Project code: LBTM12
Client: GMC (Ireland) Ltd on behalf of Railway Procurement Agency
Date: March 2013

Report on Archaeological Slit Trenches at Broadstone – Future Luas Works – Luas Broombridge (BXD) Dublin

Director: Teresa Bolger
Report Author: Teresa Bolger
Licence No: 12E0310 (ext)
Planning Reference: N/A
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EXECUTIVE SUMMARY

The excavation of seven combined utility/archaeological slit trenches was carried out within the forecourt of the old Broadstone MGWR Railway Terminus ('the Broadstone building') and within the Dublin Bus Phibsborough Depot at Constitution Hill, between 12 and 19 November 2012 in accordance with Licence Number 12E0310 (ext). These works were undertaken in order to identify the sub-surface location of the Broadstone Harbour and Canal in relation to the route of Luas Broombridge. The archaeological monitoring was carried out by Rubicon Heritage Services Ltd. and utility works were carried out by GMC (Ireland) Ltd on behalf of the Railway Procurement Agency (RPA).

The trench locations were selected using information from historic mapping, with the aim of establishing (where possible):

- the location of the canal and harbour walls and any associated structures
- the width of the canal and harbour walls
- the nature and condition of the canal and harbour walls, nature of the fill, the canal banks and any associated structures

Due to the presence of numerous sub-surface utilities, the works were being carried out as an extension of the Luas Broombridge (BXD) utility slit trenching programme. This main slit trenching programme was subject to a programme of archaeological monitoring, the results of which are fully described in a separate report (Bolger 2013).

Evidence for structural remains associated with the canal channel was identified in trenches ST-127 and ST-128 only. Taken in conjunction with the results from the previous investigations in 2010 (Doyle 2010) this would suggest substantial section of the original canal channel walls remain *in situ* to the east of the main entrance to the Broadstone building.

No indications of any *in situ* structural remains were identified within the trenches located to the west of the main entrance of the Broadstone building. Significantly, the southern limit of the canal channel was not encountered in either ST-125 or ST-126. This means that the exact location, character and condition of this section of the canal channel remains unconfirmed.

There were also no indications of any surviving structural remains demarcating or defining the footprint of the canal harbour which is located beneath within Dublin Bus Phibsborough depot (ST-122–ST-124). However, a possible cut into natural boulder clay in ST-124 may

mark the eastern limit of the harbour and might suggest that any stone elements which may originally have lined the sides of the harbour had been deliberately removed.

The basal deposits in all seven trenches tended to be waterlogged. In particular the black organic clay deposit (012) was encountered both in the canal channel (ST-125 and ST-128) and canal harbour (ST-122 and ST124) and contained obvious wood and plant fragments suggesting a high potential for anaerobic preservation at the site. This was confirmed by the discovery of a timber (019) in ST-122 that remains *in situ*. There is a clear potential that additional wooden or timber features could survive at the site. In particular, there is a high potential that any scuttled or sunk canal vessels that were left *in situ* during the demolition or decommissioning of the canal spur line and harbour will be well preserved at the site.

The alignment of Luas Broombridge will run roughly parallel to the Broadstone Canal channel. As a result ground reduction works at this location will impact directly on any surviving structural remains associated this section of the canal channel. It is also possible that ancillary features such as towpaths or slipways could be uncovered.

When the route of Luas Broombridge turns to the northwest, it will cut directly across the mouth of Broadstone Harbour. This section of the route will directly impact on any surviving structural remains or other feature or deposits associated with the canal and canal harbour, including any timber structures or vessels that might survive within the infilled harbour.

Luas Broombridge is an approved scheme and all works in the area will be carried out in accordance with the mitigation set out in the Railway Order for the scheme and in accordance with the archaeological strategy for the scheme which has been developed by RPA Project Archaeologists in consultation with Department of Arts, Heritage and the Gaeltacht.

The current policy of the Minister for Arts, Heritage and the Gaeltacht is that preservation *in situ* of archaeological material is the preferred option. Where this cannot be achieved then a programme of full archaeological excavation should be implemented to ensure the preservation by record of all affected archaeological material.

- If preservation *in situ* is possible proposals will be developed by RPA Project Archaeologists and the Luas Broombridge Conservation Architect in consultation with the National Monuments Service.
- For walls or features associated with the canal identified in the test trenching, or depicted on the historic maps, which will be impacted by the scheme preservation by record will be required. In this case the footprint of all areas proposed for construction works within the vicinity of the canal should be stripped of overburden under

archaeological supervision and any archaeological features identified should be fully excavated and recorded. This will need to be to the depth of the proposed subsurface works or until undisturbed natural geological strata are encountered (whichever is the shallower depth).

- As part of the excavation, a full measured, drawn, written and photographic record will be compiled for sections of the walls that require removal.
- Any ground reduction outside of the defined footprint of the canal channel and harbour high should be monitored by a fully qualified archaeologist for the duration of construction works. Remains of ancillary features or structures (such as warehouses) associated with the canal system, for example, could survive in such areas.

The RPA Archaeologist will update the archaeological strategy for the Luas Broombridge (BXD) scheme taking into account the results of the recent programme of testing in consultation with the National Monuments Service (DoAHG).

1.0 INTRODUCTION

This report presents the results of a programme of utility/archaeological slit trenches excavated within the forecourt of the old Broadstone MGWR Railway Terminus (the Broadstone building) and within the Dublin Bus Phibsborough Depot at Constitution Hill, along the route of Luas Broombridge (BXD; (Figure 1). These works were undertaken by Rubicon Heritage Services Ltd. for GMC (Ireland) Ltd on behalf of the Railway Procurement Agency (RPA) from 12 to 19 November 2012.

A Railway Order for Luas Broombridge was granted on 2 August 2012 and became enforceable on 28 September 2012.

1.1 Project background

Luas Broombridge (BXD) will be a twin track light rail system, which will serve a 5.6km long corridor from the Luas Green Line at its current terminus (St. Stephen's Green) to the Iarnród Éireann Broombridge Station on the Maynooth railway line. The scheme will link Dublin city centre to Phibsborough and Cabra via Broadstone and Grangegorman. Interchange with the Luas Red Line will be at the Abbey Street Stop. A total of 13 new stops are planned as part of the scheme.

The alignment of Luas Broombridge (BXD) to the fore of the Broadstone Building is in an open cut section with the Broadstone Stop constructed at grade and accessed off Constitution Hill. The stop will be bounded to the north by a curved retaining wall constructed through the site of the Broadstone Harbour and the Broadstone Canal. The trackbed will continue west from the stop before turning northwards into the Broadstone Depot area and rising to current ground level.

1.2 Utility/archaeological slit trenching programme

Seven utility/archaeological slit trenches were excavated at various locations within the forecourt of the Broadstone building and within the Dublin Bus Phibsborough Depot at Constitution Hill. The locations were selected using information from historic mapping (Figure 3).

Due to the presence of numerous sub-surface utilities, the works were carried out as an extension of the Luas Broombridge (BXD) utility slit trenching programme. This main slit trenching programme was subject to a programme of archaeological monitoring, the results of which are fully described in a separate report (Bolger 2013).

The trenching programme was undertaken by the writer with the assistance of Mr Robert Handbidge, Ms Carmelita Troy and Mr James Hession between 12 and 19 November 2012, supported by GMC (Ireland) Ltd. The works were undertaken in accordance with Excavation Licence No. 12E0310 (ext).

2.0 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

2.1 Historical Background

An industrial heritage site, comprising the possible remains of Broadstone Harbour, a section of the Broadstone Branch of the Royal Canal and associated canal storage structures is located in the vicinity of the Broadstone stop and cut-and-cover underpass.

The Royal Canal Company began construction on the Broadstone Branch *c*.1796 (Clarke 1992; Delaney 1992). By the turn of the century construction of Foster Aqueduct, which carried the branch across the Broadstone Road (now Phibsborough Road), was also under way (Casey 2005). There were numerous delays in the completion of the harbour with the harbour opening in 1806.

In 1845 the MGWR Company purchased the Royal Canal Company to run their new railway to Mullingar on the land alongside the canal. Their new railway terminus building at Broadstone was completed *c*.1850 and overlooked the canal and harbour. A floating pontoon bridge, which could be moved to one side to allow boats in and out of the harbour provided access to the Broadstone terminus building and railway yard north of the canal and harbour (Delaney 1992; Casey 2005). The MGWR soon lost interest in the canal business and in 1877 they applied for and obtained legislation empowering them to fill in the harbour and canal spur west of Constitution Hill/Phibsborough Road. A new forecourt was created and a new approach road to the Broadstone terminus building, Western Way, was built by way of Foster Aqueduct (Delaney 1992; Nolan 2001). The aqueduct was subsequently removed in 1951 to facilitate road widening; however it is likely that an ashlar block wall located on the western side of Constitution Hill/Phibsborough Road is part of this former aqueduct.

There are now no visible surface remains of the canal and harbour and the location is currently occupied by the forecourt of the former Broadstone Railway Terminus, an access road into the Broadstone Depot and the forecourt of the Dublin Bus Phibsborough Garage.

Nineteenth-century cartographic surveys record the location and dimensions of the canal, harbour and associated structures. Comparison of these surveys with recent Ordnance Survey (OS) mapping and recent archaeological testing allows the location of the site to be gauged in relation to the current landscape.

2.2 Previous investigations

Ground Penetrating Radar Survey

A Ground Penetrating Radar (GPR) survey carried out by RPA in the vicinity of the Broadstone building and within the forecourt of the Dublin Bus Phibsborough Garage identified numerous linear anomalies in the locality. Due to the potential margin of error between the historic surveys and the GPR survey these anomalies could either be archaeological in origin, comprising the remains of the former canal and harbour, or they could be abandoned utility services.

As part of the GPR survey, historic records were examined and while not identified on the ground, the location of a combined sewer was identified in these records. It is recorded as running in a south-easterly direction 20m from the Broadstone building, measuring 1.3m x 1.2m and located at a minimum depth of 5m. It is likely that this combined sewer contains the culverted Bradoge River.

Utility Slit Trenching

In 2009 two utility slit trenches (ST-21b & ST-21c) were excavated by RPA, under archaeological supervision, in front of the Broadstone building in order to establish the nature of a number of anomalies identified during the GPR survey.

ST-21b

This utility trench was located 10m south of the Broadstone building and was excavated to a depth of 2.3m. Two utility pipes were identified in this trench; a 0.05m Eircom duct at a depth of 0.3m and a 0.15m cast iron pipe (possible abandoned water pipe) at a depth of 0.68m.

ST-21c

This utility trench was located within the forecourt of the Broadstone building and was excavated to a maximum depth of 0.48m-0.60m. Bonded limestone masonry was recorded at each end of the trench. The central area of the trench was disturbed/ truncated by a cast iron Eircom pipe located at a depth of 0.48m-0.60m and the utility pipe trench varied from 0.5m-0.9m in width. The limestone masonry was interpreted as potentially representing the remains of either the former canal spur or Foster Aqueduct.

Ground Investigation Survey

Ground Investigation Surveys along the route of Luas Broombridge (BXD), and incorporating the site of the Broadstone Harbour were undertaken by RPA in 2010, 2011 and 2012. All surveys were subject to archaeological monitoring. Additional boreholes were also excavated by Iarnród Éireann at this location.

The RPA investigations comprised the excavation of a total of 19 boreholes within the vicinity of the Broadstone Harbour.

The potential base of the harbour was identified at a depth of 4.4m-5.5m below current ground level. The overlying harbour fills comprised alternate layers of gravel and sandy clays with inclusions of red brick and redeposited boulder clay.

Advance Archaeological Testing

Three archaeological test trenches (Trenches 1-3) were excavated within the Dublin City Council ('DCC') car park to the fore of the Broadstone building in 2010 (Doyle 2010). The walls of the Broadstone Canal were identified within Trench 1 at a depth of 0.36m below current ground surface. The walls, which were faced internally, were 0.75-1.9m thick and their recorded location indicated that the canal channel was 5.3m wide. Trenches 2 and 3 were excavated on the line of the harbour walls; however these walls were not identified. This may be due to inaccuracies in the calculation of the harbour location from historic maps in relation to current topographic features. Alternatively, it may be that the upper courses of the harbour wall were removed prior to infilling of the harbour, and that the preserved elements of the wall were not encountered within the trench due to a restriction of 1.25m on the depth of excavations. A potential slip way, comprising flagstones and timber elements, was identified within the southern end of Trench 2. It is possible that this slip way may have been used to provide access onto a floating pontoon bridge which is known to have been used to facilitate pedestrian and livestock crossing of the canal

3.0 OBJECTIVES AND METHODOLOGY

3.1 Objectives

The objective of the utility/archaeological slit trenching programme was to:

- establish the location of existing utilities in relation to the sub-surface remains of the canal and harbour walls
- establish the location of the canal and harbour walls and any associated structures
- establish the width of the canal and harbour walls
- establish the nature and condition of the canal and harbour walls, nature of the fill, the canal banks and any associated structures
- prepare an impact assessment to fully assess the potential impacts from the design at this location.

The results of the impact assessment will inform the Luas Broombridge (BXD) detailed Stop design and the archaeological strategy for the project.

3.2 Methodology

Seven trenches were excavated, comprising 44 linear metres in total. Each trench was 2m wide and varied in length from 5m to 9.5m in accordance with the specification set by the RPA (Figure 2). These works were undertaken between 12 and 19 November 2012.

The perimeter of each trench was saw cut and the existing surfaces broken out; each trench was then excavated using a combination of hand excavation and machine excavation (using a toothless or grading bucket dependent on the nature of the underlying infill). Excavation works ceased at the top of archaeological deposits. Where safe to do so, limited hand excavation (*c.*0.20m in depth) was undertaken to clearly expose and define the top of the canal walls (where encountered). Where no canal walls or *in situ* archaeological deposits were encountered, excavation continued to a depth of *c*.2m. To comply with Health and Safety legislation, no hand excavation was undertaken below a depth of 1.25m.

Any potential archaeological features identified during the course of archaeological monitoring were cleaned back by hand to determine their exact nature and extent and to clarify if archaeological material was *in situ*.

Once all investigations were completed, any exposed archaeological features were covered with teram, the slit trenches were then backfilled and the hard landscaping reinstated by the utility slit trenching contractor.

A written, drawn and photographic record was prepared for each trench (see Appendices). All archaeological significant features were related to Ordnance Datum and the Irish National Grid.

4.0 RESULTS OF UTILITY/ARCHAEOLOGICAL SLIT TRENCHING

ST-122 (Figure 4)

0-0.10m Tarmac (001)

0.10-0.20m Hardcore (002)

0.20-0.60m Compact black gravelly clay with frequent stones (017)

0.60-1.80m Loose greyish-black clay with occasional rubble and pockets of rubble (018)

1.80-2m Red sandy or gravelly clay (very waterlogged) (020)—east and centre of trench only

2m+ Dark black organic clay (012) —east and centre of trench only

1.5m+ Loose rubble deposit largely comprising limestone blockwork (021)—west end of trench only

The trench was oriented roughly E-W and positioned so as to intersect the west wall of Broadstone Harbour (Figure 3). It was 7m long and excavated to a maximum depth of 2.20m in the western two-thirds of the trench only. No structural remains were encountered. The deposit sequence was consistent over most of the length of the trench (Plate 1). However at the western end (beginning *c*.2m from trench terminal) deposits (012) and (020) ceased and deposit (018) occurred more shallowly. The basal deposit in this part of the trench comprised largely of limestone rubble (021) and contained an active service conduit (Plate 2). This rubble deposit (021) may mark the western limit of the canal harbour or may be wholly related to the insertion of the service conduit. The main deposit sequence in the trench appears to be consistent with the siltation and infilling of the canal harbour. Deposits (012) and (020) are most likely siltation deposits relating to the period when the harbour was in use, while the later deposits—(018) and (017)—reflect the decommissioning or infilling of the canal undertaken in the late 19th century, probably as a single event.

A timber (019) running NW-SE across the trench was encountered at the east end of the trench lying within the red gravelly deposit (020) at the interface with the overlying deposit (018; Plate 3). The timber was not directly investigated as it occurred at a depth of *c*.1.80m below present ground level and could not be safely accessed. However, it was noted that part of the upper surface was damaged or flaked away suggesting that the timber may be hollow, perhaps indicating that it was originally a wooden pipe or conduit. This timber was left *in situ* and confirms the potential for anaerobic preservation at the site.

ST-123 (Figure 5)

0-0.10m Cobble-lock (022)

0.10-0.20m Sand (023)

0.20-0.30m Tarmac (001)

0.30-0.60m Hardcore (002)

0.60-0.90m Firm dark blackish brown silty clay (024)

0.90-1.30m Firm to loose light brown silty clay (025)

1.30-1.70m Firm to loose grey-brown silty clay (026)

1.70-2m Mid to dark grey clay with high levels of rubble (027)

2m+ Waterlogged light grey clay (029)

The trench was oriented roughly E-W and positioned so as to intersect the west wall of the Broadstone Harbour (Figure 3). It was excavated to a length of 6m and maximum depth of 2.20m. No structural remains were encountered. The deposit sequence was consistent over most of the length of the trench (Plate 4). However at the western end (beginning *c*.2.20m from trench terminal) deposits (027) and (025) petered out while the other deposits in the sequence occurred more shallowly. The basal deposit in this area—overlying the waterlogged light grey clay (029) — was a yellow-brown gravel (028) with a maximum depth of 1m at the very western end of the trench (Plate 5). The profile of this deposit in the section faces of the trench suggests that it might represent an embankment. A deposit of mortared stone rubble (030) occurred in the section face of the western terminal of the trench and appeared to delimit the western extent of the possible gravel embankment (028). However, this could not be fully investigated and confirmed within the confines of the excavated trench length. The main deposit sequence in the trench appears to be consistent with the siltation and subsequent infilling of the canal harbour in the late 19th century.

ST-124 (Figure 6)

0-0.10m Tarmac (001)

0.10-0.25m Hardcore (002)

0.25-1.8m Firm mottled mid to light brown silty clay with pockets of redbrick rubble throughout (015)

1.8m+ Possible natural geological stratum (016) or loose black organic silty clay (012)

The trench was oriented roughly E-W and positioned so as to intersect the east wall of the Broadstone Harbour (Figure 3). It was 7m long and excavated to a maximum depth of 2.40m. No structural remains were encountered. The deposit sequence within the trench was consistent over its whole length (Plate 4). The only variation noted was in the basal deposit encountered. Possible natural boulder clay (016) was only encountered at the east end of the trench and at a depth of *c*.1.80 m below Present Ground Level (PGL). A 'cut' line was noted *c*.3m from the east end of the trench and extending roughly NE-SW across the trench marking the interface between the boulder clay and the canal siltation deposit (012) to the west (Plate 7). This arguably represents the eastern edge of the canal harbour. The later deposit (015) is most likely related to the decommissioning and infilling of the canal in the late 19th century, probably as a single event.

ST-125 (Figure 7)

0-0.10m Tarmac (001)

0.10-0.20m Hardcore (002)

0.20-0.30m Limestone rubble (003)

0.30-0.95m Soft brown clay with pockets of darker clay and rubble; mixed deposit (009)

0.95-1.75m Soft grey clay with stones and rubble (010)

1.75-1.80m Red sandy clay (014)

1.80m+ Loose black organic silty clay (012)

The trench was oriented roughly NW-SE positioned to intersect the south wall of the canal channel, on the approach to the Broadstone Harbour (Figure 3). It was excavated to a length of 5m and maximum depth of 2m. No indication of any structural feature was encountered and the deposits within the trench were consistent along its whole length (Plate 8); the deposits appear to be within or infilling the canal channel. The earlier deposits—(012) and (014)—are most likely siltation deposits relating to the period when the canal was in operation with the later deposits—(010), (009) and (003)—most likely relating to the infilling of the canal as part of the decommissioning process in the late 19th century. There was no indication of an edge or limit to the canal channel within the limits of trench ST-125. A service pipe crossed the trench on a NNE-SSW axis and is believed to be the same service encountered at the junction of ST-126 and ST-127 (see below). As there was no evidence for a disturbance cut relating to its insertion within deposit (010), it is reasonable to interpret that the insertion of this service pipe is contemporary with the deliberate backfilling of the canal channel.

ST-126 (Figure 8)

0-0.10m Tarmac (001)

0.10-0.50m Hardcore (002)

0.50-0.70m Limestone rubble (003)

0.70-1.60m Soft brown clay with pockets of darker clay and rubble; mixed deposit (009)

1.60-2m+ Soft grey clay with stones and rubble (010)

The trench was oriented roughly NE-SW positioned to intersect two sides of a spur feature illustrated on historic mapping which protruding into the canal channel and possibly represented a dock or slipway (Figure 3). The trench was excavated to a length of 5m and a maximum depth of 2m. No structural features were identified. The deposit sequence was consistent along the whole length of the trench (Plate 9) and the two lower deposits—(009) and (010)—appear to be related to the deliberate infilling the canal channel in the late 19th century. No indication of the edge of the canal channel was encountered within the limits of the trench. A service pipe orientated NNE-SSW was identified at the intersection of ST-126 with ST-127 and appears to be contemporary with deposit (010). The same service pipe was encountered in Trench ST-125 and its insertion is believed to be contemporary with the infilling of the canal channel.

A dressed granite stone (12E0310:003:001; Appendix 4) was recovered from the rubble deposit (003) that sealed the canal infill deposits, close to the junction of ST-126 with ST-127. This stone (Plate 16) appears to comprise part of a mullion and suggests that this rubble deposit derives from building demolition rather than from the demolition of the canal structure.

ST-127 (Figure 9)

0-0.10m Tarmac (001)

0.10-0.50m Hardcore (002)

0.50-0.70m Limestone rubble (003)

0.70-1.60m Soft brown clay with pockets of darker clay and rubble; mixed deposit (009)

1.60m+ Soft grey clay with stones and rubble (010)

The trench was oriented roughly NW-SE positioned to intersect the north wall of the canal channel and one side of a spur feature illustrated as protruding into the canal channel on historic mapping (Figure 3). The trench was excavated to length of 9.5m and had a maximum depth of 2m. Approximately 1.5m from the north end of the trench and c.0.5-0.6m

below PGL, a cobbled surface (004) was encountered abutting a mortared limestone wall (005) that was *c*.1m thick and extended across the full width of the trench (Plate 11). Both features directly underlay the layer of limestone rubble (003). This wall appears to be the north wall of the canal channel. The upper 2-3 courses appear to be wholly of limestone blockwork while the lower courses seemed to have a compact clay core/puddle layer (Plate 12). It is possible that this clay core could have been faced in stone originally, but if so, all such facing had been removed within the excavated section of the trench, perhaps as part of the decommissioning process. The exterior (north) face of the wall (005) was not investigated in order to achieve *in situ* preservation of the cobble surface (004).

The cobble surface might have originally capped the wall or ran flush-level to it to define a tow path. However, this interpretation is tentative and could not be determined definitively due to disturbance to the upper courses of the exposed section of the wall. The cobble surface (004) was set over a bedding layer comprising grey-brown gravelly clay with occasional decaying mortar (006), which in turn sealed a layer of dark brown to black gravelly clay 0.14m in depth (007) (Plate 13). Deposit (007) could be an occupation layer predating the canal construction and sealed a layer of light yellow-brown clay with frequent large and small stones (008) that could be a layer of natural boulder clay. This could not be definitively confirmed within the restrictions of the trench extents and the necessity to achieve *in situ* preservation of the cobble surface (004).

The deposit sequence to the south of the wall was consistent throughout the trench and identical to that in the adjoining trench, ST-126 (Plate 10). It appears to relate to the deliberate infilling of the canal channel in the late 19th century.

ST-128 (Figure 8)

0-0.05m Tarmac (001)

0.05-0.15m Hardcore (002)

0.15-0.50m Limestone rubble (003)

0.50-1.80m Dark brown gravelly clay with pockets of darker clay and rubble; mixed deposit (011)

1.80-2m+ Loose black organic silty clay (012)

The trench was oriented roughly NE-SW positioned to intersect the south wall of the canal channel (Figure 3). It was excavated to a maximum depth of 2m. A mortared stone wall (013) was encountered approximately 1m from the east end of the trench at a depth of 1.8m below PGL. For reasons of Health and Safety this feature was not directly investigated and all survey and recording was undertaken from outside the trench. The wall comprised

mortared limestone blocks (average block size 0.50m x 0.30m x 0.20m) and was faced on both sides (Plate 15). The stones appear to have been laid in flat bedding planes with a rubble stone construction; there was no indication of 'snecked' bonding. Lime mortar seemed to be in a poor to friable condition, however, for the most part, the *in situ* masonry appeared to be relatively securely bonded. The wall ran across the full width of the trench and was 1.26m wide. It is possible that the wall (013) represents the base of a sidewall of the canal (with the upper courses removed during decommissioning in the late 19th century). However, as this wall defines part of a stepback in the south wall of the canal channel (Figure 3), there is a possibility that it could represent the base of a set of steps (though further structural evidence to the east of the wall and within the east section face of the trench might be expected in such an instance). Immediately to the west of the wall the basal trench deposit comprised a dark organic clay (012) with potential for anaerobic preservation; this is believed to be an original canal siltation deposit and was also recorded in a number other trenches— ST-122, ST-124 and ST-125. The main deposit overlying both this siltation deposit (012) and the wall (013) was a deep mixed deposit of dark brown gravelly clay with frequent pockets of rubble and darker clay throughout (011). This deposit appears to relate to the infilling and decommissioning of the canal channel in the late 19th century.

5.0 IMPACT ASSESSMENT

5.1 Summary of archaeological findings

A total of seven archaeological/utility slit trenches were excavated during this phase of contract works. Evidence for structural remains associated with the Broadstone Canal was identified in trenches ST-127 and ST-128 only. Taken in conjunction with the results from the previous investigations in 2010 (Doyle 2010) this would suggest substantial sections of the original canal channel walls remain *in situ* to the east of the main entrance to the Broadstone building. The condition and quality of survival of these structural features is variable. The investigations in 2010 indicated that both the north and south channel walls that were fully intact and in good condition. This investigation indicates that the section of the northern canal wall identified in ST-127 had probably been partially robbed out or defaced. As the southern canal wall encountered in ST-128 was 1.80m below PGL it is reasonable to interpret that this is the remains of a robbed out wall footing or base rather than the top course of an intact wall. There is a possibility that it could represent the base of a set of steps—as this wall defines part of a stepback in the south wall of the canal channel (Figure 3)—though further structural evidence to the east of the wall and within the east section face of the trench might be expected in such an instance and this was not noted within the trench.

No indications of any *in situ* structural remains for the Broadstone canal were identified in any of the trenches located to the west of the main entrance to the Broadstone building, nor were any structural remains relating to the Broadstone Harbour identified within the Dublin Bus garage (ST-122–ST-125). Significantly, the southern limit of the Broadstone canal channel was not encountered, as had been expected, in either ST-125 or ST-126. This means that the exact location, character and condition of this section of the channel boundary remains unconfirmed. As a consistent deposit sequence was encountered in both trenches, the most likely conclusion is that the actual southern limit of the canal channel lies outwith the two test trenches to the south. The deposit sequence within the trenches reflects the siltation of the canal during its period of usage followed by deposits used to infill the canal during decommissioning.

There were also no indications of any surviving structural remains demarcating or defining the footprint of the canal harbour (ST-122–ST-124). A possible cut into natural boulder clay in ST-124 appears to mark the eastern limit of the harbour and might suggest that any original stone structure or embankment had been deliberately removed. The deposit sequence overlying and sealing this cut was consistent along the whole length of the trench and did not preserve any 'break', 'cut' or transition that would indicate where any superstructure (whether a stone wall or embankment) might previously have been located.

No definite western edge or limit to the canal harbour was encountered in either ST-122 or ST-123, though the probable gravel embankment (028) in ST-123 may be significant, particularly in light of the similarly located rubble stone deposit (021) in ST-122. It is possible that these features mark the western limit of the harbour, though whether these are original features or an artefact of the demolition/decommissioning process is uncertain.

The basal deposits in all trenches tended to be waterlogged. In particular the black organic clay deposit (012) was encountered both in the canal channel (ST-125 and ST-128) and canal harbour (ST-122 and ST124) and contained obvious wood and plant fragments suggesting a high potential for anaerobic preservation at the site. This potential was confirmed by the discovery of the timber (019) in ST-122 that remains *in situ*. There is a high potential that any scuttled or sunk canal vessels that were left *in situ* during the demolition or decommissioning of the canal spur line and harbour will be well preserved at the site.

The base of the canal channel or the harbour was not encountered in any of the trenches excavated, therefore must lie over 2m below PGL. The siltation deposits that appear to relate to the period when the canal and harbour were in use generally commenced between 1.6m and 1.8m below PGL and extend below the depth at which excavation ceased (though these were not present in all trenches). Deposits relating to the infilling and decommissioning

of the canal and harbour generally commenced between 0.2m and 0.5m below PGL extending to the top of the siltation deposits or basal limit of excavation where siltation deposits were not encountered. In most trenches the infill deposit sequence was relatively simple, consisting of deep homogenous layers, though there was some differentiation between the deposits themselves from trench to trench. It seems most likely that the infilling of the canal and harbour occurred as a single exercise and that variations in deposits reflects different sources or loads of infill material rather than different phases of infill, but open area excavation would be needed to confirm this. Available historical data indicates a late 19th century date (post-1877) for the decommissioning of the canal and harbour and the evidence from this investigation seems consistent with this. It is likely that the infill material was derived from a variety of opportunistic sources. Industrially produced post-medieval ceramics were noted within the infill layers, which could suggest that domestic waste was a component and rubble (primarily stone, but also some redbrick) was present in most deposits. The rubble could derive from the demolition of canal infrastructure or could represent the deposition of construction or demolition waste from other places. Notably the infill deposits within the trenches in the DCC carpark (ST-125–ST-128) in front of the Broadstone building were all consistently capped with a rubble stone deposit (003); the presence of a dressed stone within this material points to the demolition of a building as the source rather than the canal decommissioning.

5.2 Description of Luas Broombrige

The alignment of Luas Broombridge (BXD) to the fore of the Broadstone Building will be in an open cut section with the Broadstone Stop constructed at grade and accessed off Constitution Hill. The stop will be bounded to the north by a curved retaining wall constructed through the site of the Broadstone Canal and Harbour. The trackbed will continue west from the stop before turning northwards into the Broadstone Depot area and rising to current ground level.

The maximum depth of ground reduction required to accommodate the construction of the Broadstone Stop will be approximately 8m below present ground level.

5.3 Impact Statement

The works required to accommodate the construction of both the Luas alignment and the Broadstone Stop will require substantial ground reduction to the southwest and south of the Broadstone building both within lands occupied by the DCC car park and those of the Dublin Bus Phibsborough Depot. The alignment of Luas Broombridge will run roughly parallel to the Broadstone Canal channel. As a result ground reduction works at this location will impact directly on any surviving structural remains associated this section of the canal channel. It is

also possible that ancillary features such as towpaths or slipways could be uncovered. A possible tow path was identified on the north side of the canal channel during these investigations and a possibly slipway was identified on the south side of the canal channel during previous investigations (Doyle 2010).

When the route of Luas Broombridge turns to the northwest, it will cut directly across the mouth of Broadstone Harbour. This section of the route will directly impact on any surviving structural remains or other feature or deposits associated with the canal and canal harbour, including any timber structures or vessels that might survive within the infilled harbour.

6.0 MITIGATION STRATEGY

6.1 Recommendations for mitigation

Luas Broombridge is an approved scheme and all works in the area will be carried out in accordance with the mitigation set out in the Railway Order for the scheme and in accordance with the archaeological strategy for the scheme which has been developed by RPA Project Archaeologists in consultation with Department of Arts, Heritage and the Gaeltacht.

The current policy of the Minister for Arts, Heritage and the Gaeltacht is that preservation *in situ* of archaeological material is the preferred option. Where this cannot be achieved then a programme of full archaeological excavation should be implemented to ensure the preservation by record of all affected archaeological material.

- If preservation *in situ* is possible proposals will be developed by RPA Project Archaeologists and the Luas Broombridge Conservation Architect in consultation with the National Monuments Service.
- For walls or features associated with the canal identified in the test trenching, or depicted on the historic maps, which will be impacted by the scheme preservation by record will be required. In this case the footprint of all areas proposed for construction works within the vicinity of the canal should be stripped of overburden under archaeological supervision and any archaeological features identified should be fully excavated and recorded. This will need to be to the depth of the proposed subsurface works or until undisturbed natural geological strata are encountered (whichever is the shallower depth).
- As part of the excavation, a full measured, drawn, written and photographic record will be compiled for sections of the walls that require removal.

- Any ground reduction outside of the defined footprint of the canal channel and harbour high should be monitored by a fully qualified archaeologist for the duration of construction works. Remains of ancillary features or structures (such as warehouses) associated with the canal system, for example, could survive in such areas.

The RPA Archaeologist will update the archaeological strategy for the Luas Broombridge (BXD) scheme taking into account the results of the recent programme of testing in consultation with the National Monuments Service (DoAHG).

6.2 Resources required for mitigation

The works at Broadstone will be carried out as part of the Main Infrastructural Contract for the scheme. Detailed archaeological requirements for works in this area will be included in the contract requirements by the RPA Project Archaeologists and the Contractor will be required to carry out the works in accordance with the Railway Order and with the agreed archaeological strategy for the area.

It is envisaged that the following archaeological resources will be required for the excavation of the infilled canal and harbour:

- 1 Senior Archaeologist
- 2 Surveyors as required
- 1 licence eligible archaeological director with urban and industrial heritage experience
- 1 archaeological site supervisor
- A team of experience archaeological assistants, depending on the sizes of the areas to be resolved between 5 and 20

In addition to this core team the following specialists should be available for the duration of the on-site works to advise and assist if required:

- 1 timber/wood specialist
- 1 qualified archaeological conservator
- 1 ship timber specialist

7.0 ARCHIVE QUANTITIES

The site archive is comprised of the following materials:

Item	Quantity
Context Sheets	30
Plans	N/A
Sections	N/A
Photographs	71
Registers	2
Trench Sheets	7

Storage of the archive in a suitable format and location is required in order to provide for any future archaeological research. The archive is currently stored in the offices of Rubicon Heritage Services Ltd., Unit 2, Europa Enterprise Park, Midleton, Co. Cork. Following completion of the final report the archive will be deposited with the National Monuments Service Archive facility in Swords.

REFERENCES

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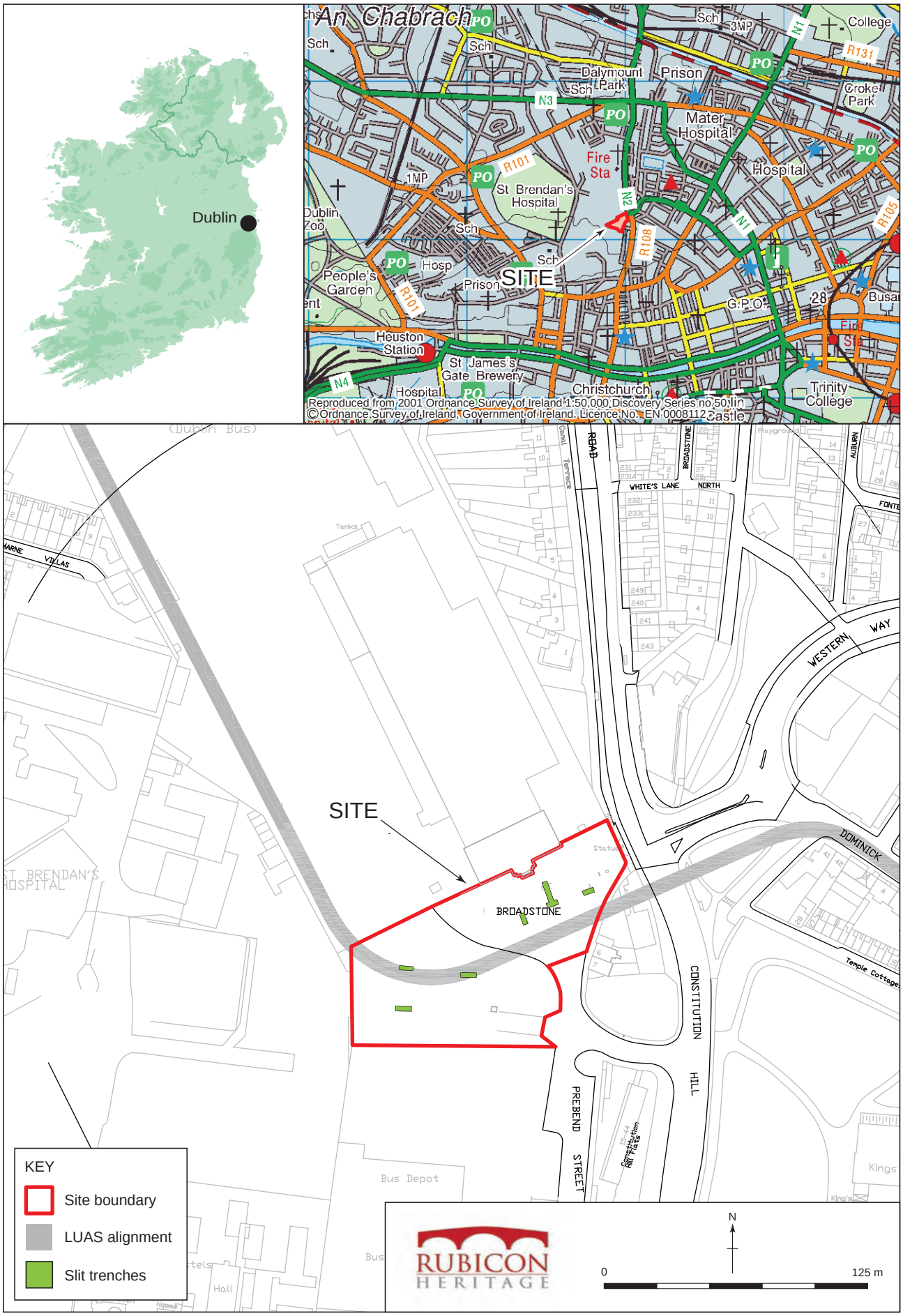


Figure 1 - Site location.

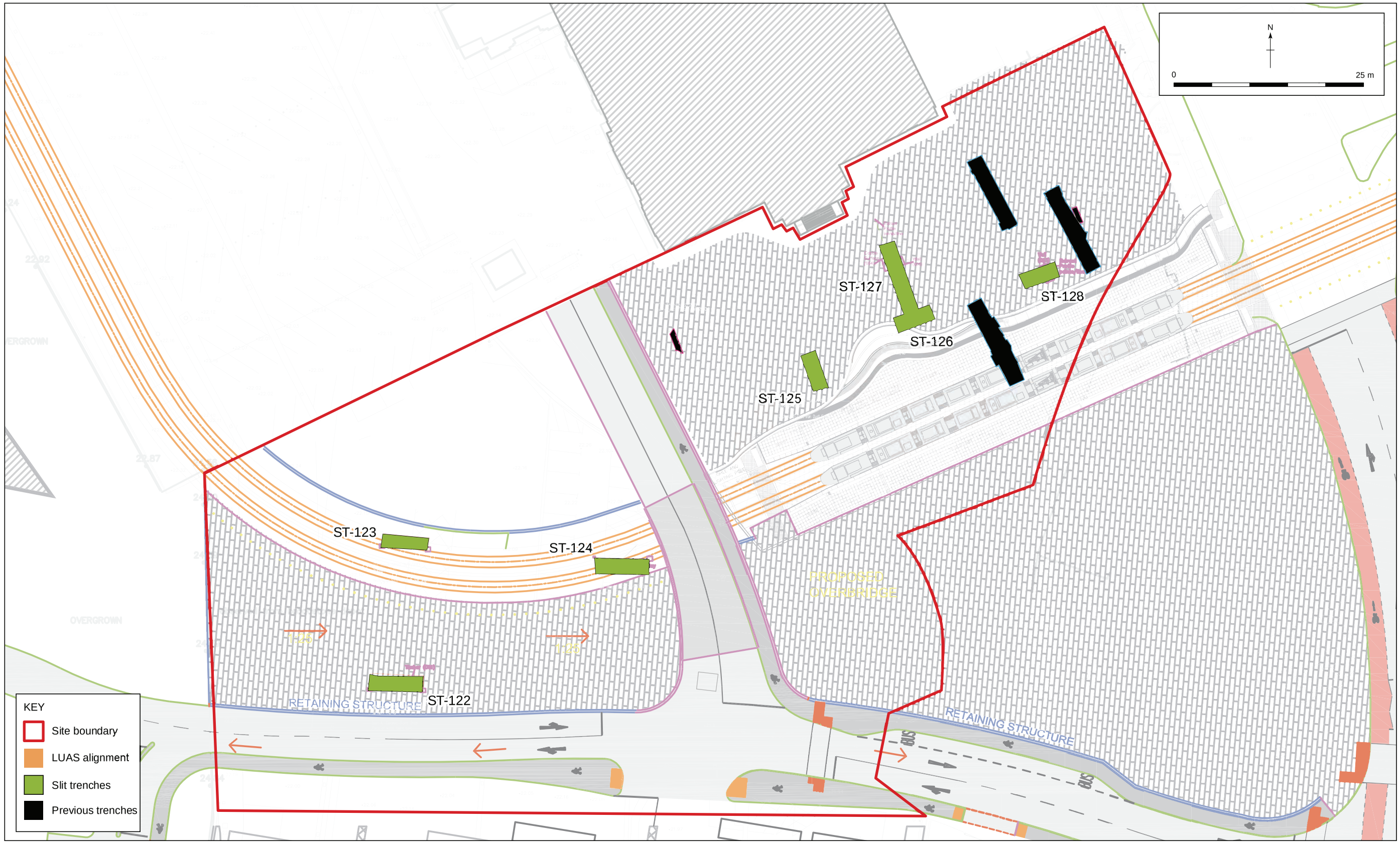
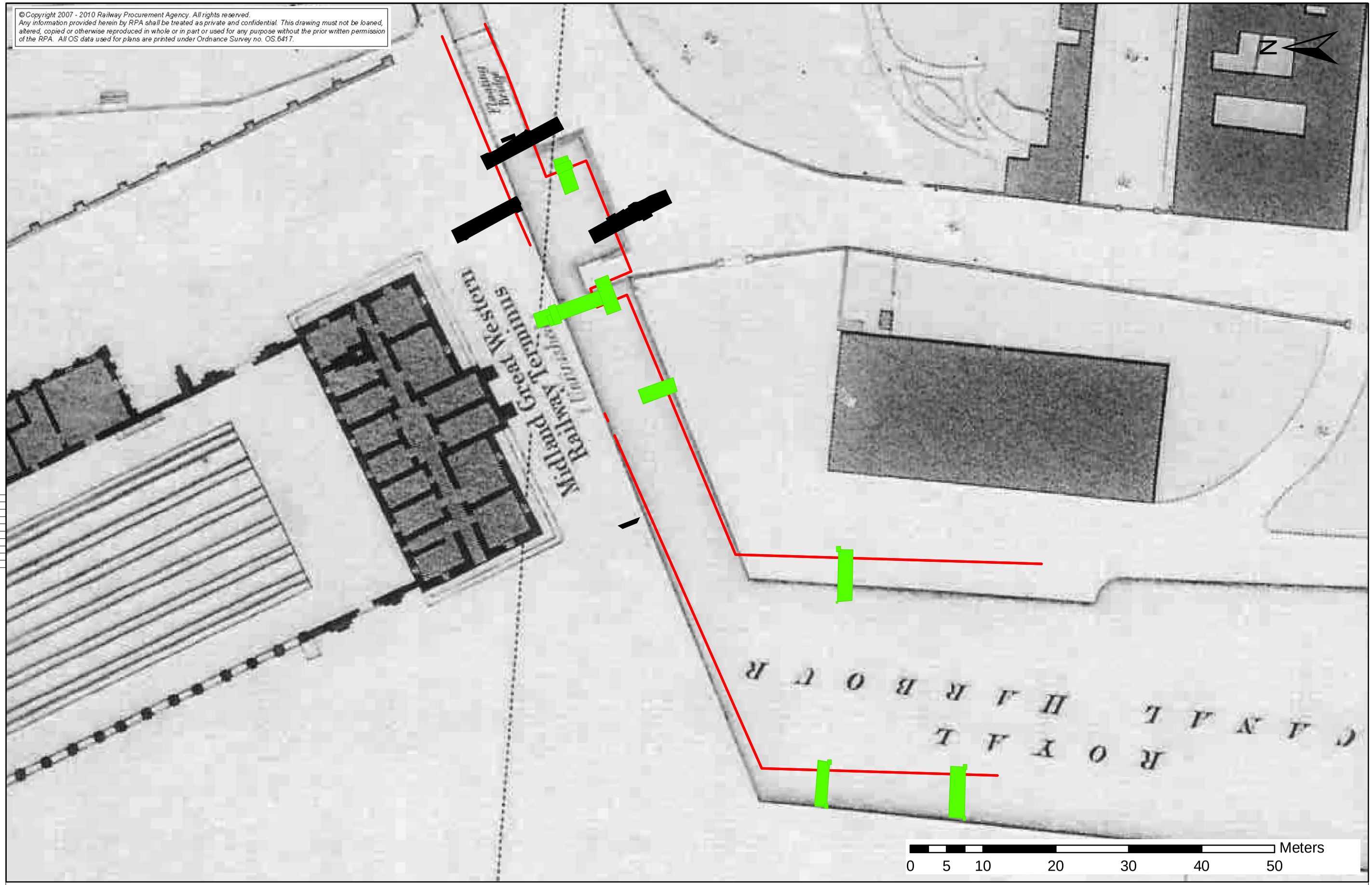


Figure 2 - Location of slit trenches.



Slit trenches

Previous trenches

Alternative canal footprint based on MGWR Survey, 1877

RPA Railway Procurement Agency
Gníomhaireacht Um Fháil Iamród
Parkgate Business Centre, Parkgate Street, Dublin 8, Ireland.
Phone +353 1 646 3400
Fax +353 1 646 3401
www.rpa.ie

LUAS

RUBICON HERITAGE

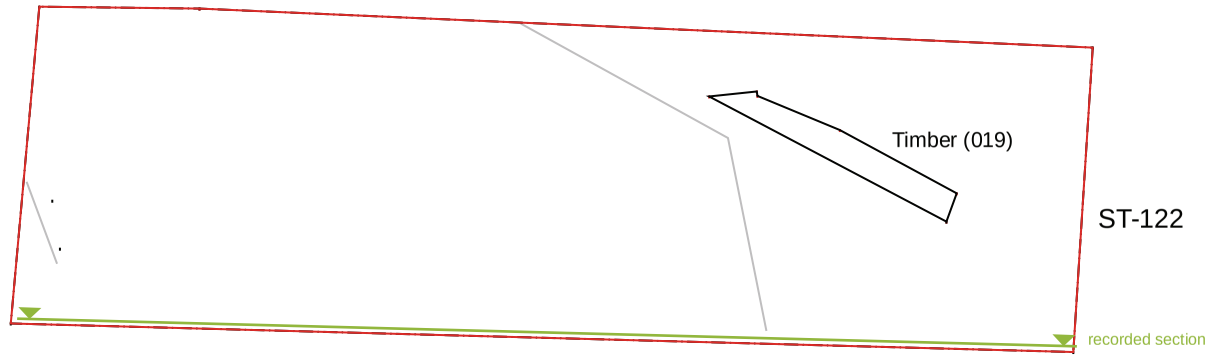
PREPARED: JMM	REVIEWED: TB	APPROVED: xx
	CHECKED: xx	DATE: March 2013
		SCALE: 1:500

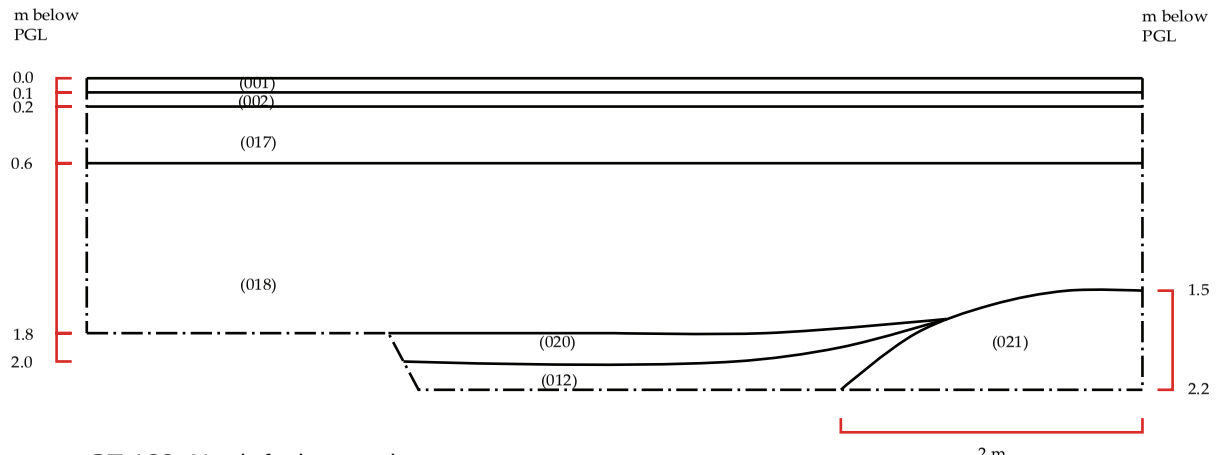
LOCATION:
Broadstone

SPECIALIST TOPIC:

Location of slit trenches superimposed on extract from Ordnance Survey 1:1056 series map (surveyed 1838; published 1847)

AREA NO.	PLAN NO.	SUBJECT.
	Figure 3	TRENCH LOCATION





ST-122, North facing section

Scaled sketch - measures are indicative only

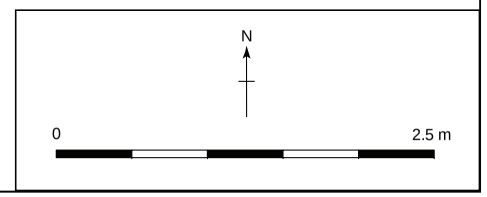
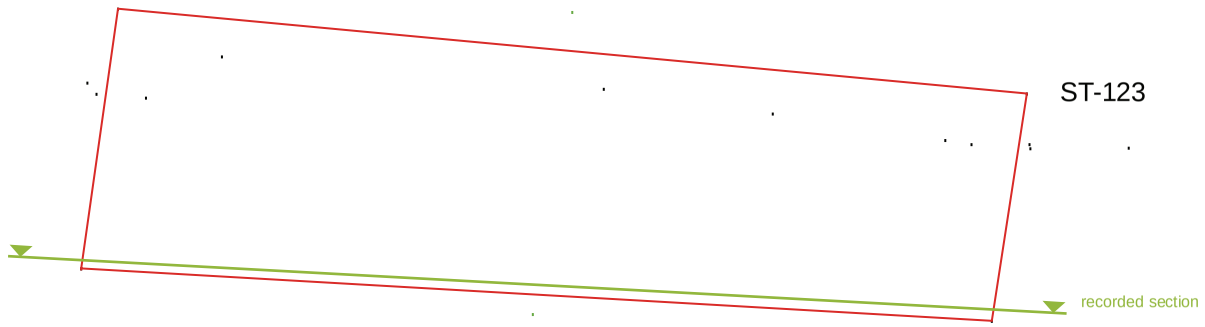
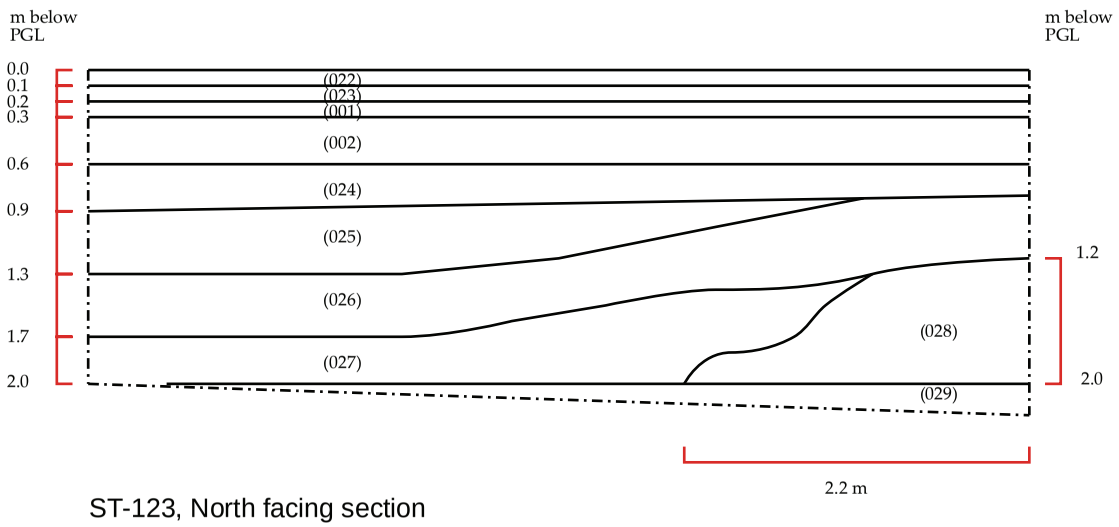


Figure 4 - Plan and scaled sketch section of ST-122.





ST-123, North facing section

Scaled sketch - measures indicative only

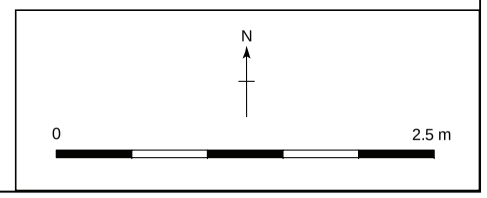
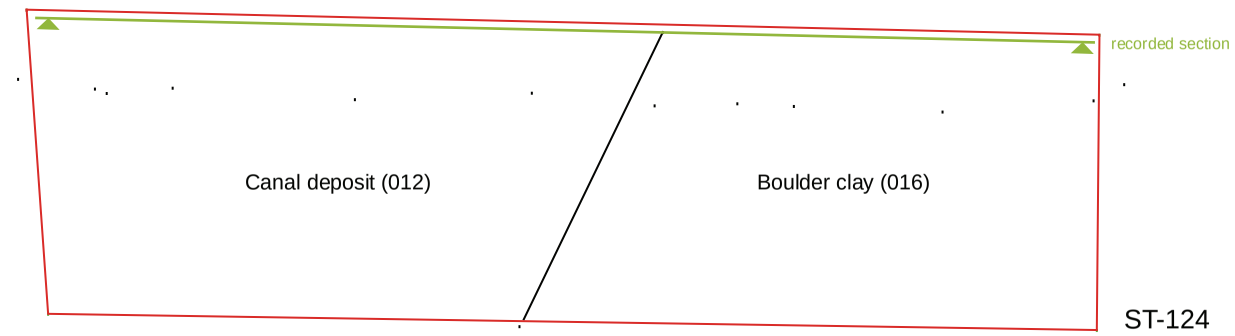
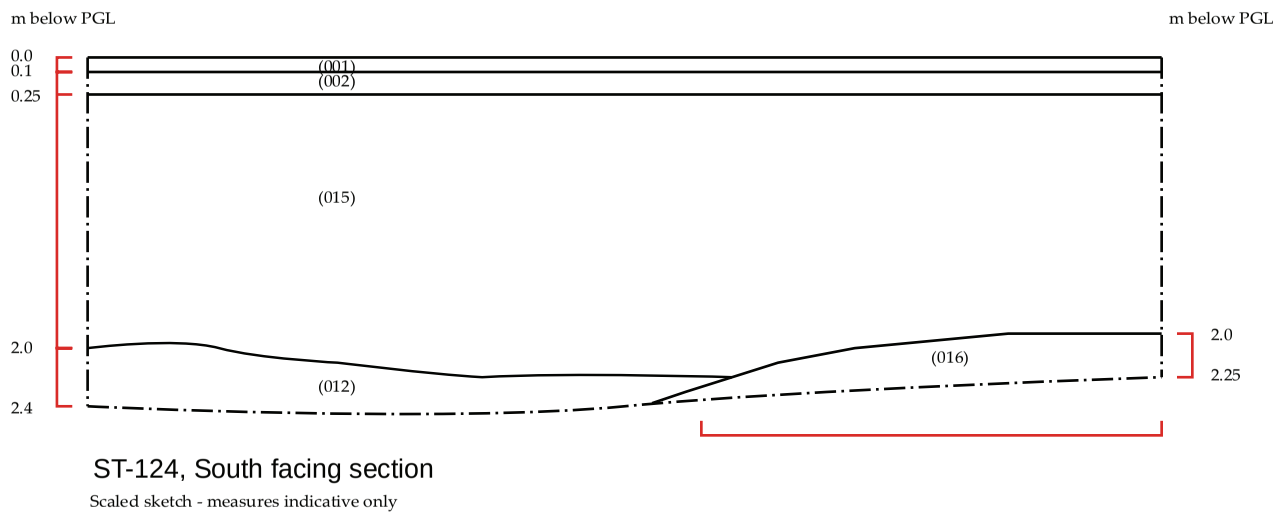


Figure 5 - Plan and scaled sketch section of ST-123.





ST-124, South facing section

Scaled sketch - measures indicative only

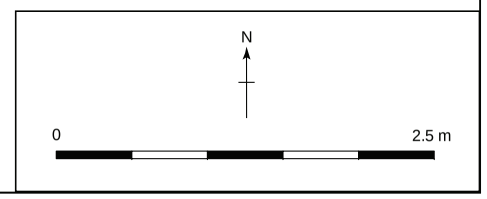
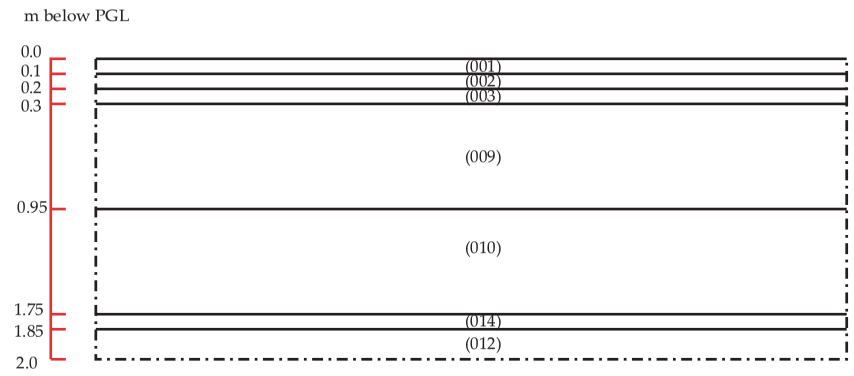


Figure 6 - Plan and scaled sketch section of ST-124.



ST-125, West facing profile
Measured profile with scaled section data added

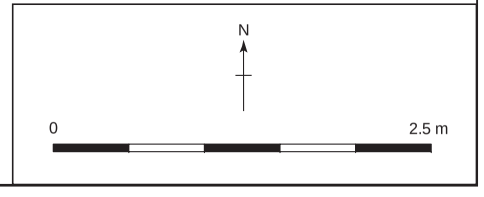
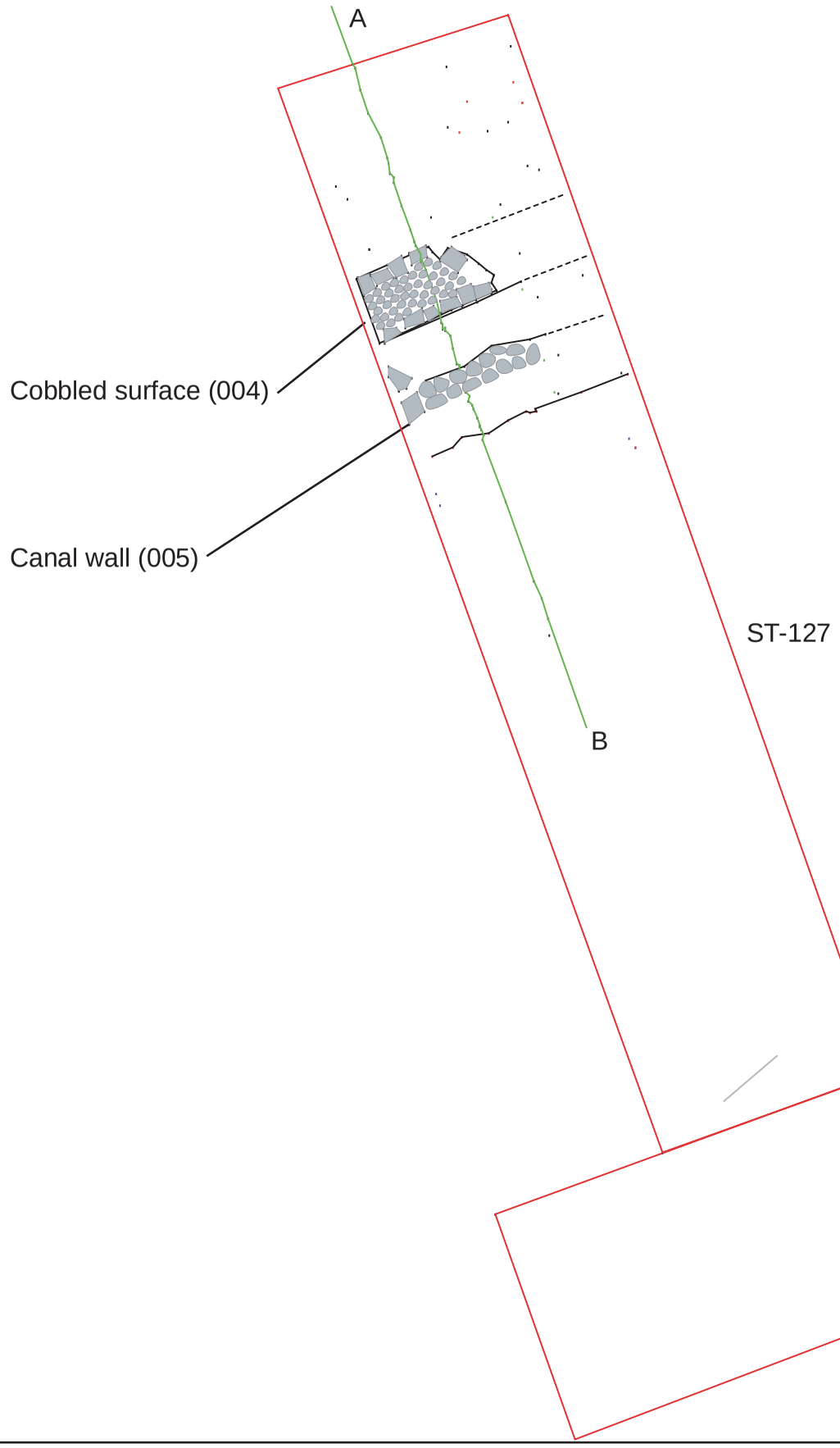
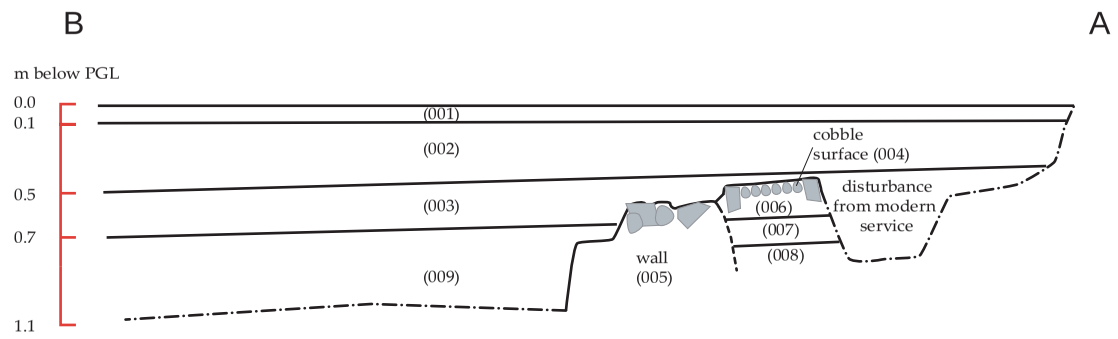


Figure 7 - Plan and profile of ST-125.





ST-127, Southeast facing profile
measured profile with scaled section data added

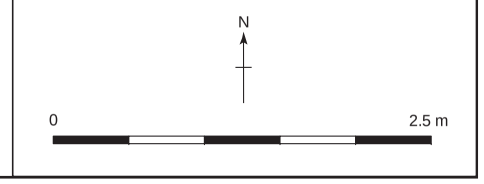
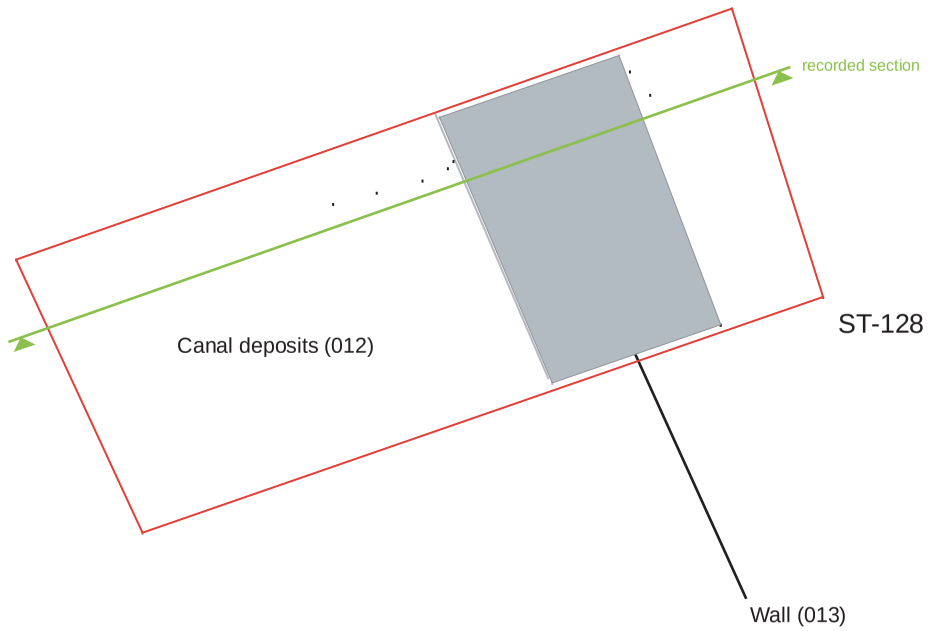
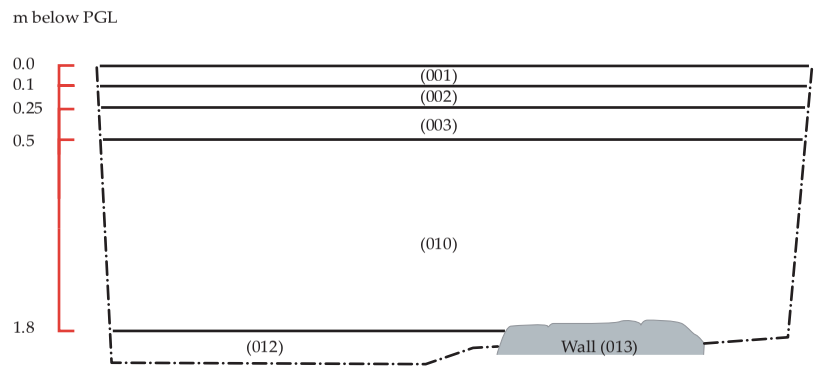


Figure 8 - Plan of ST-126 and ST-127 and profile of ST-127.





ST-128, Southeast facing profile
Measured profile with scaled section data added

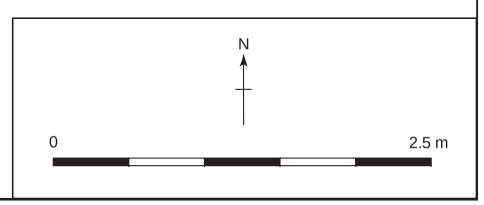


Figure 9 - Plan and profile of ST-128.

Plate 1 - ST-122, N facing section of trench, central section

Plate 2 - ST-122, S facing section of trench, showing rubble deposit (021)

Plate 3 - ST-122, Timber (019) in situ, facing S

Plate 4 - ST-123, overview of trench, facing E

Plate 5 - ST-123, N facing section of trench showing gravel embankment (028)

Plate 6 - ST-124, overview of trench, facing W

Plate 7 - ST-124, S facing section of trench showing interface between canal deposit (012) and natural boulder clay (016)

Plate 8 - ST-125, overview of NW facing section of trench

Plate 9 - ST-126, overview of trench facing SE

Plate 10 - ST-127, overview of trench facing NE

Plate 11 - ST-127, overview of canal wall (005) and cobble surface (004), facing NW

Plate 12 - ST-127, upper courses of canal wall (005) overlying possible exposed clay wall core, facing NE

Plate 13 - ST-127, bedding layer (006), possible occupation layer (007) and possible natural boulder clay (008) underlying cobbled surface (004), facing SW

Plate 14 - ST-128, overview of trench facing SE

Plate 15 - ST-128, overview of canal wall (013), facing SW

Plate 16 - Dressed architectural stone (12E0310:003:001)

Appendix 1 – Trench Register

Trench No	Length (m)	Width (m)	Depth (m)	Description	Summary of Features
ST-122	7	2	2.2	0-0.10m Tarmac (001) 0.10-0.20m Hardcore (002) 0.20-0.60m Compact black gravelly clay with frequent stones (017) 0.60-1.80m Loose greyish-black clay with occasional rubble and pockets of rubble (018) 1.80-2m Red sandy or gravelly clay (very waterlogged) (020)—east and centre of trench only 2m+ Dark black organic clay (012) —east and centre of trench only 1.5m+ Loose rubble deposit largely comprising limestone blockwork (021)—west end of trench only	• No structural remains were encountered. • In situ timber located at depth of 1.8m below PGL. • Rubble deposit (021) at W end of trench might demarcate west edge of canal harbour.
ST-123	6	2	2.2	0-0.10m Cobble-lock (022) 0.10-0.20m Sand (023) 0.20-0.30m Tarmac (001) 0.30-0.60m Hardcore (002) 0.60-0.90m Firm dark blackish brown silty clay (024) 0.90-1.30m Firm to loose light brown silty clay (025) 1.30-1.70m Firm to loose grey-brown silty clay (026) 1.70-2 m Mid to dark grey clay with high levels of rubble (027) 2m+ Waterlogged light grey clay (029)	• No structural remains were encountered. • Gravel embankment (028) may demarcate west edge of canal harbour

Trench No	Length (m)	Width (m)	Depth (m)	Description	Summary of Features
ST-124	7	2	2.4	0-0.10m Tarmac (001) 0.10-0.25m Hardcore (002) 0.25-1.8m Firm mottled mid to light brown silty clay with pockets of redbrick rubble throughout (015) 1.8m+ Possible natural geological stratum (016) or Loose black organic silty clay (012)	• No structural remains were encountered. • Interface between natural boulder clay (016) and canal deposit (012) may demarcate eastern edge of canal harbour.
ST-125	5	2	2	0-0.10m Tarmac (001) 0.10-0.20m Hardcore (002) 0.20-0.30m Limestone rubble (003) 0.30-0.95m Soft brown clay with pockets of darker clay and rubble; mixed deposit (009) 0.95-1.75m Soft grey clay with stones and rubble (010) 1.75-1.80m Red sandy clay (014) 1.80m+ Loose black organic silty clay (012)	• No structural remains were encountered. • No indication of an edge or limit to the canal channel
ST-126	5	2	2	0-0.10m Tarmac (001) 0.10-0.50m Hardcore (002) 0.50-0.70m Limestone rubble (003) 0.70-1.60m Soft brown clay with pockets of darker clay and rubble; mixed deposit (009) 1.60m+ Soft grey clay with stones and rubble (010)	• No structural remains were encountered. • No indication of an edge or limit to the canal channel or projecting spur feature shown on historic mapping
ST-127	9.5	2	2	0-0.10m Tarmac (001) 0.10-0.50m Hardcore (002)	• Cobbled surface (004) and north wall of canal channel (005) located

Trench No	Length (m)	Width (m)	Depth (m)	Description	Summary of Features
				0.50-0.70m Limestone rubble (003) 0.70-1.60m Soft brown clay with pockets of darker clay and rubble; mixed deposit (009) 1.60m+ Soft grey clay with stones and rubble (010)	*c.*1.5m from N end of trench. • No evidence for southern limit of canal channel or projecting spur feature shown on historic mapping.
ST-128	5	2	2	0-0.05m Tarmac (001) 0.05-0.15m Hardcore (002) 0.15-0.50m Limestone rubble (003) 0.50-1.80m Dark brown gravelly clay with pockets of darker clay and rubble; mixed deposit (011) 1.80m+ Loose black organic silty clay (012)	• Mortared stone wall (013)—south wall of canal channel—was encountered approximately 1m from the east end of the trench at a depth of 1.8m below PGL

Appendix 2 – Context Register

Context No	Type	Trench	Length (m)	Width (m)	Depth (m)	Description	Interpretation
001	Layer	All	-	-	0.05-0.1	Tarmac or concrete surface	Current carpark surface
002	Layer	All	-	-	0.1-0.4	Hardcore stone	Bedding for carpark surface
003	Layer	ST125; ST126; ST127	-	-	0.1-0.35	Layer of rubble: largely comprised of rough limestone blocks, with little evidence for mortar. One dressed stone (granite) was retrieved.	Demolition waste, probably deriving from a building rather than canal structure.
004	Layer	ST127	1.13	0.59	0.14	Cobble surface comprised of rounded limestone cobbles and delimited by roughly dressed limestone blocks on the north. Extends S to abut wall (005); might have originally capped wall or sat flush with top of wall	Possible tow path
005	Wall	ST127	2	S	S	Mortared stone wall; average block size 600x400x200mm. Two to three courses in situ overlying compacted clay core (exposed on south side). Possible south side was originally fully faced in limestone blockwork. Cobbled surface (004) abuts on north (so north face was not investigated); this surface may have capped wall or ran flush with it.	North wall of canal channel
006	Layer	ST127	2	0.6	0.1	Firm grey-brown gravelly clay with occasional decaying mortar and small angular stones; beneath cobbles (004)	Bedding layer for cobble surface
007	Layer	ST127	2	0.5	0.14	Loose dark brown to black gravelly clay with small angular stones underlying deposit (006)	Occupation or activity layer possible pre-dating canal
008	Layer	ST127	2	1	-	Firm light yellow-brown silty clay with frequent large and small stones under deposit (007)	Possible natural geological stratum
009	Layer	ST125; ST126; ST127	9 (min)	5 (min)	0.9	Soft brown clay with stones and pockets of darker clay with rubble throughout.	Upper infill deposit within canal channel
010	Layer	ST125; ST126; ST127	9 (min)	5 (min)	0.7 (min)	Soft grey clay with moderate stone content and possible occasional rubble; underlies deposit (009).	Lower infill deposit within canal channel
011	Layer	ST128	5 (min)	2 (min)	1.3	Loose dark brown gravelly clay with pockets of darker clay and rubble overlying wall (013) and deposit (012)	Upper infill deposit within canal channel
012	Layer	ST122; ST124;	-	-	0.7 (min)	Loose black organic silty clay, plant and wood fragments suggest good potential for anaerobic preservation	Lower infill deposit within canal channel

Context No	Type	Trench	Length (m)	Width (m)	Depth (m)	Description	Interpretation
		ST-125; ST128					
013	Wall	ST128	2	1.26	0.2 (min)	Mortared stone wall constructed of squared limestone blocks faced on both sides. Average block size 500x300x200mm. Stones laid in flat bedding planes with rubble stone construction.	South wall of canal channel
014	Layer	ST125	7 (min)	2 (min)	0.05	Loose red sandy clay overlying deposit (012)	Lower infill deposit within canal channel
015	Layer	ST124	7 (min)	2 (min)	1.65	Firm mottled mid to light brown silty clay with pockets of redbrick rubble throughout overlying deposits (012) and (016)	Upper infill deposit within canal channel
016	Layer	ST124	7 (min)	2 (min)	0.5 (min)	Compact light grey silty clay with occasion small stones	Possible natural geological stratum
017	Layer	ST122	7 (min)	2 (min)	0.4	Compact black gravelly clay with frequent stones	Upper infill deposit within canal channel
018	Layer	ST122	7 (min)	2 (min)	1.2	Loose greyish-black clay with occasional rubble and pockets of rubble	Upper infill deposit within canal channel
019	Timber	ST122	S	S	-	In situ timber at interface between deposit (018) and (020). Part of upper surface had broken away suggesting that timber was hollow (perhaps deliberately).	Possible timber pipe/conduit
020	Layer	ST122	5	2	0.2	Red sandy or gravelly clay (very waterlogged)	Lower infill deposit within canal channel
021	Layer	ST122	2	2	0.25	Loose rubble deposit largely comprising limestone blockwork with evidence for mortar	Probable modern disturbance but could be western limit of canal harbour
022	Layer	ST123	-	-	0.1	Cobble-lock	Current carpark surface
023	Layer	ST123	-	-	0.1	Sand	Bedding for cobble-lock
024	Layer	ST123	7 (min)	2 (min)	0.3	Firm, dark blackish brown sandy silty clay with frequent small stones and occasional redbrick fragements	Upper infill deposit within canal channel
025	Layer	ST123	7 (min)	2 (min)	0.4	Firm to loose light brown silty clay with frequent gravel	Upper infill deposit within canal channel
026	Layer	ST123	7 (min)	2 (min)	0.4 (min)	Firm to loose grey-brown silty clay with frequent building rubble, more concentrated towards base of deposit	Upper infill deposit within canal channel
027	Layer	ST123	7 (min)	2 (min)	0.3	Mid to dark grey clay with high levels of rubble, mostly	Lower infill deposit within canal

Context No	Type	Trench	Length (m)	Width (m)	Depth (m)	Description	Interpretation
						limestone but some red-brick; waterlogged	channel
028	Layer	ST123	2 (min)	2.25	1	Yellow-brown gravel, no indications of inclusions. Localised in possible 'embankment' at west end of trench. Abuts rubble deposit (030)	Possibly delimits the western edge of the canal harbour
029	Layer	ST123	7 (min)	2 (min)	0.2 (min)	Light grey compact clay, waterlogged; exposed at very base of trench only	Lower infill deposit within canal channel
030	Layer	ST123	2	-	0.5	Deposit of rubble noted in west section face of trench only; loose mortared limestone blocks. May mark western edge of embankment (028)	Possibly delimits the western edge of the canal harbour

Appendix 3 – Photograph Register

Photo No	Camera	Trench No	Direction Facing	Description
IMG_0142	CAN7	ST-126	NW	Overview of trench
IMG_0143	CAN7	ST-126	SE	Overview of trench
IMG_0144	CAN7	ST-127	NW	Overview of trench
IMG_0145	CAN7	ST-127	SE	Overview of trench
IMG_0146	CAN7	ST-127	W	Canal wall (005) and cobbled surface (004)
IMG_0147	CAN7	ST-127	S	N-facing section under cobbled surface (004)
IMG_0148	CAN7	ST-127	W	Canal wall (005) and cobbled surface (004)
IMG_0149	CAN7	ST-127	N	S-facing elevation of canal wall (005)
IMG_0150	CAN7	ST-127	E	Canal wall (005) and cobbled surface (004)
IMG_0151	CAN7	ST-127	E	Canal wall (005) and cobbled surface (004)
IMG_0152	CAN7	ST-127	NW	Canal wall (005) and cobbled surface (004)
IMG_0153	CAN7	ST-127	SW	Canal wall (005) and cobbled surface (004)
IMG_0154	CAN7	ST-127	S	Cobbled surface (004) and N-facing section
IMG_0155	CAN7	ST-127	W	Cobbled surface (004)
IMG_0156	CAN7	ST-127	W	Canal wall (005)
IMG_0157	CAN7	ST-127	W	Canal wall (005)
IMG_0158	CAN7	ST-127	S	Cobbled surface (004) and N-facing section
IMG_0159	CAN7	ST-127	N	Canal wall (005)
IMG_0160	CAN7	ST-127	N	S-facing elevation of canal wall (005)
IMG_0161	CAN7	ST-127	N	S-facing elevation of canal wall (005)
IMG_0162	CAN7	ST-127	N/A	Dressed granite building stone (12E0310:003:001)
IMG_0163	CAN7	ST-127	N/A	Dressed granite building stone (12E0310:003:001)
IMG_0164	CAN7	ST-127	N/A	Dressed granite building stone (12E0310:003:001)
IMG_0165	CAN7	ST-127	N/A	Dressed granite building stone (12E0310:003:001)

Photo No	Camera	Trench No	Direction Facing	Description
IMG_0166	CAN7	ST-125	NE	Overview of trench
IMG_0167	CAN7	ST-125	SE	Overview of trench
IMG_0168	CAN7	ST-125	SW	Overview of trench
IMG_0202	CAN7	ST-124	W	Overview of trench
IMG_0203	CAN7	ST-124	W	Overview of trench
IMG_0204	CAN7	ST-124	W	Overview of trench
IMG_0205	CAN7	ST-124	N	S-facing section of trench - E end
IMG_0206	CAN7	ST-124	N	S-facing section of trench - central
IMG_0207	CAN7	ST-124	N	S-facing section of trench - W end
IMG_0208	CAN7	ST-124	E	Overview of trench
IMG_0209	CAN7	ST-122	S	Timber (019) in situ
IMG_0210	CAN7	ST-122	S	Timber (019) in situ
IMG_0211	CAN7	ST-122	S	N-facing section of trench
IMG_0212	CAN7	ST-122	S	N-facing section of trench
IMG_0213	CAN7	ST-122	S	N-facing section of trench
IMG_0214	CAN7	ST-122	S	N-facing section of trench
IMG_0215	CAN7	ST-122	S	N-facing section of trench
IMG_0216	CAN7	ST-122	SW	W end of trench before extended to full length
IMG_0217	CAN7	ST-122	SW	W end of trench
IMG_0218	CAN7	ST-122	S	N-facing section of trench - W end
IMG_0219	CAN7	ST-122	S	N-facing section of trench - W end
IMG_0220	CAN7	ST-122	N	S-facing section of trench - W end
IMG_0221	CAN7	ST-122	E	Overview of trench
IMG_0223	CAN7	ST-122	W	Overview of trench
IMG_0224	CAN7	ST-122	W	Overview of trench

Photo No	Camera	Trench No	Direction Facing	Description
IMG_0225	CAN7	ST-123	W	Overview of trench
IMG_0226	CAN7	ST-123	E	Overview of trench
IMG_0227	CAN7	ST-123	S	N-facing section of trench
IMG_0228	CAN7	ST-123	S	N-facing section of trench
IMG_0229	CAN7	ST-123	S	N-facing section of trench
IMG_0230	CAN7	ST-123	S	N-facing section of trench
IMG_0231	CAN7	ST-123	N	S-facing section of trench
IMG_0232	CAN7	ST-123	N	S-facing section of trench
IMG_0233	CAN7	ST-123	N	S-facing section of trench
IMG_0234	CAN7	ST-123	N	S-facing section of trench
IMG_0235	CAN7	ST-123	N	S-facing section of trench
IMG_1426	CAN5	ST-128	NW	Mid-ex overview of trench with deposit (011) exposed
IMG_1427	CAN5	ST-128	SE	Mid-ex overview of trench with deposit (011) exposed
IMG_1428	CAN5	ST-128	NE	SW-facing section of trench with wall (013) visible
IMG_1429	CAN5	ST-128	NW	Overview of trench
IMG_1430	CAN5	ST-128	SE	Overview of trench
IMG_1431	CAN5	ST-128	NE	Canal wall (013)
IMG_1432	CAN5	ST-128	NE	Canal wall (013)
IMG_1433	CAN5	ST-128	SW	Canal wall (013)
IMG_1434	CAN5	ST-128	SW	Canal wall (013)
IMG_1435	CAN5	ST-128	NW	Terram laid in base of trench over wall (013)
IMG_1436	CAN5	ST-125	NE	Mid-ex overview of trench with deposit (011) exposed

Appendix 4 – Evaluation of the architectural stone

By: Robert Hanbidge, BA

INTRODUCTION

A broken architectural stone (12E0310:003:001) was recovered during the test excavations at the Broadstone Depot, Constitution Hill, Dublin 7.

ARCHITECTURAL STONE

A single architectural stone was recovered from ST-126, from within the rubble stone deposit (003) that overlay the deposits infilling the canal channel. It comprises a broken squared piece of granite (190x190x170mm) with a moulding along one corner, beside a chamfered edge (Plate 16). The moulding consists of a single bead recessed into the corner of the block. Traces of mortar survive on the side faces of the block.

DISCUSSION

Given the presence of the chamfered edge, the worked stone possibly represents a fragment from a hood moulding or window surround. The stone is finely crafted and is most likely to derive from a demolished building as it is unlikely that the canal structure would have incorporated ornamented features.