Report on the Excavation Cluster 23.

In August 2022 we successfully excavated at different locations at a cluster of features in the Gurvanzagal sum, Dornod province. These excavations are part of a joint Mongolian-Israeli archaeological research project. The site we lebelled Cluster 23 is located around these coordinates: 49°05.42460' 115°10.16200'. It was previously named *Kheremtiyn* (Kradin 2019: 129-130 and Figs 56-58) and *Khermiin rashaan* by Baasan (2006: 23). is located south of the wall line that we have been researching since 2018 (Shelach-Lavi et al., 2020a and 2020b). It is made up of three main features: A small rectangular enclosure; a larger rectangular enclosure; and a large circular enclosure. Each of the enclosures is surrounded by earthen wall that is between 1-2m high (Figure 1). The earthen walls of the two rectangular enclosures is preserved to some 2m high while the wall of the circular enclosure is currently around 1m high.

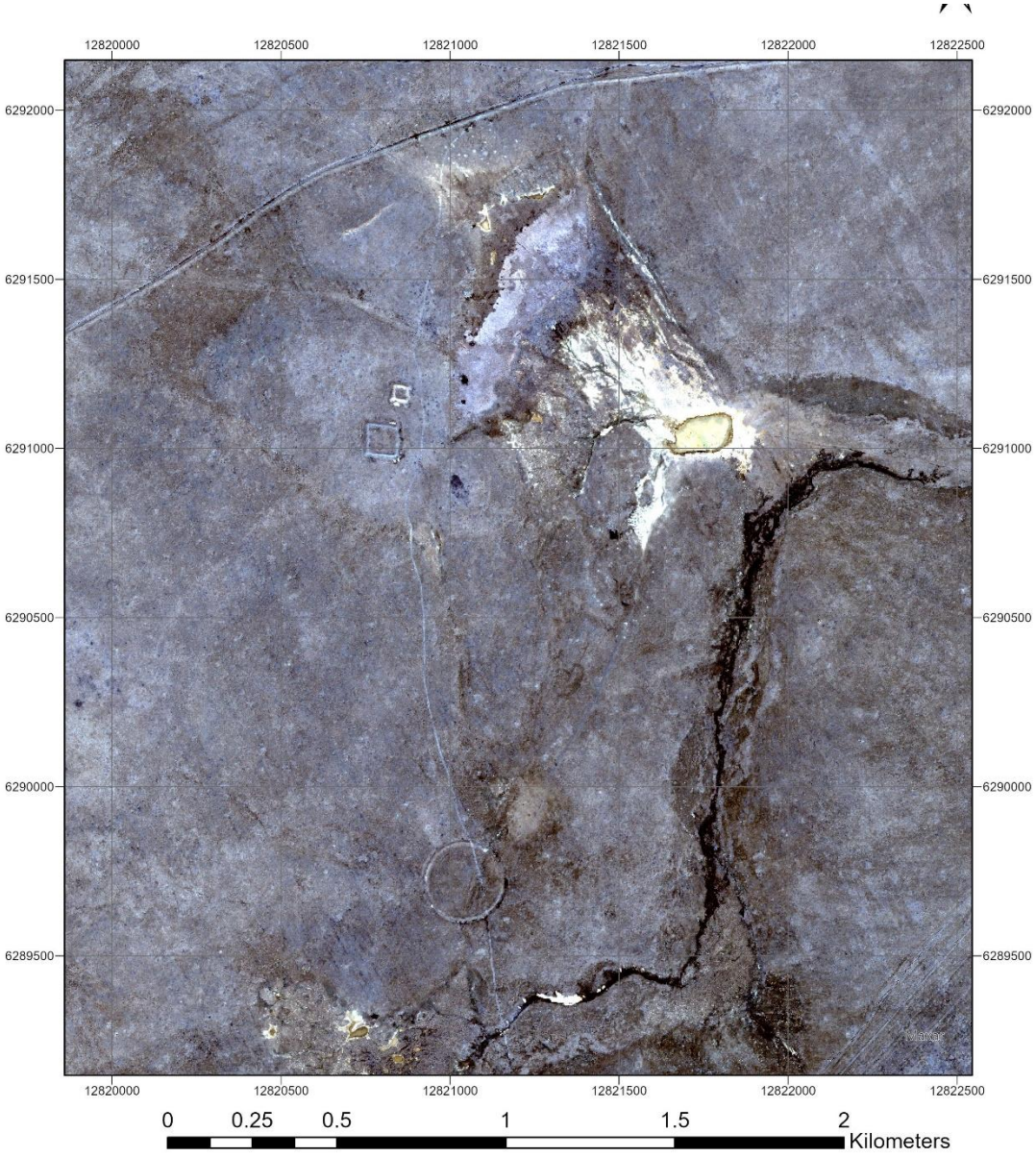


Fig. 1: A satellite photo of the cluster 23.

The goals of the excavations were: 1: To understand the structure and function of the different enclosures; 2. To obtain samples for dating the site; 3. To obtain zoological and botanic sample to better understand the ways-of-life of the people who lived at the site. All the sediments excavated from the different areas were sifted in order to recover as much data as possible. Soil samples were taken to check for issues such as the construction methods of the different structure and for possible residue left by the activity carried out inside the structures. Flotation samples were taken from strata that we though could contain evidence for human and animal activity.

Archaeological and Geophysical surveys

The first phase of our work at the Ikh Bulag site was a systematic archaeological survey of the areas inside and around the three clusters as well as along the wall. The aim of this survey was to identify above-ground features, such as concentrations of artifacts, which will help us decide where to place our excavation areas. The survey did not produce many significant findings. The only area where we did find potshards as well as animal bones was west of the large rectangular structure, where indeed we placed two excavation unites (areas A and B) and discovered the remains of trash-pits.

In addition, a team from the University of Pittsburgh, headed by Prof. Bryan Hanks, conducted geophysical surveys of different features at the site in order to identify potential areas of human activities (see the of the Archaeological Geophysical Surveys report). In addition to the two surveys, we used RTK equipment to make detailed topographic maps of the three clusters. Those maps (see figs 2; 13 and 29) served the basis on which we placed the results of our excavations.

Excavations

Our team excavated at six different locations – areas A to F – in and around the three enclosures: One in the small rectangular enclosure (area D); Three near the larger rectangular enclosure (areas A, B and E); and two in the large circular enclosure (areas C and F). Below is the report of those excavations arranged according the different enclosures.

The Small Rectangular Enclosure: Area D.

Area D was placed on the western side of the enclosing wall. A depression in this area suggest to us that this was the gate of the enclosure. Our excavations confirm this hypothesis and we were able to expose almost the entire gate (Fig. 2 and 3) which included, rammed (or tamped) earth construction as well as the use of large timber posts and beams.

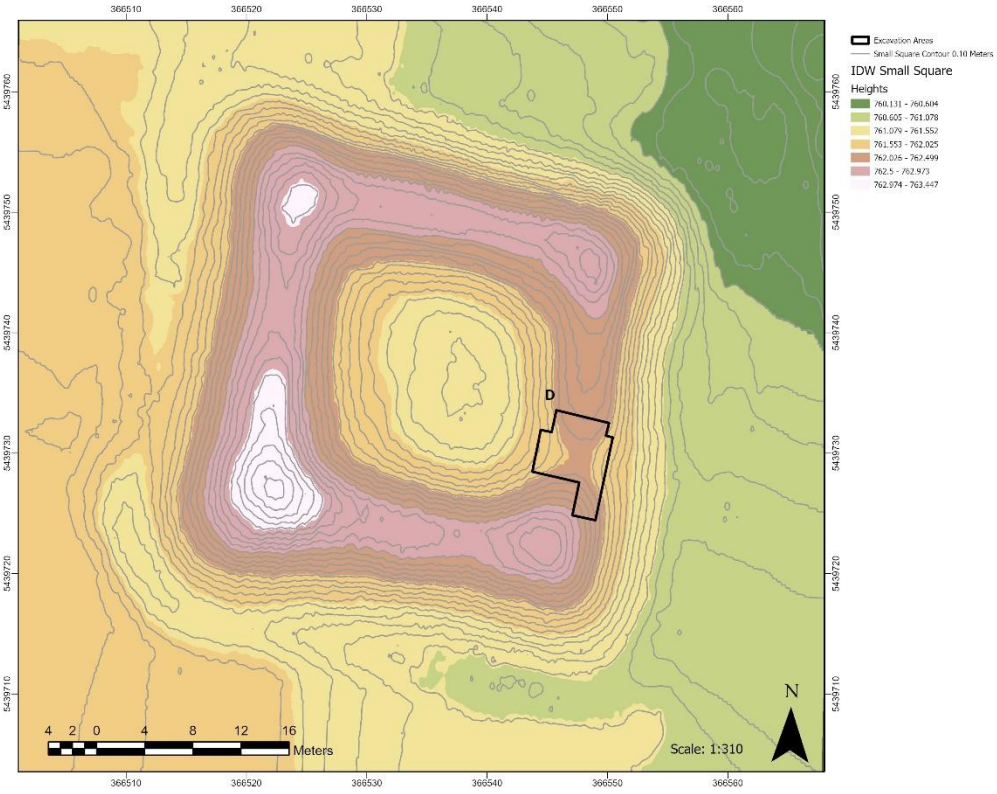


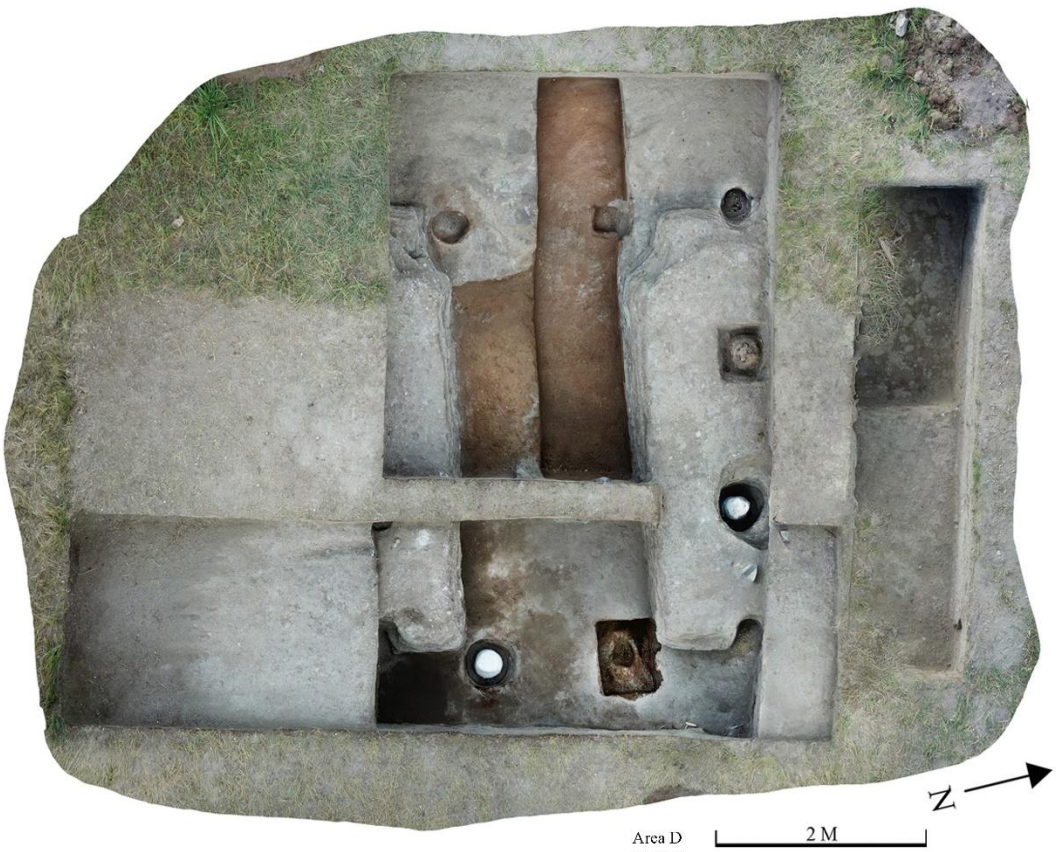
Fig. 2: A topographic map of the small rectangular enclosure and the location of area D

Fig. 3: A drone phot of area D.

After clearing about 40cm of the collapsing wall debris we reached the head of the gate's walls at a level of 761.5 masl. The walls, which were built of rammed earth layers, are much more compacted than the collapsed debris which cover them and which fill the area inside the gate. The walls are preserved to a height of 0.5 (761.0 masl) but their ordinal highest must have been higher before they were eroded. The walls are made of thin, layers of about 5cm each, of light-colored earth with a lot of white lime gravels. The layers were clearly constructed using the rammed earth method (Fig. 4).

Fig. 4: A view from west to east (from outside the enclosure to the inside) on the enclosure gate. The preservation of the walls as well as the construction layers of the rammed earth method are clearly visible.

The opening between the gate's walls is almost 2m wide and some 4.4 m deep (Fig 5 and 6). Excavations in the area north of the gate itself (unites 414 and 419) show that the wall of the enclosure was of the same width beyond the gate itself. Thus, we concluded that the entire wall of this enclosure was some 4.4 m wide with larger areas (bases of towers) at the four corners (Fig. 3).


N
Area D
24-8-22
2 M
1:50


Pole no. 9
Pole no. 8
Pole no. 6
Pole no. 4
Pole no. 10
Pole no. 3
Pole no. 11
Pole no. 2
Pole no. 7
Pole no. 5
Pole no. 1
N
2 M
Area D
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Fig. 5. An orthophoto of area D, showing the gate walls and the location of timber posts.

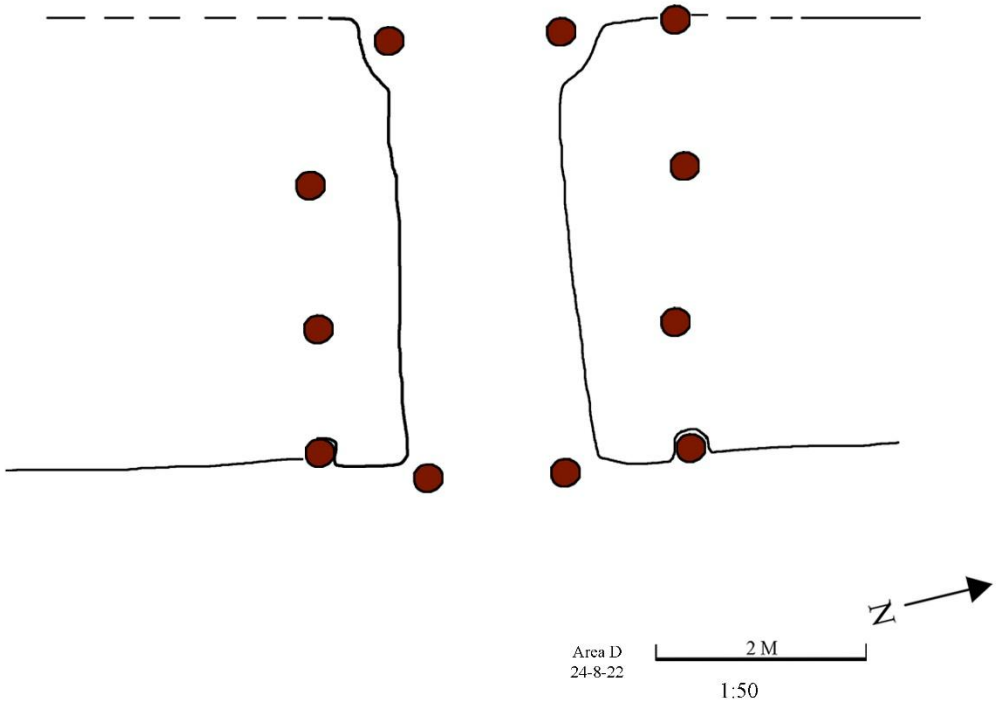

Fig. 6: A plan of the gate area.

The excavations revealed 11 large wooden posts that were part of the gate area (Fig. 5 and 6). Two rows of four posts (one of them not excavated but assumed) were imbedded inside the enclosure's walls in parallel lines some 0.5m north and south of the edges of the walls of the gate. Additional four posts were found inside the gate – two on the entrance to the enclosure (east) and two in the exit side (west). The distance between the pols in each pair is about 1m, thus they restrict the effective width size of the gate.

Some of the posts were very well preserved while others were almost completely decomposed leaving only the post holes. We took out three of the best-preserved poles for further analysis. One of the posts, marked no. 8, was preserved to almost 1m high. It was imbedded inside the enclosure wall and at the natural soil beneath it. It was some 15cm wide (Fig. 7). The other two posts were also some 15cm wide (Fig. 8). The woods were sent for analysis at the NUM's Botanical laboratory. In addition to wooden posts we found traces of vertical wooden beams that must have been part of the collapse upper parts of the wooden gate structure (Fig. 9).

Fig. 7: The excavations of post no 8.

Fig. 8: Posts no. 6 (left) and 2 (right).

Fig. 9: A wooden beam found in unite 403.

The floor of the area inside the gate was packed and it is clearly different in color form the dark-brown color of the earth on which it was built. This is clearly seen in the trench we dug into the floor level at the western (inside) part of the gate (Fig. 10).

Fig. 10: A look at the posthole of wooden post no. 10. The floor level is clearly seen above the brownish natural soil.

At the collapse level in the area inside the wall a large stone implement was discovered. It was probably the stone head (in Chinese she-hang-tou 石夯头) of an implement used to build the rammed earth (Chinese hangtu 夯土) as seen in the Chinese classical illustration (Fig 11). Other finds in this area include an iron nail (B. 4019, Fig. 12) which was probably part of the wooden construction of the gate, as well as potshards and animal bones.

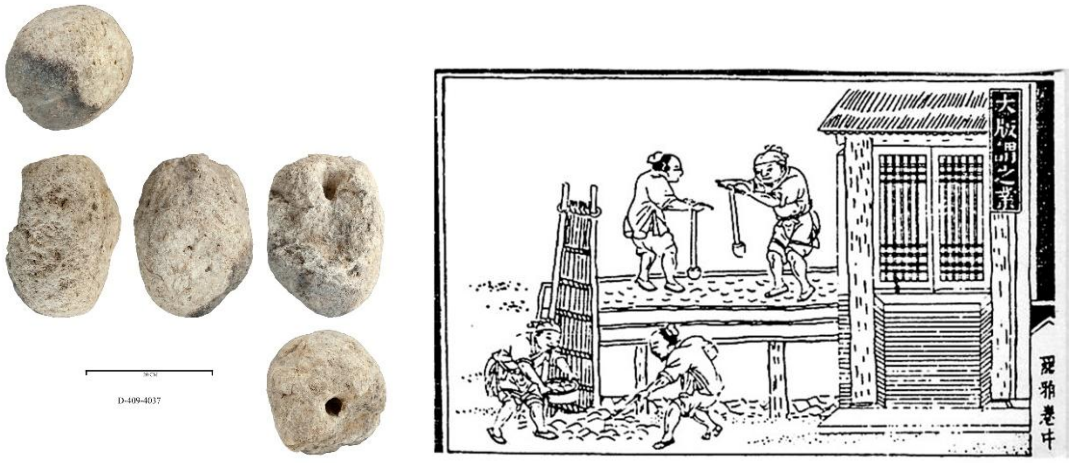

Fig. 11: Left: the stone implement found inside the enclosure gate; Right: a classical Chinese illustration of people building a rammed earth wall.

Fig. 12: An iron nail from area D

The Large Rectangular Enclosure: Areas A, B, and E.

WE have excavated in three locations associated with the large rectangular enclosure. Areas A and B are outside and east of the enclosure wall and area E is a long trench dug into the eastern wall of the enclosure and the ditch that surrounded it (Fig. 13).

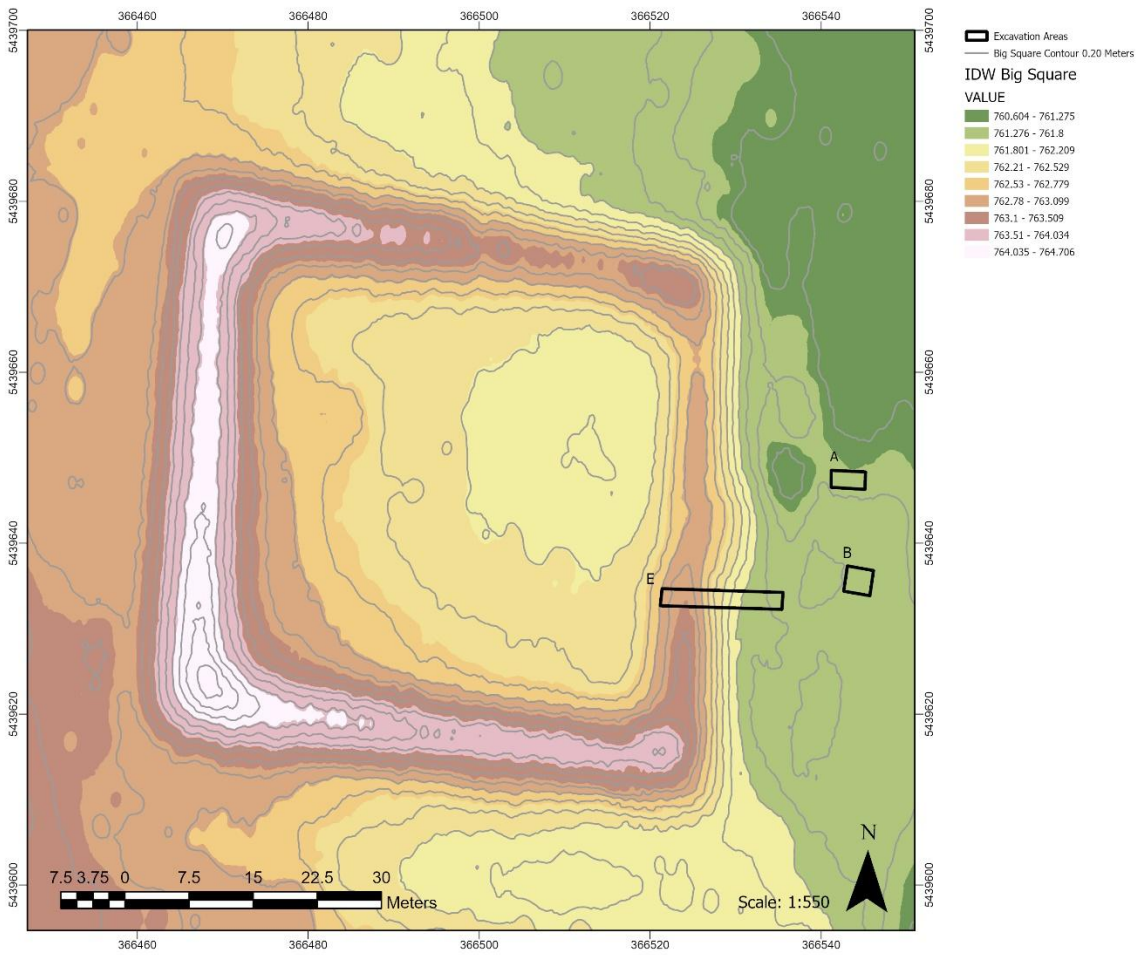

Fig. 13: A topographic map of the Large Rectangular Enclosure and the location of areas A, B and E.

Areas A and B

We decided to open the two excavation squares following the surface survey, which found a surface scatter of pottery sherds and bones. The geophysical survey also showed at this location underground anomalies in the shape of semi-round pits. The stratigraphy of the two areas and their makeup (mainly animal bones, broken pottery and ashy materials) suggest that they were shallow pits used to through trash. They are located very close to the supposed location of the enclosure's gate, perhaps on the two sides of the way leading to the gate, suggest that the trash found in them represent domestic activity that took place inside the enclosure itself but maybe also around it.

In **area B** we initially excavated a square of 2x2 meters. We than extended the area one meter to the west and one meter southward, making it into a 3x3 meters area, in an attempt to find the contour of the pit. The topsoil was loose and full of roots. About 10 cm below topsoil (around 761.44) we reached a layer of powdery, fine, ashy soil with many large bones and pottery sherds. A very large amount of well-preserved animal bones were excavated, together with numerous pottery shards with the ubiquitous puncture decorations typical of the Khitan period. The midden pit is

irregularly shaped and deepens toward its midpoint. The midden deposits were some 50cm deep, starting at ~761.44 m and ended at 760.95, under which we reached a virgin light-yellow colored soil (Fig. 14). Although there seem to be a stratified layer of ashes in the pit (Fig. 15) bones and other finds did not lay flat in any stratified manner, they seemed to be deposited haphazardly with no particular direction. Bones generally are fresh and unweathered, indicating quick burial in the midden. Initial sorting of the bones suggests a predominant of domestic animals (horse and sheep/goat) but bones of wild animals as well as fish bones were also identified. We are planning a detailed analysis of all the animal bones found in the excavation.

Fig. 14: Area B, the bottom of the trash pit showing its sloping towards the south and west.

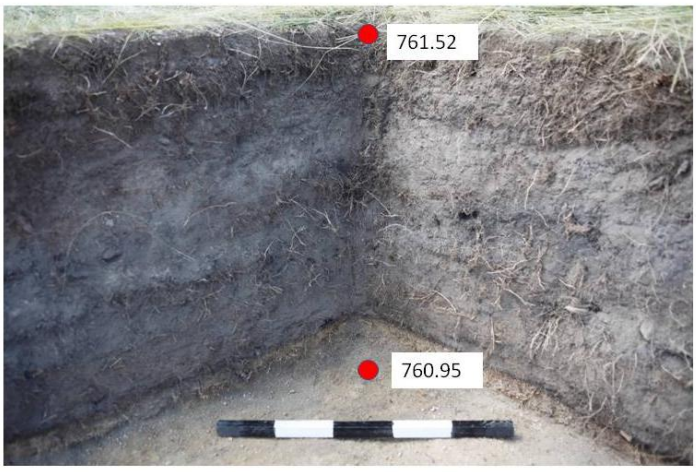

Fig. 15: The southwest corner of Area B. Ash layers are quite clear and begin only a few centimeters below topsoil, ending at a clear border between natural orange sediment and archaeological sediment.

Special find that were recovered from the excavations of area B include the carved bone “toothbrush” (B. 2018), a whistling arrow bone object (B. 2026), worked bones, a decorated astragalus (B. 2054), a bone tube (B. 2035) and a decorated metal earring (B. 2027) (Fig 16). Comparable “toothbrush” was found at the Liao city of Chintolgoi Balgas, in central Mongolia (Karadin et al., 2009: 471, fig. 8).

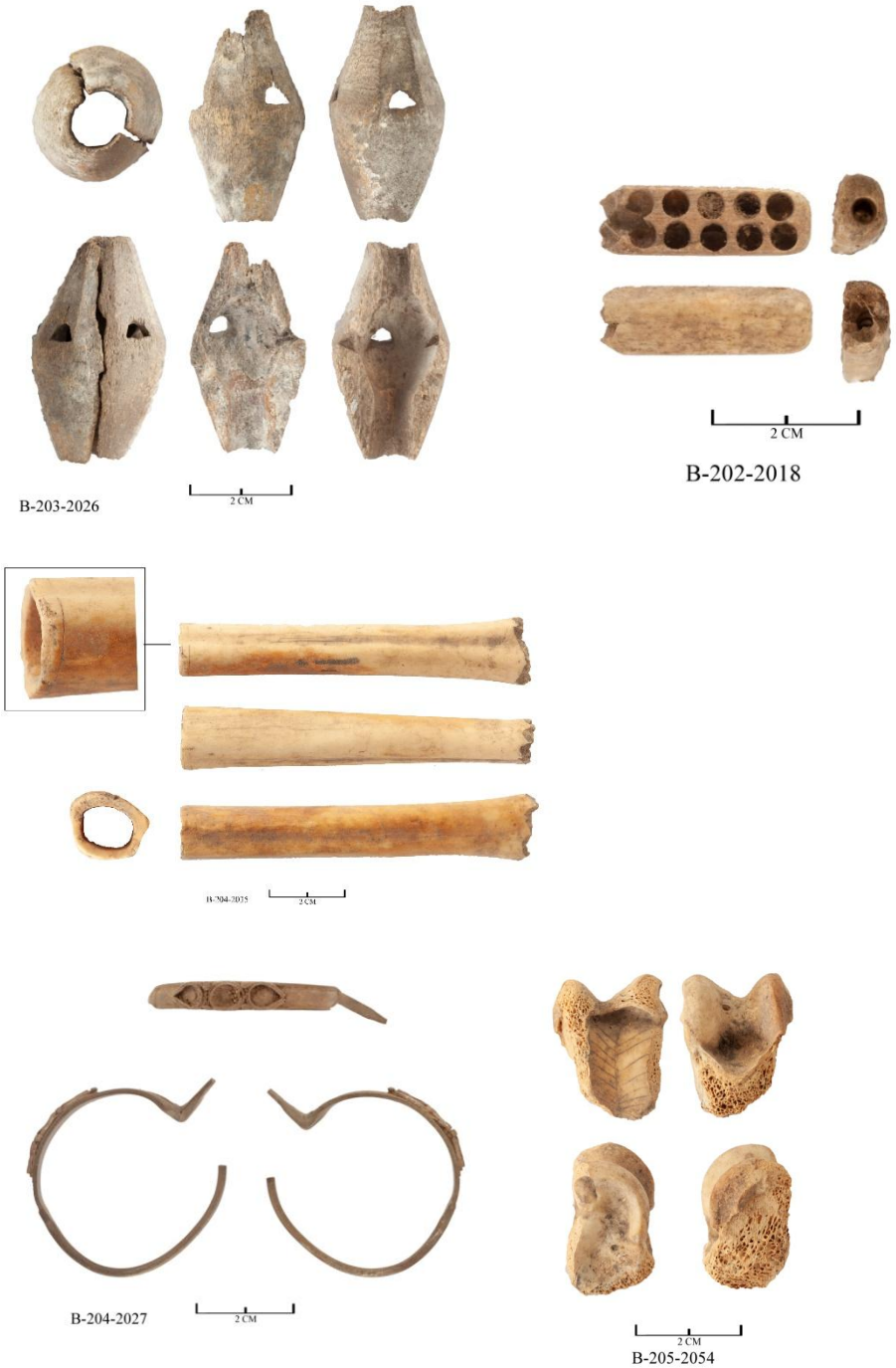

Fig. 16: Special Artifacts found in area B.

Area A

Area A is located north of area B but in the same type of setting vis-à-vis the large enclosure. It is a 2X4 meters area with very much the same kind of stratigraphy and finds that we described above for area B. The anthropogenic layers here were shallower - only some 25cm deep - starting at 761.35, immediately below the top level, and ending at about 761.10. It was not as rich as area B in unique finds but we uncover some nice potshards, including glazed pottery (Fig. 17) as well as worked antlers (Fig. 18).

Fig 17: Some of the pot shards recovered from area A

Fig. 18: A worked antlers from area A.

Area E

Area E was an elongated 15m long and 2m wide trench. It was dug perpendicular to the square's wall in order to expose a section of the eastern wall of the square as well as the ditch located east of it (Figs 13 and 19). The trench was located south of the supposed gate of the enclosure. The geophysical survey showed an elongated underground anomaly on the wall in this location, but it was not identified by the excavations. The layout of the area before excavations sloped down from the highest part of the wall (top soil 763.10 masl) in the west to the area of the ditch (761.50 masl) in the east. The depth of the excavation unites was different in each subunit, depending on situation below ground (Fig 19).

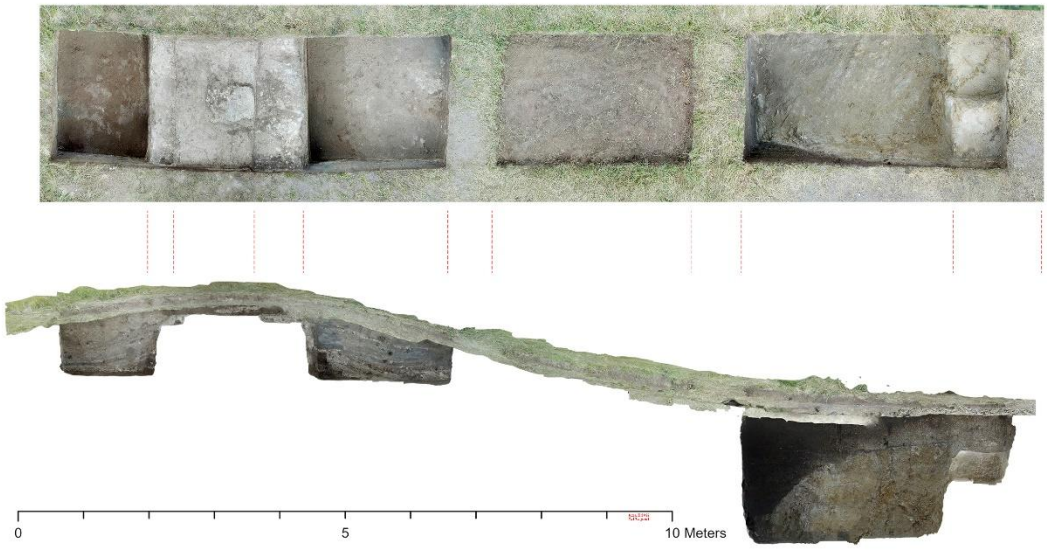

Fig. 19: A cross-section of area E (looking northwards).

This trance can be divided into three sub-sections: the eastern section (the ditch area), the central section (and area between the ditch and the wall where we did not excavate much) and the western section (the area of the wall and inside it). All the topsoil units in the area (511, 508, 505, 514, 504 and 501 from west to east) consisted of loose, brown soil that was full of roots. In the eastern part, the top soil and unites immediately below it contained potshards and animal bones, similar to what we found in the nearby areas A and B. At the southeastern corner of this area the soil became hard and whitish in color some 20cm below surface. In this area the bones and artifacts disappeared after we went down into this soil. In the western parts of this sub-unites, the darker soil was much deeper, representing the filling up of the ditch. At the lower strata of this part, we encountered black-ashy layers and the accumulation of artifacts and especially bones, was very dense (Fig. 20), suggesting that trash was damped into the ditch during the time that the enclosure was occupied. At those layers we found pieces of charcoal and wood. We took14C samples. The deepest point of the ditch, in the northwestern corner of the excavation area (unite 503) was 759.58 masl, or some 2m below surface. Disregarding the upper soil, the ditch seems to have been some 1.8m deep.

The fact that the anthropogenic layer in the northwestern corner were much deeper than in the southeastern one, as well as the pattern of the accumulation layers seen on the northern and southern section of the excavations suggest that the orientation of the ditch in this place was not parallel to the enclosure's wall but rather oblique in a general SW-NE direction (Fig. 21). In fact, this turning of the ditch can be seen in the results of the geophysical survey (fig 22). We hypothesize that this turning of the ditch is associated with the location of the enclosure's gate to the north of this area. Special finds recovered from this unite include a metal object, cut goat horns, worked bones and a perforated distal part of ovicaprid metapodial (B. 5047; fig. 23).

Fig 20. Accumulation of animal bones at the bottom of the ditch. The diagonal orientation of the pit is also visible.

Fig. 21: The northern (wright) and the southern (left) sections of the excavations. The excavation trench is perpendicular to the enclosure's wall but the location of the ditch in the two section is different, suggesting that it was not parallel to the wall.

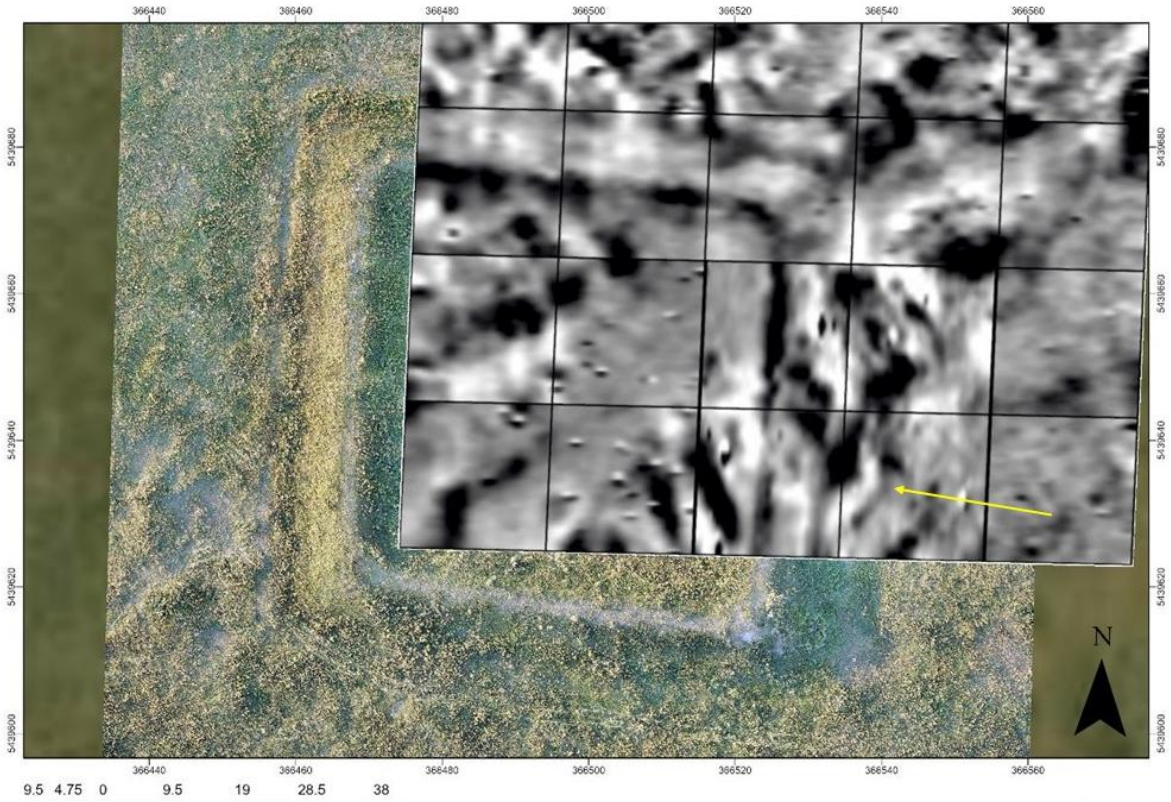

Fig 22. The geophysical survey (*geomagnetics*) of the large rectangular structure imposed on a drone photo of the same area. The Yellow arrow points to the location where the surrounding ditch make a turn eastwards.

Fig. 23. a perforated distal part of ovicaprid metapodial (B. 5047).

At the section between the ditch and the upper part of the wall we started excavating a 3x2m unit (unit 504). However, due to time constraints, it was not excavated below topsoil. Therefore, how the ditch and the wall were connected remained unclear.

The eastern section, represent the top of the enclosure wall and areas outside and inside of it. The top of the wall was exposed in unit 505 (2x2m). Wall material was exposed at the level of 762.94 masl. The outline of the wall was very clear, it was 2.2 m wide, and was preserved to the height of 81cm (Fig 24 and 25). It was built from layers of rammed earth with varying width and characteristics. Some of the layers are whiter and contain a lot of grabble, while other layers are mostly brown soil. While the technique of construction is similar to that seen in area C and D, the use of brownish and softer materials is unique to this wall.

Fig. 24. The upper part of the wall (looking northwards)

Fig. 25 The eastern face of the wall

The base of the wall is at 762.10 masl. This is still more than half a meter higher than the level of the surrounding ground, suggesting that the rammed-earth wall was built on top of an artificial mound, made of a pile of brown soil. On the outside the wall was abutted by gray-ashy soil. This feature is some 40cm wide and it is, perhaps, supported at to bottom by a thin whitish stratum made of material that is similar to that of the wall (Fig 26). It is not clear weather this is an accumulation of ash outside the wall or was it part of the wall structure, maybe a coating of the outer face of the wall. Earth samples were taken from the wall as well as the gray layer to check their makeup. In the area outside the wall we found shards as well as a microlithic core (B. 5085, fig. 27). This core may have brought up from a nearby Neolithic site as part of the earthwork involved in the construction of the wall. Excavations in the area inside the wall recovered pottery and shards from the level of 762.45 masl. A few 'living floors' or episodes of occupation existed in this area down to the base of the wall at 762.10 masl (Fig 28).

Fig. 26. Rammed earth layers of the wall and the gray-ashy soil abutted to the outside of the wall (marked by a red arrow).

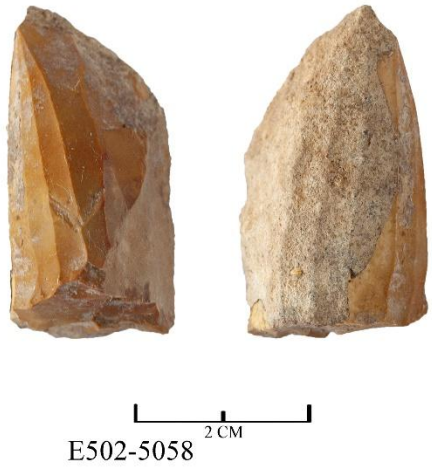

Fig. 27. A microlithic core (B. 5085).

Fig. 28. Layers of ash and debris west (inside) of the wall (unit 517).

The large circular enclosure: Areas C and F

We excavated in two areas associated with the large circular enclosure. Area C was a trench that cut through the enclosure's wall and ditch, and area F was a small test pit

located in the area inside the enclosure in a location where the geophysical survey identified a clear anomaly (Fig. 29).

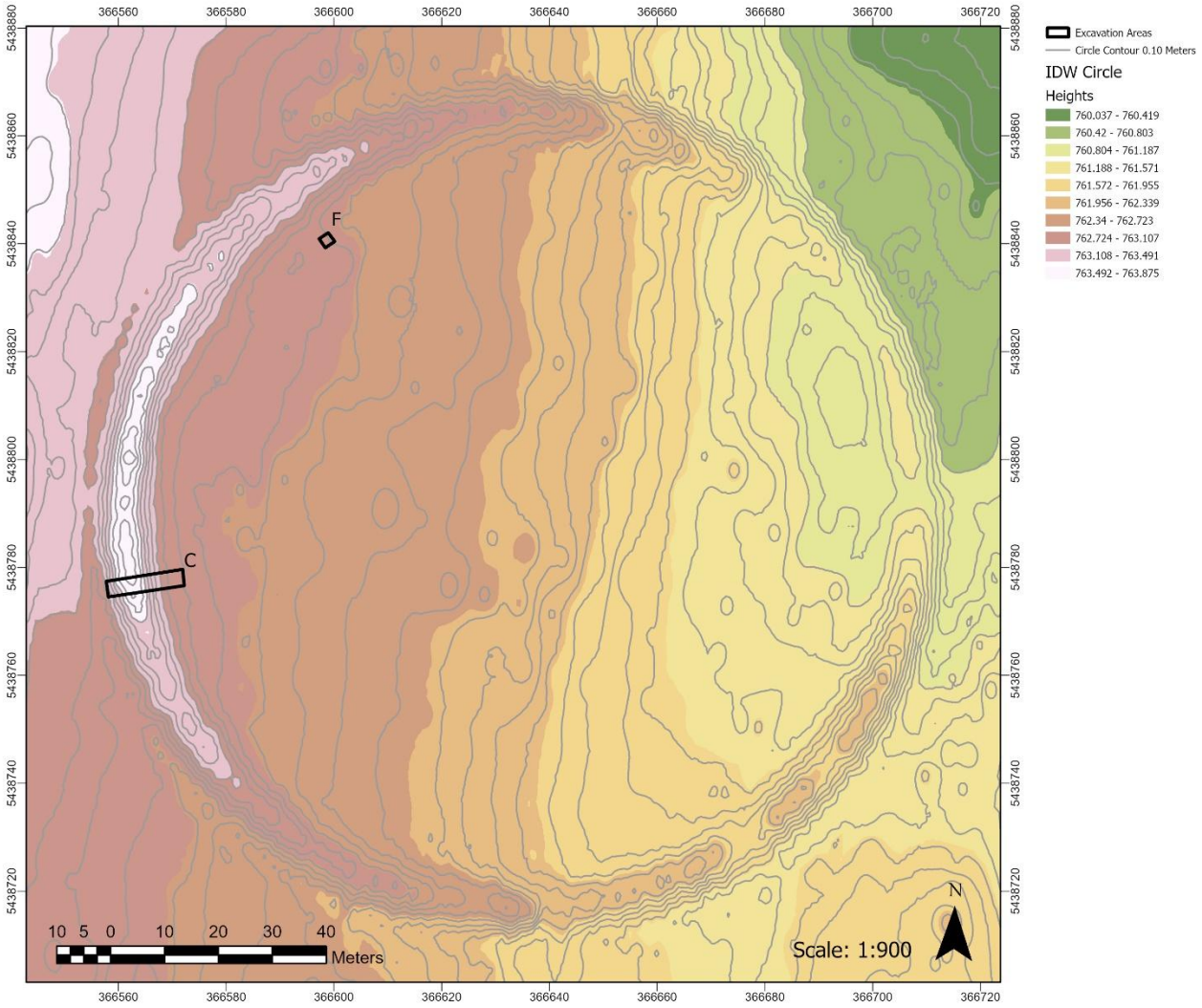

Fig. 29: A topographic large circular enclosure and the location of areas C and E

Area C

The aim of the excavation in area C was to expose the full width of the outer wall and ditch of the circular structure, study the way they were constructed and collect artifacts and samples to date its construction and occupation period. The trench was located in the western side of the enclosure at one of the places where the wall is best preserved. The trench was 21m long and 2m wide, and it was dug perpendicular to the circle's wall, cutting through its highest point (763.76 masl) and sloping eastwards to the ditch area (top soil at 763.10 masl) and westwards to inside the enclosure (763.05 masl). The trench was divided into four rectangles that were dug separately leaving thin (50cm wide) unexcavated partitions between them (Fig. 30).

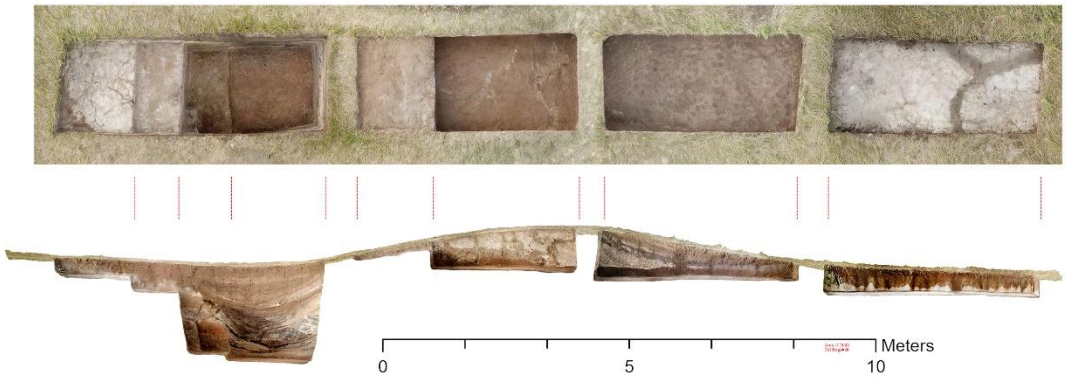

Fig. 30: A cross-section of area C (looking northwards)

The eastern most unite (5.5x2.0m) is located inside the enclosure. Approximately 10cm below the surface, the brown top-soil changes into a slightly grayer with small white grabble. This layer, with a mean depth of 10 cm, was interpreted as a paleo-topsoil which covered a white and hard bedrock (Fig. 31). No artifacts or bones were found in this unit.

Fig 31: Stratigraphy of the unite inside the enclosure.

In order to expose enclosure's wall, two units were opened to the east and west of the highest point. Approximately 15-20 cm under the surface in the east side, and 7-10 cm under the surface in the west side, we reached the top of the wall. The upper layers of the wall materials were eroded and the material was washed to both sides. After clearing those layers, the outline of the wall was clear. It was 158 cm wide, and the height of preservation was 66 cm (Height of the top of the wall: 763.67; Height of the base of the wall: 763.01), the eroded layers seen in the two areas as well as in the ditch suggest that originally the wall was higher. The wall was constructed form

horizontal thin rammed earth strata made of white grabble (Fig 32). The materials from building the wall could have come from the lower parts of the ditch. The wall was built on top of a sterile brown sediment with no finds (Fig 33). Outside of the wall (unit 314), a pile of brown soil was identified in the section (Fig 34). This pile was covered by the later debris that fallen off the wall into the ditch. The pile separated between the wall and the ditch, suggesting that before the wall was built the earth from the ditch was piled to create an earthwork and only than the wall was built from the bedrock materials excavated from the bottom of the ditch. Apart from rodent's bones (probably late) no artifacts were found in the two areas.

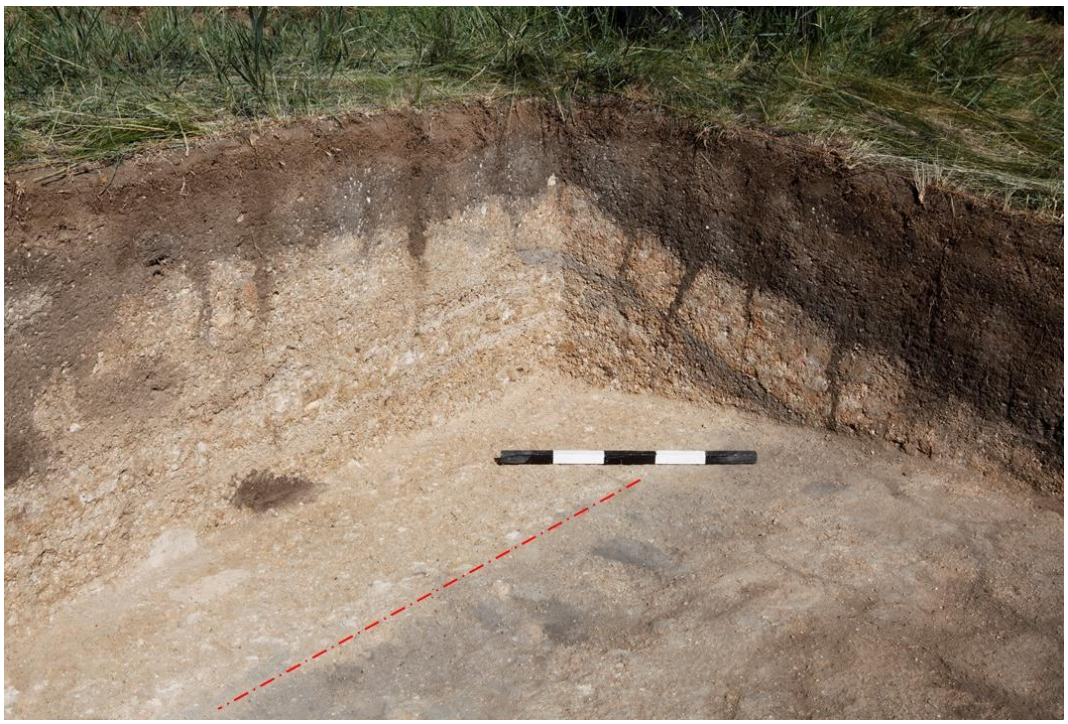

Fig 32. A section through the enclosure wall. The red line marks the edge of the wall. On the horizontal thin rammed earth strata are seen on the left and the eroded wall materials are visible in the diagonal strata on the right.

Fig. 33: The rammed earth strata built on top of a brown-colored soil

Fig. 34: A pile of brown earth (left) outside of the wall (right).

The westernmost area was 5.5x2m big. At the part further away from the wall (west) the whitish heard bedrock was reached some 20cm below the topsoil surface. At the eastern part of this units the exaction went deep into strata of softer soil that filled up the ditch. On the outside (western side) the walls of the ditch, which was dug into the bedrock, start in diagonal angle but become vertical towards the bottom of the ditch (Fig 35). On the inside (east side) our excavation did not reach the walls of the ditch, which ended closer to the wall. The ditch was at least 4m wide at the top and at least 2m at the bottom. Its depth was 171cm (the bottom level 761.09 masl). At the bottom of the ditch, we reach an orange color bedrock. The strata filling the ditch alternated

between brownish layers and layers contained white grabble and gray soil that looks like debris that were washed down from the wall. Circular brown features inserted inside this accumulation are maybe wooden beams that fell from the wall and rectangular shaped gray areas are maybe remains of bricks. Some thin brownish layers look like episodes of soil formation. This may suggest that soil was building up inside the ditch during the lifetime of the enclosure. We took OSL and 14C samples from those strata to try and date the different phases as well as form some of the features inside the accumulation (Fig 36). Unlike the excavations of the ditch in area E, the excavation of this ditch yielded almost no finds, except a concentration of animal bones in the upper part of the fill, some bearing cutting marks (Basket 3012: 762.38 masl).

Fig. 35: Excavations of the ditch area. The outer walls of the dich are seen in the front of the picture and the accumulation of soil at the ditch seen in the section in the far part of the picture.

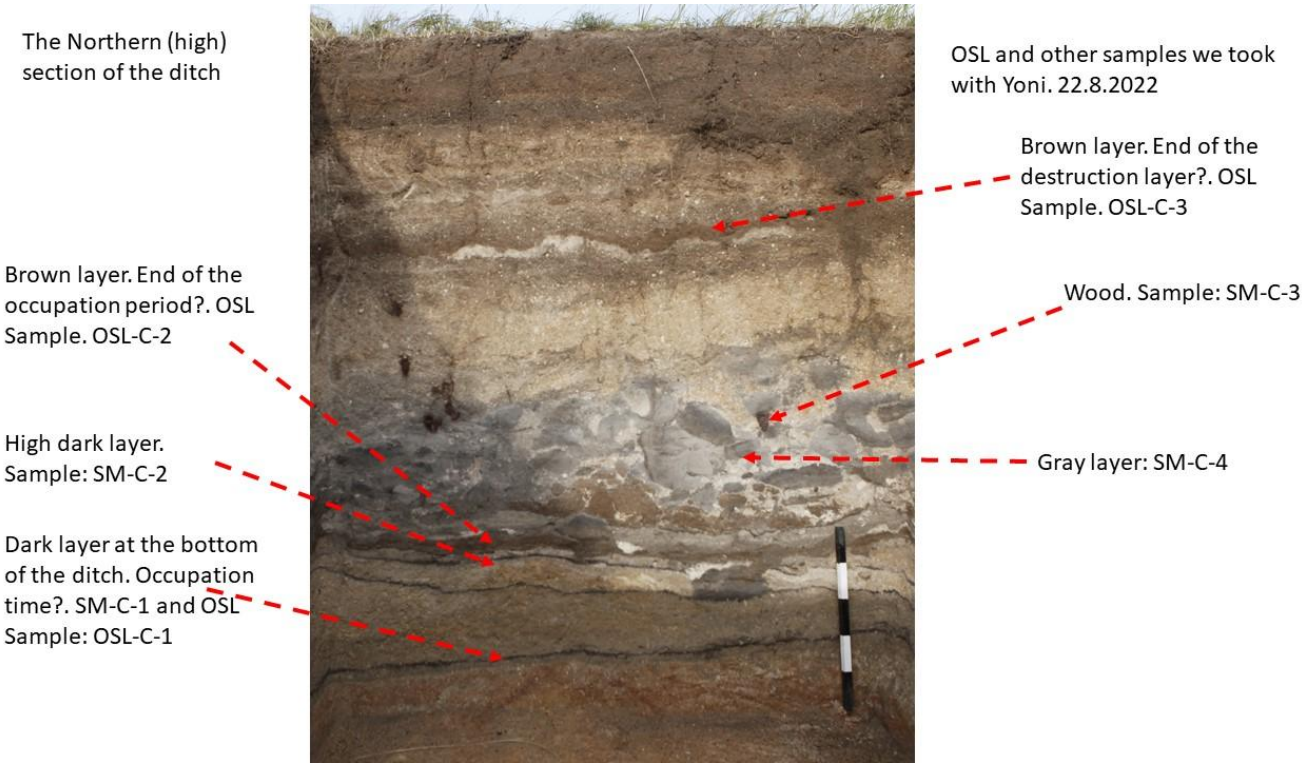

Fig. 36: Accumulation layers seen at the eastern section of the excavations and the location of samples taken from this section

Area F

Area F was an attempt to explore and try to understand what type of activity took place inside the circular enclosure. Our problem was that this is a very large area – more than 1.5ha – with no above ground finds that can help us decide where to excavate. A geophysical survey (geomagnetics) covering the entire northern half of the enclosure was carried out by the Pittsburgh team in an attempt to identify underground anomalies that could clue us to locations with high potential for underground anthropogenic layers. Following this we augered at some of the clearer anomalies and in one spot, north of area C, our auger recovered ashy materials and a piece of bone. We placed a small test pit of 2x2 m at this location (Figure 37).

The ground level was 762.73 masl. About 30cm below surface the color of the soil changed to compact whitish color soil and at the depth of 40 cm a wide line of darker softer soil appear at the center of the square. It was approximately 75 cm wide and running at the northeast - southwest direction (Fig. 38). This turn out to be a ditch some 50cm deep (bottom at 761.83) (Fig 39). A few potshards and animal bones were found near the bottom of the ditch, one of them relatively complete (Fig. 40). Samples were taken for 14C dating and soil analysis.

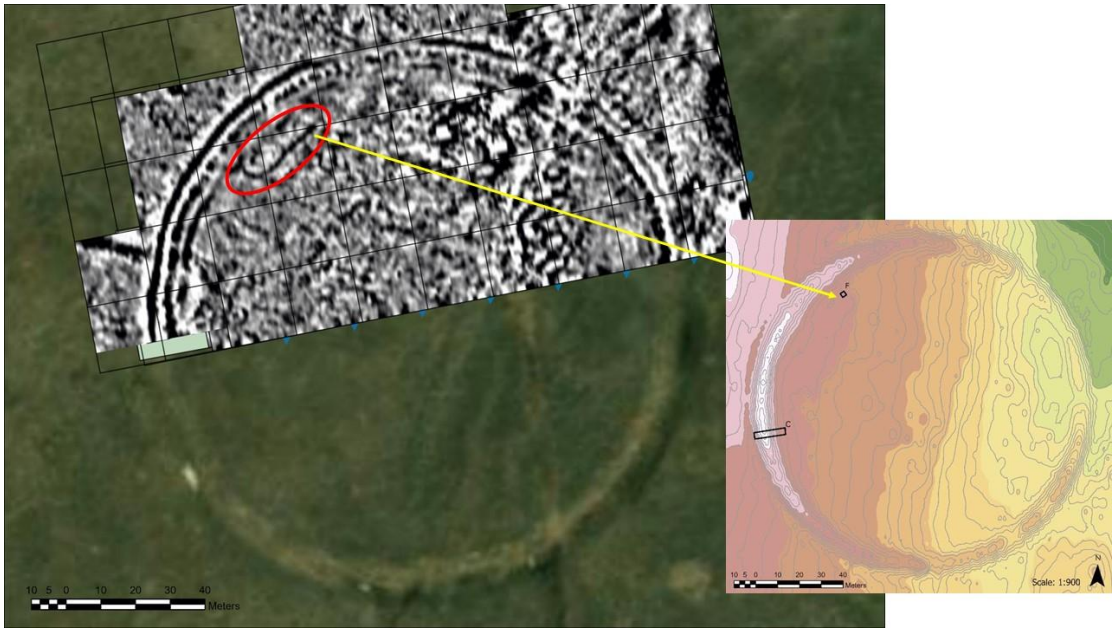

Fig. 37: The results of the geophysical survey overlayed on a satellite image of the circular enclosure. The red oval marks one of the anomalies identified and the yellow arrow the location of area F.

Fig. 38: The layout of the trench visible inside the excavation area (762.23 masl)

Fig. 39: The profile of the excavation showing the full size of the ditch

Fig. 40: Potshards found at the bottom of the ditch in area F.

The team participating in the excavations included

From the Archaeological Research Center of the National University of Mongolia:

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