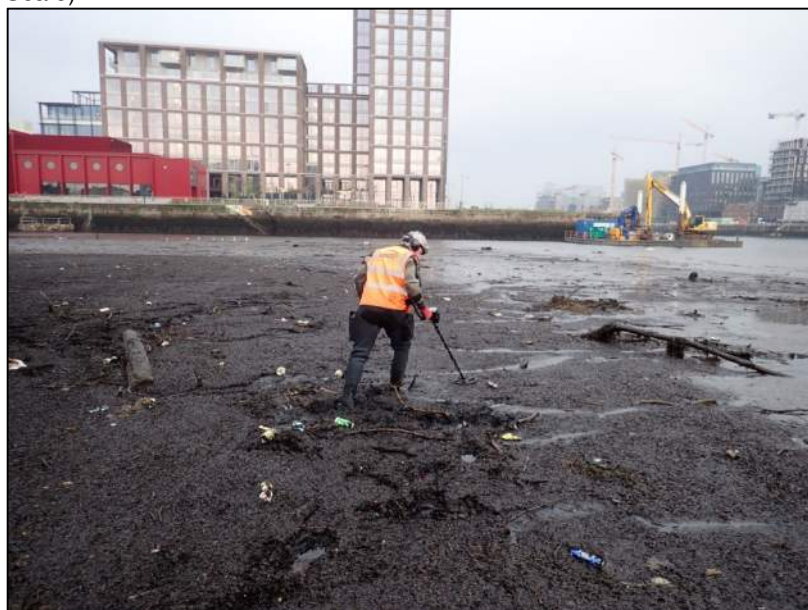


**Plate 18:** East-facing view of a flight of masonry river-access steps built into the north facade of the historic quay at Thorncastle Court (1m Scale).





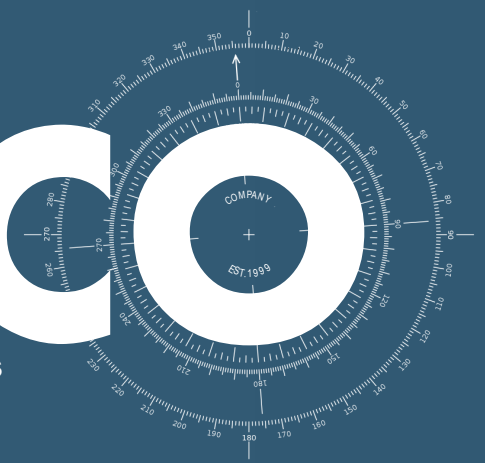
**Plate 19:** South-facing view of a flight of masonry river-access steps built into the north facade of the historic quay at Thorncastle Court (1m Scale).



**Plate 20:** Working shot of metal-detection survey across intertidal foreshore on south side of the River Liffey.

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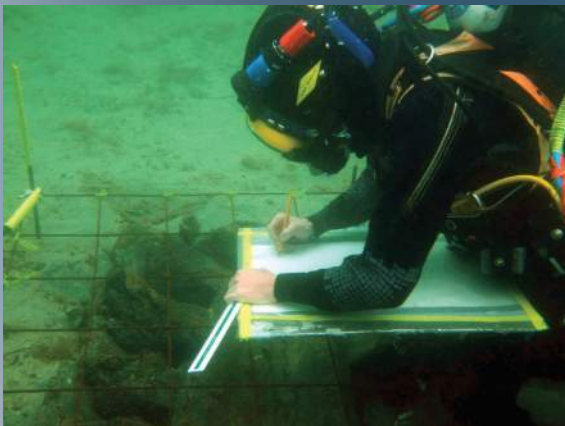


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