

16 Phase 4d Late medieval and Renaissance fortification 1350–1600 AD

16.1 Results

The presentation of the remains from Phase 4d will be given from two perspectives. Firstly there will be an account of the different feature types – part of a bulwark and the Late medieval moat (Fig. 140 and Tab. 37). After the overall description the features are placed in a structural and historical context.

This time phase could have been presented together with either the eastern gate building and/or the Late medieval city wall, but is separated in the report due to the results and dates, interpretations and the general discussion on the changes that have been made on the overall fortification over time. This also goes for the backfilling and levelling of the Late medieval moat which actually should be placed under time Phase 6 (Post medieval fortification and other early 17th century activities), but are presented here due to the difficulties in distinguishing some of these deposits from the usage layers and the fact that these layers are necessary for the discussion about the moat's final destruction, etc.

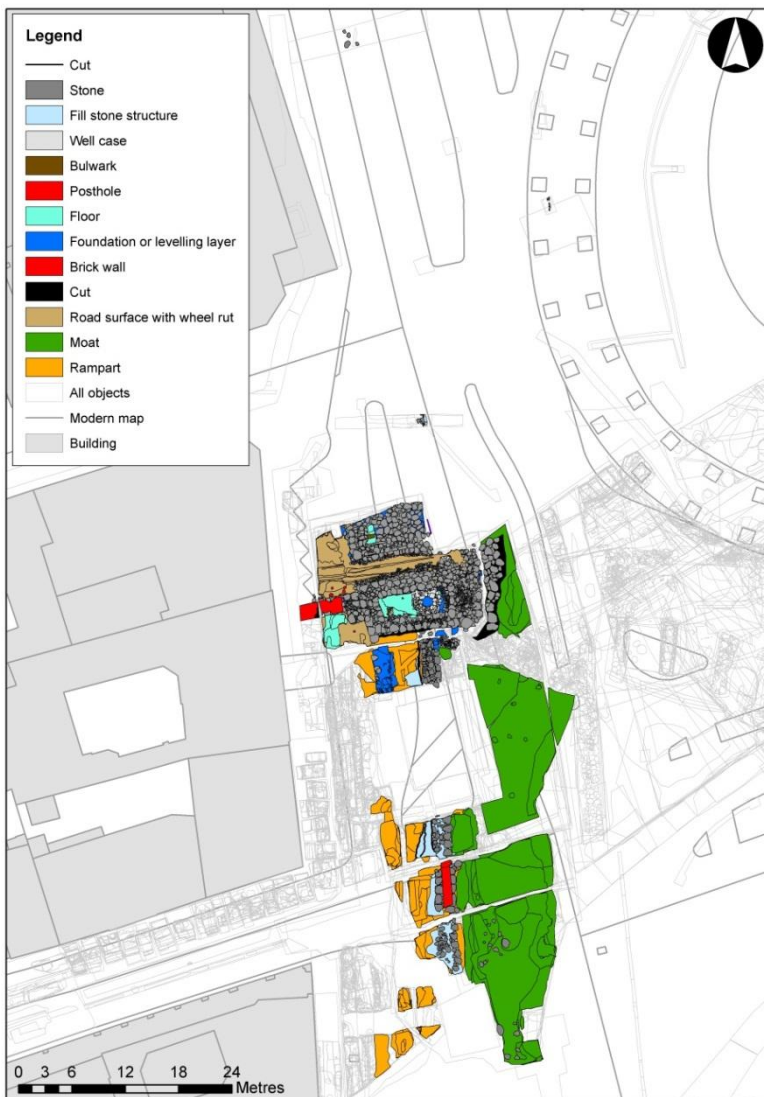


Fig. 140. Overview of Late medieval features at Kongens Nytorv.

Group	Type of feature	Subarea	Basic interpretation
502976	Timber/planks	Trench ZT162033	Bulwark
503806	Cut and fills	Station Box	Ditch?
450	Construction cut, sedimentation and backfills	Several phases	Moat, 16 th century
560	Dump and levelling layers	Phase 5B-2	Moat, 16 th century
500913	Timber	Phase 5A-1	Wooden plank

Tab. 37. Late medieval fortification.

16.1.1 Bulwark

A north-south orientated timber structure was investigated at Kongens Nytorv opposite the end of Strøget 31.0 m from the SE corner of Hotel d'Angleterre, consisting of 11 wooden posts (Fig. 141). The feature consisted of five larger mostly rectangular posts with six smaller, more rounded posts in between. All posts were vertically set, except at the north end of the structure where there was a horizontal plank (ST162149) that seemed to represent some planking behind the vertical posts.



Fig. 141. Bulwark from the mid 16th century at the SE corner of Hotel d'Angleterre.

There was an impression on site that the structure was curving slightly to the west, although the trench was too small to be certain. The posts seemed very well set and it is thought that they were driven into natural at the base of the moat, and that this structure was some kind of revetment since three contexts in subgroup 457 on the east side of the posts were interpreted as purposeful backfilling behind the posts. Peg holes in one of the saved timbers shows that this timber was a reused piece from a so-called "vognkæp" (English: rong) (Fig. 142 and 143). A sawed board made of spruce or pine was also recorded (Melin 2013:27).



Fig. 142. Part of "vognkæp". Photo: Karl-Magnus Melin, Knadriks Kulturbygg AB.

Dendrochronological dating of the timber structure placed this between the mid 15th century and the mid 16th century (Tab. 38). Some of the timber represented reused wood. The source of the oak wood was the Swedish west coast (Halland and Bohuslän) and for the pine this has been determined as Gotland (Linderson 2015).

CATRAS No.	PD No.	Species	Years	Character (Sp) Sapwood (W) Wane (B) Bark	Dating	Tree felling (V) Winter (E) After
60368	222584	Oak	187	Sp=1, not W	1448	1463±10
60369	222583	Oak	208	Sp=28, close to W	1520	1522±2
60370	222581	Oak	141	Sp=33, close to W	1543	1546±3
60371	222582	Oak	243	Sp=5, not W	1474	1489±10
60372	222585	Oak	53 (1 row)	Sp=5, not W	1432	1444±7
60373	228372	Pine	85	Sp=41, not W	1495	1514±15

Used sap statistic is 20±10 year.

Tab. 38. Dendrochronological data and dates of the bulwark.

Perhaps the best interpretation is that the revetment was for the purpose of lining the side of the moat to prevent erosion and that it was possibly lined here because erosion would have been greater on a sharp bend in the Late medieval moat.

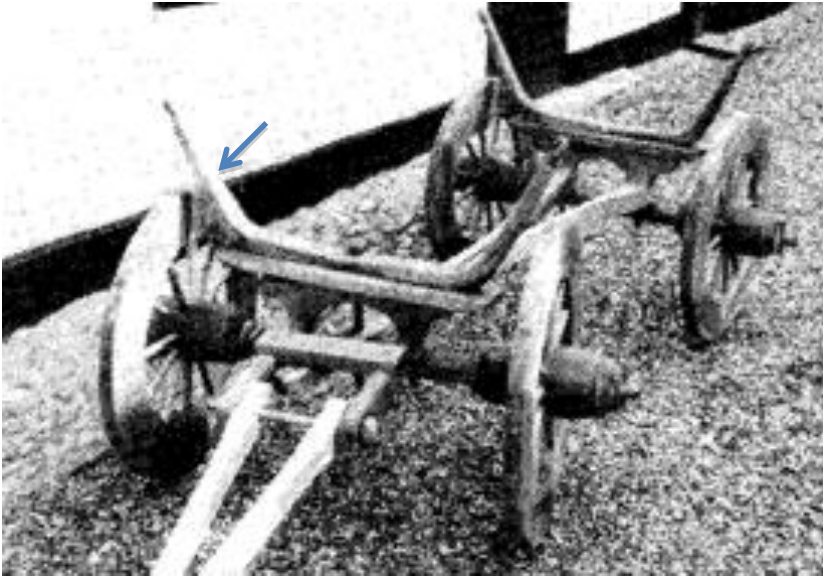


Fig. 143. The arrow points at a “vognkæp” re-used in the 16th century bulwark. Photo after Schovsbo 1987:137 and modified by Melin (2013:26).

16.1.2 The Late medieval moat – construction, usage and deconstruction

The Late medieval moat could not be separated from the earlier moat, but has been at least 10.5 m wide and was followed for a length of approximately 55.0 m running in a north-south direction (Fig. 144). The base was recorded between kote -1.0 and -0.5 m. The east side of the cut had a moderate slope (45 degrees) and had a moderate to gradual break of slope at the base. On the west side the edge was diffuse and was overcut during excavation and truncated by the Transformer Station and a modern concrete structure, which affected the exact shape and levels of the cut. The cut was steep (approximately 60 degrees to horizontal) and convex. The cut also flattened off towards the city wall foundation, leaving a very gently sloping “flattish” strip directly in front of the structure. The top of the construction cut varied from kote +0.65 to +0.10 m, the base between kote -0.45 to -0.70 m. These results can be compared with the medieval moat investigated in Vester Voldgade at Vartov, as a c. 15.0 m wide trench with the base at kote -2.0 (cf. Jensen 1934).



Fig. 144. Excavated 16th century moat, facing SW. The timber belongs to a later bridge structure. Photo: Museum of Copenhagen.

The NE part of documented moat cut (SC24862) outside the eastern gate building (6.5 m) had the exact same layout and orientation as stone foundation (SS22155; G-227), and was therefore first considered as part of a later addition to the gate building. Later, another interpretation was suggested, that this construction cut represented an older cut, which later had been truncated by the foundation, suggesting it as being part of the former 13th century moat.

No trace of the western side of the cut was observed in the north, mainly due to Østerport which had destroyed all traces of the original construction cut, though an estimated moat cut was measured in relation to the gate building (SC136403), based on the slope and the edge of stones and boulders in SS103531 (= SS22155).

The base of the Late medieval moat was approximately 0.10 m lower in the middle of the cut than at the west and east extremities. The flat nature of the moat base could perhaps indicate that the water was not fast flowing as there was no significant fall from the north to the south (towards the sea).

The Late medieval moat was most likely created during the construction of the brick and stone city wall. At that time a construction cut (SC147458) was made into the earlier rampart and the brick and stone wall was constructed within. As seen in the former Metro investigations the last phase of the embankment had been pushed approximately 4.0 m to 5.5 m beyond the High medieval moat (cf. Kristiansen 1998:106). The exact construction order is not known as there was no clear stratigraphic relationship between moat cut (SC68840) and (SC146139) and wall construction cut (SC147458).

The geology consisted of a thin gravel layer sometimes on sandy lenses, all on top of glacial moraine material. As no clay lining was identified in the moat it is suggested that the water level in the moat did not exceed the level of the moraine deposits. The exact level was approximately +0.50 m over sea level. Therefore the moat was probably no

more than 1.1 m deep, although this maximum was probably significantly more than the actual depth of water in the moat.

The sedimentation in the moat varied from 0.1-0.5 m in thickness and consisted of lensed dark brown and black decomposed peat together with light and mid blue, grey and yellow clayish silt with different types of inclusions and a large amount of household waste and building material (Fig. 145). Lenses of silt indicate slow flowing water and no traces of peat rhizomes were registered. Of zoological remains, mussels and snails were documented. Some of the findings were probably connected to the later deconstruction phase and pressed into the underlying and soft deposits, but overall this assumption does not affect the dating and deconstruction phase of the moat.



Fig. 145. Sedimentation (SD24889 and SD24916) south of the remains of the 17th century dam, facing north. Photo: Museum of Copenhagen.

The finds material dates the latest usage phase of the moat to the second part of the 16th century; 1550–1600 AD and still in use between 1550–1574 AD. This can be compared with the Late medieval moat at Rådhuspladsen, dated at earliest to 1371/1372 AD and used until the early 1600s (Lyne and Dahlström 2015:254; see also city wall, Chapter 14.2 for further dates and discussion).

The various finds categories will not be discussed here, except for certain more specific ones. For further finds specific information and osteological results; see external reports and attached appendices. No map is made for cannon- or musket balls as these represent waste like the other material. FO208077, probably from (SD143596), consisted of a forked perch from a wagon or stone sledge.

16.1.2.1 Late medieval moat – usage phase and archaeobotanical results

The alluvial layers were thought to have been waterlogged since a high amount of snails was observed during fieldwork. This is also clearly confirmed by the archaeobotanical analysis, where the frequency of molluscs was very high (Ranheden 2015:14 et seq.). Among these there were both brackish and fresh water species. Weed-flora seem to have been well established and highly diverse, which also should be the case for the fresh/wet meadow flora (Fig. 146).

The weed flora was rich and well-developed with common species growing on disturbed and nutrient-rich soils and species like *Chenopodium album* and *Ranunculus sceleratus* dominating among the plant finds, but most species observed were nitrogen-lovers. Traces of wet meadow/shoreline plants as well as brackish water/sea-meadow species were present, but not very abundant and observed species may have been part of the common flora around the moat. There were no traces of cultivation crops in this material.

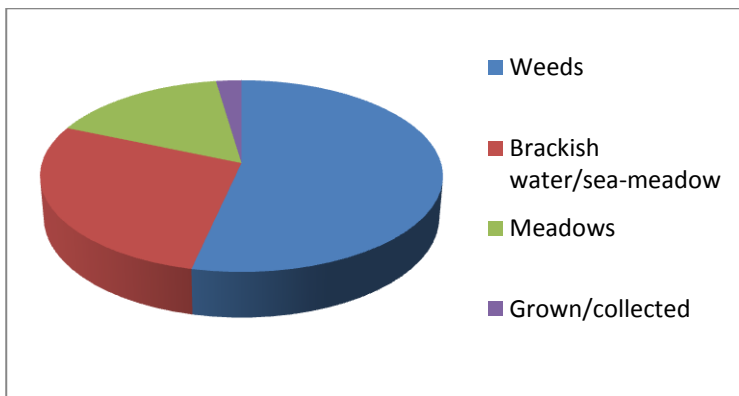


Fig. 146. Diagram showing the extensive influence of sea-shore vegetation in SD24889. Note that this diagram shows the number of different taxa and not the frequencies of finds from them. From Ranheden 2015.

In spite of this there seemed to have been a highly developed weed flora with several nutrient demanding species usually growing on such ground (and other habitats), but most of these species were not connected to shoreline habitat which could suggest that there ought to be other sources of nutrients, foremost nitrogen. In that respect the context information may explain the nutrient-rich flora aspect. The layers were probably at least partly built up using dumped materials with different origins which could have raised the nutrient status among the layers. An additional suggestion might be that cattle were held within the area outside the fortification, even though some of the nutrient rich conditions could be explained by the waste materials that were part of the layers.

In other samples more scattered finds from brackish water or sea-meadow-species, indicate a shoreline connection. There was one context that brought with it particularly strong signals from sea or brackish water influence. This particular context (SD24889) shows one of the strongest signs of sea shoreline vegetation among samples from Kongens Nytorv, at least when considering the diversity of species growing along a sea/brackish shoreline.

Finds of *Daphnia*-eggs should also refer to moisture or wet conditions, probably with undulating water-levels. These indicate at least periodically open water supporting the interpretation that this material was waterlogged, presumably also in brackish water, at least temporarily. These “eggs” are enclosed in a hardened cover called “*ephippia*” that form a kind of “survival megaspore” or “resting eggs” during inconvenient environmental conditions, e.g. during winter or drought. So, the formation of these “*ephippia*” represents a kind of “survival status” for these small shrimp-like organisms. The high presence of *Daphnia*-eggs makes it reasonable to think that water-levels were undulating during their time of deposition and that the water might have been rather shallow periodically.

Fruits from *Zannichellia palustris* (horned pondweed) that grows in brackish or salt/shallow water, means that the shore-line aspect is visible; independently these fruits derive from collected plant materials or incoming brackish water providing relevant ecological conditions for this plant.

It is however difficult to determine if these brackish signs derive from some kind of dump material or if brackish water had an ability to percolate into these layers during formation. The samples were taken from 0-0.4 m above sea level, which might bring with it one potential explanation for the brackish influence on water infiltrations into the layers.

Earlier investigations from Kongens Nytorv (cf. Moltsen & Steen-Henriksen 1998) came to the conclusion that water in the medieval moat further to the south was brackish and stagnant and salt tolerant plants were pointing to saltwater influx in the moat. Planttraces suggesting that conclusions are also visible within these later analyses, and the discussion revolves around the question of whether these materials are alluvial depositions or dumps or both. Site information suggests material mainly consisting of sediments with inclusions from different waste deposits and debris.

According to earlier investigations from Kongens Nytorv (Moltsen & Steen Henriksen 1998) three phases could be seen of hydrographic development in the environmental conditions around the medieval fortification, as seen among the layers in the moat. In a primary phase of the moat's functional period it was filled with brackish water with an estimated depth above the "gyttje" layer of 0.5 m (Moltsen 1998:21). The water in the moat probably had a more or less direct connection to the sea at this time and the water-level was in that case likely following sealevel as well.

The bottom part of the "gyttje" layers in the moat was formed in brackish water, but the marine influence on them tended to decrease upwards. During the end of the 16th century the water in the moat seems to have been stagnant as there are peat-layers from this phase which show that no sedimentation occurred during this time.

After this situation the water level increased again, partly as a consequence of accumulations of different material, mainly mineral substances (partly including dumps). Now the water seems to have been fresh which shows that the connection to the sea was cut off.

Some of the fruits and seeds identified were collected directly from the sieve after sieving big bag samples during excavation. It is important to point out the differences in representativeness between such selection and complete analysis of samples with fixed volumes. Since larger (and more rare) finds like kernels from wild cherry (*Prunus avium*), sloe (*Prunus spinosa*), plum (*Prunus domestica*) and walnut (*Juglans regia*) appear comparatively rarely in relation to a huge number of taxa from weeds and other widespread species, it is obvious that this results in a serious overrepresentation for these handpicked plant remains compared to weeds, etc.

No nut kernels from *Juglans* or *Prunus* were seen in any of the conventional samples and it is instead the very common and widespread weed flora that again dominate among plant remains. It is clear though that the collecting of plant remains from the large big bag samples has given complementary information on former plant use at Kongens Nytorv. It is obvious that wild cherry, plum, sloe and walnut were among fruits that were collected and used within the household.

16.1.2.2 The deconstruction of the Late medieval moat

The backfilling of the 16th century moat consisted of mixed building and demolition material and a large amount of domestic waste of different colour, composition, homogeneity and inclusions of finds. This backfilling happened mainly from the west to the east (Fig. 147) and can be dated from the late 16th century to the early 17th century, mainly based on the collected and registered pottery (1550–1650 AD).



Fig. 147. Backfill in the 16th century moat consisting of different sorts of building material, facing south. To the right – part of the city wall foundation. Photo: Museum of Copenhagen.

Three separate parts of the former city wall (SS21934, SS22335 and SS24827) were documented within these deconstruction layers (see Fig. 85 and 86 and further discussion in Chapter 14.2). For further information and variety of finds: see separate group numbers.

Context (ST21613) together with (ST24479) consisted of a diagonal, 1.53 m long post. A joint indicated that the pole had been part of a bigger construction and it cannot be completely ruled out that the pole was exactly in situ, e.g. a part of one of the surrounding layers. Since the post was dendrochronologically dated to the early 16th century (1509 AD), the timber was probably part of the backfill of the former moat.

Some concentrations of lime (e.g. SG-546) among the backfill were first suggested to be the remains after cleaning bricks from the former city wall. Similar deposits were documented in the former moat at the Metro investigation in 1996–1998. Since the material consisted of burnt lime without or with only a few traces of brick fragments this interpretation is not likely. It was probably waste from burning limestone for the production of lime mortar being used as building material.

Four mortar samples from different deposits in SG-721, SG-722, SG-723 and SG-732 were selected for microscopy and wet chemical analyses. The purpose was to examine these samples for similarities with other mortar samples from nearby structures, such as the eastern gate building and the city wall. The samples from (SD144623) and (SD67834) have some similarities, the other two samples show completely different morphological and chemical characteristics (Rask og Christensen 2015), and therefore it was impossible to connect them to any of the larger building structures suggested.

The various finds categories will not be discussed here, except for certain more specific ones. For further finds specific information, see external reports and attached appendices. No map is made for cannon- or musket balls as these represent waste like the other materials selected. Parts of the iron material and samples were analysed identifying casting of iron cannonballs, steel scissors, a carbon free- and a steel knife together with traces of hammerscale in deposit (SD72557), which could indicate a nearby smithy (cf. Jouttijärvi 2013:22, 23 and 30).

The limestone lion head (Fig. 148 and 149) is either Romanesque or Late medieval (cf. Rejnert 2012; Vedsø 2016a) – probably representing some sort of decoration on the medieval gate building. There is also a parallel to the lion head in the form of a chalk console from c. 1250 AD in Karlstrup church between Copenhagen and Køge (Nyborg 2016).



Fig. 148. Romanesque lion head of limestone from one of the basal layers in the Late medieval moat. Photo: Museum of Copenhagen.

The lion head was analysed using X-ray fluorescence and a handheld digital microscope with and without UV fluorescence lighting (Rask og Christensen 2011). The sculpture fragment is made of limestone and there are no traces of paint. Possible wear is seen for example on the edges of the detailing, as the curly mane, ear and eye are not entirely sharply delineated. Microscopy of the most protected areas, i.e. grooves in the ear, between the teeth and on the mane, show no signs of paint preservation. It seems that the limestone has been eroded by wind and weather, which also explains the many fossils exposed in the surface of the figure.



Fig. 149. Early Post medieval limestone architectural embellishment, possibly representing part of the lion's mane (FO204985). Photo: Museum of Copenhagen.

The cranium found in the bottom of the moat not far away from Østerport (Fig. 150) has a clear hole in the transition between the forehead and the parietal bone (not seen on the picture) and may have belonged to a condemned person, whose skull had been placed on a pole at the gate as a warning.



Fig. 150. Human skull (FO206688) found in alluvial deposits in the 16th century moat. Photo: Museum of Copenhagen.

16.1.2.3 The deconstruction phase of the Late medieval moat and archaeobotanical results

Sampling from one of the lowest deconstruction layers (SD66935) shows a rich and relatively diverse weed flora suggesting material accumulated after natural erosion and secondary accumulation from ground with a developed flora (Ranheden 2015:18 et seq.). Different sources seem to have been closely related to the deposit – among the finds in sample (PM208859) are seeds/fruits from meadow species, shoreline species and aquatics, together with dense traces of a well-established weed flora. As well as these finds there are also scattered notations of seeds/fruits that may derive from cultivated or collected plants suggesting dumped refuse material.

Considerable occurrences of *Daphnia*-eggs and molluscs suggest fluctuating water-levels and probably also a longer period of usage or function since these *Daphnia*-eggs form during periods of less optimal environmental conditions. This inclusion indicated a gradual destruction of the Late medieval moat probably related to the construction of the fortification in the early 17th century. Also worth mentioning is the very frequent appearance of molluscs within this sample as well as several notations of fish vertebrae.

The samples were collected within 0.03 m and 0.30 m above sea level. This may allow the possibility of saltwater percolating through the soil, which could be one of the explanations behind the brackish plant remains. One of the samples from a secondary construction cut (SG-731) had numerous fruits from brackish water/sea-meadow plants which suggest some kind of connection to or influence from shore-line conditions with brackish or salt water. The deposit was located at a height of 0.85 m to -1.02 m above sea level, allowing brackish water to influence the material since part of it seems to have been situated under sea level. Also notable is that the diversity of taxa is not very high compared to some other samples. This could mean that this material, to a higher degree than other samples, shows the plant-association more strictly in this location. Instead of many different species there are higher frequencies of finds from just a few separate species. The majority (not all however) of these species could also be growing within, or very close to, the same habitat.

High tides or winter storms could also have poured salt water into the moat which for some reason had been open to the seas meaning that the Late medieval moat still had connections to the sea in the late 1500s. This however contradicts the archaeobotanical results from 1996–1998 (cf. Moltzen & Steen Henriksen 1998).

16.2 Overall discussion and interpretation

16.2.1 Late medieval fortification – construction and maintenance work

We know that Copenhagen's fortifications in the 15th century consisted of a defensive wall with a number of round and some square towers and was equipped with brick bridges outside the gates, but whether this fortification was supplemented or replaced by newer embankments during the 1500s is unknown. There is knowledge of the expansion of the fortifications under Frederik the 1st (1523–1533 AD) and Frederik the 2nd (1559–1588 AD). In the 1520s it seems to have been built roundels in front of the gates, and in the 1580s reinforcement of the earthwork was carried out by Christoffer Valkendorf close to Østerport (Westerbeek Dahl in press).

When King Hans died in 1513, his son Christian the 2nd took over the throne, but his reign was uneasy. This is also reflected in Copenhagen's accounts, which show that the work on the reinforcement of the fortifications continued undaunted.

Working on the fortification's expansion and improvement are mentioned in Magistrates Vedtægtsbog from 1505–1532 AD (Thorsen 1926:227). In 1505 "*bolwerck, uden øtre port*" is mentioned and work on the eastern gate building is mentioned in both 1518 and 1523 (KD 1:255). Before 1523 two so-called trenches, i.e. fortification cuttings were dug – one by Peblingesøen and one at the beach between the two towers at Nørreport and Jarmers Gab. By Pentecost Day in the year 1530 Bishop Joachim Rønnow loaned 600 weights of silver to the city council and residents for the fortification and in 1534 the Vicars altars in Vor Frue Kirke provided 50 marks for work on the embankment (Thorsen

1926:235). In 1530 the rampart was made more massive on the inside by supporting the city wall with an embankment that was 16 cubits wide, but this estimated width is uncertain for the Østervold area due to the location of the nearby rampart street, buildings, etc. (cf. Lassen 1855:9; Thorsen 1926:234 and Fig. 151).



Fig. 151. The oldest map of Copenhagen from c. 1590 AD with Østervold and the eastern gate to the right. From Lorenzen 1930, kort I.

By the peace contingent on Christian III, he decided that he should be master of the city's fortifications. There are different opinions as to what extent the siege (1535–1536 AD) affected the city fortifications (cf. Lassen 1855:10; Thorsen 1926:236), but in 1539 the sources cite that the king began to deal with the maintenance work. At almost the same time he started extensive renovations on Copenhagen Castle and he took the initiative that the dilapidated fortification should be strengthened. As he allowed the city magistrate to keep the customs charged on foreign beer and wine introduced to the city, he also ordered the city council to refurbish the ramparts and moats. It was left to the citizens to undertake the works, but it does not seem that the king's words were followed, due to repeated requests.

In 1543 Christian the 3rd writes to Eske Bilde "*...at man ikke skulle spare på innsatsene for å klargjøre vollen og befestningen mellom Østervold og Bremerholm*" (Thorsen 1926:238).

The accounts for the city relate the building of at least two towers, one described as lying at Østerport (Kringelen). Construction work on the eastern gate and the construction of dams is also mentioned, the latter probably the same dams that were built in the moat to prevent water from flowing out to the coast and to keep sufficiently high water levels in the individual and different moat sections (see Chapter 18.1.5 and 18.2.2).

According to a letter from Christian the 3rd to Magnus Gyldenstierne in 1558 the moat should be 100 shoes (feet) wide and 40 shoes deep from the upper edge of the rampart and there should be 6 or 7 feet of water in the moat (Lassen 1855:100).

A series of redoubts outside the gates and in the towers are also mentioned. It is likely that this constitutes the semicircular fortified islands surrounded by the moat, placed in front of the gates to make access to these weak points in the fortifications as complicated as possible. Redoubts in front of the towers may well have been embankments designed to protect the walls against cannon fire from the enemy, as these weapons had become more effective and were now becoming a real threat (cf. Fig. 152).

Under the rule of Frederik the 2nd, the fortification again underwent major modernization along its alignment, headed by Christoffer Valkendorf in 1581–1583 AD. Based on the written sources this work was conducted in the area from Nørreport to Østerport reinforcing the embankment with large boulders (cf. Lassen 1855:18-19; Thorsen 1926:242), and the stones were probably collected from Amager. Valkendorf was reportedly also responsible for the redoubt north of Østerport, though there could have been a smaller embankment in place already in 1505 AD or under the reign of Christian the 3rd (Thorsen 1926:243).

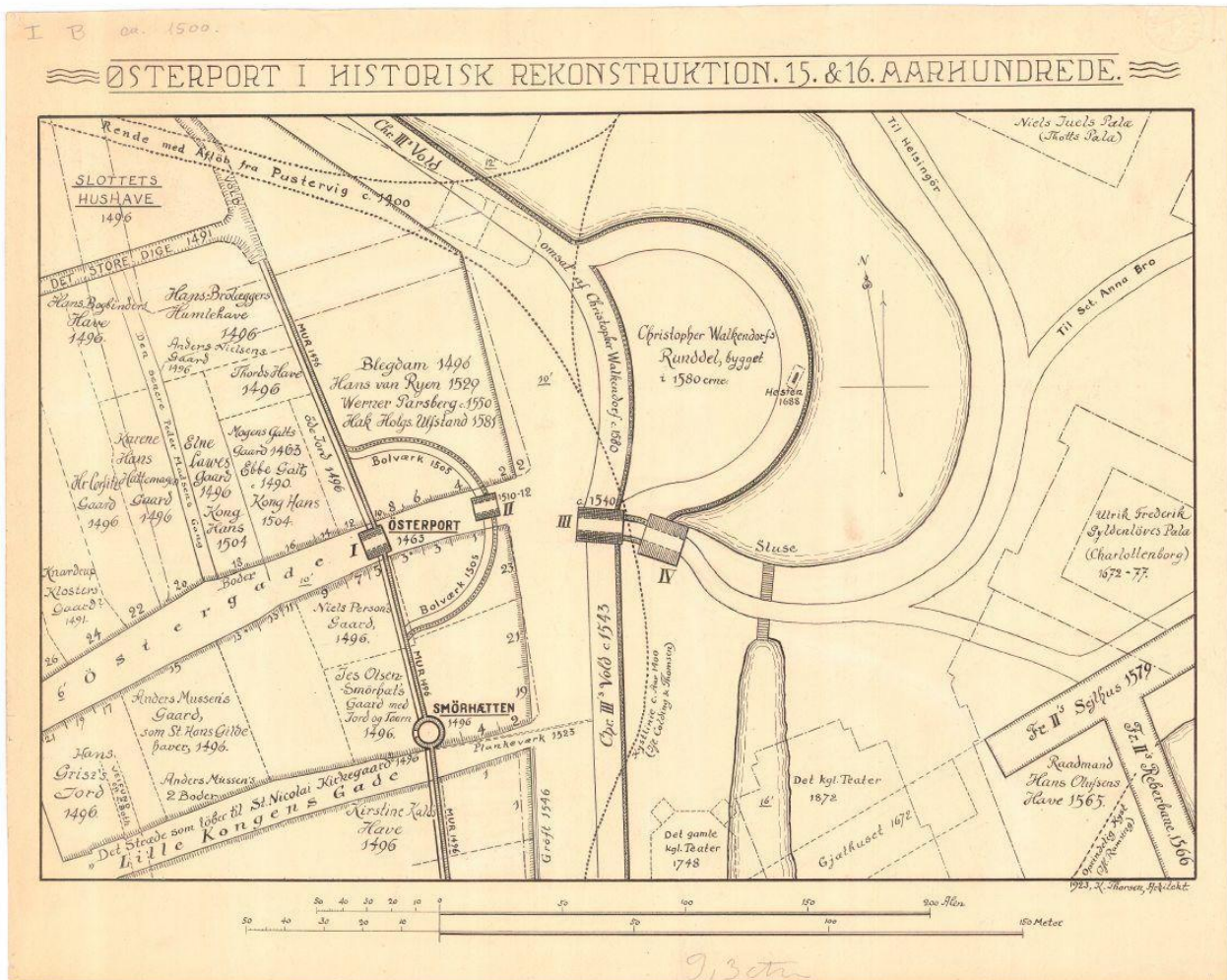


Fig. 152. Reconstruction proposal for the late 16th century fortification at Østervold with earthworks, moat, gate buildings and a suggested sluice. Drawing by K. Thorsen 1923 and printed in Thorsen 1926. From Copenhagen City Archives.

At the Metro investigations in 1996–1998 this rebuilding of the fortification in the 1580s could be seen as a substantial stone structure consisting of two to three courses immediately east of the foundation of the medieval city wall, although the relationship between this development phase and older features was unclear at several points within the excavation area (Fig. 153). As part of the construction work the rampart partially had been made of peat (?) and made taller and wider, covering at least 1.4 m of the wall base (Kristiansen 1998:13, 98 et seq.; 1999c:185 et seq.).



Fig. 153. Valkendorf's reinforcement of the fortification in the 1580s investigated at the Metro excavations in 1996–1998, facing west. Photo: Museum of Copenhagen.

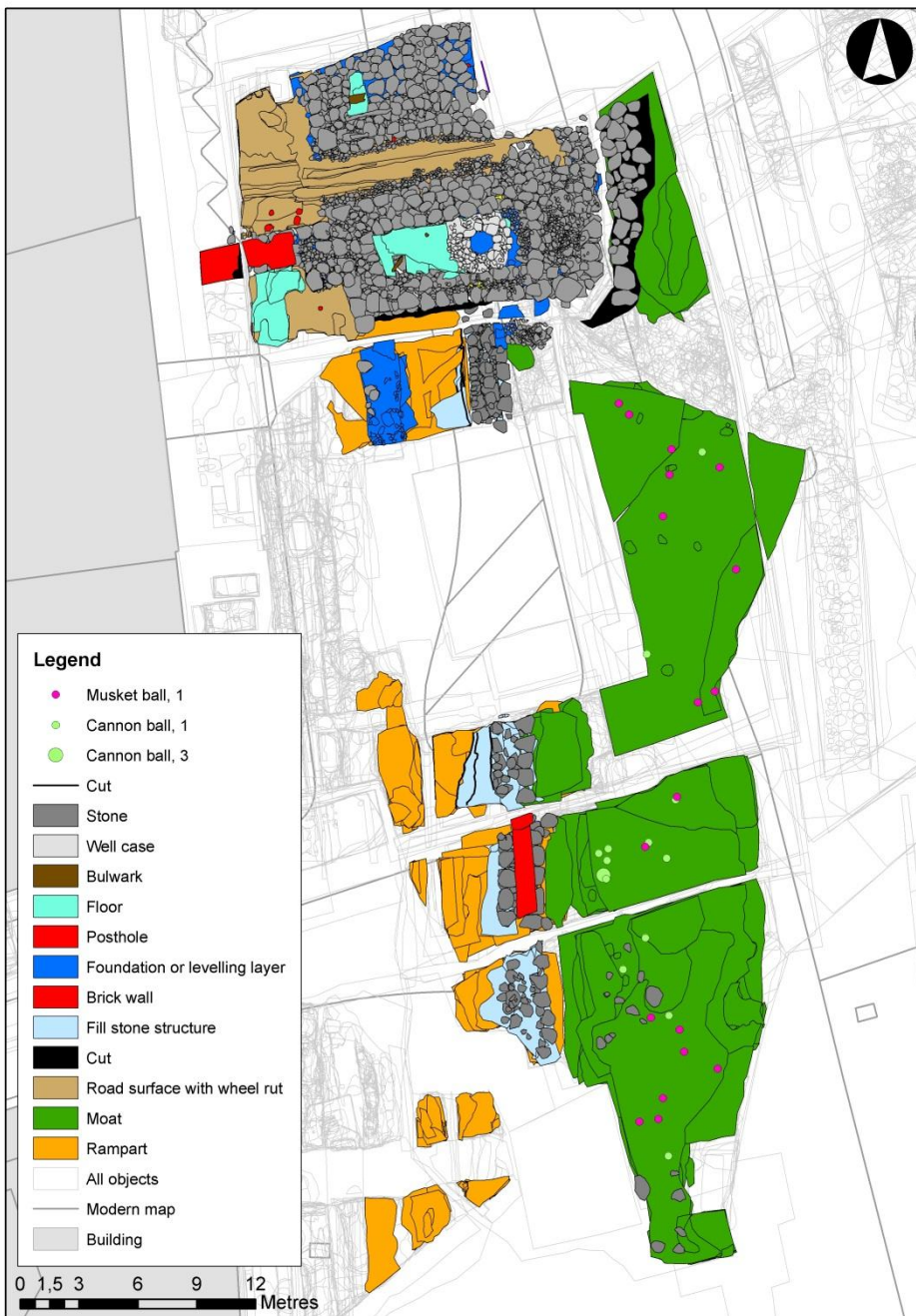


Fig. 154. The presence of cannon balls and musket balls outside Østerport.

Bulwark (G-502976) can be compared with a post dendrochronologically dated to after c. 1513 AD at the former Metro investigation, but has a different function since the latter was interpreted as part of a timber structure in Holmens Kanal (Kristiansen 1998:145).

Group (G-503806) consisted of an L-shaped cut into natural sand north of the moat with gentle sides and concave base. The truncation was approximately 0.80 m deep with two fills of dark black and brown sandy clay with inclusions of stones, pebbles, CBM and charcoal. Since the area was machined there is no stratigraphical relation to other features and together with the truncation by the modern Guide Wall the interpretation is unclear, though underlying road surfaces and with a height approximately at kote 0 m the feature is probably part of the 16th century fortification.

16.2.2 The Late medieval moat and potential sea-shore plants

South of Østerport the Late medieval moat had contact with the sea – though in which way is still unclear. It could have been in the form of a stream as seen on the map from c. 1590 (Fig. 151), or as a small sluice as seen on the reconstruction proposal by Thorsen 1923 (Fig. 152).

At the former Metro investigations in 1996–1998 several samples were collected to determine the environmental conditions in the Late medieval moat. The sediments consisted of natural “gyttje” deposited in freshwater and swamp peat with vegetation that thrives on low water, the latter at kote +0.4 to +0.6 m, which proves that the connection to the sea at this moment was interrupted. Some of the layers recorded were interpreted as cleaning layers from the moat when still in use (cf. Kristiansen 1998:112 and 113; 1999c:188-190).



Fig. 155. Late medieval moat with sedimentation layers investigated at the Metro excavations in 1996–1998, facing SW. In the middle part of the section part of the destroyed city wall can be seen. Photo: Museum of Copenhagen.

To compare these earlier results and for the discussion and interpretation of the environmental aspects for the Late medieval moat, a list of potential sea/brackish shoreline plants was created (cf. Ranheden 2015 and Tab. 39). The list shows information on four essential ecological parameters for these plants growing within shoreline habitats (Ellenberg 1979; 1988; Ellenberg et al. 1991; Hill et al. 1999).

Species	Salt	Light	Nitrogen	Reaction
<i>Atriplex littoralis</i>	4+	9	9	7
<i>Carex extensa</i>	4+	9	5	7
<i>Ceratophyllum demersum</i>	1	6	8	7
<i>Lycopus europaeus</i>	0	7	7	7
<i>Myriophyllum verticillatum</i>	0	5	8	7

<i>Onopordum acantium</i>	0	8	8	7
<i>Ranunculus baudotii</i>	4+	9	8	9
<i>Rumex maritimus</i>	0	8	9	8
<i>Rumex palustris</i>	0	8	8	9
<i>Ruppia maritima</i>	4+	9	8	8
<i>Zannichellia palustris</i>	2+	6	8	8

Tab. 39. Sea/brackish shoreline plants identified in the Late medieval moat. From Ranheden 2015.

The first three of these ecological parameters (salt, light and nitrogen) are vital environmental parameters for these plants (Ranheden 2015). Even though the aspect of salinity provides the definition for these seashore plants, the amount of nitrogen as well as light are important variables to take into account. The ecological parameters above represent spans between 1 and 9 (except for salinity that span is between 0 and 9). The degree 1 (or 0 for salinity) corresponds to lowest affinity for that parameter while 9 shows the highest affinity (or tolerance).

The fourth parameter, Reaction, is not quite the same as pH (pH 1-2 rarely exist in nature and pH values below 5 are critical for most plants since elements like nitrogen, phosphorous, sodium, calcium, etc. become very soluble and are readily leached from the soil profile and therefore hardly accessible for plants in such an acid environment). This parameter is rather a note as to how the plants prefer acid soil/water conditions or more basic conditions. A low sign means that a species prefers acid conditions while a higher note shows a preference for higher pH-values.

The list of plant taxa shows four species with fairly high affinity to a saline environment, *Atriplex littoralis*, *Carex extensa*, *Ranunculus baudotii* and *Ruppia maritima* identified in alluvial deposits (SD68005, SD68063, SD24889, SD143984 and SD144075). These four species also prefer very light conditions (9 corresponds to the strongest affinity to light) giving a furthermore optimal habitat for these species when growing along seashores.

One of the species (*Atriplex littoralis*) displays the strongest affinity to nitrogen and to neutral soil conditions. That means that this species has closest to the optimal environmental conditions when it is growing along shallow sea/brackish shorelines where nitrogen-creating seaweeds grow and where the pH level is about neutral (weakly acid to weakly basic). This latter also brings also a slightly wider span in this respect since values towards lowest and highest notes for Reaction also represent more strict demands as to that parameter. So, the *Atriplex littoralis* (Grassleaf orcle) may have had optimal conditions along the seashore as long as nitrogen content in the soil was high and the light influx was optimal. It's doubtful though whether this plant could grow within the habitation area, unless the area had a position close to the shoreline.

This can be compared with the parameters for *Ranunculus baudotii* (Brackish water-crowfoot) which has about the same ecological preferences (slightly less nitrogen though), but a higher Reaction note. The latter should mean that this plant was growing on calcareous soils or soils with a high pH for other reasons. This plant may have (in a greater degree) been located in areas with much higher pH, as e.g. within sea-meadows where evapotranspiration can exceed precipitation and cause an upward movement of alkaline elements from groundwater.

So, the behaviour of Brackish water-crowfoot suggests that it was not foremost growing within the habitations unlike the Celery leaved buttercup (*R. scelerathus*) or other common weeds appearing close to such places. Its ecological preferences are simply too specific.

If this suggestion could be taken as realistic, this would mean that the finds of seeds/fruits from this plant would point out some of dump materials that at least partly contain elements taken from the seashore rather than that they were

actually growing within or close to the excavated spots. This would also support notations from fieldwork where archaeologists proposed materials as dumped.

A similar discussion and conclusion should be valid for another plant, *Ruppia maritima* (Widgeon grass). This plant shows about the same environmental demands as *Ranunculus baudotii* except for a slightly weaker affinity as to alkaline soil/water reaction. Its environmental preferences would foremost point out an origin along a shoreline rather than within habitation areas.

There is however still a further complexity in the fact that these shoreline areas in general terms recurrently were flooded resulting in varying ancient shorelines. Traces of salt marches have been identified at several places within the excavation area. This fact adds uncertainties to the judgments concerning the relationship between in situ vegetation and the statement of dumped plant materials (Ranheden 2015; 2016).

Two interesting species for discussion could also be the *Rumex* species, *R. maritimus* (Golden dock) and *R. palustris* (Marsh dock). These plants do not favour a saline environment at all (0). Nevertheless, they both (*R. maritimus* in particular) grew along the brackish shorelines, but also other on shorelines, e.g. around lakes or along riverbanks, as long as the nitrogen status was high and the pH lay above neutral.

Based on these plant's more specified ecological demands, it would be reasonable to suggest the plant remains as deriving from their natural habitats, meaning that they were probably not growing within or close to the habitations, as long as these were not parts of, or close to the brackish shorelines.

Besides these plants with more specific preferences there are four species in the list above that could be looked upon as being less obviously connected to shorelines, and these are: *Ceratophyllum demersum* (Hornwort), *Lycopus europaeus* (Gypsy wort), *Myriophyllum verticillatum* (Whorled water-milfoil) and *Onopordum acanthium* (Scotch thistle). Judging the source of plant materials in dumps on the basis on these species would be harder as they may occur on more widespread habitats. This would cause problems for the interpretation of source as they are not specific enough.

Concerning potential botanical traces from a brackish shoreline habitat, it is also vital to know that many weeds or ruderal species may well appear within such areas. These plants (weeds) take the benefits from those ecological parameters that are often seen along shorelines, e.g. high nitrogen content in soils, light, unstable soil surfaces, etc. that is often reality within these areas.

17 Phase 5. High and Late medieval features and activities 1200–1550 AD

17.1 Results

This time phase is based on all findings that can be placed in the High and Late medieval period 1200–1550 AD based on stratigraphy and datable finds. The phase consists of different features and findings that represent the area behind the medieval fortification and an urban area with different kinds of activities. The remains from this period are spread over different subareas of the excavation, but concentrated in subareas phase 2+3 and phase 6. At the time of the excavation it was clear that some areas were indeed affected by modern disturbances (Fig. 156).

The findings are mostly dated through finds and stratigraphy. Due to the fact that phase 2+3 was excavated in 21 stages in order to protect the standing building, Hviids Vinstue, the stratigraphy and linking of layers from different stages of excavation has been difficult. This is one of the reasons why this time Phase 5 description contains more groups than other time phases (Tab. 40). Some of the groups are most likely to be part of the same feature, but since there are no actual direct connections between the groups they are kept separate and any possible linking is accounted for in the text. Also subarea phase 6 was divided to five separate subareas (phases 6A-E), and the same challenges are an issue in this area.

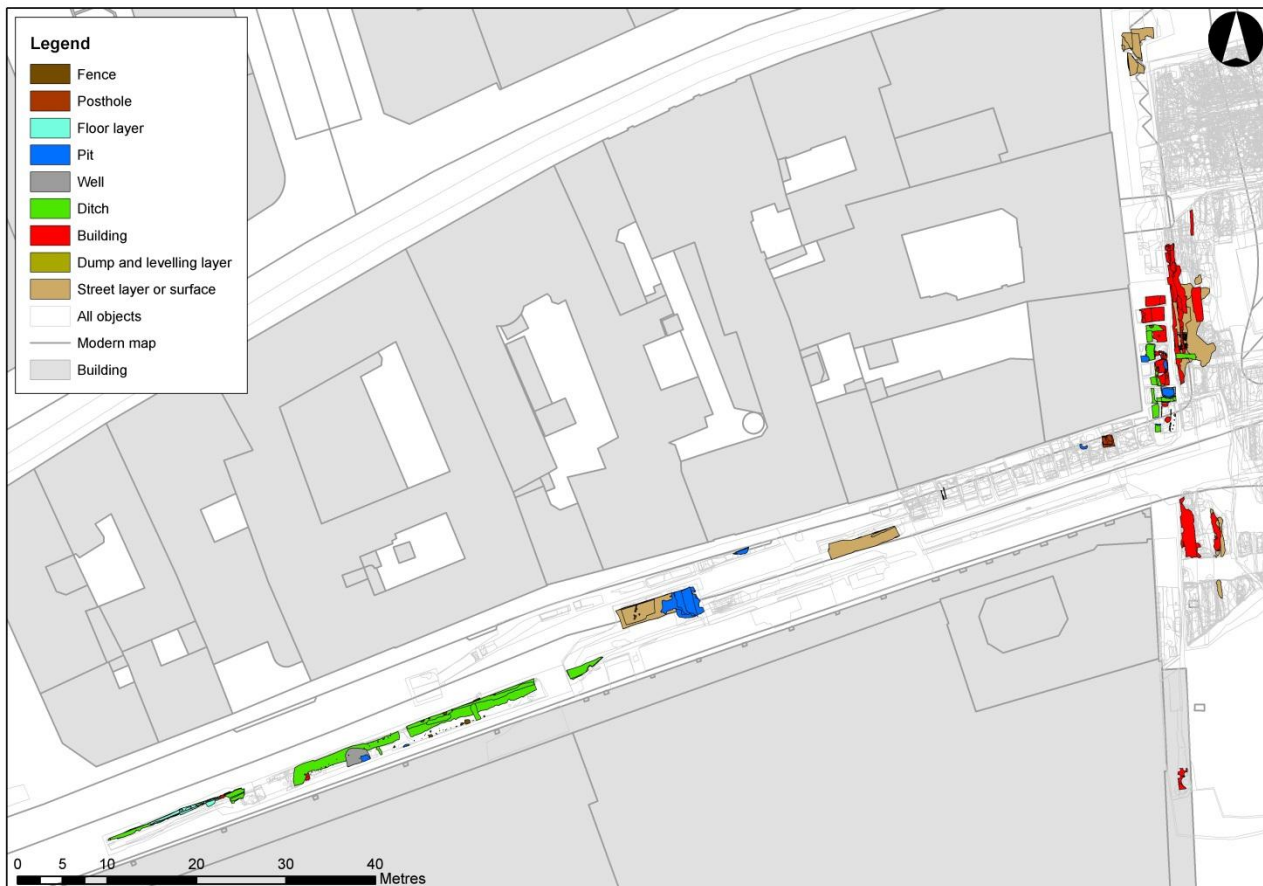


Fig. 156. All features in the High and Late medieval period mentioned in this chapter.

The following is a table listing all groups and main subgroups in this time phase. The relevant groups are presented in the following text as the features that represent this time phase. After the overall description of the individual feature types, there will be a contextual presentation of the features and finds from the different subareas.

Group/subgroup	Type of feature	Subarea	Basic interpretation
222	Walls, floors, timber	Phase 2+3	Building
289	Postholes	Phase 2+3	Building
205	Floor, walls, panels	Phase 6	Cellar
253	Fills, posthole, pit	Phase 6	Building?
211	Cut	Phase 6	Cellar?
707	Boulder, floor, deposit	Phase 6	Building/cellar
500871	Foundation, postholes	Phase 1S	Building
660	Floors, activity layers	Phase 4B	Forge building
500688	Burning activity	Phase 4B	Hearth
580	Sill beam, floors	Phase 45B	Building
976	Floor	Phase 6	Floor
978	Floor	Phase 6	Floor
846	Floor?	Phase 45B	Floor?
216	Postholes, stakes	Phase 6	Wall
429	Stones	Phase 6	Wall
980	Floor	Phase 6	Floor
670	Surface	Phase 4B	Walkway/street
971	Surface	Phase 6	Pavement
297	Ditch	Phases 2+3 and 45B	Ditch
305	Ditch	Phase 2+3	Ditch
310	Ditch	Phase 2+3	Ditch
236	Ditch	Phase 2+3	Ditch
326	Ditch	Phase 2+3	Ditch
283	Ditch	Phase 2+3	Ditch
420	Cut, backfill	Phase 2+3	Ditch
285	Ditch	Phase 2+3	Ditch
500932	Ditch	Phase 2+3	Ditch
500936	Ditch	Phase 2+3	Ditch
210	Ditch	Phase 6	Ditch
708	Stones, stake	Phase 6	Stepping stones
252	Ditch	Phase 6	Ditch
255	Ditch	Phase 6	Ditch/pit
270	Ditch	Phase 6	Ditch
272	Ditch	Phase 6	Ditch
683	Ditch	Phase 6	Ditch
704	Ditch	Phase 6	Ditch
968	Ditch	Phase 6	Ditch
986	Ditch	Phase 6	Ditch
338	Stakeholes	Phase 2+3	Fence
536	Stakeholes	Phase 2+3	Stakeholes
379	Stakeholes	Phase 2+3	Stakeholes
232	Postholes and posts	Phase 6	Fence
239	Stakes, wattle	Phase 6	Fence
269	Stakes, postholes	Phase 6	Fence
274	Stakes	Phase 6	Fence
304	Stakes, plank	Phase 6	Fence
307	Stakeholes, cut	Phase 6	Fence
684	Post-/stakeholes	Phase 6	Fence
702	Stakeholes	Phase 6	Fence
966	Stakes, posthole	Phase 6	Fence
365	Post- and stakeholes	Phase 2+3	Fence

967	Stakes	Phase 6	Fence
310104	Fences	Phase 45B	Fences
208	Wheel ruts	Phase 2+3	Wheel ruts
371	Wheel ruts	Phase 2+3	Wheel ruts
785	Wheel ruts	Phase 6	Wheel ruts
744	Layers, stones	Phase 6	Street surface
979	Layers, stones	Phase 6	Street surface
500003	Wheel rut, deposit	Phase 6	Street deposit
250	Barrels	Phase 2+3	Well
500919	Layers and stones	Phase 45B	Courtyard?
490	Street layers	Phase 45B	Rampart street
666	Street layers	Phase 4B	Rampart street
500878	Street layers	Phase 1N	Rampart street?
500879	Street layers	Phase 1N	Rampart street?
654	Pebbles	Phase 4B	Trackway?
415	Pit	Phase 2+3	Deconstruction pit
267	Barrel	Phase 6	Barrel
209	Bucket, cut	Phase 6	Well?
286	Pit	Phase 2+3	Pit
298	Pit	Phase 2+3	Pit
303	Pit	Phase 2+3	Pit
361	Pit	Phase 2+3	Pit
367	Pit	Phase 2+3	Pit
382	Pit	Phase 2+3	Pit
386	Pit	Phase 2+3	Pit
500938	Pit	Phase 2+3	Pit
500941	Pit	Phase 2+3	Pit
500928	Pit	Phase 2+3	Pit
500944	Pit	Phase 2+3	Pit
217	Pit	Phase 6	Pit
273	Pit	Phase 6	Pit
432	Pit	Phase 6	Pit
679	Pit	Phase 6	Pit
680	Pit	Phase 6	Pit
681	Pit	Phase 6	Pit
696	Pit	Phase 6	Pit
703	Pit	Phase 6	Pit
705	Pit	Phase 6	Pit
706	Pit	Phase 6	Pit
969	Pit	Phase 6	Pit
191045	Pit	Phase 45B	Pit/well?
335	Pit	Phase 4B	Pit
649	Pit	Phase 4B	Pit
653	Pit	Phase 4B	Pit
655	Pit	Phase 4B	Pit
677	Pit	Phase 4B	Pit
671	Pit	Phase 1S	Pit
672	Pit	Phase 1S	Pit
500056	Pit	Phase 1W	Pit
362	Posthole	Phase 2+3	Posthole
417	Posthole	Phase 2+3	Posthole
421	Posthole	Phase 2+3	Posthole

532	Posthole	Phase 2+3	Posthole
500922	Posthole	Phase 2+3	Posthole
500923	Posthole	Phase 2+3	Posthole
500924	Postholes	Phase 2+3	Postholes
500927	Posthole	Phase 2+3	Posthole
500931	Posthole	Phase 2+3	Posthole
500939	Posthole	Phase 2+3	Posthole
500942	Posthole	Phase 2+3	Posthole
500943	Posthole	Phase 2+3	Posthole
972	Posthole	Phase 6	Posthole
973	Posthole	Phase 6	Posthole
363	Postholes	Phase 1S	Postholes
982	Post	Phase 6	Post
237	Postholes	Phase 6	Postholes
674	Posthole	Phase 1S	Posthole
676	Posthole	Phase 1S	Posthole
500833	Postholes	Phase 1S	Postholes
500245	Posthole	Phase 4B	Posthole
500568	Posthole	Phase 4B	Posthole
500689	Imprint, post-/stakeholes	Phase 4B	Imprint, stake-/postholes
497	Posthole	Phase 45B	Posthole
183606	Postholes	Phases 45A and 45B	Postholes
306383	Stakeholes	Phase 45B	Stakeholes
685	Post-/stakehole	Phase 6	Post-/stakehole
697	Posthole	Phase 6	Posthole
500002	Posthole	Phase 6	Posthole
242	Surface	Phase 2+3	External surface
325	Deposits	Phase 2+3	Dump and levelling
337	Dump and levelling	Phase 2+3	Dump and levelling
359	Dump	Phase 2+3	Dump and levelling
360	Dump and levelling	Phase 2+3	Dump and levelling
364	Dump and levelling	Phase 2+3	Dump and levelling
368	Dump and levelling	Phase 2+3	Dump and levelling
369	Dump and levelling	Phase 2+3	Dump and levelling
374	Demolition material	Phase 2+3	Demolition
375	Dump and levelling	Phase 2+3	Dump and levelling
380	Activity layers	Phase 2+3	Activity
483	Dump and levelling	Phase 2+3	Dump and levelling
385	Dump and levelling	Phase 2+3	Dump and levelling
413	Dump and levelling	Phase 2+3	Dump and levelling
416	Dump and levelling	Phase 2+3	Dump and levelling
468	Dump and levelling	Phase 2+3	Dump and levelling
469	Dump and levelling	Phase 2+3	Dump and levelling
473	Dump and levelling	Phase 2+3	Dump and levelling
474	Dump and levelling	Phase 2+3	Dump and levelling
475	Dump and levelling	Phase 2+3	Dump and levelling
476	Dump and levelling	Phase 2+3	Dump and levelling
477	Dump and levelling	Phase 2+3	Dump and levelling
478	Dump and levelling	Phase 2+3	Dump and levelling
482	Dump and levelling	Phase 2+3	Dump and levelling
527	Dump and levelling	Phase 2+3	Dump and levelling
530	Dump and levelling	Phase 2+3	Dump and levelling

533	Dump and levelling	Phase 2+3	Dump and levelling
534	Dump and levelling	Phase 2+3	Dump and levelling
500952	Dump and levelling	Phase 2+3	Dump and levelling
531	Dump and levelling	Phase 2+3	Dump and levelling
266	Dump and levelling	Phase 6	Dump and levelling
974	Dump and levelling	Phase 6	Dump and levelling
975	Dump and levelling	Phase 6	Dump and levelling
977	Dump and levelling	Phase 6	Dump and levelling
240302	Dump and levelling	Phase 6	Dump and levelling
985	Dump and levelling	Phase 6	Dump and levelling
987	Dump and levelling	Phase 6	Dump and levelling
500004	Dump and levelling	Phase 6	Dump and levelling
193032	Levelling	Phase 45B	Levelling layers
678	Levelling	Phase 4B	Levelling layers
665	Dump and levelling	Phases 1S and 4B	Dump and levelling
701	Dump and levelling	Phase 1W	Dump and levelling
500085	Dump and levelling	Phase 1W	Dump and levelling
970	Organic deposits	Phase 6	Cultivated soil
500970	Dump	Phase 45A	Dump
500319	Dump	Phase 4B	Dump
500872	Dump	Phase 1S	Dump
501	Alluvial deposits	Phase 45B	Alluvial/natural
664	External surface	Phase 4B	External surface
500084	External surface	Phase 1W	External surface
500869	Foundation layers	Phase 1S	Foundation layers

Tab. 40. Phase 5. Groups, types of features and basic interpretations.

17.1.1 Buildings

This phase contains no less than the remains of up to 16 houses: cellars, a forge, buildings of unknown activity, single floor layers and wall remains. They are all located behind the medieval fortification and mainly in the subareas of phase 2+3 and phase 6. It was observed that the buildings placed just behind the rampart were of, what appeared to be, a more robust character, and that the remains of buildings, floors and cellar seems to derive from minor but at least two storey buildings at the western end of phase 6. The state of preservation for all buildings was quite poor, and makes further interpretation difficult (Fig. 157). The illustration also shows that there is only a minor remnant of a possible building in the area between the major settlement behind the rampart and the remains at the western end of phase 6. This is probably mainly due to modern disturbances of the areas, but might also be a result of the use of the area (see paragraph on boundary ditches below). Only the best preserved and relevant houses are presented here below, but all buildings and building remains are presented in the overall group descriptions (see Appendix 8).

The buildings are dated mainly from finds in primary layers and demolition layers. The building areas from this time period at Kongens Nytorv are, as mentioned above, placed quite far from each other which makes it possible in only some cases to identify stratigraphical relationships between the buildings.



Fig. 157. All building remains from the High and Late medieval period.

17.1.1.1 Buildings placed behind the rampart

The buildings behind the rampart are represented by two quite large buildings placed between the rampart and the house facades of today's Kongens Nytorv with the historic pub Hviids Vinstue (Fig. 158). The northern building G-580 had been quite an impressive building that was preserved at a length of approximately 12 metres. This is for medieval standards a large building, and it had been placed in a very central position in the area just south of Østerport and with a long facade facing the possible rampart street.

Building G-580 had traces of a sill beam over a length of 11 metres (Fig. 158). This points to the possibility it was a timber framed building, but no further remains support this. The sill beam might have been a partition within the big building since the same floor layers were registered over the sill beam and to both sides as well. This could also be proof of two different phases of the house where the later might have extended the building as well. Under the two floor layers several levelling layers were registered and interpreted as levelling prior to the construction of floors (SG-575 and SG-576).

There are not many indications of use of this building, and macrofossil sampling in this area in general has turned out to be quite poor in at least cultivated seeds (Ranheden 2015:32). The levelling layers are primarily rubbish layers with inclusions of many sorts. The finds of animal bones in floor layers SG-576 does, with its variety, indicate normal household waste. A possible spur from the floor layers is not interpreted as an indicator of use of the building.

There are some issues concerning the relationship of the building to the remains of the medieval rampart street G-490. There are indications that layers belonging to the street G-490 overlay building G-580. This is stratigraphically not

very realistic, and that SG-605 (interpreted as street layer/levelling layers) possibly belongs to the building G-580 as levelling layers, instead of rampart street G-490. This also makes more sense spatially with the rampart street placed between the building G-580 and the rampart G-310150.

Finds of Early redware and Late greyware suggest a date for the function of the building to 1200–1450 AD. The second phase of the rampart street G-311764 is dated to the 17th century based on the finds and that it is established after building G-580 was demolished. This must indicate that this building was demolished at the same time or before the Post medieval fortification was built (see Chapter 18).

Building G-222 was excavated just outside the current historic pub Hviids Vinstue and is interpreted as a predecessor to the current building which dates back to 1723 (Fig. 158).

The remains were part of a north-south orientated building located outside present Hviids Vinstue. The building preservation was very fragmentary, especially to the south – and also difficult to interpret due to the difficult working conditions around Hviids Vinstue where underpinning of the foundation under the existing building was being carried out in smaller separate areas. Also difficulties of managing the measuring with the total station in the small, deep holes close to standing buildings have made the following interpretation of the archaeological records difficult.

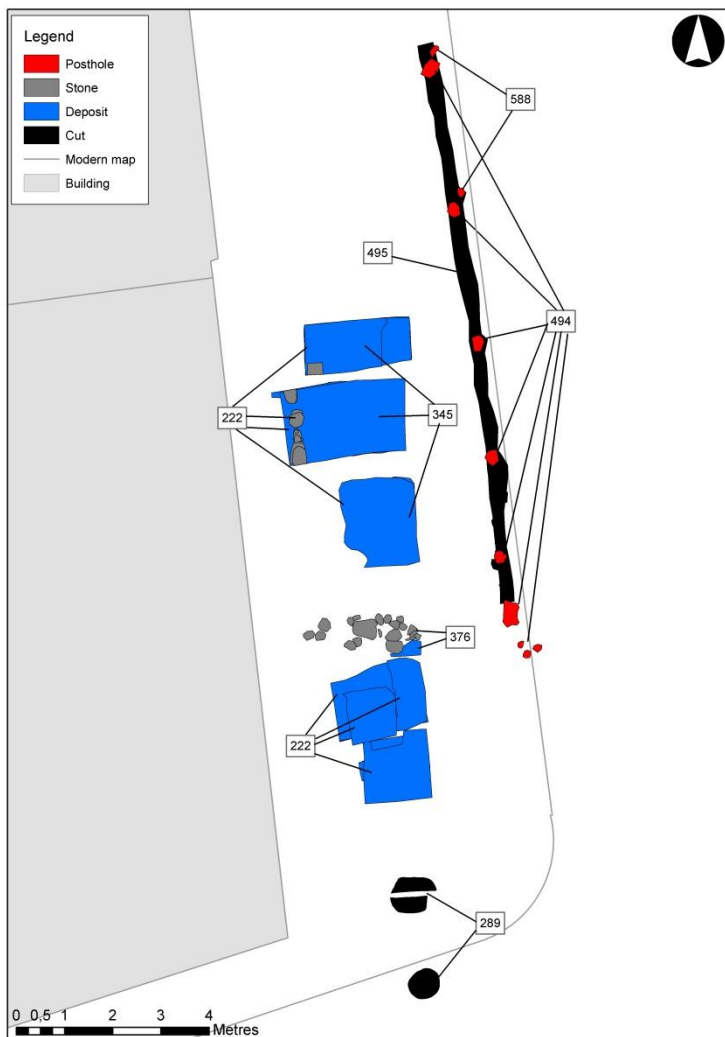


Fig. 158. Buildings G-222 in subarea phase 2+3 and G-580 (to the right) in subarea phase 4B.

The building had a dry stone structure and carried evidence of at least one clay built wall, which was demolished some time during the function of the building. To the south of the building there was evidence of timbered construction. At least one floor layer was identified and interpreted as a wooden floor. This floor was placed at the north end of the building. Also a possible mortar floor was identified, though in a very poor condition. The usage consisted of floor layers and of a pad stone and some possible traces of smithing activities. Since no slag or iron waste etc. was collected the suggestion is tentative. Two ditches SG-373 and SG-425 were excavated south of the building and were connected to the building even though their function is uncertain. They might have had a drainage function or perhaps acted as boundary ditches. There was no evidence of roof construction.

The animal bone material is interpreted as leftovers from meals, and that in connection with the strong scent from hubs observed by archaeologists from the underlying layers G-468, is in line with the thought of the building being a predecessor to nearby Hviids Vinstue.

The finds places this building in the date range from 1200 AD till the Post medieval period.

The very modest remains of a supposedly large building G-289 comprised two large postholes just south of building G-222 (Fig. 158). The postholes were aligned with today's facade which also points to a structural interpretation. The size of the postholes, 0.6-0.8 metres in diameter indicates quite a large structure.

In subarea phase 1S G-500871 represents a probable building structure comprising an E-W stone wall foundation which constitutes an external southern wall, a group of four internal postholes and a barrel in a pit which could constitute a storage feature (SG-311) (Fig. 159 and 160). These features were all cut into possible floor or activity layers.

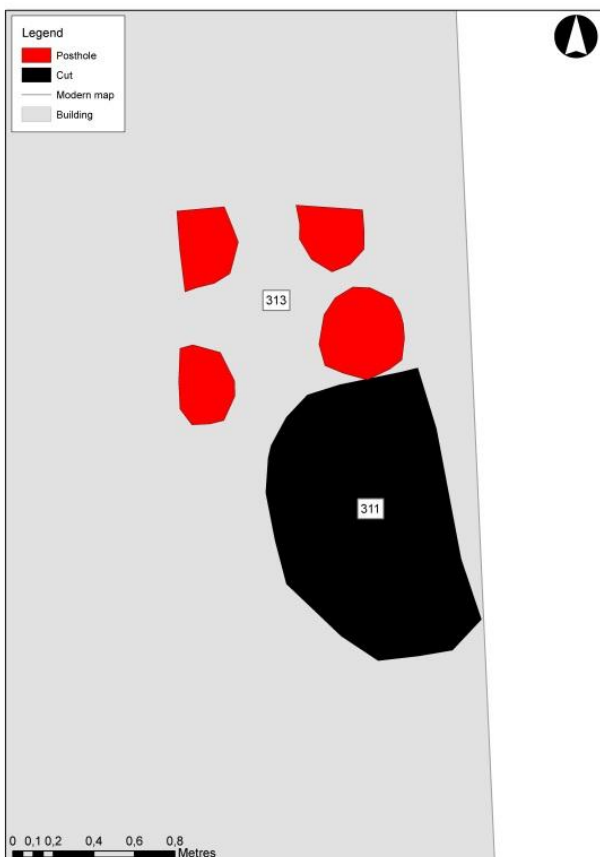


Fig. 159. The postholes and pit SG-311 representing interpreted building G-500871.



Fig. 160. Exposed upper part of wooden barrel SG-311, facing west. Photo: Museum of Copenhagen.

The postholes were spatially grouped and aligned with the wall SG-500870 to the south, however, these postholes were very closely positioned and it is uncertain what structure they could represent.

The primary function of the barrel was unclear, but in its secondary use the barrel had been filled with waste. The cut was quite large compared to the barrel and probably was not established for placing the barrel but as part of a larger structure.

These contexts suggest some kind of activity in terms of a workshop with the four posts within the house and the big cut with a barrel and a post forming part of some kind of activity within this building. The excavation conditions didn't allow a full excavation of cut SG-311, and therefore there are still some unanswered questions as to the function of this building.

The backfill of the barrel dates to Late medieval/Early post medieval period.

17.1.1.2 The forge

G-660 is a heavily truncated forge containing various internal elements, although very little of the external structure was seen to remain (Fig. 161). The forge was placed behind the rampart, and the building can be roughly characterised in three phases, however the extent of the truncation from modern disturbances has made the interpretation of some of the features uncertain.

Phase 1: Initial Construction

Postholes SG-662 and SG-650 have been interpreted as possibly relating to the construction of the forge building, as the only exterior features from the building. However due to their location on the edge of the excavation this is

uncertain. They were recorded as having cut through surface/floor SD155640 (Fig. 161), but they could be contemporary with it.

The surface consisted of a stony layer which was interpreted as a hard wearing floor surface upon which to construct the internal elements of the forge. It showed signs of wear from significant human activity. The surface had various elements cut into it which have been interpreted as relating to the internal structure of the forge; stakeholes (G-661) were thought to represent part of a framework for equipment, while SG-663 consisted of two brick platforms and two sets of impressions, all of which would have carried equipment within the forge. SG-668 was interpreted as the impression of bellows, with SG-669 as potentially part of the framework which supported them. The brick platforms showed signs of wear, and so could have been supports for an anvil base or for a quenching bucket, etc.



Fig. 161. Yellow-grey surface (SD155640) in phase 1 and 2 of the forge G-660. To the right are the impressions of possible equipment like bellows SG-668 marked with a red circle. Stakeholes SG-661 are marked in green circles and the northern part of SG-663 is marked with a blue circle. Cutting through (SD155640) in the upper part of the picture marked with a purple circle – four of the postholes within G-302 – see paragraph on phase 2. Photo: Museum of Copenhagen.

Phase 2: Reconstruction

Phase 1 was overlain by floor SG-500686 which represents an episode of re-flooring and running repairs, thought to be a restructuring of the building because the floor cancelled out a series of earlier postholes, and had a series of new postholes cut into it (Fig. 162). However, there also appeared to have been a continuation of activity, as this flooring was laid around the brick platforms in SG-663. It was thought on site to have been very clean and so could have been regularly swept whilst in use. It was also noted that the southern half of the western side was slightly depressed and more mixed which could indicate a trampled area. Floor repair (SD154552) within this group at the eastern side of the

forge, was thought to have been the result of some activity associated with metal production and could represent a smithing pan. Cut through this floor was posthole group (SG-302), the main four postholes of which were thought to represent a structure within the forge – possibly a working platform, as the area to the south of it was very compacted and heavily used (Fig. 162). Pit (SG-500687) was also recorded as having been cut through this floor layer, however given the amount of truncation the interpretation is difficult – it could have had a specific function within the forge, or it could represent the deconstruction of the structure.



Fig. 162. Floor SD155640 and bricks SG-663 represents phase 1 of the forge. Postholes SG-302 and floor layer SD500686 represents phase 2. To the lower right is surface G-670.

Stakeholes SG-500882 represents a probable structural repair or alteration to the brick platform SG-663 (Fig. 163). It is uncertain what form these repairs may have taken – a horizontal frame is a possibility or a continuation of stakes to form a frame or fence. A curve in the southern gully (SC155031) was thought to have been caused by the placing of a

barrel or bucket which wore down a groove. These repairs were deliberately deconstructed, as shown by the elongation of the holes made when the stakes were removed, which supports other evidence that the forge was deliberately deconstructed. Over this repair was a small area of re-flooring, (SD154360), which was slightly green and contained some copper slag. If copper was being worked here as well as iron, then that may explain the green colour of the floor repair (SD154552), mentioned above.



Fig. 163. Bricks (SS155322) together with stakeholes (SG-500882) facing north. Photo: Museum of Copenhagen.

Overlying or contemporary with the floor SG-302 was levelling group SG-500883, consisting of sandy levelling layers with a slag layer (SD154576) in between, thought to represent the creation of a stable working surface, together with an area of trample (SD154379), indicating activity in the southern area of the forge.

Phase 3: Deconstruction

Overlying all of the previous features is SG-500884 which consisted of several small episodes of dumping. They are all mentioned as being connected with metal working or from trample or possibly localised repair, but they have all been interpreted as dumps probably indicative of the decline or final stages of work within the forge structure.

G-670 represents a possible stone surface overlying a charcoal dump layer which may also have been used as a surface, or was at least open for a time. The stone surface, which consisted of cobbles and broken red bricks, was partly disturbed, and appeared to have a circular void in the western edge which could indicate the presence of a contemporary feature (such as a post) which has since been deconstructed. The greyish-black clayish-sand and charcoal layer was tentatively interpreted as a prior surface because it had been worn down and become more mixed in the areas where no stones were present, however, it could also represent the uppermost dump layer of rampart group (G-713) below.

G-670 could represent an internal walkway behind the rampart, or it could be a surface connected with the forge building G-660 located to the north (Fig. 162).

Dating and use

There were relatively few datable finds recovered from the construction or usage features associated with the forge, but ceramics from the slag layer (SD154576) in levelling group SG-500883 (Fig. 164) and from floor (SD155093) in SG-500686 were dated to the 13–15th centuries. This and the stratigraphical relations will most likely put the functioning of this forge in the timespan of 1250 AD to no later than 1450 AD. The forge building pre-dates the street surface G-666 which is most likely part of the possible Late medieval rampart street G-490.

The analysis of slag from (SD154576 and SD154379) indicated that the activities taking place within the forge were primary smithing. Also, a hammerscale sample from (SD154279) shows that the only process performed in the workshop was primary smithing (Jouttijärvi 2013:3). The origin of the bloom iron points to Norway and Sweden, and slags found in other areas of the excavation were almost identical in composition to the slag material from forge building G-660. This either indicates that the forge deposited its waste material over a large area, or it is a sign of more than one forge in the area that worked iron blooms from the same common source (Jouttijärvi 2013:1).



Fig. 164. Slag in context (SD154576), facing south. Photo: Museum of Copenhagen.

The forge building's predecessor and earlier activities

G-500688 represents some sort of burning activity (Fig. 165). It has been interpreted as a hearth, or representative of some industrial process or metalworking, as evidenced by the presence of lime in the middle deposit (SD156248). No plant material was found in the deposit, indicating that this was unlikely to have derived from domestic activity. No metal was found in the lowest deposit (SD156413), but the uppermost charcoal layer (SD156232) contained a moderate amount of hammerscale and animal bones, which could suggest a change in the type of activity taking place in the area. There were no positive structural elements associated with this group, therefore it was not possible to associate this activity with a forge building and it is stratigraphically older than G-660 and in the same location, but it could at least be a predecessor.



Fig. 165. Deposit (SD154859) of charcoal in G-500688 facing north. Photo: Museum of Copenhagen.

17.1.1.3 Buildings in subarea Phase 6

Building remains in the High and Late medieval period were concentrated in the western part of subarea phase 6 (Fig. 166). This is most likely a result of modern disturbances in the area. Due to the limitations of the area of phase 6 it is not possible to see the remains of the buildings in a wider context, but it is very likely that they should be seen in connection with ditch G-210 especially and other ditches and fences in the surrounding area and in general a series of plots in the area. At least two of these buildings had cellars which does suggest well built houses for permanent residence and storage.

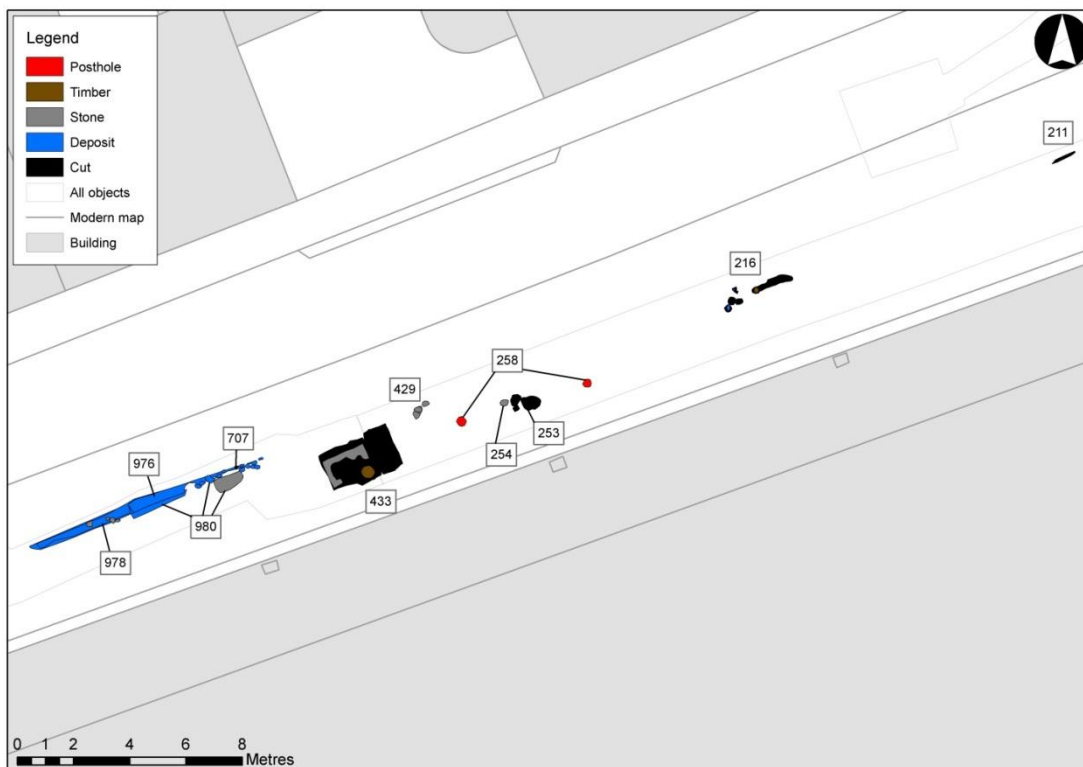


Fig. 166. Building remains in subarea phase 6.

There are no direct stratigraphical relationship between the different buildings, but because some of the remains are at the same stratigraphical level it is most likely that the buildings in this area are from around the same time period – which puts the function of the buildings in the date range of 1200–1450 AD. Renovation and multiple phases of floors and posts indicate a settlement that had a permanent character. The cellar constructions indicate storage for longer periods and floor layers that had traces of a domestic hearth (G-976) also underlines the status of resident housing.

G-205 was a NE/SW orientated building and part of a cellar level was preserved in this building (Fig. 167). It consisted of a floor made of clay and bricks and clay walls with wooden planks. These planks or panels were supported by a simple brick and clay construction at the base and showed evidence of renovation. In the SE corner of the cellar a wooden barrel was set in the ground. This barrel had traces of standing water and is interpreted as a sump. This building is dated from finds within the building and demolition layers. Pavement G-971 and a cultivated soil G-970 is at the same stratigraphic level as G-205 and might be connected, providing an example of land use.

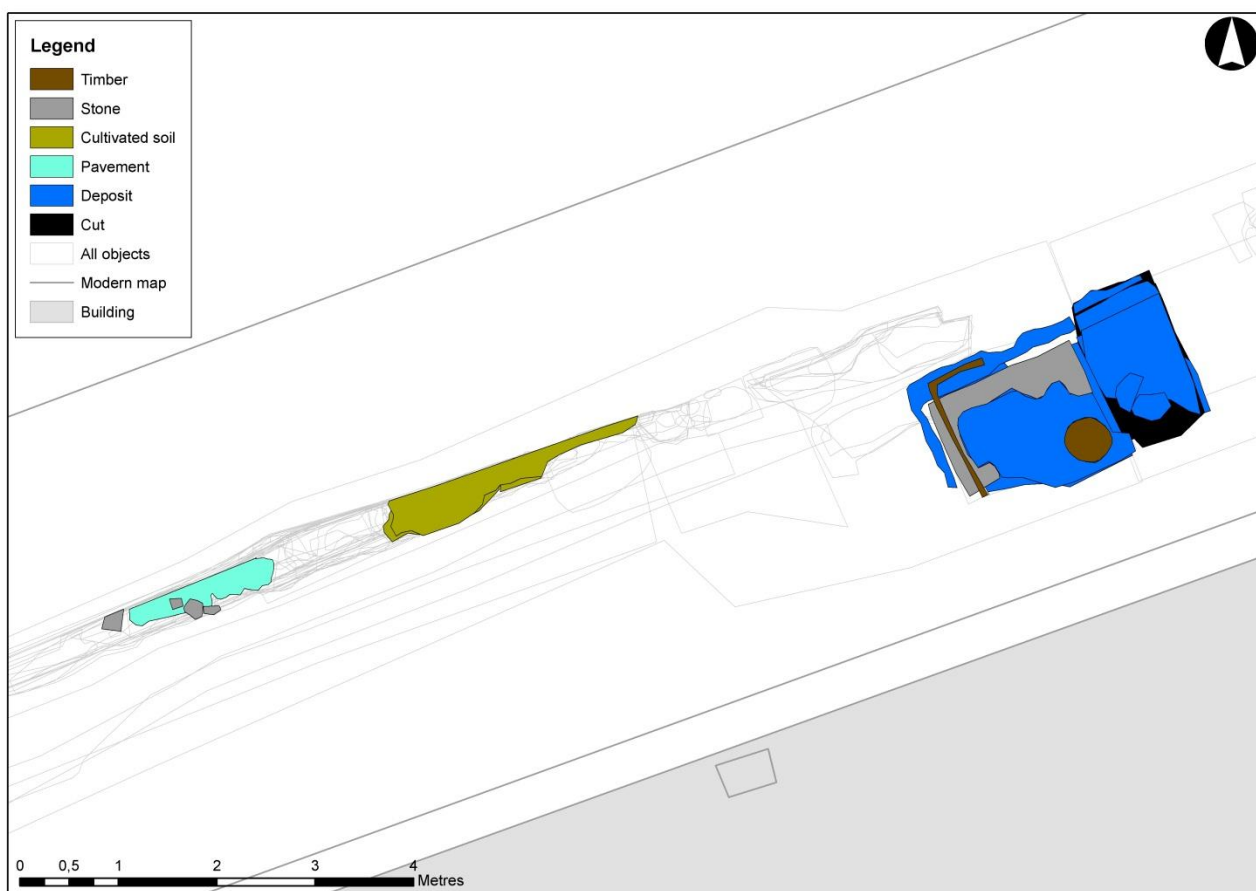


Fig. 167. An example of landuse in the area. Building G-205 (blue) with cultivated soil (vegetable garden?) G-970 and pavement G-971.

The remains of another two cellar structures were excavated in the area of phase 6. G-707 (see Fig. 166 above) could be compared to G-205 even though the remains were quite modest. It is most likely that floor layers G-976 and G-978 were part of G-707 because they were at the same stratigraphical level, though without any direct physical contact. Just east of these buildings, traces of another possible building in at least four phases were excavated (Fig. 166). Building G-253 consisted of fills, a posthole and a pit. It is suggested to represent the remains of a building because there were more postholes and cuts in the area that might possible be connected to this group (G-253). It is possible that the structure underwent a series of repairs/rebuilds.

This structure is mainly of interest since it was situated at the western end of fence line G-269, which it appeared to directly overlie. It could therefore be a building associated with this boundary, or the fence could have gone entirely out of use by the time this structure was built. Also floor layer G-976 had stratigraphical relation to fence line G-967. For further information on relations between buildings and boundaries; see below.

G-211 represents only a cut for a probable cellar which stratigraphically is below ditch G-210 (see below) and thereby the oldest building remains in subarea phase 6.

17.1.2 Boundaries, ditches and fences

Constructions of boundaries, ditches and fences are in this period narrowed down to the areas of phase 2+3, phase 6 and phase 45B (Fig. 168). They can be split into two primary groups – one group of ditches in phase 2+3 and phase 45B that seems to be part of the same system and one group in phase 6 that also seems to be connected for the larger part. For boundary ditches in an earlier period at Kongens Nytorv; see Chapter 12; Early medieval activities 1050–1200 AD. The fences in these phases are in most cases somewhat connected to the ditches and in many cases they most likely have the same function as boundary ditches. However quite a lot of stakes have been excavated without any clear connection to other findings and are difficult to put into the overall context (see Appendix 8).

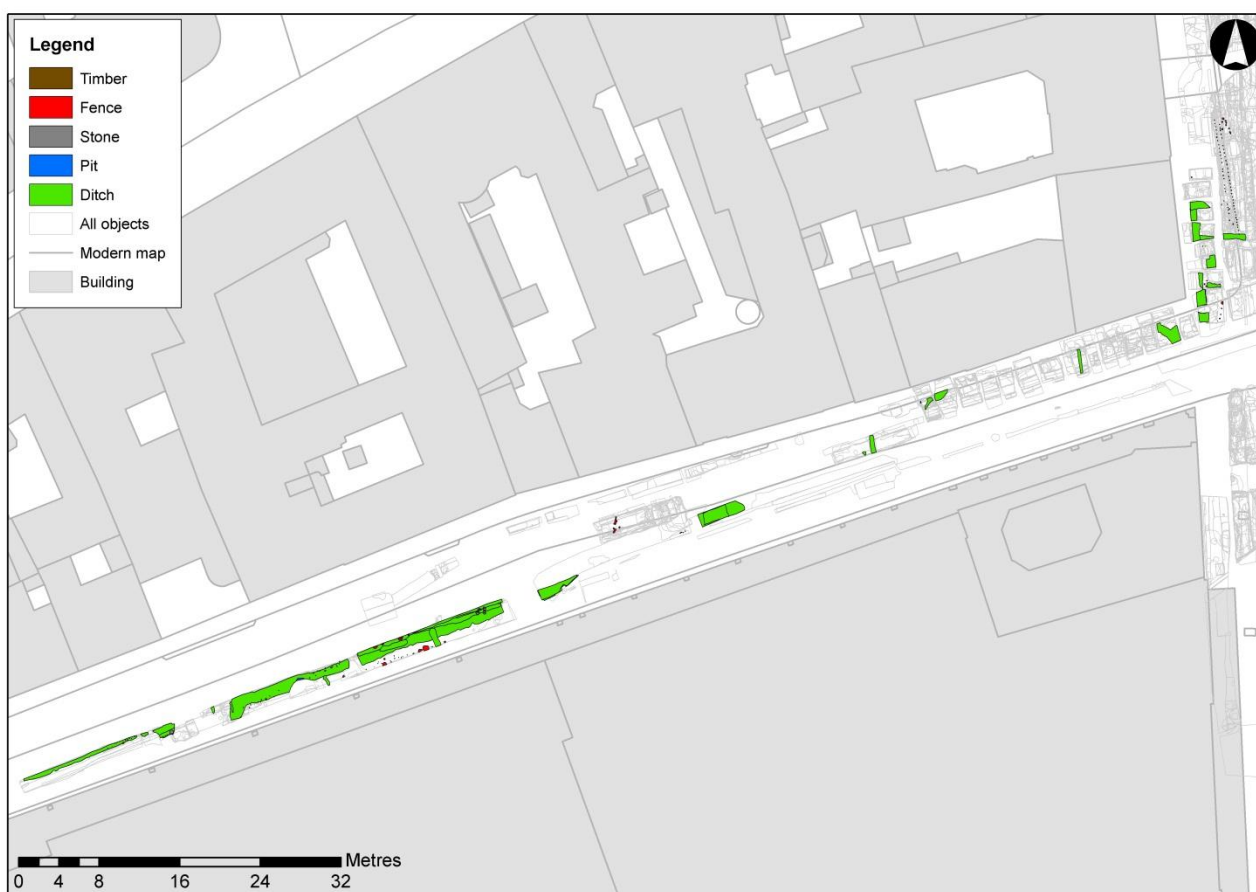


Fig. 168. All ditches and fences in the High and Late medieval periods at Kongens Nytorv.

17.1.2.1 Ditches in subarea phase 2+3 and phase 45B

In this area there are several ditches that might be part of the same system though with adjustments. As described above the area around the Hviids Vinstue was excavated in smaller, separate areas due to preserve the foundation of the historic building. This means that the excavation and interpretation of the ditches has been done in parts.

There are indications though that the ditches in these phases are, if not from the same time phase, a sign of the use of the area in the High and Late medieval periods.

G-297 is an assumed boundary ditch orientated in an east-west direction, possibly related to an estate behind the rampart (Fig. 169). The ditch was 5 m long and had straight to concave sides and a concave base with a maximum depth of 0.28 m. Fills consisted of mid black-grey to light blue-grey sandy silt with inclusions of charcoal, pebbles and stones. One of the archaeobotanical samples consisted of charred barley (*Hordeum vulgare*). G-536 represents two circular stakeholes with wood in the fills (Fig. 169). They were in a rough alignment with G-297 which was recorded c. 0.6 m to the north, so these stakeholes could be the remnant of a fence line associated with a field or estate boundary. They are also on the same stratigraphical level which is one of the oldest in this phase. G-500938 interpreted as either a pit or ditch could represent a part of G-297 (Fig. 169).

This ditch was parallel with ditch G-310 which lay c. 4.2 m to the south. Together they could represent a change in the boundary of a field or estate even though they were not on the same stratigraphic level. Ditch G-305 to the SW (around the corner of Hviids Vinstue) ran perpendicular to these ditches and was probably part of the same field system.

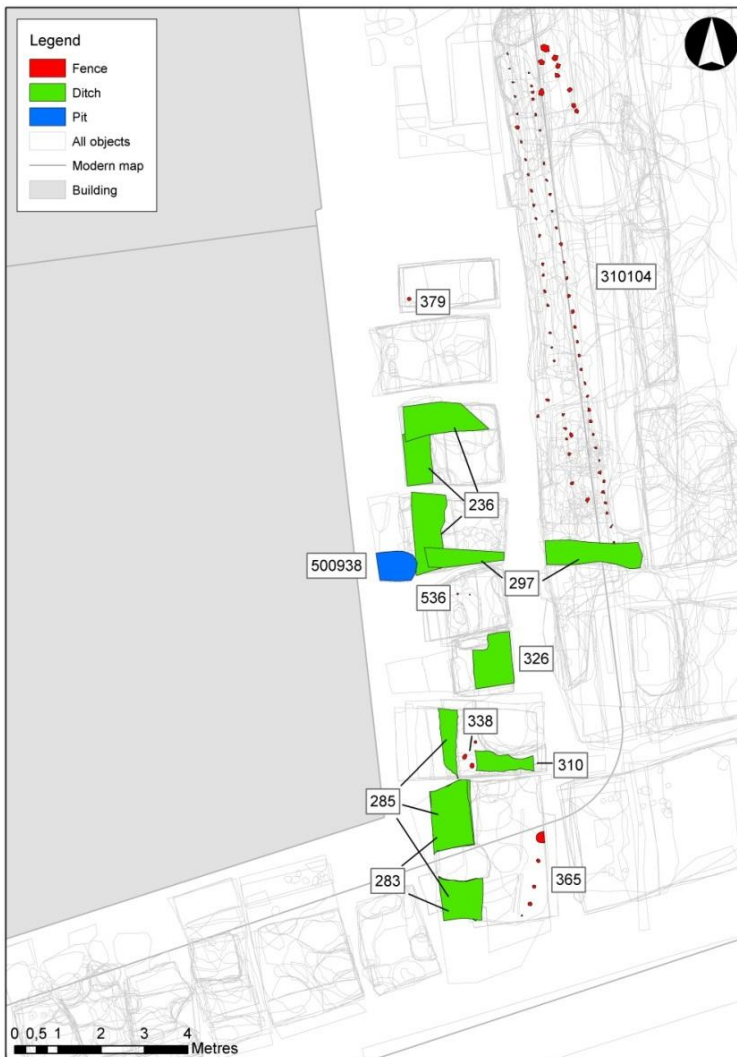


Fig. 169. Ditches in subarea phase 2+3 and phase 45B that probably represent the use of the area in the High and Late medieval periods.

G-236, an L-shaped, E-W and N-S running ditch could be a continuation of construction cut G-420 to the south, although their recorded depths differ by up to 0.4 m. The L-shape suggests the enclosure of a plot. The truncations had gentle/steep sides, were 0.6-0.8 m wide and had a concave and flat base. South of G-420 was ditch G-283 which is most likely the continuation of the latter with the same recorded depths as G-236. It was a linear cut of a possible drainage feature, 0.90 m wide and 0.15 m deep. Stratigraphically there might be a connection between building G-222 and boundary ditch G-236 (Fig. 169).

The ditch G-285 below G-283 was interpreted as a boundary ditch, and this ditch would then be interpreted as a recut of G-285. G-283 ran north-south in front of Hviids Vinstue. The ditch had straight/steep sides and a concave base to a depth of 0.4 m. The fill consisted of grey-brown silt carried by water into the base of the ditch, gradually filling it.

It was later recut by ditch G-283, which was probably just redefining the boundary. It was very close to the extant buildings and was therefore cut by the foundation cut. It possibly predates the existing buildings.

The most notable ditch or fence structure in this area was the fence line G- 310104. Stage 1, SG-498, showed evidence of 34 preserved stakeholes in the structure (Fig. 170). The stakeholes consisted of circular and sub-circular cuts with a diameter of between 0.07-0.17 m. The holes had tapered points with a sloping base. Fills consisted of mid brown silty sand with heavily decayed stakes remaining in situ.



Fig. 170. Part of fence line G-310104. Between the two rows of stakeholes is the cut for the sill beam belonging to building G-580 (see above), facing north. Photo: Museum of Copenhagen.

Stage 2; SG-520 consisted of a total of 31 stakeholes. The stakeholes had circular and sub-circular cuts with a diameter of between 0.06-0.21 m. The holes had tapered points with a flat and sloping base. Fills consisted of mid brown silty sand with heavily decayed stakes remaining in situ. Stage 3 of the fence line is SG-526 which is an extension of SG-520 to the north consisting of a total of five stakeholes. The stakeholes consisted of circular and sub-circular cuts with a diameter of between 0.08-0.16 m. The holes had tapered points with a sloping base. Fills consisted of mid brown silty sand with heavily decayed stakes remaining in situ.

These are the overall structures that define the fence, for more subgroups; see Appendix 8.

Both lines of stakes in G-310104 is interpreted as being the earliest fence in this area, separating the rampart street from a possible house plot. As there were two lines of stakeholes, these perhaps represent two different and separate stages or one more sturdy construction consisting of two rows of stakeholes. These appear to be contemporary or close in date as they were all cut into similar grey silty clay, part of levelling layers G-632 and G-499. Building G-580 is stratigraphically younger than fence line G-310104, and it appears that the building is replacing the stakes (Fig. 170) and therefore redefines the boundary.

17.1.2.2 Ditches in subarea phase 6

Group G-210 consists of a large boundary ditch following Lille Kongensgade in a NE-SW direction – the dominant excavated feature in this subarea (Fig. 171 and 172). The ditch was investigated in three different places with a total length of 37.2 m. The cut was 1.4 m wide with gentle and moderate sides and a concave/flat/irregular base, 0.6 m deep at the most. The southern side/edge seemed highly affected by erosion/weathering, possibly by water.

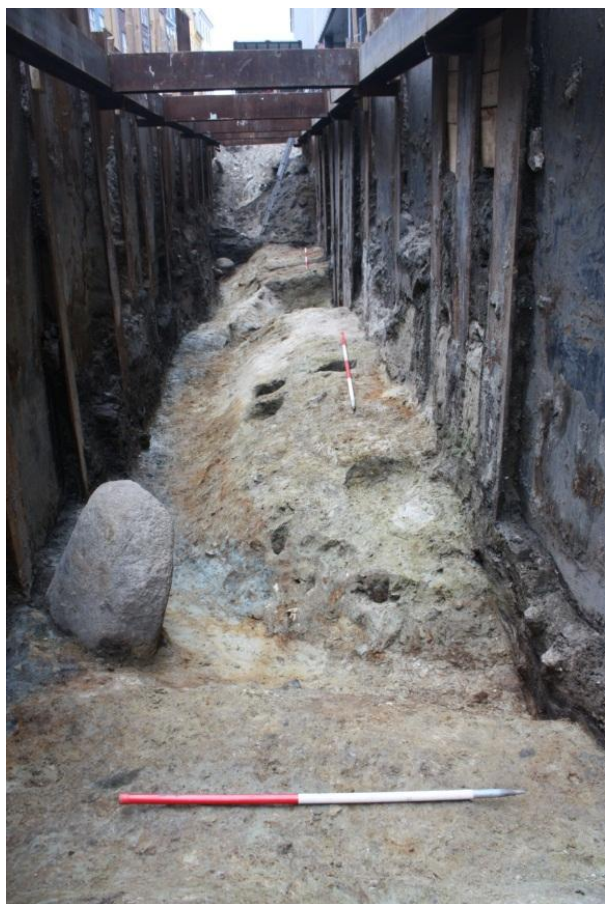


Fig. 171. Part of exposed boundary ditch (the cut) G-210, facing NE turning to the south at the west end. Photo: Museum of Copenhagen.

These cuts represented a large ditch whose primary function was likely to be a boundary ditch. The fact that the truncation turned to the south at the west end suggests that the ditch was enclosing something – possibly a plot. The deposits mainly consisted of mixed alluvial layers deposited when the ditch was still in use – though the large amount of bones (especially fish bones) and ceramics in some of the contexts should rather be interpreted as part of the later deconstruction phase. The fish bones are interpreted as household waste.

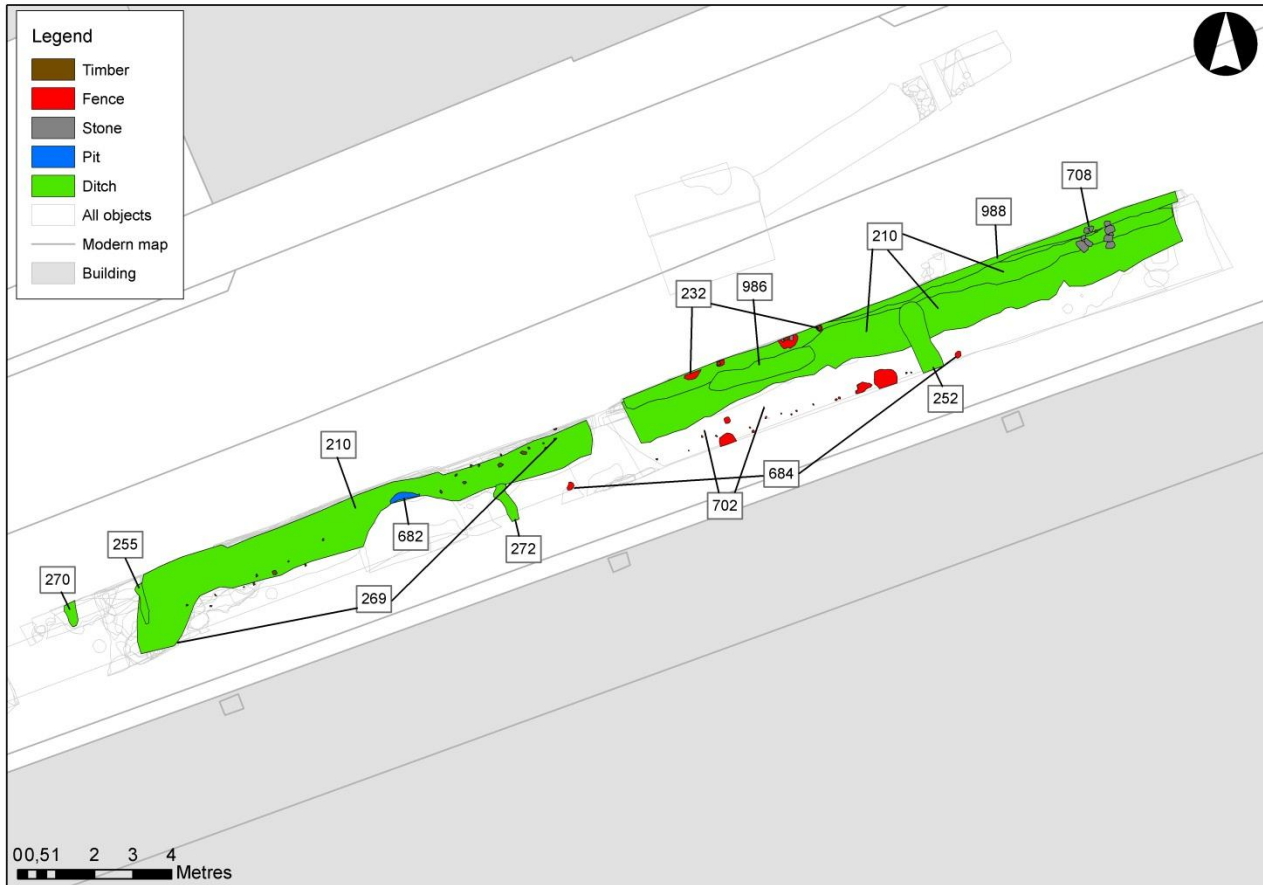


Fig. 172. The western part of ditch G-210 with gullies G-252 and G-272.

A concentration of ten stones and a vertical stake G-708 were registered within the alluvial fills of ditch G-210, and have been interpreted as a possible crossing structure over the ditch (Fig. 172). They could also be a random dump of stones within the fills, or two separate structures. But considering the alluvial layers in the ditch, an interpretation as stepping stones is definitely a possibility.

Fence line G-232 was a collection of four postholes with vertical posts (Fig. 172). This is a later addition and interpreted as part of a fence line which either can be a renewal of boundary ditch G-210 or a replacement. The fence is stratigraphically younger than gullies G-252 and G-272. This fence line is also younger than the rather long fence line G-269 which is on the same stratigraphical level as G-210, but makes more sense as a successor to G-210. The relationship between the two is uncertain.

In addition to this, two smaller gullies G-252 and G-272 could represent the later division of a large plot into smaller sub-plots. The secondary function of the ditch (G-210) was that it also acted as a drain for the plot(s) which it enclosed. G-252 consisted of four circular stakeholes in two rows situated in a boundary ditch running in NW-SE direction. The 0.1 m deep sub-rectangular ditch had convex sides and an irregular base. Against the cut there was a

thin lens of sand indicating that the ditch had been open for a while. G-272 represents a NW-SE ditch, 0.2 m deep and with a concave base.

G-986 is the cut (2.9 x 0.5 x 0.2 m) and fill of an NE-SW aligned ditch, sub-rectangular with a concave base (Fig. 172). It was not very deep and tentatively interpreted as a drainage or boundary ditch. It occurred at the same stratigraphic level as ditch G-252 to the east, and so together they could represent a new boundary in the area.

Fence line G-684 consists of a line of post- and stakeholes which were heavily truncated by an overlying modern disturbance (Fig. 172). This truncation means that we cannot know their true relationship to each other or to the surrounding archaeology, but they have been grouped together according to their alignment. The fence line was roughly parallel to ditch G-210, and so very probably corresponds to the same or a similar phase of land use.

This group also includes posthole (SC61692) towards the eastern end which may have been one of the main structural elements of the fence. It appeared from the cut that this post was removed at some point which would imply that the fence was deliberately deconstructed. Fence G-702 might represent a repair or alteration phase of G-684.

G-968 represents the cut and accumulated fill of a NE-SW running boundary ditch (Fig. 173). The ditch was approximately 0.5 m wide, had irregular/moderate/straight sides and a flat base to a depth of 0.4 m. The fills seemed consistent with alluvial and waterborne deposition, as would be expected in a ditch, with episodes of erosion from the sides of the cut interleaved with episodes of stagnation creating layers of organic, peaty matter.

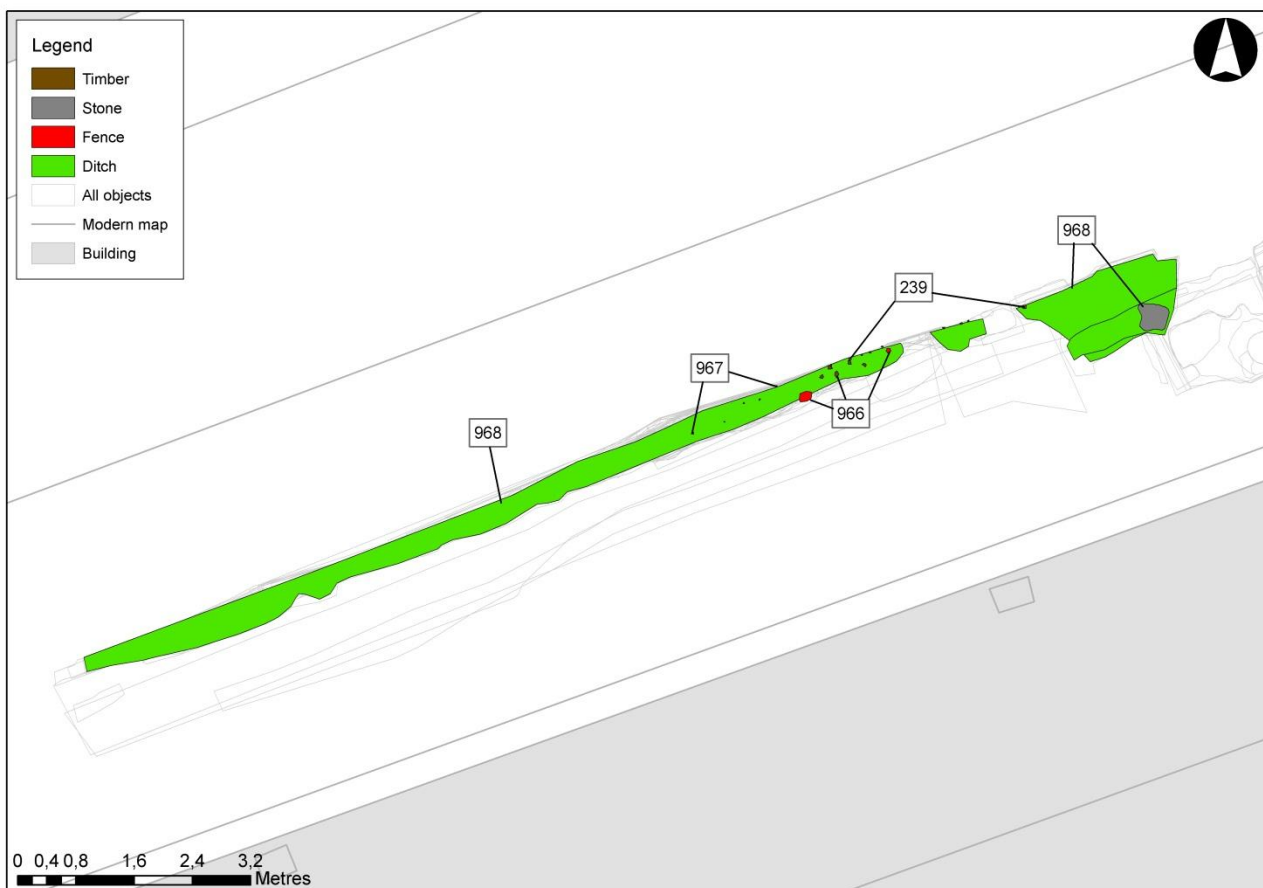


Fig. 173. Ditch G-968 running southeast of ditch G-210.

The pad stone (SS62992) was pressed into natural and could represent a stepping stone (Fig. 174). It was found in the NW corner of building G-205, and so may have been a corner pad stone for the wall, but it was not registered during the excavation of the building.



Fig. 174. Stepping stone (SS62992; G-968), facing east. Photo: Museum of Copenhagen.

The ditch probably had the same function as ditch (G-210) to the NE, and there appeared to have been a gap between them where building remains (G-204) and (G-205) were located. G-968 is on the same stratigraphical level as G-252 which means it is a later phase of G-210. Finds of early redware and older type Siegburg do indicate a High medieval date for the ditch (cf. Fig. 175). G-204 is stratigraphically younger than G-210 and might represent a change of use in the area.



Fig. 175. Fragment of Late medieval bone comb case (FO203594) with incised ring and dot ornaments and butterfly terminal plates. Fixed with copper rivets. Find from ditch G-986 which is a later phase of ditch G-210. Photo: Museum of Copenhagen.

Ditch G-968 was sealed by dump and levelling layer G-974 and in this layer fence line G-966 was established – probably in the 14th century. The fence line was represented by five vertical stakes, a stakehole and a posthole aligned E-W in two rows. They formed a short fence line which presumably would have had planks or wattling between the rows to form the body of a fence, but no clear evidence of this was recorded. Fence line G-967 replaced G-966 and was a short fence line orientated NE-SW, which may have extended out of the trench to the NE (see Fig. 173 above). The stakes formed two rows, slightly off-set from each other, and presumably also had wattle or planking between them, but no evidence of this was found during excavation.

These vertical stakes were originally grouped with fence line G-239, but they were separated later due to their orientation, although they occurred at the same stratigraphic level and so may still have been part of the same land use phase.

G-307 represented a possible N-S oriented fence line consisting of a short alignment of stakeholes and a rectangular cut (SC161848), which originally might have contained planking (Fig. 176). It appeared to pre-date street surface (G-785), as these wheel ruts were recorded as overlying the rectangular cut and represents therefore one of the earliest activities in the area.

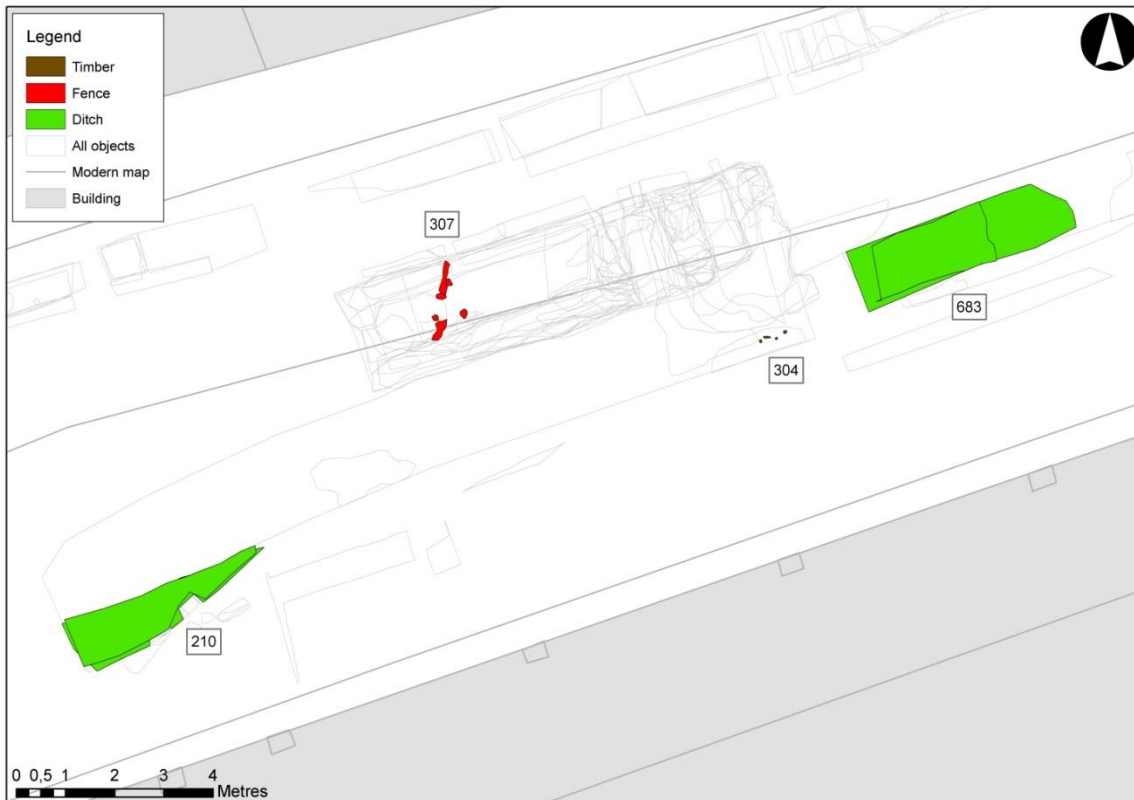


Fig. 176. Ditch G-210 and G-683 together with posts G-304 and N-S running fence line G-307.

This would indicate that the area underwent a change of use when the street was constructed, and this possible fence line could indicate an early property boundary, etc. and probably the earliest activity in the area.

Dating and use

G-210 is cut by building G-253 which is interpreted as dating to the 14th century. Based on finds the ditch could date back to the 12th century, but definitely in the 13th century (Fig. 177 and 178).



Fig. 177. Baltic ware pot (FO203807) with everted rim and incised horizontal lines from SG-439 in ditch G-210. Date: 1000–1200 AD. Photo: Museum of Copenhagen.

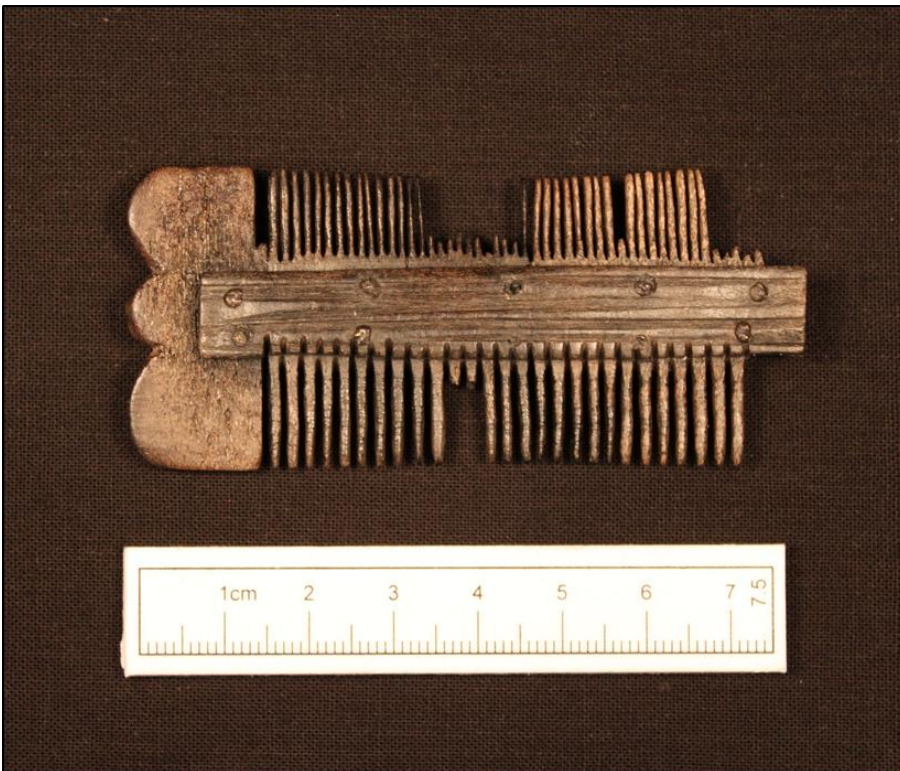


Fig. 178. High medieval bone comb (FO203654) in ditch G-210. Double-sided with two false-ribbed connecting plates and butterfly terminals. The plates are fixed with a double row of (copper?) rivets. Photo: Museum of Copenhagen.

The ditch and the stakeholes in G-252, G-272 and G-986 were probably part of a change in the area when a bigger area/plot was divided into smaller plots. G-210 and G-968 might have been water filled or at least very wet. They might have been functioning both as a boundary ditch and as a drainage ditch in the area – a double function. The findings of possible pad stones also suggest this.

The distance between the two gullies G-252 and G-272 was 11 metres. The distance between G-252 and the L-shape at the western end of ditch G-210 was also 11 metres. These are only two measurements but they do indicate that a plot south of G-210 at one point is being split up into minor plots – with a width of approx. 11 metres each. There were no other indications of a plot system, but it does indicate some sort of systematic subdivision of a larger area/plot.

17.1.3 Streets and use of the area/land use

On the corner of Lille Kongensgade and Kongens Nytorv in subarea phase 2+3 was a trace of land use in the form of wheel ruts, a fence and a well.

Wheel ruts G-371 represents four shallow depressions that were oriented north-south. The distance between the ruts was approximately 1.0 m. They were aligned with fence line G-365 consisting of a NNE-SSW alignment of five post- and stakeholes, where the southernmost stakehole was a bit out of alignment to the west and a little shallower. The fence line yielded no finds or suggested date, but placed just west of the wheel ruts, the fence line could be part of the same structure (Fig. 179). The wheel ruts are later than boundary ditch G-310 and must represent a new use of the area. They were leading to well G-250 which suggests that the street had been used in connection with either the construction, use or deconstruction of the barrel lined well.

The distance between the wheel ruts agrees with what has been observed in Østerport just north of phase 2+3 (see Chapter 15.1). It is more than likely that these wheel ruts represent a phase of the rampart street leading to and past the inner gate building.



Fig. 179. Well G-250 with wheel ruts G-371, ditch G-310 and fence line G-365.

G-208 consists of three contexts forming what has been interpreted as tracks in a former street running NNW-SSE. The wheel ruts were on top of levelling layers mainly consisting of clay. The layers were situated around Hviids Vinstue and may be part of a phase when the activity in the area changed. On the same stratigraphical level were the just described wheel ruts G-371 running in the same direction, but much further to the east.

In G-208 the width of the wheel ruts was only c. 0.06 metres and the distance between them only 0.35 metres so it is possible that they either represent only one half of a track way, or that they perhaps represent the repeated use of a single-wheeled barrow.



Fig. 180. All streets in the High and Late medieval period, G-500919.

G-785 in subarea phase 6 represents two parallel wheel ruts running E-W for a distance of 0.65 metres with mixed fills with occasional inclusions of stones, pebbles and charcoal. Cut into natural, the ruts were stratigraphically later than fence line G-307, which is stratigraphically one of the oldest features in the area and predates the High to Late medieval street surface G-744. The foundation layer of G-744 consisted mainly of pebbles, the street surface mainly of stones, pebbles and red brick fragments in a grey sand matrix (Fig. 181). There was an area of repair in the eastern part of the street, but this was not recorded separately.



Fig. 181. Street G-744, facing south. Photo: Museum of Copenhagen.

The surface was at the same stratigraphical level as external surface G-50003 and could be part of the same street surface. This group consisted of a layer of mid greyish brown silty sand including possible waterborne action deposited over a feature interpreted as being a wheel rut.

G-979 represents a levelling layer of light reddish yellow sand and mid sized stones which made up a cobbled surface (Fig. 182). Due to the level of truncation the full extent of this feature could not be seen. There were various structural elements in the area, but no associations between them were recorded on site. This group both overlies and underlies clay floors (G-978 and G-980 respectively), and so represents changes in the development of the area. It possibly represents part of a street.



Fig. 182. G-979 with a cobbled surface of granite stones, facing NW. Photo: Museum of Copenhagen.

17.1.4 Rampart streets

The rampart street which ran alongside the rampart was seen in at least three subareas (Fig. 183). The different groups representing the rampart street were not made of the same materials but were varied. There might be many reasons for this, for instance repairs, different phases or it might be the case that different people

were in charge of maintaining the street in different areas. It is difficult to say how accessible the rampart street was – an example of this is building G-580 which was built just up to the rampart street.

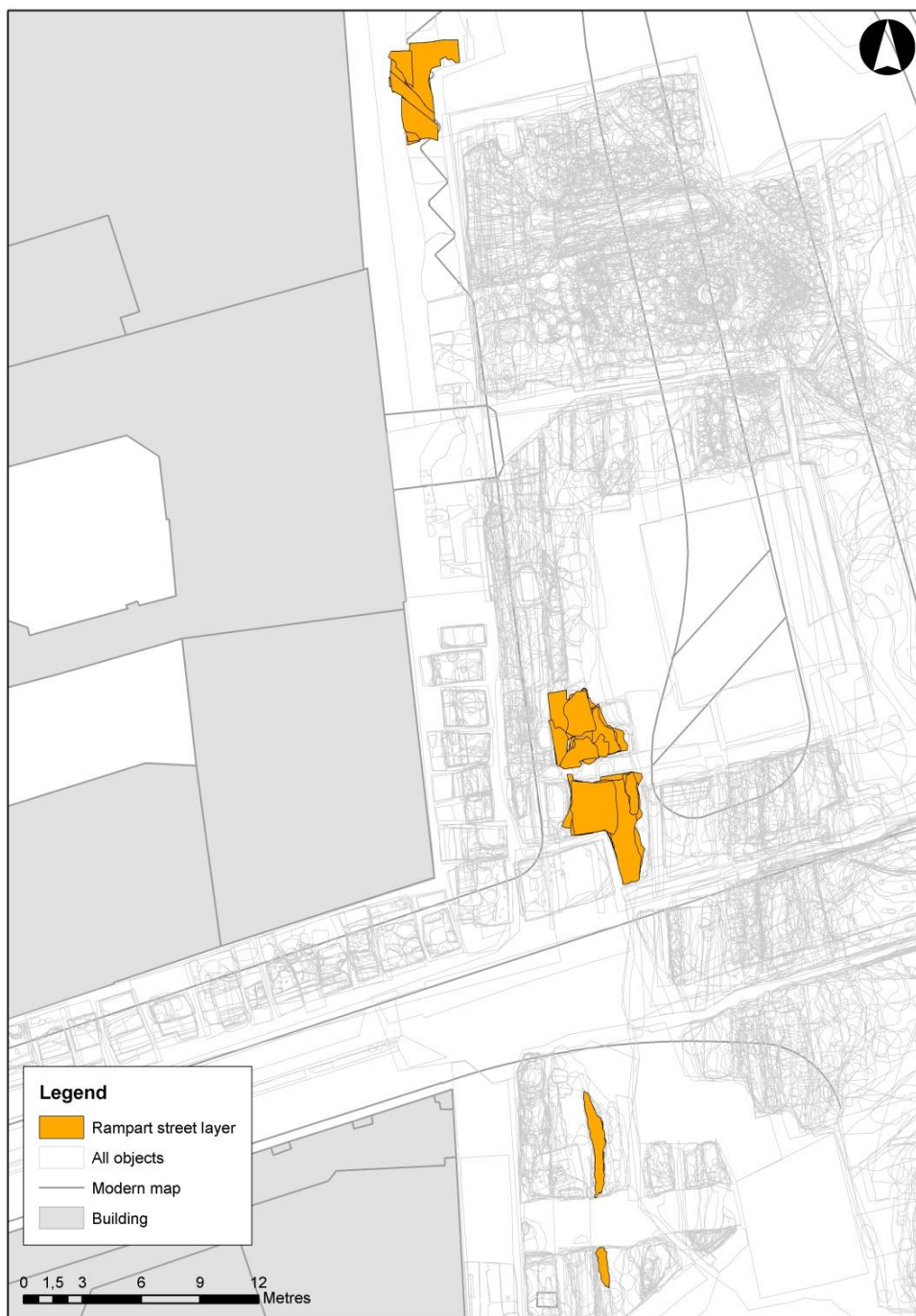


Fig. 183. Rampart street layers.

Seen from the south G-666 represents a stone street surface and associated levelling layer. The street surface consisted of mid greyish brown sand with frequent inclusions of stones and pebbles. Finds from the street surface included a Post medieval iron horseshoe (FO211475).

G-490 represents the rampart street just south of building G-580. This group was made up of several subgroups; SG-480, SG-510, SG-563, SG-621, SG-622, SG-623 and SG-635. These represent wheel ruts, street surfaces, levelling layers and repairs. There are not many datable finds, but stratigraphically it belongs to the High to Late medieval period. For discussion on this; see building G-580 above.

The street surfaces and layers consisted of pebbles with intermediate brown and green silty sand with inclusions of dark organic lenses, charcoal, pebbles, red brick fragments, mortar and bones (Fig. 184).



Fig. 184. Part of street surface (SD81926) in rampart street G-490, facing south. Photo: Museum of Copenhagen.

G-500878 was a deposit of broken brick fragments and stones likely to have formed an old street surface/rampart street (Fig. 185). Its surface, while well defined, was somewhat undulating and would not have been a completely level surface. It was not found to extend further east out of the trench. At some point it was cut through by NW-SE drainage ditch (SG-500877). Not securely dated, but probably Late medieval. The older phase of this street surface was G-500879 which consisted of compact natural sand and an associated use layer, also probably Late medieval.



Fig. 185. Stones and brick rubble surface (SD30725) in street G-500878, facing south. Photo: Museum of Copenhagen.

17.1.5 Wells, possible wells and a bucket

G-250 is a well with a construction cut, two barrels on top of each other and primary and secondary backfills. The cut was sub-circular, had steep sides and declined to a depth of 2.07 m with a concave base.

Upper barrel: The upper barrel consisted of nine vertical oak staves and 3 lines of wooden hoops. There was no lid or base, and no metal fixings. Marks had been etched into the upper part of the top barrel near the north facing side. One mark was an X, another was X with arms on the right hand side and the third was a circle with a dot in the centre. There were also tally marks (Fig. 186). Damage on the south side may have occurred when the piling was driven through the barrel. The base of this barrel overlapped the top of the barrel below.

Lower barrel: This barrel did not appear to have the same markings as the one above and the hoops were not as well preserved. Otherwise this barrel was very similar to the upper one and sat just above the natural substrate. The barrel consisted of 11 wooden staves and two hoops. One large stave was found within the barrel. The oak staves were approximately 0.75 m long.

The barrels had been re-used for a well lining. There may have been other barrels higher up, but these would have been removed by later truncations.

One of the backfills of the pit had stones and blue-grey clay probably used as a packing material around the barrel. Later, a truncation (G-415) was dug as a sub-circular pit with steep sides that cut the older barrel-lined well. This pit may have been dug to remove any other barrels after the well went out of use. The constituents of the fill indicate that it derived from mixed domestic household waste, and was deposited rapidly.

Finds from the deconstruction phase date the well to the High/Late medieval period 15th–16th century.



Fig. 186. G-250. Upper and lower barrels in situ, facing east. Photo: Museum of Copenhagen.

The shape of the western side of pit/well G-209 was straight while the eastern side seemed to be stepped. The base was irregular and difficult to separate from natural in the centre of the pit, probably because of water erosion as water was still seeping in from silty layers to the north. The deposits in G-209 (SD55926, SD55552 and SD55553) seemed to have more waterborne characteristics than those of the overlying deposits which were more like waste dumps. Therefore they have been split into two phases – the former being use, and the latter being deconstruction.

The barrel and its fills were at this point part of the deconstruction phase. The barrel might be part of use if the pit was a well, but is here kept as part of the deconstruction. The vertical sticks (S55413 and S55489) were included in this group as they appear to have been exposed during the excavation of the pit, but were not cut by it. Their stratigraphy was extrapolated from the z-values in IntraSiS. They may have had some structural function within the pit, but this is not obvious.

SG-239913 is a bucket and its fills found within pit G-209 (Fig. 187). The bucket had a diameter of 0.24 m and was 0.23 m deep. The fills were thought to be part of the disuse of the bucket and pit (household waste) (cf. Fig. 188), with the possible exception of 201876, which consisted of the degraded remains of the base and some of the underlying deposit. It may also have contained some remains associated with the final use of the bucket, so it is interpreted as part of the usage.



Fig. 187. Post-excavation. Exposed bucket SG-239913 and one of the vertical stakes, facing SW. Photo: Museum of Copenhagen.



Fig. 188. Intact medieval child's ankle boot (FO202484) found in bucket SG-239913.

17.1.6 Pits

There are pits spread over most of the area in this period, but most of them carry very little evidence of purpose or use. Pits have had multiple purposes, and some of the pits excavated at Kongens Nytorv might be individual remains of postholes or other structural remains.

G-298 represents a sub-circular shallow pit. It occurred at a similar stratigraphic level to boundary ditch G-297 to the north, and was aligned with the stakeholes (G-536) to the west, so this pit could relate to the estate or field boundary (Fig. 189). These activities belong to some of the stratigraphically oldest features in the area. Among the finds are ceramics (late greyware 1200–1450 AD).



Fig. 189. Exposed pit G-298, facing east. Photo: Museum of Copenhagen.

G-286 represents a heavily truncated pit. Its single fill seemed to have accumulated naturally, so it was not deliberately backfilled. There were no finds or dating evidence, so its function is unknown. The pit occurred at the same stratigraphic level as five other pits to the west (G-218, G-361, G-362, G-400 and G-401), well G-250, wheel ruts G-371 and fence group G-365 to the east, so there was a lot of activity in the surrounding area at the time this pit was dug, although it is unclear if all of this was strictly contemporary or whether this represents continued activity at the site. Some of the pits are dated to the Post medieval period (G-218, G-362, G-400 and G-401).

G-500938 represents a sub-rectangular feature which could either be a pit or the eastern terminal of a ditch. The fill was homogenous, and there was no indication as to the function of the feature. If it was a ditch, then its alignment appeared to respect the underlying property boundary (created by ditches G-297, G-305 and G-310), although it was on a different stratigraphic level. It was presumably filled in just prior to the construction of building G-222, although

no relation between them was recorded. It could also be associated with postholes G-421 and G-500927, and the activity associated with these features could be represented in the activity layers in group G-468.

G-432 in subarea phase 6 is the northern part of a pit consisting of a construction cut, clay lining and backfill. The feature had sharp/steep sides and a flat base at a depth of 0.14 m. The width can be estimated to approximately 0.64 m. The clay lining consisted of firm, mid greyish green silty clay with occasional inclusions of charcoal and CBM, the secondary backfill consisted of brownish grey sandy clay with inclusions of charcoal, wood, CBM, pebbles, stones and bones.

No interpretation was made on site as to its function or photos taken as the feature was heavily truncated. An interpretation as part of a clay lined pit was later suggested based on the clay lining in the base of the construction cut, though this interpretation must be rejected based on the fact that the structure was stratigraphically later than Late medieval dump layers (SG-987 and others).

G-679 also in phase 6 is a pit, and its backfill, which was partly cut into the upper deposits of pit G-209 below. No interpretation was given for this pit on site, but the description of the deposit shows that there may have been a small (waterborne?) usage layer at the base which was recorded as part of the single fill. The inclusions and finds from the deposit were suggestive of general domestic and demolition waste which was dumped in rapidly to fill the pit. It also indicates continued activity in this area.

G-696 is a sub-circular pit that was not fully excavated. No function for the pit was suggested during excavation, however the lowest fill had a high organic content, so perhaps this was a waste pit. Stratigraphically it occurred during the same phase of activity as fence G-307 and G-304. It predates street G-744. It was suggested that some of the pit fills could incorporate material which slumped into it from the street, so the material within the pit had not compacted when the street was laid down, and therefore they could occur close to each other in date (see G-744 above).

G-191045 is on the same stratigraphic level as SG-610 which represents pits dating probably from 1050–1250 AD. The find of late greyware also indicates a date around 1200 AD.

This oval-like pit can most likely be interpreted as a garbage/disposal pit (Fig. 190). However a primitive well could also be considered as the base extended down to the water level, although no evidence of a well constructed inside the pit was present. It should be noted that there were parts of wooden hoops and possibly a wooden lid/bottom to a barrel in the bottom of deposit (SD91873), which might indicate usage as a well for the pit. The destruction process consisted of seven different and mixed deposits, some of them relatively rich in bone material.



Fig. 190. Section of pit (SC89178) with different backfills, facing south. Photo: Museum of Copenhagen.

G-500056 represents a sub-rectangular Late medieval waste pit with a collapsed wattle lining (Fig. 191). The deposits within were quite peaty and organic, and may relate to the function of the pit. Much of the waste in the upper fill of the pit appeared to be domestic in origin (food waste).

Finds were ceramics (late redware; 1450–1800 AD and stoneware; 1300–1550 AD), roof- and stove tiles, CBM, window glass, a flint blade, slag, coal fragment, shell, hair, wool and bones (cattle, pig, sheep/goat, sheep, mammals unspecified, domestic fowl and -goose, bird sp. and fish unspecified).



Fig. 191. Wattle (ST29125) in pit group G-500056, facing NE. Photo: Museum of Copenhagen.

17.1.7 Postholes

Postholes from the High and Late medieval periods were concentrated mainly in the area in front of Hviids Vinstue and some in subarea phase 6. Most of the postholes are without any clear connection to other excavated structures even though it cannot be ruled out that they eventually can be interpreted as part of a structure.

G-362 in area phase 2+3 is a very large posthole on the south side of the facade of the present Hviids Vinstue which contained a square and vertical post that was at minimum 0.8 m long (Fig. 192). The construction cut was rectangular (1.1 x 1.0 m) with straight/vertical sides and a flat base. The upper 0.5 m of the post was very decayed and only the northern side was preserved – the rest of the post was only preserved as small pieces of wood inside a clear post imprint. Towards the base the post was much better preserved, and had survived almost intact. The rapid backfill consisted of mixed material with different inclusions.



Fig. 192. The very large posthole G-362, facing north. Photo: Museum of Copenhagen.

This posthole appears to be at the same stratigraphic level as the stone foundations G-214, although this was not noted during excavation. This post could have formed part of the same structure – being a corner post, as it appeared to stand at the eastern extent of the foundation. The dating is based on finds that belong to the High medieval period.

G-363 represents five postholes arranged in a curvilinear alignment (Fig. 193). Cut (SC28977) contained the remains of a decayed post (ST28963; $d = 0.2$ m), while (SC28920, SC28977, SC29211, SC29000 and SC29097) appeared to truncate previous posts, indicating that this group represents the repair or reconstruction of a previous structure. These postholes were recorded as having been cut through a mortar layer (SD28909) which was interpreted as a demolition layer – however, this deposit could perhaps have been a foundation layer for part of the earlier structure.



Fig. 193. G-363. Excavated postholes (SC28920, SC28977, SC29000 and SC29097), facing west. Photo: Museum of Copenhagen.

The circular, oval and rectangular postholes had a diameter long axis from 0.46 m to 0.78 m, vertical/steep sides, flat base and a maximum depth of 0.43 m. Backfill of mid brown-grey silty sand and clay with inclusions of CBM, lime fragments, charcoal, wood, stones, pebbles and bones.

This structure was stratigraphically above G-500833 which consisted of a group of two postholes and a stakehole. This could indicate that G-363 was a renewal of this structure but with an unknown function.

G-500923 represents an oval posthole that might be part of a N-S structure with posthole SG-500922 to the north (Fig. 194). Possibly these two postholes are to be viewed in connection with the N-S row of stones belonging to G-222.



Fig. 194. Exposed posthole (SC4029; G-500923), facing west. Photo: Museum of Copenhagen.

G-500924 represents two (possibly three) postholes which appear to have been deliberately deconstructed. The N-S alignment corresponds to the alignment of the property boundaries seen lower down in the sequence (e.g. ditches G-297, G-305 and G-310), but the construction of building G-222 in between rules out any direct association, although the plot outline/alignment could still be valid at this point.

G-500927 represents an isolated posthole. It was removed prior to the construction of building G-222. It was not directly associated with any surrounding structures during excavation, but it occurred at a similar stratigraphic level as posthole G-421 and pit G-500938, and so could relate to a structure or activity associated with these.

G-982 in phase 6 is a substantial post cut, vertical post and backfill, into the fills of boundary ditch (G-210). It probably formed a fence along with posts (ST14888, ST60108 and ST60126).

17.1.8 Dump, levelling layers and surfaces

These layers are all layers that cannot be connected to specific features or e.g. demolition layers. They are put together as separate groups, and for some of the layers it is possible to interpret their function. Most of them are likely to be levelling layers forming the surface before the building of houses, streets, etc. They can also be used for sealing features after demolition and before new constructions like houses are made on the same spot. These layers are mentioned as part of the description and discussions of different groups/structures if they have any relevance.

Activity layers are layers that for different reasons carry evidence of human or animal activity in the form of waste, trampled surface, etc. Activity layers can also be built up in areas of action or movement – for instance along a street side or near workshops.

Some of the layers in this section are mentioned as part of the descriptions of different features in the time phase and only a few should be mentioned here. The description of the remaining layers can be found in Appendix 8.

Layer G-468 represents an episode of levelling and two activity layers. These deposits have been grouped together due to the strong smell of hops. Perhaps this could be associated with some localized on-site activity prior to the building of structure G-222, or perhaps hops constituted some of the dumped material. This activity layer could relate to the activity associated with postholes G-421 and G-500927, and pit G-500938, although these features were not associated on site.

Layer G-530 represents an episode of unspecified activity between two episodes of levelling. The deposits contained a moderate amount of animal bone, so it could have been at least partly derived from domestic waste. It occurred after the deconstruction of the building group G-222, and so could represent a change of use of the area.

G-974 represents episodes of mixed dumping and a single wooden stake presumably put down to stabilize the area prior to re-use. This layer sealed ditch G-968. Finds date this to the High medieval period.

17.2 Overall discussion and interpretation

The street of Lille Kongensgade did exist in the medieval period, but it only ran north of Skt. Nikolaj Church to the east, and it was not until the 1520s that the street according to the written sources was extended to the west all the way to the eastern rampart and south of Østerport. Immediately afterwards the King's booths were built on the south side of the street by Frederik the 1st. The houses on the northern side of the street are primarily preserved and date from the 18th century.

It is now apparent from the results of the latest excavations at Lille Kongensgade that the course of Lille Kongensgade in this part of the city was already defined in the 13th century. The large boundary ditch (G-210) that was recorded running east-west down Lille Kongensgade had the same course as the present day road. It was probably deconstructed some time in the 14th century. This means that this specific area had been laid out with plots some hundred years earlier than assumed.

At some point the original plot in Lille Kongensgade is likely divided into smaller north-south running plots (G-252, G-272). There is evidence for at least three plots each with a width of approximately 11 metres. Less than one meter of the length of these plots were registered since the adjoining gullies were in the southern closure of the excavation area, but this indicates an overall control of the area – and division into plots of the same size is an example of a regulated urban area with standardized plots. Plots of the same size (c. 11x20 m) are known from an excavation in Guldsmedegade (Goldsmith Street) in Århus (Linaa Larsen and Skov 2003:122) and these narrow plots were mainly occupied by gable houses known from the 12th century in Lübeck. Due to the limits of the excavation area it was not possible to say anything about the settlement or activity on the plots.

The large boundary ditch in Lille Kongensgade most likely went out of use in the 14th or possibly 15th century. This is based on finds in the filling of the ditch (to some extent interpreted as deconstruction), but also due to the fragmentary remains of a building that cuts the boundary ditch (G-253). This means that the area did not go out of use as a settlement area, but was rearranged around this time. At least two more buildings were built in this period on top of the boundary ditch. Both of these buildings had cellars which points to a long term settlement.

To the north a series of possible plots were investigated (eg. G-236, G-285, G-310). East-west ditches were excavated outside the standing building of Hviids Vinstue that faces Kongens Nytorv both to the north and south. Most of the ditches one amongst the oldest features in the area and is dated to 1250–1550 AD, and despite the time span they seem to be part of the same plot system. There seems to be a north-south main boundary ditch that follows the current facade line of the building block. From this, adjoining ditches run east-west towards the rampart area. This indicates that at some point narrow plots were oriented towards the fortified area.

A fence line (G-310104) ran north-south along the rampart street and had most likely separated the street from a house plot or garden. This is also confirmed by the remains of a building (G-580) that at some point replaces the fence line, but redefines it in the period of 1200–1450 AD. A building interpreted as a predecessor to Hviids Vinstue was excavated from the same period even though it is unlikely that they had been in use at the same time (G-222). Due to the difficult circumstances around excavating in this area the linking between these two houses is very difficult, but they both had the long axis facing the medieval rampart, which means that the gables of the houses were sited to the north and south. Excavation also showed wheel ruts going both to the north and south following the tracks of ruts coming from the eastern gate building. It is therefore likely that an open area or a even small square was located just inside the gate. These two buildings could likely have had their gables facing this square. The size of the buildings also indicates that they had been of some importance or status.

South of these buildings a forge (G-660) was excavated. This forge must have been in use at the same time as the buildings just mentioned. The forge was of a significant size and analysis of the slag from the layers connected to the building makes it clear that it was used for primary smithing. If the gables of the houses were facing the assumed square in front of the eastern gate then the forge was placed at the rear of the buildings. The forge would also be placed close to the rampart and reassuringly close to the water in the moat.

Behind the fortification a rampart street (G490, G666 and more) was recorded, excavated in different areas, but not to its full length. It can be debated if the rampart street was present in all areas at all times, but it made getting around in the fortified area easier.

To sum up; the area seems to have been in use from the High medieval period with regulated plots, settlement, craft and production. The findings from this period are not numerous and is not interpreted strictly being as result of the modern disturbances, but also because of the less dense character of the settlement. This is also obvious in the fairly modest amount of finds, which also have added to difficulties in dating the features.