

# Beginning of the Metropolitan harbour (Phase 2) 1570s-1620s

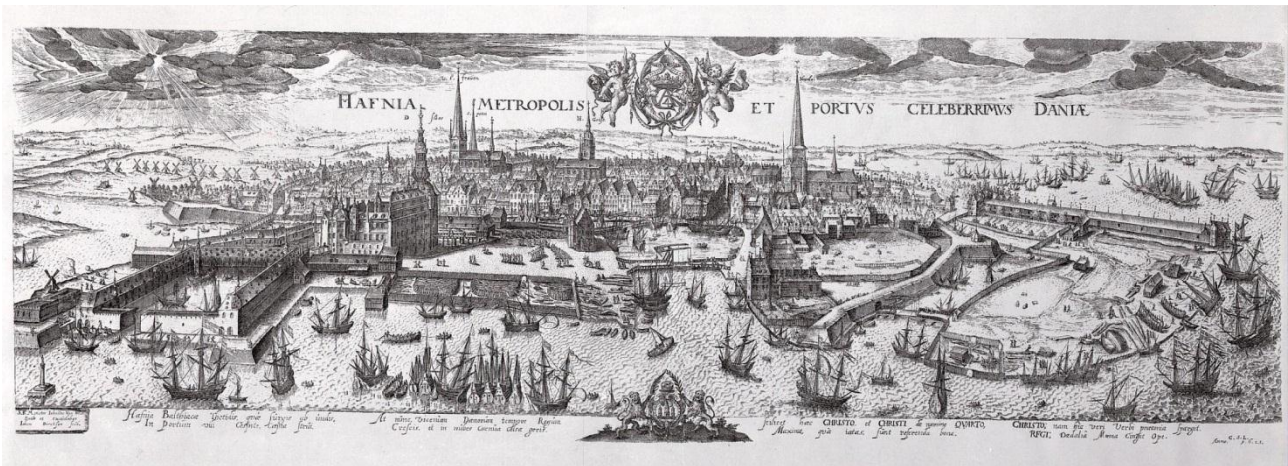


Fig. 41 Plan of Phase 2 structures and features

## Introduction

The Phase 2 period on Gammel Strand began in the 1570s, in the Early Renaissance period in Denmark (Early Post-medieval Period). It was characterized by a new harbourside consisting of a stone harbour wall, road and administration buildings, with the harbour wall and road in use in both Phases 2 and 3. The Fredrik II and Christian IV period harbour was arguably the most expensive of the harbour phases, due to the large quantity of stone and represents Copenhagen becoming the pre-eminent city in Scandinavia. The construction of the new harbour wall began with the digging of a large linear construction cut, which was seen at the northern part of the Main Excavation trench and the Guide Wall trench. The cut was rectangular in shape, truncating the Late Medieval harbour producing a flat base. A line of hundreds of posts were added into the southern part of the cut. The posts were cut in the mid-1560s, so may represent the wall was older than its previous completing date of 1583 (Fabricius 1999, 229). They were fashioned from oak and imported from the same location as the other oak posts, in areas surrounding the Ørestad region. They measured up to 3 m long and shaped rectangular with one pointed end and one flat end. These posts were pushed into the Late Medieval deposits, vertically. The wall was then built behind,

between 1.5-2 m wide and up to at least 2 m high (as seen from the truncated areas. It was built on a levelled small stone and brick sub base with large stone foundations measuring, ca.1 m<sup>3</sup> with rubble on top. A harbour frontage was created using rectangular stones with less shaped stones at rear. In the centre was laid packing stones. The style of the wall differed along the exposed area as at the eastern end of the trench they comprised brick sections laid in rows, with a possible extra base foundations set under water. There also comprised a two prong culvert consisting of brick channels in the wall and wooden pipes behind the wall.



**Fig. 42 Hafnia Metropolis et Portvs Celeberrimvs Daniae (Copenhagen Metropolis and Celebrated Danish Port). Engraving by Jan Dirksen van Campen 1611 after a painting by Johan Van Wijck. The National Museum of Denmark.**

Set behind the wall was a stone path running east west, and bounded by planks and vertically set posts. This was the harbour path of the early 1600s, which was in use till the late 1600s, although the replacement has not been found.

To the west was constructed the large new *Vejerhus*, also attributed to Valkendorf. Fredrik II asked for a new structure to be built as the last structure was decaying. The old *Vejerhus* was destroyed, as seen by the finds record and the deconstruction evidence in the area and the new building was constructed slightly to the east. The new building was rectangular shaped and 3 stories high as seen in the 1840 Daguerreotype photo. It was constructed in the same style as the earlier *Vejerhus* with the foundation set within a construction cut. The foundation consisted of large stones with brick walls added above. It was stated that it was a wonder how such a structure was built so close to the sea, where the part of the northern, eastern and western foundations were found. It has been suggested that part of the structure was built out into the sea, and if the wall group G389 continued westwards on the same orientation, then the structure would have continued into the sea. Excavation will need to solve these theories.

A few deposits were found in the harbour relating to dumping and fluvial activity in this phase. Not many of these deposits were existed to the central and eastern part of the trench as frequent dredging removed them from the base of the harbour, as well as the tops of the earlier deposits. Only the heavier finds remained, pushed into the earlier deposits and thus polluting them with later dates.

Under Christian IV, the trade continued to flourish, and with it, the harbour would have to be extended. The harbour area was changing, and with the movement of the *Dansk Ostindisk kompagni* (Danish East

India Company) on to Gammel Strand in 1616. The area cemented its place as the area where not only the harbour was administered, but also where the organization of trade goods occurred. This was the area where a large quantity of money was passed within Copenhagen, and Denmark, and also located directly next to the king. With the construction of the Børsen stock exchange in 1619 on Slotsholmen and the location to the toll house, also on Slotsholmen, (Fabricius. 2007. 85) this harbour area was the economic border area

### Stone harbour wall and bulwarks

The wooden harbourside from Phase 1 was not adequate to fulfil the needs of the Copenhagen Renaissance harbour of Phase 2. It was old and neither strong enough nor representative of what a harbourside should be in an important European capital city. The facilities would have been upgraded, to bring the harbour up to standard which is shown with the new construction at Gammel Strand. A stone harbourfront is stronger than a wooden harbourfront, and would last longer, so although expensive at the beginning, the cost would decrease as maintenance or replacement of parts of a wooden bulwark would require more maintenance and replacement at an earlier date. The granite boulders for the foundations were collected from all over *Sjælland* from stones that had arrived on the island as a result of glaciation. The limestone came from various areas, with Stevns Klint being one such possible site. It was then cut, dressed and brought to Gammel Strand. The wood used for the bulwark also represents wealth, and as in Phase 1, it was cut from oak from areas surrounding Copenhagen, from *Sjælland*, *Blekinge*, *Skåne* or *Holland*.





Fig. 43 Plan of harbour wall G532, Bulwarks G602, G503 and G415 and the harbour deposits, featuring the re-use of Phase 1 groups G647, G678 and Phase 2 alluvial group G642.

The harbour wall and bulwarks were built at the beginning of Phase 2 and represent the main construction activity. The walls and the wooden posts suggest that a large sum of money was used for quarrying and in some cases shaping the stone. Money was also spent on tree felling and working the wood, transport of materials and construction.



Fig. 44 profile containing sand G101 (at bottom of photo), overlain by SD55781 of Group G678, below SD55780 and SD55779 of sub group 667 levels at western area of Main Excavation. Note that construction cut SC57441 of Phase 2 Group wall G532 truncated the upper part of bulwark G656. A single post from bulwark G602 is at the right of the photo. Photo C03\_20140624\_11176 by Museum of Copenhagen.

Associated with the harbour wall were various wooden bulwarks, set either in-front or south of the wall G532. The post line was found to continue outside of the Main Excavation trench and the stairway trench, and was represented by G415 in the Guide Wall excavation and G503 in the Oil Container trench.

The bulwarks from G602, comprised a mixture of in-situ posts labelled ST39575 and measured individually. The posts were on average between 2 m and 3 m long and located at an average height OD of -0.03 m (with the occasional post being much lower e.g. -0.65 m). They were generally square in profile, with a boxed heart and straightened sides, measuring 0.2 m by 0.2 m wide. They all were manufactured from oak and comprised one flat terminus and one pointed terminus. They were driven through the Late Medieval alluvial deposits from groups G647, G678 and SG667, depending on the area of the trench, and into the

harbour sand to the depth of 0.3 m. They were driven in so strongly that a mechanical excavator was needed in order to remove them.



Fig. 45 Photo of Harbour wall group G532 and bulwarks group 602. Located at the eastern end of the Main Excavation looking NE. C03\_20140602\_10517

The stone harbour wall, G532, stretched for 88 m through out the Guide Wall trench and Main Excavations. Historical records state that it was constructed by 1583 and it was in use until the 1690s when the new wooden harbour was constructed. In the western area the stone harbour was in use until the 1630s when a new wooden reclamation box and then wooden harbourfront was constructed. Here, at the western end of the Main Excavation trench, the upper reaches of the wall are demolished and a new harbour is constructed southwards.

The wall was uncovered approximately 1.5 m below the present ground surface in the Guide Wall excavation and between 1.5 m and 2 m below the modern surface in the Main Excavation at an average height OD: -0.24 m at the top of the wall. It survived at a width of 2 m to 2.6 m wide and from 1.5 m to 2.5 m in height. The destruction of the upper wall part leads to an estimation of the original height. It was built within a linear construction cut with steep sides and flat base truncating the remains of the Late Medieval harbour, structures and deposits.





Fig. 46 Photo of central section of harbour wall G532 with bulwark G602 in front. Looking NW.C03\_20140611\_10788

The wall was first seen in the Guide Wall excavation in 2012 and in the Main Excavation and the Stairway trenches in 2014. It was built on a NE-SW orientation, although it curves slightly in the centre of the Main Excavation, which may reflect the former fluvial channel of the canal in the Renaissance period. The wall group was built directly on top of the Phase 1 Late Medieval bulwark group G616, and directly south of the Phase 1 bulwarks G467, G478 and G485. It was also built into the Phase 1 groups G647, G678, SG667 and the Phase 2 group G642 in the west.



Fig. 47 Photo of eastern end of wall G532 after bulwark G602 was removed. Photo shows the different construction methodology to areas in the centre and west. C03\_20140613\_10888

### **The new Weighing House / *Vejerhus***

To run a harbour effectively, administration buildings should be placed on the harbourside. This was seen by the construction of the new *Vejerhus*, which at various parts of this phase also comprised an *Accisehus* function. The new structure with the weighing and tax functions would enable the King and the Burgomasters to collect tax and govern what was received and sent out of the harbourside. With the fiscal benefits being so high for the elites a new building was needed, and the construction of a vast new structure was fulfilled in the new *Vejerhus*. The location of the structure on the harbourfront would allow quicker use of all the tax and fiscal parts of trade system, and its close proximity to the Renaissance markets on *Gammel Torv* and *Amager Torv* would also be a determining factor as the movement of goods to the market place would be a short journey.

After describing the functional and symbolic nature of the harbourside, the date of the construction should also be addressed. The key to the new date of the harbour is linked to the felling of the oak posts, undertaken in the winter 1557/1558. The posts were new cuts that appear to have been fashioned for this harbourside. The posts would have been waiting to be used for 25 years if we use the historical date of 1583 given by Valkendorf for completing the harbourside. It does not seem economical to cut the wood and store it for 25 years. This leads to many suggestions; either the harbour wall was built in the early 1560s, or the harbour was built over a long period of time or perhaps Valkendorf claimed credit for the construction or reconstruction. It is believed by the authors that the wall is actually earlier, from the early 1560s, and the Valkendorf credit belongs to a reconstruction or refashioning of the walls in the late



1570s/or early 1580s. Obviously the harbour wall could not have been built all in one short phase, as the harbour still needs to function, but it is expected it could be built over a few years, and with the new construction of the Vejerhus and dredging in the late 1570s and early 1580s is it logical that repair to the walls also occurred around the same date.

The 2010 watching brief revealed that the brick walls of the G221 structure was built on stone foundations with munkesten red brick the main form used for the brick walls. The building group consisted of 7 subgroups SG218 (western foundation wall), SG219 (eastern foundation wall), SG220 (northern foundation wall), SG289 (demolition sequences of the *Vejerhus*), SG346 (outhouse), SG347 (structural elements) and 28 contexts representing the remains of the large brick and stone built structure. These quite well preserved structural remains which were found in the western half of Gammel Strand but close to its centre, represent the northern foundation in its full length of 9.5 m, but not full width (only 1.1 m), the 2.15 m of the c. 2.2 m wide western foundation and 1.76 m of the also c.2.2 m wide eastern foundation. The whole building was approximately 13 metres wide by possibly 18 m long (using measurements linked to the believed former harbour location in the Vejerhus area and archaeological remains).



Fig. 48 Plan of possible Vejerhus building, G221. Watching brief phase, 2010



The remains of a suggested lean-to/outhouse, SG346, located on the western side of the building and the possible remains of structural elements, which potentially could be room divisions, are supposedly related to the building.

The *Vejerhus* was an extraordinarily solid building, consisting of three floors, over which there was an attic. The upper floors and the attic were used as storage floors, while the lower ones were used as *Accisebod* for taxing wine and beer. Besides housing the *accise*-work, the lower floors also housed the town weight, used to calculate the amount of food goods shipped into Copenhagen through Gammel Strand. Weighing the freight was a job undertaken by the town weight master and his men whose job it was to ensure the correct *accise* (tax) was paid. The building was demolished in 1857.



Fig. 49 Northern foundation wall SG220. Comprises Lower course (SS4298), upper course (SS4350) and overlying brick structure (SS4453) C07\_20100729\_0318

Based on the excavation results and knowledge about the 19<sup>th</sup> and 20<sup>th</sup> Century activities in the area, it is likely that the building, even though truncated, may exist in some format beneath the asphalt road and square area at Gammel Strand as the preservation of the archaeology in this area is of high standard.

## New wealth in the area – finds from the harbour

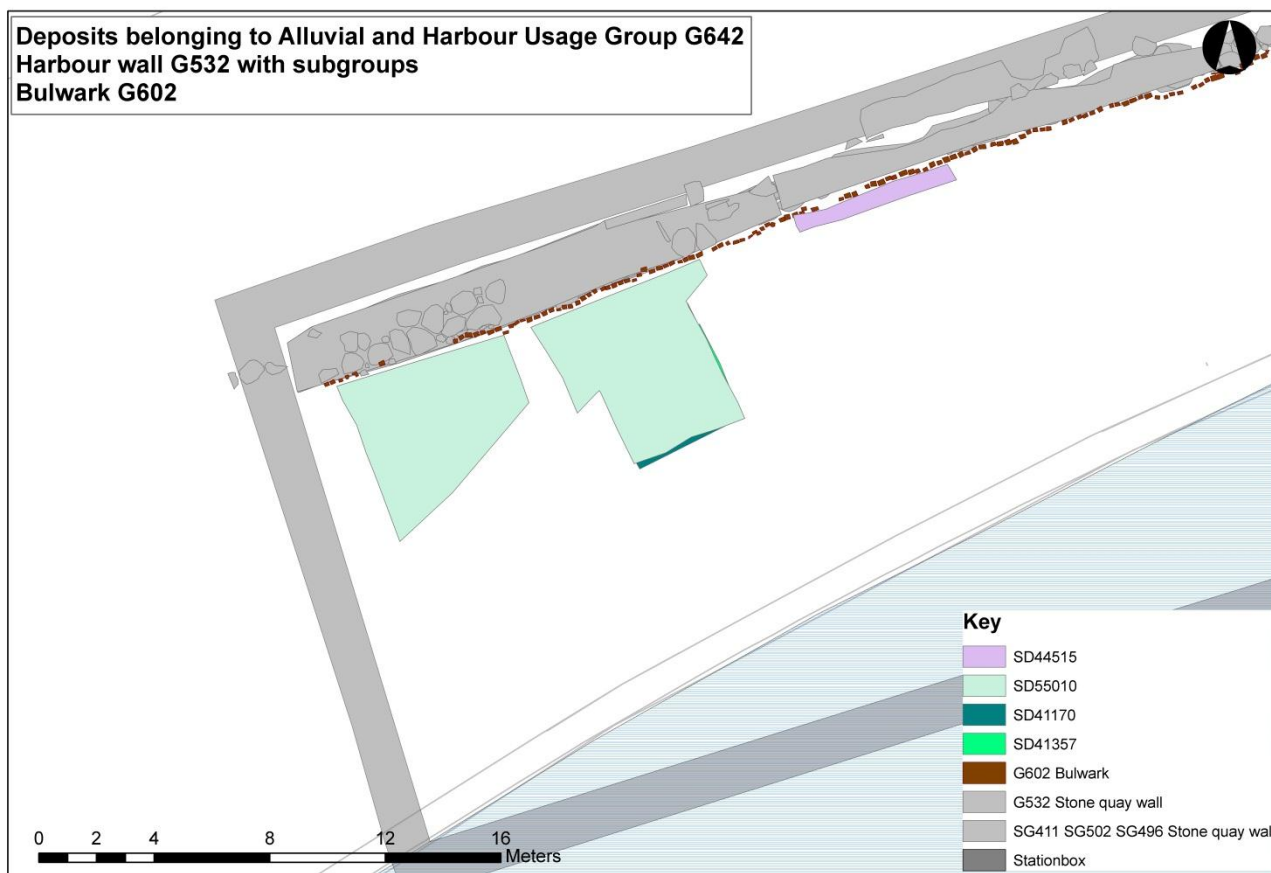


Fig. 50 Western end of trench G642. Individual deposits listed in key

The artefacts from Phase 2 were found within harbour activity and alluvial layers in G642, within structures G532, land reclamation layers behind the wall G435 and within usage layers of structures as seen within road G430 and harbour wall culverts G476 and G477

As discussed in Phase 1, various Medieval deposits at the bottom of the harbour within Groups G647, G678 and G667 were affected by dredging activity in the harbour in Phase 2. Some of the deposits that were fully enclosed under wall G532 were not affected by this activity, but groups such as G647 and G667 were placed partly beneath G532 and then continued into the Phase 2 harbour area. This meant that parts of the deposits were pure Medieval, and the other parts were dredged in Phase 2 and thus comprised Phase 2 finds.

Much effort was made to limit the amount of waste and rubbish thrown into the harbour, with people asked to report anyone throwing waste into the harbour in 1590, and in 1620. This situation had obviously proliferated for the creation of a *Brofoged* ("paving inspector") position in 1624 to manage the cleanliness of the streets so that dirt would not flow into the harbour.

Group G642 was a collection of layers that were formed by harbour activity and dumping at the base of the harbour at the western end of the Main Excavation and in the stairway trench. This dumping activity occurred mostly from the landward side which can be seen in section profiles. They were formed after wall G532 and bulwark G602 was in place, and overlay both parts of these features, mostly over bulwark G602 as it was located south of G532. These groups overlay the former Medieval deposits at the western end of the trench but were not seen at the central and eastern parts of the harbour due to dredging. They instead survived due to the construction of a harbour extension in the western area at the start of Phase 3.

### The artefactual remains from Phase 2

The finds from Phase 2, as with every other phase, represent the Copenhagener or the visitor to Copenhagen, its examples of everyday life, differential status, fashion etc. Unlike every other phase it appears more obvious that there is more evidence of the elite from the rubbish in this phase, which was expected from the location and the elite inhabitants who lived in the area.

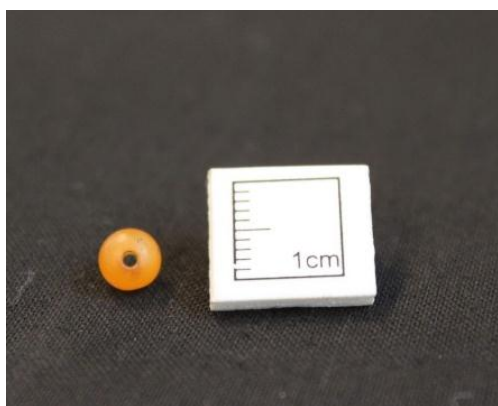


Fig. 51 Amber Bead FO203259, SD12455, G435. Retrieved from sieving PM12802. Phase 2. Museum of Copenhagen

New levelling layers behind and to the north of the harbour wall, and waste found dumped in the harbour over the wall or from ships represents the activity from which finds were retrieved. The artefacts comprise many imported Majolica, stoneware and Faience ceramic vessels from the Netherlands and the area that is now modern Germany with a few vessels from further afield. The glass vessels were mainly also from the same regions.

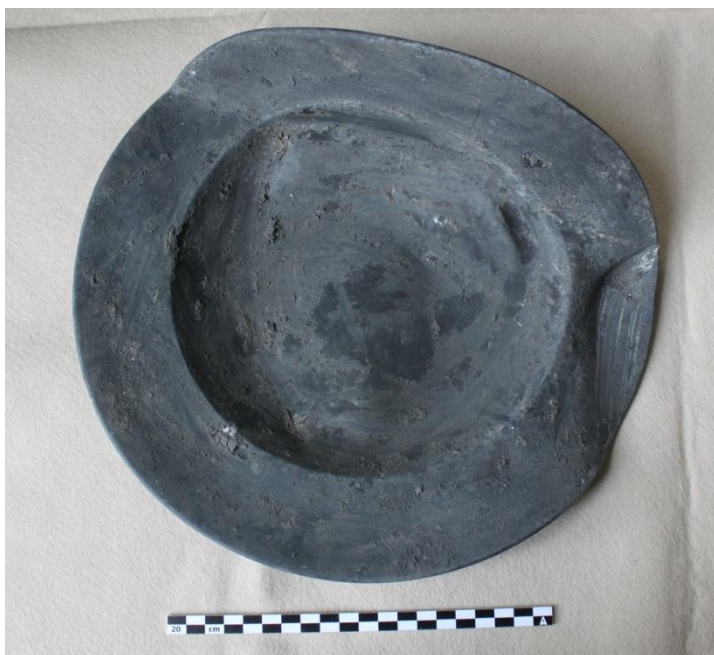


Fig. 52 Pewter plate FO 212784, SD55010, G642, pre conservation. Museum of Copenhagen

The act of dredging had mixed the finds in the harbourside pushing the artefacts into earlier, Late Medieval deposits in the harbour. As with Phase 1 the finds, behind and to the north of the wall and in the far west of the main trench under the later Phase 3 structure, were found in secure contexts and represent the societies of the time, such as the elites living at Gammel Strand. Here we see the continuance of consumerism, as in Phase 1, with Renaissance societies importing fine goods from abroad, mainly from around the Baltic, and also starting the new elite pastimes, such as smoking. The clay pipes from this phase are imported, mostly from the Netherlands, with some from England. The Netherlands



appeared to get a cultural hold on trade in Copenhagen in this period not only in artefacts but also in new architecture and this would propel Copenhagen into the globalisation period with their new luxury goods.

There were 213 ceramic sherds analysed from Phase 2 deposits, with some residual Medieval pottery and some Later Post-medieval period. A small amount of sherds date back to the later part of the 16<sup>th</sup> Century but most of the sherds related to Phase 2 are of typical 17<sup>th</sup> Century types. The majority of the sherds were Danish from Jutland representing regional trade. Dutch sherds were in the form of tin-glazed earthenware and white wares are well represented but it is mainly the redware kitchen utensils which dominate the Dutch ceramic imports. German imports are also frequent; it is generally composed of different kinds of stoneware from the Rhineland area.

The forms are varied and consist mostly of pots, jugs, mugs, bowls, and dishes but many subtypes occur. Much of the ceramics bear signs of use and in this way cannot be associated directly with the trading activity at Gammel Strand.

There were only a few Medieval residual sherds in this deposit, located within the make-up of the harbour wall G532 and within the foundations of the harbour wall culvert G477. These Late Medieval Siegburg sherds probably relate to disturbance of the underlying layers and layers behind the newly created Phase 2 harbour.

The glass from Phase 2 comprised 46% table glass, 30.7% bottle glass and 21.3% window glass and 2 % other glass. Within the deposits were some residual Medieval sherds and later Phase 3 pollution due to dredging in the harbour. The majority of the glass comprised used fragments, the result of use within the urban landscape rather than dumping in the harbour. It was in this period that the fine table glass arrived in large quantities in the assemblage, representing the new wealth flowing into Copenhagen. This was seen in the remains of *Pasglas*, *Röhmer* glass, Club beakers and *Humpen* glass and winged vessels imported from the modern Netherlands area, Germany and perhaps from Venice. This was also seen in the Metro Cityring excavations at Kongens Nytorv and Rådhuspladsen, though not in the same quantity in the same time period. The high status of the glass represents the wealth of the people living around the harbour; this is also suggested by the large size of the sherds representing primary dumping straight from households.

The clay pipes analysed in Phase 2 numbered 67 fragments from the prioritized contexts, and reflect a percentage of those collected from this phase. Many could not be narrowed in their date, nor could their provenance be seen. They reflect the start of smoking within Denmark and new trade networks linked to the manufacture of clay pipes and import of tobacco from the Netherlands.

## Land reclamation and harbour infrastructure

### Land reclamation

The land reclamation and levelling groups were located to the north of the Harbour wall Group, G532. They were a mixture of groups of backfills behind the wall for the new reclaimed land. Shortly after the first reclamation layers were added, more layers were deposited to increase the height of the ground surface and provide a flat base for the road, G430, and any other structures north of the wall. The Groups that represented this function were numbers G434, G435, G437 and G438. It was hard to differentiate which were reclamation layers and groups, and which were levelling layers, so they were called both types of deposits and groups. They comprised of urban dump material as suggested from the various types of finds



which represent the spectrum of the society. Examples include numerous redwares and greywares, the staple household wares within Copenhagen, and more elite stove tiles made from local clay but decorated with designs from Germany. The locations of these new land reclamation and levelling deposits are found behind the harbour wall G532, located geographically north of the excavations, and mainly in the Guide Wall areas. They were located on average between 0.25 m and 0.5 m OD.

**Fig. 53 Stove tile with a boy playing the flute. A Germanic mould on Sjælland fabric dating to 1480s. Representing urban rubbish within the land reclamation layers north of the harbour wall. FO202816, SD12455, Group G435. Museum of Copenhagen.**

## The Road

The harbour path/road, G430, was found in fragments within Trench 1, 2A and 3 in the Guide Wall Excavation. It was greatly truncated by later culverts and land ties from Phase 4 and modern truncations in Phase 6. The road spread over an area measuring 74 m, of which 24 m of the harbour road was seen. It was located at the average height OD of 0.55 m.



**Fig. 54 Working photo of Road Group 430 looking SW in Trench 1 of the Guide Wall trench. The photo comprises road deposit 11789 at rear and road deposit 10493 in foreground. C03\_20120723\_5083**

The road surfaces appeared to represent a harbourside road dating from the 16<sup>th</sup> and 17<sup>th</sup> Century. This was suggested from the stratigraphy and from the finds, i.e. clay pipes and pottery, embedded within the surface. Unfortunately the wood was too fragmented to be used for dendrochronology. The construction cut for the road truncated the construction deposit for the known upper reaches of Renaissance quay wall group G532. It was presumed from the artefactual evidence that the road construction occurred in the same phase as the harbour wall. Although the road was quite narrow at 1 m wide it was found to continue into the northern boundary of the Guide Wall trench. It is of the opinion that the road was wider than what has been exposed leading into an area not seen from excavation.

Evidence of many planks in the planking system, laid in crude fashion suggests a haphazard way of construction and maintenance.

Although some parts of the road contained embedded finds, it is expected to have been kept relatively clean. Around 1624, a Brofoged ("paving inspector") was appointed. The role was to manage the cleanliness of the streets so that dirt would not flow into the harbour as a large amount of costs have been spent repairing and cleaning the harbour.

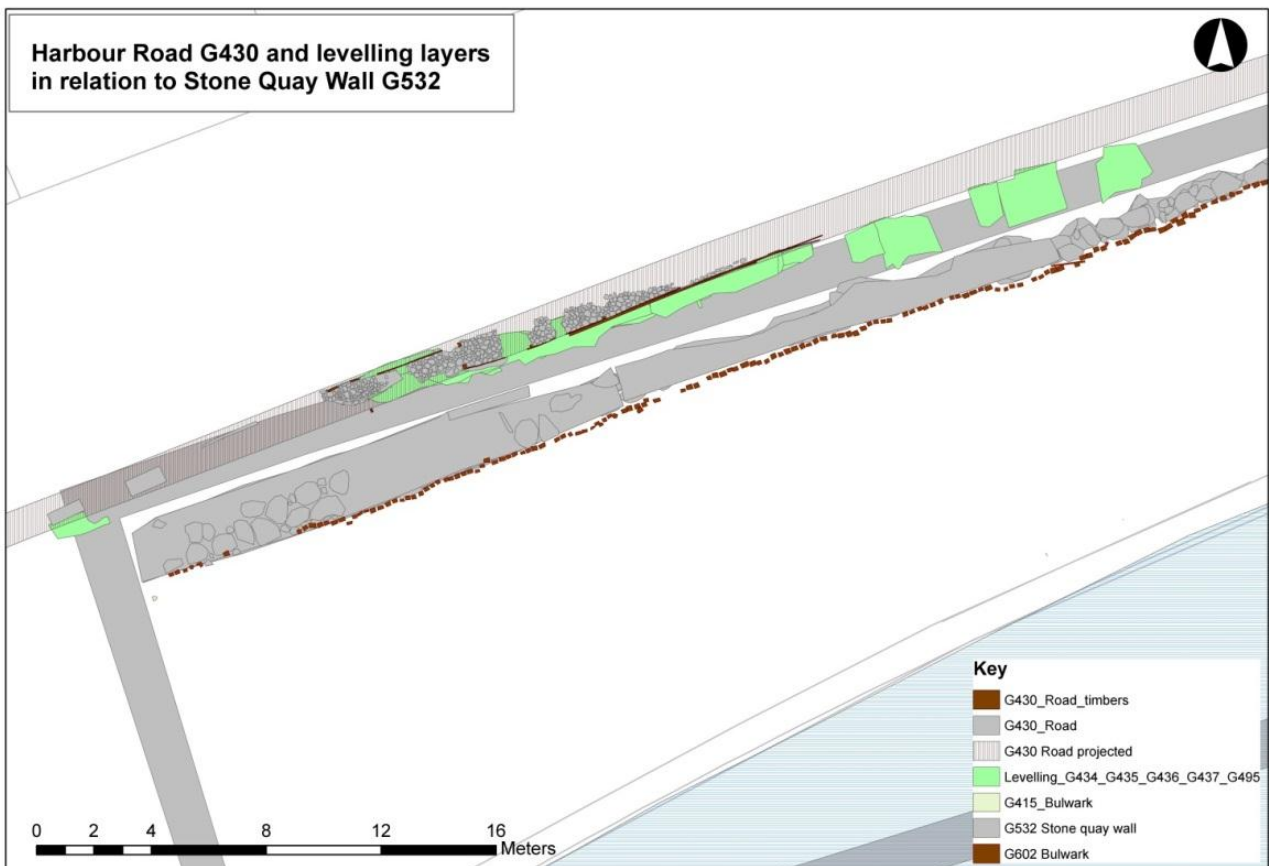


Fig. 55 Plan of western part of road G430, and underlying levelling layers

Group G430 comprised three cobbled stone surfaces, SS11789 in Area 1, SS10493 in Area 2A and SS14909 in Area 3. The road was orientated NE-SW and continues into the northern section of the Guide Wall trenches. The cobbled stone road comprised many unfinished stones measuring on average 0.2 m by 0.2 m by 0.1 m that were tightly compacted together. The road was built within similar construction cuts in the three exposed areas. The stone surface was held in place by planks to the north and south which were laid horizontally on their side. A series of stakes were then driven into the ground vertically to the north and south of the planks to keep them in position.



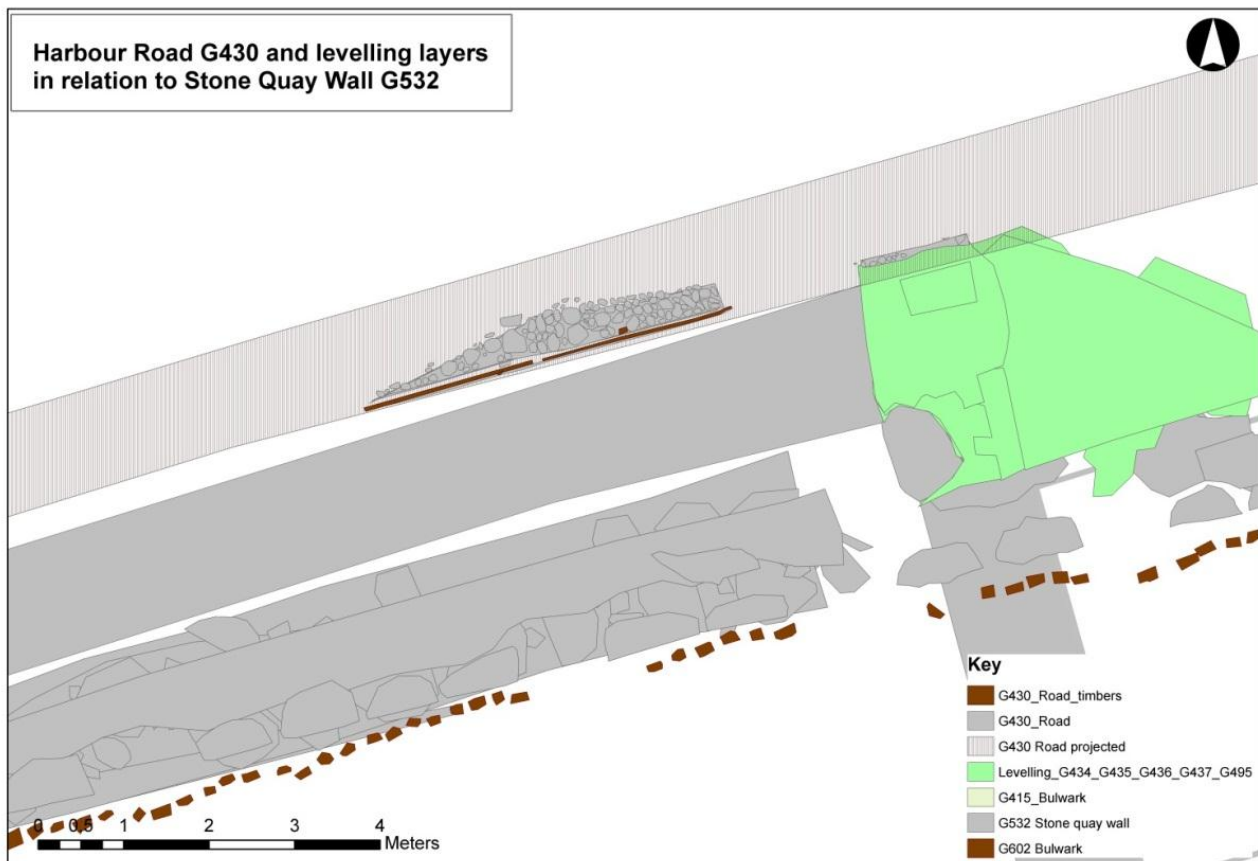


Fig. 56 Plan of eastern part of road G430, with the underlying levelling layers

## The end of Phase 2

The end of Phase 2 at Gammel Strand sees Gammel Strand obtaining big trading bodies, stationed at the harbour region. Copenhagen had already obtained special privileges to trade with Iceland in 1547 for a few years (at the end of Phase 1 period on Gammel Strand), and a loading area was assigned. The privileges were re-instated in the early 1600s.

A sign of increased trade is seen with the establishment of a sister town, Christianshavn, built to the south between 1606-19, awarded trade privileges for the citizens (KD I, nr. 421, p. 593-94). Slotsholmen, linked mainly to the monarchy and the navy, was increased in sized between 1615-20 with various military and royal structures as well as the building of Børsen, the first proper trading centre in Scandinavia.

By 1616 the Danish East India Company in 1616 was created, with the headquarters on Gammel Strand. This Company became very powerful in Denmark setting up the colony of Tranquebar (1620) in India to allow trading with India and the Far East. The new goods coming into Copenhagen led to the transformation of the whole harbour area within Copenhagen and expansion of the harbour region in Phase 3 at Gammel Strand.



# The Mid to Late Renaissance harbour; Phase 3, 1620s-1680s

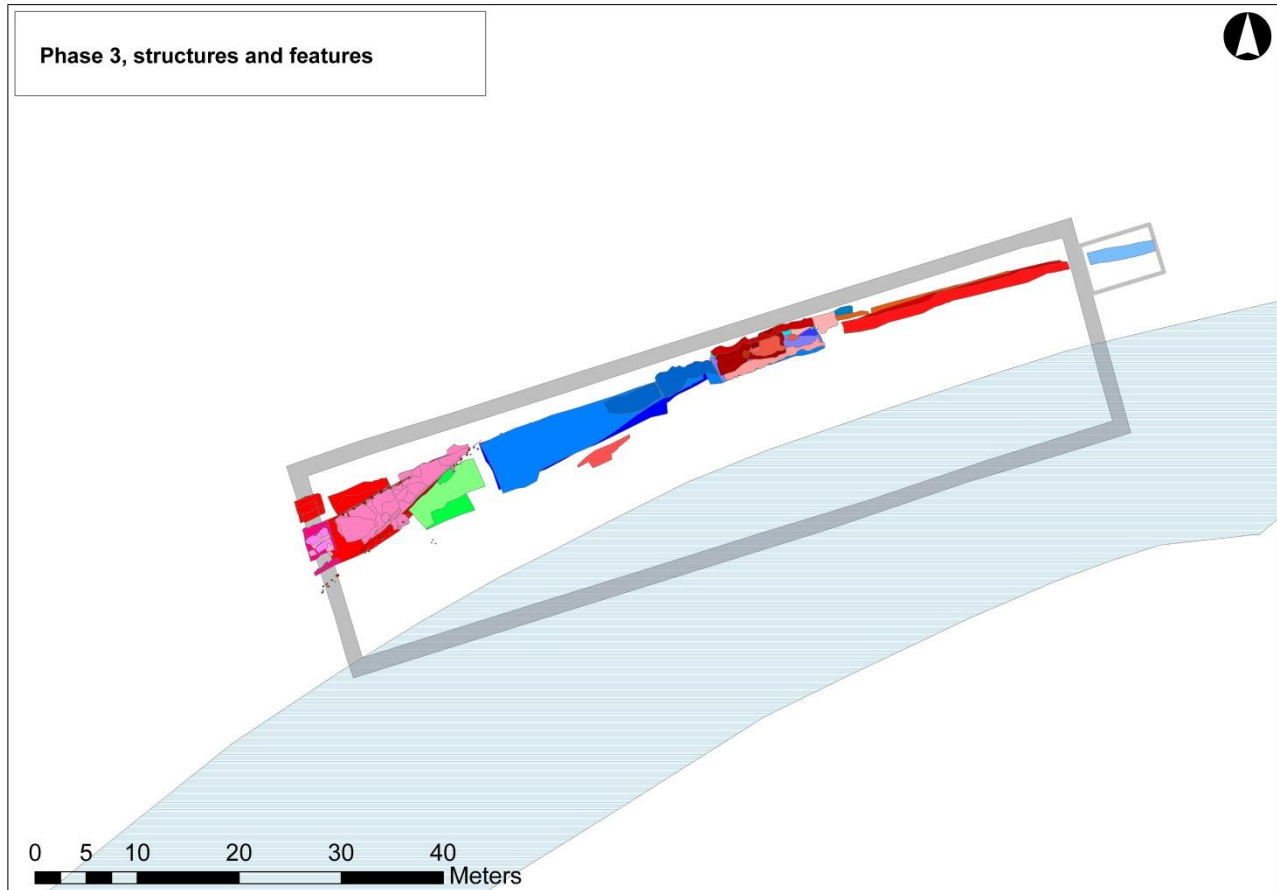


Fig. 57 Plan showing all Phase 3 structures and features

## Introduction

Phase 3 represents the Late Renaissance period in Denmark (and end of the Early Post-medieval period in NW Europe) on the Gammel Strand Metro Cityring project. It featured the construction of two large wooden harbour structures in the western area of the Main Excavation trench, maintenance and use of the harbour between the 1630s-1680s. The main activity for construction was located in the western part of the harbour in the Main Excavation trench. These posts and bulwarks (from G674 and G648) were revealed within Trench 1 of the Guide Wall trench and the area west of the baulk in the Main Excavation trench. As discussed in the previous chapter, Phase 3 consists of the second part of the Renaissance harbour use and continues the Globalisation period with Copenhagen where there is more evidence of a higher number of luxurious goods being imported from outside of Europe into Copenhagen via Gammel Strand. The phase ends at the end of 1680s which is shown by the removal of stone from the harbour wall to be reused elsewhere, and discarding large quantities of rubbish into the harbour for the beginning of land reclamation in Phase 4.



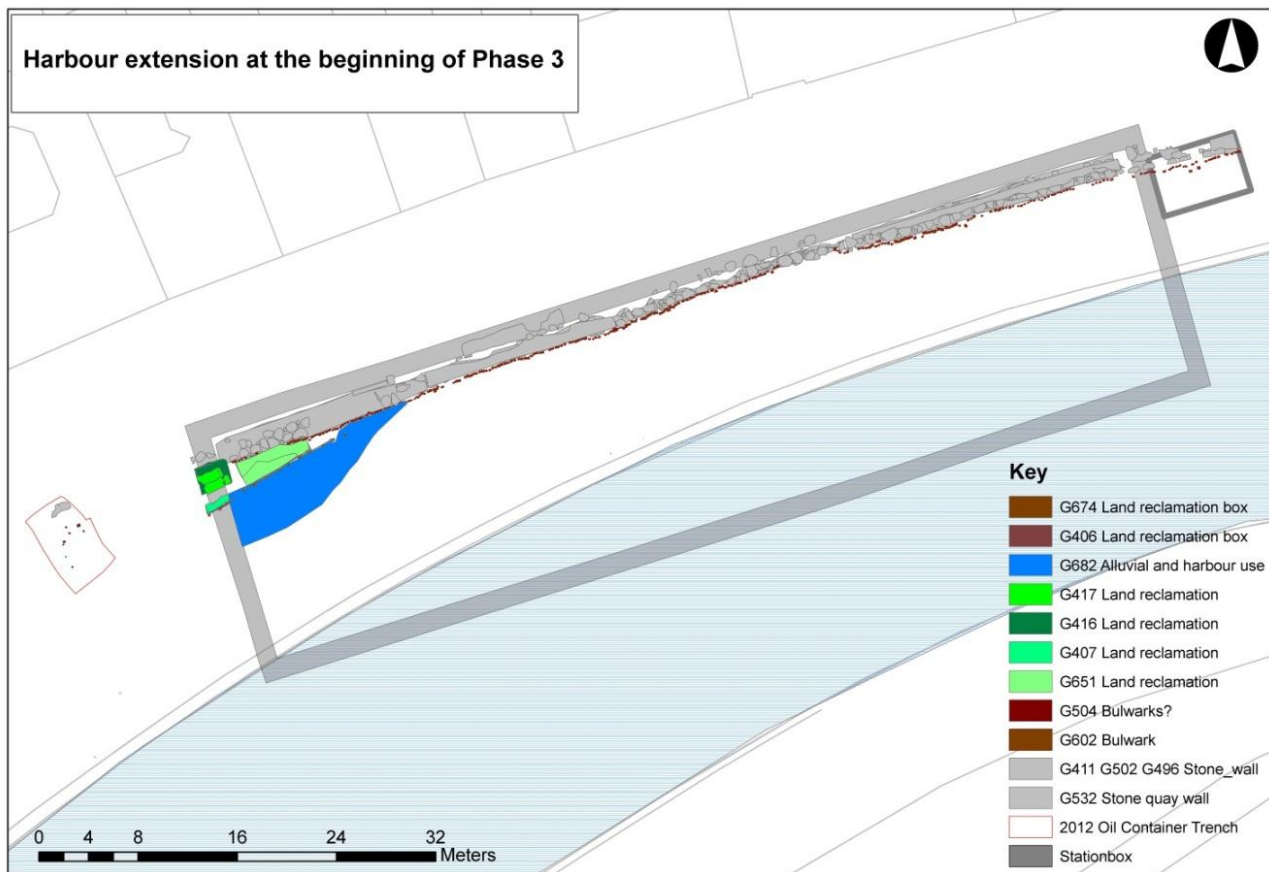


Fig. 58 Plan showing activity in Phase 3 in the mid 1620s.

### The early bulwarks and land reclamation

The first action in Phase 3 was the gradual creation of a new harbourside. This began with the construction of a land reclamation bulwark or box to start the movement south. The land reclamation bulwark was found in two periods of fieldwork, Group G406 in the Guide Wall excavation, and G674 in the Main Excavation. The whole structure measured 12.37 m long by 0.4 m in width and up to 3 m in height. It functioned as the eastern part of either a short-lived reclamation box/fence for the expansion of the area south in the western part of the excavation.



Fig. 59 Photo of reclamation fence G406, looking SW. Guide Wall excavation 2012. C03\_20120725\_5207

The top of the western section of the fence, G406, was uncovered at 0.8 m OD. It measured 2.72 m by 0.75 m and was exposed to the depth of 0.6 m. The group comprised 5 vertically set posts and a horizontal plank to form the fence. The use of the fence G406 was short-lived but still long enough for the formation of alluvial/usage deposits created to the south, as seen with G682. This mini phase was short-lived as 4 metres south a proper harbourfront was constructed, built into alluvial deposits and natural sand. The area behind was backfilled with urban waste, as seen from Group G651.

The top of the reclamation fence in the Main Excavation trench was located between 0.02m and 0.72 m OD, and measured 9.65 m long by 0.35 m wide. It comprised of posts up to 3 m long and 0.2 m wide. The structure in this area comprised ten vertical rectangular shaped posts, three horizontal planking systems belonging to ST55660 and eight support posts driven into deposit below. The support posts were tangentially shaped and very thin at 0.04 m thick. They were attached to the posts and the support posts by nails. The fence line was orientated NE-SW, nearly reaching wall G532 at the NE end.



**Fig. 60 Reclamation Fence G674, Looking N-W. Note, the bulwark was constructed in two different parts, and that bulwark G602 may have been removed to build this structure. C03\_20140624\_11187**

All sections had been nailed through the rear support planks into the front support beams. This indicated that the back, the NW facing side of the bulwark, was exposed completely prior to backfilling. The top level of planking was thought to have been truncated during demolition phase of G674 bulwark, presumably at the end of Phase 3. Surrounding these posts to its southern side was sub group SG682 from the bulwark group. The alluvial type deposit was formed by usage around the structure. The timber has since found to have been fashioned from spruce and imported from an unknown source





Fig. 61 Working photo of the excavation between G602 and G674 looking NE. Note the majority of the backfill has been removed. C03\_20140624\_11196.

Dendrochronological analysis was undertaken on 18 posts and planks from G674. Of the samples, only the spruce (used for planks and some posts) was able to be dated. None of the oak posts were successful. The oak timber probably came from southern Scandinavia, perhaps from Skåne, Hålland or Sjælland. The spruce was found to have been felled in the winter of 1625/6.

### Land reclamation

Sub-Group SG651 and group G407, represent a group of backfill deposits behind the bulwark (G674 and G406) for the purpose of reclaiming land. The groups consisted of many different deposits comprising a mixture of urban rubbish, manure and the remains of the upper parts of harbour wall, G532, which was discontinued in use in this area. The remains of other buildings from the city had also been dumped amongst the waste reflecting many levels of society. Land reclamation sub group 651 comprised seven deposits spread over an area measuring 6.12 m long by 1.9 m wide and 1.7 m deep, and was located, at the top, at -0.25 m OD. Group 407 was located slightly higher up at 0.46 m OD and measured 2.51 m by 0.73 m by 0.2 m. Of particular interest within G407 were the discoveries of rat bones that rarely survive. The presence of goshawk bones reveals that there were wealthy Copenhagen inhabitants who were able to own birds of prey and were also allowed to hunt.

### The intermediary harbour usage

The alluvial and usage sub group, SG682, was located to the south of bulwark G674. The sub-group, SG682, comprised a single large usage layer formed by activity when the bulwark Group G674 was open to the elements and the sea. It was also affected by the building of the later bulwark G648. The deposit was a dark

brown grey silt deposit with some sand; it measured 6.85m by 4.44 m by 0.25 m thick at the greatest extent. It comprised pebbles, stones, bone and wood with medium amounts of CBM along with ceramics, iron, slag, bone, glass and leather dating to the late 16<sup>th</sup> to the early 17<sup>th</sup> Century. The deposit was found to be thicker next to the bulwark and thinner as it moved southwards. This was probably due to the process of fluvial activity and people throwing in rubbish from the bulwark. Physically the group overlies the lower parts of Bulwark G674.

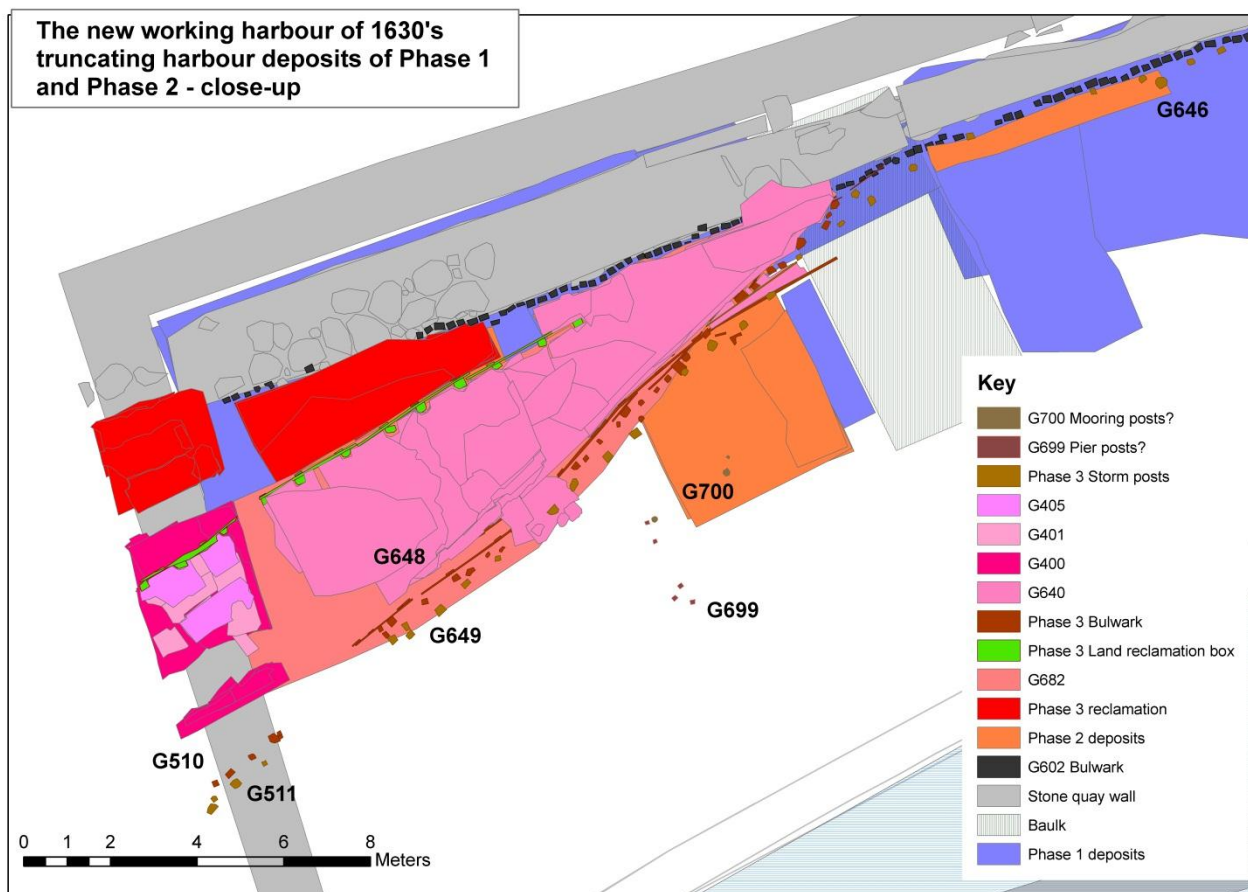


Fig. 62 Plan of the 1630s new working harbour G648, with associated deposits.

### The western harbour extension

The next activity was seen in the creation of the harbourfront G648, the wood used came from trees felled in the mid to late 1620s. The new harbour bulwark was located in the Main Excavation trench on a NE-SW orientation, leading in from the western section of the 2012 Guide Wall trench, which joined into the earlier stone harbour wall G532 at 18m from the western end of the trench. When the bulwarks were completed, they were backfilled with rubbish from the city (G640).

Built in front and to the south of the new harbourfront G648, wall G532 and bulwarks G602 from were storm posts (G511, G646 and G649) these were added to protect the harbour and provide temporary mooring.

The new harbourside and reclamation fence was a mixture of oak and pine imported from areas within Denmark, Norway and Sweden, with most posts and planks newly felled. The whole construction project



seemed to have occurred around the same time in the mid-1620s according to dendrochronological dates. The main harbourside was also refurbished with the addition of storm posts which were pushed into earlier alluvial deposits of Phases 1 and 2. The storm posts were imported oak felled in 1637 and 1638 with the new western harbour comprising oak from Norway and the central and eastern area comprising oak from Öland. The different provenance of the storm posts is interesting and may be represented by many factors, without a confirmed answer by historical documentation. They may represent different shipments; different companies refurbishing the harbour or simply using the next two shiploads to furnish the harbourside.

### The new bulwark

Bulwark G648 originally comprised a total of thirty-six vertical posts and seven horizontal timber planking structures. An additional five planks and posts were added later for repair. The structure measured 16.67 m long by 1.1 m wide by 1.36 m high and it was located at the levels of 0.14 m to -0.3 m OD. The vertical posts ranged between 3.5m long by 0.20m by 0.20m. They were fashioned from oak, boxed heart style, fairly rectangular in shape with one flat and one pointed terminus. They were usually pushed into alluvial deposits from Group 642 rather than having a whole purposely dug for them. When uncovered, most were still vertical, but some had warped or were now at an angle due to the weight of the harbour expansion to the north.



Fig. 63 Harbour wall G532 to the far left of photo, Bulwarks G674 near left, backfill group G640 centre and bulwark G648 right of photo. Looking NW. C03\_20140616\_10952

The horizontal planking structures were fashioned from pine. They were between 1 m to 2 m long by 0.1 m thick and 0.2 m wide. They were set behind the vertical posts, attached by nails, and placed or added in



layers. Leaning into these planks were support posts, positioned at an angle. The support posts were fashioned from oak and spruce, with oak being the dominant type. The bulwark was in use from the late 1620s to the late 1680s when it was finally replaced by the new Phase 4 harbourside



**Fig. 64** Close up of harbour bulwark G648 next to the baulk. The photo is centered on an area of repair shown by horizontal plank ST41884 and three vertically set planks (ST39435, ST39413, ST55582) used as the plank's support. The photo is looking N. C03\_20140613\_10920

### **The backfills behind the new bulwark**

To solidify the new harbourfront, soil had to be placed behind the new harbourfronts which in turn lead to new land creation in the harbour region. Group G640 represents the dumping of waste behind the harbourfront G648 and groups G400, G401 and G405 behind group G510. The deposits were mainly created by dumping backfill in the area between bulwarks G674 and G648, and in the eastern area between the Renaissance harbour wall G532 and bulwark G648. This occurred mainly in the 1630s and 1640s, when structure G648 was first built but the upper deposits were probably affected when creating the new harbour in Phase 4.

The group (G648) was located in an area measuring 14.97m by 3.22m by 1.5m deep. It consisted of a total of twenty five deposits of various sizes, rapidly dumped to backfill an area between the new harbourfront and a land reclamation fence. Tip lines were visible in the profiles of the groups and it was evident that deposits were not able to slump and settle.

The majority of the layers were mid brown silt with some sand, comprising mixed urban waste with finds material such as clay pipes, leather, animal bone, ceramics glass and textiles. The deposits were also



organic in places with the remains probably representing manure and other waste from the streets, which were seen in deposits SD55586, SD40743, and SD56082. These were a mixture of cess and horse manure representing everyday life from the city. Certain deposits, as in SD54972 and SD42941, contained primarily building waste/rubble probably from either the dismantling from earlier stone harbour wall Group G532, or from demolished buildings. Deposit SD55783 contained less building material, but comprised a large quantity of mortar representing excess materials from building structures. There were three highly organic deposits SD55586, SD40743, and SD56082. Most of the layers were created by the late 1620s, but they were probably affected by levelling and the placement of land ties and buildings in Phase 4.

Fig. 65 Well preserved stove tile depicting Judith with the head of Holofernes flanked by Adam (not preserved) and Eve and with a depiction of the Veil of Veronica, FO213816 and FO213811, SD55586 (G640). Museum of Copenhagen

## The Storm posts

Placed in front and to the south of the bulwark groups, G510 and G646, the harbour wall, G532, and bulwark group G602 were storm post groups G511, G646 and G649. All three storm post groups fulfilled the same purpose but were assigned different numbers as they related to different parts of the harbourfront. It is believed that they were all pushed into the underlying deposits and the harbour base around the same time in Phase 3, perhaps the early 1640s. The purpose of these posts may be varied. They may represent extra protection of the harbour wall, extra ties for ships or perhaps they represent harbour locations for docking. All three groups span an area 76m long in the Guide Wall excavation and Main Excavation trench. It is suggested that these posts were in use until the end of Phase 3 in the late 1680s, and were then covered over with backfill for the construction of the harbour in Phase 4.

The posts were mainly rectangular shaped with a pointed tip and in good condition due to the preservation conditions. Post ST34393 comprised a fish basket fashioned from wicker, FO219487, which was later attached to the post. It is believed that the basket represents storage of caught fish, rather than a fish trap.

The majority of the posts from G649, located outside timber bulwark G648 were pine, with confirmed to have been felled, mainly, in the winter between 1639 and 1640, and imported from Middle Baltic region, perhaps from Gotland/Eastern Sweden area. The pine posts from G646 were felled in the winter of 1642/43, and probably transported from Norway, from the Oslo region. These posts were located directly south of the stone harbour wall G532.

## The usage of the harbour, 1620s-1650s

As mentioned in chapters for Phase 1 and Phase 2, a mixture of dredging and other harbour activity affected the soil deposits at the harbour base. It is not until the post 1650s that we can visibly distinguish new deposits at the harbour base in the central and eastern areas. What was largely seen in those areas is the continuance of Phase 1 deposits, but with Phase 2 and Phase 3 finds pushed into the deposit and added to the Phase 1 assemblage. This is viewed in Fig. 68 where the deposits in the harbour from Phases 1 to 3 are shown. It would be wrong to remove the finds results from the Phase 1 assemblage, so they are kept in the Phase 1 deposits, with the knowledge that mixing of finds from Phases 1 to 3 have occurred.

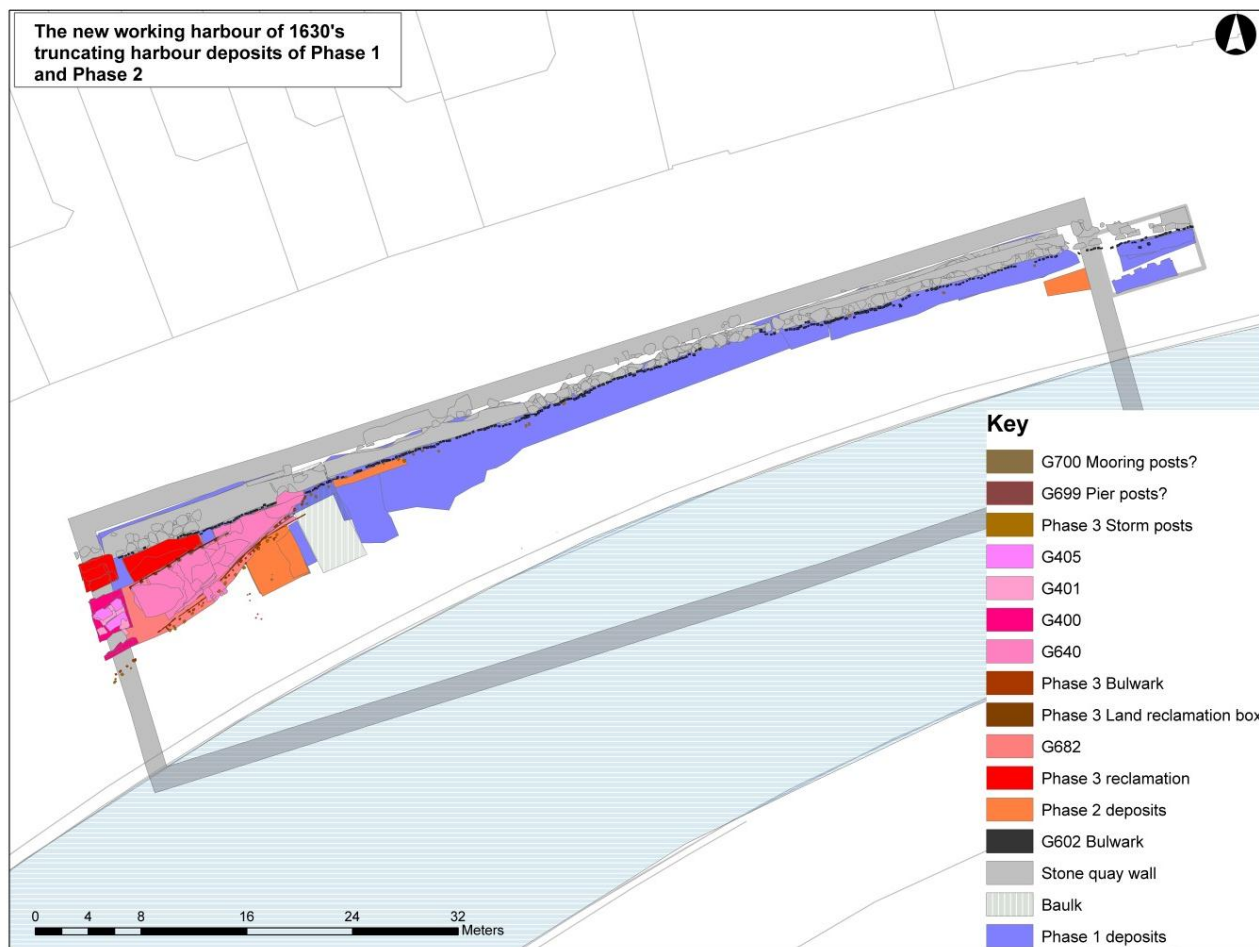


Fig. 66 Plan showing harbour activity from 1620s-1650s. Note the re-use of Phase 1 and Phase 2 deposits at the harbour base due to harbour dredging.

## Maintenance of the harbour wall, and cleaning of the harbour base

Historical records relating to Gammel Strand in Phase 3 relate to two main topics; cleaning of the harbour or preventing the harbour being filled and the maintenance of the harbour. Unless a specific building on Gammel Strand area is mentioned in these records, they may not actually relate to the Gammel Strand area but at least they provide an insight into activity. Records from 1633, 1635, 1637, 1639 and 1642, running for five years state the continuance of the *accise* tax, in total fourteen years of work, to be used on maintenance and repair of the harbour. This obviously links well in the time period for the construction of harbour extension G674, harbourfront G648 and G510 and storm posts G511, G646 and SG649 from the



Main Excavation area. In 1680 people living next to the new canal were told to fix the harbour when maintenance is needed, which implies that all areas had a responsibility to provide upkeep of the harbour next to their properties.

Regarding the cleaning of the harbour, in 1658, due to moving of the stream at *Løngangen*, the citizens asked for it to be cleaned up. This, amongst other issues led to the king appointing *Henrich Bielcke* in 1663 to keep an eye on the harbours and make sure they were equipped with bulwarks and not filled up with dirt and sand as has happened. A harbour tax is used in 1665 for five years to support the harbour. In 1671 a regulation was placed forbidding the loading and off-loading of ballast or throwing dirt out into the harbours or canals.

The mid to late 17<sup>th</sup> Century in this phase is mainly represented by the build-up of rubbish next to the harbourfront and to the south of the harbourfront. Many of the lower deposits of groups; G664 to the west, G663 to the centre and G666 to the east of the main trench were sand rich layers coupled with what appears to be short bouts of the dumping of urban rubbish over the harbour wall. This process of dumping changes at the end of the phase with thick deposits of manure, waste, building material and food remains created by throwing rubbish into the harbour showing the end of the harbour use. The anaerobic soil conditions created from this activity led to the preservation of organic artefacts revealing knowledge of the Copenhageners and the visitors in the period. This will now be discussed in more detail below.

### **The decrease in maintenance of the harbour**

The final phase of the Renaissance harbourside dates from the late 1640s to the late 1680s when it was partially dismantled and a new harbour was created to the south. The deconstruction deposits then merge into the Phase 4 construction deposits for the construction of the new Phase 4 harbourside. This was not so apparent when excavating the areas, and near impossible to distinguish in the post excavation phase, but it is evident that these groups consist of harbour usage, deconstruction and construction with some deposits continuing into the early 1700s.

It appears from this phase that the harbour was not as frequently cleaned as in the earlier part of Phase 3 which is shown by the creation of large usage groups at the harbour base. This was apparent in the western area of the trench with G664, central area of the Main Excavation trench with G663, and in G666 at the eastern area. This occurred despite of the laws and regulations added to the harbourside from the 1660s.

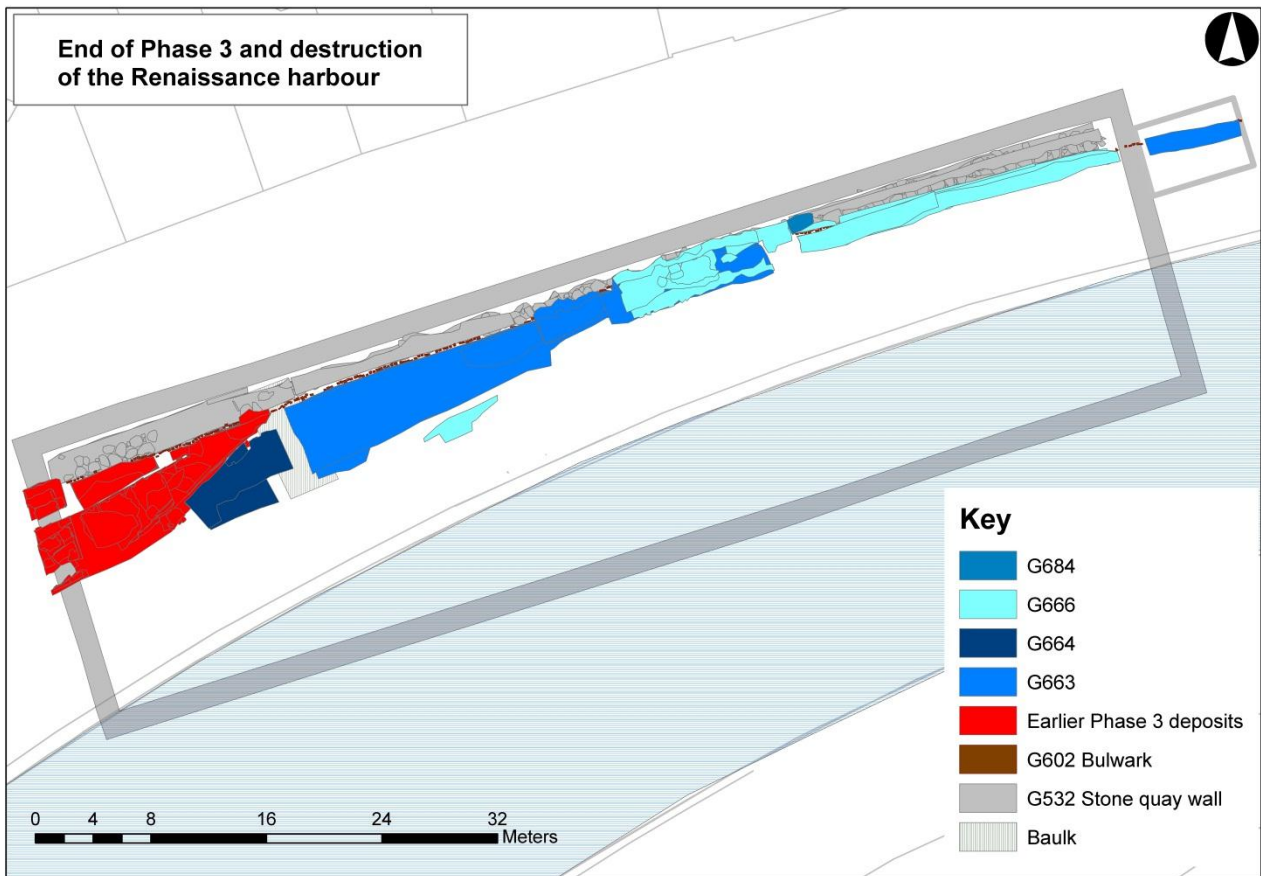


Fig. 67 Plan showing the end of Phase 3 and the destruction of the Renaissance harbour.

Usage phases of the harbourside from the 1640s were then represented by alluvial group G664 in the west, the lower deposits of G663 in the central area of the main trench, and the lower layers of Group G666 in the eastern area of the trench. At the end of the phase, in the 1680s, the use of the Renaissance harbour ends. The upper levels of wall Group G532 were removed or robbed, as seen in G682 although some of these stones were found dislodged south and north of the wall in various destruction deposits. To prepare it for the construction of the Phase 4 bulwark the area to the south of Harbour wall G532 and bulwark G648 became a dumping area for urban waste. This was represented by G620 in the west, and the upper levels of G663 and G666 in the centre and east of the main trench and the stairway trench. As expected, the end of the phase merges in with Phase 4, so the deconstruction deposits can also be viewed as construction deposits.

## The west end



Fig. 68 Plan of G664 and the deposits within the group

The west end group comprised two deposits. The lowest layer (SD38150) represents a fairly large deposit,



Fig. 69 Deposit SD38150, from G664. Note the large quantity of shellfish from the usage deposit. Looking N. C02\_20140526\_9538

of almost pure sand, excavated immediately to the seaward side of the southernmost timber bulwark. Where SD38150 met the timbers of the wooden bulwark, clusters of mussel shells were found immediately around the posts. This strongly suggests the area was open to the sea and that this deposit was washed in. The small patches of mid brown silt revealed evidence of many cultivated plants from the city.





Fig. 70 Sherd from a Chinese Kraak porcelain bowl, c. 1580-1644, FO 216855, SD38150, G664. Museum of Copenhagen

Overlying deposit SD38150 was deposit SD40474, both physically and stratigraphically. Deposit SD40474 was very thick and the matrix was very organic. When first uncovered it was black but later turned brown after oxidization and comprised a lot of clay. It contained a large quantity of animal bones, especially jaw bones. The deposit ended in being used in the late 1600s.



Fig. 71 Leather gun holster from the 17th Century, FO 213540, SD40474, G664. Museum of Copenhagen

### The central part

Group G663 was located in the central area of the main 2014 excavation and within the stairway trench of the 2014 Main Excavation. Within the main trench the group was spread over an area measuring 35 m by 5.65 m. The location of the deposits varied in height; in the northern area from -0.24 to -0.8 m OD, and to -1.1 m to the south. In the stairway trench one deposit is represented in this group measuring 6.5 m by 1.47 m by 1.47 m.

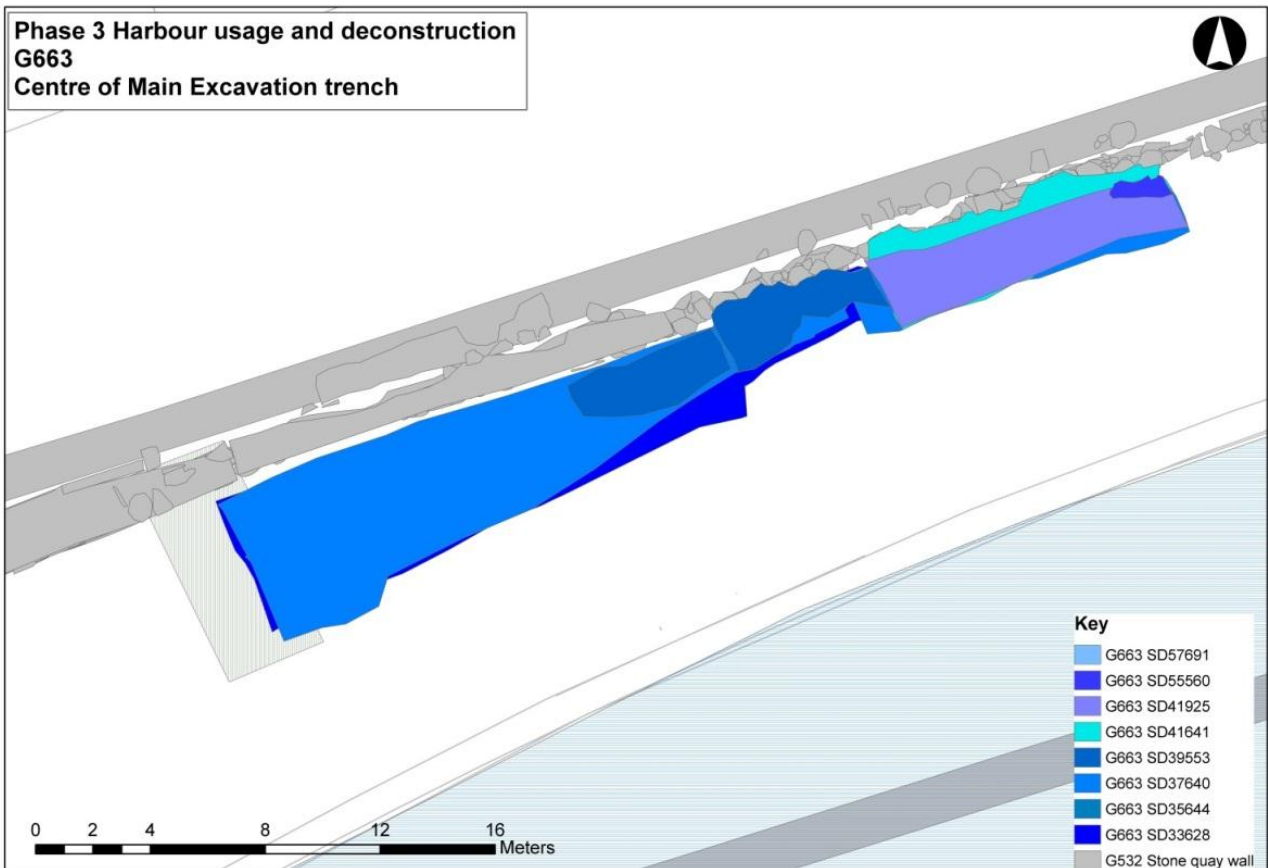


Fig. 72 Plan showing the contexts within G663, Main Excavation trench.

This group portrays usage of the harbourside from the mid to late 1600s and is represented by six deposits which consist of a mixture of alluvial, slow accumulating layers and sporadic dumping of waste and demolition material at the end of the Renaissance harbour use. The deposits ranged in thickness between 0.3 m and 1 m and between 1.5 and 4.5 m wide. They were rich in organic finds due to the anaerobic soil conditions and consist of assemblages full of ceramics, clay pipes, animal bones, organic and other special finds.



Fig. 73 Left: FO 218778. Decorated Siegburg ware. SD33628, G663. From the eastern part of the central area. Right: FO 214424 Winged goblet, 17th Century (right). Perhaps from the Netherlands. SD37640, G663.

**An interesting deposit**

The first deposit in this group, SD37640 extends over the whole central area at 34 m by 5.6 m by 1 m, shown in plan. It consisted of dark brown silt and clay and represents a long period of dumping over perhaps 40 years. Deposit SD37640 comprised many layers of mussels and fishbone that seem to have accumulated naturally in the organic layer. The mussels were whole so they were living in the harbour. The deposit comprised a large quantity of urban waste with finds from all over northern Europe as seen in the glass, ceramic and stove tile assemblage. The large collection of clay pipes were found to have been



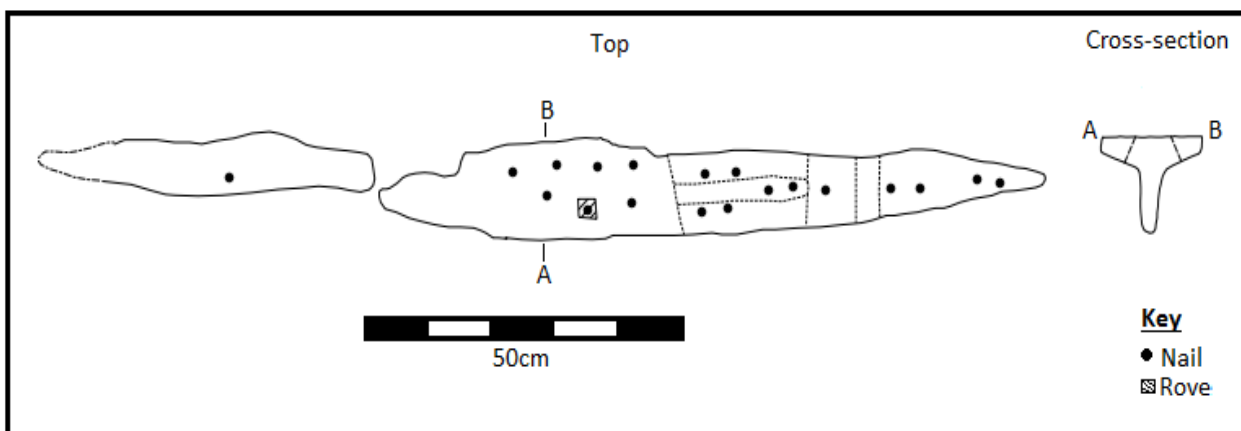
imported from the Netherlands although some English pipes were registered (FO 212998 as an example). Special finds were represented from more coins, household materials and fishing artefacts.

**Fig. 74** Leather book cover with imprinted floral decoration, after conservation. FO 213533, from SD37640, G663. Museum of Copenhagen



The deposit also contained remains of a ship with an oak timber beam Keel FO218893. The keel was in two fragments measuring 1.6 m long with 18 square iron nails still present. The keel was believed to be from either a small rowing boat or clinker built sailing vessel. 5-10 m in length.

**Fig. 75** FO 212520 Christian IV coin. Photo of Obverse with minting date of 1644, pre conservation. Museum of Copenhagen.



**Fig. 76** FO218893 Reconstructed keel. Dashes on cross-section show angle of nails. SD37640, G663. Drawing by G. Dickinson.



### *Destruction of part of wall G532 via a cannon ball*

It is believed that at some point in antiquity, perhaps in the mid-late 1600s that the plank repair G704 collapsed and posts from G701 were pushed away, hence their discovery at different angles to other posts from the earlier G602. This area was then further backfilled and covered over at the end of Phase 3 and beginning of Phase 4. It is not known what caused the plank repair G704 and repair posts G701 to collapse, but within the soil deposit SD55560, cannonball or grenade FO212798 was found. This deposit overlay the planks, posts and lower soil deposit SD41925, and arguably the impact of the cannon ball smashed the wall, posts and planks and led to the partial creation of deposit SD55560, which then continued to be formed in the later 1600s.



Fig. 77 Iron cannonball FO212798, from SD55590, G663. Pre-conservation photo. Museum of Copenhagen.

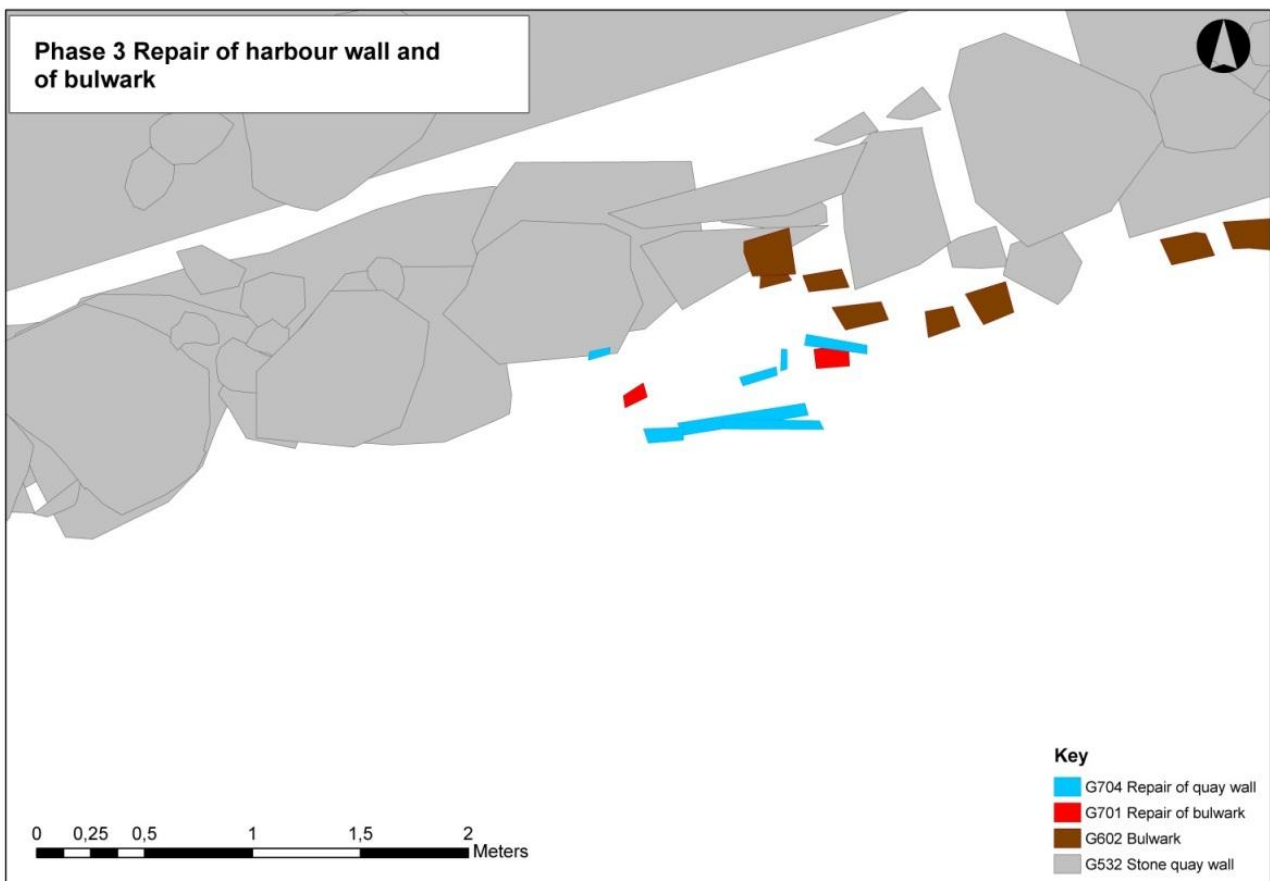


Fig. 78 Plan showing activity linked to groups G701, G704 which may suggest repair of wall G532 and bulwark G602.

### The eastern end

Group G666 comprised thirteen deposits. The group was a mixture of urban dump deposits within the harbour and the demolition of wall group G532 in the form of mortar dumps, brick dumps and foundation stones merging with construction activity with reclamation layers for Phase 4. This phase dates from the mid 1600s until the late 1600s. The deposits were either found south of the wall G532 or physically above the remains of former wall G532.

The group was located in the central east and eastern area of the Main Excavation trench and measured 59.85 m by 3.89 m by 1.5 m to 2 m deep, with highest points of the groups between c.0.1 m OD to the north, to -1.2 m OD in the south, reflecting the slope of the landscape and tipping style of the dumping procedure.



Fig. 79 Left: FO217959. Post-medieval lead buzz disc, SD39102, G666. Right: Part of Portuguese faience vase or jug? Dates from 1575-1650. FO 216631, SD39811. G666. Photos by the Museum of Copenhagen

In general the artefactual assemblage in G666 was uniform in nature with 403 clay pipes mainly from the Netherlands, with a few from England. The glass was imported from mainly the Netherlands and the area that comprises modern Germany. The pottery was a collection of Danish redwares and *Jydepotte*, with light and redwares from the Netherlands and Westerwald stonewares from Germany. Only a few fragments were represented from tableware, mostly in the form of faience and majolica. The metal finds comprised a few corroded coins and unidentified corroded metal objects. The nature of the deposits, comprising of mostly rubble and demolition material was represented from a standard late 17<sup>th</sup> Century urban assemblage. It is presumed that this urban waste was brought into the area and dumped as it would only represent household or storage ware from the prestigious structures in the area, not the exquisite tableware.

### The end of the Phase 3 harbour

The final act within the phase is shown by the demolition and robbing of the harbour wall. Very little of the wall is dumped into the harbour as the stone was of high standard and would have been robbed and reused, as seen in the foundations of structures in the next site phase. Large quantities of brick and mortar from the upper reaches of the wall were mainly thrown into the harbour, as they were not deemed so important to keep. It is expected that complete bricks were reused elsewhere.