Kongens Nytorv 1650-1950 AD

Results

The remains from this time phase include different types of structures such as building remains including brick walls, road and street surfaces, wooden water pipes, ditches, a barrel, post- and postholes, fences and stakeholes, a well, pits, dump and levelling layers, robber pits, pavements and finally modern features. Besides stratigraphical observations some of the deposits or features have been grouped in this time phase based on datable finds. The amount of groups for this time phase is striking, and some of these could for practical reasons have been merged, but have nonetheless been retained for various reasons. After the overall description the features are placed in a structural and historical context.

Lille Gjethus

Part of a building was recorded in a watching brief trench during night work in current Holmens Kanal (Fig. 247).



Fig. 247. Night work. Floor of square bricks and brick walls (SS53028 investigated in current Holmens Kanal, facing south. Photo: Museum of Copenhagen.

The building included several structures such as a brick floor in several phases, wooden planks, boulders, various types of masonry, a collection of ten vertical piles in an area of approximately 1.7 x 0.8 m, and parts of a foundation consisting of three parallel wooden beams together with demolition material containing brick fragments and mortar. The piles had a diameter of 0.2 m and had been used to stabilize the building (Fig. 248). The building remains can be connected to and interpreted as part of the Lille Gjethus from 1698; the city's former cannon foundry, magazine or storage shed for the finished moulded cannons.



Fig. 248. Features belonging to Lille Gjethus excavated in Holmens Kanal.

A continuation of the building was investigated in 2013. Traces of two brick walls were recorded in the southern part of a trench approximately 20 m from the NW corner of the Royal Theatre. The southern wall consisted of masonry of so-called Flensborg bricks truncated by modern disturbance to the south. The number of courses was at least three rows. First sign of the bricks was seen at a depth of 0.7 metres. There were two bricks as stretcher (W-E) and four bricks as header (S-N) seen, facing north. The feature continued below the excavation limit. The northern wall consisted of four rows and was the same as southern wall, placed a couple of metres from the former structure. It was harder to see the shape since less was exposed than of the southern wall, but the same form, mortar and yellow bricks had been used. First seen at 0.78 m below the present surface, this wall also continued below the excavation limit.

Hviids Vinstue

With the establishment of the new Metro Cityring it was necessary to underpin the foundations of Hviids Vinstue and other nearby buildings in order to provide additional support. Larger parts of the facade were therefore exposed and excavated, which enabled archaeological documentation of the brickwork together with foundation stones (Fig. 249).



Fig. 249. Exposed brick wall and foundation stone at Hviids Vinstue, facing north. Photo: Museum of Copenhagen.

The recording showed the different phases of maintenance work and interventions in the brick wall foundations that have happened during the years after the building was constructed in the early 1700s.

Other building remains

Part of a building was investigated north of Danske Bank's facade (Fig. 250).



Fig. 250. Overview trench outside Danske Bank with exposed boulders, stones and brick wall, facing east. Photo: Museum of Copenhagen.

Besides the remains of a floor (?) in the western part of the trench, seven large boulders arranged in at least two courses forming a U-shape were documented in an area of approximately 2.7 x 1.4 m surrounding an open area with a buried bucket (Fig. 251).



Fig. 251. Part of brick wall belonging to a former building outside the northern facade of the present Danske Bank. In the middle – part of a bucket with unknown purpose.

The bucket contained different types of waste, such as brick fragments, tiles, glass and ceramics. Below the bucket two wooden 0.7 m log logs of uncertain function was recorded. Up against the boulders an accumulation of 20 smaller stones were recorded (G-202). The southern row of boulders and a large stone to the west had served as the foundation for a later NE-SW running wall of red and yellow bricks in three courses.

In a watching brief trench across Bredgade from Krinsen to Nyhavn parts of a building were investigated (Fig. 252).



Fig. 252. Foundation stones and brick wall exposed during night work in trench ZT52627, facing SE. Photo: Museum of Copenhagen.

The brickwork and foundation stones belong to an earlier building with a Post medieval date. An accumulation of bricks recorded in the north could have a similar origin. Beams were revealed in the northern part of the trench and this construction may be the remnants of a bulwark and parts of a ground anchor. Similar structures have been encountered in previous surveys in the area. The structure could represent part of the guard building seen on Marcelius prospect from c. 1720 AD (see Fig. 261 below).

In the northern part of a trench between the Royal Theatre and August Bournonvilles Passage No. 1 a brick foundation of so-called Flensborg bricks was documented (see Fig. 254 below). The width was estimated to be about 1.0 m, with the foundation continuing beyond the edge based on the location of the trench to the north. The brickwork may have belonged to Store Gjethuset built on the site in 1672 AD.

Outside the Royal Theatre a standing beam without further context and larger stones were investigated in trench ZT7627. Part of a wattle and daub wall (?) and plank can be interpreted as the remains of a floor or wall. A boulder (1.7 x 0.6 x 0.6 m) with shaped sides and drill holes (?) appeared in the same destruction layers.

In a trench extending from August Bournonvilles Passage to the SW corner of the Royal Theatre some stones were recorded and interpreted as remnants of an older building, but probably represent destruction material. Part of a wattle and daub wall (?) could be remains of a timber building seen between Store Gjethus and Lille Gjethus on a drawing from 1698 (cf. Elling 1940; Fleischer 1985). A large boulder exposed and removed from a watching brief trench outside the theatre represented an "entrance stone", perhaps from the former Harsdorff's Theatre (1774) west of the current theatre (Fig. 253).



Fig. 253. Boulder interpreted as an "entrance stone" (Danish: afviser) from dump and levelling layers outside the Royal Theatre. Photo: Museum of Copenhagen.

Part of a stone pavement was investigated in August Bournonvilles Passage. In a monitoring trench in Heibergsgade outside No. 7 an uncertain Late post medieval brick wall in the SW corner was recorded (1.2 m down), although without further interpretation.



Fig. 254. Four foundation stones and lower parts of a brick wall (2.5 x 1.0 x 0.5 m) running in NE-SW direction together with brickwork and foundation layers in Heibergsgade and August Bournonvilles Passage.

Road and street surfaces

Five different road and street surfaces dated to this time phase were recorded at Kongens Nytorv and adjacent streets (Fig. 255). The surfaces did not differ remarkably from the already reported medieval and Post medieval road and street surfaces and consisted of brown-grey silty sand and clay with inclusions of soot, charcoal, red brick fragments, pebbles and stones. The average stone fragment size was 2.0-3.0 cm in diameter where in some places the surface had sunk into (or filled) the wheel ruts. The street surfaces recorded in Lille Kongensgade consisted of pebbles, flint and brick fragments and were in many ways similar to the road surfaces documented outside Østerport dated to the 16th and 17th centuries.



Fig. 255. Street surface in Lille Kongensgade, facing north. Photo: Museum of Copenhagen.

Wooden water pipes

Several wooden water pipes were documented both in Lille Kongensgade and at Kongens Nytorv (Fig. 256). The pipes were made of pine, had a diameter of between 0.20 m and 0.50 m, where the drilled core was from 0.10-0.20 m in diameter. Some of the pipes had joints made of metal and a covering of lead plate (Fig. 257). In some cases the pipes had been stabilized with wood blocks or bricks.



Fig. 256. Overview. Wooden water pipe lines at Kongens Nytorv and in Lille Kongensgade.



Fig. 257. Iron bolt in one of the recorded wooden water pipe. Photo: Museum of Copenhagen.



One of the largest pipes exposed in the Station Box had writing on it: N x 31 x 21¹/₂ x 11 x 13 (or 15) (Fig. 258).

Fig. 258. Wooden water pipe showing the price of being connected to Copenhagen's pumped water system in the 1830s. Photo: Museum of Copenhagen.

Number 31 fits well with price for connecting a water pipe to the common pumped water system (Topcagic 2014b). The cost according to the written sources (e.g. Hans Peder Resen's book about water in the late 1600s) was 30 rdlr. To this amount came a yearly fee of 1 riksdaler (30 + 1 = 31 riksdaler). According to the Chancellery Letter Books, Queen Dorothea ordered pine trunks for the water pipes that were 7-8 cubits long and 11-13 palm wide (c. 3 inches) in circumference from Koldinghus in 1561. Number 11 figures on the pipe and perhaps this represents the palm circumference? However, there is no 7-8 quantity, but according to a German historian, Florini (1702), the wooden pipes could be 8-12 feet long. In the cases where long pipe lines were assembled these could be 18-24 feet long. The information may have been written for the water master and his apprentice, who were responsible for the practical work needed to lay down the pipes to customers in the mid 1830s. So the text on the pipe probably represents the price for the connection to the pumped water, the lengths of the pipes in feet, and perhaps their palm in circumference.

Dendrochronological analysis was carried out on some of the wooden pipes dating these to 1828–1832 AD and 1835– 1838 AD. The pine had been imported from Poland (Krakow) and Sweden (Småland) (Linderson 2012). The dates are somewhat similar to the datings from the Metro investigations in 1996–1998, where some of the wooden pipes (GAD, GBX and GDI) were dendrochronologically dated to 1618–1619 AD, 1749–1750 AD, 1835–1836 AD and 1855–1856 AD and after 1850 AD (cf. Kristiansen 1998:Appendix 7), but it is unclear if any of these can be connected to the pipelines further to the north (as these were not identified on the original plans and drawings).

An interpreted well and several pits, posts, postholes and stakes were also recoded belonging to this time phase, where function and interpretation is unknown since none of these can be connected to larger structures. The levelling layers behind the former embankment and fortification consisted of mixed deposits of different colour, composition, homogeneity and finds, placed in connection with building activities, etc. The deposits recorded at Kongens Nytorv

were mainly dumped here to level the area before the establishment of the square in the late 17th century. The material was also used to backfill Holmens Kanal in 1864 (Fig. 259) and to create Nyhavn's Kanal in the 1670s.



Fig. 259. Removing the last traces of Østervold. Backfilling of Holmens Kanal outside current Danske Bank in 1864 facing Holmens Kirke to the west. Photo: Museum of Copenhagen.

Kongens Nytorv - from defences to the city's new square

Buildings

Store Gjethus was built in 1672 on a cadastral west of Gyldenløves Palæ, later Charlottenborg, and operated as a cannon foundry, evidenced in the origin of the name (derived from the Low German Gieten = moulding). In the second half of the 17th century the need for cannons for the Army and Navy led to an expansion of Gjethuset (Fig. 260). Naval architect, J. C. Ernst acquired an adjacent plot west of the existing building on which a new building was constructed called Lille Gjethus. The building was 100 feet long (c. 31.0 m) and approximately 27 feet wide (c. 8.4 m), constructed to two storeys (cf. Elling 1940; Fleischer 1985).

In the early 1700s production was limited and in 1719 Etienne Capion and Samuel v. Qvoten got the permission to arrange comedies in the building. This activity was only arranged for a short time and the building was demolished when the Royal Theatre was built in 1872.



Fig. 260. Geddes' elevated map from 1761. North of Vingårdsstræde one can see Det Holsteinske Palæ where Magasin is located today. The buildings south of the square are from left to right; Lille Gjethus, Store Gjethus and Charlottenborg. From Copenhagen City Archives.

No information about a larger structure or building is mention in the report for KBM 1208 (Engberg 1994) recorded in the same excavation area outside Kongens Nytorv No. 9. The archaeologist recorded foundations, a masonry of "munkesten" and boulders orientated in a north-south direction, a wooden pile, part of a sewer well (?) and levelling layers with bricks at the NW corner of the Royal Theatre which could represent part of Lille Gjethus, although in the report the foundations are interpreted as part of a tower or crane connected with Holmens Kanal and the pile as part of a bulwark (Engberg 1975).

At the Metro investigations in 1996–1998 the archaeologists also recorded a number of more or less diffuse structures and unidentified remains of buildings in Holmens Kanal where some of the recorded masonry could be part of Eigtved's Komediehus from 1748 AD. Remains of the demolition of the fortification consisted of robber trenches, 20 wooden water pipes and one pipeline trench mainly orientated in a north-south direction (Kristiansen 1998:13 and 137 et seq.).

The post-excavation interpretation concludes that the boulders north of Danske Bank, or at least some of them, were part of the former city wall (Kristiansen 1998:73 et seq.; 1999b:162-165). Further investigations were not carried out in the trench due to the excavation limit. The entire foundation later had been used as foundation for a brick wall,

probably part of the building seen on Geddes' elevated map from 1760 and replaced by Peschiers Gård (Danske Bank) in 1796. The brick wall probably could also be connected to the 10-metre-long stone foundation under Danske Bank's north facade documented by Ramsing in the early 20th century (Ramsing 1910:562 et seq.).

Kongens Nytorv and Krinsen

After the relocation of the gate and rampart in 1647 the Kongens Nytorv area was undeveloped, occupied by halfdemolished walls, massive soil piles and mud. The area was used as a landfill site and dock for boats from and to the neighbouring counties of Scania and Halland, in the tiny cove at Krabbeløkke through the current Nyhavn. The ancient ramparts, moats and rubbish had left the site as hilly terrain, so as a joke it was called Hallandsåsen after the Swedish ridge of the same name (Hartmann & Hartmann 1988:9 et seq.). The northernmost part of the moat was filled in during the 1680s, and the remaining portion in 1864.

When Christian the 5th became king in February 1670 he decided to clear the terrain. The new city centre was intended to be surrounded by aristocratic palaces. In the subsequent years a series of mansions were built around the square. The first was Gyldenløves Palace (the present Charlottenborg), which was built in the years 1672–1683 AD, followed by Thott Palace from 1683, which today houses the French Embassy (Fig. 261).

In 1688 a garden in the Baroque style was opened in the centre surrounded by double tree lines, and was nicknamed Krinsen, which means "circle". In the centre Christian the 5th raised a statue of himself sitting on a horse. Nyhavn was constructed in the period 1671–1673 AD extending from the sea to Kongens Nytorv north of Charlottenborg.



Charlottenburg avec la Matue du Rol Openhague. fur le nouvean Marché Man 11 97 97 20. 4 6. Winster oug.

Fig. 261. Krinsen and Kongens Nytorv seen on Marcelius prospect from c. 1720 AD. From Museum of Copenhagen collections.

Roads and streets

The knowledge of the older streets in Copenhagen is only based on limited written sources. Østergade began east of Amagertorv, and is first mentioned in 1447 in connection with the development and expansion of the area west of Østervold (KD II:73; Ramsing 1943:9; Fabricius 2006:108 et seq.). There are however uncertainties: perhaps Østergade was previous known as Tyskemannsgade, which is mentioned in the *Jordebog* from 1377. Lille Kongensgade is first mentioned in the *Jordebog* from 1496 (KD I:185; Fabricius 2006:89 et seq.). Originally the street ran from Store Kirkestræde and down past St. Nikolaj Church. Not before about 1520 was the current position of the street established.

The stratigraphic sequences in older street environments are characterized mainly by the surviving street layers as well as drained carrying layers. Investigations have shown that there is a clear chronological change in the street surfacing, from the tightly packed small stones and branches in the older levels to the stone and cobbles in the younger. Previous archaeological surveys in Malmö have proven up to six street levels at the same place (Heimer et al. 2007:24; Thomasson 2009:5). Foundation layers may vary with elements of both domestic waste and demolition components in the form of brick fragments and waste such as animal bones, pottery, etc.

Some of the layers Roesdahl documented in 1969 can be interpreted as older street levels through their content of pebbles and twigs (Roesdahl 1969). Older street levels (cobbles) with unclear date have also been documented in Østergade/Bremerholm and in Vingårdsstræde near Holmens Kanal (Simonsen 1998; Lomholdt Poulsen 1999). Previous archaeological investigations carried out in close proximity to Kongens Nytorv have revealed remains of roads, dated to the Late Middle Ages or Renaissance period (Leen Jensen 2007).

The medieval and Post medieval city was cut by three main roads, where the oldest and probably most important communication route was the street that ran parallel to the shore along current Vestergade-Vimmelskaftet-Amagertorv and the extension in Østergade (Christophersen 1985:71). During the rebuilding after the great fire in 1728 the medieval street pattern was changed, where a few streets disappeared, while others were created.

The city water supply

From at least the 16th century, a citywide investment was made in a municipal water system, which saw water pumped into the city through wooden water pipes. These water pipes were essentially tree trunks that were drilled through the centre so that they were hollow. They were connected end to end, bringing the water several kilometres to the city from various sources. In Copenhagen wooden water pipes were used to direct the water into the city from the surrounding lakes, between the years 1578–1859 AD (Topcagic 2014a). Copenhagen was thus the first Danish city where an alternative to well water was used. The use of hollowed wooden logs ended in 1859 when new technology using iron pipes and steam pumps to pump water around the city made this possible. With the introduction of a long distance system Copenhagen got the water in three ways - through wells, fountains and pumped water. The difference between fountain and pumped water was that fountain water had a greater pressure, as it was taken from Emdrup Lake. The lake is about 5 km north of central Copenhagen and about 15 m above sea level, exploiting gravity to let the water "fall" down to the city. When the water came out, it would jump, hence the name fountains. If there was too little water in Emdrup Lake, one had to conduct water from Utterslev and Lake Gentofte to Emdrup Lake. The pumped water came from lakes just outside the city walls, namely Peblinge- and Sortedams Lake. This arrived at a lower pressure than the fountain, due to the short distance and the lower level of the terrain compared to the city. Pumped water was first established in 1609 by the magistrate of Copenhagen, i.e. about 30 years after the fountain's introduction in the city.

Written sources from the 16th-17th century and historic maps showed how the water from both fountain and pumped sources was discharged into the city. Especially on Resen's card from 1677, one can see how the water was managed entirely from Emdrup Lake, under the moats at Nørreport and Østerport and further to the city contenders

(customers who had paid for a water supply). The timber species used for the water pipes was pine and the wooden trunks were connected by lead and by iron bolts (Fig. 262).



Fig. 262. One of the main pipelines at Kongens Nytorv. Wooden water pipe with construction cut through the foundations of 17th century Østerport, facing SW. Photo: Museum of Copenhagen.

The pipes were generally placed in trenches, which much like today were then filled in, meaning that they were not visible on the surface. Within the city they generally followed the streets, and in many cases probably started from the former moats and the new square before having branch pipes connected to them to take water down the various side streets.

The Scania market

During the Middle Ages coastal and offshore fishing in the Baltic Sea came to have great socioeconomic significance. The Catholic Church's prescriptions regarding diet during Lent, general population growth and the establishment of cities with non-food-producing populations were some of the factors that contributed to its importance. The supply of herring was very rich in the southern Baltic, where the fish from Øresund were considered to be Europe's best and a coveted commodity.

Based on information from the Icelandic Sagas and later written sources, it has been possible to identify a number of important herring fishing periods from the 11th to the 14th century. These are considered to have occurred between 971–1026 AD, 1083–1138 AD, 1195–1250 AD and 1307–1362 AD. It should be pointed out however that there is great uncertainty regarding the preciseness of these periods.

There have been several attempts to explain the periodic variations in the presence of herring. Peak years comprise a 10 year period within a 111-year cycle (Höglund 1998:7; Rosén & Molander 1923:32). The variation has been suggested to be as a result of sunspots occurring or hydrographic changes affecting their migrations, since herring are dependent upon a certain temperature and the salinity of the water.

Herring fishing was a distinctly coastal type of fishing which operated from bases on land. These bases were placed close to the fishing grounds and were regularly visited by people during the fishing season. On the beach, the fishermen had their tents, booths and other shelters where they ate and lived, as well as drying and mending their nets (Eriksson 1980:29). The expression *skivestahger* in the so-called *"modbog"* can be seen as evidence that the fishermen set their nets on stakes (cf. Hasslöf 1955; cf. Eriksson 1980:41 and 66).

The centre for the Scania market was primarily two small villages on the Falsterbo Peninsula (Skanör and Falsterbo), but the market also included other fishing and market places along the coast (Terra Scaniae 2015). The market had many similarities with the annual fairs that were established in the county of Champagne and Brie in northern France (the Champagne fairs) at the same time, which during the 13th century became an important trading centre.

The market was a meeting place for merchants from northern European cities, fishermen – mainly from Denmark – and the Danish monarchy, which acted as guarantor for market peace and placed taxes on fishing and trade. The market day opened on August 15th and fishing was only allowed between St Bartholomew's day on August 24th and St Dionysius's day on October 9th.

The Scania market was located in a good area for communications, situated at the entrance to the Baltic Sea and a natural meeting place for merchants from east and west. Through the Scania market the traders could halve their transportation costs. During its heyday in the 13th and 14th centuries, the fair traded in more than 50 different products, which as well as the base item herring, also included grain from Eastern Europe, clothes from Flanders, dried fish from Norway and iron from Sweden.

Apart from the fishermen, it is estimated that during the good years more than 20 000 people stayed in the fishing camps around Øresund during the fishing season. Herring brought profit to the fishermen and those responsible for the in preparation and conservation, but the biggest profits were taken home by the Danish king and the German merchants who supplied salt and ensured further distribution.

The king owned the rights and possession over the beach (Eriksson 1980:19-23). It was an economic zone clearly defined in the *Regale* or *Grundregale*. The *Regale* has its origin in the 11th century and included special rights to land that was not under private ownership. This applied primarily to commons and undeveloped areas, but also the right to the beach.

There were rules and fees, in principle, for all aspects of the market and the fishing. Anyone who had tasks to perform was controlled by the king's staff officers and customs officials and had to pay different types of taxes (Eriksson 1980:62).

Herring fishermen were organised in "companies", whose leaders were given a fish sign, a physical object giving them the right to undertake fishing, from the customs officer. The written law does not mention the size of these companies, but it is likely that the fishing boats had a staff of 4 to 6 men.

Fishing during the Middle Ages was not considered to be a special profession. The word fisherman is not mentioned in the Danish and Swedish laws, nor were there any guilds for fishermen such as we know from other professions. The explanation for this must be sought in herring fishing techniques and organization. Fishing with herring nets did not require great maritime and technical knowledge on the part of the practitioner; only one or two fishermen in the vessels needed to be experienced seamen, the other positions were taken by the casual labour market.

The majority of the fishermen consisted of peasants and citizens, permitting a relatively short fishing season during the winter months. The fishermen and their assistants on land came from the countryside on both sides of the Sound, and also from nearly all Danish market towns east of Skagen in the north of Jutland. Fishing came to constitute a good source of income and also provided one or two barrels of herring to the fisherman's own household. Herring fisheries occurred not only in the Øresund, but were scattered throughout the western Baltic Sea – from the Danish west coast to Blekinge in modern day Sweden and to the island of Bornholm.



Fig. 263. Herring fishery. From Olaus Magnus Historia om de nordiska folken (2010).

The fish were caught either by using drift nets dragged by boat or floating with the stream at night, or using nets held in place by means of wooden piles or rocks on the seabed (Fig. 263). When the herring were brought ashore, the so-

called "*gællekoner*" and "*læggekoner*" took care of the catch. Their task was to clean the fish and package them. The fish were put in barrels and the lid placed on and an inspector quality marked of the goods.

Urbanisation in the eastern part of Copenhagen/the area of Kongens Nytorv

There are only a few indications of a prehistoric activities at Kongens Nytorv from finds of processed flint in secondary deposits, but they do indicate an area inhabited or used from prehistoric times.

The current layout of Copenhagen is the result of a long process of filling up the coastal areas for more dry land, but also space since the 13th century. This also indicates that the area of Kongens Nytorv must have been an area dominated by salt marshes in the Early medieval period since it is so close to the coast. This is the case in some areas, but not to the east which came as quite a surprise, and will be described later in this chapter.

Medieval period

In the medieval period – at least up until the 15th century, the settlement behind the medieval fortification with gates seems to be centered on the middle and the west side of the city. Finds (or lack of same) indicates that the north-eastern part of the city was less densely populated Also historians describe an area more rural in character and that the area was characterized more by farms and market gardens for growing crops (Fabricius 1999:179).

A large farm owned by the King; Østergård is mentioned in the written sources in the 14th century and is described as being situated in the eastern part of Copenhagen (Fabricius 1999:167ff.). The general assumption is that Østergård was situated on a large plot between the later Lille Kongensgade and Vingårdsstræde, but there is no archaeological evidence to support this (Fig. 264). At Vingårdsstræde a royal Vingård (vineyard) was built in the 15th century and part of the building is still preserved to this day and is one of the oldest remaining buildings in Copenhagen. This indicates that even though this part of the city was densely populated the King had interests in the area – which might have been of more rural character. Archaeological evidence might also support this (cf. Skaarup and Jensen 2002:30).



Fig. 264. Part of reconstructed map over the medieval eastern part of Copenhagen. Based on different interpretations through time and subject to errors and new interpretations. Vingården is shown on the map and somewhere between Vingårdsstræde and Lille Kongensgade, the farm of Østergård is thought to have been situated. The church of Skt. Nikolaj is also shown on the map. Map revised by Hanne Fabricius (Fabricius 1999:190).

The street of Lille Kongensgade did exist in the medieval period (though under a different name), but it only ran north of Skt. Nikolaj Church, and it was not until the 1520s that the street was lengthened to the west all the way to the eastern rampart south of Østerport. Shortly after, Kongens Boder (the King's Booths) was built on the south side of the street under Frederik the 1st's rule (1523–1533 AD) (Fig. 265).



Fig. 265. Kongens Boder (The King's Booths) number 23-29 photographed in 1910. The buildings were torn down in 1932. Photo: Museum of Copenhagen.

The 22 booths were meant to be housing for servants and officials that were part of the royal household, but after just 30 years many of the booths were sold off to private Copenhageners. The inhabitants must have been of the new 16th century social class; the bourgeois. In 2006 two so-called bislagssten ("porch stones") were found at an excavation in the middle of the street (Fig. 266), and the size and weight of the two stones indicated they must have been placed outside a house in the same street (Jark Jensen 2007). Up until the 1930s a few of these booths were still standing, but they were torn down when Magasin de Nord expanded their department store. The houses on the northern side of the street are primarily preserved and date from the 18th century.



Fig. 266. One of the two so-called bislagssten ("porch stones") found in Lille Kongensgade in 2006. The inscription has the year 1560. Photo: Museum of Copenhagen.

It is now clear from the results of the latest excavations in connection with the Metro Cityring at Lille Kongensgade that the course of the road, Lille Kongensgade in this part of the city was defined in the 13th century – maybe even earlier on. The large boundary ditch that was excavated running east-west down Lille Kongensgade followed the same course as the medieval and also present day street. It was probably deconstructed sometime in the 14th century. This means that this specific area has been laid out with plots some hundred years earlier than previously assumed.

At the first Metro excavations at Kongens Nytorv back in 1996–1998 the archaeologists registered north-south running boundary plots that could be C14-dated to 1024–1270 AD revealed under the medieval rampart. Some of these boundary plots were recognized in the last excavation at Kongens Nytorv (see Chapter Early medieval activities 1050–1200 AD above) and this indicates a regulated settlement in the Early medieval period. At both excavations there were not many remains of the accompanying settlement represented by the boundary ditches.

In 1998 a larger east-west oriented ditch was excavated beneath the standing building of Magasin (Poulsen 2000). It is not possible to state the date of construction for this ditch, but it was deconstructed sometime in the 14th century –

the same time as the boundary ditch recorded in Lille Kongensgade (Fig. 267). This could indicate, with caution, two east-west running boundary ditches that surround a plot (or part of it) in the area of the current warehouse.



Fig. 267. All ditches and fences in the High to Late medieval period. Please note the approximate east-west boundary in the middle of the current street of Lille Kongensgade with the smaller gullies to the south.

At some point the plot in Lille Kongensgade was likely divided into smaller north-south running plots. There is evidence of at least three plots with a width of approximately 11 metres. Less than a metre of the length of these plots was recorded since the adjoining gullies were revealed at the southern limit of the excavation area, and it was not possible to say anything about the settlement or activities within the plots. The laying out of the plots does however indicate an overall control of the area, and their division at the same proportions is an example of a regulated urban area with standardized plots. Plots of the proportions of 11 x 20 metres are for example known from Guldsmedegade in Århus (Linaa Larsen and Skov 2003:122f.), and these narrow plots were mainly occupied by gable houses known from 12th century in Lübeck.

As just mentioned above the large boundary ditch in Lille Kongensgade most likely went out of use in the 14th century. This is based on finds in the backfill of the ditch (to some extent interpreted as deconstruction), but also due to the fragmentary remains of a building that cuts the boundary ditch. 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 and both of these buildings had cellars which points to a more long term settlement.

To the north a series of possible plots were excavated. Outside Hviids Vinstue facing present Kongens Nytorv, both north-south and east-west ditches were recorded. Most of them are among the oldest features in the area and are dated in the spectra of the High to Late medieval periods, but they seem to be part of an ongoing/constantly renewed

boundary system. There seems to be a north-south main boundary ditch that followed the then current facade line of the building block. From this, adjoining ditches ran east-west towards the rampart area. This indicates that at some point narrow plots were oriented towards the fortification to the east (Fig. 267).

A fenceline of stakes that ran north-south along the rampart street had most likely separated the street from a house plot or garden. This is also confirmed by the remains of a building that at some point replaces the fence line, but in any case redefines it in the period of 1200–1450 AD. Also a building interpreted as a predecessor to Hviids Vinstue was excavated from the same period; even though it is unlikely to have been in use at the same time. Due to difficult circumstances around excavating in this subarea the relationship between these two houses was very unclear, but they both had the long side of the building facing the rampart, which means that the gables of the houses were oriented to the north and south. The size of the buildings also indicates that they had been of some importance or status.

Excavation of the street surfaces showed wheel ruts going both to the north and south following the tract of ruts from the eastern gate building. This means that when one arrived in Copenhagen through Østerport they had more than one choice of direction and it is likely that a larger open area or even a small square was located just inside the gate.

South of the buildings facing the possible square a forge was investigated. The forge must have been in use at the same time as the buildings. It was of a significant size and analysis of the slag from the layers connected to the building indicates primary smithing. If the gables of the houses were facing the assumed square in front of the eastern gate then the forge building was placed to the rear of the buildings. The forge would also have been placed close to the rampart and reassuringly close to the water in the moat.

Behind the medieval fortification ran a rampart street which was recorded in different areas, but not to its full length. It is not certain if the rampart road was present in all areas at all times, but it made getting access to the fortified area easier at least in some areas.

Post medieval period

In the Post medieval period there is evidence of settlement both inside and outside the fortification. Inside the fortification, there is proof of at least one predecessor to the current building that houses the present Hviids Vinstue. The boulders in the foundation of this building were of a size that could suggest reuse of boulders from the medieval or Post medieval fortification. To the west of Hviids Vinstue traces of a wooden structure that indicates scaffolding used in connection with the building of one of the earlier buildings on the corner of Lille Kongensgade and Kongens Nytorv was recorded. This shows that the location of the building block in which Hviids Vinstue is a part, has been permanent since at least the 16th century. Also another building staggered from the current facade indicates the continuous placement of buildings in this block.

The remains of a stable were also excavated to the west of Lille Kongensgade (Fig. 268).



Fig. 268. Remains of probable horse stable excavated in Lille Kongensgade.

The archaeological evidence suggests a street surface with wheel ruts continued directly into the building which most likely was a simple construction. Animals such as horses and other domestic animals had been living inside the fortification alongside the humans, and in this case stabling for horses would have been needed for people travelling to Copenhagen either on horseback or by carriage. Having a street surface leading straight into the building suggests a more organized and public stable for travelers – maybe for temporarily housing horses or for changing tired horses.

The King's Booths in Lille Kongensgade are most likely originally to have been high quality brick buildings and this is probably one of the reasons why some of the buildings still survived into the 1930s before they were torn down (Fig. 269). The buildings that were still standing in the 20th century must have been rebuilt/restored on more than one occasion. The excavations in Lille Kongensgade revealed remains up to three buildings that stratigraphically belonged in the latest level before the present time. This corresponds well with the fact that they were – at least some of the nemins of buildings torn down only some 90 years ago. The dating of finds also puts the remains in the range of the Post medieval period. The best preserved building could indicate a function as some kind of workshop. A barrel was set in the floor with an adjoining wooden drainage. There was no indication of which kind of work had been carried out. It could also have had the function of a front shop at the same time. This would be very likely in this urban setting of booths along the street with different functions and inhabitants.



Fig. 269. Archaeological findings of the King's Booths/Kongens Boder – see plot No. 21-29. Outside plot No. 23 was the location of the barrel and other remains that are interpreted as a type of workshop.

Just south of Lille Kongensgade a work area with traces of mortar production was located (Fig. 270). This could have been a smaller local production site, because large scale production probably would take up a lot of space. The production area was placed near the medieval forge building and indicates an industrial area in this part of the city – also confirmed by the fact that no definite domestic evidence exists from the same area.



Fig. 270. Mortar production area. Photo: Museum of Copenhagen.

The streets in this period confirm the already existing curves of Lille Kongensgade and the rampart street after the demolition of the fortification.

Clear evidence of settlement with buildings, roads, gardens, etc. was investigated outside the former 17th century fortification. These activities are dated to the later half of the 16th and early 17th centuries. They are most likely part of the settlement of gardens and minor houses that can be seen on older maps, and some of the structures carry evidence of being workshops and of being part of the shipyard at Bremerholm (Lille Gjethus).

Conclusion

All in all the excavations show that the urban layout of the area of Kongens Nytorv and side streets was established much earlier than formerly known. Actually this continuity remained until the present day. There are boundary ditches older than the medieval rampart which prove that the area was regulated before the 13th century. The presence of clay lined pits indicates seasonal land use and maybe evidence of legal rights and ownership. The layout of Lille Kongensgade is recognized in the large east-west orientated boundary ditch from the 13th century, which also marks the course of the later road. The fortification is erected in the early years of the 1200s and becomes the outer limit for the new city.

Houses of a significant size and quality perhaps already in the 14th century seem to surround an open square of some sort just inside the eastern gate. These buildings probably would have been part of the fortification area, like official buildings or merchants' properties and inns that would be first encountered by many of the visitors to Copenhagen. Down the later Lille Kongensgade evidence of buildings destroying an older boundary ditch in the 14th century marks the ditch's demolition. A change of use in the area is obvious but the archaeological evidence is very dispersed and modest. A forge existed from the 13th century in the area south of the buildings and is obviously kept at some distance from the domestic areas due to e.g. fire hazards.

In the Post medieval period there are still traces of settlement, though somewhat modest, just south of the eastern gate building. At least three buildings or building remains confirmed the building block of which Hviids Vinstue is a part. This indicates that the corner of Kongens Nytorv and Lille Kongensgade can be traced from at least the early 16th century to the present day. In Lille Kongensgade the remains of the King's booths are confirmed together with streets from the same period. At the western end of Lille Kongensgade the remains of a stable were recorded. Due to its construction it is assumed that it had been of a more public character. In the same area as the medieval forge building there is proof of mortar production, which also underlines the interpretation of the area as an industrial workshop area not suited for ordinary domestic household activities.

The eastern gate and fortification through time

The medieval gate building 1200-1600 AD

The first Østerport dated to the early 13th century at the end of Østergade had an estimated size of c. 140 m² where the edge of the Late medieval moat constitutes the eastern limit. The building consisted of four rooms and included a well. It has not been possible to determine the exact height of the gate, but on the basis of the suggested height of the city walls at 5.0 m, this must have been at least 10 m for effective defence in case the city wall was captured by enemies. Built into the rampart, the building had windows/loopholes above the fortification line similar to the gate exposed at Nørreport when the 17th century fortification was demolished in the mid 1800s (see Fig. 272 below). The gateway had been c. 10 m long and 2.7 m wide.

Further details and design of the gate building are unknown, but Østerport during the Middle Ages had probably been a Gothic building with an archway at least 2.5 m high. The first gate does not seem to have been equipped with a roof, but with the upper parts forming a platform with surrounding parapet (cf. Thorsen 1926:227). This suggested description differs from the oldest known depiction of the gate building seen on a prospect of Braun and Hogenberg from 1588 and Resen's version from 1677 showing a building with Late Gothic blinds, pointed gables and a circular rose window (Fig. 271), but this difference probably represents later additions and building work during the 1500s.



Fig. 271. Prospect of Copenhagen with Østerport in the middle (5) seen from northeast c. 1596. From Resen's *Atlas Danicus* 1677. The image is cropped. Photo: Copenhagen City Archives.

Based on the demolition material within the gateway area the latest version of the inner gate building was walled in red brick with rows of limestone ashlars – common for these types of buildings in the Late Middle Ages and especially seen on high status buildings from the 16th century. This is also suggested through the city accounts (*Rentemesterregnskaberne*) from 1608, both describing the destruction and the reuse of bricks (cf. Kristiansen 1998:Appendix 8) and the fact that the medieval gateway was called Røde port (*rubeam portam*) (KD I:105; Thorsen 1926:214; Christophersen 1985:109; Skaarup 1998a:38; Fabricius 1999:120). The building had at least two floors, pitched roof with stepped gables and was equipped with rich Renaissance decoration – although these are not known in detail except for the lion's head found among other demolition material in the Late medieval moat (see Fig. 112).

The pavement inside and outside the gate building was made of tightly packed pebbles, but also maintained using mortar. Moreover the investigation revealed small areas with cobbled surfaces just outside the Late medieval moat.

Comparing the archaeological results with the other two investigated medieval gate buildings in Copenhagen there are both similarities and differences:

The Late medieval version of Østerport is significantly larger than both Nørreport and the remains of Vesterport. The contemporary Nørreport was squared (c. 7.0 x 7.0 m) with a gateway width of 4.0 m and with a round arched vault (Fig. 272 and 273). The southern wall was 1.0 m wide and the north and east wall 1.26 m (cf. Lassen 1855:Planche III; Thorsen 1926:239).



Fig. 272. Nørreport's gate building outside Nørregade in Nørre Voldgade. A similar row of limestone ashlars at the base has been documented in Østerport. Drawing by C. O. Zeuthen. From National Museum of Denmark.



Fig. 273. Nørreport exposed when removing the 17th century embankment in 1873. Image from Fabricius 2006. Original drawing from Illustreret Tidende 1873/74.

Part of Vesterport was investigated during the Metro excavation at Rådhuspladsen in 2011–2012. The gate itself, based on the foundation remains, measured 9 x 9 m, where the gap between the foundations at the outer gate building was 2.75 m, while the projecting wall extended c. 5.1 m to the southwest of the gate's western corner. The building is dated to around 1375 AD (Lyne and Dahlström 2015:180-181 and 200).

As the conducted archaeological excavation shows there had been extensive maintenance and modification work on Østerport throughout the years, before the final reconstruction of the building in the early 17th century. These results fit well with the written sources that mention work on the gate building and Østervold both in 1505, and the years between 1510 and 1512 (Nielsen 1877–1892; Thorsen 1926:229-231; see also further discussion of the medieval fortification 1200–1600 AD below). The annex west of the main building was highly fragmented, but is interpreted as a separated custom- or guard house often seen in connection with gate buildings in the High Middle Ages (cf. Middle Holsten Gate in Lübeck) and presumably functioned concurrently with the main gate building. The gate building was demolished with the relocation of the fortification in 1647.

The medieval fortification 1200–1600 AD

Rampart and bulwark

The medieval fortification can be followed for a length of 2.4 km from the beach at Løngangsstræde along the mill cutting past Vesterport to Jarmers Plads, further along Boulevarden to Nørreport at the end of Nørregade, thence to St. Gertrudsstræde and Aabenraa to Landemærket, along with Gothersgade and further to Østerport at current Kongens Nytorv where it reached the beach again at Vingårdsstræde. The only visible remnant of the northern embankment today is the raised level seen in Tornebuskegade outside Nos. 8-10 (Christophersen 1985:61).

Through archaeological studies the medieval rampart has been proven between Vartov Grønnegård, Nørreport and Kongens Nytorv (Jensen 1934; Ramsing 1940, Vol. III:4; Kristiansen 1998:63 et seq.; Skaarup 1998a:39; Fabricius 1999:117 et seq.). The fortification has on several occasions been identified at Løngangsstræde (Thorsen 1926:205 and Fig. 274) and at an excavation in 1992 a rampart or dam was recorded along the former beach in Lille Kirkestræde and dated to the 1220s (KBM 775).



Fig. 274. The medieval rampart and moat exposed at the corner of Gothersgade and Landemærket in 1926. The natural salt marshes can be seen as a horizontal line in the middle of the section. Drawing by Peter Linde. Museum of Copenhagen.

To the east the medieval fortification has also been demonstrated at several archaeological sites along Kongens Nytorv's southwestern part – in front of the Hotel D'Angleterre facade, past Østergade and further to the front facade of Magasin to Vingårdsstræde (Fabricius 1999:177 et seq.).

A reconstruction of the medieval rampart has been made based on these earlier archaeological investigations together with information from the written sources. The Late medieval rampart width seemed to have been

standardized to 10-12 m and the height between 1.5-3.5 m, while the moat was 12.0-14.5 m wide with a depth of 2.0-2.5 m. The size varies between the different locations, but the building material is always natural moraine dug from the moat in front of the embankment and placed directly on top of the natural salt marshes, and finally covered with topsoil and/or turf. The outer edge has at some places been strengthened with a wooden bulwark or stone settings (Fig. 275).



Fig. 275. Bulwark, rampart and moat (blue), facing NW. Photo: Museum of Copenhagen.

The varying dimensions of the rampart appear to be dependent on how many times it was reinforced with superimposed clay and topsoil (Christophersen 1985:61).

During the former Metro investigations in 1996–1998 the rampart was suggested to consist of a "core rampart" 2.20 m wide and 0.30-0.35 m high (cf. Kristiansen 1998:66 et seq.), but this suggestion was later reinterpreted as part of the same High medieval rampart. Like the new investigations at Kongens Nytorv, no reliable growth horizons were recorded either archaeologically or through macrofossil analysis and the building material consisted of sub-surface material (moraine) mixed with organic material (peat and topsoil), with the exception of some layers that to a greater extent consisted of brick rubble (Kristiansen 1998:66 et seq.; Kristiansen 1999b:160), presumably representing later maintenance work both on the city wall (?) and the rampart.

One should assume that the rebuilt embankment outside the city wall belongs to the Late medieval work on the fortification. At Kongens Nytorv at least three rebuilding phases could be confirmed and three building phases could also be seen in Gothersgade south of Lønporten and south of Møntergade (Ramsing 1924 No. 103:5). An interesting observation is that no additions into the moat were recorded at the latter as were seen at Kongens Nytorv and Vartov's yard. In connection with removal of the earthwork at Nørreport two different ramparts were recorded – one 5 cubits high and another 7 cubits high (Thorsen 1926:240).

The rampart was not fully developed before the Reformation (Christophersen 1985:61 and 67). It is mentioned in a royal letter from 1524 and 1526 that the rampart was maintained with soil and peat (Lassen 1855:7 and 90). Especially in the period from the late 15th century up to Christian 3^{rd's} siege in 1535–1536, major construction work took place, covering the moat, bulwarks, dams and other earthworks, and wall and tower constructions (Christophersen 1985:109).

The High and Late medieval moat could be followed throughout the entire length of the excavation. The High medieval moat could, however only with certainty be separated from the later moat phase in the moat's westerly part located under Late medieval earthwork additions. Based on the heights the moat had been at least 1.4 m deep with a water depth of c. 1.0 m. Preservation conditions and the lack of analyzed samples has made it impossible to clarify whether the oldest moat was filled with water or not, but silting around the bulwark (see below) suggests the presence of flowing water to a certain degree. In that case the water was probably collected from the surroundings or from the existing north-south running stream seen on later illustrations and maps of the area.

Archaeobotanical analysis from the Late medieval moat shows that the environment consisted of brackish, stagnant water. As in previous studies a weak salt effect indicates that the mud ("gyttje") had been formed before the filling up of "*Dybet*" between the coast and Bremerholm in the 1530–1540s (cf. Kristiansen 1998:83 et seq.; 1999b:169).

A timber structure was first interpreted as part of the so-called "*Byens Planker*" mentioned in the town privileges from 1254 and 1294 (KD I:33 and 56), but this suggestion must be rejected since the city planks consisted of a palisade on *top* of the rampart crown. This structure is therefore reinterpreted as a bulwark where the basic construction method was to drive timbers into the lower parts of the moat cut, then moraine (from digging the moat) was backfilled behind the bulwark to support the rampart and to prevent erosion back into the moat. There is no clear explanation for the 1 m gap between the eastern and western row of timbers – either these represent different building phases or the appearance would have been of vertical and tilting planks rising out of the water with a twofold function – both acting as a delineation of the moat's edge and as an additional barrier to movement and access. The timbers represent a continuation of a similar wooden structure recorded at the Metro investigations in 1996–1998 approximately 30 m to the south. At this excavation a north-south orientated palisade or alternative rampart reinforcement at the western edge of the moat was recorded. This consisted of several pits and postholes in a row with a length of either 42.0 m or 64.5 m (cf. Kristiansen 1998:84 and 85; 1999b:156-158 and 168).

Similar reinforcements of the fortification have also been recorded at other places in Copenhagen. In Løngangsstræde a row of oak posts with a distance of 1.5-2.0 m (cf. Rosenkjær 1906:272 et seq.; Thorsen 1926:205) may represent a bulwark connected to the High medieval rampart close to the former beach. A bulwark has also been recorded in connection with the rampart at Vartov Grønnegård. Beneath the city wall foundation several posts (d: 0.20-0.25 m) were documented following the fortification line. At the edge of the rampart more boulders were recorded and in front of these pillars of oak and planks of pine formed a bulwark (Jensen 1934:48 et seq.).

This type of reinforcement and methods to strengthen the rampart are also known from other Danish and Swedish cities. From Nyborg on Funen there are descriptions of bulwarks in connection with the moat's edge (Sørensen 2016) and bulwark/edging has also been recorded in connection with the rampart in Halmstad dated to the early 14th century (cf. Bjuggner 2014:13 et seq.). In Hjelmerstald in Aalborg a number of vertical and slanting piles along side the embankment have been investigated. These piles can either be interpreted as a reinforcement of the rampart or as supporting a plank work on the rampart crown. The area up to the base of the embankment had been a wide, wet and flooded area, where the excavation exposed some random pile works, boat parts and loose wood (Møller Knudsen and Kock:180). Piles in Norra Vallgatan No. 90 (Kv Skepparen) in Malmö, Scania consisted of four-sided and round oak posts including one outer row of oblique piles (cf. Kalling 1954a; 1954b:103-104).

A possible bulwark and a wattle fence can also be seen north of and parallel to "*Byens Planker*" elsewhere in Malmö (cf. Lindgren Hertz 1985:55; Kling och Lindgren Hertz 1990:35-36) and a reinforcement of the rampart in the form of pointed oak sticks has been documented in the moat close to the medieval Østerport (cf. Reisnert 1998:Fig 4).

The new and fixed dendrochronological dates of the bulwark and one of the AMS-datings from the rampart, show that the construction of the fortification started in the early 13th century. This date coincides well with the dating of the eastern gate building and with the written sources where the fortification is mentioned both in Jacob Erlandsen's town law from 1254 and Johannes Krag's town law from 1294, describing the city walls, moat, planks, bridges and fences (DD 1:2 No. 138, KD I:18 and 56). We also know that Copenhagen's citizens relinquished pieces of land for the moat in 1296 (KD I:63). At the former Metro investigations at Kongens Nytorv only a few finds were collected from the rampart, consisting of ceramics with dates to late 13th century, 13th-15th century and 14th (15th)-17th century. The rampart in this stretch was suggested to be dated to the last decades of the 13th century (Kristiansen 1998:66, 67 and 73).

The facility of the rampart is normally attributed to Archbishop Absalon, but it is uncertain whether it in its full extent stems from Absalon's time. In Pope Alexander IV's papal bull from 1258 the city is mentioned as *castri de Copmamnæhafn*, which can be translated as the fortified city of Copenhagen. It is therefore possible that the bishop's gift was closely related to the construction of the fortification – and thus the urban area – in this part of the city, something which may explain Bishop Ingvard's letter from 1289 where he thanks the city's citizens for their loyalty to the church and their aim to fortify the city as part of their indulgences (KD I:30).

Building activities were in a large degree financed in the 13th century through a *fabrica* (building fund) and presumably foremost performed as a waged work. An important aspect to the building activities may be related to the more personally anchored religiousness with sacrificial deeds and penance, which could be channelled through various building activities.

The question is whether the bishop was the driving force, or whether he was dependent on other stakeholders' preferences in this matter. The key player in this regard must have been the dominant bourgeoisie. Its defence objective has of course played an important role, but the basic reason was probably the citizens striving to physically delineate the city from the surrounding countryside. It was a manifest demarcation that was both actual and symbolic. This created two separate rooms; the world within the fortification and the world beyond. The fortification was the physical demarcation between the city and the country, between city court and the land rights, between citizens and farmers. It served as protection and defence against certain enemies and robber bands, but primarily as a control tool for the city's internal operations. Through the city gates the council had control of all movements in and out of the city, over supply and troop transports, over taxes and customs. The urban population was thus in the council's power over all the various operations that took place in the city.

The city planks

Some imprints interpreted as postholes on top of the rampart behind the city wall could be remains of the so-called *"Byens Planker"*. The High Middle Age rampart was probably equipped with a parapet, mentioned in the city laws from 1254 and 1294 and as late as in Christoffer of Bayern's city laws from 1443 (Lassen 1855).

Similar palisades or planks are known in other cities during the medieval period. In Falster these were called Fælles virke; 1158 AD), Flensborg (Plankemajen), Haderslev (no name), Køge and Nyborg (Bulværksstræde), Malmö and Halmstad (Byens Plank) and Aalborg (Bysens Planken).

The city planks in Malmö are dated to the early 14th century stretching along Norra Vallgatan from Malmöhus to current Drottningatorget and consisting of a long row of piles (Johansson 1976; Reisnert 1998:27 et seq.). Up against the posts' southern side there were three horizontal planks (about 4 m long and 0.25 m wide) in a row, partly

overlapping and constructed of reused boat parts. On the northern side of the boards there were coarse sands and between the posts and south of these remains of a wattle fence. Similar planks in Kv Fisken (also Malmö) had been placed in a ditch in natural sand with five four-sided posts with a separation distance of about 1.5 m. On the southern side the boards had survived in four layers, vertically set and up against the piles (Lindgren Hertz 1985:52-53; Nyberg 1985:69 et seq., Fig. 1 and 2; Kling och Lindgren Hertz 1990:24 et seq.).

In Aalborg the city planks have been dated to immediately after 1320 AD and consisted of double rows of four-sided oak posts dug into the rampart crown, and at some places strengthened with boards (Møller Knudsen og Kock:173 et seq.; 1992; Bergmann Møller 2016). Remains of an interpreted palisade belonging to the fortification have also been investigated in Svendborg consisting of two rows of oak logs with a separation distance of 40 cm, stabilized by cross tilt piles on which large oak logs were resting. The dating is uncertain, but believed to be before 1300 AD (Reinholdt 1992:75 and Fig. 65-66).

The city planks in Copenhagen have never been identified archaeologically – although there is information about a row of large oak posts with a separation distance of 1.5 m to 2.0 m approximately 6 m north of Løngangstræde (Rosenkjær 1906:272 et seq.; Ramsing 1910:521 et seq.). The reasons for this lack of evidence and remains may be due to the fact that the rampart crown was destroyed when it went out of use and also was truncated by the city wall foundations and later activities.

Based on other archaeological investigations of older Viking Age ramparts we know that these had wooden palisades of dug and radially split logs (Fig. 276), but it is far from certain that such a work-intensive construction technique was used along the 2.4 hectare medieval fortification of Copenhagen.



Fig. 276. Palisade of vertical and pointed poles as seen at Lejre Experimental Centre. Photo: Morten Steineke.

One conceivable explanation is that wood-saving techniques had been used, for example stave wall- or post and plank techniques that both use wooden sills placed directly on the ground or on rows of sill stones. The horizontal or vertical planks were later fitted onto these sills. These building techniques thus required no or few marked interventions which may explain the loss of archaeological evidence. The city law from 1294 mentions that one was fined for going under or loosening the *"Planks"* which could argue for horizontal timber in the palisade (cf. Lassen 1855), something which could explain the distance between the posts of 1.5-2.0 m. At the same time one should not forget that on older prospects, the city planks and similar fences are always illustrated by vertical plank works (cf. Braun and Hogenberg 1588).

The Late medieval city wall

Copenhagen is one of a few Danish medieval market towns which get a fortification with wall and towers (the other two are Kalundborg and Vordingborg). There were several towers built along the wall, and the names Kattetårn, Hanetårn, Kringelen, Smørhætten and Løvetårn are known from contemporary sources from the second half of the 15th century. Jarmers Tårn at the corner of Vestervold and Nørrevold is not mentioned before 1529 AD, but would also probably have been part of the fortification's 11 original towers.

The width of the documented brick wall outside Lille Kongensgade varied from 0.86 m to 1.20 m placed on 2-3 courses of large granite boulders where the width of the foundation was 1.1-2.2 m (Fig. 277). The construction cut truncated both the original rampart and the salt marshes, within which the stones had been placed step-wise. Limestone ashlars had later been placed at the base of the wall to level the masonry built with medieval coursing ("munkeskifte") using bricks with the size of 27.0 x 12.5 x 9.0 cm.



Fig. 277. Overview of the city wall with stone foundation, facing west. In front – the Late medieval moat with part of a later and temporary 17th century bridge structure. Photo: Museum of Copenhagen.

The wall had probably been 9 cubits high (5-6 m) with a watchman's gallery or top coronation of stone to avoid frost damage on the top courses. During Frederik the $1^{st's}$ reign the fortification was straightened with an inner embankment as high as the city wall and with a width of 16 cubits (cf. Thorsen 1926:226 and 234) – although it is uncertain if the latter is valid for the area south of Østerport and the area excavated, since this would in large degree affect the access through the rampart street. In comparison the city wall in Malmö, Scania from the early 15^{th} century is believed to have been 9 cubits high – c. 5.5 m with a width of "three stones" (c. 0.9 m) standing on a one metre high foundation of natural boulders (Rosborn 1984:37; Reisnert 1998:32 et seq.; Olsson och Ödman 2009).

Both Ramsing (1940, Vol. III:10) and Engqvist (1951:9) suggested that it should have been a city wall south of "Byens Tårn" and Østergård based on an old deed from 1298 (DD 2:4:284), and "thend gamell mantellmwr" is mentioned in a deed from 1546 (KD I:288; Thorsen 1926:233). Based on the wall foundation documented north of Danske Bank (cf. Fig. 71) the original masonry must have continued south of Vingårdsstræde, and this *could* indicate a wall continuing along the beach as a so-called "strandmur" similar to the city walls known from e.g. Malmö and Visby, but currently this assumption remains unproven.

The new excavation and results show clear similarities with the city wall investigated in 2010 and with earlier documentations, both in respect to building material and techniques and to stratigraphic relations to the original rampart.

Lassen (1855:20) describes a 4-5 cubit high wall between Østerport and the former guard house, although without mentioning the precise location. Approximately 17.3 m outside Hotel D'Angleterre part of the medieval rampart and city wall consisting of two courses of granite boulders and a 1.2 m wide brick wall with lime dressed stones and the moat with 16th century fill was investigated (Linde 1929; Berlingske Tidende 1929; Ramsing year unknown).

In connection with the construction of a Transformer Station in 1941 part of the rampart and stones belonging to the city wall was exposed. The foundation appears on several images and drawings as a c. 11.25 m long and 2.00 m wide NW-SE orientated line of boulders consisting of at least two courses lying between kote +1.60 and +2.08 m. East of the boulders part of a collapsed brick wall and seven stones could be related to the structure (Berlingske Tidende 1941; Jensen 1941).

At the end of Lille Kongensgade at the corner of former a'Porta, approximately 15.3 m from the building, a 0.86 m wide masonry structure consisting of seven to ten courses of "munkesten" and limestones on granite boulders was documented. This was recorded together with several rubbish layers (Kayser 1961), and the brick wall investigated must be seen as part of the city wall. Not far away – at Magasin's northern corner at Østergade (should be Lille Kongensgade), in association with excavation in the street, part of the city wall was visible consisting of boulders and a brick wall of Renaissance stones (Frederiksen 1981). The latter probably represents the damage seen in the brick wall during the excavation in 2010 (see Figure 277 above).

At the Metro investigations in 1996–1998 the city wall was preserved in three foundation courses consisting of two rows of stones with a width of 1.1-1.7 m and a height at least 1.4 m. The top of the foundation was not preserved and no mortar was recorded on the stones. The courses and the rampart layers had been built "step by step", where the purpose of the rampart primarily had been to stabilize the boulders. Part of the wall was also found as destruction layers of bricks and ashlar limestone above the mud layers in the former moat (Kristiansen 1998:73 et seq.; 1999b:156-158, 161 and 162). This destroyed section of the city wall consisted of a continuous remnant of a brick wall, at least 1.8 x 1.2 m with medieval coursing together with bricks and limestone ashlars. The remnant was interpreted as part of the parapet. The wall had been 0.42 m thick with unfilled joints. No reused bricks were identified in this part of the brick wall. The suggestion of a new city wall was based on the orientation and traces of mortar scar by masonry of 0.42 m thickness on the surface of the foundation stones and demolition material and robber trenches, but it is

worth mentioning that this interpretation was rather uncertain. Suggestions that the city wall was restored at some time were explained by functional differences within the new structure (cf. Kristiansen 1998:108-110 and 115).

The investigated city wall at Kongens Nytorv is interpreted as a later addition to the 13th century fortification and probably dated to the first half of the 14th century. This proposal is based on stratigraphic observations and relationships with identified construction cuts into the High medieval rampart and several reinforcing deposits placed against the foundation stones and at the same time covering the oldest version of the moat. Similar construction details were recorded at the former Metro excavation in 1996–1998 where the rampart layers had been placed up against the foundation stones – although some stones were also recorded as dug *into* the rampart, which the archaeologist responsible interpreted as a local phenomenon (cf. Kristiansen 1998:75).

Only a few datable finds were collected in connection with the city wall, consisting of ceramics (Late redware; 1450– 1660 AD, and a cannon ball). Several C14-dates were made on different types of material, from the brick wall itself (charcoal from mortar) and from deposits belonging to the construction phase (macrofossils). The different samples date the wall between the second half of the 11th century and the first part of the 15th century, thus a period of several hundred years, making a closer dating of the wall problematic (see further information and discussion in Chapter The eastern gate and fortification through time).

The problem with a more precise dating of the city wall is by no means new. At the former Metro excavation three thermoluminesence analysis (TL-dates) from mortar connected to a remnant of the city wall were dated to 1227±60 AD, 1255±60 AD and 1230±60 AD (Kristiansen 1998:65, 77 and 78; 1999b:165 and 176). At the same excavation a brick kiln built in several phases (stove, brick floor, two brick benches, six heating channels and brickwork of "munkesten" preserved in 6 courses) investigated west of the oldest rampart line, was interpreted as being used for brick production connected to the construction of the city wall and covered by a later (Late medieval?) phase of the rampart. TL-dates of bricks in the stove were dated to 1210±60 AD and 1310±60 AD. Charcoal (*Fagus silvatica* and unknown, unknown own age) from the fire pit was C14-dated to 1161–1297 AD (Kristiansen 1998:65 and 93-95; 1999b:156, 157, 159, 169 and 176; C14-datings from KBM 1410. 2012). The archaeologist responsible does not give a satisfactory explanation for these early dates, but points out the uncertainty of using thermoluminesence analysis at that time. Since the charcoal's own age is unknown these can not be used for further discussion.

Already in Copenhagen's first town privileges the city walls are mentioned (1254), but it is possible that this is a fixed expression which means fortification rather than an actual wall and should be seen together with the fact that Ingvar Hiort thanks the citizens for fortifying the city in the year 1289 (KD I:18; Skaarup 1998a:26).

The use of firearms in the 14th century could explain why the rampart was increased with walls and fortification towers. The Hanseatic League used cannons at the storming attempt in 1428 AD and in the middle of the 1400s a definite wall is mentioned and it is likely that this was built of bricks and stone, which was standard at the time. The building of the city wall must therefore have started before this time. The first stage is initiated on the city's eastern border from the shoreline south of Østerport. In 1249 the city was burnt down by the Lübecks and the city wall was not completed in 1259 AD when Jaromar the 2nd of Rügen conquered the city through the plank fortification in what we know today as *"Jarmers Gab"* and where the remains of Jarmer's tower is today.

The king did not fully take over the supremacy of the city and castle from the Roskilde diocese before 1416/1422 – so construction of the various fortifications, city walls included, was the citizens' responsibilities and primarily based on private initiative (cf. Thorsen 1926:221). From 1496 to 1515 construction work was carried out on the fortification, especially in 1510 when the mayor and aldermen took out a large loan for the (re)construction of the city wall. Further work was implemented by Frederik the 1st (1523–1533 AD) and Christian the 3rd (1534–1559 AD), who both carried out a considerable modernization program for the state defence during their reign. In the turbulent years from 1520 and up to the siege of Copenhagen in 1536 the last piece of the city wall was built from Nørreport to Vesterport and

on to the beach south of the current Vartov, but the state of and need for maintenance work on the city wall in the mid 16th century is clarified by information from 1543 when the citizens of Copenhagen went as far as asking the King if they could tear down the wall.

Based on the written sources together with the archaeological results and uncertain AMS-datings, the oldest part of the city wall at Kongens Nytorv is dated to the mid 14^{th} century – a suggestion that to some degree fits well with the fact that the oldest part of the city wall at Vesterport is dated to around 1372 AD (cf. Lyne and Dahlström 2015:189).

The final demolition of the city wall was completed in connection with the Østervold bastion in the early 17th century when the Late medieval moat was backfilled with rubbish including a large amount of demolition material from the wall itself together with the excavated soil from the new and larger moat (Fig. 278).



Fig. 278. The final destruction. Discarded bricks and demolition material in the Late medieval moat, facing north. Photo: Museum of Copenhagen.

These observations correspond with the results from the Metro investigation in 1996–1998 where the backfill included demolition material of limestone ashlars, rubble (both "munkesten" and smaller 16th century bricks) and larger sections of the city wall combined with other materials reused in the new foundation front. During the former excavation it was hypothesised that the city wall had been demolished in connection with Valkendorf's work on the fortification in the late 1500s (cf. Kristiansen 1998:73 et seq.; 1999b:162-165), but this suggestion could not be proven in the investigations made in 2010, and the written sources, including selected items from *Rentemesterregnskaberne* from 1608 and 1609, describe the demolition and *reuse* of bricks from *"the old wall at Østerport"* in the construction of the new fortification (cf. Lassen 1855:20-21; Kristiansen 1998:13 and Appendix 8; Westerbeek Dahl in press).

Late medieval fortification - building operations 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 and roundels in front of the gates during the 1500s is unknown.

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. Work on the fortification's expansion and improvement are mentioned in Magistrates Vedtægtsbog from 1505–1532 AD (Thorsen 1926:227). In 1505 "*bolwerck, uden østre port*" is mentioned and work on Østerport is mentioned both in 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 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 (cf. Lassen 1855:9; Thorsen 1926:234), but this estimated width is uncertain for the Østervold area as mentioned before.

In 1536 Christian the 3rd 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 of 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 into 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.

The accounts for the city tell of the building of at least two towers, one described as lying at Østerport (Kringelen). Construction work on the eastern gate building and the construction of dams is 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 sufficient water levels in the individual and different moat sections.

A series of redoubts outside the gates and towers is also mentioned. Not proven for certain at Kongens Nytorv, it is likely that this constitutes the semicircular fortified islands surrounded by the moat (roundels), placed in front of the gates to make access to these weak points of the fortifications as complicated as possible (Fig. 279). Redoubts in front of the towers may well have been embankments designed to protect the walls against cannon fire from the enemy, now that these weapons had become more effective and were becoming a real threat.



Fig. 279. Proposal for the eastern fortification with Østerport and roundel in the late 1500s. Note that these are located further north than what the archaeological investigations have demonstrated. From Christophersen 1985:108.

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).

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). Valkendorf reportedly was also responsible for the redoubt north of Østerport – although there could have been a smaller embankment in place already in 1505 AD or under the reign of Christian the 3rd (Thorsen 1926:243).

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 located immediately east of the foundation of the medieval city wall, but the relationship between this development phase and older features was unclear at several points within the excavation area. As part of the construction work the rampart had been partially 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.). No traces or continuation of this structure were recorded during the archaeological investigations in 2010.

Christian the 4^{th's} new fortification and gate building

The new gate building

The archaeological excavations show that the old gate was partly demolished and a new building was erected at the same location. This confirms the written sources which mention nothing about the main gate being moved. The inner gate building, rebuilt 1607–1611 AD, was placed in the same position as its medieval predecessor midway between today's Østergade and Lille Kongensgade. In 1608 *"det gullandske sten-arbejde til den nye Østerport"* is mentioned consisting of fine decorated adornments in lime- and sandstones from Jutland. *Rentemesterregnskaberne*, which is a thorough book-keeping recorded of government expenditure, also states that the new vault of the inner gate building was completed in 1604 (Lassen 1855:13; Thorsen 1926:243-245). The roof was covered with slate (Lassen 1855:27; Thorsen 1926:201 and 245) and several finds of roof slate both in the Late medieval moat and its 17th century successor confirm the use of this building material.

In tandem with the construction of the new moat, an outer gate was also constructed. This faced to the southsoutheast, approximately at a right-angle to the main gate building, in itself a defensive layout (Fig. 280).



Fig. 280. Reconstruction proposal for the early 17th century fortification at Østervold with earthworks, moat, gate buildings and dams with barrier towers. Drawing by K. Thorsen 1923 and printed in Thorsen 1926. From Copenhagen City Archives.

The two buildings probably had two floors each, their further appearance, however, is unknown. In 1638–1639 AD the inner gate building was equipped with a powder tower (Lassen 1855:22-27). Southeast of the inner gate a dam was constructed across the moat in 1607–1608 with two block towers in the middle.

The new gate building was larger than its predecessor expanding eastwards into the Late medieval moat, partially filled with stones and boulders. The extension, although this is not completely settled, should have finished a couple of metres from the well and moat edge, immediately east of the old city wall, and by a section of the road and entrance where the latter makes a slight bend to the south (cf. Fig. 76).

In the written sources there is information about bulwark work in connection with the rampart and ditch outside Østerport. These also inform about the ordering of boulders to fill the moat (cf. Lassen 1855:26-27). It has not been possible to find any reasonable explanation for the bulwark's dendrochronological dating to 1642–1652 AD which coincides with the (partial) destruction of the inner gate building. One should assume that the posts were pushed into the ground before these were covered by stones and boulders and again that these were later than road surfaces of High medieval origin based on the finds material. There is though a definite uncertainty for some of these relationships since subarea phase 45A, investigated within the gate building was during excavation subdivided into a western and eastern part due to the need for machine power to remove larger stones and more complex deposits. Added to this is the fact that the boulders recorded in subarea phase 5A-1 were placed in the Late medieval moat before the dam structure (see Fig. 147 above). It has been impossible to clarify if these stones represent an older foundation compared with the rest of the stones placed in the Late medieval moat in the early 17th century.

No clear evidence of an outer gate related to the drawbridge on the other side of the moat (pictured on Johan van Wijck's painting and later prospect from 1611) could be proven, except for a bulwark at the base of the moat, probably constructed to stabilize a larger and unknown structure – though outside the excavation area. Big boulders were recorded in the backfill in 2016 and could represent remants of a destroyed building (SS318228; G-504240), but to prove this requires further archaeological excavation.

Østervold

In 1606 Christian the 4th bought all the gardens and plots outside Østervold, i.e. the area between Østerport and the beach, as well as the area between the fortification and the shoreline to the northeast (KD I:438-439; Nielsen 1885:381; Ramsing 1940, Vol. III:4). A comprehensive modernization of the city's ancient fortifications started the same year, which came to extend for almost twenty years (Christophersen 1985:61; Westerbeek Dahl 1996).

The construction work began in February 1607 and lasted until 1624 only interrupted by the Kalmar War. The remnants of the outdated medieval defence system was removed and instead a system was established employing ramparts of earth with bastions at regular intervals, curtains to flank the terrain and water filled moats surrounding the city, as it was then known throughout Europe (Fig. 281). At the same time the eastern part of Bremerholm was included in the new fortification, the city's three gates were renewed, and the suburbs were regulated (Westerbeek Dahl in press).



Fig. 281. Copenhagen's new fortification at Østervold drawn by Swedish engineer Heinrich Thome in 1624. The image is cropped. From Krigsarkivet – War Archives, Stockholm.

In the process of rebuilding the fortification based on Dutch and Italian models, the former roundel north of Østerport was transformed into a spear-edged bastion, physically connected to the rampart in the semicircular fortification. The possible reasons for this – apart from general defensive needs – may relate to a desire to keep up with current trends in urban defence, as well as satisfying an increased need for defence. These constructions would again have been organised centrally, either by the king, or by his administration, requiring significant planning and organisation, and a large expenditure of labour, time and money (Westerbeek Dahl in press).

Jan Dircksen's prospect of Copenhagen from 1611 is the only source that suggests that the city's fortifications might have been covered by bricks (cf. Fig. 198). No brick structure could be traced in connection with the bastion at Kongens Nytorv as were seen at the Metro excavation at Rådhuspladsen (cf. Lyne and Dahlström 2015:206) and nothing in the demolition material from the fortification or the subsequent filling of the moat suggests this. Here, in the southern part of Østervold, from Østerport in the north to Vandporten to the south, the outer slope was almost vertical and it would have been very difficult to maintain this fortification if the works outside were lined with bricks. It is also unclear if the reproduction represents soil or masonry. Since there are no entries in the written sources mentioning the purchase of bricks and/or work with masonry, nor later repair around the bastions, it seems clear that it was intended that the fortifications from Vandkunsten in west to Bremerholm in the east were built as earthworks in "Dutch style" (Westerbeek Dahl in press).

Rentemesterregnskaberne mention the ramparts and roundels to be 7 cubits high, the parapet 3 cubits high with a cannon bench inside, the embankments width – without parapets and berm facing the moat – should have been 20 cubits (cf. Fig. 282). The written sources also mention that a person named Corneliussen was required to place stones along the inside of the moat, and that he should even pay for supplies of turf for the rampart. Only by Nørreport did the rampart reach the height of up to 11 cubits. Moreover, the rampart was equipped with a two metres wide berm (Westerbeek Dahl in press).



Fig. 282. Investigated parts of the 17th century fortification with the inner gate building and Østervold.

Huge amounts of turf from Amager were used in the construction of the new fortification (cf. Lassen 1855:29 et seq.; Thorsen 1926:248). This building material was also identified at several locations in the excavation in connection with the bastion. The embankment had to "sit" for a period of time before the work was finished with a covering of turf. This work was finished two to three years after the embankment was completed, when Jost Spangenberg and Anders Nielsen in 1613 provided the foundation with an outer skin of turf (Westerbeek Dahl in press).

Christian the 4th demanded the new moat to be 62 cubits wide and 5 cubits deep. A map from 1629 shows that the moat surrounding the bastion and southwards had a width of c. 50 cubits. The moat's width from Østerport's bastion to Rosenborg and Nørreport was in 1615 approximately 62 cubits (Thorsen 1926:250-251).

The new Metro excavations at Kongens Nytorv show that the bastion's throat was in the immediate extension of Østerport and its two facades met roughly where l'Amoureux's statue of Christian the 5th is today. The width of the moat was between 21.0-23.4 m south of the bastion and the depth at the most 2.1 m from the top of the construction cut to the middle of the base. This could be something greater if one compare it with the results from watching brief trench ZT1196 close to Ny Adelsgade (c. 2.7 m). These measurements are anyway much less than the moat depth measured at Vesterport, being 5.0-5.5 m (cf. Lyne and Dahlström 2015). There were no indications that the moat sedimentations had reached all the way up to the foundation stones arguing for a higher water level.

A combined moat and canal (Holmens Kanal) was built in front of the rampart, which was so deep that ships could go up to a pier. From here a gate called Vandporten (built 1608/1609 AD) provided access into the city (Kristiansen 1998:116 et seq. and Appendix 8; 1999c:185 et seq.).

A new stone and brick arched bridge was constructed in 1608 in order to span the outer moat and link the outer gate to the area outside the city (cf. Lassen 1855:27-28). The bridge, partly walled, partly a drawbridge in wood, led through an outer gate building to the place in front of Sejlhuset and Reperbanen on the northeast side of Bremerholm. The bastion was located north of the bridge, so that this could be protected (Hartmann & Hartmann 1988:6 et seq.).

Five of these vertical brick pillars or bridge piers were investigated in the moat (Fig. 283). Part of this bridge structure was also recorded in 1994 in the street outside Kongens Nytorv No. 21. This consisted of a dressed stone plinth with three dressed stones and masonry of medieval bricks and lime mortar on a foundation of boulders and demolition material from the 16th century or later. The dressed stones sloped at 15-20 degrees (Skaarup 1994).



Fig. 283. Overview and upper part of bridge pillar Nos. 1 and 2, facing SW. Photo: Museum of Copenhagen.

The width was c. 7 m and similar to the 17th century bridge investigated at Vesterport (cf. Lyne and Dahlström 2015:208) and details/construction method are very similar to later versions outside Østerport.

In connection with the new bridge one needed a temporary entrance into the city. In 1618–1619 a 30 fathoms bridge entering through an arch down to the beach opposite Slotsherrens gård at Østerport is mentioned (Thorsen 1926:237 and 247), which is presumably the same bridge investigated at the end of Lille Kongensgade in 2011.

Part of a dam and barrier tower was documented SE of the inner gate building and alongside the bridge on its southern side. Dams with sluices across the moat were necessary in order to maintain an adequate water level in the moat and a dam also appears on the prospect based on van Wijck's painting from 1611.

The water was collected from both the surroundings and from the lakes north of the city. From the lakes, the water was diverted into the moat by a trench from Peblingesøen to the cutting by Jarmers Gab. The water reservoir also had

a drainage later named Rosenbækken that led south to Kalvebodløbet. This system was expanded in 1526 AD with an excavation at Rosenbækken, which ran from Emdrup into the sound at Hellerup. In this way Emdrup Lake was created. From here the water was discharged probably through Lersøen into Ladegårdåen and into the lakes whose surface area thereby was considerably increased.

The barrier tower previously had been documented without any clear interpretation (cf. Skaarup 1994). This brick structure was interpreted as a tower related to a dam structure just south of Østerport and dated to 1608–1609 AD. This hurdle is also seen on Thorsen's drawing of Østervold including two small towers to prevent passage over the moat (Fig. 280; cf. Lassen 1855:28; Thorsen 1926:246; Westerbeek Dahl 2016, In press). The interpretation as a tower is also based on its internal structure and comparison with a similar, still existing tower in Nyborg and other examples from the Continent (Fig. 284).



Fig. 284. Prospect of Antwerpen with a barrier tower on one of the dams connected to the bastion in the late 16th century. The image is cropped. From Braun and Hogenberg 1588.

In connection with these dams, several watermills were built to utilize the height difference created in the water table. How many mills were established been along the fortress terrain is unknown, but a water mill close to Østerport is mentioned in 1511/1512 AD (Skaarup 1996:36) and a waterwheel is also displayed on the prospect from 1611 (cf. Fig. 198). One of the first proposals for the circular structure on site was that this represented the remains after a watermill – but no material from a demolished mill (parts of milling stones, wheels, axles, paddle blades, etc.) was encountered. Round structures exist in relation to horizontal mills, but are not known in Denmark, except at Bornholm. A horizontal mill operates normally with a modest (narrow) water flow, but with a big fall, and a horizontal mill's performance in comparison with that of a vertical mill is so modest that it hardly was part of a fortification of the dimension that existed at Østerport in the early 17th century (Fischer 2016).

Part of an interpreted sluice can be compared with the mill race at Rådhuspladsen dated to c. 1600 AD, but this feature was highly fragmented.

Some of the deposits in the moat (usage and deconstruction) were seen as older than the bridge pillar foundations (cf. SG-503401 and SG-503423), but later regrouped and placed under the 17th century fortification (Phase 6) in the matrix. Exposed by machine within the 17th century moat area and without any clear relations, this stratigraphic "disagreement" can either be explained through the construction of the barrier tower on top of the dam within the Late medieval moat and using the same type of deposits, *or* by other activities – for example when building a roundel north of Østerport, a type of artillery fortification introduced by Christian the 3rd in the 1540s.

The backfill and terrain levelling deposits of the 17th century moat consisted of typical waste and building material – similar to earlier observations and excavations at Krinsen. In the 1940s several finds were collected consisting of well preserved iron and metal artefacts related to urban and military culture (Bunkersudgravningen på Kgs. Nytorv 1944). Typological facts combined with observations regarding the decoration and fabric of the other artefacts point towards a date in the second part of the 16th century and beginning of the 17th century. Part of the building material collected from the 17th century moat originates from the same building. The dating is early 17th century and the ashlars could represent decomposition material from the former Østerport, although this proposal is highly uncertain.

The fortification was abandoned in 1647 in connection with the establishment of New Copenhagen and the city's expansion to the east. After the fortification went out of use, this part of the moat outside Østerport was filled in during 1680 and used as a general dump waste and junkyard.

Assessment of results

The excavation at Kongens Nytorv is exceptional for more than one reason. Just the sheer scale of the excavation area and the amount of findings makes it very applicable for future studies. It is also an area of Copenhagen which was considered more of a "quiet corner" of the medieval city. Through out the medieval period, the archaeological records have – apart from the fortification – been somewhat small scale, but highly interesting. Signs of an early settlement (pits and boundary ditches) – considered to date back to the Viking Age, recorded in the Metro investigations in the 1990s. During the same excavation a large part of the medieval and Post medieval fortification was revealed, and for the first time in recent years part of the fortification was exposed and accessible for modern archaeological analysis. The unique find of well preserved "porch stones" (Danish: bislagssten) in Lille Kongensgade in 2007 also made an impression. Lastly the written sources describing the royal place Østergård, possibly sited on the plot of current warehouse Magasin de Nord, which has been the subject of many and at times lively discussions about the area for decades should be mentioned.

Site specific questions

The excavations in 2009–2016 did indeed reveal findings from the prehistoric period to the present day. The overall dominating feature was obviously the medieval and post medieval fortification, but also new knowledge of the settlement and activities in this part of Copenhagen, both before and after the establishment of the fortifications was revealed. The following paragraphs are a summation of the results in relation to the objectives and aims, which are presented in the main report (Steineke and Jark Jensen 2017).

From the prehistoric period no clear settlement could be confirmed, but findings of flint artefacts point to the presence of near-shore settlement or activity in the area of Kongens Nytorv. The dating of the findings is Late Mesolithic and Neolithic. Salt marshes were documented in several areas of the excavation and the general cultural layers were up to 2.0-2.5 metre. Being a near-coastal marsh area, the area must have been flooded regularly and therefore the coastline must have been varying and limited the ability for settlements to develop.

The Viking Age is not represented in the material with the exception of some AMS-dates from smaller pits of unknown function, and Early medieval findings are present, but dispersed. The east-west running boundary ditches in Lille Kongensgade probably dates back to the 1200s based on datable finds, of which these are somewhat later than ditches further to the east running north-south. At least one of the later ditches can be connected to the boundary ditches excavated in the earlier Metro excavation at Kongens Nytorv in 1996–1998. This proves a regulated settlement existed in the area even though it might have been of temporary character. No specific marketplace activities were observed, but the finding of four clay lined pits dating to the second part of the 12th century indicates activities that are linked to fishing and seasonal market activities. In connection with the clay lined pits, a so-called and interpreted "*Grumbod*" was recorded which is a house of temporary character and reveals evidence of fishing of a more seasonal character.

As for settlement in the medieval and Post medieval period the excavations gave very useful results in connection to reconstruction of the settlement areas – to some extent also outside the 17th century fortification. Plots and boundary ditches were recorded over most of the area and so were building remains, parts of fences, wells, pits and street surfaces. Also the medieval fortification was well documented and the medieval rampart, bulwark, city wall, moats and not least the eastern gate were pinpointed in the excavation. Except of the city wall, dated to the 14th century, the origins of the fortification can be dated to the early 1200s. Part of a palisade which could be the remains of the city planks were only registered indirectly through postholes. The eastern gate was replaced by a new building in connection with the construction of a new fortification based on Dutch and Italian models that included bastions, curtains, a dam with a barrier tower and a drawbridge in the early 17th century.

Objectives of the project in the light of the project aims

As described in Objective and aims in the main report (cf. Steineke and Jark Jensen 2017), the excavation at Kongens Nytorv had the goal to answer some overall questions on urbanization, economics and city life, applied to the Metro Cityring project in order to answer some site specific questions that were mainly based on knowledge from previous investigations in the area and on comparison with what is known from other similar urban areas.

Many of the questions were answered and some of them not. Also a lot of the questions were linked to the previous Metro investigation at Kongens Nytorv 1996–1998 (see Chapter below for further information).

Background, organization, direction and characterization of urbanization

Kongens Nytorv was once placed in Copenhagen's easternmost part. The fortification marked the outline and the jurisdiction of the city. This provided great possibilities to explore the spatial use of the urban area.

The High medieval boundary ditches that were recorded at the former Metro investigations (KBM 1410/1910) and also underlined by findings of boundary ditches and some smaller pits in use prior to the medieval fortification in this excavation, identifies the earliest evidence for a regulated settlement in the area of Kongens Nytorv. The findings of clay lined pits and a "*Grumbod*" from the 12th century indicate an early seasonal settlement (Danish: fiskeleje), but with a clear layout of jurisdiction. Around the same time as for the medieval fortification, plots were established in Lille Kongensgade. So even though the present stretch of road at Lille Kongensgade was not established until the 16th century, there are implications with these plots that the area was already in use as a permanent settlement. Only the northern end of these plots could be identified in the excavation and unfortunately not any of the activities or buildings connected to them. The oldest building remains investigated were dated to the 14th century onwards. In general the preservation of the houses was poor, but in most cases it was possible to say something about construction details and type of buildings. In Lille Kongensgade there were also buildings with cellars, which also points in the direction of permanent, well built houses. Also, wells and pits indicate an area of urban activity as does the variety of finds, even though they are notably few, representing household equipment, tools, personal items, etc.

Traces of streets imply the interaction between public and private space. The medieval buildings close to the eastern gate were oriented with their gables to the north which suggests an open square just inside the gate. The rampart street was through out the medieval and Post medieval period a continuous feature which must have been under the public administration of the city. The proximity to the rampart and the eastern gate has definitely had an influence and vital impact on the urban activities in the area.

In the southern outskirts of the excavation area inside the fortification, a medieval forge and a Post medieval mortar production area were recorded. There were no indications of domestic buildings in this particular area which points to the possibility of a separate industrial area of flammable activities and workshops. Outside the 17th century moat several buildings were also located dating to 1550–1650 AD, which also had workshop potential, perhaps connected to the ship wharf at Bremerholm.

Great evidence of the city boundary and fortification was revealed and new and valuable knowledge was gained on the medieval city wall, but not least for the eastern gate which now can be dated back to the early years of the 13th century. This makes sense when seen in relation to the 12th and 13th century plots in the area and the clay lined pits from the late 1100s. It does give the area a completely new perspective for a new interpretation of the urbanization of Copenhagen.

Economic and demographic fluctuations

The excavation at Kongens Nytorv produced evidence of both trade and craft. The latter is represented in the clay lined pits showing evidence of fish processing (herring) in the Early medieval period. From the 13th century there is also evidence of primary smithing in the area. The forge remains excavated in subarea phase 4B specialized in primary

smithing of bloom iron from Norway or Sweden and slag from this production was also spread in many of the other subareas. The slag might come from this sole forge or from nearby workshops processing the same iron blooms. The rather low quality iron artifacts such as knives and other objects found at the excavation seem to derive from the iron produced in the area. This indicates a production to supply the local area. After 1550 AD the evidence of smithing is more diverse including secondary smithing, but still of iron of rather low quality produced in the area.

From the Post medieval period there is an indication of mortar production in the area. This must have been for local consumption, perhaps in relation with the construction of the new fortification. Production waste of leather from shoes is among the finds material collected from the 16th and 17th century moats, evidence of production in the area. The waste also tells us about recycling and reuse of older shoes etc. to make new items or repairs.

Among the ceramics there are almost no finds from the Early medieval period and therefore very little evidence of local or imported pottery. Up until 1350 AD this remains the case, but then a rise is documented in the presence of stone ware and other imported wares, which must reflect a Hanseatic influence and mercantile culture and trade.

The varied finds from the 17th century moat show a growing economy and consumerism indicating urban life. The material represents urban society at all levels. Due to the excellent preservation conditions in the moat, the amount of both inorganic and organic finds from here was overwhelming. The city and its inhabitants were represented by different types of building materials, animal and fish bones, leather waste and shoes, textiles, ceramics, metal, drinking and window glass and many other find categories.

At Kongens Nytorv it seems that the economic and demographic fluctuations are to some extent following the same lead. In the Early medieval period the material traces of the inhabitants are scarce, but the evidence of a developed urban area is represented by pits, plots (boundary ditches), workshop/production evidence and by the eastern gate and fortification. By the High and Late medieval periods there is evidence of a more socio-economic character in the larger amount of settlement activities and finds including imported ceramics. It is notable that both in the medieval and Post medieval periods production in this part of Copenhagen seems to be very local and to some extent simpler in character.

Cultural and social implications and consequences of city life

The results from Kongens Nytorv have provided a very unique picture of the social and cultural implications of Copenhagen's city life. Even though some of the subareas excavated were quite disturbed by modern truncations and much of the material fragmented, the evidence was still present and implies social levels, lifestyles and cultures.

There was not much evidence from usage layers in houses, plots etc. that could tell us about social structures within the single households. Most of the evidence from finds and food consumption comes from secondary dump layers or waste pits. Still it must be an indicator of the social and cultural status in the very near surroundings of the eastern parts of the medieval city.

As mentioned in the previous paragraph the 17th century moat had been used as junkyards providing evidence of city life in the mid 1600s, also on different social levels – from imported wine glasses to everyday waste. The finds can also be related to the daily life close to the embankment, which besides cannon and musket balls, revealed fittings and gaming pieces with motifs of soldiers. The defence of the city and the associated soldiers in the area has definitely had an impact on the cultural life.

The analyzed bone material tells of a varied food consumption including mammals (mostly pig, cow and sheep/goat), birds and different types of fish. There are very few possibilities of linking the consumption to specific households, but it gives a general idea of the diet of the Copenhageners in the area of Kongens Nytorv. Cereals are also present, although the use of cultivated plants is less evident among the material. There are some indications of meadow plants that are associated with cattle breeding and this might have been the case for the undeveloped areas and salt marshes outside the city limits.

All in all the area investigated at Kongens Nytorv represents the cultural and social diversity of urban life with finds that represents the high and low of society and with food consumption that gives an impression of a varied diet. Moreover the presence of public administration in the area and also the people working at the fortification must have left a cultural impression in many ways.

Future potential

The excavation at Kongens Nytorv in advance of the Metro Cityring resulted in large areas being excavated down to the natural substrate. Only in some few areas is there archaeology left in the affected areas, due to excavation limits and following the directives of the Metro Company.

Despite this the area of Kongens Nytorv and its surroundings still has a great potential with unexamined areas. This especially includes the area north of Østerport further information about the northeastern part of the gate building, the medieval fortification including the city wall and the area around the mouth of Østergade, including potential High medieval fishing activities and city planning.

The unexcavated areas of Lille Kongensgade, but also the backyards of the blocks of Hviids Vinstue and other buildings, could contribute knowledge about the plots and general settlement patterns in the area. These might also give yield some information on activities earlier than the ones registered during this excavation. The area outside the 17th century fortification and north of the Royal Theatre and west of Charlottenborg also indicates well preserved building remains survive that can tell us more about the settlement structure and gardens outside the fortified city. This includes both the presence of an outer gate building and buildings belonging to the shipyard on Bremerholm from the 16th and 17th centuries. The location of Bremerholm's cemetery is neither clear.

The excavations in 2009–2016 at Kongens Nytorv have provided the future with a lot of potential for further studies of the findings. Both the new knowledge about the medieval and 17th century fortification and the urbanisation of the area as a whole leave us with material for many years to come and future research in the finds material should be encouraged.

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Abbreviations

Appendix: App.

The Archaeological Archive, Museum of Copenhagen: AA

Danmarks Riges Breve: DRB

Diplomatarium Danicum: DD

Figure: Fig.

Kjøbenhavns Diplomatarium: KD

The Metro Company (Metroselskabet): MC

Museum of Copenhagen: KBM (also used as Archive reference)

The National Heritage Agency: KUAS (Kulturarvsstyrelsen)

Table: Tab.