



# Toompea limestone quarry – excavations and surveys on Toom-Kooli Street, Tallinn

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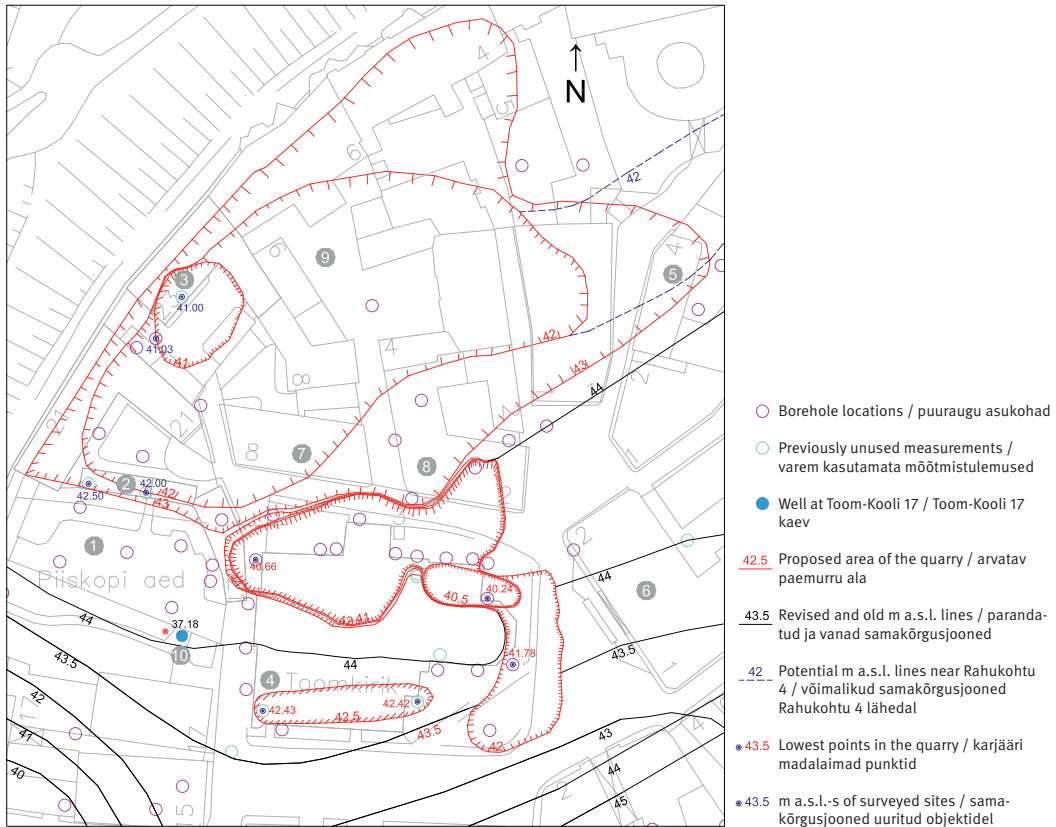
## INTRODUCTION

In 2015 and 2017, several archaeological excavations and surveys were carried out on Toom-Kooli street in Tallinn. Toom-Kooli St. 19 (known as Bishop's Yard (Est. *Piiskopi aed*); 2017), Toom-Kooli St. 21/2 (2015) and Toom-Kooli St. 23 (2017–2018) are all situated in the area of a medieval limestone quarry in the north-western corner of Toompea plateau. Professor Rein Zobel (1928–2012), Estonian architectural historian strongly involved in the study of the town fortifications and the formation of Tallinn, believed that the centre of the quarry stood at Toom-Kooli St. 6 (Cathedral church dedicated to St Mary) and that the quarry extended until the north-western edge of the plateau based on data from boreholes drilled in the 1950s and 1960s. His reconstruction has rarely been contested (Tamm 2004, 379) and it has remained unrevised. As admitted by Zobel, the constant influx of new raw data from archaeology from the end of the 1990s resulted in some information being not included in his reconstructions (Zobel 2009, 10). With extended access to relevant data and an accumulation of information from work carried out after the publication of his seminal works nearly 10 years ago, it is time for a revision of the size and characteristics of the quarry.

This article is divided into two clear segments. The first part focuses on the general results of the archaeological surveys and excavations carried out in Toom-Kooli street in 2015 and 2017 which have led to an opportunity to reassess previous reconstructions of the quarry. The second part offers an updated reconstruction of the quarry, including data from Toom-Kooli St. 19, 21/2 and 23 but also from earlier research (Fig. 1). Other uses of the area of the quarry are touched upon as well.

## TOOM-KOOLI ST. 19 – BISHOP'S YARD

An archaeological survey was carried out at Toom-Kooli St. 19 (Fig. 1: 1) in 2017 during the reconstruction of the drainage system (Reppo 2017). This is where the House of the Bishop of Tallinn stood, first mentioned in 1420 and probably depicted on the 1683 town model by Erik Dahlberg (AM.079288); it was likely destroyed in the 1684 fire (ET 2, 65). Most of the surveyed area was significantly disturbed by previous earthworks. Only at the easternmost corner, a few metres from the Cathedral, a fragment of a limestone wall built in three segments was discovered parallel with the westernmost building of Toom-Kooli St. 21/2. It could belong to the buildings shown on Dahlberg's model. The foundation level was not reached. A charcoal-rich destruction layer, probably that of the 1684 fire, covered the eastern part of the wall and extended east towards Toom-Kooli street where it was cut by a modern drainage system.



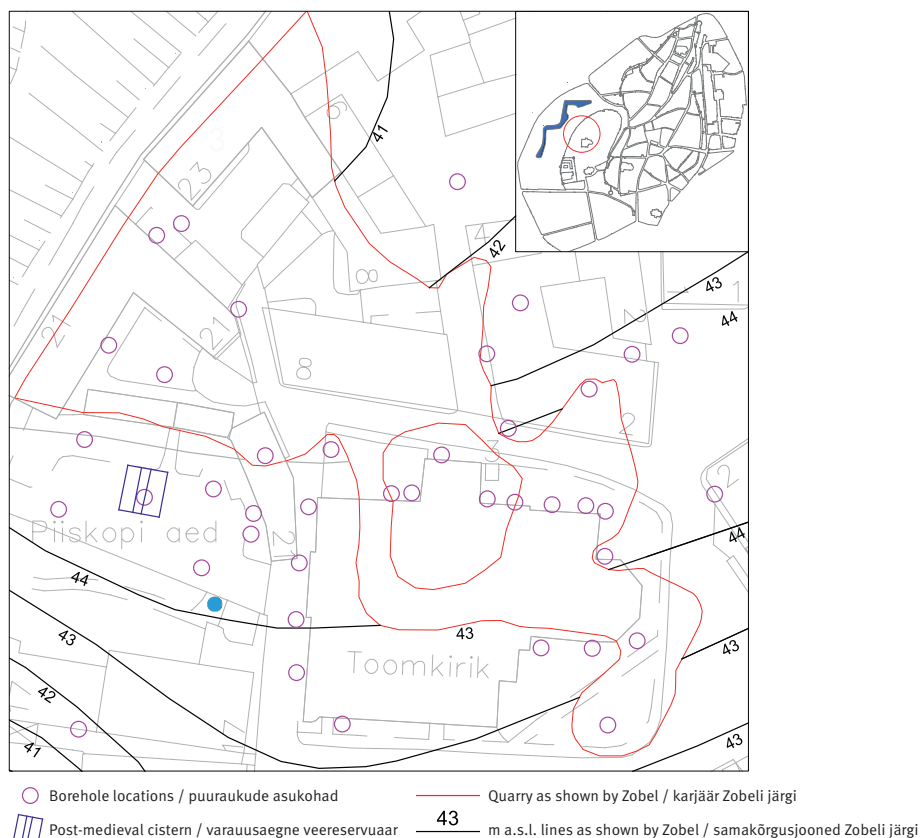
**Fig. 1.** Location of surveyed sites (1–3) and sites mentioned in text (4–10). Revised reconstruction of the quarry and m a.s.l. lines. Based on unpublished data from described excavations; Uuetalu et al. 1960; Üprus et al. 1953; Zobel 2009, 34, fig. 19 and Zobel & Mudist 2006.

**Jn 1.** Järelevalvealusel objektid (1–3) ja tekstis mainitud objektid (4–10). Paemurru ja paekivitaseme samakõrgusjoonte uus rekonstruktsioon. Allikateks publitseerimata kaevamisandmed, Uuetalu et al. 1960, Üprus et al. 1953, Zobel 2009, 34, ill. 19 ja Zobel & Mudist 2006.

Drawing / Joonis: Monika Reppo

The layer did not extend west, the spread of the fire possibly been obstructed by the central, higher part of the wall or hypothetically, the proximity of the public well (Toom-Kooli St. 17), still standing just a few metres south. The only finds were sherds of Early Modern Age glazed redware belonging to a pipkin (not stored).

Based on the relief of the area and earlier research, indicating heavy building debris, it is probable that the quarry did not extend to the Bishop's Yard. However, a 7 × 7.9 m post-medieval vaulted water cistern was located beneath the yard (Fig. 2) that could have been built within an existing area in the quarry. The same lime-plastered cistern was discovered in 1927 (Päewauudised 1927), covered by wooden logs and measured to be 6.5 metres deep (Kardetawad keldrid Toompeal 1927) filled with 160,000 litres of water. It was believed to have been built shortly after 1757 although no records confirming this were found. Another source claims that a 130 m<sup>3</sup> cistern was built in 1874 to be used in case of fires, filled with the water from Patkuli pond and later connected to the town's water system (Jakobson et al. 1967). The cistern was left unemptied in 2017.



**Fig. 2.** Reconstruction of the quarry with the location of boreholes and limestone level m a.s.l. lines as proposed by Zobel. Based on Zobel 2009, 34, fig. 19 and Zobel & Mudist 2006.

**ln 2.** Zobeli esitatud paemurru rekonstruktsioon puuraukude asukohtadega ning paekivitaseme samakõrgusjoontega. Allikas: Zobel 2009, 34, ill. 19 ja Zobel & Mudist 2006.

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## TOOM-KOOLI ST. 21/2

In 2015, an archaeological survey (Reppo & Toos 2017) was carried out directly north of the Bishop's Yard during the foundation works of the southern building of Toom-Kooli St. 21/2 (Fig. 1: 2). The main building of the complex is situated in the south-western corner of the plot and it was first mentioned in 1613. The slightly odd layout is probably due to plots being joined after the fire of 1684 when the original building complex was destroyed. No auxiliary buildings are visible on the 1683 town model nor on a plan from 1732. Buildings at the northern and western end of the yard are first mentioned in 1765; the modern, smaller building at the southern end was only built in 1911 (Raam 1993, 246). Foundation work on the inside and outside of the building showed that it stands partially on the edge or edge of a section of the quarry (+42.00 m a.s.l.). The majority of the area had been filled only as late as the 16th century based on the finds dating from 1500 to 1800. Only at one point at the southern side of the building, a clear medieval fill was visible. The medieval finds included some fragments (AI 7739: 2) of 14th – early 15th century Lower Saxon stoneware (LASX3; typology here and elsewhere after Russow 2006).



**Fig. 3.** Some finds from Toom-Kooli St. 23.  
**Jn 3.** Mõningaid Toom-Kooli 23 leide.  
 (AI 7746: 1, 9–10, 94.)  
 Photo / Foto: Monika Reppo



**Fig. 4.** View inside the medieval cellar towards the original yard. The weathered quarry cut is clearly distinguishable.

**Jn 4.** Vaade keskajegse keldri seest esialgse õue suunas. Ilmastiku käes kulunud murdeserv on selgesti eristatav.

Photo / Foto: Monika Reppo

### TOOM-KOOLI ST. 23

A basement was built under the middle and western section of the main building at Toom-Kooli St. 23 (Fig. 1: 3) in 2017–2018. It turned out that the cultural layer was 2.5 m thick and stood directly on the limestone plateau with clear cut marks.<sup>1</sup> The earliest, grey silty layer could be dated to the second quarter of the 13th century. Loose limestone slabs, fragments of Paffrath globular pots (1225–1300; AI 7746: 1, 3–4, 9–10; Fig. 3), proto-stoneware (1225–1275; AI 7746: 7–8) and animal bones with cut marks were found here. After removing the soil, it became clear that the NW–SE-oriented medieval cellar on the north side of the Toom-Kooli St. 23 plot was built directly on the edge of a quarry cut or the quarry itself (Fig. 4). The silty layer did not extend further from the quarry cuts and appeared to be contemporary or only very slightly earlier than the basement. The silty layer was covered by a dark fill with limestone debris inclusions, also noted on other sites on Toom-Kooli street with finds of 13th-century highly decorated redware (AI 7746: 19) and Siegburg proto-, near and stoneware (1225–1350; AI 7746: 11–15, 21–26). This layer appears to have been deposited in the former yard, its location evidenced by the SE-facing window of the cellar and the dark layer extending against the cellar wall. The limestone debris was covered with a charcoal and soot-rich layer which included Langerwehe stoneware (1375–1450; AI 7746: 27–29) and a bone needle with a drilled eye (AI 7746: 94; Fig. 3). It is very possible this layer relates to the fire of 1433 although the fires of 1533 or 1581 cannot be conclusively outruled. The layers deposited on the medieval layers include several fragments of early modern and modern ceramics and are related to the modern building on site which extends 4 metres south from the south-eastern

<sup>1</sup> During building work, the limestone was cut deeper so the medieval cut no longer preserves at floor level although segments of it are visible at the sides of the building.

wall of the cellar and does not have a basement. Although some of the finds relating to the foundation of the current building were from the 16th century, it could have been built soon after 1683 as it is not present on the town model. From the fill of a later rebuild of the medieval cellar which closed off an entrance to the west, a late 17th-century faïence plate was found (Fig. 5).



Fig. 5. 17th-century faïence plate from Toom-Kooli St. 23.

Jn 5. 17. sajandi fajansstaldrik Toom-Kooli 23 objektilt.

(AI 7746: 123–129.)

Photo / Foto: Ervin Sestverk

### THE QUARRY UNTIL NOW

Toompea plateau currently sits at around +48.00 m a.s.l. and stretches 7 ha. The foot of the hill is formed by Cambrian sandstone, the rest by Ordovician limestone (ET 2, 252). The quarried limestone is known as Lasnamäe limestone which is deposited in 56 layers – on Toompea, the top 30 are however missing (Perens 2003, 25). The quarry stood in the northern part of the plateau at one of the two west-east oriented tectonic faults (Künnapuu 1970, 86) within the large fortress (*castrum maius*). Geologist Helle Perens (2010, 49) has proposed that limestone was already quarried on Toompea before the Danish conquest of 1219. Zobel's reconstructions place the quarry on the plots of Toom-Kooli St. 6, Toom-Kooli St. 21, Toom-Kooli St. 23, Kiriku St. 8, north-western corner of Kiriku St. 6, southern edge of Kiriku St. 2 and the central part of Kiriku Square (Zobel 2009, 34; Fig. 2). Geologist Sulev Künnapuu has suggested (1970, 85–86) a similar location with the quarry extending gradually from the northern edge around Toom-Kooli St. 23 towards Toom-Kooli St. 6 as this would have been the easiest way to break the limestone.

The location of the quarry has been proposed based on boreholes drilled in 1940, 1953, 1954 and 1961. These have been published as a CD-ROM catalogue<sup>2</sup> by Zobel (Zobel & Mudist 2006; Fig. 2). He has also discussed the potential pre-habitation limestone plateau levels in a 1998 article alongside the current limestone levels (Zobel 1998). This data was later re-used in his 2009 book. Going back to the original data from boreholes, several discrepancies appear in Zobel's reconstructions. It is unclear why data from all of the boreholes has not been used. Omitting those at the western side of the Cathedral has led to an erroneous reconstruction of the quarry, making it smaller and much shallower on this end. Rounding up or down in other places has made the quarry deeper or shallower.<sup>3</sup> Zobel's reconstruction of the present-day plateau surface (Zobel 2009, 31) around Rahukohtu area cannot be correct either in light of more recent research. With the lack of another source and adequate data to check the validity, most of his other plateau measurements of Toompea have still been used. Taking all of the above into account, a renewed contour map is imminent.

### THE QUARRY – A REVISED RECONSTRUCTION

Viewing previously unused data from the catalogue together with a handful of the sites<sup>4</sup> where the quarry level was reached has offered better understanding of the quarry including the time scale of certain sectors falling into disuse or being repurposed. The original borehole measurements from Zobel's catalogue, Künnapuu (1970) and Juhan Naha (Üprus *et al.* 1953, fig. 4; Tamm 2004, 381) have been used alongside the author's excavation results from Toom-Kooli St. 19, Toom-Kooli St. 21/2 and Toom-Kooli St. 23. Data from architectural studies carried out at Toomkirik (Uuetalu *et al.* 1960 and Üprus *et al.* 1953) and from several archaeological excavations was included – Rahukohtu St. 4, Kiriku Sq. 1, Kiriku street, Kiriku St. 2, Toom-Kooli St. 19 and Toom-Kooli St. 21 which will be referenced below. Based on these sources, a renewed contour map (Fig. 1) is proposed where the orientation of the labels is used to indicate the direction of the slope. This means that sloping towards the quarry, the label is above the line to mark descent from the marked altitude (e.g. from +41.00 m to +40.00 m) and outside the quarry below the contour line to mark ascent (e.g. from +41.00 m to +42.00 m). The quarry slopes are also marked with hachures towards the depression area for added clarity.

It is currently believed that the founding of the quarry proper is linked to the construction of the old castle (*castrum minus*) by the Danes in the south-western corner of Toompea although in all likelihood limestone was quarried here before by the locals. The Danish castle was probably completed by 1229 (Dubovik 1993, 39). Within the same year or shortly after, building work started in the area of the quarry on the stone church of the Dominican monastery north of Toompea castle (Kala 2002, 397) at present-day **Toom-Kooli St. 6** (Fig. 1: 4). It is probable that some wooden structures stood around here before, such as the proposed church of the Dominicans. Although they were forced to leave, the church is believed to have been completed by 1240. In the basement of the Cathedral, a one metre high quarry edge is visible. Zobel has proposed this to be the deepest part of the quarry, potentially influenced by a report from 1955 (Ilves *et al.* 1955). Although he has suggested that the limestone may have been quarried beneath the church after it was already completed (Perens 2010, 21), it

<sup>2</sup> Borehole numbers from Zobel's catalogue have been used although it should be noted they do not correspond to the numbers used by the Data Bank of Engineering Geology (Est. *Eesti Ehitusgeoloogia Fond*).

<sup>3</sup> Notably the +40.00 m a.s.l. line in Fig. 2, where the borehole results were both at around +40.80 m, making the quarry nearly a metre shallower in reality. For Toom-Kooli St. 23 the differences was up to 2.17 metres, see below.

<sup>4</sup> Around 30 reported archaeological surveys and excavations have been carried out from 1952–2017 in the area of the quarry.

has been noted that the sediment is weathered and eroded, indicating it has been exposed to elements before the church was built (Perens 2003, 28), making it impossible to have been used for quarrying afterwards. Also, based on earlier data (Üprus *et al.* 1953), there is a higher ridge at +44.00 m a.s.l. between the two deeper cuts under the church.

Another difference in the reconstruction comes with the addition of some boreholes such as nos 192, 194 (Cathedral), 405 and 423 (Toom-Kooli St. 23). As a result, the deeper, central part of the quarry is elongated both west and east and the deepest measured part stands at +40.24 m a.s.l. at the eastern end of the church, not at the northern end. Here the quarry is around 80 cm shallower than Zobel's reconstructed contour line leads us to believe. Revision of the data actually indicates that the quarry could have stretched further north (Fig. 1). During the excavation of **Rahukohtu St. 4** (Fig. 1: 5), carried out in 2001, an even deeper quarry cut appeared than the one in the basement of the Cathedral (Perens 2003, 28). Unfortunately, no report has been submitted and no other data exists for this plot. An extension towards this area has been added tentatively to the reconstruction, marked with a blue dashed line.

It appears that this might be the furthest the deeper cut extends, as results from Kiriku Sq. 1 and trenches along Kiriku Square have shown that the limestone lays here at +43.75...+44.04 m a.s.l. (Talvar 1997; Bernotas 2016). Still, the revised quarry does extend a little bit eastwards based on trenchworks carried out in front of **Kiriku Sq. 1** (Talvar 1998; Fig. 1: 6) where the limestone level is at around +41.76 m a.s.l., similar to the hole drilled in 1940 next to the Cathedral (Naha 1940, 3). The central part of **Kiriku Square** within the former graveyard of the Cathedral is considered to be an extension of the deeper part of the quarry at around +41.80 m a.s.l. No data is available for **Kiriku St. 8** (Fig. 1: 7) which could potentially be situated in the deepest parts of the quarry. It is important that future surveys and excavations are carried out with this in mind. **Kiriku St. 2** (Fig. 1: 8) offers very little additional information, although several surveys have been carried out here over the years, none of which have reached the ground level apart from the borehole no. 177 dug in 1953. Moving towards the quarry's northern edge, **Kiriku St. 6** (Fig. 1: 9) was potentially one of the few buildings left unharmed in the 1684 fire, built directly on the limestone plateau in the 16th or 17th century (Raam 1993, 79). Just like with Kiriku St. 8, we have no archaeological information on the site relevant to the quarry. The northern side of the quarry is problematic as is evidenced by Toom-Kooli St. 23.

The limestone plateau level marked in Zobel's catalogue at around +43.20 at **Toom-Kooli St. 23** does not correspond to the data by Künnapuu whose boreholes reached the limestone plateau at +41.03 and +41.96 m a.s.l., Zobel's data thus differing significantly (+2 metres) from actual measurements. During excavations in 2017, it was found that several section edges are visible within the area with varying depths and directions. In the middle of the building, the quarry was fairly level at around +41.00 m<sup>5</sup>, with some shallow cuts extending an extra 10–15 cm into the limestone. At the western end, there were more visible differences, with blocks in between cuts as high as 80 cm and up to 150 cm at the very edge of the Toompea plateau, forming a natural 'wall' here (Fig. 6). This could have potentially been for safety or for use as part of the early fortifications as a town wall of the upper town was built on the edge of the plateau during the medieval period. The cellar described earlier could be part of one of the early buildings directly next to the then town wall.

<sup>5</sup> The precise results of the m a.s.l. on this site will be given after the building work is completed.



**Fig. 6.** View towards the edge of the plateau. The edge of the quarry forms a natural ‘wall’ with weathered edges. During building works, 60 cm of limestone was removed from the old quarry floor.

**Jn 6.** Vaade Toompea saarlava serva poole. Paemurru serv moodustab loodusliku “seina”, mille murdservad on kulunud. Ehitustöödel eemaldati 60 cm endise paemurru põhjast.

Photo / Foto: Monika Reppo

As indicated before, there were loose limestone slabs in the earliest layer. In one point at the southern side of the building, a clay and gravel rich fill extended even further below +41.00 m in a deeper quarry cut. Here the natural level was not reached and the fill differed from the rest of the excavated area. The finds from most quarry cuts at Toom-Kooli St. 23 indicate that works stopped by the second quarter of the 13th century, but the deeper cut in question included some sherds of fully developed Siegburg stoneware (SIEG3a, 1300–1425, AI 7746: 119–120). With its location slightly ‘away’ from the small cellar built directly on the quarry, it is possible that the extra depth and marginally later fill could indicate a date for the basement, in this case using material quarried in close proximity.

The data from **Toom-Kooli St. 21** corroborates the idea that parts of the quarry remained in use after the Cathedral and Old Castle were completed. The area was not built up until quite late and in addition to the discovery of the cut edge of the quarry in 2015 and the almost non-existent medieval fill, large loose limestone slabs were found during the 1952 excavations in the earliest layer. It is possible that this part of the quarry remained open at least for some of the post-medieval period. Susanna Tarakanova and Osvald Saadre (1955, 20) suggested the

quarry may have been open until the 16th century. At present, there is no data to disprove this hypothesis. The presence of the quarry edge at Toom-Kooli St. 21/2 supports the claim that the quarry did not extend to **Toom-Kooli St. 19**, directly south of the edge. Also, taking into account that on the model from 1683, a building stood at the location of the cistern unearthed in 2017, this area being at least partially built up by 1420 the latest and that there is a lack of data to support the presence of a quarry, it is considered unlikely that it extended here.

## OTHER, LATER USES OF THE TECTONIC FAULT

Zobel has proposed that after the closure of the quarry in the mid-13th century, people quarried limestone from their own yards (Perens 2010, 21, 50). This could be true with cellared buildings as potentially shown with Toom-Kooli St. 23. Limestone from Lasnamäe and Toompea looks nearly identical, but the origin of the stone could potentially be identified



as they have been quarried from completely different layers (Perens 2010, 21). No research of this kind has been undertaken as of yet. It has been speculated that parts of the quarry were used until the end of the 14th century both for limestone and burning lime (ET 2, 253). This is plausible as the Toompea castle was rebuilt several times with a definite need for limestone. Later, lime and limestone was moved here from Lasnamäe (quarry in use at least from 1371; Perens 2010, 12) and also Hiiumaa (Maiste 2008, 44). As shown before, a later date for closure for some parts of the quarry is not unlikely. The quarry was however not the only way the tectonic fault proved to be useful for the residents of Toompea.

As a result of quarrying and springs in the tectonic fault, drinkable surface water gathered here and it seems to have been an optimal place for wells, as six of the 12 known public wells are located in or in the vicinity of the old quarry (Jakobson *et al.* 1967, 11). The oldest are present on a 1684 map, unfortunately all unnamed (SE/KrA/0406/28/040/008). There is actually a lot of confusion and contradiction on the location of one of the oldest, St Mary's Well (Zobel 2008, 15) in previous works. Some authors place the well at Toom-Kooli St. 17 (Nerman & Kaplinski 2012, 603; Zobel 2009, 33; Fig. 1: 10), others place it completely on the other side of Toompea at Kiriku Sq. 1 (Jakobson *et al.* 1967, 5; ET 1, 323) and some within the old castle (Sepp 2008). To make things even more confusing, the location even varies within the same source (ET 1, 167 vs ET 1, 323). The other wells of Toompea seem to cause less confusion, though at times the information is difficult to pick apart. It is clear though that there was a spring both at the north-western edge of the plateau at Toom-Kooli St. 23 and also a spring-well at the eastern edge of the plateau which Zobel at one point calls Mary's Spring (2008, 16), at another the Wailing Well (2009, 30), a name used by Jakobson *et al.* (1967, 6 – *stagnum ickmare dictum* at Kohtu St. 8). It is also believed that this latter spring fed St Mary's Well, in this case placed at Kiriku Sq. 1 (ET 1, 323). It is most likely that this is where the well stood, as it is directly east of the Cathedral (St Mary's Church) and has been used in a 1630 manuscript to identify locations of other buildings in the vicinity (ET 1, 323). A well was discovered here during excavations in 2016 (Bernotas 2016).

## CONCLUSION

Recent research on Toompea has offered an opportunity to adjust Rein Zobel's hypotheses about the medieval limestone quarry on Toompea. Although the quarry certainly stood on the plots outlined by Zobel, it has now become apparent that parts of it have stretched further north and the period of use and depth in sections differs markedly. Admittedly, the renewed interpretation of the quarry is based only on the areas where research has been undertaken over the years. The plot of Kiriku St. 8 could offer new information on what could perhaps even be the deepest and oldest part of the quarry. The survey at Toom-Kooli St. 23 is still on-going and additional data is expected to clarify the situation further. Added accuracy could also be achieved from relocating certain boreholes such as those north of the Cathedral (nos 292–297). The idea of a pre-conquest quarry deserves consideration and discussion as well. Overall, the limestone quarry of Toompea is a good example of how research carried out in one area over time builds a dataset which enables to propose renewed interpretations and reconstructions of town development, early extraction of natural resources and the usage of the area with future, adjusted and alternative reconstructions much expected as more data becomes available.

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## TOOMPEA PAEMURD – UURINGUD JA JÄRELEVALVE TALLINNAS TOOM-KOOLI TÄNAVAL

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Seoses 2015. ja 2017. aastal Toom-Kooli tänaval Tallinnas keskaegse paemuru kohal toimunud arheoloogiliste uuringutega avanes üle aastate võimalus paemuru asukohta ning dateeringut korrigeerida. Tallinna vanema ehitusajaloo tunnustatud uurija Rein Zobel uskus, et Toompea paemurd paikneb kruntidel Toom-Kooli 6, Toom-Kooli 21, Toom-Kooli 23, Kiriku 8, Kiriku 6 (krundi loodenurok), Kiriku 2 (krundi lõunaseru) ning Kiriku platsi keskosas (jn 1). Tema pakutud rekonstruktsiooni on harva vaidlustatud, küll on aga Zobel ise tõdenud, et 1990. aastate lõpust alanud pidev info juurdevoog seoses arheoloogilistelt uuringute arvu plahvatusliku kasvuga ei võimaldanud tal kogu olemasolevat infot analüüsida ning seega võivad mõned tema rekonstruktsioonid olla ebatäpsed. Uue info kogunemine lubab nüüd paemuru asukoha ja iseloomu kohta anda täpsustatud ülevaate. Käesolev artikkel jaguneb kahte selgelt eristuvasse ossa, millest esimene pool käsitleb üldistavalt 2015. ja 2017. aasta uurimistöid ning teine pakub paemuru revideeritud rekonstruktsiooni, hõlmates andmeid nii Toom-Kooli 19, 21/2 ning 23 töödelt kui ka varasematelt uuringutelt. Samuti käsitletakse paemuru seoseid linnalinnal veevärgiga.

Toom-Kooli 19 ehk Piiskopi aias (jn 1: 1) asus vähemalt 1420. aastast Piiskopimaja, mis hävis ilmselt 1684. aasta tulekahjus. Teostatud järelevalve käigus avastati sepipõõratud kultuurkihi alla vaid idanurgas paekivist müürikatke, mille idapoolseim ots oli kaetud ilmselt sama tulekahju söetasandiga, milles leidis glasuuritid graapeni katkeid. Samuti avastati aiast 7 × 7,9 m põhiplaani ning kuni 6,5 m sügav paekivist veemahuti (jn 5), mis on ilmselt rajatud 1874. aastal. Uurimistulemusi arvestades on hetkel väheusutatav, et paemurd ulatus siiani. Toom-Kooli 21/2 (jn 1: 2) allavundeerimisel toimunud järelevalve näitas, et uusajal hoonestatud krundi lõunapoolne hoone on rajatud paemuru servale (+42.00 ü.m.p.). Valdav osa muru täitest oli uusaegne, kuuludes kõige varem 16. sajandisse. Vaid ühes lõunakülje profiilis oli jälgitav keskaegne täide, mis sisaldas Alam-Saksi kivikeraamikat. Toom-Kooli 23 (jn 1: 3) hoone alla keldri rajamisel selgus, et 2,5 meetrise kultuurkihi all paiknes selgete mürdmisjälgedega paekivi. Otse paele ladestunud 13. sajandi II veerandisse dateeritavas kihis leidis lahtised paekiviplaate, Paffrathi tüüpi savinõude ja protokivikeraamika katkeid (jn 3) ja lõikejälgedega loomaluud. Krundi tagaosas paiknenud kelder on rajatud otse paemuru servale (jn 4). Sellest lõunas paiknenud keskaegse õueala keldri rajamisjärgne täide sisaldas muuhulgas 13. sajandi ornamen-

teeritud glasuurkeraamikat. Antud täidet kattis sõerikas kiht, milles leidis nii Langerwehe kivikeraamikat kui ka puuritud silmaga luunõel (jn 3). Võimalik, et see kiht seostub 1433. aasta põlenguga, kuid 1533. ja 1581. aasta põlengud pole välistatud. Neile ladestunud uusaegsed kihid on seotud praegu krundil paikneva hoonega, mis ulatub 4 meetrit lõunasse ning millel puudub kelder. Kuigi hoone sissekaevest saadi ka 16. sajandi leide, on see ilmselt rajatud peale 1683. aastat, kuna puudub linnaplaanil. Ka keskaegse keldri läänepoolse sissekäigu sulgenud hilisema ümberehituse täitest saadi 17. sajandisse dateeritav fajansstaldrik (jn 5).

Kõik kolm objekti asuvad 7 ha suurusel Toompea saarlaval (+48.00 ü.m.p.), millel paljandub Lasnamäe lademe 56 paekihist alumised 26. Paemurd paiknes Toompea põhjaosas nn suures linnuses ühel kahest tektoonilisest rikkevööst ning on pakutud, et see oli kasutusel juba vallutuseelselt. Rein Zobel on määranud paemuru asukoha 1940., 1953., 1954. ja 1961. aastal rajatud puuraukude põhjal (jn 2). Vaadeldes puuraukude originaalandmeid, ilmneb mitmeid lahkevusi Zobeli rekonstruktsiooniga. Eriti jääb selgusetuks, miks pole kõiki puurauke kasutatud läbivalt ning miks on mõningad loodusliku pae kõrgused märgitud valesi. Kasutades Zobeli kataloogi, Sulev Künnapuu, Juhan Naha andmeid ning Toomkiriku uuringuid, aga ka Rahukohtu 4, Kiriku plats 1, Kiriku tänava, Kiriku tn 2, Toom-Kooli 19 ja Toom-Kooli 21 arheoloogiliste uuringute andmeid, kus saavutati paemurruga seonduv tasand, oli võimalik koostada uus ja täpsustatud paemuru rekonstruktsioon. Kuvatud samakõrgusjooned järgivad põhimõtet, kus number paikneb muru languse suunas joone kohal ning murrust eemal tõusu märkides joone all.

Praeguse seisuga usutakse, et paemurd rajati 1229. aastal valminud väikese linnuse (*castrum minus*) ehitamiseks. Samal aastal asuti paemuru kohale Toom-Kooli 6 (jn 1: 4) ehitama dominiiklaste kloostrikirikut. Kuigi dominiiklased pidid lahkuma, valmis kirik ilmselt 1240. aastaks. Toomkiriku keldris on jälgitav meetrikõrgune murruserv ning Zobel on pidanud seda paemuru sügavaimaks osaks, kust jätkati paevõtmist ka pärast kiriku valmimist. See on siiski ebatõenäoline, sest nagu Helle Perens on viidanud, on mürdmist kiht käes murenenud. Zobeli rekonstruktsiooniga ilmneb andmete võrdlemisel veel erinevusi. Lisades puuraugud 192 ja 194 ning täpsustades samakõrgusjooni, muutub paemurd lääne ja ida suunas pikemaks, kuid põhjaosas umbes 80 cm madalamaks ning madalaim koht nihkub kiriku idaotsa

(+40.24 ü.m.p.; jn 1). Võimalik, et paemurd saaks pikendada ka põhjasuunas, kuna 2001. aastal avastati Rahukohtu 4 keldrite (jn 1: 5) süvendamisel veelgi kõrgem murruserv. Kahjuks puudub selle kohta aruanne – ala on lisatud rekonstruktsioonile katseliselt. Kiriku platsil toimunud tööd näitavad, et ida suunas paemurd ei jätku (paas +43.75...+44.04), kuigi veidi ulatub see Kiriku plats 1 maja ette (jn 1: 6). Viimane sügavam nurk jääb Kiriku platsi keskossa Toomkiriku kalmistu alale (+41.80 ü.m.p.). Kuigi Kiriku 8 (jn 1: 7) asub potentsiaalselt paemurru sügavaimas osas, puuduvad antud kinnistu kohta uurimisandmed. Rohkem infot ei paku ka tunduvalt enam uuritud Kiriku 2 (jn 1: 8), kus paeni jõuti vaid 1953. aasta puuraugus nr 177. Ka otse paeplatoole ehitatud Kiriku 6 (jn 1: 9) kohta puuduvad muud andmed.

Paemurru põhjapoolne osa näibki olevat kõige problemaatilisem. Nimelt on Zobeli rekonstruktsioonile kantud absoluutkõrgus +43.20 Toom-Kooli 23 õues täiesti erinev puuraukudest saadud infoga, kus pae kõrguseks mõõdeti +41.03 ja +41.96 – seega ligi kahemeetrine vahe. Ka 2017. aastal toimunud uurinud kinnitavad, et paemurru kõrgus siin jääb +41.00 juurde. Jälgitavad olid mitmed eri suuruse ja sügavusega murdekohad. Läänepoolses otsas olid need eriti silmapaistvad, kus lõigete vahele jäi 80 kuni 150 cm kõrguseid paeplokke, kõrgeim neist moodustas Toompea platoo servale justkui “seina” (jn 6). Hoone lõunakülje üks murre erines teistest nii sügavuse kui ka täite poolest, sisaldades veidi hilisemat Sieburgi kivikeraamikat, see oli ka ainus koht, kus paemurru põhjani ei jõutud. Kuna antud murre paiknes pisikesest olemasolevast keskaegsest keldrist veidi eemal, on võimalik, et see seostubki viimase rajamisega. 1952. aastal Toom-Kooli 21 pae pealt leitud lahtised paekiviplaadid, olematu keskaegne täide ning hiline hoonestus kinnitavad, et osa paemurrust jäi veel Toomkiriku ja linnuse valmimise järel kasutusse. Susanna Tarakanova ja Osvald Saadre pakkusid, et

paemurd oli siin avatud veel 16. sajandil ning hetkel puuduvad selle väite ümberlükkamiseks tõendid. Küll on aga kindel, et Toom-Kooli 19 krundile paemurd ei ulatunud.

Zobel oletas, et pärast paemurru sulgemist 13. sajandi keskel jätkasid elanikud pae mürdmist oma kruntidelt. Toom-Kooli 23 näite varal võib kellerdatud hoonete puhul seda isegi uskuda. Küll aga pole paemurdmine olnud rikkevöö ainuke kasutusala – nimelt paiknes siin vähemalt 6 Toompea 12st teadaolevast avalikust kaevust. Kuigi üldiselt on selge, kus asusid kaevud, on eriti Püha Maarja kaevu kohta mitmeid vastukäivaid väiteid. Andmeid kontrollides näib siiski, et viimane asus Rüütelkonna hoone juures Kiriku platsi idaküljel, mille sisehoovist leiti 2016. aasta järelevalve käigus ka kaevuraketised.

Hiljutised uuringud Toompeal võimaldavad Rein Zobeli paemurru rekonstruktsiooni täpsustamist. Kuigi paemurd asus tõesti tema poolt pakutud krundidel, jääb selle sügavam osa suuremale alale ning ka põhjaküljel on sügavam, kui varem arvatud. Paemurru värskendatud rekonstruktsiooni koostamisel oli samas võimalik toetuda vaid uurimisandmetele, kus saavutati paetasand. Nii võiks lisainfot tuua potentsiaalselt murre sügavaimas osas paikneva Kiriku 8 uuringud, aga ka Toom-Kooli 23 krundil jätkuvad ehitustööd. Samuti täpsustaks rekonstruktsiooni teatud puuraukude asukohtade (nr 292–297) uuesti plaanistamine. Ka vallutuseelse paemurru idee edasiarendamine võib tuua muudatusi praegu esitatud rekonstruktsioonis ning võimaldaks täpsemalt arutleda paemurru eri osade võimalike kasutusaegade üle. Toompea paemurru uurimistöö on kokkuvõtvalt hea näide sellest, kuidas ühest piirkonnast aja jooksul kogutud andmed võivad anda võimaluse linnaruumi arengu, loodusvarade kasutamise ning ala kitsama kasutuse uuteks tõlgendusteks. Kindlasti ei jää käesolev esitelu viimaseks Toompea paemurru rekonstrueerimiskatseks.