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KING'S ISLAND
FLOOD RELIEF SCHEME

**EIAR Addendum Report
Volume 3**

**King's Island Flood Relief
Scheme**

October 2020



Comhairle Cathrach
& Contae **Luimnigh**

Limerick City
& County Council



OPW Oifig na
nOibreacha Poiblí
Office of Public Works

Appendices

Appendix D Supplemental information to Section 8: Cultural Heritage

Appendix D1b

King's Island Flood Relief Scheme Preliminary Stratigraphic Report on Archaeological Testing (Volume 2)

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Archaeological Testing for the proposed King's Island Flood Relief Scheme, Limerick

Ministerial Consent C000980, Excavation Registration
Number E005120, R000528

Volume 2

October 2020

Project Archaeologist: Sarah McCutcheon

Authors: Billy Quinn, William Anderson and Nigel Malcolm

Client: Arup on behalf of Limerick City and County Council

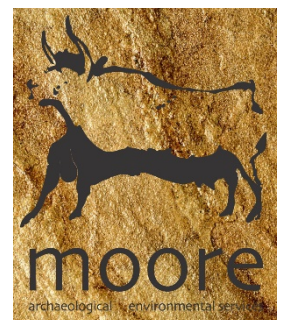
Moore Archaeological & Environmental Services Limited. T/A Moore Group

Registered in the Republic of Ireland - Registration Number: 341912

Registered Address: 3 Gort na Rí, Athenry, Co. Galway, Ireland

Phone: +353 (0)91 765640

Web: www.mooregroup.ie



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Finds Analysis

Artefacts recovered from the KIFRS test excavations include ceramics, bottle glass, clay pipes, tiles and a small number of metal objects. Considering the large volume of soil excavated, the number of artefacts retrieved was relatively small. This was due in part to the mechanical excavation method, where largely redeposited soil was removed in bulk. However, even where hand excavation was undertaken in areas of particular interest, the frequency of artefacts was limited due to the disturbed nature of the ground impacted by land reclamation and/or construction works.

The artefact collection policy focused on sampling diagnostic material from contexts which were either representative or uncommon. Artefacts were generally retrieved from fills predating the 19th century. Generally, fills in Areas 2-7 shallower than 2m depth were redeposited. Only rarely were fills encountered which could be identified as undisturbed by later activity.

The following analysis arranges the finds by material and gives an overview of prominent ceramic wares, including discussion of the finds recovered, comparison with examples from previous excavations and illustrations. This pays attention to the horizontal distribution of defined artefacts from different excavated points, allowing for characterisation of particular excavated areas. Differences in the composition of assemblages, in the types and date of artefacts present, were discerned in those areas of reclaimed land and former harbour (Areas 4, 5 and the west of 6), places of medieval and post-medieval activity (Areas 1 and 2) and accumulated layers over natural ground at the southern end of King's Island (Areas 6 and 7).

The artefacts can be chronologically grouped into three main categories: medieval, early post-medieval and later post-medieval. The date range of the latter two categories is determined by the large-scale Georgian redevelopments of the New Quay, as well as George's Quay in the 1760s and the construction of the courthouse in the early 1800s. The majority of collected artefacts date from the 17th and 18th centuries and were deposited before or at the time of the Georgian redevelopments. However, a small number of finds date from the medieval and immediately post-medieval period. In most cases these are redeposited and located in later contexts, but some can be associated with *in situ* features and fills, particularly the lowermost fills in trenches TT6-1, TT6-2 and TT6-4.

Ceramics

Medieval wares

Sherds of green glazed ceramics were recovered from several of the excavation trenches. Most are post-medieval in date, but sherds from the deepest excavated fills in TT6-2 and TT6-4 are comparable with well-defined medieval wares that have been recovered from medieval contexts at excavations in Limerick.

From the basal fill of TT6-4, at more than 2.8m depth, where glazed tiles and a small gold strip were recovered (discussed below), was a coarse sherd of gritty, grey coloured ceramic with deeply stabbed marks and lines and coated in a thin green glaze (Figure 1). The vessel is hand-made and thick walled (15mm). The paste is gritty, with frequent angular inclusions.

From the basal fill in trench TT6-2, a body sherd of fine pale reddish-brown ceramic coated on one side with mottled green glaze may be identifiable as Saintonge ware; another mottled green glazed sherd from TT1-3 may also be Saintonge ware, although it is from a late post-medieval (18th/19th century) context (Figure 2).

Saintonge ware has been identified from excavations at Charlotte's Quay (Lynch 1984: 304), St Saviour's Dominican Priory (Shee Twohig et al. 1996: 68), and in large quantities from King

John's Castle (Wiggins et al. 2016: 350-353). The prominent forms of the plain green-glazed ware are jugs with some smaller jars, and the fabric is described as 'wheel-thrown, highly fired and generally white to buff throughout or with a pale grey core' (Wiggins et al. 2016: 351); the distinctive green colour was achieved by adding iron filings to the glaze. Saintonge was imported to Ireland from its production centre in western France as part of the wine trade in the Norman period; on the basis of its stratigraphic context at King John's Castle, Saintonge ware in Limerick is broadly dated late 12th to early 14th century.

Also recovered from TT6-2 was a rim sherd of a thin-walled dish or bowl in very fine, pinkish pale brown fabric which is unglazed but has a white slip coating (Figure 3). This artefact, almost certainly an import, appears to be medieval.



Figure 1 Glazed coarseware with stabbed and incised surface from TT6-4



Figure 2 Green glazed fineware from TT6-4 (left) and from TT6-2, possible Saintonge ware (middle) and mottled green glaze ware from TT1-3 (right)



Figure 3 Rim of unglazed fineware bowl from TT6-2

Glazed red earthenware

Sherds of utilitarian vessels with light red to bricky red coloured fabric and coated in thin clear lead glaze were recovered from trenches in Areas 1, 6 and 7. This can be classed as post-medieval glazed red earthenware, which is broadly dated from between the 16th and 20th centuries; large quantities of this ware have been found at excavations in Limerick, including at King John's Castle (Wiggins et al. 2006: 362).

These were utilitarian vessels which are described as '[...] bowls and jars whose function is not precisely known but it is likely that they were used for the same range of purposes that the same forms in plastic and Pyrex are used today' (McCutcheon and Meenan 2011: 109). Glazed red earthenware was produced widely in Ireland during the 18th centuries, in both urban and rural settings (Meenan 2007: 400-401).

Examples of glazed red earthenware from the KIFRS test excavations are either closed forms, such as jugs or bowls, which mostly have the glaze applied only on the interior, leaving the exterior unglazed. The clear glaze means that the colour derives from the fired ceramic below. Eight sherds of this ware, deriving from a minimum of five vessels, were recovered from TT7-1 (Figure 4). These have a fine, pale brown to reddish yellow fabric and thin clear slip on the interior. The forms are not recognisable from the body sherds, though the ribbing on the interior and their angle suggests that they are from jugs, jars or semi-closed bowls.

Though difficult to date precisely, considering their context and the co-presence of sgraffito decorated North Devon Ware, it is likely that these are 17th century examples. However, one small sherd from here has a distinctive, gritty texture and darker yellow glaze, and it might be identified as North French glazed gritty ware, a medieval ceramic import that at King John's Castle comes from deposits dated late 12th/early 13th century (Wiggins et al. 2006: 348).

Production of this ware is marked by long-term continuity in vernacular potting traditions. A large fragment of a bowl from TT1-3 has a flat-topped rim with the typical interior glazed and exterior unglazed (Figure 5). The presence of this bowl in the context of the brewery building means that it can probably be dated to the 19th century. This demonstrates the continuity of local production and usage of glazed earthenware over several hundred years.

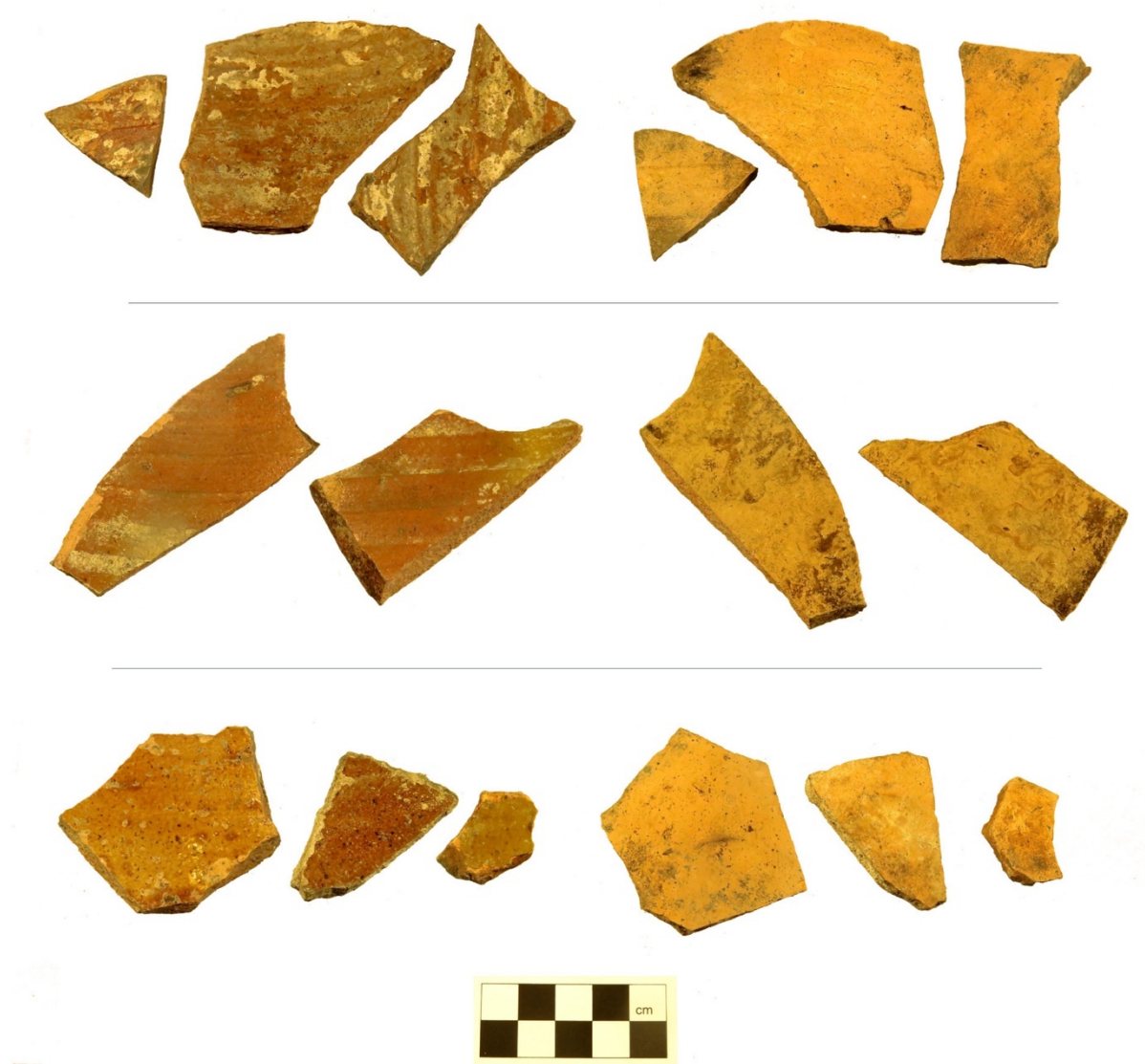


Figure 4 Glazed red earthenware sherds (interior left, exterior right) from TT7-1



Figure 5 Glazed red earthenware bowl from TT1-3

Slip painted red earthenware

Three sherds of polychrome, 'slip painted', glazed ceramics were recovered from TT6-1 and TT6-2 (Figure 6). Two of these are rim fragments (one only partial) and another is the base of a footed vessel. The two rims are from large dishes: one has a ledge rim and the other has a triangular shaped rim and a diameter of 360mm. All of the sherds are from different styles of vessel in terms of their form and decoration, though all use the same glaze colours. A clear or brown coloured glaze is applied above cream slip and on top of this the decorative elements, which consist of dots and swirls, are painted in a pale yellow or cream colour. Decorated glazed red earthenware recovered from King John's Castle is dated to the 17th century and related with the presence of Dutch immigrants who worked in the linen industry (Wiggins et al. 362-364).

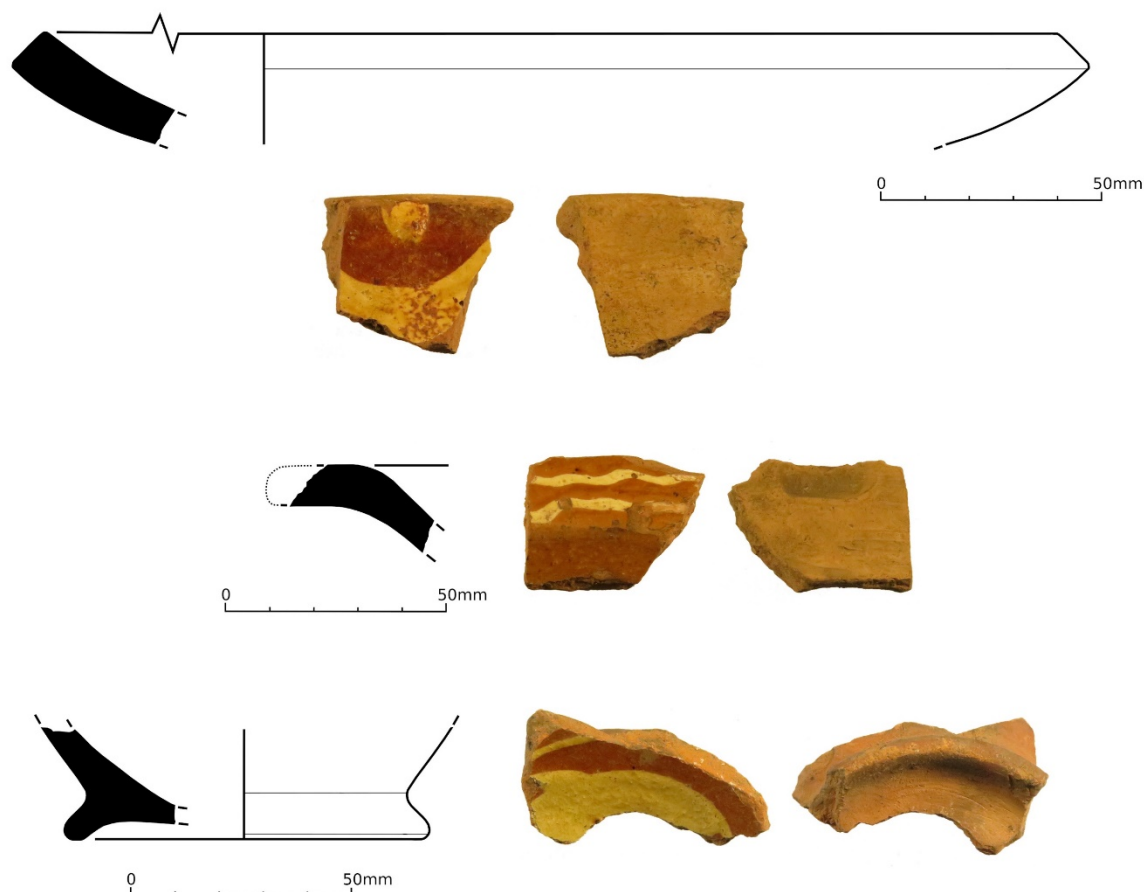


Figure 6 Slip painted wares from TT6-1 (top and middle) and TT6-2 (below)

North Devon ware

Several sherds of yellow and brown glazed pottery identifiable as North Devon ware were recovered. Of these, four have incised, sgraffito decoration. The ware has a fine paste containing small, frequent and well sorted dark grits. The interior is glazed but the exterior is generally left unglazed or partially glazed. The glazed areas have a white slip with dark brown glaze and above that the brownish yellow glazed, with incised decoration cutting through the yellow and revealing the darker brown colour below. Incised motifs include circles or spirals, straight and wavy lines.

Two rim fragments of North Devon sgraffito decorated dishes were recovered from TT6-1 and TT7-2 (Figure 7). A close parallel to the dish rim with wavy decoration recovered from TT6-1, though more complete, was found in Custom House, Flood Street, Galway (Delaney

1997; Fitzpatrick et al. 2004: 400). The example from TT7-2 has diamond shaped cross hatched decoration. Both likely date from the 17th century and come from large dishes or platters, with rim diameters of 300-320mm.

North Devon ware has been found in large quantities in port cities along the Irish coast, including in Waterford, Cork, Limerick and Galway. These ceramics were exported in bulk from southwest England to north America during the 17th century, and their presence in Ireland relates both to this trade, as well as direct import: according to Meenan (2007: 398-399), importation to Ireland was at its greatest in the second half of the 17th century and continued into the 18th century but waned in the later 18th century. Sgraffito decoration of North Devon ceased in around 1700 (Meenan et al. 2004: 400; McCutcheon and Meenan 2011: 110), therefore, the examples recovered probably date from between the mid-17th and early 18th century, so pre-date the Georgian redevelopment of Merchant's and George's Quay.

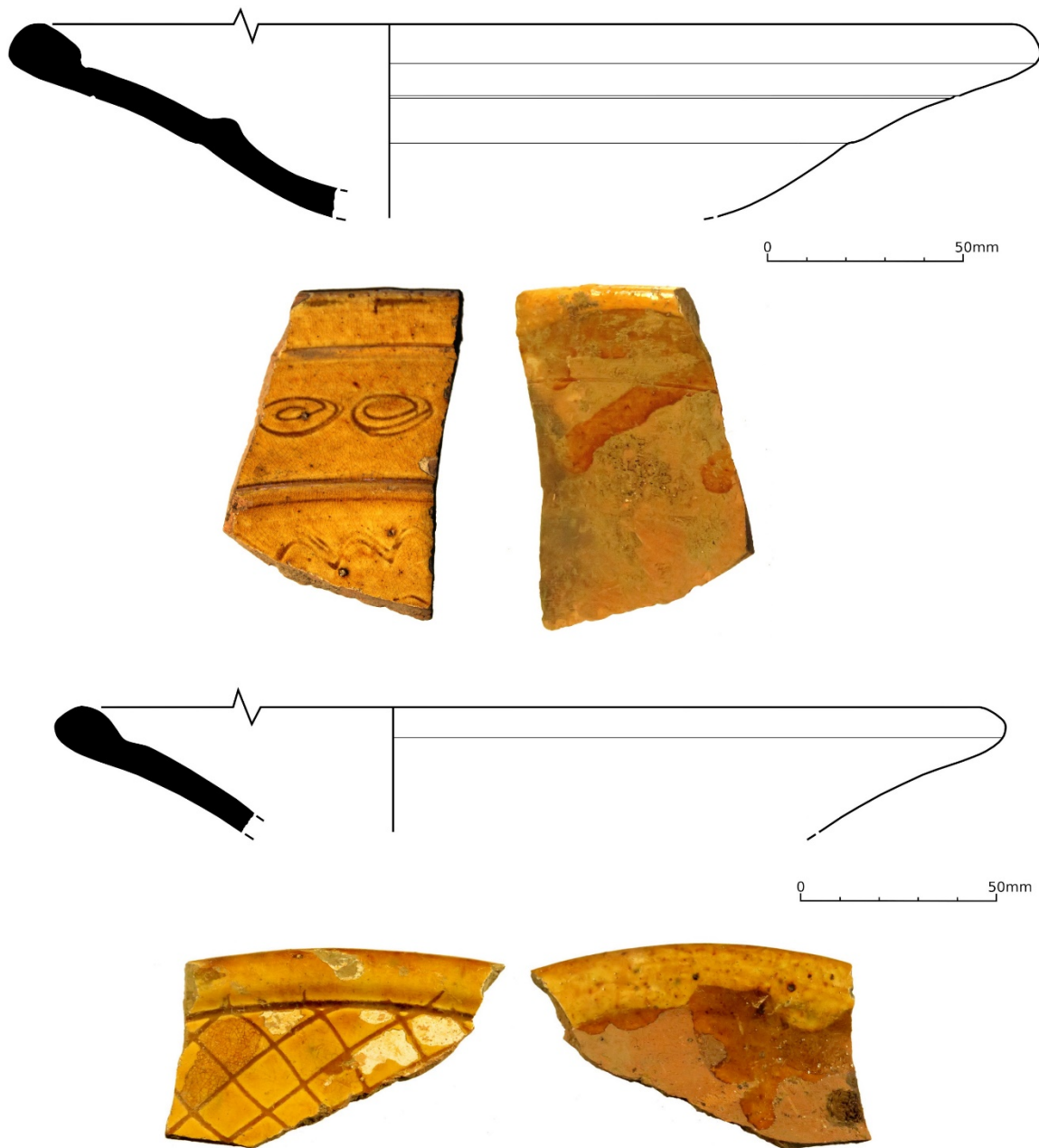


Figure 7 Sherds of North Devon sgraffito ware, from TT6-1 (above) and TT7-2 (below)

Plain yellow glazed

Sherds with yellow and brownish yellow glaze might be identified as undecorated North Devon ware as the fabrics and bichrome glaze are similar, though there are differences in the forms, which tend to be closed jugs and jars with flat bases and flat or ledge rims. A distinctive feature is the presence of glaze smudges on the underside, which come from being stacked during the firing process. This sort of deficiency is a mark of some of utilitarian vessels, as discussed by McCutcheon and Meenan (2011: 106) in the context of black glazed storage vessels, who note that minor flaws on functional vessels would not have mattered for objects not intended for display and that less than perfect vessels, possibly classified as 'seconds', were still in use. Diagnostic sherds of plain yellow glazed ware were recovered from TT1-3 (a rim and base) (Figure 8).



Figure 8 Yellow and brown glazed sherds from TT1-3

Olive green glazed

A number of sherds with olive green coloured glaze were recovered from Area 6 and 7. These include internally glazed jugs and jars which have a flat base and an everted rim of another

closed form vessel (Figure 9). These sherds are distinguished from the medieval green glazed sherds discussed above by their coarser and redder fabric and the dark green colour of the glaze, though a medieval or early post-medieval date is conceivable.

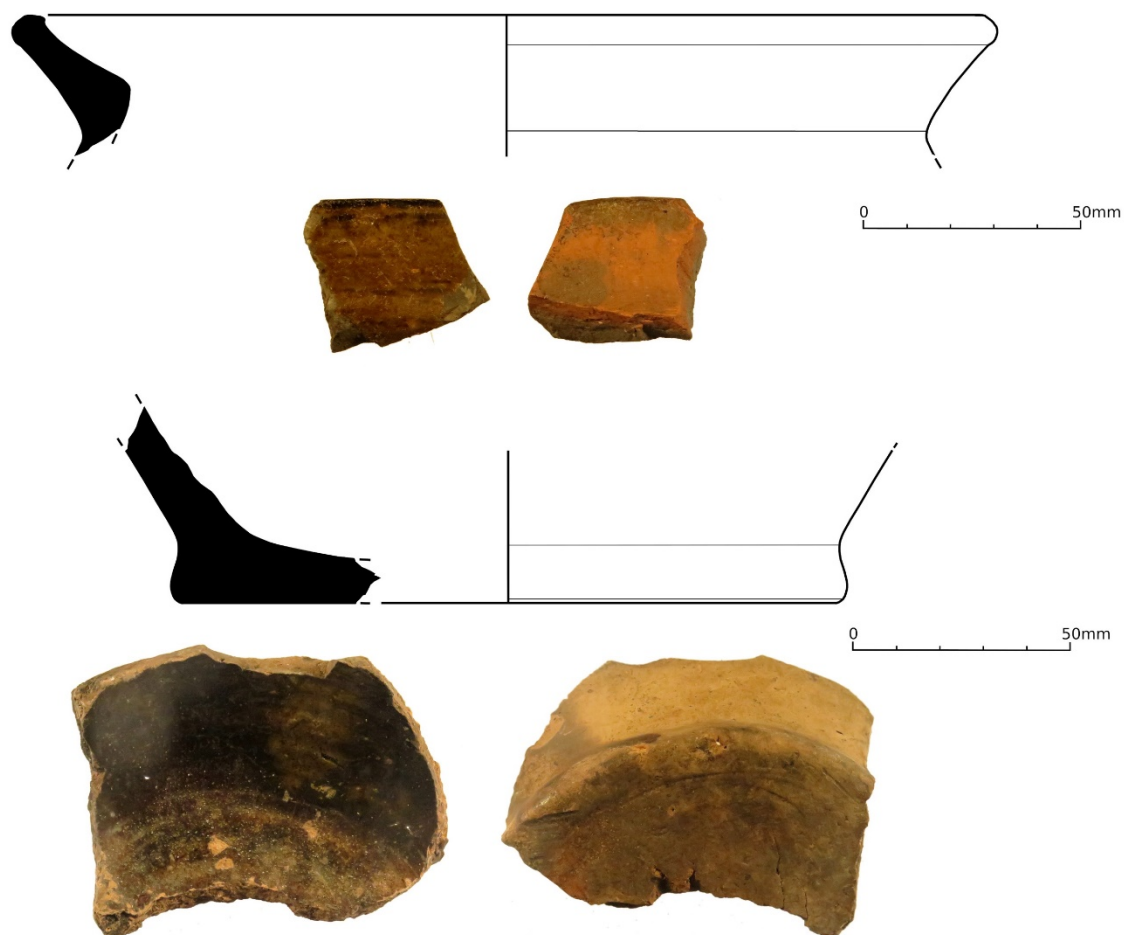


Figure 9 Olive green glazed wares from TT7-1 (above) and TT6-1 (below)

Blue and polychrome painted white wares

Hand decorated, tin glazed ceramics, including blue on white and polychrome, were recovered in small quantities from trenches in Area 1 and 6 (Figure 10). These are distinguished from the later, 19th century transfer printed earthenware, where the decoration was mechanically applied (discussed below).

The hand decorated sherds include a possible fragment of faience, a ceramic imported from Portugal in the first half of the 17th century (Fitzpatrick et al. 2004: 380-383). From Area 1, in contexts dating from the 18th to 19th century, a base fragment of a marbled pattern footed bowl and a polychrome blue and yellow whiteware were recovered.

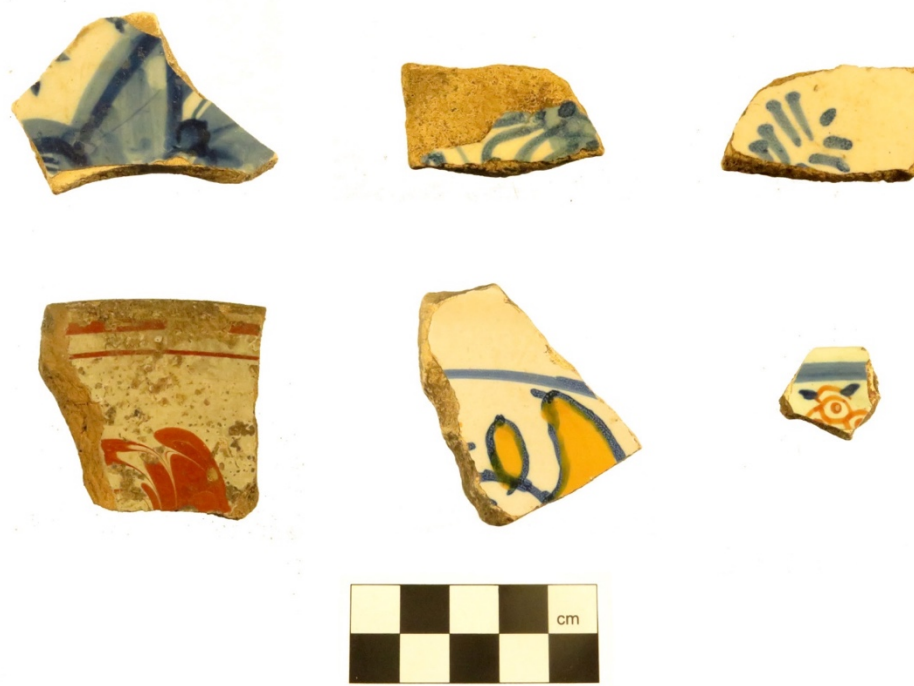


Figure 10 Tin glazed monochrome and polychrome decorated ceramics

Black glazed earthenware

Sherds of black-glazed earthenware were frequently present in later excavated contexts, and sometimes at considerable depth, especially in the harbour fills at the base of trenches in Area 5 (Figure 11) and the northwest of Area 6. Diagnostic sherds of black-glazed ware were recovered from five trenches (TT5-1, TT5-2, TT5-3, TT6-2 and TT7-2); smaller body sherds were present in most trenches excavated Area 1.

The black-glazed earthenware is characterised by its dark red, bricky fabric coated with evenly and thickly applied black glaze and the generally large sized vessels including basins with thick rims, ribbed body and lug handles. Several black-glazed sherds were recovered from TT5-1, below the level of the cobbled surface, which is contemporary with construction of the Courthouse, so date from the very start of the 19th century or earlier. The large dimensions and closed form of black-glazed vessels that were used for bulk storage, is shown in two large rim fragments from TT5-3, the larger of which has a diameter of 380mm (Figure 13). Smaller black-glazed vessels were also in use, as shown by a small strap handle, perhaps belonging to a jug or pitcher from TT6-2 (Figure 14).

Black-glazed pottery was manufactured between the 17th and 19th century and was imported in bulk from England (Meenan 2007: 398). It was made from coal-measure clays especially in the west of England and Wales. Larger vessels were used in the preparation and storage of food, such as the preserving of meat by salting or pickling. McCutcheon and Meenan (2011: 105-6) describe the use of large black-glazed vessels for the preservation of foodstuffs: 'The heavy squared rims would have been useful to tie the cord around; the straight splayed sides would have made it easier to remove the contents from the pot and the horizontal handles would have facilitated in moving the pot after it had been filled'. The presence of these large storage vats fits with the industrial, dockside setting of Merchant's Quay.



Figure 11 *Black-glazed and other ceramics from TT5-1*



Figure 12 *Black-glazed and other ceramics from TT5-1*



Figure 13 *Black-glazed storage vessel rims from TT5-3*

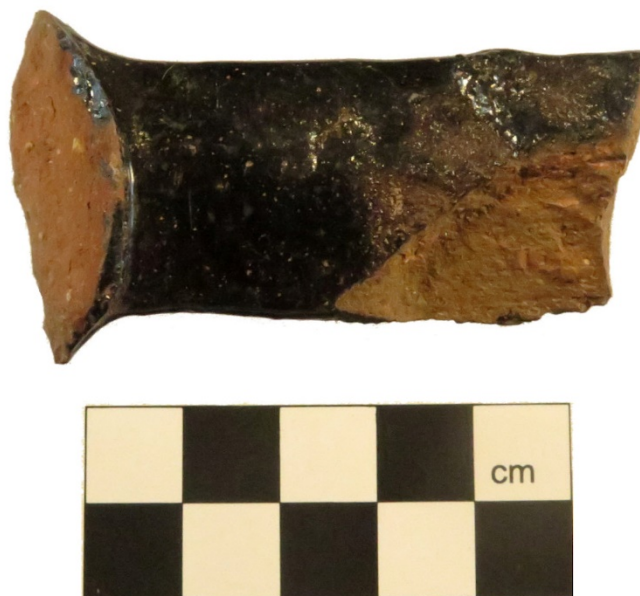


Figure 14 *Black-glazed ware strap handle from TT6-2*

Mass-produced 19th century ceramics

Material collected from the excavations in Area 1, within the area of the brewery and former mill, includes a variety of 19th century mass-produced ceramics such as transfer printed earthenware featuring 'willow ware' decoration and dark blue printed earthenware (Figure 15). These 'domestic' ceramics likely derive from the cottages that stood on the site following the decommissioning of the brewery.

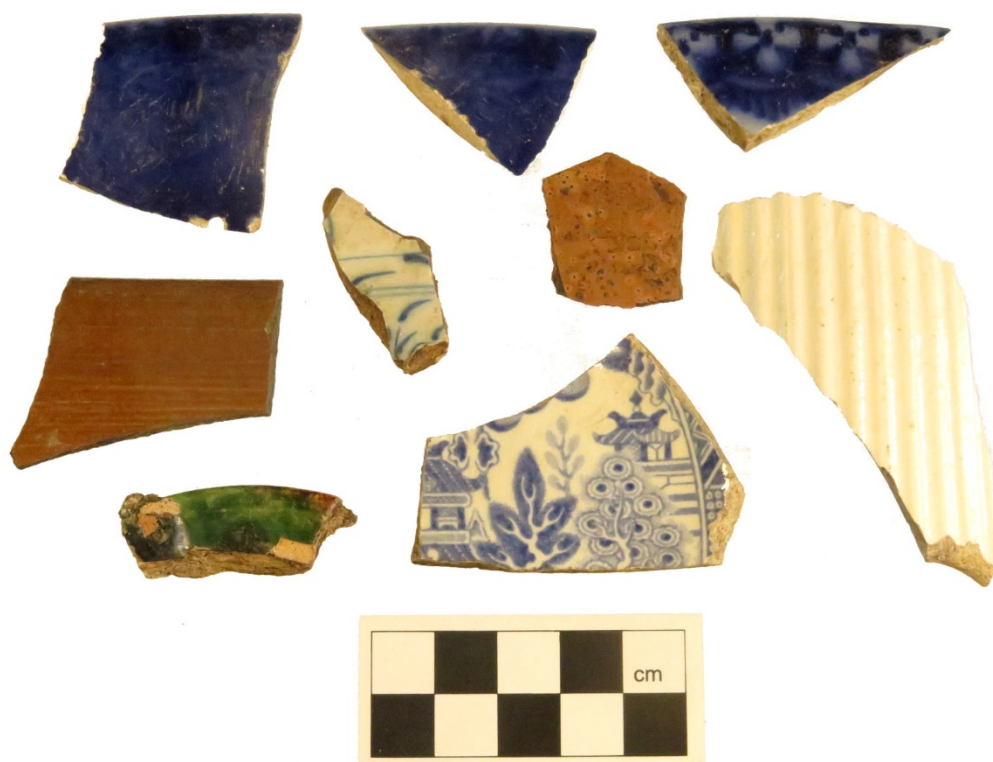


Figure 15 *Transfer printed and other mass produced 19th century ceramics from TT1-2*

Tiles

A small but varied number of tiles were recovered, including medieval floor tiles (from TT6-4 and TT6-1), terracotta roof tiles (from TT5-1 and TT6-4) and a 'Delft ware' wall tile (from TT1-3).

The possible floor tiles come from the basal context of TT6-4 (C6-4-11) where a fragment of medieval glazed pottery and a small strip of gold were also found (Figure 16). Both are squared pieces of dense red pottery, with one straight edge surviving. One is mainly unglazed, 28mm thick and has an inlaid white line running across its top. The other is 37mm thick and its top and two sides have green glaze with cream slip painted coating. Both have flat, rough undersides. Another possible medieval floor tile comes from TT6-1, which has a matt coating of dark green over white slip.

Medieval floor tiles have been found during other excavations in King's Island, including at St Saviour's Dominican Priory (Shee Twohig et al. 1996: 72-73), at the Parade/Broad Lane opposite the Bishop's Palace (Hodkinson et al. 1998: 34) and at King John's Castle (Wiggins et al. 2006: 468-474).

As relatively small fragments survive, the examples from Merchant's Quay cannot be definitely identified or related with known designs. Their proximity to St Mary's Cathedral is one clue as to their origin, but they are also close to medieval domestic buildings that crowded the quayside here. The presence of these objects at more than 2.5m depth and alongside a sherd of glazed medieval pottery strengthens their identification as medieval tiles.

Several fragments of terracotta roof tile were recovered, particularly in trenches TT5-1B and TT6-4. These plain, unglazed tiles indicate a 'pan and cover' system of roof covering. Their date is uncertain, but such roofs are likely to have been superseded in the 18th century by slates, some examples of which were present in the upper (later 18th and 19th century) fills.

A complete roof slate was found in TT5-1B and a fragment with a hole bored through it was from TT6-2.

Two fragments of a glazed wall tile with blue, hand-painted decoration, were recovered in Area 1, from TT1-3 (Figure 17). The tile shows a rural scene, with a small building, perhaps a mill, beside water, with a fence, barrel and reeds in front and stylised birds in the sky. The tile is likely to be Dutch and can be broadly termed 'Delft', though tiles of this style were also made in England. The tile probably dates from the late 17th or 18th century, but similar hand-painted tiles were made into the 19th century. Delft tiles were found during nearby excavations at King John's Castle (Sweetman 1980: 224; Wiggins et al. 2006: 472); the later find was interpreted as coming from the wall of a 17th century building which was later demolished to build the 19th century infantry barracks.

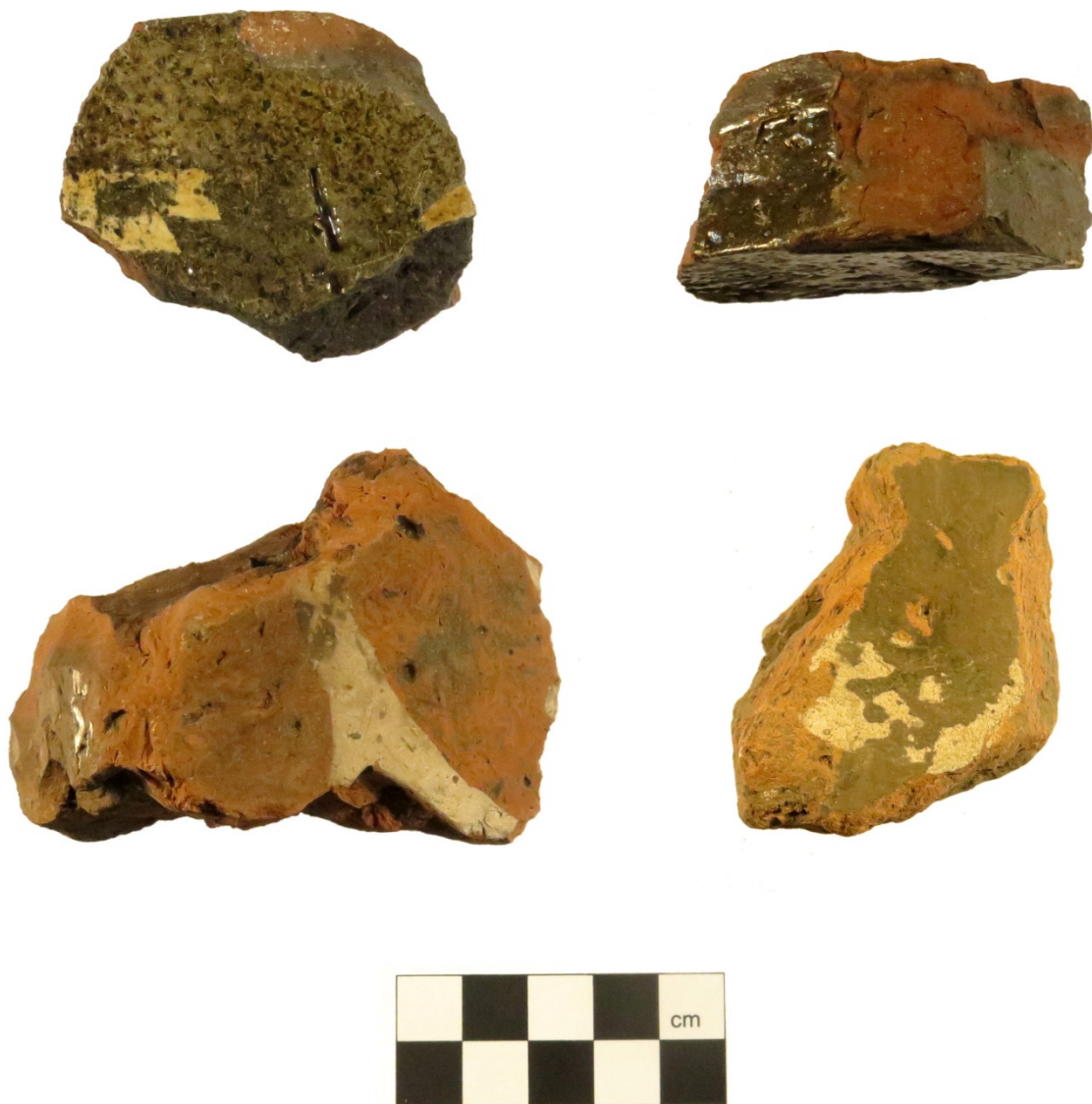


Figure 16 Medieval glazed floor tiles from TT6-4 and TT6-1



Figure 17 Dutch wall tile from TT1-3

Clay tobacco pipes

A large number of fragmentary clay tobacco pipe stems were unearthed. Of the ten stem fragments that were retained, none had markings that would assist identification; only one pipe bowl was found during the excavations (Figure 18).

The pipe bowl, which is largely intact, was recovered from TT6-1. This bulbous bowl had a small diameter (15.4mm) and a short stubby base or heel. There are no identifying markings on the pipe, other than rilling around the rim of the bowl. Judging by the size and angle of the bowl and the flat heel, it is possible that this is a Dutch pipe and dates from the late 17th or early 18th century. Though comparison may be made with clay pipes from other port settings in Limerick (Wiggins et al. 2016: 451-459) and Galway (Fitzpatrick et al. 2004: 427-447), the lack of markings hinder more certain identification of this pipe.



Figure 18 Clay pipe bowl from TT6-1 (left) and stems from TT6-2 (right)

Glass

The glass artefacts recovered from the excavations consist mainly of bottles; a small amount of modern window glass was found, but no vessel glass. Glass bottles were recovered especially from trenches in Area 5 which yielded the largest, most intact fragments. Most are large wine bottles, with base diameters of 140-180mm, and can be dated to the 18th-early 19th century and relate to either consumption refuse from the former buildings at Merchant's Quay or trading activity, though there were no concentrations large enough to identify a 'bottle dump' as such. From TT5-1, the neck and finish of a bottle still retains its cork in place (Figure 19).



Figure 19 Glass bottle finishes from (left to right) TT1-3, TT6-2 and TT5-1



Figure 20 Large glass bottle base from TT6-2



Figure 21 *Bottle glass from TT5-2*

Metal

Five metal artefacts were retained from the test excavations (Figure 22). These were recovered from excavated fills that had archaeological potential using a metal detector or from visual inspection.

One fragment of precious metal – a small strip of suspected gold or gold alloy – was recovered from a depth of more than 2m in the eastern side of TT6-4 (C6-4-11). This context also contained medieval glazed floor tiles and a sherd of incised glazed medieval pottery. The gold strip is 84mm in length (though it is crumpled, so it would extend to approximately 100mm); its width ranges from 4.4mm at one end, tapering to 1.5mm at the other end; its thickness is just 0.1mm.

A circular coin or token was recovered from TT6-1D, directly beside the Potato Market wall. It has heavy accretions; until conservation has been done it is impossible to identify. It appears to have a high copper content, judging from the green that shows though in places where there are not thick accretions. Its diameter is 29.3mm and its width is 3mm.

The other three metal artefacts, all from TT6-2, are a square shaped piece of lead, a small spherical fragment of copper and a triangular shaped fragment of iron.



Figure 22 Metal artefacts: a gold strip from TT6-4 (top); copper coin from TT6-1 (middle); lead, iron and copper fragments from TT6-2 (bottom)

Leather

Fragments of a leather shoe were recovered from TT6-2. In its unconserved state there are no distinguishing features identifiable.

Lithics

Two flaked quartzite artefacts were recovered from the lower fills of TT6-1C (Figure 23). These come from depths below the level of the east/west aligned wall. Pieces of flint were also recovered from these depths, but these are rounded and non-artefactual. However, the quartzite objects appear to bear flake scars, and one has a prominent bulb of percussion. Though there are not clear morphological characteristics, it is possible that these are prehistoric artefacts that derive from alluvial fills beside the River Shannon. Notably, neither flint nor quartzite is naturally occurring in the Limerick area.



Figure 23 Flaked quartzite from TT6-1

Organic

Bone and shell were not generally collected from the excavations, as it was usually from redeposited, insecure contexts, so had little contextual value. However, where large quantities were present, this was noted, and in some cases informed the nature of related features, for example, the concentration of oyster shell in fills abutting the base of walls in TT5-1 and TT5-2 helped to confirm the identification of the walls as the quay wall.

Where organic material provided particular information about the date or activities associated with a context, this was collected or sampled. At the lower levels of TT6-1, adjacent to the east/west wall, a tusk was recovered that appears to come from a pig (Figure 24). This lower fill in TT6-1, which also contained flint and quartzite, appears to be an early context.

A large quantity of bone was present in TT6-2, and some of these bore butchery marks, as the illustrated examples show (Figure 24). This appears to be consumption refuse, probably pre-dating the Georgian renovations of the area, though it might equally derive from the terrace of houses located here during the first half of the 19th century.



Figure 24 Tusk from TT6-1 and bones with butchery marks from TT6-2

Catalogue of drawn ceramics

Artefact number: TT1-3-01 (Figure 8)		
Part: Rim	Diameter: 260mm	Wall thickness (min.): 3.6mm
Form: Bowl. Ledge rim, thin walled, slight groove on inner side of rim		
Fabric: Fine, with fine and well-sorted grits. Colour: reddish yellow (5YR 7/6)		
Surface: Glazed both sides with olive yellow undercoat below yellow brown, thickly applied, unslipped		

Artefact number: TT1-3-02 (Figure 8)		
Part: Base	Diameter: 200mm	Wall thickness (min.): 6mm
Form: Closed pot or jar. Flat base, shallow ribbing on interior walls; smooth exterior walls		
Fabric: Fine, well fired, dense, with very fine mica and sparse quartz grits. Colour: pink (7.5YR 7/4)		
Surface: Glazed interior with yellow on brown mottled glaze; unslipped		

Artefact number: TT6-1-01 (Figure 7)		
Part: Rim	Diameter: 320mm	Wall thickness (min.): 6mm
Form: Dish with offset, thickened rim. Shallow open form with carination that is more pronounced on interior. Prominent grooves below the lip and at carination on interior; groove on exterior below the lip and lighter wheel turning marks below		
Fabric: Fine, evenly fired, dense, with fine, well sorted dark grits. Colour: reddish yellow (5YR 7/8)		
Surface: Glazed interior, dripping and smudged on exterior which is unglazed. In glazed zones is white slip with brown underglaze and yellow overglaze. Incised decoration of spirals around the outer rim and wavy lines or loops below the carination		

Artefact number: TT6-1-02 (Figure 7)		
Part: Rim	Diameter: 360mm	Wall thickness (min.): 7.5mm
Form: Dish or plate (large). Triangular shaped pointed rim, slightly thickened, moving to thinner walled body of the vessel		
Fabric: Fine, soft, evenly fired; subangular grits and voids, moderate grain and fairly sorted; some larger rounded quartz inclusions. Colour: reddish yellow (5YR 6/6)		
Surface: Glazed and painted interior, unglazed outer rim and exterior. White slip below dark red or brown ground (2.5YR 4/8) with painted dots and swirls in yellow (2.5Y 8/6), thickly applied. Pale cream wash or slip on exterior.		

Artefact number: TT6-1-03 (Figure 6)		
Part: Rim (partial)	Diameter: unknown	Wall thickness (min.): 5.7mm
Form: Dish or bowl. Ledge rim (part surviving)		
Fabric: Fine; dark grits and voids, moderate grain and well sorted. Colour: reddish yellow (7.5YR 6/8)		
Surface: Glazed and painted interior, unglazed exterior. Unslipped. Glazed decoration has reddish yellow ground (7.5YR 6/8) overpainted with very pale yellow (5Y 8/3) double wavy lines on the top of the ledge rim.		

Artefact number: TT6-1-04 (Figure 9)		
Part: Base	Diameter: 150mm	Wall thickness (min.): 7.4mm
Form: Closed, jar or jug. Flat base. Shallow ribbing on interior, smooth exterior wall		
Fabric: Medium fine, regular firing, slightly bricky and angular fracture; regular fine grits, fair sorting, sparse, fine mica. Colour: reddish yellow (5YR 6/6)		
Surface: Glazed interior, unglazed exterior. Unslipped. Glaze is thickly coated and dark green or dark olive grey (5Y 3/2) with zone of lighter yellowish green.		

Artefact number: TT6-2-01 (Figure 3)		
Part: Rim	Diameter: 300mm	Wall thickness (min.): 4mm
Form: Bowl, thin walled		
Fabric: Very fine, soapy, cream coloured with very fine lime and dark grey grit inclusions. Colour: very pale brown (10YR 8/3)		
Surface: Cream slip on interior and exterior		

Artefact number: TT6-2-02 (Figure 6)		
Part: Base	Diameter: 80mm	Wall thickness (min.): 3.5mm
Form: Bowl or small jug, thin walled. Footed base (9mm tall foot); steep sided walls; sunken floor		
Fabric: Fine, with well sorted light brown grits. Colour: reddish yellow (5YR 7/8)		
Surface: Glazed and painted interior. Red slip exterior with no glaze; interior has yellowish red ground (5YR 5/8) with yellow (5Y 8/6) overpainted swirls.		

Artefact number: TT7-1-01 (Figure 9)		
Part: Rim	Diameter: 220mm	Wall thickness (min.): 8mm
Form: Jar or other closed form vessel. Everted rim		
Fabric: Fine, soft; fine mica and moderate, well sorted dark grits. Colour: grey inner margin (2.5YR 7/1) and reddish yellow exterior margin (5YR 7/6)		
Surface: Unslipped, with thickly applied brown and dark olive brown glaze around the lip and lighter on the interior.		

Artefact number: TT7-2-01 (Figure 7)		
Part: Rim	Diameter: 300mm	Wall thickness (min.): 4.5mm
Form: Dish with offset, thickened rim; groove on the inner side of the rim		
Fabric: Fine to medium fine; bricky; evenly fired. Colour: light red (2.5YR 7/8).		
Surface: Glazed interior with unglazed exterior but glaze dripping and smudged below rim. Slip below glazed zones. Glaze is dark reddish brown ground (5YR 3/2) with yellow over (2.5Y 7/8). Incised sgraffito decoration of diamond cross hatching revealing the darker underglaze		

Discussion

The archaeological testing programme undertaken by Moore Archaeological and Environmental Services between May and September 2020 at Kings Island, Limerick involved the excavation of 31 trenches at nine different locations. In six areas, the Mill and Brewery Site, Harbour at Courthouse car park, Merchants Quay and the Potato Market both structural remains and layers of archaeological potential were identified. Artefacts retrieved included a mixed assemblage including late medieval tiles and ceramic sherds and post medieval to modern pottery, glass and a hammered gold strip. Due to the depth of many of the trenches, most effected by tidal flooding, access for safety considerations was limited to visual inspection and an examination of the spoil. In other instances, on the exposure of sub-surface foundations, trench boxes were employed to record features.

Mill and Brewery Site

Area 1, the Golden Mills and brewery site, located along the riverside to the north of the Civic Buildings exposed the rubble core remains of a double arched bridge that would have led to a mill wheelhouse. This rubble foundation and associated collapse was previously exposed during archaeological investigations carried out by Celie O’Rahilly in 1987/88. The bridge measuring approximately 2.8m wide was 1m below ground and had been cut by a sewer pipe servicing Nolan’s Cottages built in 1895. The bridge is depicted on a map of Limerick dated 1590 and extends from the town wall at the east connecting two mills, an outer one annotated Thomas Arthurs Mill the inner one known as Queens Mill (TCD, MS 1209/57). The Civil Survey describes the mills as two stone houses (36ft. by 30ft. (10.8m x 9.1m) and 45ft. by 27ft. (13.7m x 8.2m)) "with two mills (wheels?) therein seated and a thatched house. The bridge is also featured in Thomas Phillip’s pen and ink prospect of Limerick as a double arched structure leading to a square wheelhouse with crenelated parapet and a pitched roof.

The mill operated as part of the City Brewery in the mid-18th century, the inner mill being incorporated into the brewery. In 1834 the Mill was described in the Limerick Chronicle as in ‘full working order, a large sum of money being lately expended in fitting it up in the best style, fit for immediate work’ and capable of manufacturing ‘six thousand barrels of wheat in the year’. From 1835 Matthew Fitt operated the business as the Newgate Brewery until its closure in 1879. Based on OS maps and historic photography the western part of Golden mill was demolished by 1870.

Trenches 1-3 exposed the northern elevation of the mid-18th century City Brewery building. This building survived as a stone built, rectangular, substructure containing two-barrel vaulted tunnels. The eastern most barrel vault was exposed and surveyed by O’Rahilly The tunnel, found either side of the bridge, measured 15m long, 3m wide and 2m deep (N side) and 1.25m long 1.6m high and 1.3m wide (S Side). It abutted and obscured the northern face of the outer bridge arch and to the south was blocked by a wall. A shaft 0.7m² was noted near the junction point of the wall and tunnel. The western tunnel ran for a minimum length of 9m. Its interface with the Golden Mills was not determined as it will not be impacted by the proposal. These tunnels, post-dating the bridge, may have been used as cisterns to draw water for the daily operation of the brewery. Internally, between the tunnels a series of four foundation pads or plinths were exposed. Two of these to the north were topped with square stones with central sockets, the two to the south had evenly prepared surfaces. These were interpreted as base supports of a timber superstructure. Between 1893-95 north following the Corporation acquisition of the brewery premises for conversion into artesian dwellings the brewery building was knocked and infilled to the north.

Courthouse Carpark, Potato Market and Merchant’s Quay (Areas 4, 5 and 6)

Excavations on the former site of the old quay, built c.1500-1764, which is the present-day site of the Courthouse carpark, the Potato Market and the western side of Merchant’s Quay, took place between June and August 2020. The medieval harbour, as previously described, was bounded to the north and south by two piers terminating in towers set 30m apart. Internally the port was irregularly shaped, with centrally placed projecting jetties either side of two long

docks running along the inside of the pier walls. This basic configuration, as depicted in maps from the 16th to mid-18th century, remained relatively consistent, however minor improvements and maintenance works would have been routine. The footprint of this quay was transformed in the early 1760's into a southern tapering long dock (site of the Potato Market) and a northern wedged shaped sheltered bay (present site of courthouse).

Groundworks in Area 5 exposed structural remains in four trenches; an ENE by WSW wall in TT1, a rough foundation in TT5-2 that aligns generally with a well faced quay wall in TT5-3 both oriented NNW/SSE. A returning wall, also in TT5-3, tied into and at a near ninety-degree angle to the quay wall. In TT5-5 there were two walls, a lower, earlier wall connecting with a later higher wall, part of the New Quay development. Area 4, in the Potato Market likewise uncovered two walls in Trenches T4-1 and TT4-2. Both these walls had considerable similarities with robbed out northern elevations and plinths to the south.

Based on historic mapping all the above walls relate to versions of the harbour over the course of its development. Comparing the location of these walls utilising GIS and unscaled cartography is problematic, however despite these limitations some conclusions can be drawn. The latest walls as found in Area 4 and TT5-1 can, using map 2 of the IHTA, be reasonable interpreted as relating to the development of New Quays as laid out in a plan of 1764. The foundations in TT4-1 and TT4-2 align with the northern facing wall of the southern arm of the quay. Similarly, the later wall in TT5-5 matches the southern face of the northern arm. The existing bay between the projection at the Curragower Boat Club and the projection at the SW corner of the courthouse corresponds to the mouth of the New Quay. In addition, the 'L' foundation exposed in TT6-2 aligns with location of a watch house that would have overlooked the NE corner of the Quay.

An interpretation of the late medieval walls and how they relate to the configuration of the harbour can only be conjectural. The NNW/SSE foundations exposed in both TT5-2 and 3 roughly correspond in orientation and width; the southern wall being better preserved complete with cut facing stone. Oyster shells in abundance were found abutting the west facing base of these structures suggesting an interface with the harbour. In TT5-3 a tied in returning wall running to the east may relate to the corner of a jetty as featured on historic mapping.

The lower wall found in TT5-5 overlaid by the later New Quay wall, could be interpreted as a section of the earlier northern pier wall. This pier, according to Leask, was about 100 feet (30m) in length and returned northwards at a near quarter turn connecting with the town defences running towards King Johns castle. The orientation of this albeit very short (1.4m) section of wall would position it at or near the corner of the return.

The foundation found to the south of TT5-1 at a conjectural level is the hardest to interpret. Its location not easily corresponding with the documented walls from historic maps. On its exposure, given its width, build quality and depth below ground it was considered an early remnant. This section of wall assuming it terminates to the west is approximately 11m away from the projected line of the early wall identified in TT5-5. This, if the walls are contemporaneous, provides for a very narrow turn to the north dock for cargo vessels. If the wall belongs to the later 1760's New Quay, its position and dimensions still remain anomalous. Notwithstanding the above the wall in TT5-1, in the absence of any other known developments in the area, has to be associated with harbour architecture.

Bridge Street, Merchants Quay and Georges Quay

Excavations in TT6-1, TT7-1 exposed significant structural remains relating to the town wall and the Quay Gate. TT6-1, was excavated in four sections and extended from the corner of the Potato Market wall to near the northern kerbside. The features exposed from north to south included an intact section of cobbles (1.1m long by 0.8m wide) interfacing with a north south running wall along the west side of the trench. To the east and abutting this was a mortared surface. Near the centre of the southern carriageway the 7.1m long north south wall terminated, its south facing elevation partially exposed. Abutting the corner face of this wall and angled NE/SW was a 4.4m long stony foundation, its exposed top course slightly concave.

This feature continued under the Potato Market wall. These features were putatively interpreted as the cobbled access point of Quay Gate (later Iron Gate 1769) with a connecting wall meeting the foundational remains of a three-sided bastion that projected into the Abbey River. Both the gate and the bastion were thrown down by 1760 in advance of the development of the New Quay and Bridge. A more comprehensive interpretation of this area would require further detailed excavations.

The wall found in TT7-1 opposite the Locke Bar on Georges Quay conforms to the accepted projections of the line of the location of the town wall as noted by O'Donovan in 1998. This solid wall found at a depth of 2m and was 1.8m wide N/S. In 1716 a delegation of Dutch priests noted that '*when the city had been captured the King ordered that all fortifications and the castle on the river, around the city should be destroyed*'. The walls along this stretch were demolished to foundation level during the development of Georges Quay in the 1760s.

Eastern side of Merchants Quay

Testing along the eastern range of Merchants Quay exposed foundations over a box drain and a lower wall in TT6-3. The upper foundations correspond with a line of fifteen buildings that overlooked the New Quay later the Potato Market. One such centrally located building was the Old Custom house rebuilt in 1638 and closed in 1764 to be replaced by a new building on the Mardyke. Griffiths valuation for this street records twelve houses with yards, a shop, office and the site of St. Mary's Temperance Society. Contemporary pictures of the period show a terrace of four-story, gable ended structures facing west. A lane allowed access to the grounds of St. Mary's to the north. This line of buildings was largely demolished by 1870 to allow the expansion of St. Mary's to the south west.

Underneath the upper foundations in TT6-3 and respecting the line of these buildings was an earlier wall that had an exposed height of 1.2m and measured 800mm wide. Abutting this early wall, to the west, were contexts with a sherd of late medieval pottery.

TT6-4 to the north exposed a layer cobbles in the southern half of the cutting probably contemporary with the building of the Courthouse in the early 19th century. The lower accumulated deposits contained artefacts that included green glazed sherds, a tile fragment and a strip of hammered gold.

Between Court House and Civic Buildings

A single trench was excavated in Area 2 and exposed infilled ground abutting the foundation of the southern boundary wall for the Gaol built in built in 1811-1813. Elements of this complex have already been incorporated into the fabric of the Civic offices.

Other

Investigations carried out in Area 3 SW corner of the Courthouse, Area 7 Creagh Lane and Areas 8 and 9 St Mary's Park did not expose any archaeological material.

Conclusion

Archaeological testing for the KIFRS that took place between May and September 2020 investigated nine distinct areas of King's Island with their own unique local histories and challenges. Historic settlement on King's Island is well documented with a rich tableau of maps that provide an insight to the city's growth throughout and after the medieval period. The determinant that generated this growth was trade. Limerick was where salt water met fresh water and the sailor met the producer. King's Island, a defensible stronghold on a tidal estuary, was as far inland as vessels could navigate before reaching the natural obstacle of the Curragower Falls. This geographic point is where imported goods from Britain and continental Europe could be landed, and empty holds filled from the rich produce of the hinterland. Militarily the control of this stretch of water by the prevailing authority, be it Gaelic, Viking, Norman or English, bought security and dominance that extended north along the waterways

to the interior of the country. This power was manifest in the economic benefits bought in by customs and excise to invest in civil projects and by private wealth to build businesses, dwellings and endow churches and religious houses.

Within the historic town the wealth generated from foreign trade and the domestic economy survives in the stone and mortar of King John's Castle, St. Mary's Cathedral, and the Old Exchequer. Phillips' view of Limerick from 1685 shows the walled town with the river in the foreground, the skyline dominated by the Cathedral bell tower. The harbour mouth is shown as a guarded entrance overlooked by two towers behind which are an array of masts, ships at berth. Behind the harbour commercial enterprises included mills, malt houses, breweries, tanneries, fisheries, wool merchants, and slaughterhouses. Limerick was noted for exporting salmon and, as with all towns, of the period importing French and Spanish wines.

The medieval harbour as detailed on early maps and panoramic views operated from at least the 13th to the mid-18th century. In the 1760s, as part of a major urban redevelopment, its quays were reconfigured, and a new bridge built. Subsequent developments included the Court House (1810), the City Gaol (1813) and the Potato Market (1840s).

As part of the archaeological investigations a series of trenches were excavated in the footprint of the port that exposed harbour architecture including an interface between the docks and the quayside, a potential section of the north quay, the entrance through the quay gate and a riverside bastion that allowed access to the south pier. In George's Quay an extant section of the town wall running along the north of the Abbey River was recorded. Sections of the New Quays built by 1769 were found in Areas 4 and 5 along with the foundations of a potential watch house in Area 6.

Further north, on the site of the mill (LI005-017074-), groundworks uncovered a rubble core foundation, previously identified by O'Rahilly as a bridge connected to a 14th-15th century mill house that is mentioned in the Civil Survey. Also exposed was an 18th-century brewery building, formerly the City and Newgate Brewery. This site was levelled in the 1870s to make way for social housing.

Despite reclamation, infilling and redevelopment the investigations exposed archaeological features, fills and artefacts in the harbour and landward side of the quays. The preservation or recording of these archaeological resources will require consideration as part of any future developments.

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Appendix 1: Catalogue of Excavated Features

The following catalogue contains details on 42 archaeological features documented during the KIFRS test excavations. Each entry gives information on the feature type, location (by excavated area, trench and ITM coordinates), depth, dimensions, alignment, description of the feature's construction (materials, coursing, bonding) and condition, an estimated date of construction and discussion. The minimum depth of features was recorded using the DGPS – the figure is given as metres above sea level (ASL) using the Irish national grid vertical datum.

Trench: TT1-1	Context: C1-1-05	Dates excavated: 28/5/20
Feature type: Arch of barrel vault/tunnel		
Co-ordinates (ITM): 557685.2113, 657687.6101		
Minimum depth (ASL): 3.8161m		
Depth of feature below surface: 0.28-3.4m		
Base of feature reached? N (foundation reached)		
Alignment: WSW/ENE, 70°		
Description:	Stone built barrel vault with north-facing arch exposed, directly to the west of C1-1-06. The arch has a span of 3.65m and height of 1.85m from the impost to the keystones. The arch and abutment are set on a plinthed foundation of rectangular blocks.	
Date of construction:	17th century mill/brewery associated with Golden Mills and City Brewery (established 1739).	



Figure 25 Arch of barrel vaulted tunnel in TT1-1 (C1-1-05)

Trench: TT1-1	Context: C1-1-06	Dates excavated: 28/5/20
Feature type: Arch of barrel vault/tunnel		
Co-ordinates (ITM): 557692.4252, 657690.9870		
Minimum depth (ASL): 3.8161m		
Depth of feature below surface: 0.3-2.2m		
Base of feature reached? N		
Alignment: WSW/ENE, 70°		
Description:	Stone built barrel vault with north-facing arch exposed, directly to the east of C1-1-05. The arch has a span of 3.04m and exposed height of more than 1.5m. Voussoirs are sandstone and the keystone is limestone keystone, all bonded with thickly applied white mortar	
Date of construction:	17th century mill/brewery, associated with Golden Mills and City Brewery (established 1739)	



Figure 26 Arch of barrel vaulted tunnel in TT1-1 (C1-1-06)

Trench: TT1-2	Context: C1-2-04	Dates excavated: 26/5/20
Feature type: Barrel vault		
Co-ordinates (ITM): 557685.2113, 657687.6101		
Minimum depth (ASL): 3.8161m		
Depth of feature below surface: 0.28m (max depth of 3.4m reached in TT1-1)		
Base of feature reached? N		
Alignment: N/S		
Description:	Top of stone barrel vault – arch excavated at north end in TT1-1 (C1-1-05)	
Date of construction:	17th century mill/brewery, associated with Golden Mills and City Brewery (established 1739)	



Figure 27 Barrel vault/tunnel in TT1-2 (C1-2-04)

Trench: TT1-3	Context: C1-3-12	Dates excavated: 2/6/20
Feature type: Pier/pad		
Co-ordinates (ITM): 557689.5756, 657685.7840		
Minimum depth (ASL): 3.5508m		
Depth of feature below surface: 0.55-1.65m		
Base of feature reached? Y		
Alignment: N/S		
Description:	Mortared limestone pad to support superstructure; circular shadow of mortar on top where column base would have once sat	
Date of construction:	17th century internal foundations for brewery	



Figure 28 Pier/pad in TT1-3 (C1-3-12)

Trench: TT1-3	Context: C1-3-13	Dates excavated: 2/6/20
Feature type: Pier/pad		
Co-ordinates (ITM): 557692.5662, 657685.9035		
Minimum depth (ASL): 3.6612m		
Depth of feature below surface: 0.5-1.3m		
Base of feature reached? Y		
Alignment: N/S		
Description:	Mortared limestone pad to support superstructure; circular shadow of mortar on top where column base would have once sat	
Date of construction:	17th century internal foundations for brewery	



Figure 29 Pier/pad in TT1-3 (C1-3-13)

Trench: TT1-3	Context: C1-3-14	Dates excavated: 2/6/20
Feature type: Wall abutment		
Co-ordinates (ITM): 557688.0750, 657684.9957		
Minimum depth (ASL): 3.8278m		
Depth of feature below surface: 0.45-1.2m		
Base of feature reached? N		
Alignment: NNW/SSE, 170°		
Description:	Abutment wall of barrel vault running to the west (C1-1-05)	
Date of construction:	17th century	



Figure 30 Abutment wall of barrel vault in TT1-3 (C1-3-14)

Trench: TT1-3a	Context: C1-3a-08	Dates excavated: 8/6/20
Feature type: Pier/pad		
Co-ordinates (ITM): 557689.5414, 657687.8959		
Minimum depth (ASL): 3.8788m		
Depth of feature below surface: 0.3-0.8m		
Base of feature reached? N		
Alignment: N/S		
Description:	Mortared limestone pad with socketed square column base in centre to support upright	
Date of construction:	17th century internal foundations for brewery	



Figure 31 Pier/pad in TT1-3a (C1-3a-08)

Trench: TT1-3a	Context: C1-3a-09	Dates excavated: 8/6/20
Feature type: Pier/pad		
Co-ordinates (ITM): 557691.6520, 657688.4511		
Minimum depth (ASL): 3.9121m		
Depth of feature below surface: 0.3-0.8m		
Base of feature reached? N		
Alignment: N/S		
Description:	Mortared limestone pad with socketed square column base in centre to support upright	
Date of construction:	17th century internal foundations for brewery	



Figure 32 Pier/pad in TT1-3a (C1-3a-09)

Trench: TT1-4	Context: C1-4-09	Dates excavated: 4/6/20
Feature type: Foundations		
Co-ordinates (ITM): 557695.6404, 657675.1379		
Minimum depth (ASL): 3.4511m		
Depth of feature below surface: 0.45-1.2m		
Base of feature reached? N		
Alignment: N/S (approximate)		
Description:	Heavily mortared rubble foundations at the south of TT1-4, suspected to belong to medieval bridge exposed in previous excavations that was linked to mill wheel house	
Date of construction:	Late Medieval	



Figure 33 Mortared foundations in TT1-4 (C1-4-09)

Trench: TT2-1	Context: C2-1-10	Dates excavated: 22/5/20
Feature type: Wall		
Co-ordinates (ITM): 557720.2477, 657604.5379		
Minimum depth (ASL): 3.5798		
Depth of feature below surface: 0.4-1.6m		
Base of feature reached? N		
Alignment: SW/NE, 65°		
Description:	Wall revealed for length of 2.3m, Matches with the outer western boundary wall of the Women's Prison compound. The wall is in good condition	
Date of construction:	1813, construction of the Women's Prison	



Figure 34 Wall in TT2-1 (C2-1-10)