7.5. Phase 5. The Final Working Harbour, 1820s-1870s

7.5.1. Summary

There were several contemporary episodes of construction at the beginning of the 1820s on Gammel Strand which mark Phase 5 of the harbour development. This began with a series of land reclamation dumps, G634, at the western end of the Main Excavation trench, to stabilise the southern edge of building G707 prior to the deconstruction of the previous phase of bulwarks and the construction of new bulwarks further south into the harbour. This episode of levelling could be contemporary with the reported construction undertaken in the area by A.H. Seith in 1823 (see above Chapter 3), but this could not be corroborated archaeologically.

7.5.2. Introduction

The new phase of harbourfront rebuilding used the same method of land tie and bulwark construction seen in Phase 4. The bulwarks from this phase were only fully extant in the Stairway trench to the east of the Main Excavation trench, although some partial remains were also uncovered underneath the later 1880s wall. The land ties associated with the new harbour front were extant throughout the Main Excavation trench; however the connections between most of the land ties and bulwarks of this phase were destroyed during the construction of the final phase of harbour development. Two pits, G579 and G670, dug into the backfills over the land ties did not have any clear function, and were thought could relate to the construction or removal of unidentified features.

Contemporary with the new harbourfront was a structure referred to as the '*fiskegang*', G583. This was a low level quay running along the south of the harbourside, which would have formed an elongated walkway just above sea level, and survived as a series of in-situ posts which would have held a timber platform.

Three timber water pipes, G231, G545 and G622, from the Main Excavation trench date to this phase and would have connected the properties to the north with the harbourside. One of these pipes, G454, emptied into a square timber box feature half way along its length, which was interpreted as a water filter, presumably to clean the waste water before it discharged into the harbour, although this could also have been a saltwater pump as seen in contemporary pictures.

At the end of this phase there were two episodes of demolition, G289 and G691, which related to the deconstruction of the buildings on Gammel Strand. Group G691, at the western end of the Main Excavation trench, filled the remains of a small basement room and the remainder of the foundation. Group G289, at the far western extent of Gammel Strand, excavated during the watching brief in 2010, represented the demolition of the Renaissance *Vejerhu*s (Weighing house) and the *Vejerhus* courtyard (see above chapter 7.2). The Renaissance *Vejerhus* was known to have been demolished in 1857 (Linvald 1979), which could also provide a contemporary date for the demolition of the other known structures on Gammel Strand.

The final episode of construction in this phase was the concrete quayside, G589 that formed a continuous alignment with the western end of the previous *fiskegang*. This quayside appeared to have been locally repaired after construction due to the presence of a small pit to its northern edge which had removed some of its construction elements.

Fig. 319 Plan of all Phase 5 structures and features. See also A3 version in appendix XX

7.5.3. Structures and features

The structures and features related to Phase 5 comprise levelling deposits as well as cuts, deposits and timber structures related to the construction of the new harbour front and the so-called *Fiskegang*.

7.5.3.1. Levelling

Group	Sub-group	Group name
634		Levelling

Table 52 Group G634 related to Phase 5 levelling

The initial activity during this phase was an episode of levelling at the western end of the Main Excavation trench in order to reclaim land southwards further out into the harbour. The levelling area extended to 15.6 m northeast-southwest and 3.44 m northwest-southeast and was 0.4 m thick, with the top of the deposits at 0.18 m OD. The material used was very mixed in colour and composition, e.g. SD28936 was grey-brown sandy silt while SD30219 was greenish-grey sandy clay. Both contained stones, CBM and charcoal, however the only finds recovered were 19th Century ceramics. A horizon of wood chips within SD28936 of this levelling was likely to have been residue from the construction of these early 19th Century bulwarks (see below), and demonstrated that the timbers were worked on site prior to assembly. Two other associated deposits, SD33324 and SD28982, were not excavated due to site access logistics; however they were sandy and yellow brick respectively.

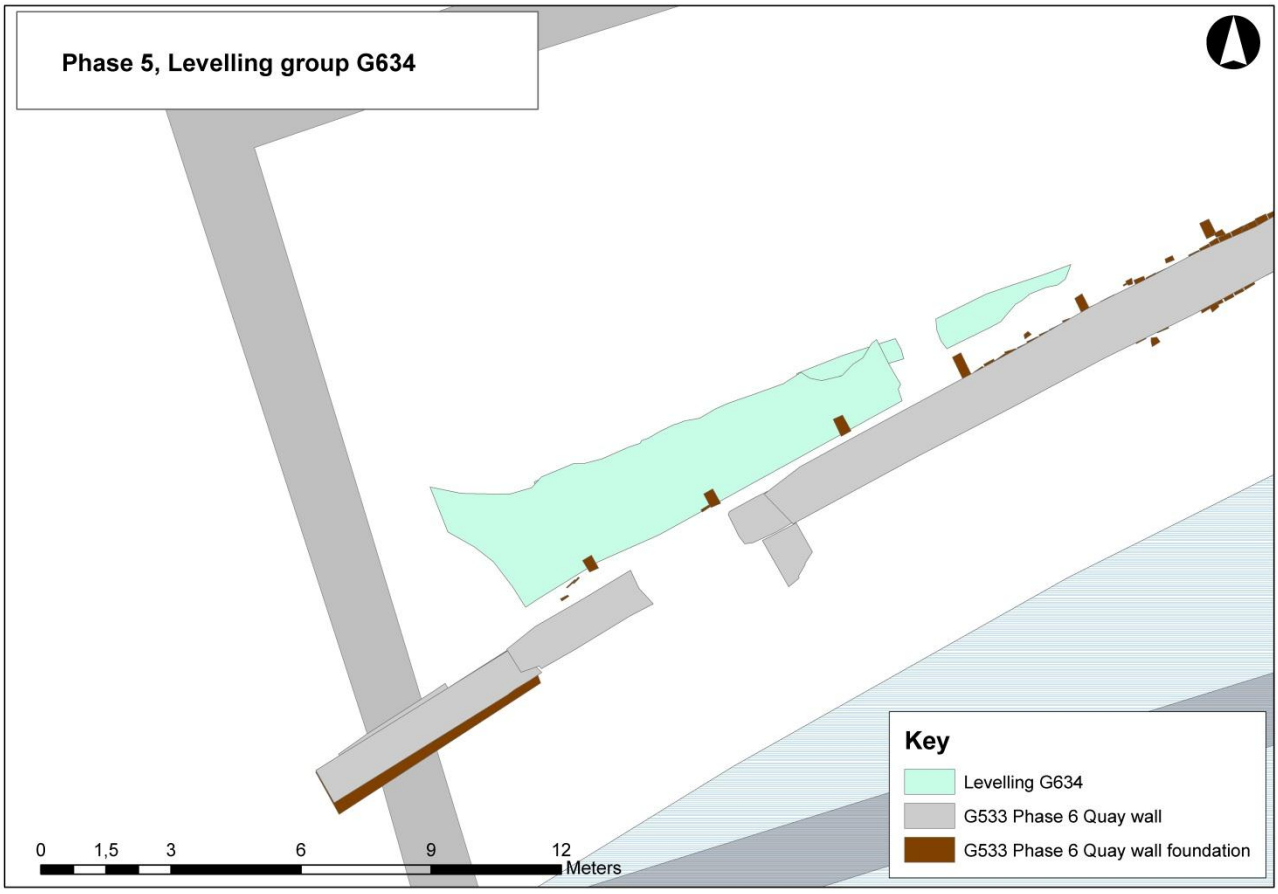

Fig. 320 The extent of the levelling deposits, G634, associated with the creation of the bulwarks and land ties during this phase. The later Phase 6 quay wall delimits the deposits southwards.

The land reclamation was presumably necessary in this area to stabilise the southern edge of building G707 to the north prior to the deconstruction of the Phase 4 bulwarks and the construction of new ones further out into the harbour.

7.5.3.2. Harbourside

Group	Sub-group	Group name
509		Land tie
550		Land tie
551		Land tie
562		Land tie
	590	Repair
563		Land tie
565		Land tie
572		Land tie
575		Land tie
580		Land tie
581		Land tie
586		Land tie
587		Land tie
591		Waterfront
599		Land tie
607		Use
613		Deconstruction
614		Deconstruction
615		Land tie
631		Land reclamation dump
632		Land tie
635		Land tie
662		Backfill
679		Land tie

Table 53 Groups and sub-groups related to Phase 5 harbourside

This fifth phase of harbourside development consisted of twenty land ties and 60 m of remaining timber bulwark, of which 7.6 m was fully extant in the Stairway trench at the easternmost end of the excavation. The land ties were aligned northwest-southeast, perpendicular to the bulwark which ran northeast-southwest, and were constructed using the same method as the previous phases; northwest-southeast anchor beams were supported on lower posts and often jointed to them with lap-half joints. Stretcher beams were then placed across the northern end of the anchor beams to which they were fixed with lap half joints and iron bolts. Vertical support posts to hold the structure in place were driven in to the south of the stretcher beams and were fixed to them with horizontal iron bolts. The single stretchers were an average of 1.2 m long and 0.25 m in cross section. The lower posts were an average of 0.22 m in cross section dimensions and the support posts were an average of 0.2 m. The lengths of these were not often recorded but where they were, they appear to have been approximately 2.5 m long. While all of the anchor beams were truncated, they were an average of 0.2 m in cross section and the longest, ST23980 in G615, was 4.6 m in length. The land ties occurred at an average height of 0.2 m OD and the bulwark seen to the east was at 0.3 m OD.

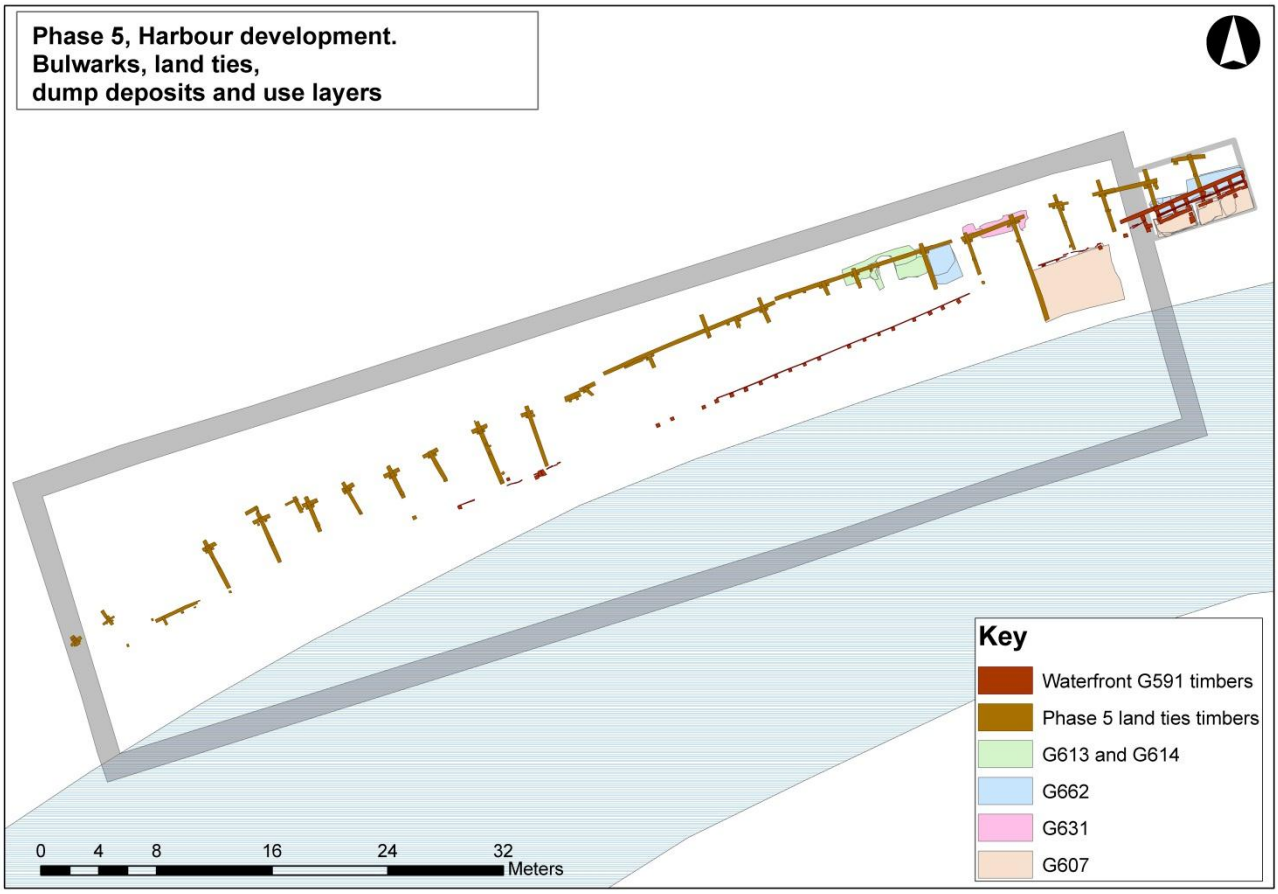

Fig. 321 Phase 5 harbour development. Bulwarks, land ties, dump deposits and use layers.

All timber elements were pine, although no provenance was suggested for the timber. In the eastern half of site were two double land ties, G575 and G632; with two anchor beams fixed at either end of one long stretcher. Towards the centre of the excavation area and coinciding with the *fiskegang* G583, was a series of seven remaining short anchor beams connected to two long stretcher beams of land tie G562. Further anchor beams would have been attached to this structure but later harbourside development removed them and the anchor beams which remained appeared to have been disturbed. In the western end of the Main Excavation trench the land ties were all constructed individually from each other. This change between construction styles is probably due to the reinforcement required behind the *fiskegang* to stabilise this structure, which was not necessary further west due to the ability to have longer anchor beams.

The land tie, G550, was positioned to the immediate west of land tie G635 and was stratigraphically later than it, and was also truncated to north and south so its full dimensions were unknown. The position of this land tie in relation to the other would suggest an episode of repair or maintenance of the (now non-extant) bulwark. G679 had four timber elements at its northern extent; short stretcher beam, ST24669, which overlay post ST24677, and abutted the anchor beam ST24468 by means of the wedge ST24681. These elements were incorporated into the land tie at a later episode, although no additional construction cut was observed, and could also be part of a later repair episode reinforcing G679.

Fig. 322 Land tie group G562 to the left, with truncated and disturbed anchor beams. The upright posts with peg holes for the contemporary *Fiskegang* (G583) can be seen to the right hand side of the picture. C03_20140331_9244 (cropped)

There was evidence of two small interventions beside three of the support posts of the two long central stretchers in G562. Sub-group SG590 to the west was a small, shallow cut, measuring 0.46 m by 0.4 m and was 0.28 m deep, around a support post which contained remains of bark and wood, and probably represented either an episode of repair of the land tie or the truncation of the associated anchor beam, given the presence of the wood. The north-south aligned linear cut G613 measuring 2.05 m by 0.5 m by 0.43 m deep, was located between two support posts and was likely to have represented the removal of the anchor beam with which these posts were associated. There was no indication why this anchor beam was removed and no others of the land tie: the later insertion of an anchor beam dating from the 1880s harbour wall (see below) to the east of G613 could have necessitated the removal of the earlier anchor beam, however in other locations along G562 the Phase 6 anchor beams were inserted alongside or even above those of the earlier structure.

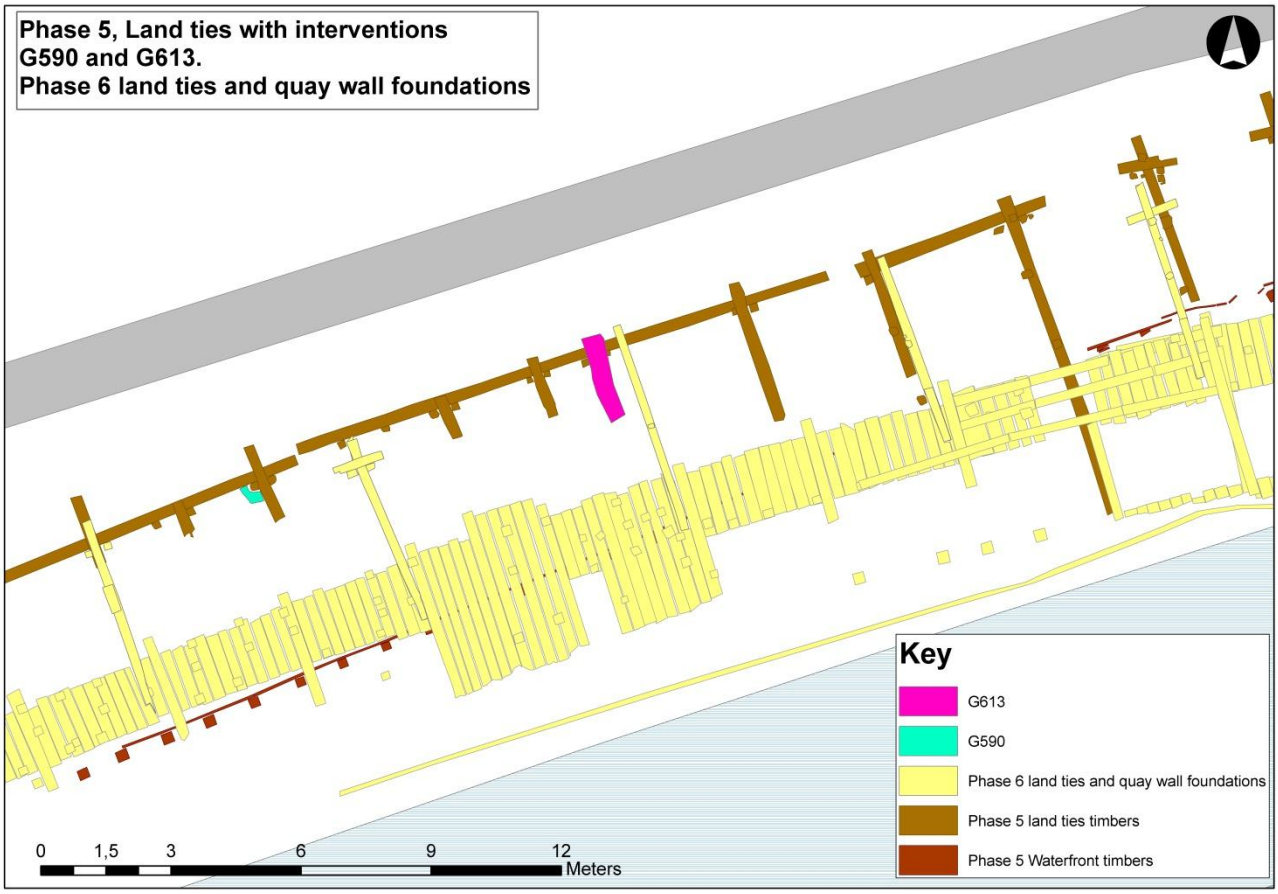

Fig. 323 The interventions around support posts of the land ties G562 which represented repair or removal of structural elements, along with the relation between the Phase 5 and Phase 6 land ties in this area.

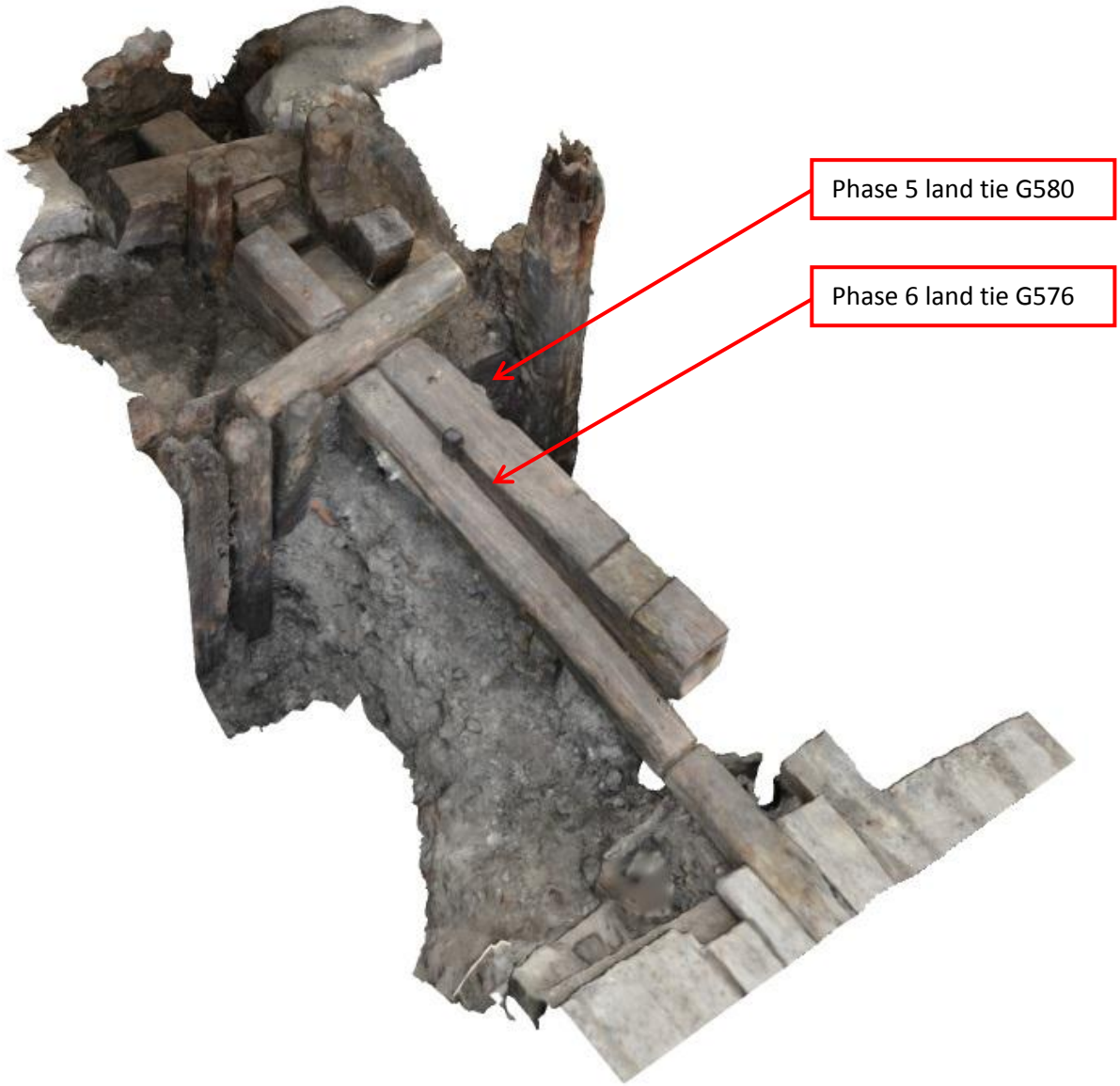

Fig. 324 A photogrammetric rendering of land ties G580 of the Phase 5 harbour and G576 of the Phase 6 harbour, showing how the land ties were related to each other

Dendrochronology samples were taken from six of the land ties, three of which returned dates. Of these samples, the anchor beam, ST32025 of land tie G587, was dated to AD 1790[?] (PD208501), which could either indicate a reused timber or an insecure dating. The stretcher, ST23903 from land tie G581, in the central part of the excavation area was dated to after AD 1747 (PD208651), and the easternmost support posts (ST30845 and ST30860) from the long land tie, G562, were dated to AD 1822 winter (PD208512), and AD 1823[?] (PD208497) respectively. These latter dates correspond exactly with those of the *fiskegang* (G583) directly to the south (see below) indicating that these structures were constructed contemporaneously. However, the other dates returned are approximate and indicate only that those elements of the structure were constructed after those suggested dates, and in this respect they correspond to the dates returned for the extant harbour front (G591 - see below) and would support the interpretation that all these structural elements were contemporary.

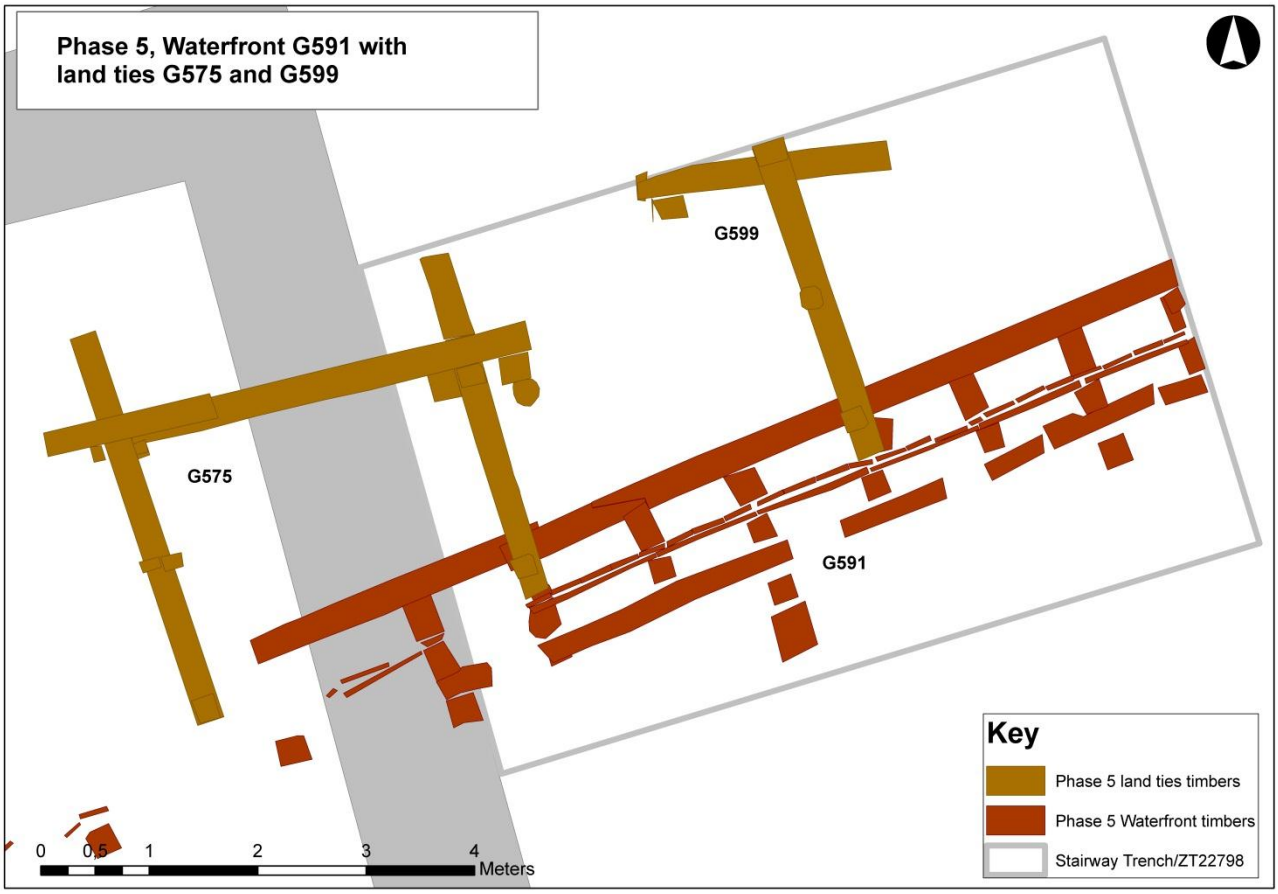

Fig. 325 Plan showing the extant remains of bulwark G591 from the 5th phase of harbour development and its relation with land ties G575 and G599

The bulwark only remained complete in the Stairway trench in the eastern end of the Main Excavation trench. It was constructed from southwest-northeast aligned planks ST13627 held in place with a batten (14013) across the top to the south. This was reinforced by a row of square posts, ST13444, ST13436, ST51240, ST51244, ST51248, ST51252, ST51256, and ST51844, driven into the underlying deposits with a beam, ST13623 and ST13454, in front of them. Behind the planking, to the north, were a series of blocks ST's 13806, ST13634, ST51224, ST51228, ST51232, ST51236, ST51868, and ST53397, between the planks and a stretcher beam ST13789. All these elements were fastened together with an iron bolt. The planks formed two rows and lay horizontally to the south and vertically to the north. It was suggested that the upper edge of the planks would have corresponded with the old waterline, and the alternating of wet and dry environments would have resulted in the deterioration to the top edge of the planks seen in the excavation, and consequently the upper extent of the bulwark may have originally been higher. One storm post, ST51882, was recorded towards the easternmost end of the excavation. Behind the timberwork was a series of four mixed dump deposits which contained building rubble and very mixed finds.

To the west of the Stairway trench, the bulwark was only recorded during a watching brief at the end of the excavation. A row of 19 square posts with planking, ST46817, behind was recorded extending southwest underneath the later 1880s harbour wall foundation (see Fig. 32).

Fig. 326 The remains of the bulwark under excavation in the Stairway trench/ZT22798. Looking west. C03_20140403_9295 (cropped)

Fig. 327 The excavated planking construction of the bulwark in the Stairway trench. Looking north. C03_20140718_11660

Three dendrochronology samples taken from bulwark G591 dated from the mid 18th Century; the planking, ST13627, dated to after AD 1726 (PD212240), one of the posts, ST51252, to after AD 1753 (PD212227), and the southern beam, ST13623, to After AD 1760 (PD208507). Two of the remaining planks sampled were not broad enough to enable dendrochronological dating. The dates returned were imprecise so the bulwark is

Fig. 328 The marks on timber ST28486 (G591). C03_20140515_10289

still likely to be contemporary with the land ties further west which date from the winter of 1822-3, or these dates could indicate a re-use of timbers, although no evidence of re-use was recorded during excavation.

One of large bulwark posts, ST28486, had marks incised onto its east facing surface (see Fig. 328). They were not carpenter's marks, but presumably relate to the construction of the harbour front in the 1820's.

In front, to the south, of the remaining bulwark was a series of fourteen silt and dumping deposits, G607, which measured 16.25 m by 3.9 m and 2 m deep, which accumulated while the bulwark was in use. The sequence of deposits began with a sandy layer, SD47931, which contained a large quantity of mixed finds from the late 18th and early 19th Centuries which included many clay pipes, glass fragments, and ceramics derived from China, Denmark and Holland, and point to a contemporary deposition rather than re-deposition from earlier layers, thereby reflecting the general ceramic consumption in Copenhagen during this time. A sherd of Siegburg ware dating from 1300-1550 was likely to be part of a small episode of re-deposition within the sequence (see Kristensen 2016a and 2016b). A small, slightly corroded cannonball (FO215160) was also recovered from this deposit. It was thought to derive from a small ship's or land cannon and did not show any signs of having impacted, so may have been lost overboard accidentally rather than fired. It also contained a possible ramrod for a rifle (FO218246).

Thereafter, the sequence of deposition alternated between organic rich silting and more sterile sand layers. The organic deposits were richer in finds, with the lowest deposit, SD47888, having contained many fish bones and cattle jaws which were indicative that the market was still in use while this deposit was laid down. Deposit SD53437, a silt deposit in the middle of the sequence contained part of a rubber shoe from Edinburgh, FO218278 (see Fig. 330), which represented a more unusual piece of household waste. A deposition of concrete towards the base of the sequence appeared to have set in-situ due to the presence of concrete within surrounding pottery fragments, and was thought to have been a

Fig. 329 Toy teapot (FO212842) found in SD53437 (G607). Museum of Copenhagen

Fig. 330 Rubber shoe FO218278 found in SD53437 (G607). Museum of Copenhagen

waste dump from local construction. The sandy layers were thought to derive from dredging activity to clear the harbour; however they could also have derived from the *sandkiste* (sand-chest) which was located to the east of Højbro bridge or from the barges which delivered the sand (see Chapter 3).

A series of deposits, G631 and G662, measuring 22.67 m by 3.4 m overall, overlaid the land ties in the eastern half of the excavation and was specifically interpreted as construction backfill. These deposits were only seen in this location due to the disturbance of the overall area by later harbour development. The westernmost deposits in G631 and G662 in the Main Excavation trench had a greater concentration of building rubble and CBM mixed with a moderate amount of finds. The backfill deposits in G662 in the Stairway trench/ZT22798 were less disturbed than the others in this group and contained a much greater concentration of artefacts including stove tiles, glass from windows and bottles,ceramics from China, Holland and Germany, and English and Dutch clay pipes including a 'Jonah' pipe FO214950 dating to 1630-1670. Another unusual find was the copper wire from a French hood FO215334 which dated to the late Medieval-early Renaissance period (Whatley 2015). Most of the artefacts recovered dated from the mid 17th Century to the mid 18th Century, indicating that this material was re-deposited behind the bulwarks.

Fig. 331 FO213584 bone toy (kaste gris), collected from SD53367 (G607). Museum of Copenhagen

Group G614 was the final episode of intervention associated with land ties G562, but had an imprecise interpretation. This intervention consisted of a cut which measured 2.7 m by 1.45 m and was 0.45 m deep, which contained three mixed backfills which spilled over the edges of the cut. It overlay the removal cut G613 (see above) and could represent the removal of some feature in the area, although there was no evidence for any other structural elements which would have been removed. The combination of these features could indicate a later stage of localised repair or renovation of the harbour front.

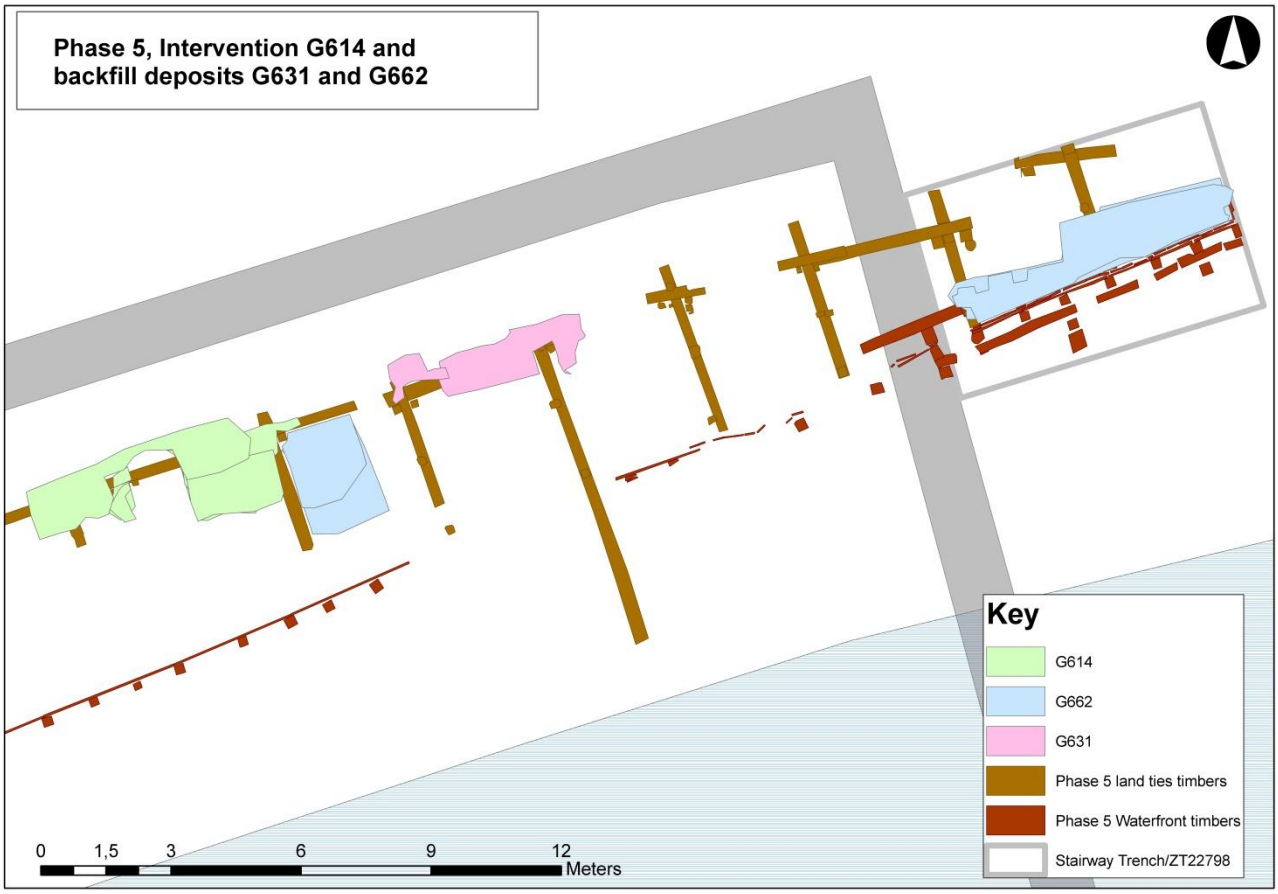

Fig. 332 Plan of intervention G614 and the backfill deposits, G631 and G662, around the land ties and bulwarks of the Phase 5 of harbour development

7.5.3.3. *Fiskegang*

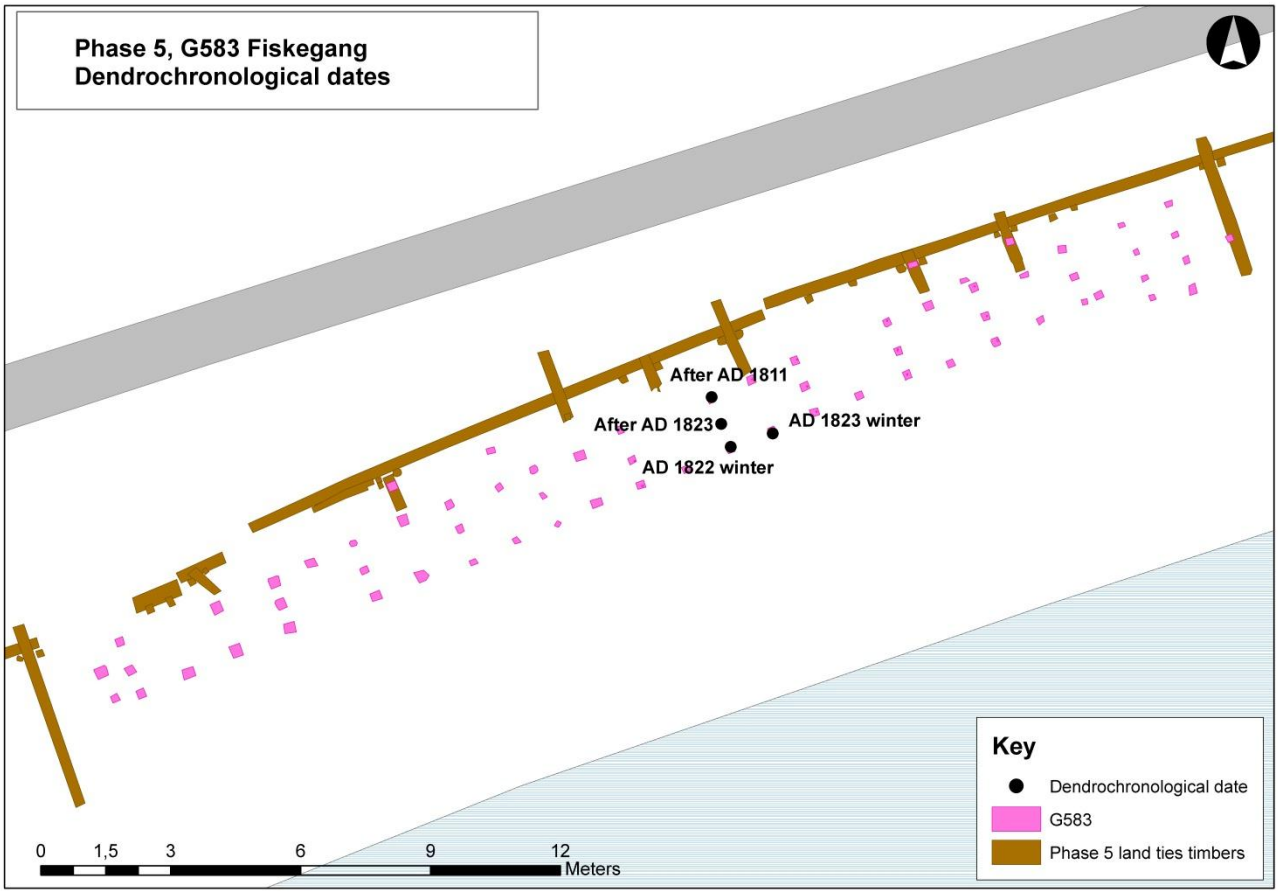

Fig. 333 Plan showing the upright square posts in rows which formed the foundation of the *fiskegang*. Dendrochronological dates were obtained from four of the posts.

Group	Sub-group	Group name
583		Fiskegang
	629	Backfill

Table 54 Groups and sub-groups related to the Phase 5 Fiskegang

The *fiskegang* ("fish-walk") was a low level quay (at 0.25 m OD) along the south of the harbourside, which formed an elongated walkway just above sea level, and was accessed by a short flight of steps down from street level at either end. Beside this quay were moored small barges which contained fish to be sold on the harbour by the *fiskekoner* (literally "fish wives").

The remains of the *fiskegang* G583 consisted of 74 square pine posts, vertically set and arranged in 26 rows. Each post measured approximately 0.2 m by 0.2 m in cross section, was 3-3.5 m long and tapered to a four sided point which was driven into the underlying silting layers of the harbour. Saw marks were present on 16 posts, and 50 contained peg-holes to the top, 17 of which had round pegs remaining which would have been used to fix overlying planking to form the walkway. These posts formed the foundations for the northeast-southwest aligned structure which would have run parallel to and abutted the old harbourside to the northwest. Three of the *fiskegang* posts (ST28284, ST28377, and ST27884) were later reused in-situ as lower support posts for land ties (G567 and G568 respectively) during Phase 6 of the harbour development, with wedges used to provide the correct elevation and secure the overlying anchor beams. The

daguerreotype from 1840 (see Fig. 336) shows the back wall of the *fiskegang* was constructed from brick rather than timber like the bulwarks which made up the remainder of the harbourfront, but no evidence of this construction or a foundation for it was found during excavation.

Four dendrochronology samples were taken from the *fiskegang* posts, three of which (PD209027 from ST 26000, PD209024 from ST26008 and PD209025 from ST26016) dated from the winter of 1822-3 and one (PD209026 from ST27539) returned a date of after 1811.

Fig. 334 FO 212841. A toy plate recovered from SD33971 (G629). Museum of Copenhagen

The posts appear to have been backfilled around with building rubble, probably as a stabilisation measure, although the precise stratigraphic relation of the posts with the underlying deposits through which they were pushed was unclear. The backfill, grouped as G629, also contained mixed artefacts from domestic sources with many clay pipe stems and bowls recovered, window and bottle glass, and stove and floor tiles. A small toy plate was also found (FO212841). The presence of a disarticulated humerus and a femur, from different skeletons (one adult and one juvenile) suggests that part of the deposit came from a disturbed former burial ground. Nearly all of the artefacts date from the mid 17th to mid 18th Centuries, with three pot sherds dating from the Medieval period, which indicates that this backfill was derived from redeposited material and does not therefore reflect contemporary use of the harbourside.

There are one or two artefacts which could be contemporary, such as a porcelain cup and saucer which date between 1800-1900 (FO217954 and FO217953 respectively) and the lead line FO212461. Some of this material is also indicative of the trade which had been occurring during the mid to late 18th Century, with faience which originated from the Netherlands and stoneware from Germany, along with Chinese porcelain among the finds recovered. The 18th Century dates for the bulk of the ceramics could indicate that this deposit derived from previously dumped material which was redeposited here after the *fiskegang* was constructed in 1822-3.

Fig. 335 FO 212461. A lead line to ascertain the depth of water. Recovered from SD53332 (G629)

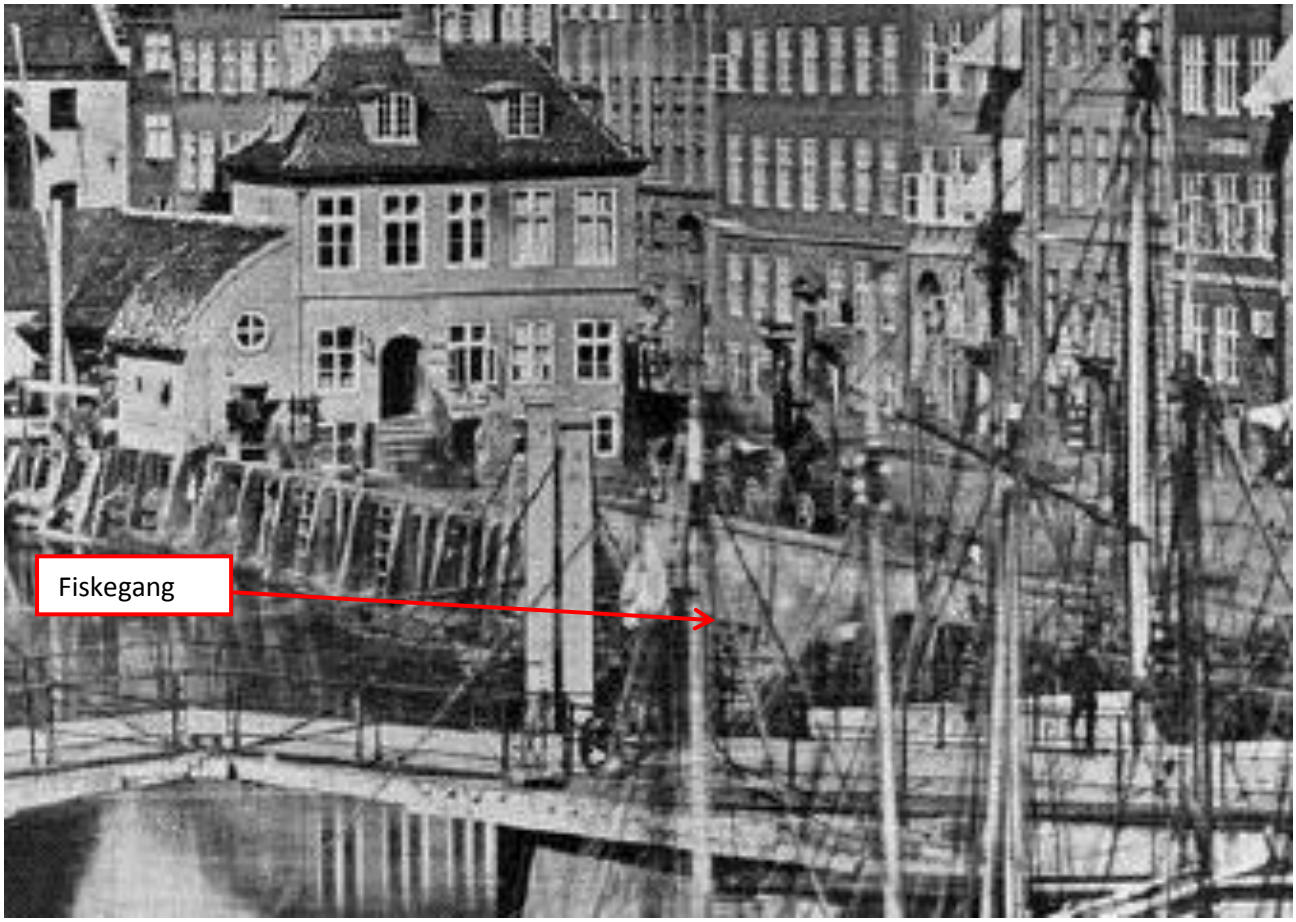

Fig. 336 Detail of the daguerreotype showing Gammel Strand in 1840. The *fiskegang* can be seen as a break in the harbourside behind the ship masts, although the walkway itself is hidden from view by the Højbro Bridge

7.5.3.4. Drainage

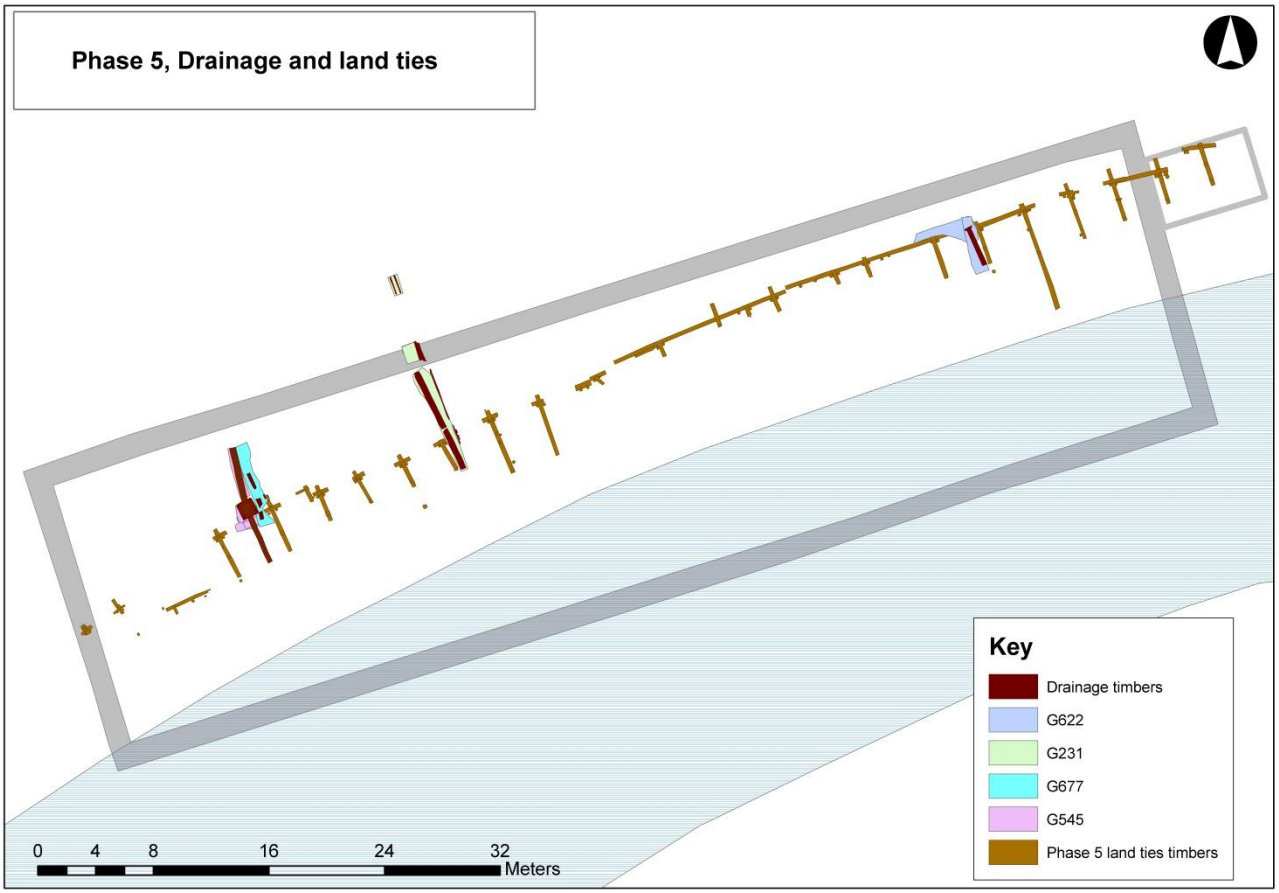

Fig. 337 Plan showing the four drainage features in relation to the Phase 5 land ties

Group	Sub-group	Group name
231		Drain
545		Water filter/standpipe
622		Water pipe
677		Deconstruction

Table 55 Groups related to Phase 5 drainage

Three features in this phase of harbour development were connected with the management of water, and one other represented the location of another drainage feature which had been removed in antiquity. All of the elements were on a northwest-southeast alignment, which would have run perpendicular to the harbour front, and although it is assumed that the water pipes and drains would have linked with properties to the north side of Gammel Strand, only one pipe (G231) was seen to extend beyond the Main Excavation trench.

Drain G231 was cut through the backfill deposits of the previous phases of harbour development, and also necessitated the removal of stones from the Renaissance harbour wall. To the north, during a watching brief, the feature consisted of two planks lining a cut, although the timber pipe itself was not seen. This could be due to the relative depth of the watching brief and Guide Wall trenches compared to the Main Excavation trench which was c. 0.4 m to 0.6 m lower. In the Main Excavation trench, wooden pipe, ST33533, was truncated through the middle by a modern gas pipe cut. The southern half, which still

retained bark, was sampled for dendrochronology but returned no date. Three holes to the upper surface of the pipe, the southern two of which contained timber plugs, were probably for maintenance,. The eastern edge of the cut for the pipe, ST34160, was lined with horizontal planks, ST34603, propped up with three posts, ST35988, ST35992 and ST35996, to shore up the trench while the pipe was laid, and it may be these which were seen further north. The northern end of the timberwork was situated at 0.8 m OD, while the southern extent was at -0.4 m OD, giving a gradient of 1:12 over the 14.4 m extant length of the pipe.

Fig. 338 Southern extent of drain G231, viewed from the south. The gap created in the Renaissance wall can be seen to the top, and the plank shoring for the edge of the trench to the right. C03_20140423_9722

The other timber pipe associated with this phase of harbour development, G622, measured 4 m by 0.96 m and 0.6 m deep, and lay in the eastern half of the Main Excavation trench. There was no evidence of the plank shoring, however the northern end of the water pipe was supported by a short piece of planking. The timber pipe itself, ST26693, measured 2.8 m long and was 0.6 m in diametre, and a dendrochronology sample did not return a date. The northern end of the pipe was at 0.13 m OD and the southern end at -0.25 m, giving a gradient of 1:7.5. It was originally thought to connect with ST51975, an east-west aligned pipe to the north east of ST26693, however that pipe was determined to date from an earlier phase. There was no evidence for a further northern extent for this pipe but the area immediately to the north was heavily disturbed by a 20th Century gas pipe. The southern end of the pipe was thought to have been truncated during construction of Phase 6 of the harbour development.

Fig. 339 Plan showing the timber elements of water filter G545 in relation to the surrounding land ties of this phase of harbour development.

The feature interpreted as a waterfilter, G545, consisted of a timber box with two waterpipes extending from it; ST25600 to the north and ST25560 southeast. The box was constructed from four sill beams, ST34297, into which were jointed four timber posts, ST25931, one in each corner, with timber planks, ST25962, set horizontally between; four surviving to the south, two to the north and east, and one to the west, and a timber plank floor, ST25950, constructed of five planks. The lower three side planks on the north and south sides were shaped to fit around the two water pipes, and so the pipes and timber sides must have been constructed simultaneously. The plank floor sat inside the timber sides and was shaped to fit around the posts. The exterior of the waterpipes were packed with blue clay SD25395 to cover the joint with the timber box to make it watertight. The clay also covered most of the outside of the southern side of the timber box to fill the extent of the construction cut, but was seen nowhere else. This extended along the entire length of the northern water-pipe, but may have been truncated away from the southern pipe as there was also no bark covering it, as there was to the north. The northern water-pipe had a wooden bung in its southern end, and a 0.06 m hole bored at an angle into the top of the pipe. The inside of the box was filled with gravel SD25574, and below this over the timber floor was a layer of organic silts SD25784 which was presumed to be the filtrate, as was a thin silting episode SD34335 underneath the floor planks over the base of the cut. All the timber elements were constructed from pine, and the southern pipe may have been truncated to the south when the 1880s harbour wall was built. The structure does not exhibit much of a

Fig. 341 Overview of the water filter pipes with the timber box between. Looking north. C02_20140312_8529

gradient, with the northern end at sea level, and the entire southern pipe level at -0.05 m OD. Dendrochronology samples taken from both water pipes did not return a date.

Fig. 340 Detail of the excavated central filter. Looking southeast. C03_20140314_8795

This feature was interpreted as a water filter used to remove waste products from foul water before it was disgorged into the canal, as it is very similar to a structure found on 19th Century plans. There were indications that the gravel infill had been cut into from the western side as the planking on that side was disturbed, and the gravel spilled slightly over on to the surrounding area. This disturbance could have been to access the filter box to bung the northern pipe and drill the hole into the top of it - perhaps in order to increase the pressure of the water flow, or to clean out the filter. This feature could also have been part of a standpipe at street level which would have been attached to the small bored hole in the top of the northern pipe. The box 'filter' would then have been used to catch the overspill water which was then channelled back into the canal via the southern waterpipe. The cut on the western side could then represent the time when the standpipe was removed.

Fig. 342 Detail from an etching of 1869 "Vinteren 1869 I Kjobenhavn III ved Gammel Strand" by B. Dlien, showing a standpipe on Gammel Strand by the harbour wall. Højbro can be seen in the background. National Museum

The final feature connected with drainage in this phase of harbour development was the deconstructed remains of a timber pipe, G677. The feature measured 59 m by 1.2 m and 0.5 m deep, but all that remained of the previous timber pipe were four pieces of decayed wood or bark in the base of a cut; ST23524 was two bark fragments and heavily decayed wood, which measured 1.19 m by 0.23 m and 0.56 m by 0.25 m and ST23536, which measured 0.33 m by 0.08 m and 0.68 m by 0.33 m, could either have been two timber pieces as part of a support for the deconstructed pipe, or could be part of the backfill. The feature was located directly to the east of the waterfilter G545 (see above) which may suggest that this pipe was removed when the filter was constructed, or it could represent an earlier standpipe which was replaced.

7.5.3.5. Pits

Group	Sub-Group	Group name
579		Pit
670		Pit

Table 56 Groups related to Phase 5 pits

These two pits were thought to relate to the construction or deconstruction of other, unidentified features in the area. Both were truncated and so their full extents were not known. The eastern pit, G579, measured 0.82 m by 0.3 m and 0.19 m deep from a height of -0.11 m OD and was filled with sterile material, while the western pit, G670, measured 1.42 m by 0.28 m and 0.2 m deep from a height of 0.28 m and contained a mixed backfill with some domestic-type waste of ceramics and bone. Due to their locations and stratigraphic relations, they were unlikely to be associated with any land ties in the area.

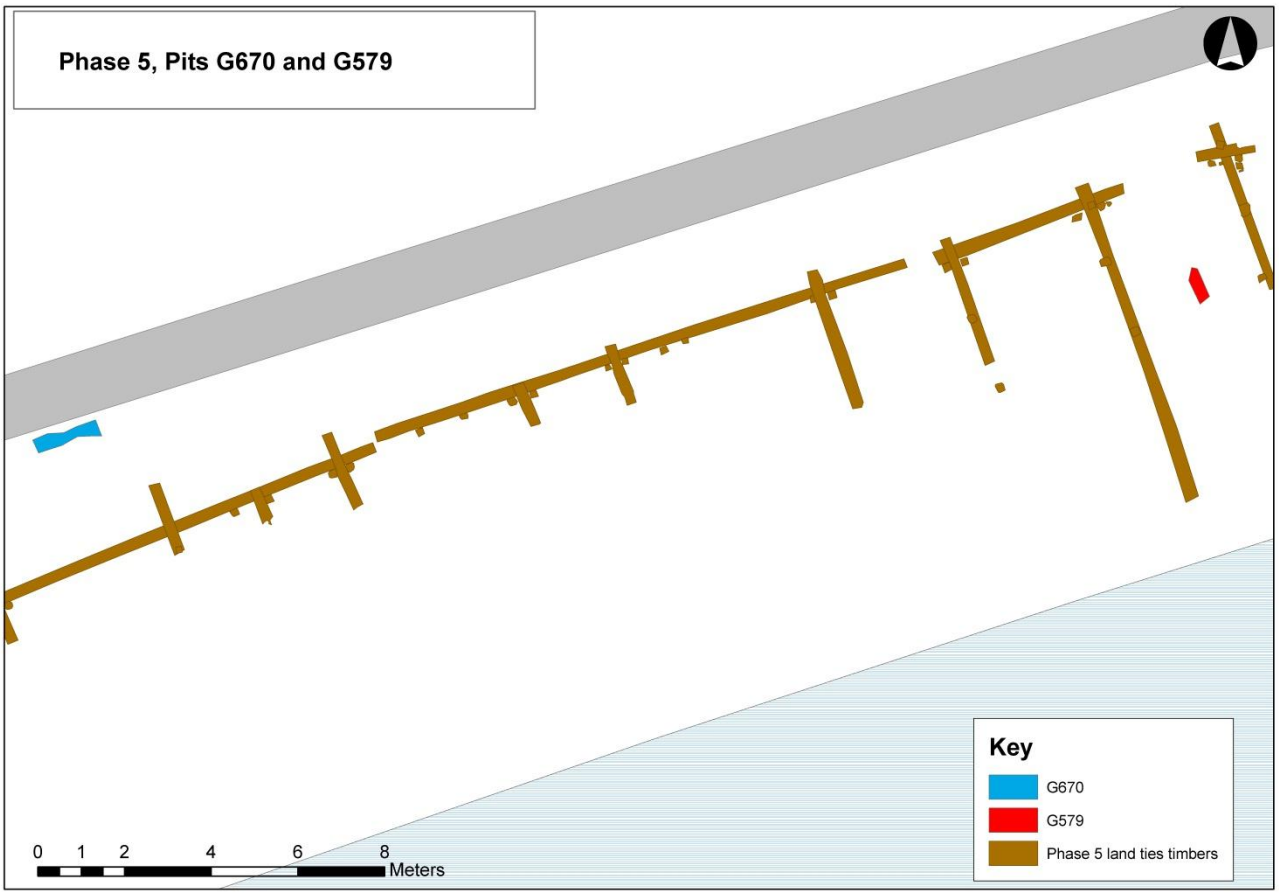

Fig. 343 Plan of the two pits in the Phase 5 of development of the harbourside

7.5.3.6. Demolition

Group	Sub-Group	Group name
691		Demolition
289		Demolition-the *Vejerhus*
	286	Demolition-the *Vejerhus*
	287	Demolition-the *Vejerhus*

Table 57 Groups and sub-groups related to Phase 5 demolition

There were two episodes of demolition which related to the deconstruction of buildings on Gammel Strand.

To the western end of the Main Excavation trench were two deposits of mixed building rubble, one of which, SD21975 measured 1.44 m by 1.33 m and 0.2 m deep, and filled the remains of a small basement room. The deposit which overlay this, SD20816 measured 7.39 m by 3.72 m and 0.65 m deep from a height of 0.7 m OD, was a thick layer of demolition rubble which also covered the remainder of the foundation. This represented the demolition of the underlying building, G707 with the resulting building rubble used to level the area before the harbourside was redeveloped. There is no recorded date for the demolition of this building, however it could be contemporary with the demolition of other buildings on Gammel Strand (see below).

The second episode of demolition, at the far western extent of Gammel Strand which was excavated during a watching brief in 2010, consisted of two separate sequences of demolition material. G286 measured 3.19 m by 1.51 m and 0.5 m deep, and overlay the northern wall and western wall foundation of a northeast-southwest aligned building, G221, interpreted as the Phase 2 Renaissance *Vejerhus*; G287,which measured 3.63 m by 2.14 m by 0.7 m deep from a height of 0.5 m OD, overlay another northeast-southwest aligned wall, G220, further east interpreted as the northern wall of the *Vejerhus* courtyard.

The *Vejerhus* was known to have been demolished in 1857, which would securely date the second episode of demolition outlined above, if this building was correctly identified. This could also provide a contemporary date for the demolition of the other known structures on Gammel Strand.

7.5.3.7. Concrete Quayside

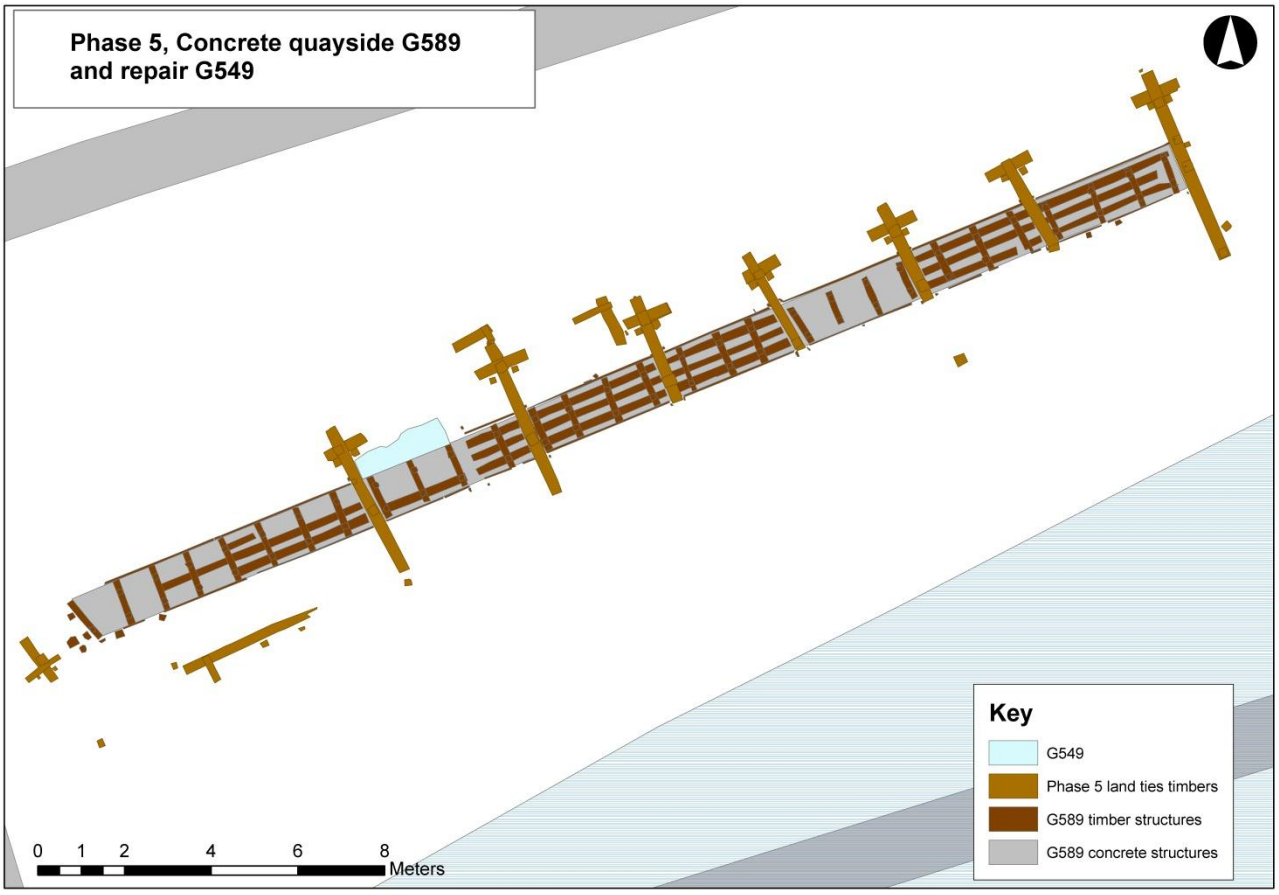

Fig. 344 Plan showing the structural elements of the concrete quayside

Group	Sub-group	Group name
589		Quayside
	549	Repair

Table 58 Groups and sub-groups related to the Phase 5 concrete quayside

This concrete structure measured 27.94 m by 1.2 m with its upper surface at -0.14 m OD. It lay to the north of the 1880s harbour wall towards the western end of the Main Excavation trench, forming a continuous alignment with the western end of the '*fiskegang*' G583 (see Fig. 344). It was constructed within a trench, the sides of which were lined with 25 planks, ST25196. These measured approximately 2.8 m long, 0.04 m thick and 0.19 m deep, standing on edge horizontally, two planks deep, and were held in place by wedges, ST26567, ST37060 and ST37098. A total of 58 square posts, ST29270, which measured approximately 0.12 m square by 0.75 m long, were driven through the base of the trench in pairs approximately 0.8 m apart and stabilised with a hard-core layer of packing stones, SD29560, to form a foundation for the concrete. Each pair of posts was jointed with a lap joint to an overlying transverse beam, ST50243, which measured approximately 0.15 m square and approximately 1.10 m long. Between each of these beams lay three parallel longitudinal beams, ST22389 – 23 in total, although some were removed along with the overlying concrete. The dimensions of these beams averaged 0.22 m by 0.1 m in cross section and varied in length between 2.20 m and 3.15 m. These beams appear not to have been jointed together, however where the longitudinal beams abut drain G545 from the previous phase they were jointed together with lap joints.

The planking acted as shuttering to contain the liquid concrete, SS50128, which was then poured over the timberwork to create a foundation or walkway. The depth of the concrete was not recorded but appears to have been approximately 0.5-0.6 m.

There were three structures which extended south beyond the concrete quay: the anchor beams of two land ties (G551 and G679) and the southern waterpipe of the filter group G545. These structures were incorporated into the concrete quay when it was constructed, and while their southern ends may have been truncated from their original length they must have extended into the waterline which would have interfered with mooring the boats, although there may have been a lower extent of the bulwark alongside the quay.

A photograph of Gammel Strand from c. 1865 shows a long straight walkway in front of the then harbour wall which could be both the *fiskegang* and the concrete quayside (see Fig. 345). Three dendrochronology samples of the longitudinal beams returned a date of 1868.

The quayside appears to have been locally repaired after construction, or another, unknown feature in this area was removed. SG549 consisted of a cut, which measured 2.18 m by 0.67 m and 0.6 m deep, along the northern edge of the concrete approximately 7.5 m from its western end, which removed some of the planks that lined the concrete structure. The backfill within the cut was comprised of building rubble which gives no indication of the purpose of this cut. The German Westerwald stoneware found in the backfill (see Kristensen 2016a and 2016b) probably derived from the material through which the repair was dug and therefore does not relate to the repair episode itself.

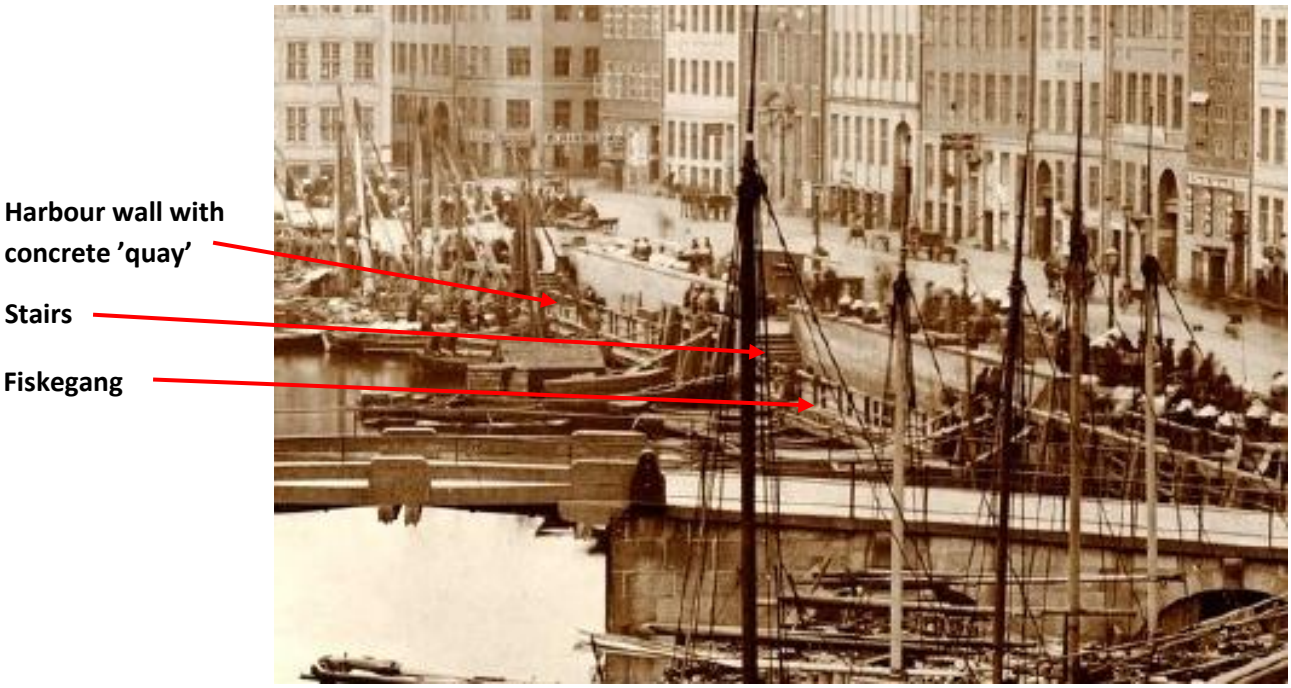

Fig. 345 Detail from Gammel Strand ca. 1865. Compare with Fig. 365 from Phase 5 showing Gammel Strand in 1840 showing the shorter, earlier extent of the *fiskegang*. Museum of Copenhagen

7.5.4. Phase 5 Conclusion

The development of Gammel Strand during Phase 5 continued the general pattern of regular rebuilding and expansion of the harbour front further south. This episode of construction occurred in 1822-3 as confirmed by dendrochronology from the various structures. While the style of construction using land ties and bulwarks was the same used during Phase 4, this phase represented the most substantial timberwork seen at Gammel Strand to date. The provenance of the timbers also differed from the previous episodes of rebuilding, being exclusively pine, although the country of origin was not known. Previously the timbers had been a mix of oak, pine and spruce with some timbers known to originate from northern Germany or northern Poland, and some which showed evidence of having been reused from earlier structures.

The inclusion of the *fiskegang* at the eastern extent of the harbour during this phase of construction illustrates the increasing importance the sale of fish played in the function of the harbour at this time. The area was no longer exclusively for the import of goods, with the expansion of other harbour areas around the city during the course of the 17th and 18th centuries, however, the harbour infrastructure itself now reflected the downturn in the importance of Gammel Strand in the trading life of the city, even though the *Vejerhus* retained its function until 1849. Thirty five years after the re-build this change was reinforced by the deconstruction of the previous trade administration buildings in the area in 1857, thereby again confirming through infrastructure the change in function of the area away from trading goods. This deconstruction created a large open area in front of the harbour where markets were subsequently held (Linvald, 1979). Whether this demolition was due to the deterioration of the buildings is unrecorded, however, the obsolescence from their previous functions is evident by the lack of any subsequent replacement. The addition of the western extent to the *fiskegang* in 1868 indicated the further expansion of fishing as the main role of the harbour.

The presence of the water filter at the western end of the Main Excavation trench demonstrates an acknowledgement that the waste water from the houses to the north of the harbour would have been polluting the water in which the fish were kept alive prior to being sold. It is unfortunate that no dates were provided through dendrochronology to be able to show a relative sequence for the installation of the pipes, and where this structure would have be placed in that sequence, as it is unique in the area and tempting to think it was the most recent.

Most of the finds material from this phase derived from re-deposited material used in various construction backfills around the features and especially over the land ties. These artefacts are indicative of earlier activity related to the harbour and the surrounding area, but within this context they are out of situ and so bear no relation to the contemporary activity during the mid 1800s, except to say that the backfill was very likely composed of material which was deposited in the immediate area during the preceding phases. The artefacts which derived from the use deposits of the Phase 5 bulwark in the east of the excavation appear to be indicative of a spectrum of contemporary household waste.

There were some finds that were contemporary, and from the assemblages of bulk finds such as ceramics, leather, clay pipe and glass, it shows the quantity of Danish manufactured objects increased in number and percentage. Although there continued to be objects from the Netherlands and Germany (in decreasing numbers), there was an increase in objects from Great Britain reflecting new finds created by various industrial practices. For more knowledge of the finds material read the various finds reports.

In regards to natural sciences, due to prioritisation, the quantities of animal bone, macrofossil samples and dendrochronological samples analysed decreased from those undertaken in Phase 4. The information from these reports can be seen in the individual Gammel Strand natural science reports. To summarise, the results revealed more knowledge of the local landscape (of the city and surrounding area and harbour), with dietary evidence revealing 19th Century common dietary evidence where the majority of food eaten was from Denmark and Scandinavia with some global imports amongst the assemblages.

7.6. Phase 6. The Modern Harbour, 1880s-2007

7.6.1. Summary

The final phase of the development of Gammel Strand was categorised by the construction of the recognisable modern harbour. During this period the *loppetorv* (flea market) which had been established on the site of the demolished *Vejerhus* moved to Vandkunsten (Fleischer 1985), although the *fiskekoner* (fishwives) continued to sell fish from the harbour front until their stalls were disbanded in 1958 following the construction of a new *fisketorv* (fish market) building in Gasværkshavnen. One single booth remained on Gammel Strand until the owner, Doris Marx, retired in 2008.

7.6.2. Introduction

Fig. 346 Plan of all Phase 6 structures and features (see also A3 version in appendix)

The major episode of activity during this phase was the re-building of the harbour wall in stone in the 1880s. This expanded the harbour slightly further south, and was constructed using the same method of land ties and land reclamation dumps which had been used in the two previous episodes of harbour building. The main difference in this instance was the construction of the harbour wall in stone rather than the continued use of timber bulwarks which had distinguished all previous phases. This demonstrated a willingness to re-invest in the area 30 years after the demolition of the old administrative buildings on the site which had created an open space, and implied a will to 'gentrify' the old harbourside through the replacement of timber with dressed stone. The Højbro Bridge at the eastern end of Gammel Strand had

been reopened in 1879 after being rebuilt, so the rebuilding of the harbourside at this time was likely to have been the continuation of a program of development.

Fig. 347 The newly redeveloped harbour front ca. 1890-1900, with the *fiskekoner* wearing their distinctive white head coverings, selling fish along the harbourside. Nationalmuseet Antikvarisk Topografisk Arkiv Fotografier

Thereafter was a series of discrete interventions which may either have been associated with the repair or maintenance of the harbour wall, or the removal of features on the harbourside such as the whale-oil street lamps or salt water pumps. The archaeological identification of contemporary street furniture is impossible due to the depth at which the archaeology began. There was, however, evidence of two tall street lamps seen in early 20th Century photographs, in the form of two square, brick foundations. Photographs from 1924 also show a large gas pipe being laid which was identified during the Main Excavation.

Overlying all features was an extensive episode of levelling which formed a ground raising layer and a foundation for the cobbled surface of the harbourside. A further pit cut through these layers was probably associated with an isolated repair incident, indicated by the presence of a lens of mortar within the base.

The final major intervention to the harbourside was the renovation of the harbour wall undertaken in 2007 where the upper courses of the 1880s harbour wall were replaced and the waterside edge remodelled. The statue of the *fiskekone* to honour the hard work of the fishwives situated at the far eastern end of the harbourside by Charles Svejstrup Madsen dates from 1939/40 (see Fig. 16 in Chapter 3).

7.6.3. Structures and features

7.6.3.1. Harbour Wall Construction

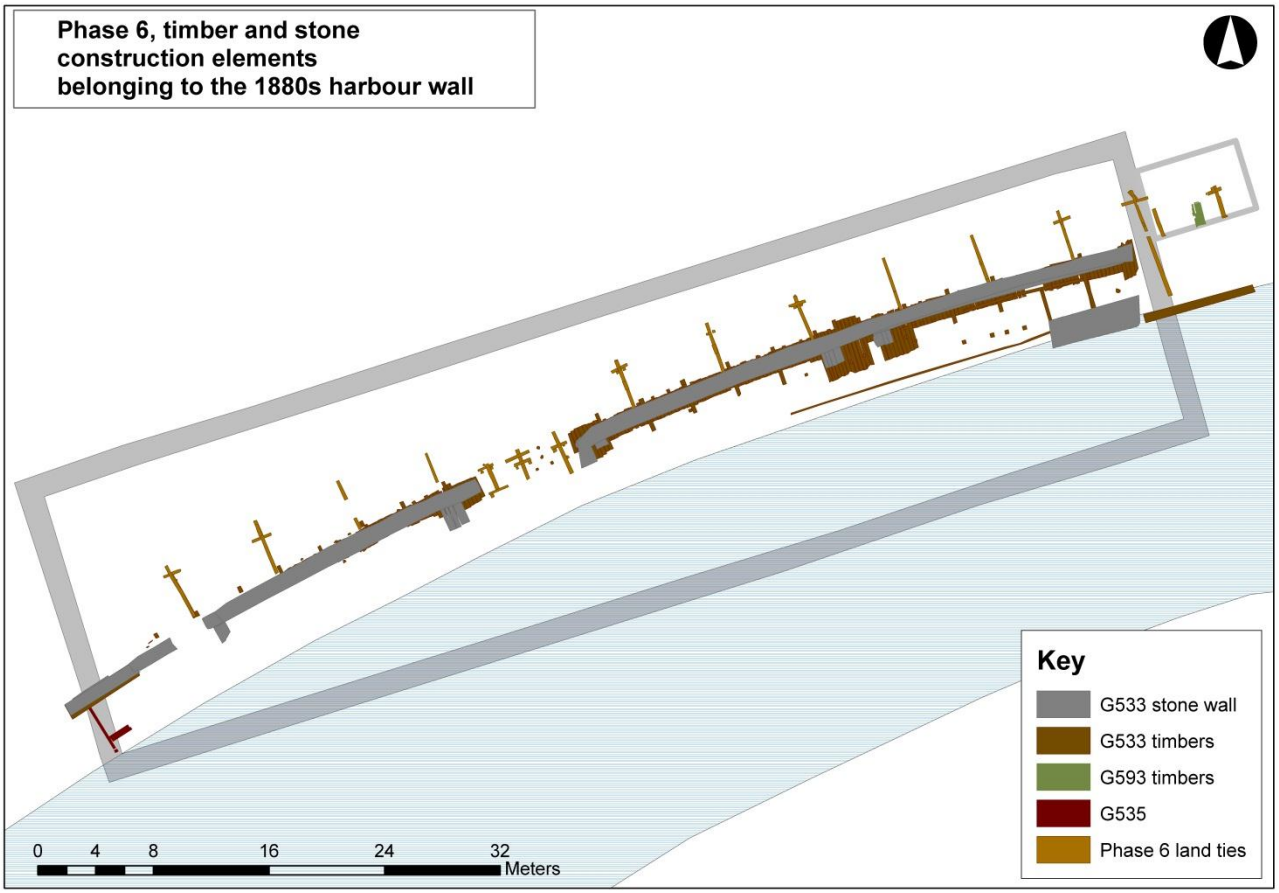

Fig. 348 Plan of 1880s harbour wall showing the timber and stone construction elements

Groups	Sub-groups	Group name
533		Quay wall
535		Bulwark
	540	Land tie
	543	Backfill
	548	Repair cut
	558	Repair cut
	559	Waterpipe
	566	Land tie
	567	Land tie
	568	Land tie
	571	Land tie
	576	Land tie
	585	Land tie
	592	Land tie
	593	Vertical planks
	594	Land tie
	597	Land tie

	600	Land tie
	605	Land tie
	623	Deconstruction cut
	624	Land tie
	628	Pit
	643	Land tie
	658	Land tie
	669	Land tie

Table 59 Groups and sub-groups related to Phase 6 harbour

The construction of the stone harbour wall necessitated the partial removal or truncation of some of the elements of the previous, Phase 5 harbourside. The construction cut for the new harbour wall extended back (northwest) a maximum of approximately 4.7 m from the previous bulwarks i.e. far enough to expose the rear long stretcher beams from the previous phase in the eastern half of the Main Excavation. This was to remove many of the land ties which would have interfered with the construction of the new harbour wall, although 19 of the anchor beams which connected with the previous phase of bulwarks were merely sawn off at their southern ends. In the western half of site, the construction cut for the wall was only observed to extend to a maximum width of 1 m, although the construction cuts for the associated land ties in that area (G566, G571, G585, G643) extend further northwest from the harbour wall (none of the previous phase of bulwark was extant in that area); from 2.73 m for the easternmost land tie, G571, to a maximum length of 4.16 m for the westernmost land tie, G585. The construction cut may not have been observed here due to disturbance in this area or the excavation conditions, and the initially undetermined relationship with the concrete quay G589 from Phase 5.

The new harbour wall was built on a timber foundation (see Fig. 348 above). This was constructed from 104 support posts which carried northeast-southwest aligned horizontal beams jointed to the posts with mortise and tenon joints, which in turn carried northwest-southeast aligned horizontal planks. The support posts were seen during the machining at the end of the Main Excavation, so their full lengths were not recorded, however they measured 0.26 m^2 with a mortise to the top. Most of the foundation structure was uncovered by machine during the final stages of the excavation, so only seven of the overlying beams were fully recorded in the Main Excavation. Their lengths varied in size from 1.48 m to 3.64 m, and they were laid end to end in three rows over the support posts to which they were jointed with tenons, with approximately two to three joints per beam. These beams carried 202 horizontal planks, aligned northwest-southeast, which created a flat, stable surface onto which the stone wall was constructed. The lengths of these planks varied from 1.55 m to 3.5 m with the majority being shorter, and they were an average of 0.28 m wide at a height of -0.32 m OD. The longer planks extended south beyond the others, and were laid together to create a platform approximately 6.7 m wide which corresponded with the positions of flights of steps which led south down to a lower level of the quayside outside the area of excavation.

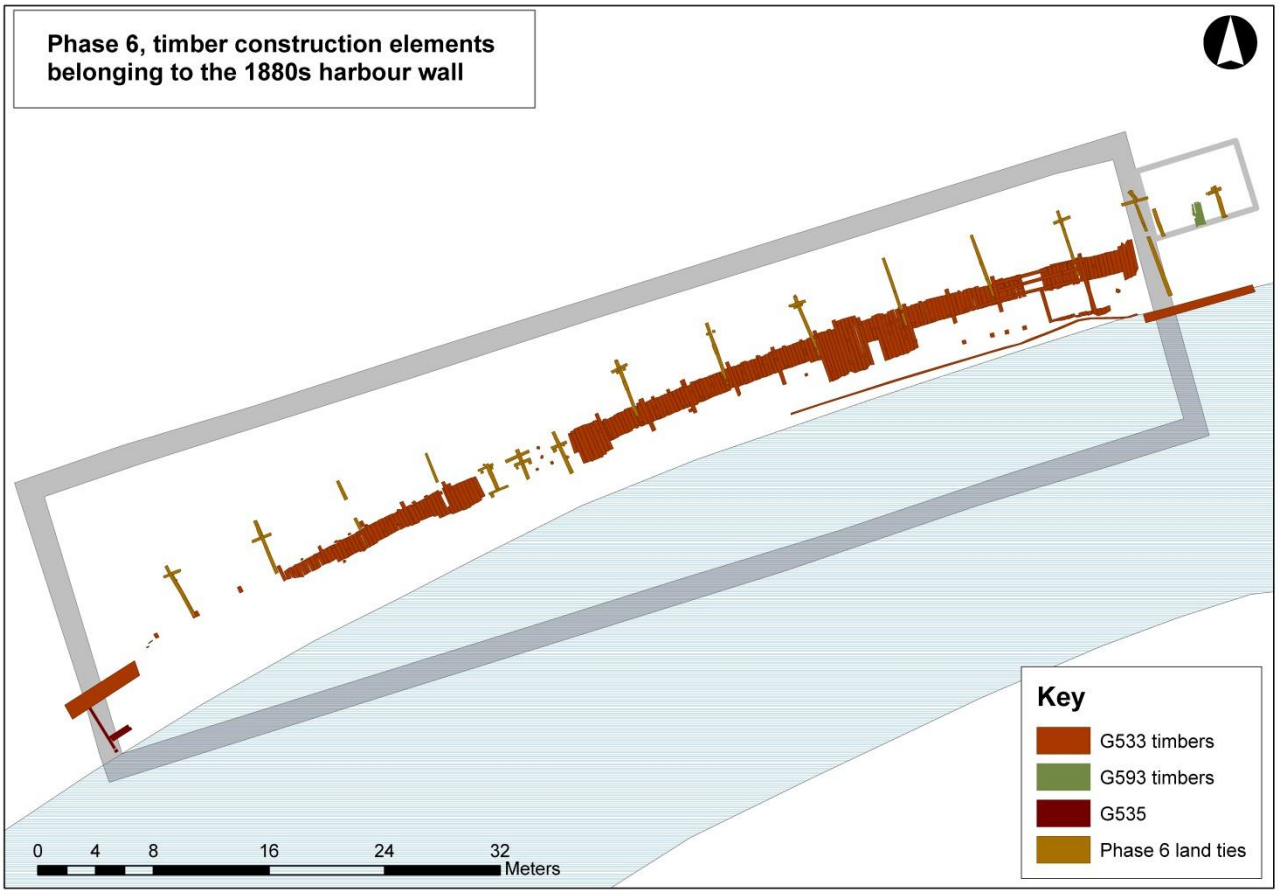

Fig. 349 Plan showing the timber elements of the 1880s quay wall including the timber planking foundation and 16 land ties

The timber foundations were held in place with 16 land ties each constructed from support posts, a stretcher beam and an anchor beam. In the eastern half of the Main Excavation, the southern end of seven of the land tie anchor beams were jointed into the plank platform of the wall foundation, but this was not observed in the western extent. While each of the land ties varied in its construction depending on the placing or reuse of extant surrounding elements, they were all constructed from the basic formula which had been seen in the previous phases. This was, namely, a northwest-southeast aligned anchor beam with a northeast-southwest aligned stretcher beam above and two posts either side. The anchor and stretcher beams were often fixed together with an iron bolt, and sometimes, e.g. G669 and G600, with a lap half joint. There were, however, many adaptations from this basic construction during this phase, where for example the construction cut for the land tie was partially backfilled to provide support for the anchor beam, as in G585 and G643 in the western half of the Main Excavation, or the placement of a support post under the anchor beam, as in G576, G600 and G624. Five of the land ties utilised the previous land tie structures from Phase 5, with the anchor beams from G566, G567, G571, G600 and G624 all laid over older stretcher beams, from G565, G562, G572, G562 and G632 respectively. Some anchor beams were also held in place with wedges or braces, namely G567, G568, G576, G592 and G624. A recurring element which was not seen in any of the previous phases of land ties was the presence of a short, smaller anchor beam over the northern end of the main anchor beam. This was seen in G540, G585, G597, G643 and G669; however there was no obvious explanation as to why these land ties required this additional structural element,

unless it was to further secure the stretcher beam in place, although 3 of these land ties were known to have been fastened together with iron bolts.

Fig. 350 View of the stone harbour wall looking west shows some of the land ties in-situ. In the middle of the picture the anchor beam from G600 can be seen overlying the stretcher beam from G562 from Phase 5, and fastened to it by means of a lap joint and an iron bolt. The square timber posts throughout are the *fiskegang* from the previous phase, and the truncated anchor beam in the foreground is also from land tie G562 in Phase 5. C03_20140331_9229 (cropped)

Fig. 351 The harbour wall was constructed from land ties (G567 seen in the foreground), a wooden platform, and 2-3 remaining courses of stones. The mortar lips can be seen between the stone courses and the brick foundation G621 can be seen in the right of the picture. C03_20140327_9162 (cropped)

The stone harbour wall was constructed on top of the timberwork foundation by bedding large stones onto a layer of mortar over the planks. Three courses of 19th Century stonework were recorded as SS19332, SS20007 and SS20055, with squared-off stones lying on their long edge to the seaward side of the wall, and more roughly shaped boulders behind. The stone sizes varied from 0.23 m by 0.13 m, up to approximately 0.8 m by 0.5 m, but were generally fairly uniform in size. The stonework was a mixture of Öland sandstone, fine grained sandstone and concrete. Each course was mortared together, with a mortar 'lip' between the first and second courses. This lip was interpreted as evidence of a construction technique, where the first course of stones was laid then material was backfilled behind the stones before the second course was laid. However, a later cut close to the wall, SG548, was observed in the middle and western half of the trench, which was interpreted as being evidence of repair or repointing with which this mortar lip could be contemporary. This repair measured 25.6 m by 0.35 m and was 0.25 m deep from an average height of 0.18 m OD at its western extent and approximately 0.4 m to the east. The two areas which would have led to the steps, 15.5 m apart, extended south beyond the main sea wall and would have led down to a platform at sea level beside the wall (the *fiskegang*), however these steps were not fully excavated due to their position at the limit of excavation. The uppermost courses of the stone wall dated from renovations in 2006/7 and consisted of ashlar masonry SS19792. This was only surveyed as a separate context in the western extent of the Guide Wall trench, whereas it was removed by machine in the main trench to expose the 19th Century wall for recording.

Fig. 352 FO212500, SD25025, SG543. A Swedish 5 öre coin dated 1875. Museum of Copenhagen

The cut for the harbour wall, SC26932 and SC30266, was indistinct in places due to the composition of the construction

backfill behind the wall, SG543, which consisted of the material which had previously been excavated. The backfill deposits were very mixed dumped material including general and construction waste along with redeposited silts and material from previous phases which had been excavated as part of the construction cut. Many of the clay pipes from the deposits date from the early to mid 18th Century and are unused, which is indicative of re-deposited material within the cut. Of the three coins recovered, two were skillings dating to 1771 and one was a Swedish öre dating to 1875. This Swedish coin is likely to be contemporary with the backfill as is a Norwegian lead seal for herrings FO212826.

A ceramic water pipe, G559, which measured 4.66 m by 0.7 m and 0.3 m deep and consisted of eight interlocking sections, was mortared into the stone wall in the eastern half of the excavation. Given that there was no evidence of later intervention at the harbour wall, this waterpipe was likely to have been contemporary with its construction. This ceramic pipe did not continue north into the Guide Wall excavation, however there was a timber pipe, G464, which followed the same alignment, therefore the ceramic pipe could represent a replacement of the southern end of this timber pipe during the harbour redevelopment. There was a small sub-circular cut, G558, which measured 0.7 m by 0.55 m and 0.15 m deep, between a post in land tie group G562 from Phase 5 and the ceramic pipe G559. As it was unlikely to be associated with the land tie, due to the difficulty in locating this feature from ground level, this feature could represent an episode of repair or maintenance of the earlier timber water pipe which was replaced.

Fig. 352 FO212506, SD25025, SG543. A Christian VII 1 skilling coin dated 1771. Museum of Copenhagen

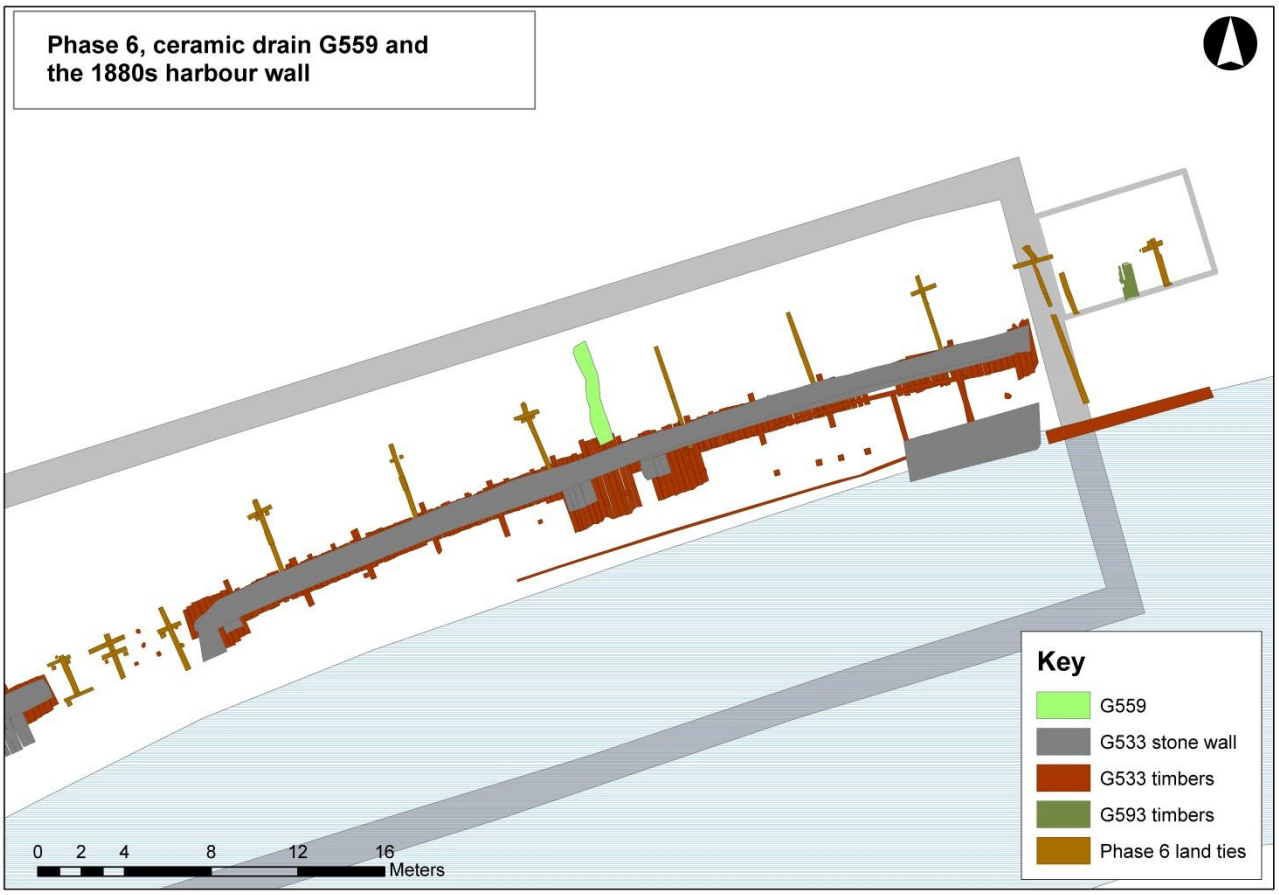

Fig. 353 Plan showing the relation between the ceramic drain G559 and the 1880s harbour wall

A 24 m by 6.3 m and 0.7 m deep linear cut, G703, was located between the two flights of steps in the middle of the Main Excavation and was cut through the backfill deposits of the harbour wall construction at a height of 0.12 m OD. The material within this feature consisted of the same mixed deposits through which it was cut, and the main evidence for the cut itself came from the profile created during excavation. This feature presumably represented a repair or maintenance episode of the stone harbour wall, however there was no such corresponding action recorded in the wall at this point.

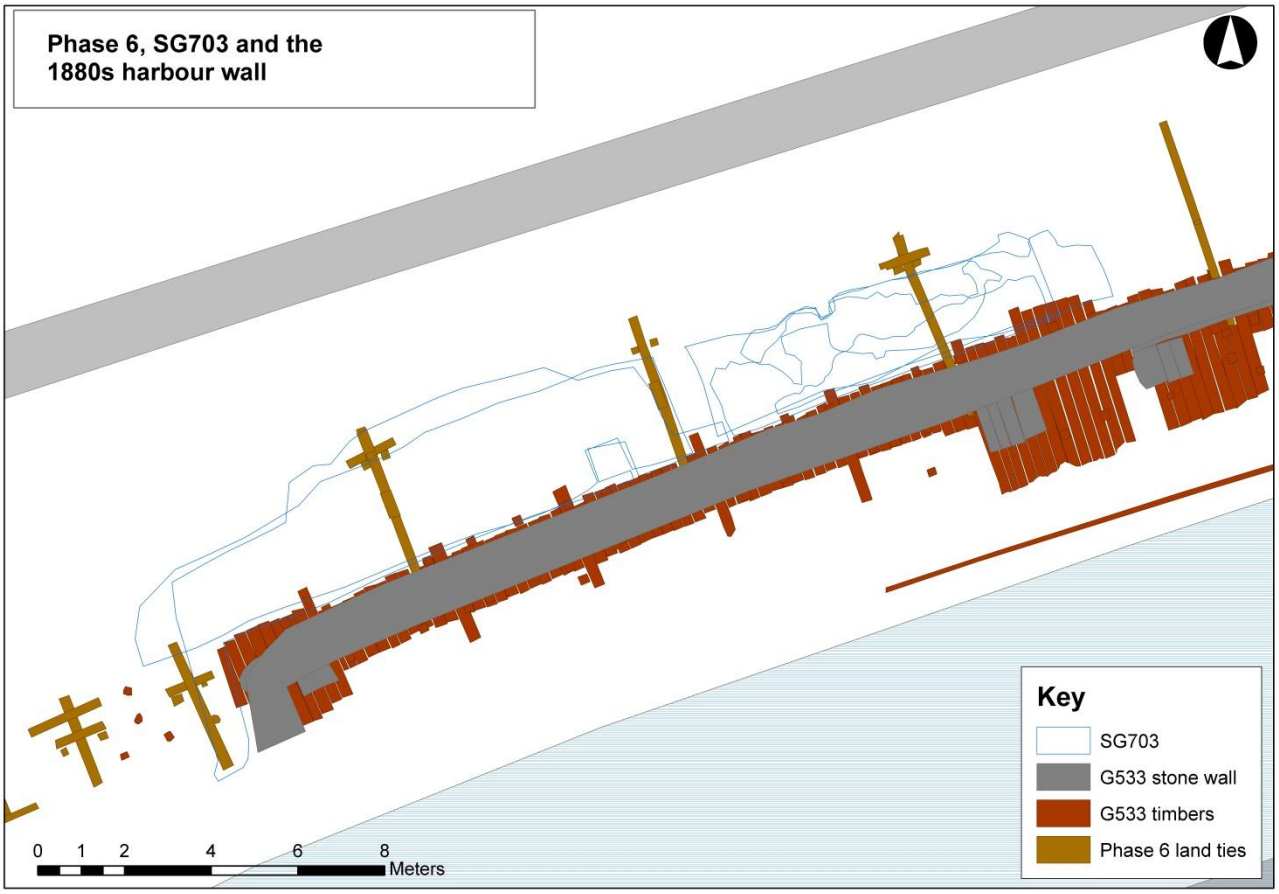

Fig. 354 Plan showing the outline of SG703, a possible repair cut running along the northern side of the 1880s harbour wall

In the middle of the Stairway trench abutting the south side of the Phase 5 bulwark was a north-south aligned timber structure G593, which measured 1.56 m by 0.67 m and 0.85 m deep. This structure was cut through the backfills behind the 1880s harbour wall, and the northern side of the structure was bounded by the Phase 5 timber bulwark G591. It was constructed from five north-south slender beams or thick planks, and 6 vertical planks ST50883. The beams were placed in 2 parallel lines; beams ST50917 and ST51806 to the east with ST51267 acting as a wedge to the north: and ST52117, ST52087 and ST52132 to the west. These were thought to be a guide for the 6 vertical planks positioned between them. The northern most two vertical planks are about 0.45 m higher than the others which corresponded with the height of the adjacent planking and bulwark post, though they appeared broken at the top, and had been shaped along the <northern side to fit against the planking of the bulwark. The whole structure was backfilled by a mixed pebbly clay dump layer SD50743 that extended westwards out of the trench. Dendrochronology samples taken from two of the vertical planks did not return a date. This structure was thought to be associated with the 1880s stone harbour wall, although the precise interpretation of the timber structure was problematic without the relation with that structure. It may have been shoring connected with an episode of repair or maintenance of the stone wall, however the stone wall was not exposed in this area to ascertain the presence of any corresponding repairs.

Fig. 355 Plan showing the vertical timber structure G593 in the Stairway trench/ZT22798

7.6.3.2. Pits

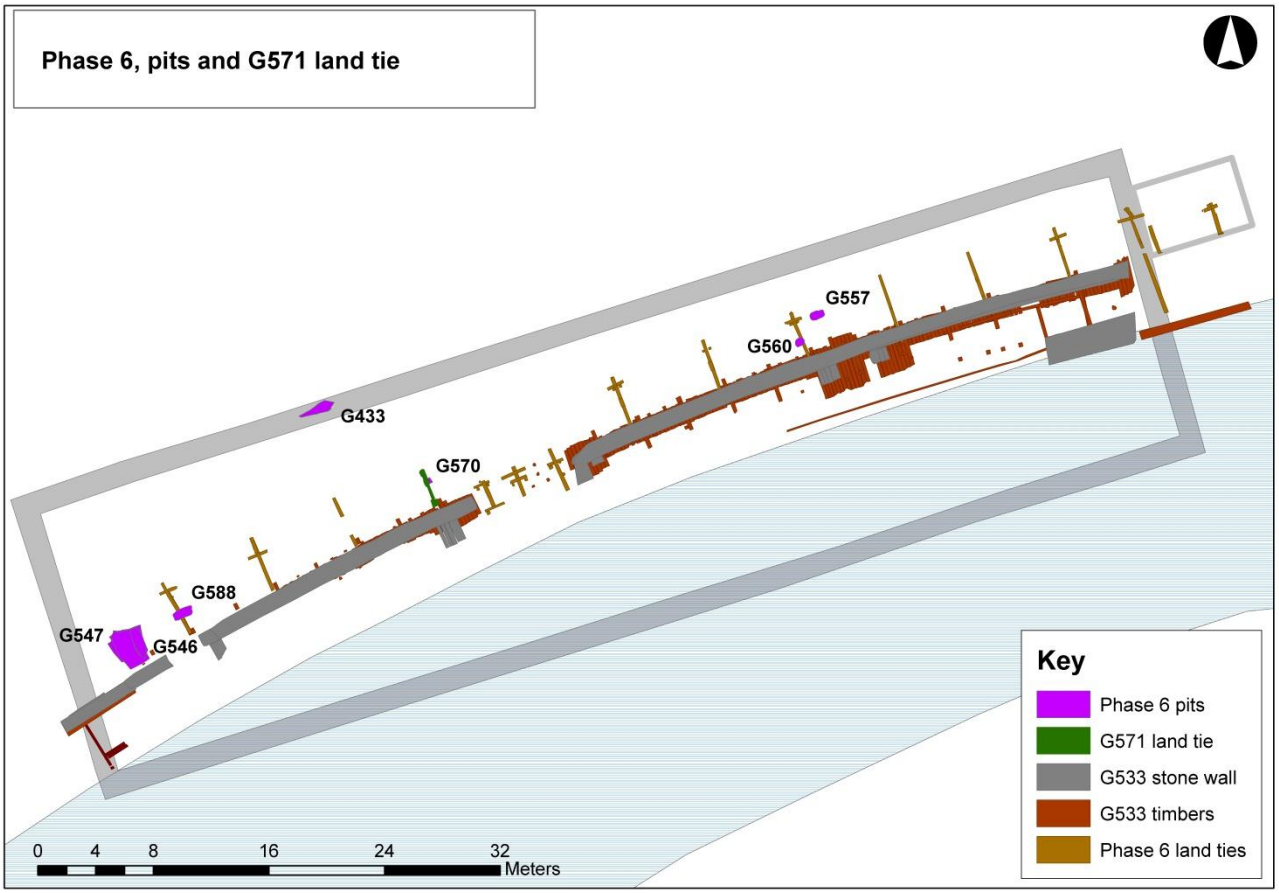

Fig. 356 Plan of the Phase 6 pits and land tie G571

Group	Sub-group	Group name
433		Pit
546		Pit
547		Pit
557		Pit
560		Pit
570		Pit
588		Pit

Table 60 Groups related to Phase 6 pits

Six pits were excavated into the backfill behind the 1880s harbour wall, none of which had a definite discernible function, but all were thought to be either associated with the removal of previously overlying features or with a repair of the harbour wall. One pit was located further to the north of the harbour construction, also of an indeterminate function.

G570 was a small isolated pit, 0.4 m by 0.25 m and 0.5 m deep at a height of -0.18 m OD, between two land ties, back filled with sterile gravel, sand, stones and small pieces of concrete. There was no obvious function for this pit but it was thought that this could have been associated with the placing of land tie G571.

Two circular pits, G557 and G560, lay 1.4 m apart towards the eastern end of the Main Excavation. These pits were of similar size; G557 was 1.03 m by 0.58 m and 0.3 m deep at 0.27 m OD; and G560 was 0.65 m by

0.55 m and 0.2 m deep at 0.12 m OD. However, their fills differed; G560 contained demolition material and G557 contained material similar to that through which the pit was excavated, neither of which contained finds. These were both likely to have been short-lived features and neither had an obvious function, but they could have been associated with the removal of overlying features.

The three pits towards the western end of the Main Excavation were not fully excavated due to the excavation conditions. Of these pits, G546 was cut through G547, which was not fully exposed. The latter measured 2.9 m by 0.17 m and was a maximum of 0.7 m deep, sloped downwards towards the wall from a height of 0.18 m OD, and contained a large amount of mortar in the backfill, which could indicate that the pit was cut to access the harbour wall for repair. The backfill also contained a small amount of very mixed finds which was likely to have derived from redeposited material. Pit G546 was linear, measured 2.2 m by 0.72 m and 0.14 m deep from 0.31 m OD, with a fairly flat base and steep sides, and was backfilled in a single episode with the material through which it was excavated that contained ceramic, iron and a piece of clay pipe. It could then represent an earlier (possibly failed?) episode of repair, or the removal of an unidentified feature. Pit G588, 2.4 m further east, and measured 1.4 m by 0.7 m and 0.15 m deep from 0.12 m OD. It was aligned with the harbour wall and was filled with demolition material and so could also have been connected with a repair to the harbour wall or the removal of an overlying feature.

7.6.3.3. Street Lighting

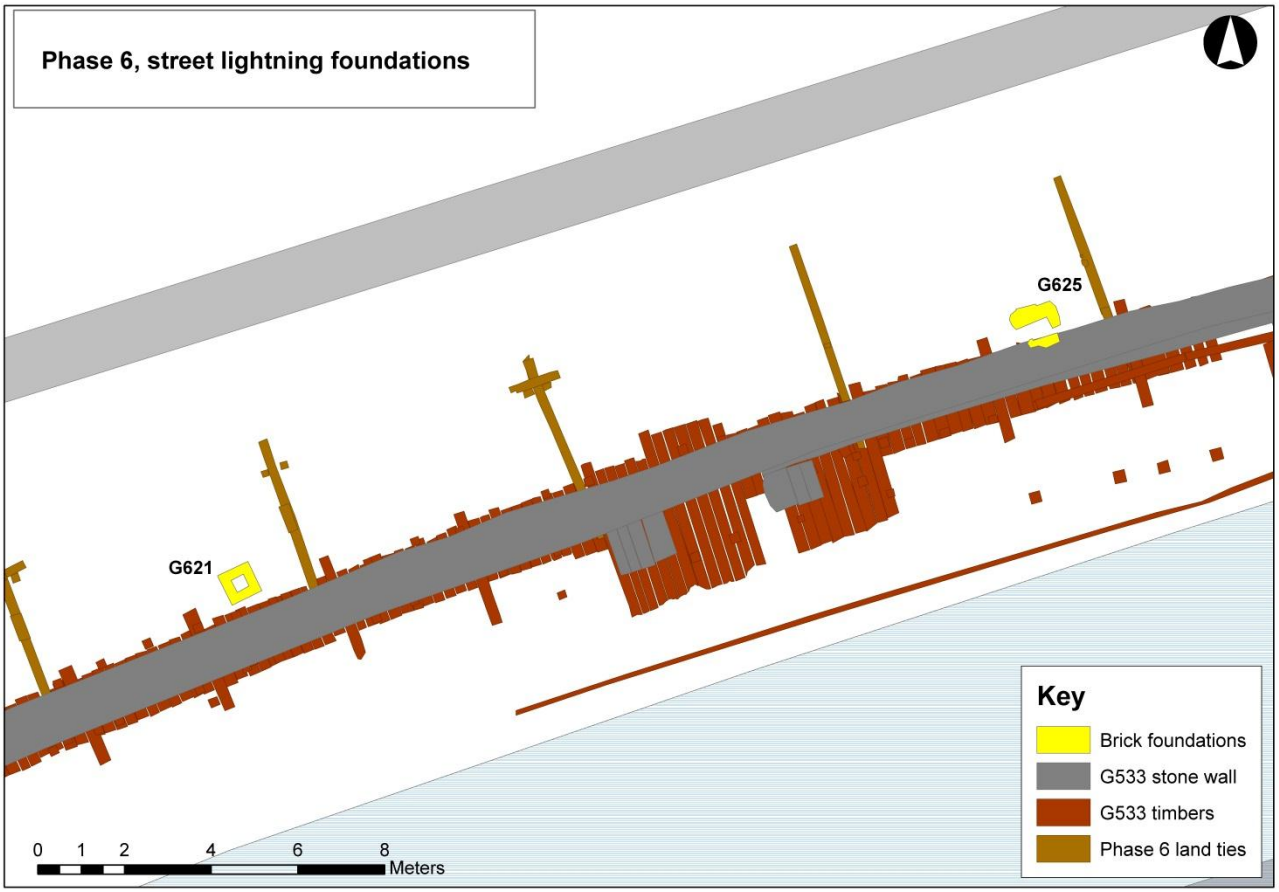

Fig. 357 Plan of the brick street lighting foundations

Groups	Sub-groups	Group name
621		Foundation
625		Foundation

Table 61 Groups related to Phase 6 street lighting

Cut through the upper backfills behind the 1880s harbour wall and situated close to the wall itself, were two hollow square structures approximately 18.75 m apart. These were constructed of yellow brick in alternating rows of headers and stretchers; G621, to the west, measured 0.75 m square by approximately 1.5 m deep from 1.5 m OD, with a 0.3 m square central hollow; and G625, to the east, which measured 1.09 m by 0.95 m and c.0.5 m deep from 1.38 m OD, with hollow measuring approximately 0.4 m by 0.53 m. The discrepancies in size could be due to G625 having been constructed adjoining and partly mortared to the stone harbour wall whereas G621 lay c. 0.37 m to the north of the wall. G625 was also damaged during machining. The construction of these foundations differed slightly from each other; G625 had a single course step foundation and the exterior face of G621 was rendered, presumably to prevent damp penetration. No construction cut was observed for G625, which could reflect the excavation conditions at the time, or that the foundation could have been trench-built, whereas an external construction cut was necessary for G621 to facilitate the application of external render. The internal deposits within the hollows of the structures also differed, however both were thought to represent general waste dumped after the

features went out of use, and were not indicative of any associated function. The deposits within G625 contained a layer of burnt material (interpreted as dumped rather than in-situ due to a lack of burning on the internal brickwork of the structure) along with some quite modern material, indicating that the feature was deconstructed relatively recently. They were initially thought to be either drains or manholes behind the harbour wall, however the presence of a narrow iron pipe protruding southwards from the base of structure G621 is suggestive that these structures were associated with the gas street lighting of the harbour.

Fig. 358 Brick street light foundation G625 abutting and built into the earlier 1880s stone harbour wall looking south. C03_20140204_7913 (cropped)

Photographs of the harbour from the late 19th and early 20th Century show a series of street lamps throughout the area with some situated close to the harbour wall, although their precise location is difficult to determine. There are also two tall iron lamps beside the wall which would require the depth of foundation which these brick structures provide. These tall lamps can be seen in a photograph from 1908 (see below), but are not present in a photograph dated c. 1905 (Torvehandel på fisketorvet på Gammel Strand, c. 1905 on Væggen), and so date from the early 20th Century.

Fig. 359 Photo of Gammel Strand dated to c. 1908. The shorter, more common street lamps can be seen in the left foreground, along with the tall iron lamps along the harbour front. Museum of Copenhagen

7.6.3.4. Gas pipes

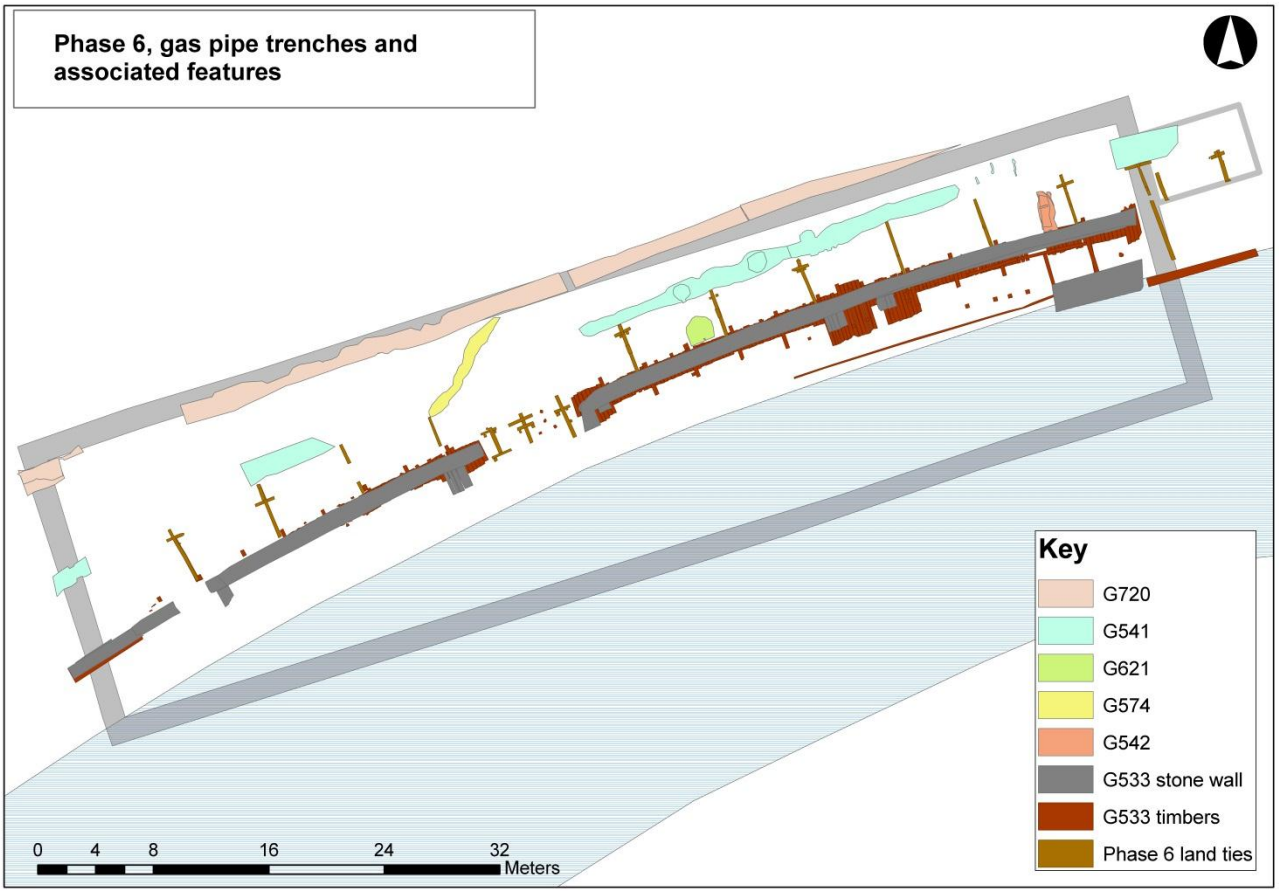

Fig. 360 Plan of the gas pipe trenches and associated features

Group	Sub-group	Group name
541		Gas pipe
542		Gas pipe
574		Gas pipe
621		Gas pipe
720		Gas pipe
721		Service pipe

Table 62 Groups related to Phase 6 Gas pipes

Gas street lighting was first introduced to Copenhagen in 1857 (*Anonymous* 1982: 13) but a map from 1852 showed the projected route of the proposed gas pipelines. Three gas pipes were found within the Main Excavation trench, one with a large diametre; G541, and two narrower; G542 and G574. There was also a narrow iron pipe to the south of G621 which was recorded as associated with the brick foundations for a street light (see above). A total of three gas pipes were also found in the Guide Wall trench. One of these was found to be the western part of gas pipe group G541. Located 4 m north was G720, a gas pipe with approximately the same diametre as G541. This was also recreated in the post excavation phase from many gas pipe cuts on the same orientation within Trenches 1/ZT9164, 2a/ZT12420, 2b/ZT13818 and Trench 3/ZT13569. The final gas pipe group was G721, a narrower service pipe only seen in the very NW of Guide Wall Trench 1/ZT9164.

The large northeast-southwest oriented gas pipe, G541, which measured 84.21 m by 2.11 m and 0.5 m deep from an average height of 0.33 m OD, truncated most of the late 19th Century deposits from the southern part of Trench 1/ZT9164 of the Guide Wall trench and then continuing along the northern side of the Main Excavation and Stairway trench. There were probably two episodes of gas pipes within this cut, with the first being removed before the other was placed onto the wooden strut supports found further east. Two large vertical iron pipes, c. 1.2 m in diametre located towards the western end of the pipe, may have been connected to the pipe or may have been beneath it for support. The gas pipe itself was removed by machine and was not surveyed. Neither of the two narrower gas pipes, G542 or G574, connected with the large east-west pipe G541.

Fig. 361 Map from 1852 showing the route for the projected gas pipelines. Copenhagen City Archive

Of the smaller gas pipes, the cut for the easternmost pipe, G542, measured 2.72 m by 1.01 m and 0.45 m deep from an average height of -0.1 m OD, and was cut through the backfills of the 1880s wall. No disturbance to the wall itself was observed, confirming that the pipe post-dated the construction of the wall. The pipe itself was only 1.4 m long and extended 1.1 m northwest from the quay wall before rising vertically, then continuing horizontally at a higher level. It was broken and heavily corroded at the northern end where it was supported on timber planks. It was thought to have connected with a gas light at street level.

Gas pipe G574 was the only on site to be on a different alignment to the others, being oriented north northeast-south southwest. The cut for the pipe measured 8.5 m by 0.8 m and was 0.4 m deep from a height of 0.17 m OD, although the dimensions of the pipe itself were not recorded. This pipe extended further north than the larger east-west gas pipe G541, and so was unlikely to have connected with it, and it contained no vertical joint to connect to street level. This was likely to have been from a different phase of gas installation than the other pipes, although no connections to identified street furniture can be made for most of them.

Fig. 362 The large northeast-southwest gas pipe G541 being laid at Gammel Strand during the early 20th Century. The normal, shorter street lamps can be seen in the background. Museum of Copenhagen

Fig. 363 Working shot showing the gas pipe cut SC9090, G720, in the Guide Wall trench as it was found during excavation, viewed from the southwest. C03_280612 4589 (cropped)

A fourth iron pipe was found to the south of brick foundation G621 and was suggestive that this feature was the foundation for a street light (see above). The details of the connection between the pipe and the foundation were not recorded, however it appears that the pipe was attached approximately 1.5 m below the top of the brick structure, and was thought to continue further southeast out of the excavation.

Photographs from the early 1900s show what is probably the earlier of the two large gas pipe being laid. This was probably a major gas main and unlikely to have been purely to supply the street lamps in the area. No connections were seen to this pipe either in the Main Excavation trench associated with the street lamps, or running through the Guide Wall trench to the north to supply the buildings along the street front.

Fig. 364 The northern gas pipe cut SC9729, G721, in the Guide Wall trench looking west. C03_20120713_4923

Group G720 was uncovered in the Guide Wall excavation within Trenches 1, 2a, 2b and 3. It measured 68.02 m long by 1.37 m wide and 1.5 m deep. The construction cut for the pipe truncated features from Phases 2-6, stopping just above Phase 1 bulwarks within Trench 3. It was supported on a mixture of planks and boulders; with the boulders probably part of the former Renaissance wall G532.

Group G721 was located in the northern part of Trench 1/ZT9164, 1.5 m north of G720 and orientated on a SW-NE direction. The group measured 12.9 m long by 0.65 m wide by 2 m deep and truncated the northern section of the building G707 and some deposits beneath. The construction cut contained backfill comprising urban waste from the 17th to the early 20th centuries with finds such as glass bottles, ceramics, CBM and animal bone within the fill. The gas pipe was smaller in diametre than the pipes seen in pipes G541 and G720 and was made from rubber.

7.6.3.5. Levelling

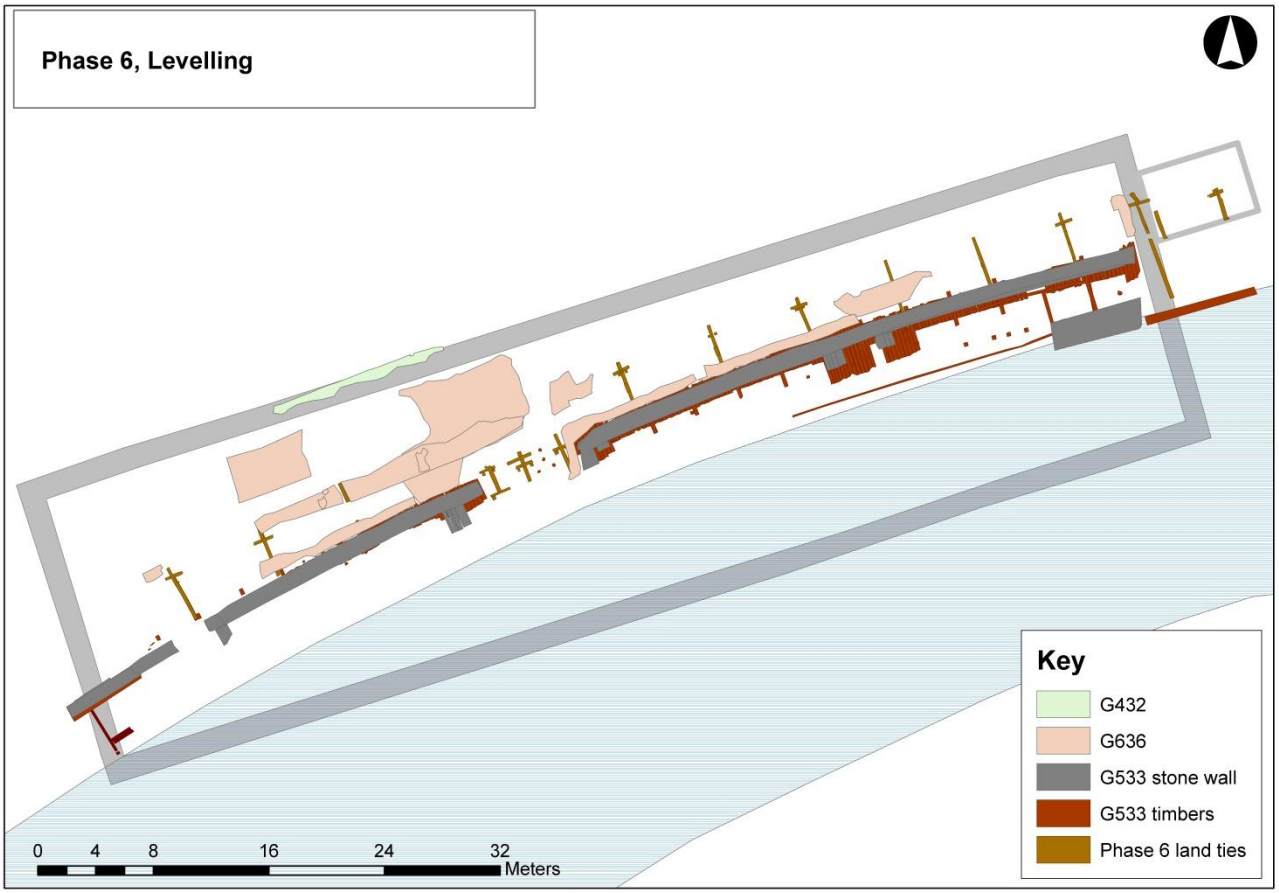

Fig. 365 Plan of the levelling deposits behind the harbour wall

Group	Sub-group	Group name
432		Levelling
636		Levelling

Table 63 Groups related to Phase 6 levelling

Overlying all of the previous features and extending across the entire Main Excavation area was a series of thirteen dumped deposits, covering an area of 77.32 m by 9.93 m at an average of 0.3 m OD. The material within and between these deposits was very mixed, but there was a high content of building waste throughout in the form of CBM and rubble. The main deposit, SD20146, which overlay all of the Main Excavation area consisted of general waste which contained ceramic and glass sherds, animal and fish bones, slag, leather and 79 clay pipe fragments. The only objects which could be associated

Fig. 366 FO211629. Well preserved lead cloth seal (probably from Hamburg) found in the large levelling dump SD20146 (G636) which covered the entire site. This demonstrates the very mixed nature of the material with a probable 16th-17th Century cloth seal found in a late 19th Century deposit. Museum of Copenhagen

with the contemporary use of the harbour were a pine fid FO212448, and the five small copper alloy coins, FO212523, FO212525, FO212533, FO212536 and FO212537, which were too corroded to date. The remaining artefacts consisted of those which could have been accidentally lost or thrown out, such as a bone comb FO213515, and iron padlock, FO218090, and various copper or bone buttons and cutlery. Much of the material was likely to have been re-deposited, as illustrated by the recovered glass fragments which date from the 17th Century to 1754, two lead cloth seals, FO211629 and 212822 which are likely to date from the 16th to 17th Centuries, and the discovery of a Medieval leather shoe FO218263. Five corroded musket balls were also recovered, and although three of them were shot only one of these appears to have suffered impact. However, muskets were out of use by 1900 so again these are likely part of the re-deposition. The full depth of the levelling varied across site, with the main deposit, SD20146, having a maximum recorded depth of 2.4 m, but this would have fluctuated depending on the depth of the underlying archaeology. This deposit extended across the whole of the Main Excavation and was removed by machine. The purpose of these deposits was to raise and level the ground surface to the required height and to provide a foundation layer for the overlying stone-block paving. Finds from these deposits were dated as either Post-medieval or 19th Century, with no modern material observed, so this episode of levelling was likely to be contemporary with the construction of the 1880s stone harbour wall.

Fig. 367 FO213419. Clay pipe found in the levelling dump SD20146 (G636). Its design comes from the Schmidt family in Stubbekøbing and dates to around 1740-70. The unusual lid is probably brass which contains four holes and is attached to the body of the stem with a decorative wire. Museum of Copenhagen

Fig. 368 FO213530. A small glass bottle found in the levelling layer SD20146 (G636). The remains within the base of the bottle could be the bottle stopper. Museum of Copenhagen

Fig. 369 FO213355 (left) and FO213357 (right). Two spoons with the stamp 'London' on the back, found in the levelling layer SD20146, G636. Museum of Copenhagen

7.6.3.6. Pit Construction

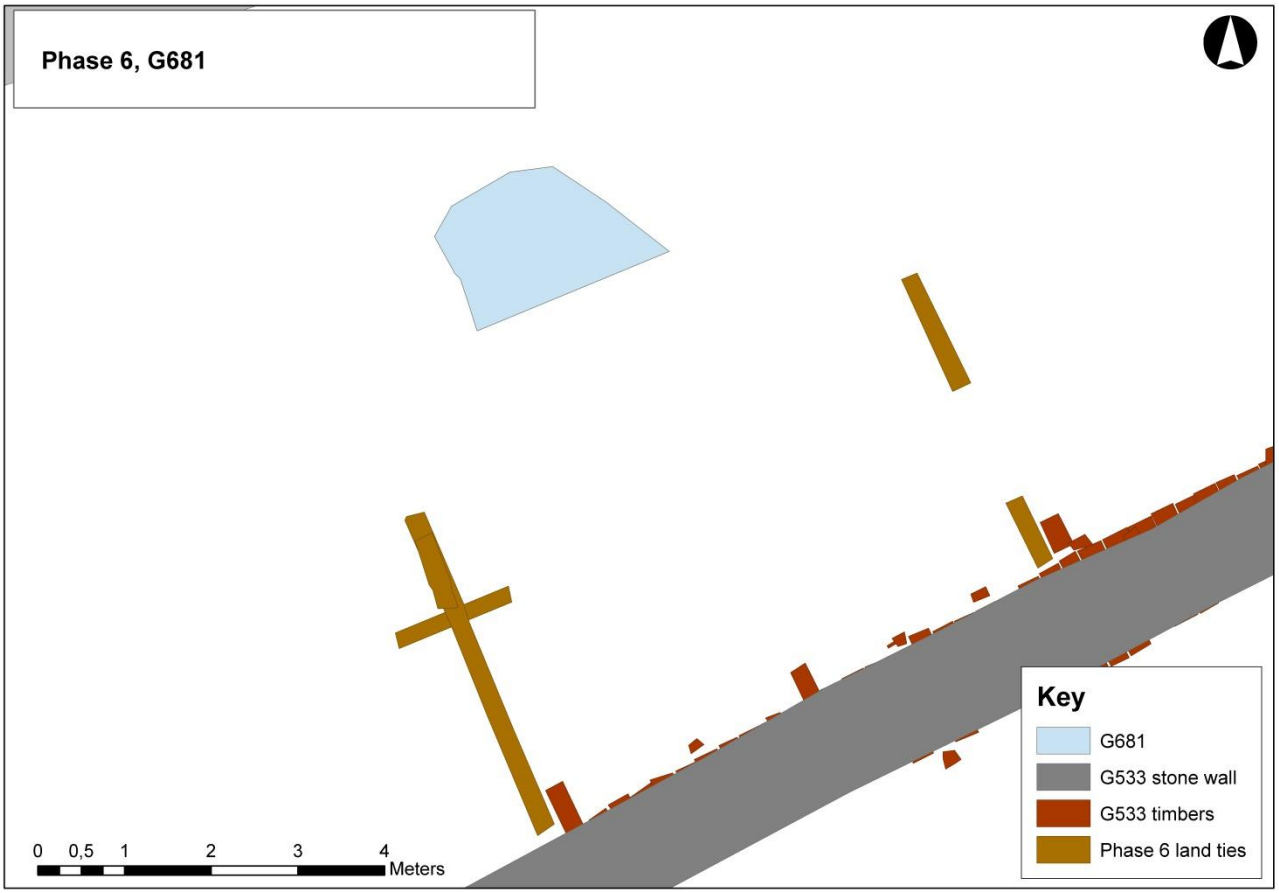

Fig. 370 Plan showing pit G681, the southern edge of which was truncated by modern services

Group	Sub-group	Group name
681		Pit

Table 64 Group G681 related to Phase 6 pit construction

After the general levelling of the whole area there was only one identified episode of activity which was not recorded as modern disturbance: the excavation of a 2.38 m by 1.55 m and 0.5 m deep pit G681, from a height of 1 m OD. This pit was itself truncated by modern disturbance to the south and so was likely to have been wider than 1.55 m originally. The position of the pit does not suggest an obvious function, however a lens of lime seen at the base of the pit could indicate the pit was used for localised lime mortar production. It was thereafter backfilled with building rubble, again suggestive of a construction related purpose. The pit lay 3 m north of the concrete quayside and 5.5 m north of the 1880s harbour wall, so any lime mortar or render produced within this pit could have been used for the repair of this.

7.6.4. Modern harbour use

The majority of the activity in the late 20th Century and early 21st Century at the harbourside was not seen in the archaeological record from the excavations (physical, artefactual or natural science remains). It is instead documented in the photographic, historical and modern archives, which are discussed in Chapter 3: Cultural Historical Background and Topography.

7.6.5. Phase 6 conclusion

The final phase of harbour redevelopment was characterised by the deconstruction of the Phase 5 timber bulwark and the construction of a substantial harbour front in stone which maintained the form of the Phase 5 harbour with *fiskegang*. This was part of a programme of general improvement of the harbour front and continued on from the rebuilding of Højbro Bridge just to the east. The use of stone demonstrated a willingness to invest in the area rather than using cheaper wood, and may also have been seen as more cost-effective in the long term by mitigating the requirement for replacing a decayed structure every 50 or so years. Economy in design can also be seen through the re-use of some of the stretchers from the Phase 5 land ties to the east of site. The rebuilding not only made the design of the harbourside uniform along its entire length, but also did not allow for further expansion, possibly preventing the channel between Gammel Strand and Christiansborg from becoming too narrow.

The subsequent interventions identified in the harbourside all related to larger infrastructure development such as the installation of street lights and the large gas mains, rather than to the specific use of the harbour, although it can be inferred from the necessity for street lights that this area was a main public space. The artefacts recovered from this phase were mostly re-deposited from earlier phases, and as such do not contribute much to the understanding of the life in the city or use of the harbour at this time.

The finds and natural science work undertaken for Phase 6 was small in quantity due to the overall prioritisation strategy on Gammel Strand. What was analysed point to a collection of redeposited material from the 18th Century with some contemporary finds within 19th and 20th Century deposits. The finds were most prevalent from backfill group G543 and various other modern interventions and truncations linked to the early 20th Century service pipes into earlier Post-medieval layers. This may explain the recovery of even some Late Medieval finds and Post-medieval artefacts from Phase 6.