Območje pristanišča v Navportu

The port area of Nauportus

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Izvleček

Zaščitna raziskovanja leta 2007 so potekala na bregu reke Ljubljanice in v jugozahodnem vogalu rimske naselbine *Nauportus* na Dolgih njivah na Vrhniki. Iz časa od 4./3. st. do sredine 1. st. pr. Kr. je bilo na bregu reke ugotovljenih pet faz človekove dejavnosti (faze 1 A–E), ki so vidne v neurejeno odloženih kosih lesa s sledmi obdelave (sekanje, klanje, žaganje). V fazi 1 A je prišlo do izsekavanja gozda, verjetno tudi do utrjevanja brega z lesnim odpadom. Breg je bil ponovno utrjen z lesom v fazi 1 C. V predavgustejskem ali avgustejskem obdobju so območje tlakovali s kamnito podlago in peščenim nasutjem, kar je potekalo sočasno z gradnjo postojanke na Dolgih njivah (faza 2 A). Tlakovanje je bilo kmalu dvakrat popravljeno (fazi 2 B–C). V tlakovanju smo prepoznali urejeno nabrežje rečnega pristanišča v Navportu. Območje naselbine in pristanišča je bilo opuščeno kmalu po avgustejskem obdobju.

Ključne besede: Slovenija, Nauportus,Vrhnika, Dolge njive, latenska doba, avgustejsko obdobje, rečno pristanišče, makrobotanika, les, živalske kosti

Abstract

Rescue excavation was conducted in 2007 in the Roman vicus of Nauportus, i.e. present-day Vrhnika. It was located on the right bank of the Ljubljanica River and also comprised the south-western corner of the Roman settlement at Dolge njive. Five phases of human activity (Phases 1 A–E) have been ascertained in the period between the 4th/3rd century BC and the middle of the 1st century BC on the area of the riverbank. These activities could be recognised by the disorderly deposited pieces of wood, which showed traces of working (chopping, splitting, and sawing). Signs of deforestation in the surrounding area have been detected in Phase 1 A, while at the same time the riverbank was probably consolidated with wood waste. The bank was consolidated with wood waste once more in Phase 1 C. The same area was paved with a stone base and a sand layer (Phase 2 A) in the Pre-Augustan or Early Augustan period when the trading settlement at Dolge njive was constructed. Afterwards, the paving was renovated twice in a rather short period (Phases 2 B–C). The pavement of the riverbank has been interpreted as a landing stage of the river port at Nauportus. The settlement and the port were abandoned soon after the Augustan period.

Keywords: Slovenia, Nauportus, Vrhnika, Dolge njive, river port, La Tène period, Augustan period, macrobotanical analysis, wood, animal bones

Kazalo

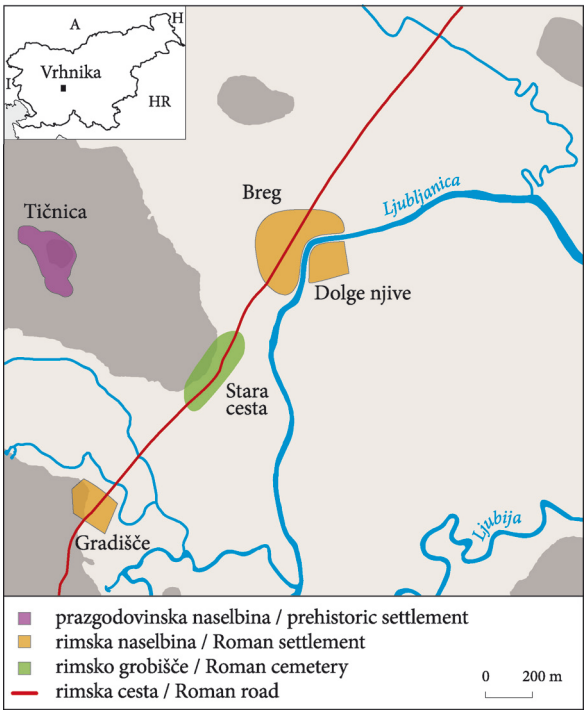
UVOD

Na zgodovinski razvoj zahodnega roba kotline Ljubljanskega barja je močno vplivala magistralna povezava med Italijo in srednjim Podonavjem. Ta prečka gorsko pregrado z razvodjem med Jadranskim in Črnim morjem ter se pri Vrhniki spusti v ravnino. Tam se je nekoč, takoj za izviri Ljubljanice, začela tudi dolga plovna pot proti vzhodu, po rekah Ljubljanici, Savi in Donavi.[1]

Predmeti iz strug Ljubljanice in Ljubije ter posamične najdbe z ravnine severno od Vrhnike kažejo obljudenost od srednje bronaste dobe dalje.[2] Na griču Tičnica je stalo gradišče, ki sicer še ni natančno datirano, vendar po njegovi velikosti, visokih obrambnih nasipih in strateški legi lahko predpostavljamo, da gre za osrednjo prazgodovinsko naselbino območja (*sl. 1*).[3]

Strabon poroča, da je v 2. st. pr. Kr. ob Ljubljanici stala naselbina Navport, ki je bila v rokah keltskih Tavriskov. Naselbina je bila tranzitna postojanka na poti iz Italije proti vzhodu, kjer so blago, ki so ga tovorili iz Italije, preložili na ladje.[4] Najpozneje sredi 1. st. pr. Kr. je bil Navport v rokah Rimljanov in kot vikus vključen v teritorij kolonije Akvileje.[5] Rimska poselitev se je razvila v ravnini

[1] Horvat 1990; Šašel Kos 1997, 33–35; Istenič 2009a.
[2] Horvat 1990; Gaspari, Masaryk 2009.
[3] Gaspari, Masaryk 2009.
[4] Strabon 7, 5, 2; Šašel Kos 1990, 17–20, 143–147.
[5] Šašel Kos 1990; Šašel Kos 1998; Šašel Kos 2000, 294–297.



Sl. 1: Vrhnika. Poselitev v prazgodovinskem in rimskem obdobju.
Fig. 1: Vrhnika. Settlement in prehistory and Roman period.

ob reki. Na desnem bregu in v okljuku Ljubljanice na Dolgih njivah je bila v predavgustejskem ali v zgodnjeavgustejskem obdobju zgrajena utrjena postojanka z osrednjim trgom in velikimi skladišči. Šlo je za tranzitno in prekladalno postajo na poti proti vzhodu, ki so jo upravljale akvilejske trgovske družine. Postojanka je verjetno delovala tudi kot logistična baza za podporo rimske vojske v okupacijski fazi (*sl. 1; 2*).[6]

Na začetku 1. st. se je razvilo še drugo naselbinsko jedro na Bregu, to je na nasprotnem, levem bregu Ljubljanice, kjer je tudi potekala novo zgrajena cestna povezava med Akvilejo in Emono (*sl. 1*). Postojanka na Dolgih njivah je bila opuščena kmalu po koncu avgustejskega obdobja, na Bregu pa je Navport živel nepretrgano do začetka 5. st.[7]

ZAŠČITNE RAZISKAVE LETA 2007

Rekonstrukcija in razširitev avtocestnega mostu čez Ljubljanico na Vrhniki v letih 2007–2008 sta posegli na robni območji antične poselitve na Dolgih njivah in na Bregu (*sl. 1–3*). Na prostoru, kjer so bili predvideni gradbeni posegi, je Zavod za varstvo kulturne dediščine Slovenije, Območna enota Ljubljana, sondiral junija 2007. Šest sond je bilo izkopanih na desnem bregu Ljubljanice, na Dolgih njivah (*sl. 4:* sonde 2–7), ena pa na nasprotni strani reke, na Bregu.[8]

Zaščitna arheološka izkopavanja pod vodstvom Inštituta za arheologijo ZRC SAZU so potekala od 25. 9. do 7. 11. 2007. Terenska dela sta vodili Pavla Peterle Udovič na Dolgih njivah (desni breg Ljubljanice) in Tina Žerjal na Bregu (levi breg Ljubljanice).[9] V prispevku predstavljamo rezultate izkopavanj na desnem bregu, kjer je raziskava posegla na rob rimske postojanke na Dolgih njivah.

METODE DELA

Izkopavanje

Območje raziskovanja je obsegalo 146 m^2 površine severno od avtocestnega priključka, prilagodilo pa se je predvidenemu gradbenemu posegu (*sl. 3; 4*).

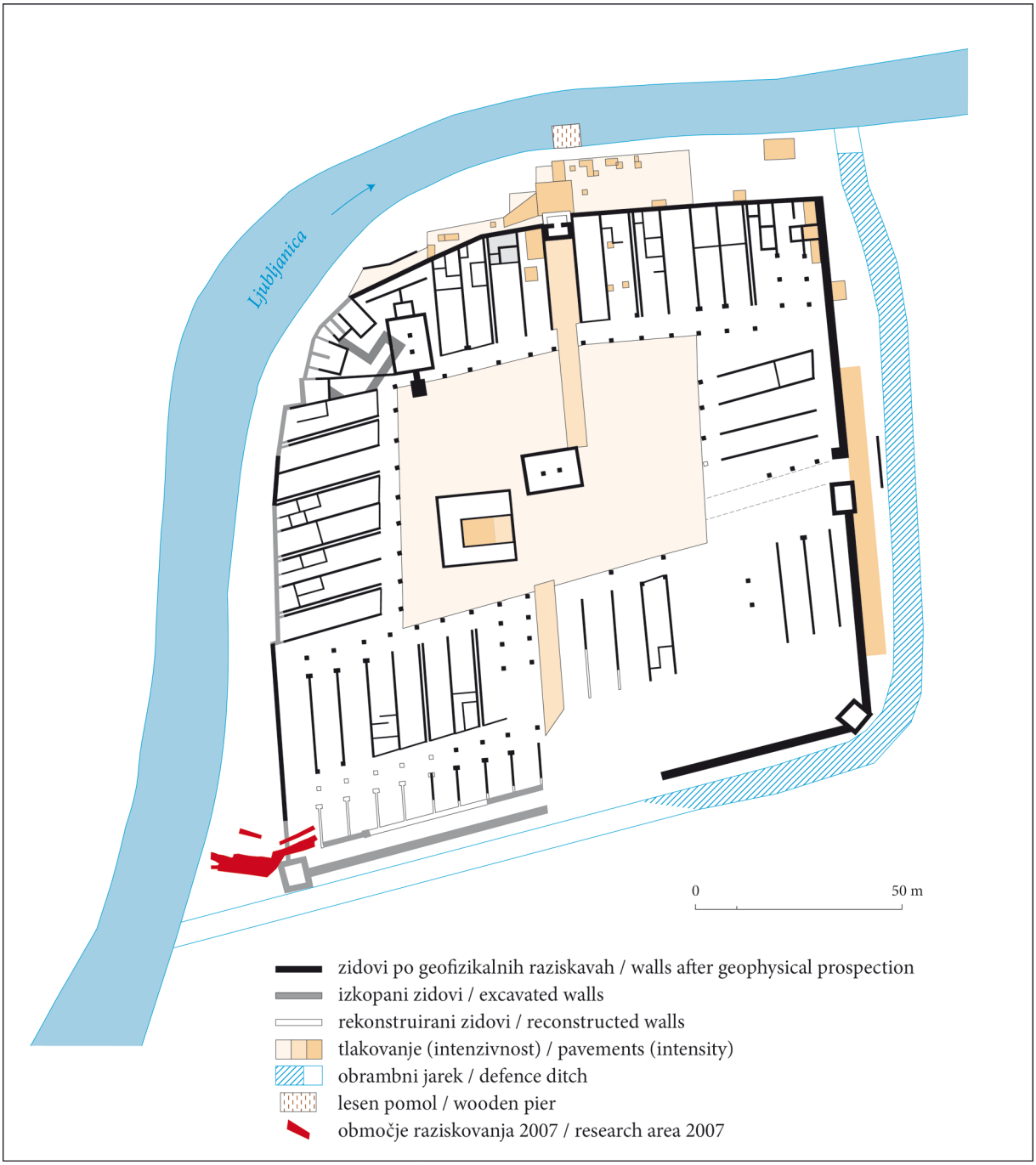
Sonde:

Predhodno je bilo izkopanih šest sond različnih dimenzij (sonde 2–7), da bi ugotovili globino in ohranjenost arheoloških plasti. Na začetku izkopavanj smo ponovno očistili ter dokumentirali profile sond 2, 3 in 7 (*sl. 4; 5; 16–17*). Pokazalo se je, da so v sondi 3 na nabrežju Ljubljanice novodobni nanosi segali še do globine 1,85 m, kjer zaradi vdora rečne vode ni bilo več mogoče izkopavati (*sl. 4; 5*). V sondah 5 in 6, v osrednjem delu predvidenega posega, so bile arheološke plasti v celoti uničene pri gradnji ceste in mostu v letih 1969–70. Severovzhodni del raziskovanega prostora (območje sond 4 in 7) pa je bil močno poškodovan z različnimi novodobnimi posegi: odvodnim jarkom, kolovozom in avtocestnim nasipom (*sl. 4*).

Izkopi:

Prostor raziskav smo za dokumentiranje drobnih najdb razdelili v mrežo kvadrantov, 4 × 4 m, ki smo jih označili s črko in številko. Strojni izkop je segel do globine okoli 30 cm na celotnem območju raziskovanja, za globlje izkopavanje pa smo se odločili samo tam, kjer smo naleteli na

[6] Horvat 1990; Mušič, Horvat 2007; Horvat 2008.
[7] Horvat, Mušič 2007; Horvat 2009a; Horvat 2012.
[8] Draksler, Nadbath 2007.
[9] Horvat, Peterle Udovič, Žerjal 2007; Žerjal, Peterle Udovič 2007–2008.



Sl. 2: Vrhnika. Rimska naselbina na Dolgih njivah (po Mušič, Horvat 2007, sl. 39) in območje raziskovanja leta 2007.
Fig. 2: Vrhnika. Roman settlement at Dolge njive (after Mušič, Horvat 2007, Fig. 39) and the position of the research areas.

nepoškodovane arheološke plasti. Te globlje posege smo označili kot izkope 1, 2 in 3. *Izkop 1* je bil umeščen med brežino Ljubljanice na zahodu in poškodovanim območjem na vzhodu (*sl. 4*). Izkopavanje je zajelo dele kvadrantov B5–B7 in C5–C7 in potekalo po režnjih v okviru arheoloških stratigrafskih plasti (profil: *sl. 6*; planumi: *sl. 7–15*). Na terenu je bilo včasih težko razlikovati posamezne hodne površine (npr. plasti 13 in 14) in še posebej spodnje vlažne plasti 1–5. Dela v najglobljih plasteh je močno ovirala talna voda, tako da so bile v najnižjih režnjih izkopane oziroma natančno dokumentirane precej manjše površine kot na vrhu. Severni profil izkopa 1 (profil C–D;

Sl. 3: Vrhnika, Dolge njive. Desni breg Ljubljanice pred izkopavanji in severni rob mostu. Pogled proti vzhodu.
Fig. 3: Vrhnika, Dolge njive. The right bank of the Ljubljanica River before the excavations and the northern edge of the bridge. View towards east.

sl. 4; 6) smo lahko smiselno povezali s severnim profilom sonde 3 (profil A–B: *sl. 4; 5*).

Majhna *izkopa 2* in *3* sta bila umeščena sredi močno poškodovanega območja, ki leži predvidoma že znotraj obzidanega prostora rimske naselbine (*sl. 4; 17*).

Vzorčenje in naravoslovne analize

Arheobotanika

Semena in plodovi

Vzorčenje:

Vzorce za arheobotanične raziskave semen in plodov smo zbirali samo na območju izkopa 1, in sicer:

– 1. vzorce sedimenta *sistematično,* iz vsake plasti od vrha do dna izkopa 1, blizu stičišča kvadrantov B6 in C6;

– 2. dodatno oz. *po presoji,* z odvzemom arheobotanično zanimivih najdb (semen, plodov, oglja, lesa, drevesnih listov, iglic).[10]

S sistematičnim odvzemom je bilo pridobljenih 16 vzorcev sedimenta, v količini po 2–4 litra. Po presoji odvzetih vzorcev je bilo 9 in ti so bili pobrani skupaj s sedimentom okoli posamezne arheobotanične najdbe. Vzorci so bili oštevilčeni, mesto odvzema pa je označeno na načrtih (sl. *7–11; 13; 15*).

Vse vzorce smo sprali oz. mokro presejali na dveh sitih s standardnim premerom por 2 in 0,355 mm. Organske ostanke, ki so se ujeli na sitih, smo v celoti pregledali pod stereomikroskopom *Leica MZ75* s 6,3–50-kratno povečavo. Ker so bili v večini prepojeni z vodo, smo jih ohranjali mokre.

Raziskava:

Najprej smo opravili preliminarno raziskavo izbranih sistematično odvzetih vzorcev sedimenta iz zgornjih in bolj suhih plasti 6, 9, 13 in 16. Organski ostanki so bili zelo slabo ohranjeni, zato ostalih vzorcev iz suhih plasti nismo podrobneje analizirali. Organski ostanki so bili bolje ohranjeni v devetih po presoji odvzetih vzorcih iz spodnjih bolj vlažnih plasti 2, 3 in 5, zato smo vse analizirali. Z analizo trinajstih vzorcev smo dobili vpogled v vse arheološke faze na najdišču (glej *razpr. 1*).

Pri določevanju semen in plodov smo si pomagali z referenčno zbirko Inštituta za arheologijo ZRC SAZU in identifikacijsko literaturo.[11] Poimenovanje rastlinskih vrst sloni na *Mali flori Slovenije*.[12]

Les

V izkopu 1 se je v najnižjih, močno vlažnih plasteh 2–5, ohranil moker, nezoglenel les (*sl. 4; 6–9*). V višjih plasteh (plasti 6–18) smo naleteli samo na ostanke korenin sodobnih rastlin (*sl. 6*). Med izkopavanjem nismo opazili zanesljivih znakov o vzročnih oziroma funkcionalnih povezavah med različnimi arheološkimi plastmi z lesom, zato smo obravnavali les iz vsake plasti posebej.

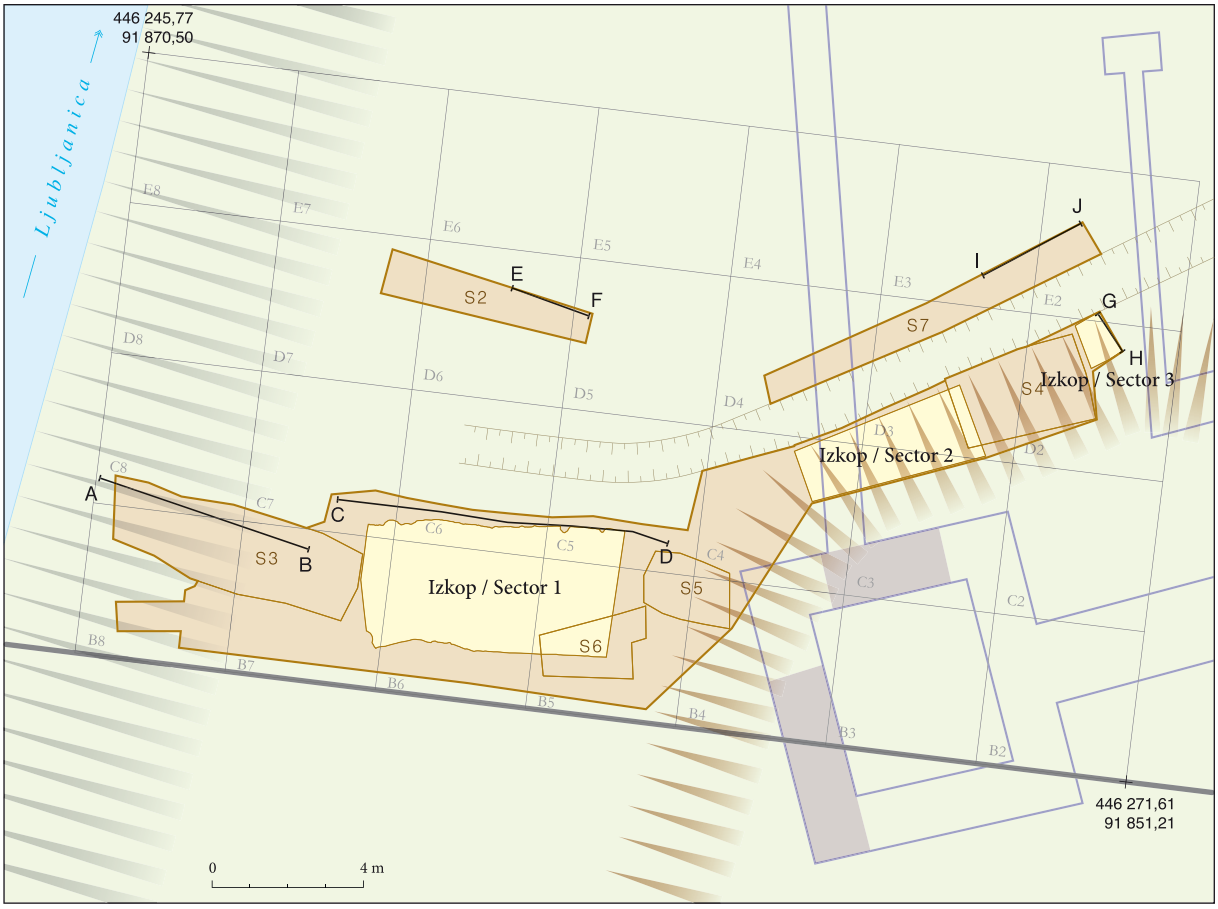
Vzorčenje:

Dosledno smo pobrali ves les, na katerem so bile vidne sledi obdelave, ter večje in na videz bolj reprezentativne kose iz posameznih plasti (skupaj 357 kosov). Vsak kos lesa smo po dvigu očistili, fotografirali in opisali. Izmerili in določili smo ohranjenost lesa, primarno lego oziroma orientiranost v drevesu (oz. deblu) in morebitne sledi obdelave. Bolj zanimive primerke smo narisali (*sl. 21*). Kosi oz. vzorci lesa so pri laboratorijski obdelavi dobili posebne oznake. Te na slikah (*sl. 6–9*) navajamo brez začetnega dela, ki pomeni kodo najdišča (VRH07-), celotno oznako pa uporabljamo v besedilu in katalogu lesa. V katalogu je

[10] Jacomet, Brombacher 2005, 77; Andrič, Tolar, Toškan 2016, 64.

[11] Npr. Beijerinck 1947; Schoch, Pawlik, Schweingruber 1988; Jones, Taylor, Ash 2004; Cappers, Bekker, Jans 2006; Bojnanský, Fargašová 2007.

[12] Martinčič et al. 2007.



območje raziskovanja / research area
izkop / sector
S2-7 sonda / trench
A B profil / cross section
antična arhitektura / Roman architecture
D7 kvadrant / square
severni rob avtocestnega mostu / northern edge of the highway bridge
novodobni jarek / modern ditch
breg / bank
avtocestni nasip / highway dike

Sl. 4: Vrhnika, Dolge njive. Območje raziskovanja, izkopi, sonde, mreža kvadrantov in predhodno ugotovljena antična arhitektura. Lokacija stavbe (po Mušič, Horvat 2007), obzidje (po Schmid 1943, sl. 1), stolp (po Mikl Curk 1974, pril. 3 in po Horvat 1990, 99, sl. 22). M. = 1:200.
Fig. 4: Vrhnika, Dolge njive. The research area, sectors, trenches, grid of squares and the previously ascertained Roman architecture. Position of buildings (after Mušič, Horvat 2007), fortification walls (after Schmid 1943, Fig. 1), fortification tower (after Mikl Curk 1974, App. 3 and after Horvat 1990, 99, Fig. 22). Scale = 1:200.

natančneje predstavljen les iz plasti 2–4, ki ga je razmeroma malo, hkrati pa gre za večje in značilne primerke (*Katalog lesa,* št. **1**–**28**) Izmed številnih vzorcev lesa iz plasti 5 so v katalogu opisani samo izbrani kosi (*Katalog lesa,* št. **29**–**36**). Kataloške opise dopolnjujejo razpredelnice (*razpr. 6–11*).

Določitev vrste lesa:

Botanična identifikacija izbranih vzorcev lesa je bila opravljena v laboratoriju Oddelka za lesarstvo Biotehniške fakultete UL. Od skupno 357 odvzetih vzorcev je bilo analiziranih 120 primerkov. Le dva od teh sta bila primerna tudi za dendrokronološke raziskave.

Vzorci mokrega lesa so bili najprej globoko zamrznjeni, sledila je obdelava površine prečnega prereza, s katero smo vzorec pripravili za analizo vrste in ostalih lesno-anatomskih značilnosti. Analizo smo opravili s stereomikroskopom in mikroskopom, širine branik pa smo merili s pomično mizico in računalniškim programom TSAP/X in

TSAP/Win. Kadar lesna vrsta ni bila določljiva že z do 50-kratno povečavo (tj. s stereomikroskopom), je bilo treba pripraviti lesno-anatomske preparate, ki so primerni za opazovanje lesno-anatomskih značilnosti pod mikroskopom z do 1000-kratno povečavo. Pri identifikaciji lesne vrste so nam pomagali referenčna zbirka Inštituta za arheologijo ZRC SAZU in Oddelka za lesarstvo BF UL ter identifikacijska literatura.[13] Poimenovanje rastlinskih vrst sloni na *Mali flori Slovenije*.[14]

Po zaključeni analizi vzorcev lesa nismo trajno shranili.

Pelod

Iz severnega roba izkopa 1 (C–D) je bil vzet 2 m visok sedimentni stolpec za pelodno analizo (absol. viš. od 288,17 do 290,17 m n. m.; *sl. 6*). Raziskava je predstavljena v posebnem prispevku,[15] tukaj pa povzemamo samo najpomembnejše zaključke.

Arheozoologija

Vzorčenje:

Živalski ostanki so bili zbirani ročno na celotni površini izkopov. Ob tem sta bili na meji kvadrantov B6 in C6 iz vsake plasti od vrha do dna izkopa 1 vzeti še po dve vedri sedimenta prostornine 10 litrov za mokro sejanje (premer por na sitih: 3 in 1 mm). S takšnimi sistematično odvzetimi arheozooloških-mi vzorci so bile vsaj na tem območju ustrezno zajete tudi drobne arheozoološke najdbe, vključno z ostanki glodavcev. Izmed skupno 13 vzorcev sta živalske najdbe vključevala dva (*razpr. 1*). Mesto odvzema arheozooloških vzorcev je označeno na načrtih s številko vzorca (*sl. 13; 15*).

Raziskava:

Pri taksonomski opredelitvi mikrofavne smo upoštevali zgolj zobe, saj je razlikovanje med ožje sorodnimi vrstami na podlagi odlomkov postkranialnega skeleta zelo težavno. V nasprotju s tem smo pri velikih sesalcih upoštevali ostanke vseh skeletnih elementov z izjemo reber, ki smo jih razvrstili le v velikostna razreda velikih in malih prežvekovalcev. Pri poskusu razlikovanja med ostanki ovce in koze smo se oprli na smernice, ki so jih objavili Boessneck, Müller, Teichert (1964) ter Zeder, Pilaar (2010). Možno prisotnost divjega prašiča smo ugotavljali na podlagi analize velikosti dovolj ohranjenih prašičjih kosti in zob. Pri tem smo upoštevali splošno uveljavljene arheozoološke dimenzije, ki jih je vpeljala von den Driesch (1976). Starost posameznih živali ob smrti smo ocenjevali na podlagi ugotovitev o (ne)zraščenosti epifiz[16] ter stopnji obrabe žvekalne površine zob.[17] Pri oceni deležev zastopanosti posameznih taksonov smo kot vstopni podatek uporabili kazalec "število taksonomsko določenih primerkov" (NISP; *Number of Identified Specimens*).[18] Pri tem smo večje število odlomkov, ki so očitno pripadali istemu zobu oziroma kosti, upoštevali kot zgolj eno najdbo (tj. NISP = 1).

Naravoslovno datiranje

Iz starejših plasti izkopa 1 (plasti 1–3, 5) smo izbrali šest vzorcev za *datiranje z metodo merjenja ogljikovega izotopa 14C*:

– 1. Iz palinološkega sedimentnega stolpca, odvzetega iz severnega profila (C–D) izkopa 1, so bili izbrani trije vzorci sedimenta: dva iz plasti 1 in eden iz plasti 3 (lega *sl. 6*).[19]

– 2. Izmed arheobotaničnih vzorcev so bili trije izbrani iz izkopa 1: iz plasti 2 hrastovo deblo (VRH07-086a; lega *sl. 7*), iz plasti 5 pa jesenovo deblo (VRH07-178) in jelova iglica (iz arheobotaničnega vzorca št. 74; lega *sl. 9*).

Dendrokronološka analiza je bila, kljub številnim vzorcem lesa, mogoča le na dveh primerkih iz plasti 2 v izkopu 1 (VRH07-086a in -102).

TERENSKI IZVID

Izkop 1
(*sl. 4; 6–15*)

Izkop 1 je bil umeščen v bližino rečnega brega, med predhodno izkopane testne sonde 3, 5 in 6, zajemal je površino 6,75 × 3,5 m in najgloblje segel 2,25 m pod površje. Zaradi vdiranja talne vode se je izkopana površina proti dnu ožila. Prvotna, s travo pokrita površina je bila rahlo nagnjena proti reki. Tudi večina arheoloških plasti je bila nagnjena v isto smer. Stratigrafsko zaporedje arheoloških plasti

[13] Npr. Schweingruber 1990; Torelli 1991; Richter, Dallwitz 2002.

[14] Martinčič et al. 2007.

[15] Glej Andrič 2016 (v tej številki *Arheološkega vestnika*).

[16] Silver 1969.

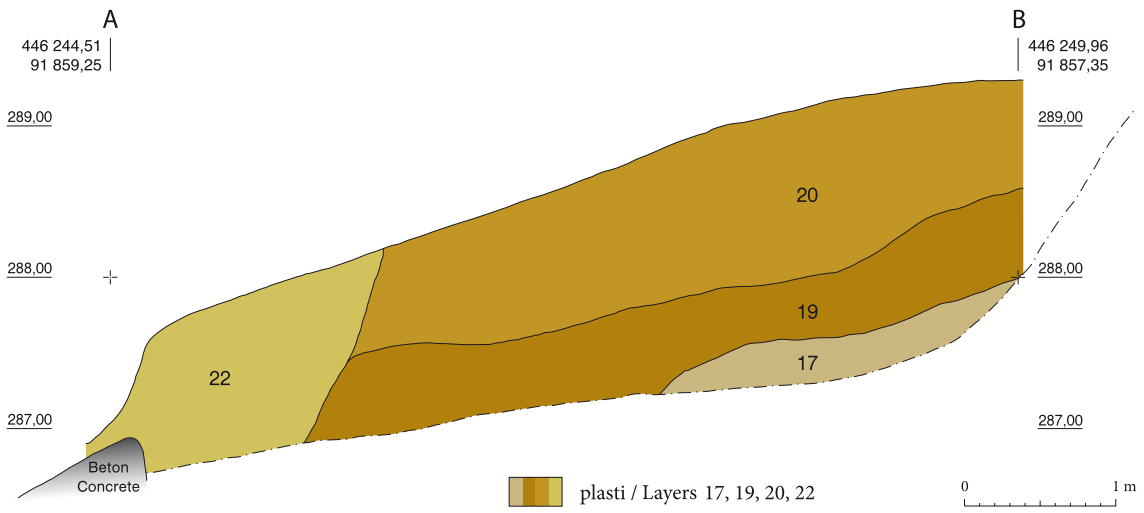
[17] Payne 1973; Payne 1987; Grant 1982; Rolett, Chiu 1994.

[18] Grayson 1984.

[19] Glej Andrič 2016 (v tej številki *Arheološkega vestnika*).

Plast Layer	Terenska oznaka SE Field mark SE	Opredelitev Determination	Predmet kat. št. Artefact Cat. No.	Vzorec / Sample			
				Les kat. št. Wood Cat. No.	Botanika Vzorčenje, št. Botany Sampling, No.	Zoologija Vzorčenje, št. Zoology Sampling, No.	14C
22	1071	nasutje / deposit					
21	1014 (jama / pit), 1013 (polnilo / fill)	jama in polnilo jame / pit and its fill	71				
20	1001, 1017a	nasutje / deposit					
19	1002, 1017b	nasutje / deposit					
18	1019	ornica / turf layer					
17	1012	naplavina / alluvium	69–70				
16	1015	tlak / pavement	57–68		S: 1	x S: 2	
15	1016	podlaga za tlak / pavement base	56				
14	1020	hodna površina / walking surface	38–55			x	
13	1029	hodna površina / walking surface	34–37		S: 8	x S: 7	
12	1034 (jama / pit), 1033 (polnilo / fill)	jama in polnilo jame / pit and its fill	28–33				
11	1030, 1032	tlak / pavement	19–27			x	
10	1036	podlaga za tlak / pavement base					
9	1035	hodna površina / walking surface	10–18		S: 19	x	
8	1037	tlak / pavement	5–9			x	
7	1038, 1040	podlaga za tlak / pavement base	3–4			x	
6	1031, 1076, 1077	naplavina ali nasutje / alluvium or intentional deposit	2		S: 33		
5	1043	naplavina in hodna površina / alluvium and walking surface	1	29–36	P: 74, 234		Poz-46647 Poz-46649
4	1063–1070	les / wood		16–28			
3	1078	naplavina in hodna površina / alluvium and walking surface		15	P: 77, 79, 80, 82, 93		Beta-259684
2	1050–1058, 1060–1062	les / wood		1–14	P: 92, 100		Poz-46646
1	1053	naplavina (geološka osnova) / alluvium (geological base)					Beta-241775 Beta-242460

Razpr. 1: Vrhnika, Dolge njive. Izkop 1 in sonda 3. Plasti, terenske oznake, opredelitve plasti, predmeti in naravoslovni vzorci. Način vzorčenja: S = sistematični vzorec; P = po presoji odvzet vzorec; x = ročno pobrane živalske kosti.
Table 1: Vrhnika, Dolge njive. Sector 1 and Trench 3. Layers, field marks, determinations, artefacts and samples. Methods of sampling: S = systematic sampling; P = judgment sampling; x = manually collected animal bones.



Sl. 5: Vrhnika, Dolge njive. Sonda 3. Profil A–B. M. = 1:50.
Fig. 5: Vrhnika, Dolge njive. Trench 3. Cross section A–B. Scale = 1:50.

je vidno v profilu C–D na severnem robu izkopa 1 (*sl. 6; razpr. 1*). Iste in podobne plasti smo zasledili tudi v sondi 3 na bregu reke, v profilu A–B (*sl. 5*).

Plast 1

Na dnu izkopa je ležala zelo vlažna temno siva in temno rjava plast, ki so jo sestavljale zaplate finega peska in glinenega melja (*sl. 6; 7*). Zaradi vdiranja vode v izkop je bila plast 1 dokumentirana samo v okoli 1 m širokem pasu ob profilu C–D, v debelini okoli 30 cm. Padala je v smeri proti reki in v profilu A–B ni bila vidna (prim. *sl. 5*). Debli VRH07-102 in VRH07-627 sta se v plast 1 verjetno pogreznili in pripadata plasti 2.

– *Najdbe*: Plast ni vsebovala arheoloških predmetov.

– *Vzorci*: Vzorec sedimenta in vzorec neidentificiranih rastlinskih makrofosilov, ki sta bila odvzeta na absolutni višini 288,25 m n. m., sta bila analizirana z metodo merjenja izotopa 14C (glej dalje *Datiranje*).

– *Opredelitev*: Plast je geološka osnova območja in je verjetno nastala kot rečna naplavina.

Plast 2

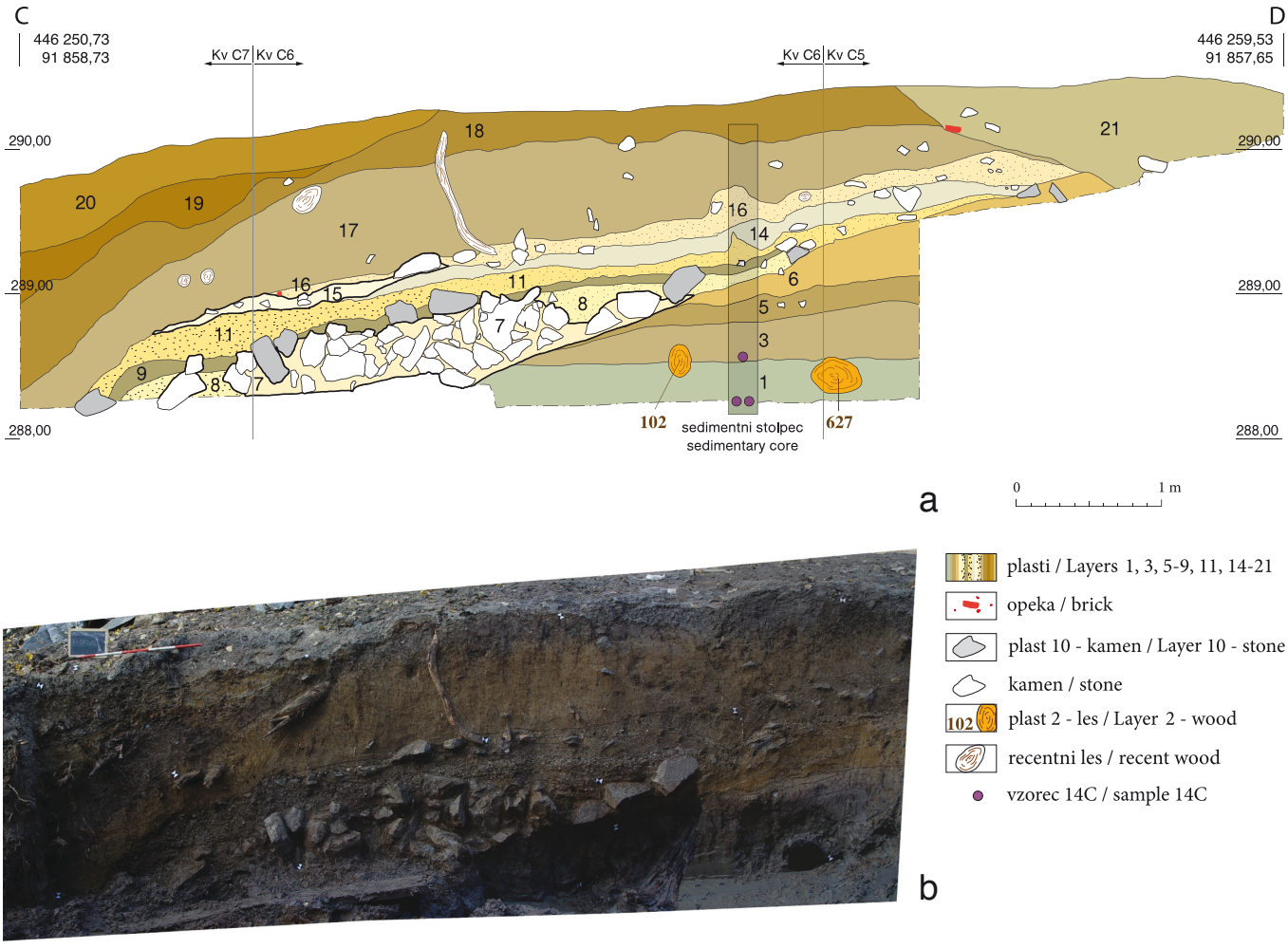
Plast 2 sestavljajo samo kosi lesa, ki so neurejeno ležali na geološki osnovi. Izkopana je bila približno 1 × 2 m velika površina, ocenjena prostornina izkopane plasti pa je okoli 0,7 m^3 (*sl. 6; 7*). Odkrita so bila velika debla in veje, manjši drobci lesa in koščki oglja. Debli, ki najverjetneje sodita v plast 2, sta se zaradi teže pogreznili globoko v plast 1 (VRH07-102 [*Katalog lesa,* št. **5**] do absol. viš. 288,40 m n. m; VRH07-627 [*Katalog lesa,* št. **2**] do absol. viš. okoli 288,22 m n. m.). Ostali kosi lesa so ležali na absol. viš. od približno 288,40 do 288,75 m n. m., se pravi v 30–40 cm debelem sloju med plastema 1 in 3, in niso vidni v profilu (prim. *sl. 6*). Razporeditev daje vtis, da so bili kosi naključno nametani.

– *Najdbe*: Plast ni vsebovala arheoloških predmetov.

– *Vzorci*: Arheobotanična vzorca 92 (lega *sl. 7*) in 100.[20] Pobrani so bili tudi vsi večji kosi lesa (14 primerkov; *sl. 6; 7; 21:* 1,3; *22; Katalog lesa,* št. **1**–**14**; *oznake vzorcev lesa*: VRH07-085, -086a, -087, -088, -089, -090, -102, -142, -170, -260, -261, -613, -627, -633). Vzorec VRH07-086a (*Katalog lesa,* št. **1**) je bil datiran z analizo izotopa 14C, dva vzorca hrastovih debel (VRH07-086a, VRH07-102; *Katalog lesa,* št. **1**, **5**) sta bila dendrokronološko obravnavana.

– *Opredelitev*: Gre za plast namerno odloženega ali naravno naplavljenega lesa.

[20] Vzorec 100 ni viden na *sl. 7,* ker je ležal pod deblom VRH07-627.



Sl. 6: Vrhnika, Dolge njive. Izkop 1. Profil C–D (a – načrt, M. = 1:50; b – pogled proti severu).
Fig. 6: Vrhnika, Dolge njive. Sector 1. Cross section C–D (a – plan view, scale = 1:50; b – view towards north).

Plast 3

Les iz plasti 2 je prekrivala plast 3 – temno siv glineni melj, ki je vseboval veliko manjših kosov lesa ter različnih drobcev rastlinskega in živalskega izvora. Prisotni so bili tudi koščki oglja (*sl. 6; 8*). Plast je bila debela do okoli 40 cm (absol. viš. približno od 288,50 do 288,90 m n. m.), padala pa je proti zahodu in jugu. Izkopana je bila na površini okoli 3 × 3 m (prostornina izkopane plasti okoli 3,15 m^3). Na *sl. 8* je viden manjši del zgornje površine plasti 3 - tisti, ki nam ga je uspelo natančneje dokumentirati.

– *Najdbe*: Plast ni vsebovala arheoloških predmetov.

– *Vzorci*: Vzorec sedimenta iz absol. viš. 288,57 m n. m. je bil datiran z analizo izotopa 14C (lega *sl. 6*; glej dalje *Datiranje*). Pobranih je bilo pet arheobotaničnih vzorcev: 77, 79, 80, 82 (*sl. 8*), 93[21].

[21] Ni podrobneje lociran.

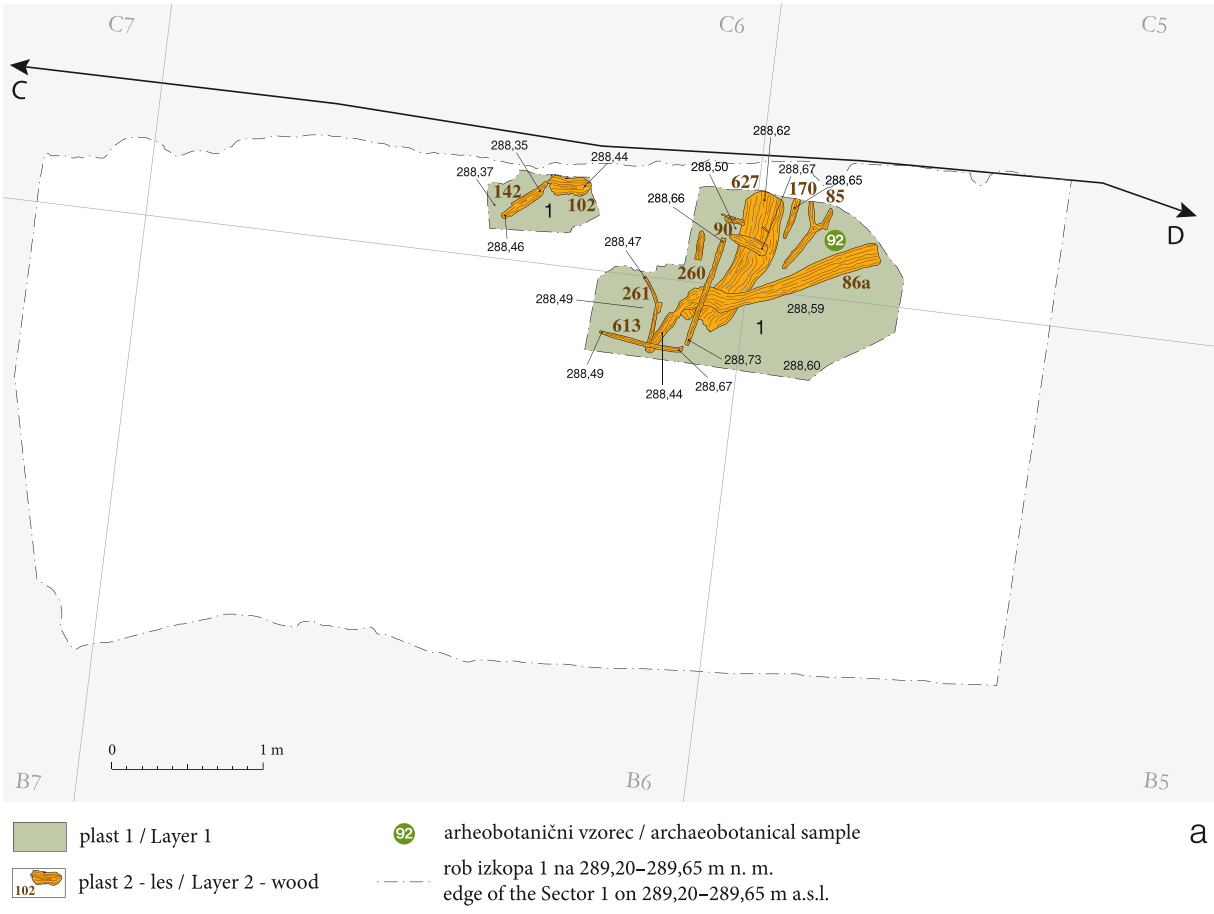
Pobran je bil samo en večji primerek lesa - hrastova veja (*sl. 8*; VRH07-029; *Katalog lesa,* št. **15**).

– *Opredelitev*: Plast se je zaradi debeline ter neurejenih drobcev lesa verjetno oblikovala dlje časa. Lahko gre za deloma naplavljen sediment. V rabi je bila kot hodna površina.

Plast 4

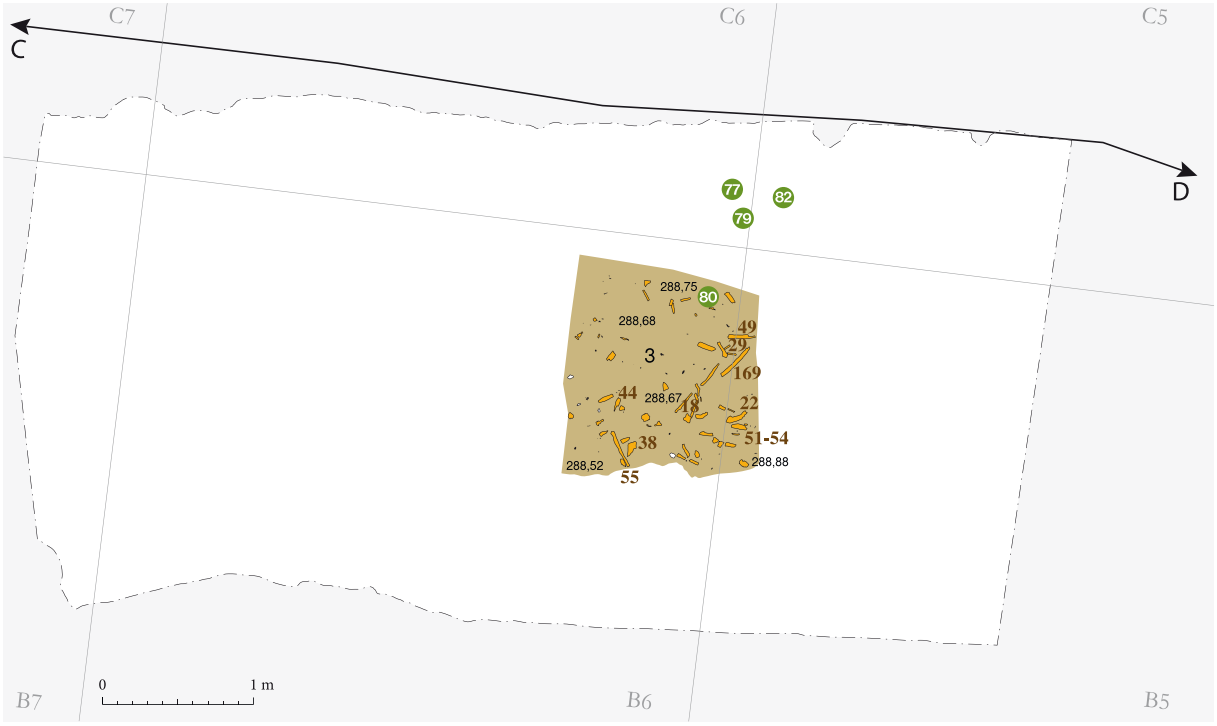
Na površini plasti 3 je ležala večja količina nametanega lesa, ki smo jo poimenovali plast 4 (*sl. 8*). Ležala je na absol. viš. okoli 288,80 do 288,90 m n. m., v profilu C–D pa ni vidna (prim. *sl. 6*). Plast lesa je padala po površini plasti 3 proti zahodu in jugu. Manjši kosi lesa so bili zgoščeni na površini okoli 1,4 × 1,4 m (prostornina okoli 0,2 m^3).

– *Najdbe*: Med lesom, ki je sestavljal plast 4, ni bilo arheoloških predmetov.



Sl. 7: Vrhnika, Dolge njive. Izkop 1. Del površine plasti 1 z ostanki lesa, ki predstavljajo plast 2. – **a**: načrt, M. = 1:50. – **b**: detajl, les, VRH07-261 (*Katalog lesa,* št. **10**) in VRH07-613 (kat. št. **9**). – **c**: detajl, les, VRH07-086a (kat. št. **1**) in VRH07-627 (kat. št. **2**).

Fig. 7: Vrhnika, Dolge njive. Sector 1. Part of the surface of the Layer 1 with the remains of wood, representing the Layer 2. – **a**: plan view, scale = 1:50. – **b**: detail view, wood, VRH07-261 (*Catalogue of wood,* no. **10**) and VRH07-613 (cat. no. **9**). – **c**: detail view, wood, VRH07-086a (cat. no. **1**) and VRH07-627 (cat. no. **2**).



Sl. 8: Vrhnika, Dolge njive. Izkop 1. Del površine plasti 3 z ostanki lesa, ki predstavljajo plast 4. – **a**: načrt, M. = 1:50. – **b**: detajl, les, VRH07-018, -022, -049, -051–054, -169 (kat. št. **17**, **19**, **21**–**26**).
Fig. 8: Vrhnika, Dolge njive. Sector 1. Part of the surface of the Layer 3 with the remains of wood, representing the Layer 4. – **a**: plan view, scale = 1:50. – **b**: detail view, wood, VRH07-018, -022, -049, -051–054, -169 (cat. nos. **17**, **19**, **21**–**26**).

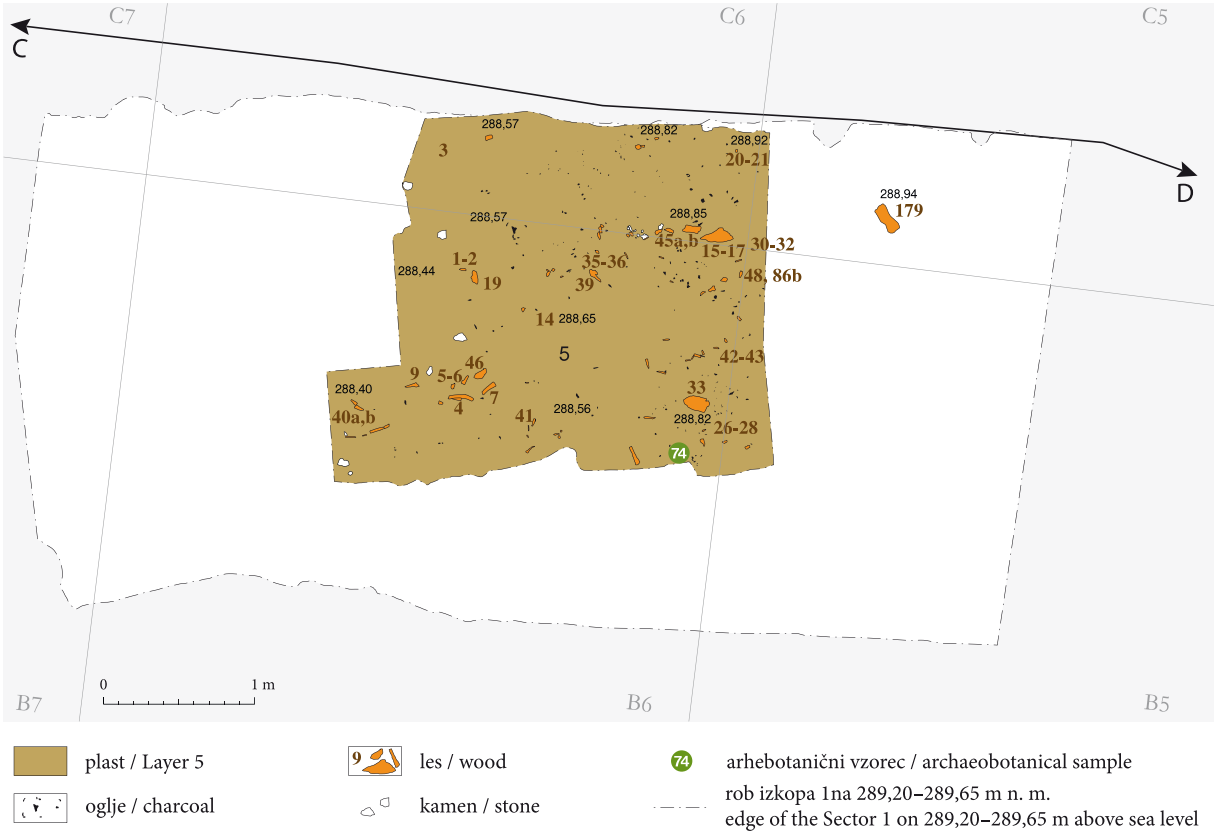
– *Vzorci*: Pobranih je bilo trinajst večjih kosov lesa (*sl. 8; 23;* glej *Katalog lesa,* št. **16**–**28**; *št. vzorcev lesa* VRH07-018, -022, -037, -038, -044, -047,-049, -051, -052, -053, -054, -055, -169). Prevladovale so krajše veje (dolge do 33 cm), deščice in okleščki. Na šestih kosih so bile vidne sledi obdelave: klanje in sekanje.

– *Opredelitev*: Ostanke razlagamo kot odpadek, ki je nastal pri obdelavi lesa.

Plast 5

Plast sestavlja glineni melj mešane temno sive in rdečkasto rjave barve (*sl. 6; 9*). Ob profilu C–D je bila debela od 15 do 20 cm in je bila močno nagnjena proti Ljubljanici - na dolžini dveh metrov za 50 cm. Izkopana je bila na površini okoli 3,5 × 2,5 m (prostornina okoli 1,75 m^3).[22] Po celotni plasti so bili enakomerno razpršeni manjši, zelo fragmentirani

[22] Plast 5 je bila raziskana v večjem obsegu, kot je predstavljeno na *sl. 9*.



Sl. 9: Vrhnika, Dolge njive. Izkop 1. Del plasti 5. M. = 1:50.
Fig. 9: Vrhnika, Dolge njive. Sector 1. Part of the Layer 5. Scale = 1:50.

kosi lesa. Vsebovala je tudi drobce oglja in drugega organskega materiala ter redke kamne.

– *Najdbe*: V plasti je ležal del ostenja keramičnega kozarca (*sl. 19; Katalog predmetov,* št. **1**).

– *Vzorci*: Arheobotanična vzorca 74 (*sl. 9*) in 234.[23]

Pobranih je bilo 329 bolje ohranjenih primerkov lesa (*sl. 21:* 29–33; *24; Katalog lesa,* št. **29**–**36**; *št. vzorcev lesa*: VRH07-001–007, -009–017, -019–021, -026–028, -030–036, -039–043, -045–046, -048, -050, -056–084, -086b, -091–101, -104–141, -143–168, -171–176, -178–179, -181–188, -190–196, -198–259, -263–334, -660–661, -663–671).

Z analizo izotopa 14C sta bila proučena vzorec lesa iz obdelanega jesenovega debla (VRH07-178; *Katalog lesa,* št. **32**) in vzorec jelove iglice (arheobotanični vzorec 74; globina 288,72 m n. m.).

– *Opredelitev*: Sediment, ki je bil morda deloma naplavljen in v rabi kot hodna površina.

Plast 6

Plast 6 je prekrivala plast 5. Sestavljal jo je glineni melj melirane rjave in sive barve, s finim peskom (SE 1077, SE 1031), v katerega je bila vključena leča sivo rjave meljaste gline (SE 1076).[24] Največja debelina plasti je bila 40 cm, padala je v smeri proti reki in se izklinila (*sl. 6; 10–13*). V plasti s prostim očesom ni bilo videti večjih drobcev lesa ali oglja. Zelo majhni koščki oglja pa so bili vidni pri povečavi v arheobotaničnem vzorcu 33.

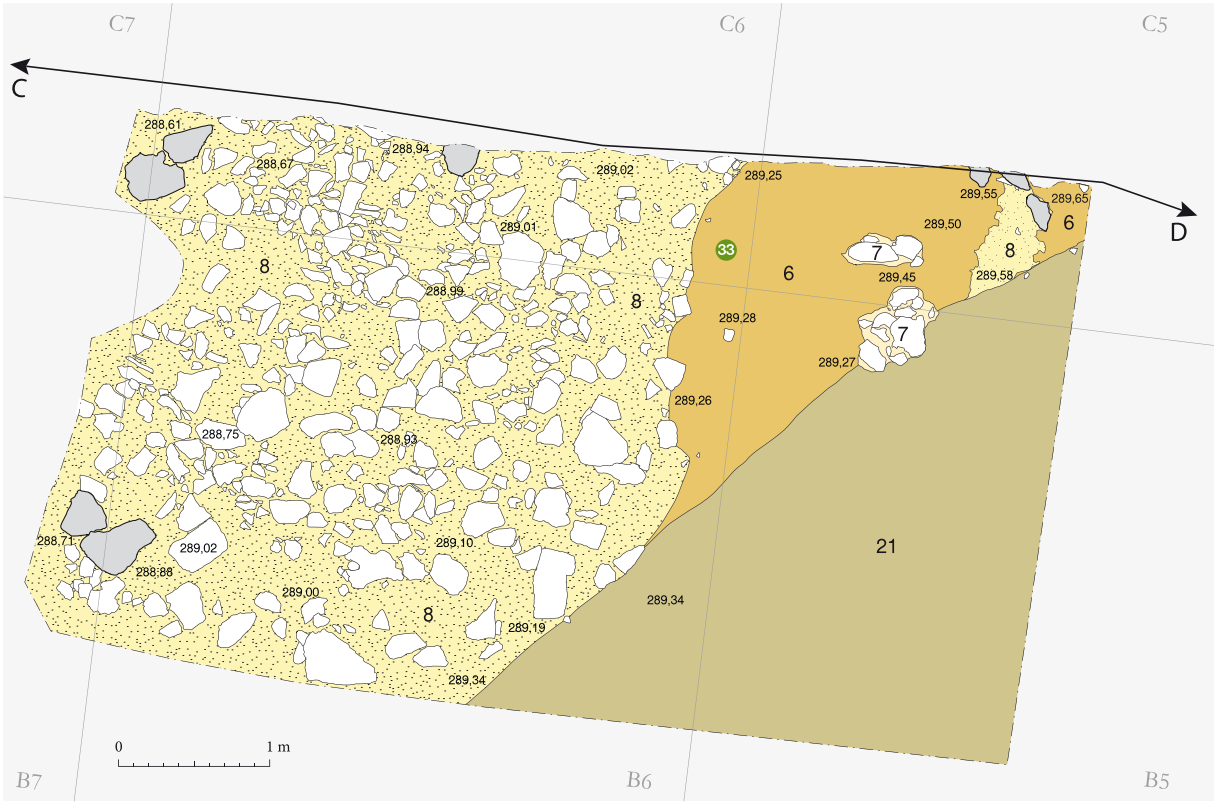
– *Najdbe*: Odlomek ostenja grobe keramike (*Katalog predmetov,* št. **2**).

– *Vzorci*: Arheobotanični vzorec 33 (*sl. 10*).

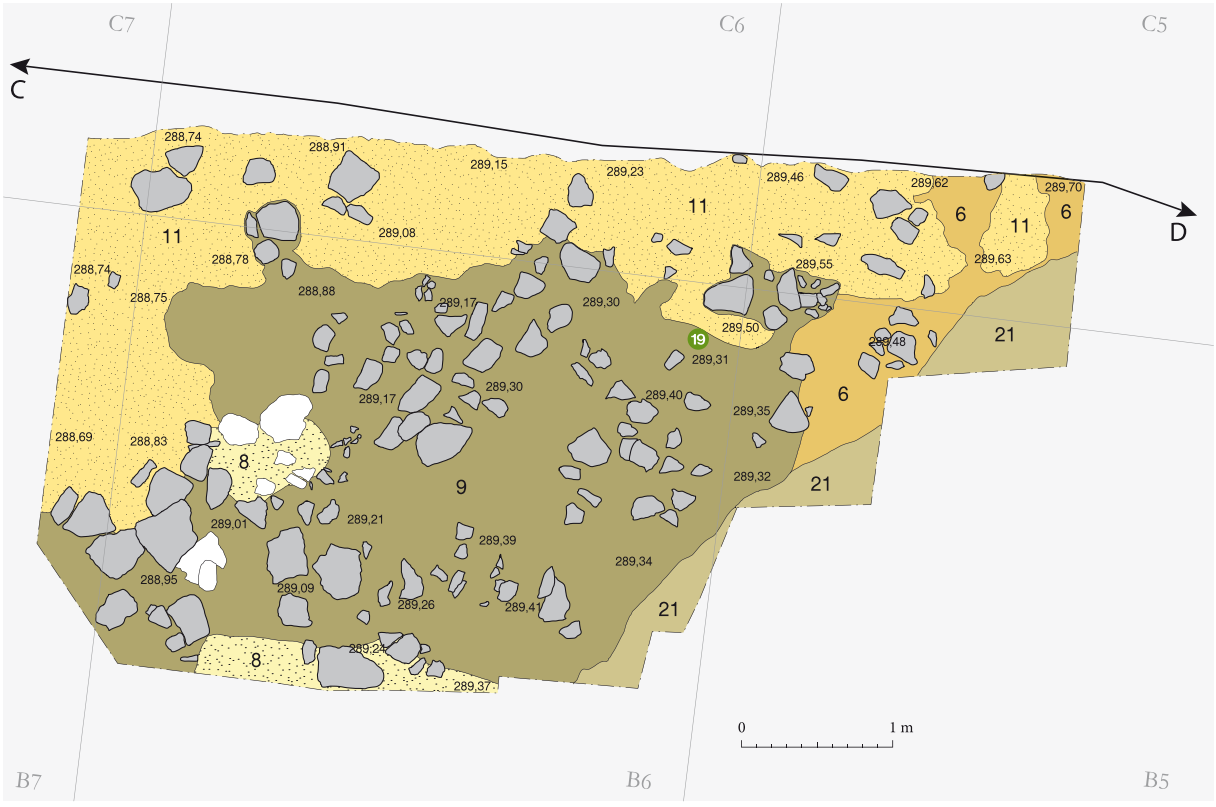
– *Opredelitev*: Nastanek plasti ni jasen. Lahko je bila naplavljena ali pa namerno nasuta.

[23] Ni natančno lociran.

[24] SE 1031, 1076, 1077 niso vidne na slikah.

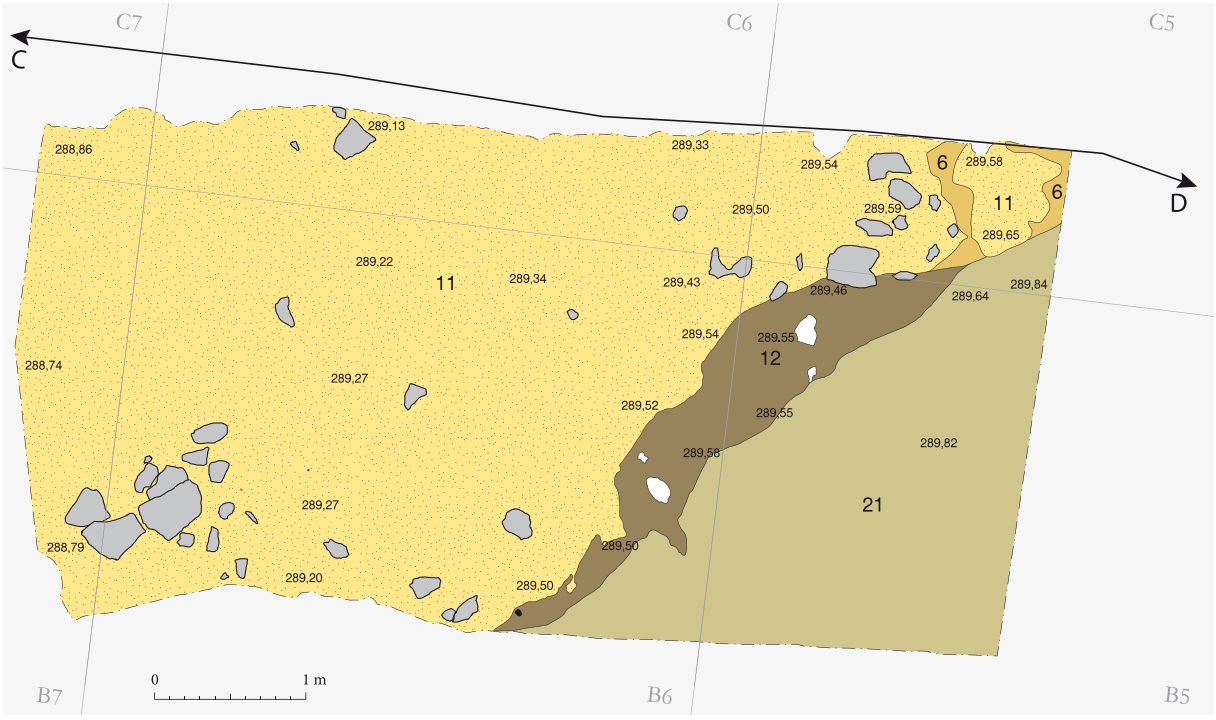


Sl. 10: Vrhnika, Dolge njive. Izkop 1. Planum na absol. viš. od 288,61 do 289,65 m n. m. Glineni melj (plast 6); kamnita podlaga za tlak (plast 7); peščeni tlak (plast 8) in posamezni kamni plasti 10. (a – načrt, M. = 1:50; b – pogled proti severu).
Fig. 10: Vrhnika, Dolge njive. Sector 1, at an altitude from 288.61 to 289.65 m a.s.l. Clayey silt (Layer 6); stone base for pavement (Layer 7); sandy pavement (Layer 8) and individual stones of the Layer 10. (a – plan view, scale = 1:50; b – view towards north).



Sl. 11: Vrhnika, Dolge njive. Izkop 1. Planum na absol. viš. od 288,69 do 289,70 m n. m. Hodna površina (plast 9) prekriva peščeni tlak (plast 8), kamnito podlago (plast 7) ter plast glinenega melja (plast 6). Na hodno površino so postavljeni kamni mlajšega kamnitega tlaka (plast 10), ki jih deloma pokriva peščeni tlak (plast 11). (a – načrt, M. = 1:50; b – pogled proti severu).

Fig. 11: Vrhnika, Dolge njive. Sector 1, at an altitude from 288.69 to 289.70 m a.s.l. Walking surface (Layer 9) covers sandy pavement (Layer 8), stone pavement base (Layer 7) and the layer of clayey silt (Layer 6). Stones of the later pavement base (Layer 10) are lying on the walking surface (Layer 9). They are partly covered with sandy pavement (Layer 11). (a – plan view, Scale = 1:50; b – view towards north).

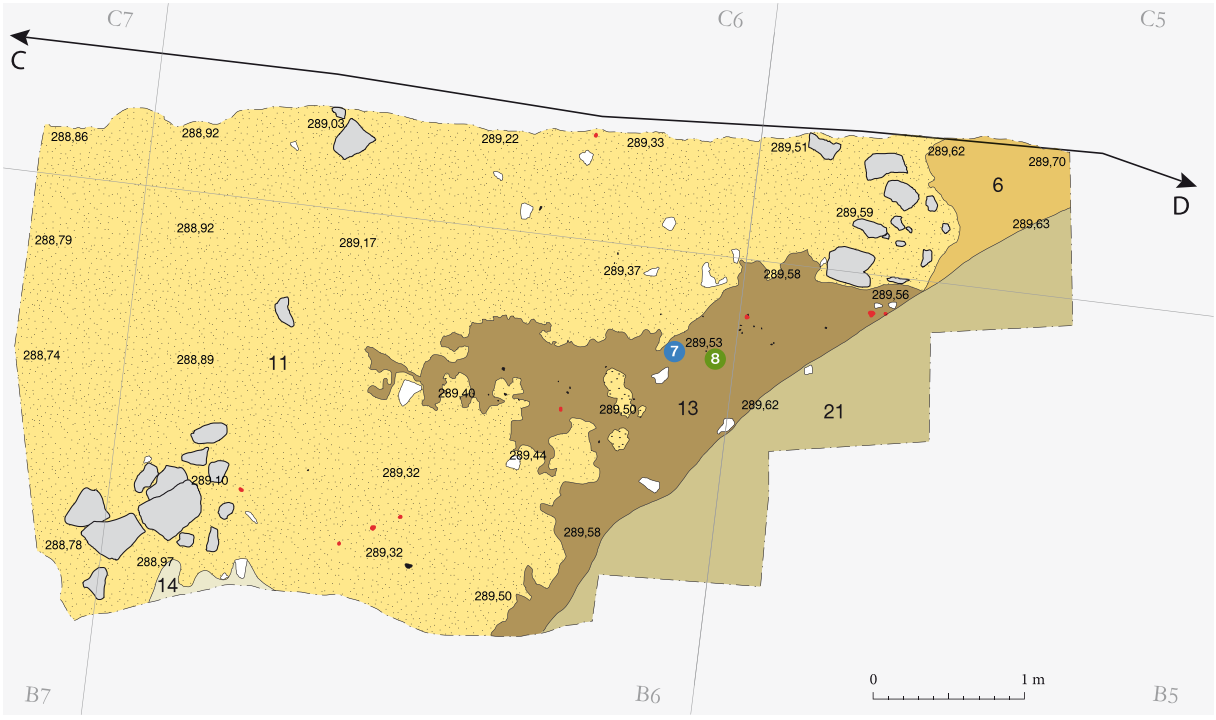


a

b

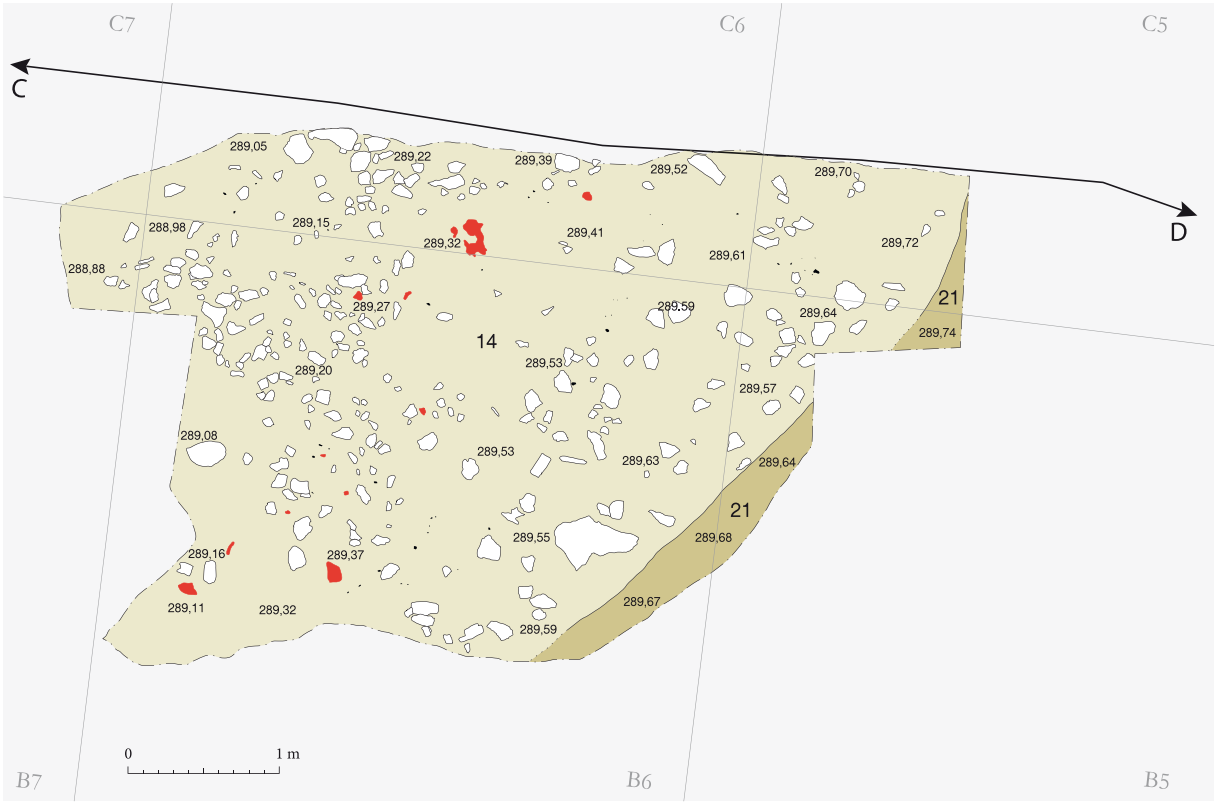
Sl. 12: Vrhnika, Dolge njive. Izkop 1. Planum na absol. viš. od 288,74 do 289,65 m n. m. – **a**: načrt, M. = 1:50; peščeni tlak (plast 11); polnilo jame (12); vidni so še posamezni kamni kamnite podlage (plast 10) in del plasti 6. – **b**: pogled na peščeni tlak (plast 11) s posameznimi kamni (plast 10) in izpraznjeno jamo.

Fig. 12: Vrhnika, Dolge njive. Sector 1, at an altitude from 288.74 to 289.65 m a. s. l. – **a**: plan view, Scale = 1:50; sandy pavement (Layer 11); fill of the pit (Layer 12); individual stones of the pavement base (Layer 10), part of the Layer 6; plan view. – **b**: view on sandy pavement (Layer 11) with individual stones (Layer 10) and empty pit.

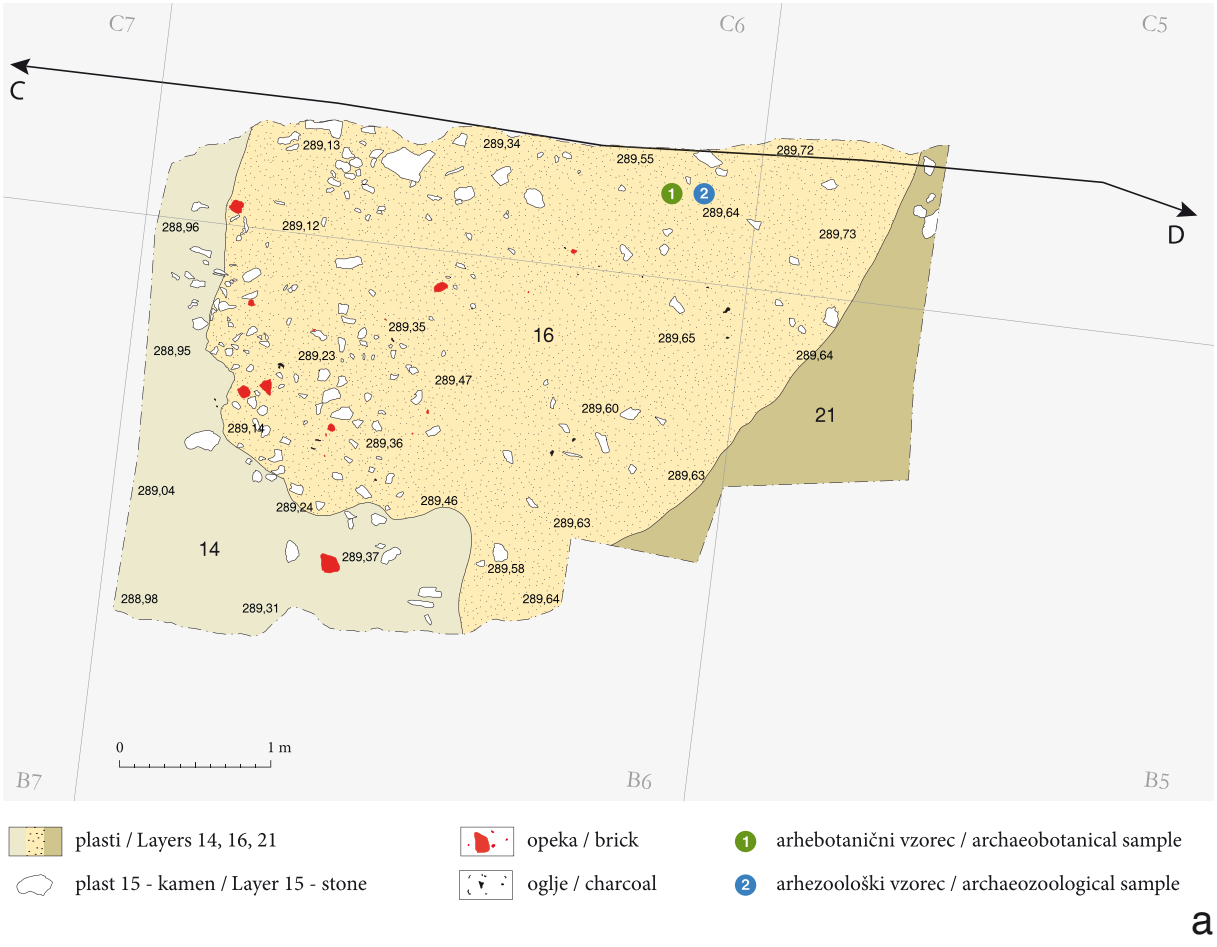


Sl. 13: Vrhnika, Dolge njive. Izkop 1. Planum na absol. viš. od 288,74 do 289,70 m n. m. Peščeni tlak (plast 11) in na njem hodna površina (plast 13). Vidni še posamezni kamni kamnite podlage (plast 10) in del plasti 6. (a – načrt, M. = 1:50; b – pogled).

Fig. 13: Vrhnika, Dolge njive. Sector 1, at an altitude from 288.74 to 289.70 m a.s.l. Sandy pavement (Layer 11) and above it a walking surface (Layer 13). Individual stones of the pavement base (Layer 10) are also visible and part of the Layer 6. (a – plan view, Scale = 1:50; b – view).



Sl. 14: Vrhnika, Dolge njive. Izkop 1. Planum na absol. viš. od 288,88 do 289,72 m n. m. Na hodni površini (plast 14) ležijo kamni podlage za tlak (plast 15). (a – načrt, M. = 1:50; b – pogled na planum.
Fig. 14: Vrhnika, Dolge njive. Sector 1, at an altitude from 288.88 to 289.72 m a.s.l. Stones of the pavement base (Layer 15) cover the walking surface (Layer 14). (a – plan view, Scale = 1:50; b – plan view.



Sl. 15: Vrhnika, Dolge njive. Izkop 1. Planum na absol. viš. od 288,95 do 289,73 m n. m. Peščeni tlak (plast 16) pokriva kamne podlage za tlak (plast 15) in hodno površino (plast 14). (a – načrt, M. = 1:50; b – pogled na planum.
Fig. 15: Vrhnika, Dolge njive. Sector 1, at an altitude from 288.95 to 289.73 m a.s.l. Sandy pavement (Layer 16) covers the stones of the pavement base (Layer 15) and walking surface (Layer 14). (a – plan view, Scale = 1:50; b – plan view.

Plast 7

Plast so sestavljali ostrorobi kamni, verjetno lomljeni, večinoma med 5 × 10 do 20 × 30 cm, posamezni pa so bili tudi večji (40 × 30 cm). Neurejeno so bili naloženi, v osrednjem delu tudi v več slojih, do 60 cm visoko. Prostore med kamni je zapolnjeval glineni melj, pomešan s peskom. Kamenje je pokrivalo plast 5 in segalo tudi, vsaj v širini 1,5 m, čez zahodni, nižji del plasti 6. Vzhodno od strnjene plasti 7 ležijo na površini plasti 6 skupine kamnov, ki jih lahko razumemo tudi kot dele plasti 7 (*sl. 6; 10*).

– *Najdbe*: Ostenja rimske navadne namizne keramike in brezoblični kosi prežgane gline (*Katalog predmetov,* št. **3**, **4**).

– *Opredelitev*: Gre za namerno nasutje, ki ga razlagamo kot utrditev površine in podlago za tlak.

Plast 8

Plast 8 iz sivo rjavega in rumeno rjavega grušča ter peska (kamenčki največ do 2 cm) je prekrivala plast 7 (kamenje) in plast 6 (glineni melj). Plast se je zajedla v žepe med kamne iz plasti 7, kjer je bila debela tudi do 20 cm. Nad ilovnato plastjo 6 je bila debela nekaj centimetrov in ohranjena v lečah. Vsebovala je drobce oglja (*sl. 6; 10*).

– *Najdbe*: Rimski novec, kos železa, odlomki navadne namizne keramike in brezoblični kosi prežgane gline (*Katalog predmetov,* št. **5**–**9**).

– *Opredelitev*: Gre za namerno nasutje, ki ga razlagamo kot peščeni tlak.

Plast 9

Plast 9, ki jo je sestavljala mešanica glinenega melja in peska, je prekrivala pesek plasti 8. Debela je bila največ 5 cm in neenakomerno ohranjena. Vsebovala je drobce oglja (*sl. 6; 11*).

– *Najdbe*: Kosi železa, odlomki fine in navadne namizne keramike, grobe kuhinjske keramike ter brezoblični kosi prežgane gline (*sl. 20:* 12,13; *Katalog predmetov,* št. **10**–**18**).

– *Vzorci*: Arheobotanični vzorec 19 (*sl. 11*).

– *Opredelitev*: Plast interpretiramo kot sediment, ki se je nabiral na hodni površini - na peščenem tlaku oz. na plasti 8.

Plast 10

Plast 10 so sestavljali večji kamni, premera od 10 do 30 cm, ki so bili malo pogreznjeni v plast 9. Postavljeni so bili neurejeno, v enem sloju, in ne popolnoma strnjeno. Ležali so približno na območju starejšega peščenega tlaka in hodne površine na njem (plasti 8–9). Na vzhodnem delu izkopnega polja, kjer je bil peščeni tlak plasti 8 ohranjen zelo slabo, so ležali ti kamni neposredno na plasti 6 (*sl. 6; 10–13*).

– *Najdbe*: Plast ni vsebovala arheoloških predmetov.

– *Opredelitev*: Gre za namerno nasutje, ki ga razlagamo kot utrjevanje površine in podlago za tlak.

Plast 11

Plast je sestavljalo peščeno nasutje, ki je prekrivalo kamne plasti 10 in na vzhodnem delu izkopa neposredno plast 6. Na zahodnem delu je bila plast močno nagnjena proti Ljubljanici in do 25 cm debela, na vzhodnem delu izkopnega polja se je stanjšala do debeline 5 cm. Vsebovala je drobce oglja (*sl. 6; 11–13*).

– *Najdbe*: Majhni in razmeroma maloštevilni odlomki fine namizne, navadne namizne in grobe kuhinjske keramike, odlomki amfor, opeke in brezoblični kosi prežgane gline (*sl. 20:* 19–21; *Katalog predmetov,* št. **19**–**27**).

– *Opredelitev*: Gre za namerno nasutje, ki ga razlagamo kot peščeni tlak.

Jama in plast 12

Plitva jama je bila vkopana v peščeni tlak (plast 11). Globoka je bila 11 cm in je segala na nekaterih mestih že do kamnov plasti 10. V dolžino je bila ohranjena 3,8 m, v širino pa le 0,7 m, saj je bil njen rob poškodovan z novodobnim vkopom (tj. s plastjo 21). Zapolnjena je bila z glinenim meljem, kamni in drobci oglja. To polnilo smo poimenovali plast 12 (*sl. 12*).

– *Najdbe*: Železni predmeti ter odlomki grobe keramike in amfore (*Katalog predmetov,* št. **28**–**33**).

– *Opredelitev*: Gre za umetni vkop – jamo, katere namen ni jasen. Zasutje jame (plast 12) pa kaže namerno izravnavo površine.

Plast 13

Temno siv in rjav glineni melj (plast 13) je pokrival del peščenega tlaka (plast 11) in polnilo jame (plast 12). Ohranjen je bil v lečah in debel do 3 cm (*sl. 13*), ni pa bil viden v profilu izkopa (prim. *sl. 6*). Vseboval je drobce oglja.

– *Najdbe*: Železen žebelj ter majhni in razmeroma maloštevilni odlomki grobe kuhinjske keramike (*sl. 20:* 34–36; *Katalog predmetov,* št. **34**–**37**).

– *Vzorci*: Arheobotanični vzorec 8, arheozoološki vzorec 7 (*sl. 13*).

– *Opredelitev*: Plast razlagamo kot sediment hodne površine, ki se je odložil na peščenem tlaku (plast 11) in nad polnilom jame (plast 12).

Plast 14

Nad plastjo 13 je ležala do 10 cm debela plast 14 – sivo rumeni meljasti pesek, ki je vseboval posamezne kamne, manjše zaplate ožgane zemlje in številne drobce oglja (*sl. 6; 14; 15*).

– *Najdbe*: Železni predmeti, majhni odlomki fine in navadne namizne keramike ter grobe kuhinjske keramike, amfore, opeka, imbreks in brezoblični kosi prežgane gline (*sl. 20; Katalog predmetov,* št. **38**–**55**). Pri izkopavanju je bilo mestoma težko ločiti hodne površine različnih arheoloških faz. Odlomki istih posod (*sl. 20:* 42,45; glej *Katalog predmetov,* št. **42**, **45**) so bili pripisani tako plasti 14 kot tudi 16. Ker globlje ležeča plast 14 med izkopavanji verjetno ni bila takoj prepoznana kot drugačna, smo posodi v katalogu vključili v plast 14.

– *Opredelitev*: Verjetno gre za sediment hodne površine, ki se je odložil na peščenem tlaku (plast 11) in na ostanku starejše hodne površine (plast 13).

Plast 15

Na peščeni plasti 14 je ležala plast 15, ki so jo sestavljali ostrorobi kamni večinoma od 5 × 5 do 20 × 10 cm. Položeni so bili v enem sloju, tako da je bila plast debela okoli 10 cm. Na delu bližje Ljubljanici so bili kamni manjši in bolj gosto nasuti, na delu, ki je od Ljubljanice odmaknjen, pa so bili kamni večji in redkeje nasuti (*sl. 6; 14; 15*).

– *Najdbe*: Na zgornji površini plasti je ležal rimski novec (*Katalog predmetov,* št. **56**). V plasti so bili najdeni tudi posamezni kosi opek.

– *Opredelitev*: Namerno nasutje za utrditev površine in podlaga za tlak.

Plast 16

Do 25 cm debelo plast 16, ki je prekrivala kamne plasti 15, so sestavljali peščeni melj, pesek in grušč s številnimi drobci oglja (*sl. 6; 15*).

– *Najdbe*: Kovinski predmeti, majhni in maloštevilni odlomki keramike, kosi opek, posamezni koščki prežgane gline in žlindra (*sl. 20*: 60–61; *Katalog predmetov,* št. **57**–**68**).

– *Vzorci*: Arheobotanični vzorec 1, arheozoološki vzorec 2 (*sl. 15*).

– *Opredelitev*: Namerno nasutje, ki kaže na peščeni tlak.

Plast 17

Plast 17, ki je bila debela do 70 cm, je sestavljal rjavi peščeni melj s posameznimi kamni (*sl. 5; 6*).

– *Najdbe*: Koščki opeke, več drobcev antične keramike (*sl. 20:* 69; *Katalog predmetov,* št. **69**, **70**) in odlomki novodobne keramike.

– *Opredelitev*: Plast je verjetno deloma naplavinskega nastanka in se je odlagala daljše obdobje.

Plasti 18–22

Plast 18

Predstavljala je prvotno rušo in prst, ki je ležala na površini pred gradnjo mostu v sedemdesetih letih (*sl. 6*). Na območju tik ob reki je ni bilo mogoče zaslediti (prim. *sl. 5*).

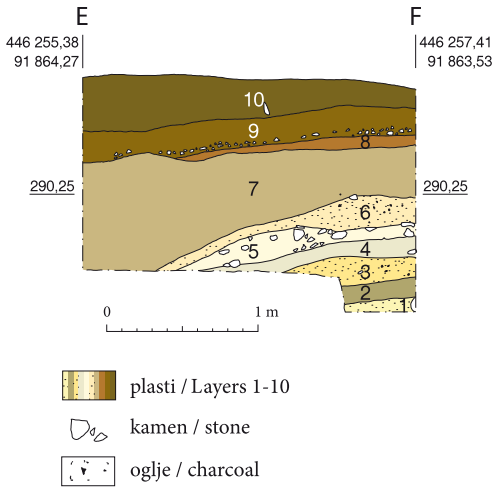
Plasti 19–22

Te so poznejše in so verjetno nastale ob gradnji modernega mostu in pri urejanju rečne struge.

Plasti 19 in 20 sta vsebovali med drugim tudi ostanke plastike (*sl. 5; 6*).

Plast 21 je zapolnjevala velik vkop, ki je uničil arheološke plasti v jugovzhodnem delu izkopa 1 in na širšem območju sond 5 in 6 (*sl. 4; 6; 10–15*). V njej so bile odkrite novodobne najdbe in tudi čebuličasta fibula (*sl. 20:* 71; *Katalog predmetov,* št. **71**).

Plast 22 je nastala pri zadnjem urejanju brežine (*sl. 5*).



Sl. 16: Vrhnika, Dolge njive. Sonda 2. Profil E–F. Pogled proti severu (M. = 1:50).
Fig. 16: Vrhnika, Dolge njive. Trench 2. Cross section E–F. View towards north (scale = 1:50).

Sonda 2
(*sl. 4; 16*)

Sonda 2 je merila približno 5,6 × 1 m in je segala okoli 1,5 m globoko, vendar geološka osnova ni bila dosežena. Med izkopavanji smo jo ponovno očistili in dokumentirali profil E–F, v katerem je bilo prepoznanih več plasti (*sl. 4*).

Plasti v profilu padajo proti reki Ljubljanici (*sl. 16*). Opisane so od spodaj navzgor.

Plast 1: temno rjav peščen melj s posameznimi kamni, premera do 20 cm (niso vidni na *sl. 16*). Plast ni bila izkopana do konca in se nadaljuje še v globino.

Plast 2: glineni melj rjave barve.

Plast 3: rjav peščen melj s peskom in gruščem, drobci oglja in opek; v prečnem profilu sonde vidni posamezni kamni s premerom do 10 cm (ni na *sl. 16*).

Plast 4: glineni melj rjave barve.

Plast 5: rjav peščen melj s peskom, gruščem, kamni, kosi opeke, malte, drobci oglja in lečami peska.

Plast 6: rjav peščen melj s peskom in gruščem, manjšimi kamni in drobci oglja. Plast 6 ima nekoliko več grušča in manj kamnov kot plast 5.

Plast 7: rjav peščen melj s posameznimi kamni, koščki opek in keramike.

Plast 8: svetlo rjav glineni melj.

Plast 9: rjav glineni melj.

Plast 10: ruša.

Izkopa 2–3 in sonda 7
(*sl. 4; 17; 18*)

Na vzhodnem območju raziskav je Zavod za varstvo kulturne dediščine Slovenije že prej izkopal sondi 4 in 7, prostor pa je bil tudi močno poškodovan z različnimi novodobnimi posegi. Pri svojih raziskavah smo ponovno očistili in dokumentirali del profila in površine sonde 7 ter odprli dve manjši površini – izkopa 2 in 3, ki sta bila umeščena ob zahodnem in vzhodnem robu sonde 4 (*sl. 4; 17*).

Povsod smo ugotovili podobno stratigrafijo (*razpr. 2*).

Plast 1

Plast 1 je geološka osnova, ki jo je sestavljal rjavi glineni melj (*sl. 17*), katerega zgornja površina je bila sivo obarvana in zaradi recentnih posegov valovita. Po izvoru gre verjetno za naplavino.

V sondi 7 je bila v geološko osnovo vkopana *jama za stojko*, s premerom 20 cm in obložena s kamni (*sl. 17a; 18a;* SE 1046–1047). V geološko osnovo je bila vkopana tudi struktura iz nepravilno razporejenih apnenčastih lomljencev, ki so bili veliki do 30 × 15 cm. Odprta je bila na površini 1 × 0,6 m, vendar se je nadaljevala tudi zunaj sonde. Morda gre za ostanek nekakšnega *temelja* (*sl. 17a; 18b;* SE 1059). Niti jame za stojko niti temelja nismo podrobneje raziskali.

Plast 2

Plast 2 je sestavljalo nasutje grobega peska in grušča, ki je pokrivalo geološko osnovo. Kamenčki so bili veliki do 3 × 2 cm, vmes pa so bili tudi drobci opeke. Plast je bila močno poškodovana. V izkopu 3 je bila debela do 10 cm, v izkopu 2 se je ohranila le kot 2 cm debela lisa, v sondi 7 je bila ohranjena na manjšem območju (1,8 × 0,6 m) v debelini do 7 cm

Plast Layer	Terenska oznaka SE Field mark SE	Opredelitev / Determination	**Predmet**, kat. št. **Artefact**, Cat. No.
9	1074	ruša / turf	
8	1008	polnilo odvodnega jarka / fill of the modern ditch	
7	1004	avtocestni nasip / highway dike	
6	1005	avtocestni nasip / highway dike	
5	1011	avtocestni nasip / highway dike	
4a	1006, 1021	ornica, premešana / mixed arable land	77–78
4b	1024	ornica / arable land	
-	1079	ostanek obzidja? / remains of the fortification wall?	
3	1041, 1042, 1048	ruševinska plast / debris layer	73–76
2	1007, 1022, 1049	peščeni tlak / sandy pavement	72
-	1059	temelj / foundation	
-	1046–1047	jama za stojko / posthole	
1	1010, 1023, 1025, 1026, 1027, 1028	naplavina (geološka osnova) / alluvium (geological base)	

Razpr. 2: Vrhnika, Dolge njive. Izkopa 2–3 in sonda 7. Shematični prikaz plasti, terenskih oznak, osnovnih opredelitev plasti in predmetov.
Table 2: Vrhnika, Dolge njive. Sectors 2–3 and Trench 7. Layers, field marks, determination of layers and artefacts.

(*sl. 17*). V njej je bilo najdenih nekaj brezoblič nih kosov prežgane gline (*Katalog predmetov,* št. **72**). Plast 2 je verjetno ostanek peščenega tlaka.

Plast 3

Plast 3 je sestavljal temno sivo rjav glineni melj, ki je prekrival plast 2 in temelj (SE 1059) v sondi 7. Plast je vsebovala apnenčaste lomljence (do 44 × 25 cm), manjše kamne, kose opek ter drobce oglja in malte. V izkopu 3 in sondi 7 je bila debela do 20 cm (*sl. 17*). V izkopu 2 se, verjetno zaradi recentnih posegov, ni ohranila. V njej so bili najdeni drobni in maloštevilni odlomki antične keramike: navadno namizno posodje, amfore, opeke in brezoblični kosi prežgane gline (*Katalog predmetov,* št. **73**–**76**). Verjetno gre za ruševinsko plast.

Plasti 4a in 4b

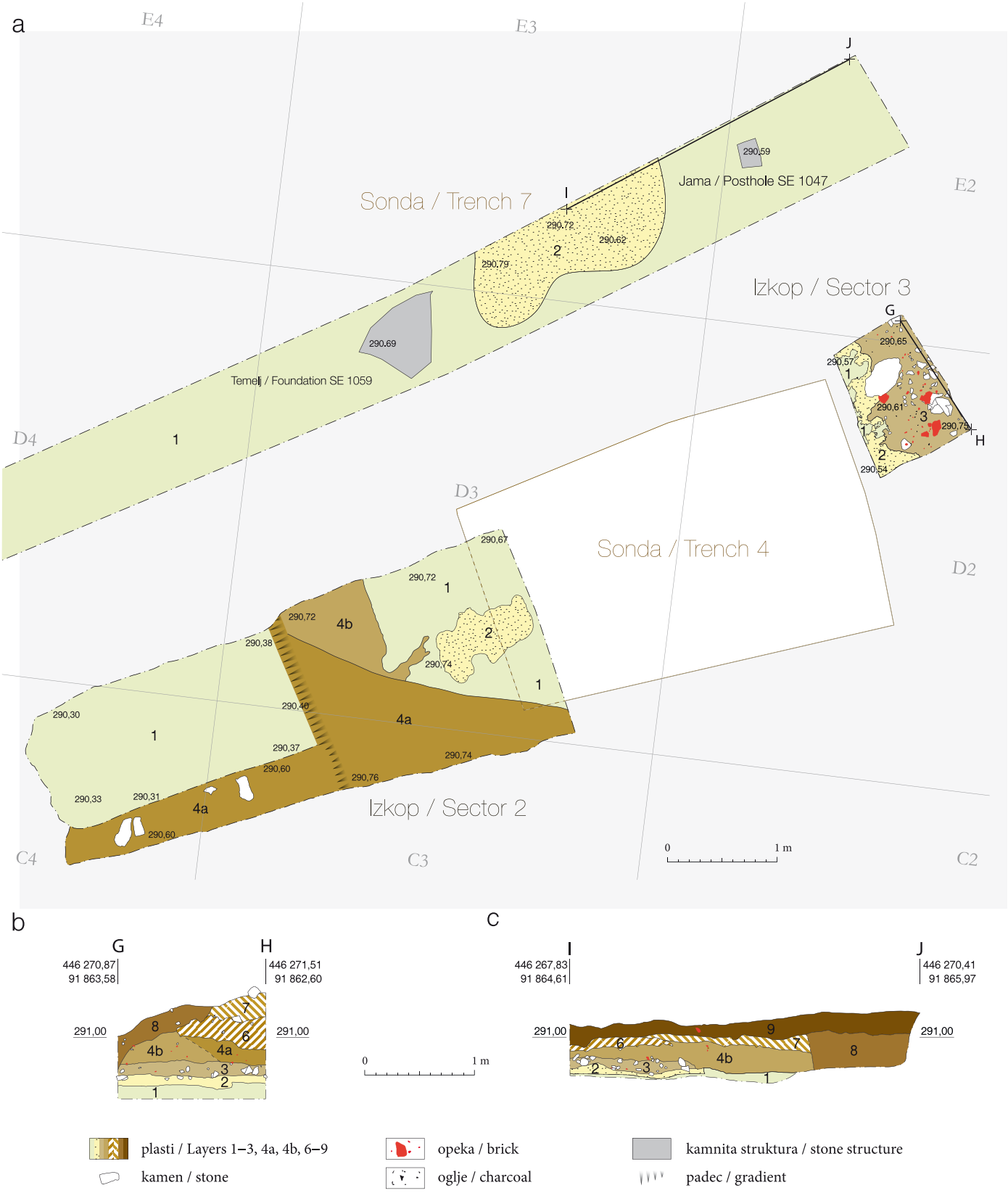
Plast 4a iz temno sivo rjavega peščenega melja, debela do 20 cm, je v izkopu 2 ležala neposredno na geološki osnovi, v izkopu 3 pa nad plastjo 3 (*sl. 17*) in deloma tudi neposredno nad peščenim tlakom plasti 2 (ni slike). V plasti je bil najden košček ostenja skodelice iz keramike tankih sten in nekaj koščkov opek (*sl. 20:* 77; *Katalog predmetov,* št. **77**, **78**). V izkopu 2 je bilo v tej plasti, prečno čez izkop, v širini 1,35 m, več razmetanih apnenčastih kamnov lomljencev (do 30 × 13 cm; meja med kv. C3 in C4, *sl. 17a*).

Plast 4a je na strani, brez ostre meje, prehajala v plast 4b iz sivkasto rjave peščene gline z malo grušča, drobci opeke in oglja, ki je bila debela do 25 cm. Ta je v izkopu 2 pokrivala neposredno geološko osnovo, v izkopu 3 pa je ležala nad plastjo 3. V sondi 7 je deloma neposredno pokrivala geološko osnovo (plast 1), polnilo jame za stojko (SE 1046–1047) ter plasti 2 in 3 (*sl. 17*).

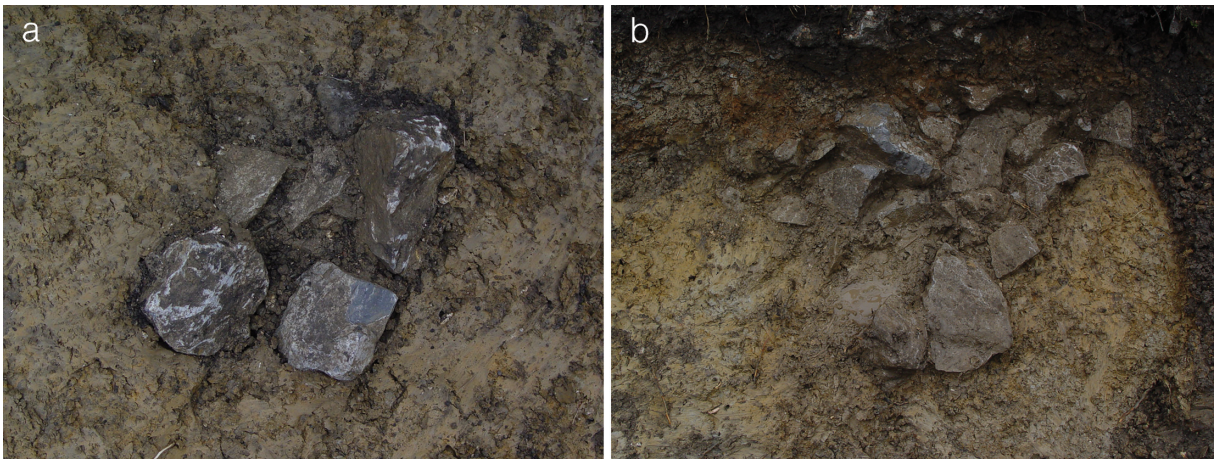
Plasti 4a in 4b, med katerima ni ostre meje, verjetno predstavljata prvotno ornico. Plast 4a je bila ob gradnji avtoceste močno poškodovana, premešana in deloma odstranjena. Plast 4b, ki je bolj oddaljena od ceste, pa se je verjetno ohranila v prvotnem stanju.

Plasti 5–9

Višje smo zasledili vrsto recentnih nasutij (plasti 5–7*)*, ki so sestavni del avtocestnega nasipa (*sl. 17b,c*). Med sondo 7 ter izkopnima poljema 2 in 3 je potekal okoli 1,5 m širok odvodni jarek (*sl. 4*), plast 8 pa predstavlja robno polnilo tega jarka (*sl. 17b,c).* Območje sonde 7 je prekrivala ruša – plast 9 (*sl. 17c*).



Sl. 17: Vrhnika, Dolge njive. Izkopa 2 in 3 ter sonda 7. Tloris (**a**); profil G–H, pogled proti severovzhodu (**b**); profil I–J, pogled proti severozahodu (**c**). M. = 1:50.
Fig. 17: Vrhnika, Dolge njive. Sectors 2 and 3 and Trench 7. Plan view (**a**); Cross section G–H, view towards north-east (**b**); Cross section I–J, view towards north-west (**c**). Scale = 1:50.



Sl. 18: Vrhnika, Dolge njive. Sonda 7. – **a**: Jama za stojko (SE 1046–1047); – **b**: temelj (SE 1059). Prim. *sl.17a*.
Fig. 18: Vrhnika, Dolge njive. Trench 7. – **a**: Posthole (SE 1046–1047); – **b**: Foundation (SE 1059). Cf. *Fig. 17a*.

INTERPRETACIJA ARHEOLOŠKIH PLASTI

Dogajanja in sledi človekove dejavnosti na raziskanem območju smo razdelili na pet sklopov, ki vsebujejo manjše ali večje število arheoloških faz. Faze 1 A–E predstavljajo plasti pred nastankom rimske naselbine na Dolgih njivah, faze 2 A–C povezujemo z obstojem naselbine, faza 3 predstavlja dogajanja po opustitvi naselbine, fazi 4 in 5 pa sta novodobni (*razpr. 3*).

Izkop 1

Najbolj izpovedne so bile plasti v izkopu 1 (*sl. 6–15*). Z arheološkimi fazami, ki smo jih tu opredelili, lahko razumemo dogajanje na celotnem območju raziskav (*razpr. 3*).

Faze 1 A–E (plasti 2–6)

V plasteh 2–6 smo predvsem v obdelanih kosih lesa in drobcih oglja prepoznali sledi človekove dejavnosti.

Faza 1 A

Predstavlja jo plast 2 – sloj velikih kosov lesa, ki ležijo na geološki podlagi. Debla in veje s sledmi sekanja kažejo, da bi lahko šlo za čiščenje zaraščenih površin, odvečen oziroma manj uporaben les pa je bil odvržen na breg Ljubljanice. Mogoča je tudi druga razlaga – da gre za les, posekan višje ob reki in naplavljen na raziskovano območje (glej dalje *Izsledki arheobotaničnih analiz. Les*). Znakov za bližino naselbine nismo opazili.

Faza 1 B

Predstavlja jo plast 3, ki je verjetno nastajala daljše obdobje in vsaj deloma kot naplavina na rečnem bregu. Vsebovala je koščke oglja in veliko manjših kosov lesa, med katerimi so bili tudi taki s sledmi obdelave. Kaže, da je šlo za hodno površino in bližino človekovih dejavnosti.

Faza 1 C

Predstavlja jo plast 4 – sloj manjših kosov lesa. Po sledeh sekanja in klanja na vejah ter po deščicah in okleščkih menimo, da gre za odpadek, ki je nastal pri obdelavi lesa (glej dalje *Izsledki arheobotaničnih analiz. Les*). Plast kaže bližino človekovih dejavnosti, ne pa naselbine. Verjetnost, da je bil les naplavljen, se zdi majhna.

Faza 1 D

Predstavlja jo plast 5, ki je po debelini in razpršenosti ostankov sodeč nastajala daljše obdobje in je bila verjetno deloma naplavinskega izvora. Vsebovala je številne drobce oglja, odlomek ostenja rimske keramične posode (*sl. 19*) in številne razmeroma majhne kose lesa, ki so bili odpadek pri obdelavi lesa (glej dalje *Izsledki arheobotaničnih analiz. Les*). Ostanki torej kažejo na hodno površino in bližino človekovih dejavnosti, redkost arheoloških predmetov pa hkrati pomeni, da je bil naselbinski prostor razmeroma oddaljen.

Faza 1 E

Predstavlja jo plast 6 – glineni melj, v katerem je bilo nekaj zelo majhnih koščkov oglja in en drobec keramike. Lahko gre za naplavino, ki se je odložila ob reki, ko v bližini ni bilo naselbine

Faza Phase	Plast / Layer			Datacija / Chronology
	Izkop 1 in sonda 3 Sector 1 and Trench 3	Sonda 2 Trench 2	Izkopa 2–3 in sonda 7 Sectors 2–3 and Trench 7	
5	19–22	-	5–9	novodobno / modern
4	18	8–10		
3	17	7	4a–4b	od sredine 1. st. po Kr. do zgodnjega novega veka / from the mid 1st cent. AD to the early modern period
2 C	15–16	5–6	2–3	avgustejsko obdobje / Augustan period
2 B	10–14	3–4		
2 A	7–9	1–2		
1 E	6	-	-	sredina 1. st. pr. Kr. / mid 1st cent. BC
1 D	5	-	-	konec 2. st. do sredine 1. st. pr. Kr. / from the end of the 2nd to the mid of the 1st cent. BC
1 C	4	-	-	3. ali 2. st. pr. Kr. / 3rd or 2nd cent. BC
1 B	3	-	-	3. ali 2. st. pr. Kr. / 3rd or 2nd cent. BC
1 A	2	-	-	4. ali 3. st. pr. Kr. / 4th or 3th cent. BC

Razpr. 3: Vrhnika, Dolge njive. Razvrstitev plasti v arheološke faze in datacija.
Table 3: Vrhnika, Dolge njive. The arrangement of layers in the archaeological phases and dating.

ali intenzivnih človekovih dejavnosti. Obstaja pa tudi možnost, da je bil debeli sloj melja namerno nasut za utrditev hodne površine. V tem primeru bi potem morali plast 6 povezati z začetnimi dejavnostmi v fazi 2 A.

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Plasti faz 1 A–E so torej nastajale v daljšem časovnem obdobju in vsaka pomeni sled ločenega dogajanja. Fazi 1 A (plast 2) in 1 C (plast 4) predstavljata dva kratkotrajna dogodka - namerni odložitvi lesa, ki se zdi verjetneje kot to, da gre za naravno naplavino. Fazi 1 B in 1 D razlagamo kot dve daljši obdobji večinoma naravnega odlaganja naplavinskih plasti 3 in 5 ob hkratni uporabi prostora za hodno površino. V vseh štirih fazah so vidne sledi človekovih dejavnosti, naselbinski prostor pa je bil oddaljen. Nastanka in pomena faze 1 E oziroma plasti 6, ki vsebuje zelo malo človekovih sledi, ne moremo dobro pojasniti: lahko gre za enkratno namerno nasutje ali pa za naravno naplavino.

Faze 2 A–C (plasti 7–16)

Faza 2 A

V fazi 2 A je bil obrežni pas pokrit z debelo plastjo kamenja (plast 7), na katero je bila nasuta plast peska (plast 8). Šlo je za utrditev in ureditev brega s kamnito podlago in peščenim tlakom. Na pesku se je nabrala tanka plast meljaste gline (plast 9), ki jo razlagamo kot ostanek hodne površine.

Faza 2 B

V fazi 2 B je bilo območje ponovno utrjeno s kamni (plast 10), vendar ne v tako strnjeni plasti kot pri prvi utrditvi. Čez je bila nasuta debela plast peska (plast 11). Šlo je torej za obnovo: novo utrditev in novi peščeni tlak. Na tlaku sta se nabrala dva zaporedna sedimenta hodnih površin (plasti 13 in 14). V površini tlaka je bil viden tudi vkop – jama, ki je bila kmalu zasuta (plast 12) in katere funkcije ne moremo prepoznati.

Faza 2 C

V fazi 2 C je sledila še tretja utrditev površine, tokrat z drobnejšimi kamni (plast 15). Prekrita je bila z novo plastjo peska (plast 16). Hodna površina, ki smo jo pričakovali na plasti peska, ni bila ohranjena.

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Dejavnosti v fazah 2 A–C se torej začnejo z utrditvijo in tlakovanjem rečnega brega, čemur sledita dve popravili.

Faza 3 (plast 17)

Fazo 3 predstavlja debela plast 17 iz peščenega melja z maloštevilnimi ostanki iz različnih obdobij, od antike do novega veka (glej dalje *Datiranje po predmetih*). Odlagala se je verjetno dolgo časa. Morda lahko v njej prepoznamo nekoliko dvignjen naplavinski pas, ki spremlja strugo Ljubljanice vzdolž celotnega toka čez barje.[25] Plast se je oblikovala zunaj naselbinskega območja.

Fazi 4 in 5 (plasti 18–21)

Plast 18 predstavlja prvotno rušo in prst, ki je pokrivala površino pred sodobno gradnjo mostu in ceste (**faza 4**). Plasti 19–21 so nastale ob gradnjah in urejanju brega v zadnjih desetletjih (**faza 5**).

Sonda 2

Plasti v sondi 2 (*sl. 16*) se dokaj dobro ujemajo s plastmi v izkopu 1 (*sl. 6*). Območji ležita le 5 m narazen in sta umeščeni med obzidje rimske naselbine in reko (*sl. 4*).

Tako kot v izkopu 1 bi lahko tudi v sondi 2 videli tri zaporedna utrjevanja površine z nanosi peska (plasti 1, 3 in 6). V plasti 5, ki vsebuje več kamenja, bi morda lahko videli podlago za peščeni tlak (plast 6). Vmesni plasti 2 in 4, iz glinenega melja, sta lahko ostanka hodnih površin ali nasutij. Potemtakem bi lahko plasti 1–6 postavili v faze 2 A–C, tako kot smo jih določili v izkopu 1 (*razpr. 3*).

Plast 7 (rjav peščen melj) iz sonde 2 se verjetno ujema s plastjo 17 v izkopu 1, kjer smo jo interpretirali kot naplavino, nastalo po antičnem obdobju (*razpr. 3*).

Izkopa 2–3 in sonda 7

Po primerjavi s starejšimi raziskavami je bilo jasno, da sta bila izkopa 2 in 3 umeščena znotraj jugozahodnega območja rimske naselbine na Dolgih njivah (*sl. 4; 17*).

Prvi poseg neposredno v geološko osnovo (plast 1) predstavljata vkopani jama za stojko in manjša kamnita struktura nepravilne oblike. Geološko osnovo v vseh sondah, jamo za stojko in kamnito strukturo je pokrival tlak iz grobega peska in gruščа (plast 2). Nad tlakom je ležala slabo ohranjena ruševinska plast (plast 3). Po skromnih najdbah lahko tlak in ruševino nad njim postavimo v rimsko dobo (glej dalje *Datiranje po predmetih*).

Nekaj razmetanih kamnov v izkopu 2 v plasti 4a je morda predstavljalo zadnji ostanek vzhodnega obzidja rimske naselbine.

V plasteh 4a in 4b smo prepoznali nekdanjo ornico, ki se je oblikovala od opustitve antične naselbine dalje.

Plasti 5–7 predstavljajo najmlajša, novodobna nasutja.

DATIRANJE

Analiza radioaktivnega izotopa 14C

Analize ogljika 14C so opravili na šestih vzorcih (*razpr. 1*) v laboratorijih *Poznań Radiocarbon Laboratory* in *Beta Analytic Radiocarbon Dating*. Datacije so bile kalibrinane s programom Calib Rev 7.0.2.

Izkop 1 – **geološka osnova** (plast 1)

V tej plasti sta bila datirana en vzorec sedimenta in en organski vzorec:

– Vzorec sedimenta je bil odvzet iz palinološkega sedimentnega stolpca na absol. viš. 288,25 m n. m. (lega *sl. 6*; glej dalje Andrič 2016).

Beta-241775: 2730 ± 40 BP; kalibrirano 2923–2756 BP oziroma 973–806 BC (2 sigma).

– Neidentificirani rastlinski makroostanki iz plasti 1 so bili odvzeti iz palinološkega sedimentnega stolpca na absol. viš. 288,25 m n. m. (lega *sl. 6*; glej dalje Andrič 2016).

Beta-242460: 2300 ± 40 BP; kalibrirano 2363–2156 BP oziroma 413–206 BC (2 sigma).

Čeprav sta bila oba vzorca odvzeta iz iste globine v plasti 1 in sta ležala drug poleg drugega, je razlika med datacijama zelo velika. Vzorec sedimenta (Beta-241775) je datiran v čas 973–806 pr. Kr., vzorec rastlinskega makroostanka (Beta-242460) pa 413–206 pr. Kr. Ker se datacija drugega vzorca ujema z datacijo debla iz plasti 2 (faza 1 A; glej spodaj), je mogoče, da so se datirani rastlinski makroostanki pogreznili v plast 1 iz mlajše, višje ležeče plasti 2, tako kot se je to zgodilo s posameznimi večjimi kosi lesa iz plasti 2. Po tej razlagi datacija prvega vzorca (973–806 pr. Kr.) bolj pravilno določa čas

[25] Melik 1946, 41; Horvat 1990, 35–36, 49, 161, 171.

nastanka sedimenta v plasti 1 na absol. viš. 288,25 m n. m. (glej dalje Andrič 2016).

Izkop 1 – **faza 1 A** (plast 2)

Za analizo 14C je bil odvzet vzorec lesa iz periferije hrastovega debla z vidnimi sledmi obdelave VRH07-086a (*sl. 7; 21; 22*; *Katalog lesa,* št. **1**).

Poz-46646: 2225 ± 30 BP; kalibrirano 2329–2154 BP oziroma 379–204 BC (2 sigma).

Analiza je pokazala približno starost debla ob njegovem poseku, tj. 379–204 pr. Kr.

Izkop 1 – **faza 1 B** (plast 3)

Datiran je bil organski sediment, odvzet iz palinološkega sedimentnega stolpca, na absolutni višini 288,57 m n. m. (lega *sl. 6*; glej dalje Andrič 2016).

Beta-259684: 3050 ± 40 BP; kalibrirano 3366–3085 BP oziroma 1416–1135 BC (2 sigma).

Ocenjena starost sedimenta (1416–1135 pr. Kr.) v plasti 3 je skoraj 1000 let starejša od datacij spodaj ležečih plasti 1 in 2 in tako ne ustreza stratigrafski legi na terenu. Verjetno kaže na premeščanje obrečnega sedimenta ali pa na material vodnih rastlin, katerih datacije so zaradi specifičnega fotosintetskega cikla prestare (glej dalje Andrič 2016).

Izkop 1 – **faza 1 D** (plast 5)

Datirana sta bila dva organska vzorca, vzorec lesa in jelova iglica.

– Vzorec lesa je bil odvzet iz periferije jesenovega debla s sledmi obdelave VRH07-178 (*sl. 21*; *Katalog lesa,* št. **32**).

Poz-46647: 2095 ± 30 BP; kalibrirano 2144–1995 BP oziroma 194–45 BC (2 sigma).

– Druga analiza je bila narejena na jelovi iglici, najdeni v arheobotaničnem vzorcu št. 74, odvzetem na globini 288,72 m n. m. (lega *sl. 9*).

Poz-46649: 2225 ± 35 BP; kalibrirano 2331–2153 BP oziroma 381–203 BC (2 sigma).

Datacija jelove iglice (Poz-46649) v čas 381–203 pr. Kr. najverjetneje kaže prestaro obdobje. Vzrok je lahko presedimentacija ob reki. Mogoče je tudi, da je bil vzorec zaradi težavnega razlikovanja arheoloških slojev med izkopavanji pripisan napačni plasti in bi pravzaprav sodil v plast 3.

Datacija jesenovega debla (Poz-46647) v čas 194–45 pr. Kr. je stratigrafsko ustreznejša.

Dendrokronologija

Dva vzorca hrastovih debel (VRH07-086a in VRH07-102; *sl. 6; 7; 21*: 1; *22*: 1,5; *Katalog lesa,* št. **1**, **5**) iz izkopa 1, oba iz plasti 2 (faza 1 A), sta bila primerna za dendrokronološko analizo. Razpon branik je bil 45 let, kar pa ni bilo dovolj za uspešno datiranje z referenčno hrastovo kronologijo (Katarina Čufar, Oddelek za lesarstvo, Biotehniška fakulteta, Univerza v Ljubljani).

Datiranje po predmetih

Izkop 1

Faza 1 D (plast 5)

V plasti 5 je bil najden en sam predmet – odlomek ostenja visokega vretenastega kozarca iz keramike tankih sten (*sl. 19*; *Katalog predmetov,* št. **1**). Takšni kozarci so se sredi 2. st. pr. Kr. razširili iz tirenske Italije po vsem polotoku in po zahodnem Sredozemlju. V notranjosti Slovenije jih najprej srečamo na rimski postojanki Mandrga na prelazu Razdrto, kjer so datirani na konec 2. ali na začetek 1. st. pr. Kr. oziroma v obdobje LT D1a.[26] Različica, okrašena z bunčicami, se na jugovzhodnoalpskih najdiščih pojavlja v prvi tretjini 1. st. pr. Kr.,[27] npr. na Prevalu na Razdrtem[28] in v Fornačah.[29] Kot kaže skupek najdb iz stavbe OR/20c c s Štalenske gore, pa je bila v tretji četrtini 1. st. pr. Kr. že zelo redka.[30] Za odlomek ostenja iz plasti 5 ni jasno, kateri različici visokih kozarcev pripada.

Na podlagi odlomka kozarca lahko torej datiramo plast 5 v čas od konca 2. st. pr. Kr. do najpozneje zgodnjeavgustejskega obdobja.

Faza 1 E (plast 6)

V plasti 6 je bil najden samo en odlomek ostenja prostoročno izdelanega lonca (*Katalog predmetov,* št. **2**). Po videzu ga lahko povežemo s prazgodovinsko keramiko, podrobneje pa ga ne moremo opredeliti.

Faza 2 A (plasti 7–9)

Plast 7: *Katalog predmetov,* št. **3**, **4**. Maloštevilni odlomki rimske navadne namizne keramike in brezoblični kosi prežgane gline.

[26] Horvat, Bavdek 2009, 68–72, 94.

[27] Božič 2008, 128.

[28] Horvat, Bavdek 2009, 112, 121.

[29] Horvat, Bavdek 2009, 71–72; Stokin 1992, t. 1: 8–9,12; 3: 10–12.

[30] Schindler-Kaudelka 2002, 266.

Sl. 19: Vrhnika, Dolge njive. Izkop 1, plast 5. Ostenje kozarca iz keramike tankih sten (*Katalog predmetov,* št. **1**).
Fig. 19: Vrhnika, Dolge njive. Sector 1, Layer 5. Fragments of the thin-walled beaker (*Catalogue of artefacts,* no. **1**).

Plast 8: *Katalog predmetov,* št. **5**–**9**. Odkrit je bil močno izrabljen as, kovan v prvi polovici 2. st. pr. Kr. (kat. št. **5**). Med maloštevilnimi kosi rimske navadne namizne keramike izstopa bikonični vrč (kat. št. **7**).

Plast 9: *sl. 20:* 12,13. *Katalog predmetov,* št. **10**–**18**. Najdenih je bilo nekaj železnih predmetov in predvsem keramika, npr. kozarec iz oksidacijsko žgane keramike tankih sten (kat. št. **14**), navadna namizna keramika z vrčema (*sl. 20:* 12,13) in lonci iz grobe kuhinjske keramike, izdelani na roko (kat. št. **17**).

Rimska keramika v treh plasteh faze 2 A je maloštevilna, prisotne pa so vse tri običajne skupine: fina, navadna namizna in groba kuhinjska keramika. Oksidacijsko žgana keramika tankih sten, bikonični vrč in vrč s širokim izlivkom kažejo na zgodnjo rimsko dobo, ožje časovno pa niso določljivi. Tudi novec ni primeren za natančno datiranje plasti. V vseh plasteh so ležali razpršeni brezoblični koščki oranžno prežgane gline, ki so morda ostanki ometa ali oblog ognjišč in peči. Odkritih je bilo tudi nekaj koščkov železa nedoločljivih oblik.

Faza 2 B (plasti 10–14)

Plast 10: brez arheoloških najdb.

Plast 11: *sl. 20*: 19–21. *Katalog predmetov,* št. **19**–**27**. Ustje (*sl. 20:* 19) pripada verjetno sigilatni skodelici padske proizvodnje B in oblike Consp. 22.6, ki je značilna za čas od drugega desetletja pr. Kr. do konca avgustejskega obdobja.[31] Ostala keramika ni ožje časovno določljiva.

Plast 12: *katalog predmetov,* št. **28**–**33**. Predmeti niso ožje časovno določljivi.

Plast 13: *sl. 20:* 34–36. *Katalog predmetov,* št. **34**–**37**. Predmeti niso ožje časovno določljivi.

Plast 14: *sl. 20*: 38, 42–48. *Katalog predmetov,* št. **38**–**55**. Dve posodi iz keramike s črnim premazom (*sl. 20:* 42,43) se ujemata s srednjepadsko keramiko s črnim premazom oziroma s poroznim fabrikatom s Štalenske gore.[32] Krožnik (*sl. 20:* 42) ima ravno dno in poševno steno, ki se proti ustju enakomerno zožuje. Krožnik s podobno obliko ostenja je bil odkrit že pri starejših izkopavanjih na Dolgih njivah.[33] Sorodne oblike najdemo tudi med poroznim fabrikatom s Štalenske gore[34] in keramiko najstarejših rimskih plasti iz Gurine.[35] Gre za pozne oblike keramike s črnim premazom, ki jih lahko postavimo predvsem v predavgustejsko in zgodnjeavgustejsko obdobje.[36] Podobno oblikovano ostenje krožnika se pojavi tudi na zgodnji sigilati – oblika Consp. 1.[37] Krožnik (ali skleda) s poševnim ostenjem in preprosto zaključenim ustjem (*sl. 20:* 43) je blizu oblikam Lamboglia 5/7 in 7/16, ki sta značilni za avgustejsko obdobje.[38] Nepremazani kozarci vrste Aco (*sl. 20:* 44) so na Štalenski gori številni v drugem desetletju pr. Kr., v poznoavgustejskem obdobju pa že zelo redki.[39]

Plasti faze 2 B vsebujejo raznovrstno rimsko keramiko. Fino namizno posodje (krožniki, kozarci, skodelice) je bilo uvoženo iz severne Italije. Iz Italije je prišla verjetno tudi navadna keramika, izdelana iz prečiščene gline in oksidacijsko žgana (vrči, pokrov, skleda). Grobi kuhinjski lonci, ki so bili izdelani ali vsaj dodelani na roko (*sl. 20:* 21,35,36), pa so verjetno lokalnega izvora. Poleg številnih koščkov prežgane gline se pojavljajo v plasteh odlomki amfor, opek in kos imbreksa. Najdenih je bilo tudi več žebljev in različnih koščkov železa (*sl. 20:* 34,38).

Krožnik s črnim premazom (*sl. 20:* 42) in čaša Aco (*sl. 20:* 44) kažeta na zgodnje- oziroma srednjeavgustejski čas, medtem pa sigilatna sko-

[31] Conspectus 2002, 90.

[32] Horvat, Bavdek 2009, 57–58.

[33] Horvat 1990, 116, t. 22: 4; Mušič, Horvat 2007, 257–258, 278–279.

[34] Schindler 1967, t. 5: 7–8; Schindler 1986, 356, sl. 4: 9–11.

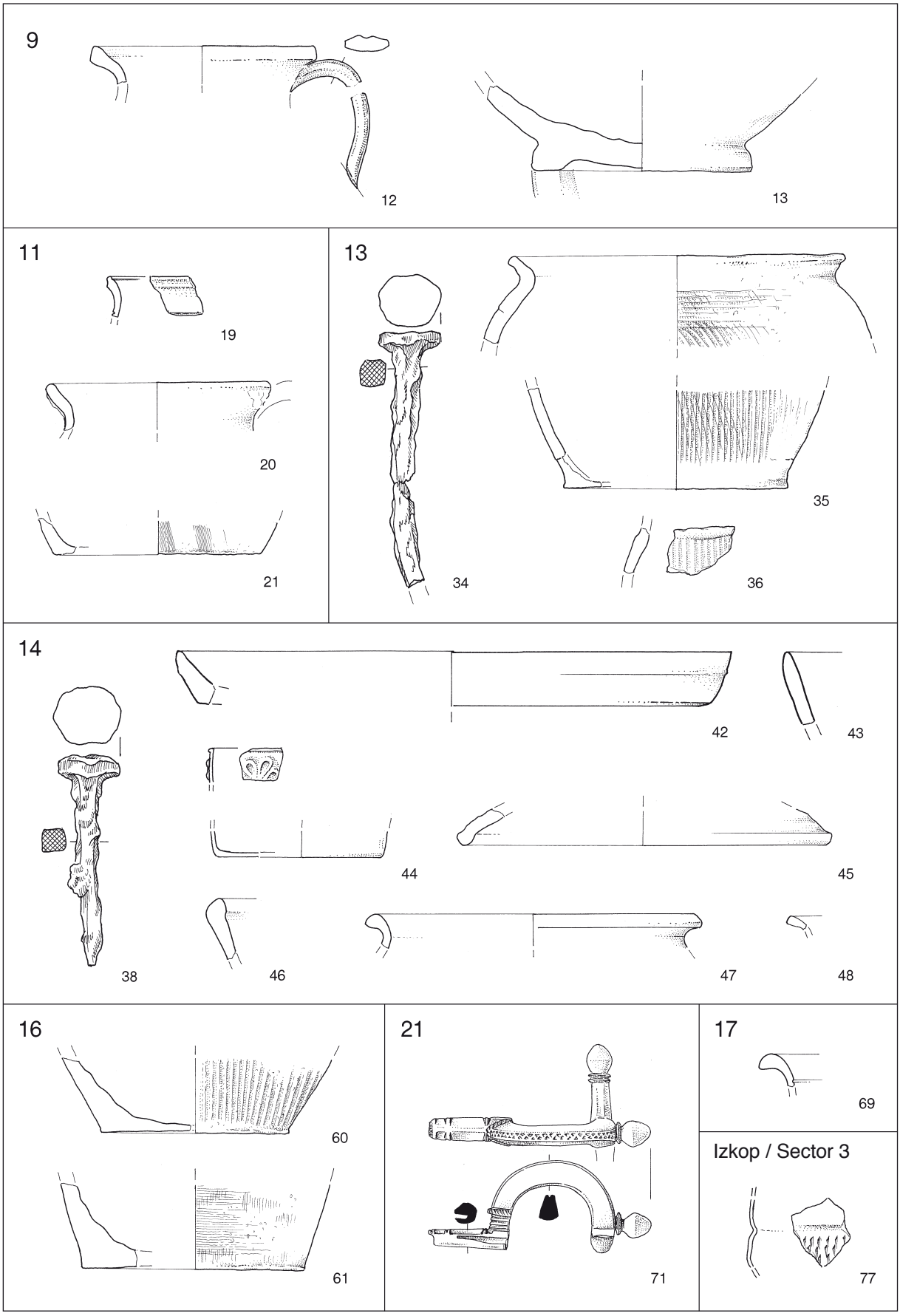
[35] Gamper 2007, sl. 4: 2,4; 11–13.

[36] Mušič, Horvat 2007, 257–258, 278–279.

[37] Schindler, Scheffenegger 1977, 41–50, t. 8: 8–9; Conspectus 2002, 52.

[38] Božič 2008, 133–134; Dolenz et al. 2008, 258–260; Horvat, Bavdek 2009, 118.

[39] Schindler Kaudelka 2000, 62.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Izkop / Sector 3
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Sl. 20: Vrhnika, Dolge njive. Predmeti. – Izkop 1: plasti 9, 11, 13–14, 16–17, 21 (kat. št. **12**, **13**, **19–21**, **34–36**, **38**, **42–48**, **60**, **61**, **69**, **71**. – Izkop 3: (kat. št. **77**). 34,38 železo; 71 bakrova litina; ostalo keramika. M. 19,34,38,42–44,71,77 = 1:2; ostalo = 1:3.
Fig. 20: Vrhnika, Dolge njive. Artefacts. – Sector 1: Layers 9, 11, 13–14, 16–17, 21 (cat. nos. **12**, **13**, **19–21**, **34–36**, **38**, **42–48**, **60**, **61**, **69**, **71**). – Sector 3 (cat. no. **77**). 34,38 iron; 71 copper alloy; the rest pottery. Scale 19,34,38,42–44,71,77 = 1:2; other = 1:3.

delica (*sl. 20:* 19) zanesljivo opredeljuje fazo 2 B v srednje- do poznoavgustejski čas.

Faza 2 C (plasti 15 in 16)

Plast 15: *Katalog predmetov,* št. **56**. Najden je bil močno izrabljen as, kovan v prvi polovici 2. st. pr. Kr.

Plast 16: *sl. 20*: 60–61. *Katalog predmetov,* št. **57–68**. Poleg grobih kuhinjskih loncev (*sl. 20:* 60,61 in kat. št. **64**) srečamo še keramiko tankih sten (kat. št. **62**), navadno namizno keramiko (kat. št. **63**), koščke amfor, opek in prežgane gline (kat. št. **65–67**). Zraven je bilo še nekaj kovinskih predmetov (kat. št. **57–59**) in kos žlindre (kat. št. **68**).

Po predmetih se plasti faze 2 C ne da datirati podrobneje kot v zgodnjerimsko dobo.

Faza 3 (plast 17)

V plasti 17 je bilo najdenih nekaj manjših koščkov rimske keramike (*Katalog predmetov,* št. **69**, **70**), med njimi izvihano ustje sklede (*sl. 20:* 69). Sklede in skodele z izvihanim ustjem so bile zelo priljubljene in dolgo uporabljane ter se pojavljajo od druge polovice 1. st. do začetka 3. st. po Kr.[40]

Faza 5 (plast 21)

V moderno premešani plasti 21 vzhodno od izkopa 1 je bila najdena fibula s čebuličastimi zaključki gumbov (*sl. 20:* 71; *Katalog predmetov,* št. **71**). Sodi v tip I A, ki je najpogostejši ob koncu 3. in na začetku 4. st., tj. med letoma 280 in 320.[41]

Izkop 3

Plast 2: *katalog predmetov,* št. **72**. Najdeni so bili samo brezoblični kosi prežgane gline.

Plast 3: *katalog predmetov,* št. **73–76**. Maloštevilni kosi keramike sodijo v rimsko dobo, niso pa časovno ožje določljivi.

Plast 4a: *sl. 20:* 77. *Katalog predmetov,* št. **77**, **78**. Skodelica tankih sten (*sl. 20:* 77) je po sivi in trdi keramiki brez premaza blizu fabrikatu C s Štalenske gore, ki je bil priljubljen od tiberijskega časa dalje.[42] Primerjamo jo lahko tudi s keramiko tankih sten tipa A iz Angere, kjer sodi v tiberijsko-klavdijsko obdobje.[43]

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Po redkosti keramičnih odlomkov iz faz 1 D in 1 E v izkopu 1 sodimo, da gre za čas pred izgradnjo rimske naselbine na Dolgih njivah. Odlomek ostenja kozarca iz keramike tankih (*sl. 19*) iz faze 1 D predstavlja najstarejši predmet na izkopanem območju. Z njegovo pomočjo lahko datiramo fazo od konca 2. do sredine 1. st. pr. Kr., hkrati pa odlomek tudi dokazuje, da je v Navport že takrat prihajala fina namizna keramika iz Italije.

V plasteh faz 2 A–C v izkopu 1 so bile odkrite maloštevilne arheološke najdbe, predvsem močno razdrobljena keramika in le nekaj kovinskih predmetov. Gradivo iz vseh plasti je zelo sorodno: rimski novci, iz Italije uvožena fina namizna in navadna namizna keramika ter lokalna groba kuhinjska keramika. Natančnejša datacija faz 2 A in 2 C ni mogoča zaradi majhne količine gradiva. Fazo 2 B pa se da dobro datirati po značilnih oblikah fine keramike. Krožnika iz keramike s črnim premazom (*sl. 20:* 42,43), skodelica iz tere sigilate (*sl. 20:* 19) in kozarec vrste Aco (*sl. 20:* 44) so bili lahko skupaj v rabi v srednjeavgustejskem obdobju. Najverjetneje so si vse tri faze (2 A, 2 B in 2 C) razmeroma hitro sledile in sodijo v avgustejsko obdobje.

Keramično skodelico (*sl. 20:* 77), ki je datirana v prvo polovico 1. st., najdena pa v nekdanji ornici v izkopu 3, lahko povežemo z rimsko naselbino na Dolgih njivah.

Odlomek sklede (*sl. 20:* 69), najden v plasti 17 (izkop 1, faza 3) in datiran med drugo polovico 1. in začetek 3. st., je iz časa po opustitvi naselbine na Dolgih njivah.

Čebuličasta fibula (*sl. 20:* 71), najdena na uničenem prostoru, je najmlajši arheološki ostanek in sodi na konec 3. in na začetek 4. st.

[40] Istenič 1999, 96–99; Krajšek, Stergar 2008, 253.
[41] Pröttel 1988, 349–353.
[42] Schindler-Kaudelka 1975, 31–32.
[43] Sena Chiesa 1985, 393.

IZSLEDKI ARHEOBOTANIČNIH ANALIZ

Semena in plodovi

Vseh devet po presoji odvzetih arheobotaničnih vzorcev iz z vodo prepojenih starejših plasti izkopa 1 (*razpr. 1:* plasti 2, 3, 5; faze 1 A, 1 B, 1 D) je vsebovalo različne rastlinske in živalske ostanke (*razpr. 4*).

Med rastlinskimi prevladujejo semena in plodovi naravnega rastja, predvsem vodnih in obrežnih rastlin (npr. vodni sovec, vodna zlatica, šaši, ostričevke, bički, dristavci). Veliko je tudi ostankov drevesnih vrst, predvsem jelke, jelše, leske, hrasta in bukve (semena oz. plodovi, iglice oz. listi, popki, les). Ni pa bilo ostankov kulturnih ali gojenih rastlin. Med možnimi nabiranimi rastlinami so bila odkrita semena jagodnjaka, maline in divje jablane oz. hruške ter plodovi leske, hrasta in bukve.

Majhni živalski ostanki, ki so se ujeli na situ med mokrim sejanjem, kažejo na vodno (npr. vodne žuželke, mehkužci, ribe) in antropogeno okolje (koproliti malih sesalcev, velikosti reda miši).

Štirje preliminarno pregledani sistematično odvzeti vzorci (po eden iz faz 1 E, 2 A, 2 B, 2 C) so vsebovali izredno malo ali nič rastlinskih ostankov (*razpr. 1; 5*) in, kar je pomembno, ohranjenih ni bilo nobenih ostankov kulturnih rastlin. Tako smo se prepričali, da v nobeni od mlajših plasti (od faze 1 E dalje) ni antropogenih sledi rastlinske prehrane (gojene ali nabirane). Zato ostalih sistematično odvzetih vzorcev iz suhih, mlajših plasti nismo več analizirali.

Les

V izkopu 1 smo iz plasti 2–5 pobrali različno število vzorcev lesa. Razlike v količini so posledica velikosti, ohranjenosti in številčnosti ohranjenih kosov lesa, pa tudi prostornine izkopanih plasti (*razpr. 6*).

Opisi kosov lesa:

Vzorčen les je v večini izviral iz *debel* ali *vej*. Kadar ločitev ni bila popolnoma jasna (pri manjših in poškodovanih kosih), smo primerke s premerom koluta 5 cm in več opredelili kot "*debla*", primerke z manjšim premerom pa kot "*veje*". Debla in veje večinoma niso imeli ohranjenih stranskih vej. Pogosto ni bilo mogoče ugotoviti, ali je to posledica obsekavanja ali naravnega procesa. Skorja (z lubjem ali brez) je bila lahko ohranjena ali pa tudi ne, vendar namernega lupljenja nismo mogli prepoznati.

Po izvoru in sledeh obdelav smo les razdelili na *neobdelana* in *obdelana debla* (debla, klana na segmente ali tramovi), *deske*, *neobdelane* in *obdelane veje*, *oklešče, luske* in kose *lubja* (*razpr. 6–9*). Kot *oklešče* smo opredelili manjše klane in odsekane kose (s periferijo ali brez), v katerih smo prepoznali odpadek pri obdelavi lesa. *Luske* so majhni in tanki koščki lesa, katerih nastanek težko ugotovimo.

Na vzorcih smo prepoznali sledi obdelave: *klanje, sekanje, žaganje* in *ožganost* lesa.

Faza 1 A (plast 2)

Vzorčenih je bilo 14 kosov lesa. Gre za listavce, vrstna pestrost lesa je razmeroma velika. Prevladuje hrast, sledi bukev, ostale vrste so prisotne s posameznimi primerki (*razpr. 7; sl. 6; 7; 21:* 1,3; *22*; *Katalog lesa,* št. **1**–**14**).

Debla, pet hrastovih in eno bukovo, so bila neenakomerno debela, tudi grčava, s premeri od 6 do 30 cm. Ohranjene dolžine so bile od 20 do 215 cm, pri čemer sta dve segali še zunaj izkopnega polja (*sl. 6; 7; 21:* 1,3; *22:* 1–6; kat. št. **1**–**6**).

Sledi obdelave so pogoste (*razpr. 6; 7*). Debla so imela odsekane veje, obsekane konice, zaseke (*sl. 21:* 1,3; *22:* 1–6; kat. št. **1**–**6**), v enem primeru so morda vidne tudi sledi žaganja (*sl. 21:* 3; *22:* 3; kat. št. **3**). Najdena je bila ena klana deščica (*sl. 22:* kat. št. **7**), konica ene od vej je obsekana (*sl. 22:* kat. št. **9**). Šest vej je brez sledov obdelave in tudi brez stranskih vej (kat. št. **8**, **10**–**14**), ena med njimi je bila verjetno ožgana (*sl. 22:* kat. št. **8**).

Večja debla in veje kažejo na sekanje dreves, klano deščico pa lahko razumemo kot odpadek pri obdelavi lesa.

Hrastovo deblo VRH07-086a (*sl. 21:* 1; *22:* kat. št. **1**) je bilo datirano z metodo radioaktivnega izotopa 14C.

→

Razpr. 4: Vrhnika, Dolge njive. Izkop 1. Arheobotanični in arheozoološki ostanki v vzorcih iz faz 1 A, 1 B in 1 D (plasti 2, 3 in 5). x = večje število; ? = nezanesljiva identifikacija.

Table 4: Vrhnika, Dolge njive. Sector 1. Archaeobotanical and archaeozoological remains in samples from Phases 1 A, 1 B and 1 D (Layers 2, 3 and 5). x = large number; ? = unsure identification.

Vzorec / Sample		Faza Phase 1 A		Faza Phase 1 B					Faza Phase 1 D	
		Plast Layer 2		Plast Layer 3					Plast Layer 5	
TAKSON / TAXA	Št. / No. / Ostanek / Remain	92	100	77	79	80	82	93	74	234
Quercus sp. / hrast	želod / acorn		1	?1	2				?1	
Quercus cerris / cer	želod / acorn					1				
Alnus glutinosa / črna jelša	seme / seed			?1					2	
Fagus sylvatica / bukev	žir / beech nut									1
Abies alba / jelka	iglice / needles				3	13			10	
Corylus avellana / leska	lešnik / hazel nut	1						2		
Maloideae / jablana, hruška	pečka / pip				1					
Galium sp. / lakota	seme / seed				1					
Trifolium sp. / detelja	seme / seed					?1				
Epilobium, Hypericum / vrbovec, krčnica	seme / seed					3				
Chenopodiaceae / metlikovke	seme / seed					1				
Rubus idaeus / malina	seme / seed					1				
Fragaria vesca / jagodnjak	seme / seed				1					
Betulaceae / brezovke	socvetje / inflorescence					1				
Schoenoplectus sp. / biček	seme / seed					1				
Carex sp. / šaš	seme / seed					6				
Cyperaceae / ostričevke	seme / seed				4					
Sagittaria sp. / streluša	seme / seed					?1				
Ranunculus aquatilis / vodna zlatica	seme / seed				6	2			2	
Ranunculus acris / ripeča zlatica	seme / seed				1	1				
Potamogeton sp. / dristavec	seme / seed					3	1			
Oenanthe aquatica / vodni sovec	seme / seed				11	18			1	
Pteridium aquilinum / orlova praprot	ostanek lista / leaf remains			1		1				
Fungi / glive	spore / spores					1				
ostalo / other	ostanki mahov / remains of mosses			x	x	x	x		x	
	ostanki semen oz. plodov / remains of seeds or fruits								3	
	ostanki popkov / remains of buds				4	x			2	
	ostanki vejic, koreninic, lesa / remains of twigs, fine roots, wood			x	x	x	x		x	
	ostanki skorje dreves / remains of tree bark				x				x	
	ostanki listov listavcev / leaf remains of deciduous trees			x	x	x	x		x	
	mikrooglje / micro-charcoal			1	x	x	x			
Mollusca / mehkužci	lupinice / valves			x		x	x		x	
Gastropoda / polži	hišica / shells								1	
Trichoptera / mladoletnice	hišice / shells			x	x	x	x		x	
Coleoptera / hrošči	zunanji skelet / exoskeletons						1			
Insecta / žuželke	zunanji skelet / exoskeletons			x	x	x			x	
Pisces / ribe	luska / scales					1				
mali sesalec / small mammal	koproliti / coprolites				3	5				

Faza / Phase	**1 E**	**2 A**	**2 B**	**2 C**
Plast / Layer	**6**	**9**	**13**	**16**
Št. vzorca / Sample No.	**33**	**19**	**8**	**1**
Volumen sedimenta / Volume of the sediment	2,8 l	4 l	3 l	3,5 l
Volumen anorganskih ostankov / Volume of inorganic remains	35 ml	600 ml	260 ml	100 ml
Volumen organskih ostankov / Volume or organic remains	10 ml	100 ml	60 ml	250 ml
Rastlinski makroostanki **Macrobotanical remains**	drobci oglja, ostanki mahov in koreninic fragments of charcoal, remains of mosses and fine roots	drobci oglja fragments of charcoal	drobci oglja fragments of charcoal	1 seme maline (*Rubus idaeus*), drobci oglja 1 seed of *Rubus idaeus*, fragments of charcoal

Razpr. 5: Vrhnika, Dolge njive. Izkop 1. Arheobotanični ostanki v sistematično odvzetih in preliminarno pregledanih vzorcih iz faz 1 E, 2 A, 2 B in 2 C (plasti 6, 9, 13 in 16).
Table 5: Vrhnika, Dolge njive. Sector 1. Archaeobotanical remains in the systematically collected and preliminary examined samples from the Phases 1 E, 2 A, 2 B and 2 C (Layers 6, 9, 13 and 16).

VZOREC LESA / WOOD SAMPLE		**Faza / Phase**				Σ
Oblika ali prvotna lega **Form or original position**	**Obdelava / Working**	**1 A** Plast / Layer 2	**1 B** Plast / Layer 3	**1 C** Plast / Layer 4	**1 D** Plast / Layer 5	
Deblo / Trunk	neobdelano / unworked				2 (0,6 %)	2
	klano, obsekano / split, chopped	6			16 (4,9 %)	22
Veja / Branch	neobdelana / unworked	6		6	132 (40,1 %)	144
	klana, obsekana / split, chopped	1	1	2	34 (10,3 %)	38
Deska / Board	klana / split	1		2	65 (19,7 %)	68
Oklešček in luska / Woodchip and shawing	klano, obsekano / split, chopped			2	40 (12,2 %)	42
Lubje / Bark					27 (8,2 %)	27
Nedoločeno / Undefined				1	13 (4,0 %)	14
Σ		14	1	13	329 (100 %)	357

Razpr. 6: Vrhnika, Dolge njive. Izkop 1. Število vzorcev lesa iz faz 1 A–D (plasti 2–5), oblika ali opredelitev lesa po prvotni legi v drevesu in sledi obdelave.
Table 6: Vrhnika, Dolge njive. Sector 1. The number of wood samples from the Phases 1 A–D (Layers 2–5), form or determination of wood according to its original position in the trunk and traces of working.

Faza 1 B (plast 3)

Iz plasti je bil pobran samo en večji kos lesa - hrastova veja, z obsekanim koncem (*razpr. 6*; *Katalog lesa,* št. **15**).

Faza 1 C (plast 4)

Plast 4 je sestavljal, podobno kot plast 2, sloj neurejeno nametanih manjših kosov lesa (*sl. 8*). Kot vzorce smo pobrali krajše veje (dolžine do 33 cm), deščice in oklešče (*razpr. 6*; *Katalog lesa,* št. **18**–**28**). Devetim vzorcem nismo določili vrste, preostali štirje pa so pripadali štirim različnim vrstam lesa listavcev (*razpr. 8*).

V primerjavi s plastjo 2 gre tu za drugačno sestavo lesnih ostankov: manjši kosi lesa, med katerimi močno prevladujejo veje (kat. št. **17**, **20**–**23, 25, 27**–**28**), prisotne so deske (*sl. 23:* 18; kat. št. **16**, **18**) in oklešček (*sl. 23:* kat. št. **19**), ni pa večjih debel. Deske in okleščki kažejo, da gre vsaj deloma za odpadek, ki je nastal pri obdelavi lesa. Zdi se nam verjetno, da so s plastjo lesa namenoma utrdili mehko obrežje.

Oblika Form	Obdelava Working	Vrsta nedoločena / Species unidentified	QUSP	FRSP	ALGL	COAV	ALGL/COAV	ACSP	ACSP/TILIA	FASY	SASP/POSP	CPBE	ULMUS	ROSACEAE	ABAL	IGLAVEC / CONIFEROUS TREE	Σ
Deblo / Trunk	neobdelano / unworked																
	klano, obsekano / split, chopped		5							1							6
Veja / Branch	neobdelana / unworked	2					1			1	1	1					6
	klana, obsekana / split, chopped		1														1
Deska / Board	klana / split									1							1
Oklešček in luska / Woodchip and shawing	klano, obsekano / split, chopped																
Lubje / Bark																	
Nedoločeno / Undefined																	
Σ		2	6				1			3	1	1					14

Razpr. 7: Vrhnika, Dolge njive. Izkop 1, faza 1 A (plast 2). Število vzorcev lesa po lesnih vrstah in sledeh obdelave.
Table 7: Vrhnika, Dolge njive. Sector 1, Phase 1 A (Layer 2). The number of wood samples in relation to the wood species and traces of working.
QUSP = *Quercus* sp. (hrast / oak); FRSP = *Fraxinus* sp. (jesen / ash); ALGL = *Alnus glutinosa* (črna jelša / black alder); COAV = *Corylus avellana* (leska / hazel); ACSP = *Acer* sp. (javor / maple); TILIA = *Tilia* sp. (lipa / lime); FASY = *Fagus sylvatica* (bukev / beech); SASP = *Salix* sp. (vrba / willow); POSP = *Populus* sp. (topol / poplar); CPBE = *Carpinus betulus* (gaber / common hornbeam); ULMUS = *Ulmus* sp. (brest / elm); ROSACEAE = rožnice / rose family; ABAL = *Abies alba* (jelka / fir)

Faza 1 D (plast 5)

Pobrali smo 329 vzorcev lesa, ki je bil neurejeno razpršen v plasti 5. Bistveni podatki o lesu so predstavljeni na razpredelnicah (*razpr. 6; 9–11*), v katalogu pa so opisani samo primerki, predstavljeni s slikami (*sl. 21:* 29–33; *24*; *Katalog lesa,* št. **29**–**36**).

Več kot 90 % pobranih primerkov je majhnih, dolgih okoli 20 cm ali manj, daljših je bilo le nekaj vej (največ do 50 cm dolžine). Verjetnost, da smo dele istega drevesa obravnavali večkrat, je torej precejšnja.

104 vzorcem smo določili vrsto. Les hrasta prevladuje z 31 % (n = 32 vzorcev), sledijo jelša (n = 13–16), jesen (n = 12), javor (n = 9–10), bukev (n = 8) in iglavci (n = 11) (*razpr. 9*).

Število kosov s sledmi obdelave (n = 155) in tistih brez njih (n = 174) je približno uravnoteženo (*razpr. 10*). Maloštevilni primerki so bili tudi ožgani (n = 10), kar je le 3 % vzorčenega lesa (*razpr. 11*).

Polovico ostankov predstavljajo veje (n = 166), od katerih jih je bila večina (80 %) krajša od 20 cm. 80 % vej (n = 132) je bilo neobdelanih, hkrati pa so bile tudi brez stranskih vej in pogosto brez lubja. Ni bilo mogoče jasno razlikovati med naravnimi procesi in namenskim lupljenjem ter odstranjevanjem stranskih vej. Na 20 % vej (n = 34) so bile jasno vidne sledi obdelave: zaseki, s katerim so bile odsekane od debla, obsekane konice ali pa so bile veje razklane po dolgem (*razpr. 6; 9; sl. 21:* 29; *24:* 29,34ab; kat. št. **29**, **34**).

Oblika Form	Obdelava Working	Vrsta nedoločena / Species unidentified	QUSP	FRSP	ALGL	COAV	ALGL/COAV	ACSP	ACSP/TILIA	FASY	SASP/POSP	CPBE	ULMUS	ROSACEAE	ABAL	IGLAVEC / CONIFEROUS TREE	Σ
Deblo / Trunk	neobdelano / unworked																
	klano, obsekano / split, chopped																
Veja / Branch	neobdelana / unworked	5					1										6
	klana, obsekana / split, chopped		1	1													2
Deska / Board	klana / split	1								1							2
Oklešček in luska / Woodchip and shawing	klano, obsekano / split, chopped	2															2
Lubje / Bark																	
Nedoločeno / Undefined		1															1
Σ		9	1	1			1			1							13

Razpr. 8: Vrhnika, Dolge njive. Izkop 1, faza 1 C (plast 4). Število vzorcev lesa po lesnih vrstah in sledeh obdelave.
Table 8: Vrhnika, Dolge njive. Sector 1, Phase 1 C (Layer 4). The number of wood samples in relation to the wood species and traces of working.
QUSP = *Quercus* sp. (hrast / oak); FRSP = *Fraxinus* sp. (jesen / ash); ALGL = *Alnus glutinosa* (črna jelša / black alder); COAV = *Corylus avellana* (leska / hazel); ACSP = *Acer* sp. (javor / maple); TILIA = *Tilia* sp. (lipa / lime); FASY = *Fagus sylvatica* (bukev / beech); SASP = *Salix* sp. (vrba / willow); POSP = *Populus* sp. (topol / poplar); CPBE = *Carpinus betulus* (gaber / common hornbeam); ULMUS = *Ulmus* sp. (brest / elm); ROSACEAE = rožnice / rose family; ABAL = *Abies alba* (jelka / fir)

Debla so bila razmeroma maloštevilna (n = 18; 5,5 % vzorčenega lesa) in z majhnim premerom (5–8 cm). Večinoma (n = 16) so bila obdelana: klana po dolgem na segmente koluta ali v tram (*razpr. 6; 9; sl. 21:* 32; kat. št. **32**).

Bolje so bili zastopani odlomki desk (n = 65; 19,7 % vzorčenega oziroma 42 % obdelanega lesa), ki so bile vedno izdelane s klanjem. Po prvotni legi v deblu smo razlikovali radialne deske (vključno s polradialnimi), ki prevladujejo (n = 40), in tangencialne deske (n = 25). Med tangencialnimi je več tistih, ki so bile klane ob periferiji debla in jih morda lahko razložimo kot ostanek priprave tramov (*razpr. 6; 9; sl. 21:* 30,31; *24*: 31,35,36; kat. št. **30**, **31**, **35**, **36**). Nekatere deščice imajo poševno obsekane robove (npr. *sl. 21:* 30; *24*: 35,36; kat. št. **30**, **35**, **36**), ena je bila obžagana (*sl. 21; 24*: kat. št. **31**).

Velika količina lesa s sledmi obdelave, predvsem pa posebne skupine, kot so razklana debla, oklešči (19,4 % obdelanega lesa; *razpr. 6; 9; sl. 21*: kat. št. **33**), tangencialne deske s periferije in odsekane veje, kažejo, da gre večinoma za ostanke obdelave lesa. Deske in tramovi bi morda lahko kazali celo na pripravo gradbenih oziroma konstrukcijskih elementov. Razpršena lega v plasti kaže, da kosi niso bili odloženi hkrati in s posebnim namenom.

Jesenov tram VRH07-178 (*sl. 21:* 32; kat. št. **32**) je bil datiran po metodi 14C.

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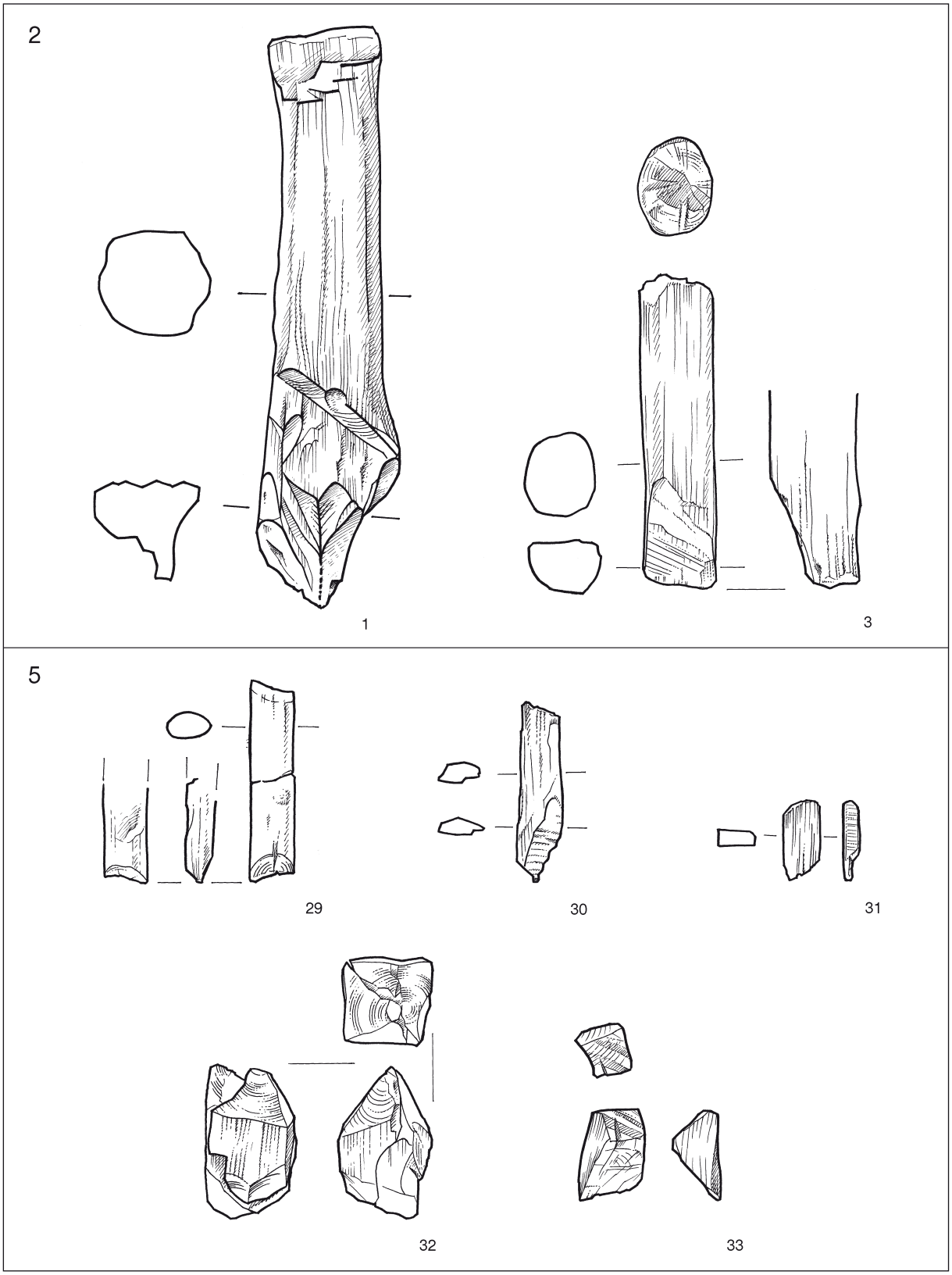
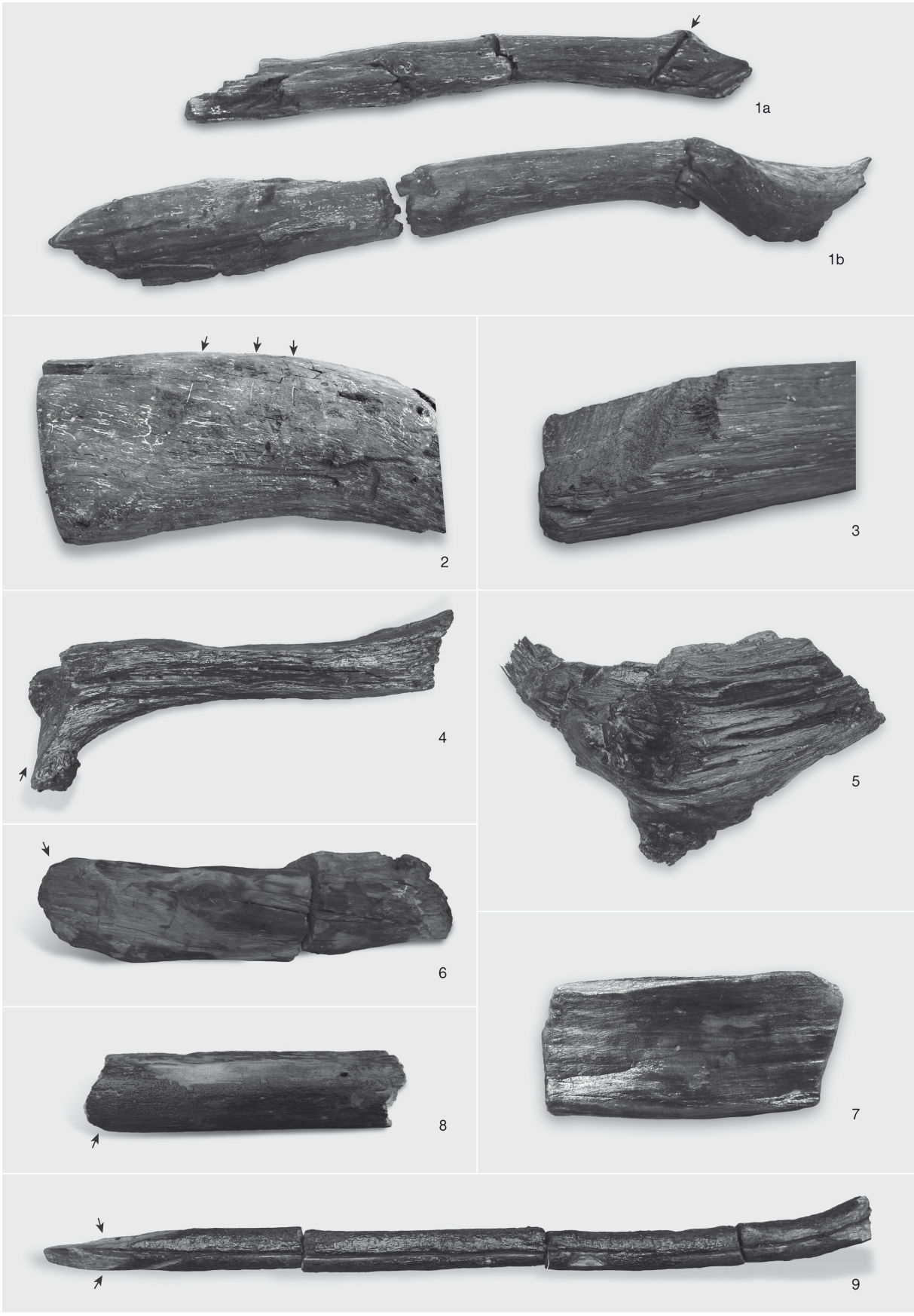
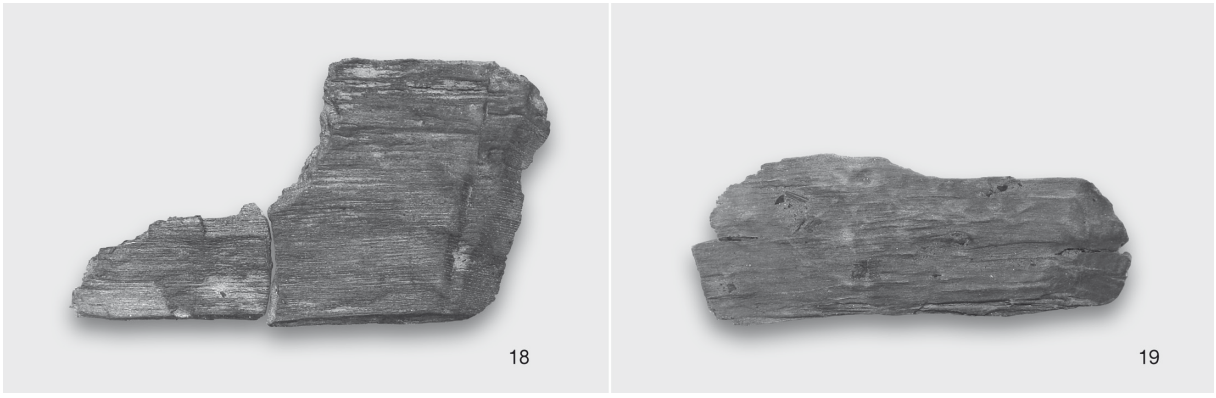


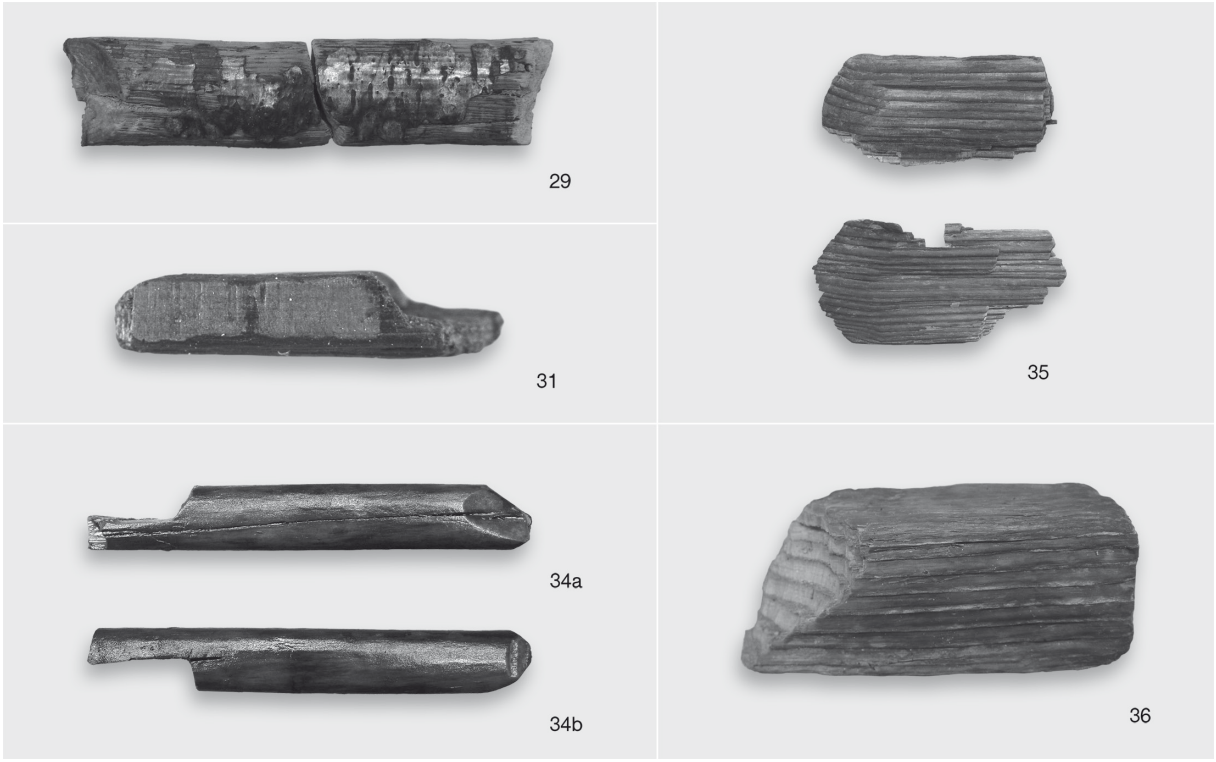
Sl. 21: Vrhnika, Dolge njive. Izkop 1. Les s sledovi obdelave. – Plast 2: kat. št. **1** (VRH07-086a, detajl), **3** (VRH07-087). – Plast 5: kat. št. **29** (VRH07-115), **30** (VRH07-183), **31** (VRH07-113), **32** (VRH07-178), **33** (VRH07-270). M. = 1:4.
Fig. 21: Vrhnika, Dolge njive. Sector 1. Wood with traces of working. – Layer 2: cat. nos. **1** (VRH07-086a, detail), **3** (VRH07-087). – Layer 5: cat. nos. **29** (VRH07-115), **30** (VRH07-183), **31** (VRH07-113), **32** (VRH07-178), **33** (VRH07-270). Scale = 1:4.



Sl. 22 / Fig. 22



Sl. 23: Vrhnika, Dolge njive. Izkop 1, plast 4. Les s sledovi obdelave: – kat. št. **18** (VRH07-038), **19** (VRH07-053). Različne velikosti.
Fig. 23: Vrhnika, Dolge njive. Sector 1, Layer 4. Wood with traces of working: – cat. nos. **18** (VRH07-038), **19** (VRH07-053). Different sizes.



Sl. 24: Vrhnika, Dolge njive. Izkop 1, plast 5. Les s sledovi obdelave: kat. št. **29** (VRH07-115), **31** (VRH07-113), **34** (VRH07-056), **35** (VRH07-136), **36** (VRH07-166). Različne velikosti.
Fig. 24: Vrhnika, Dolge njive. Sector 1, Layer 5. Wood with traces of working: – cat. nos. **29** (VRH07-115), **31** (VRH07-113), **34** (VRH07-056), **35** (VRH07-136), **36** (VRH07-166). Different sizes.

←

Sl. 22: Vrhnika, Dolge njive. Izkop 1, plast 2. Les s sledovi obdelave: – kat. št. **1** (VRH07-086a), **2** (VRH07-627), **3** (VRH07-087), **4** (VRH07-142), **5** (VRH07-102), **6** (VRH07-090), **7** (VRH07-089), **8** (VRH07-088), **9** (VRH07-613). S puščicami so označeni zaseki (1a,2,4,6,9) in pooglenitev (8). Različne velikosti.
Fig. 22: Vrhnika, Dolge njive. Sector 1, Layer 2. Wood with traces of working: – cat. nos. **1** (VRH07-086a), **2** (VRH07-627), **3** (VRH07-087), **4** (VRH07-142), **5** (VRH07-102), **6** (VRH07-090), **7** (VRH07-089), **8** (VRH07-088), **9** (VRH07-613). Arrows mark the incisions (1a,2,4,6,9) and charred area (8). Different sizes.

Oblika Form	Obdelava Working	Vrsta nedoločena / Species unidentified	QUSP	FRSP	ALGL	COAV	ALGL/COAV	ACSP	ACSP/TILIA	FASY	SASP/POSP	CPBE	ULMUS	ROSACEAE	ABAL	IGLAVEC / CONIFEROUS TREE	Σ
Deblo Trunk	neobdelano / unworked				1	1											2
	klano, polovica / split, half				1							1					2
	klano, tretjina / split, a third	1															1
	klano, četrtina / split, a quarter	1			1												2
	klano, osmina / split, eight part		3														3
	obsekana konica / lopped off ending					1											1
	klano v tram / split into beam	1	2	1				1		1					1		7
Veja Branch	neobdelana / unworked	95	6	9	4	3	1	5	1	2	4	1		1			132
	odsekana ali obsekana konica / dissected from trunk or lopped off ending	7	1		2	1	1	2		3			1				18
	razklana / lenght-wise splitting	13		1	1							1					16
Deska Board	radialna / radial	26	6	1											1	6	40
	tangencialna / tangential	5	2														7
	tangencialna s periferijo / tangential with periphery	12	1		1		1	1		1					1		18
Oklešček / Woodchip	klano, sekano / split, chopped	21	8		1												30
Luska / Shawing		8														2	10
Lubje / Bark		26	1														27
Nedoločeno / Undefined		9	2		1					1							13
Σ		225	32	12	13	6	3	9	1	8	4	3	1	1	3	8	329

Razpr. 9: Vrhnika, Dolge njive. Izkop 1, faza 1 D (plast 5). Število vzorcev lesa po lesnih vrstah in sledeh obdelave.
Table 9: Vrhnika, Dolge njive. Sector 1, Phase 1 D (Layer 5). The number of wood samples in relation to the wood species and traces of working.
QUSP = *Quercus* sp. (hrast / oak); FRSP = *Fraxinus* sp. (jesen / ash); ALGL = *Alnus glutinosa* (črna jelša / black alder); COAV = *Corylus avellana* (leska / hazel); ACSP = *Acer* sp. (javor / maple); TILIA = *Tilia* sp. (lipa / lime); FASY = *Fagus sylvatica* (bukev / beech); SASP = *Salix* sp. (vrba / willow); POSP = *Populus* sp. (topol / poplar); CPBE = *Carpinus betulus* (gaber / common hornbeam); ULMUS = *Ulmus* sp. (brest / elm); ROSACEAE = rožnice / rose family; ABAL = *Abies alba* (jelka / fir)

Obdelava / Working	**Število / Number**
Neobdelano / Unworked	161
Obdelano / Worked	155
Nedoločeno / Undefined	13
Σ	329

Razpr. 10: Vrhnika, Dolge njive. Izkop 1, faza 1 D (*plast 5*). Število vzorcev neobdelanega lesa in lesa s sledmi obdelave.
Table 10: Vrhnika, Dolge njive. Sector 1, Phase 1 D (*Layer 5*). The number of samples of unworked wood and wood with traces of working.

Oblika / Form	Obdelava / Working	Ožgano / Charred
Deblo / Trunk	neobdelano / unworked	
	klano / split	3
Veja / Branch	neobdelana / unworked	3
	klana, obsekana / split, chopped	2
Deska / Board	klana / klana	
Oklešček / Woodchip		1
Lubje / Bark		
Nedoločeno / Undefined		1
Σ		10

Razpr. 11: Vrhnika, Dolge njive. Izkop 1, faza 1 D (*plast 5*). Število vzorcev ožganega lesa po prvotni legi v drevesu in sledeh obdelave.
Table 11: Vrhnika, Dolge njive. Sector 1, Phase 1 D (*Layer 5*). The number of wood samples with signs of burning according to the original position in the trunk and traces of working.

V vseh fazah od 1 A do 1 D je bil na bregu Ljubljanice odložen les s številnimi sledmi obdelave, med katerimi prevladujeta sekanje in klanje. Kaže, da je pogosto ali celo stalno na raziskovanem prostoru oziroma v njegovi bližini potekala obdelava lesa. Izbira vrst lesa je bila očitno nenamenska, tj. raznovrstna, kar pomeni, da so ljudje uporabili les, ki so ga imeli v okolici največ na voljo.

Po vrstah lesa ter po večjih deblih in vejah iz plasti 2 sklepamo, da je v fazi 1 A prišlo do sekanja gozda ali čiščenja območja ob reki. Pri tem so bili na breg odloženi veliki, a manj kakovostni kosi lesa (grčava in kriva debla ter veje). Po ostankih sekanja in izboru sodimo, da je namerno odlaganje nerabnega lesa verjetnejše kot naravno naplavljanje iz bolj oddaljenega prostora. Z odloženim lesom bi lahko tudi namenoma utrdili mehko, blatno površino ob reki.

V plasti 3, ki sodi v fazo 1 B, je bilo malo lesa. Edini pobrani kos pa je bil obsekan, kar nakazuje bližino nedoločenih dejavnosti.

V fazi 1 C je bila s plastjo 4 odložena večja količina manjših kosov lesa, med katerimi so prisotni tudi ostanki obdelave. Morda je šlo tudi tokrat za odpad in hkrati za namerno utrjevanje brežine z nerabnim lesom. Možnost, da gre za naravno naplavino, se zdi manj verjetna.

V plasti 5, ki sodi v fazo 1 D, je bilo odkrito veliko lesa, med katerim prevladujejo manjši kosi, vendar s številnimi sledmi obdelave. Ta les ni bil odložen s posebnim namenom, temveč ga razumemo kot odpadek intenzivne obdelave lesa, ki je verjetno potekala nekje v bližini.

IZSLEDKI ARHEOZOOLOŠKE ANALIZE

Nabor sesalskih ostankov z Vrhnike vključuje 81 večinoma fragmentiranih kosti in zob, od katerih je bilo dobro tretjino mogoče tudi ožje taksonomsko opredeliti. Z izjemo dveh odlomkov iz sonde 7, plast 4b (ornica, ki se je oblikovala po antičnem obdobju), so bili vsi ostanki pobrani na območju izkopa 1. Večinski del najdb sodi v faze 2 A–C (tj. v avgustejsko obdobje, plasti 7–16, *razpr. 1; 3*) in temu se bomo v nadaljevanju nekoliko podrobneje posvetili.

Taksonomija

Med taksonomsko ožje opredeljenimi ostanki sesalcev iz faz 2 A–C je zastopanih najmanj pet različnih vrst iz štirih družin. Z izjemo dveh glodavcev so to izključno domače živali. Vrstna pestrost je primerljiva z drugimi podobno bogatimi zbiri sesalske makrofavne z rimskodobnih najdišč jugovzhodnoalpskega prostora. Povprečno število arheozooloških najdb na plast je 16,7, znotraj razpona ene standardne deviacije (SD = 9,99) okrog omenjene vrednosti pa se umešča kar pet od skupno sedmih plasti, z vsaj enim odlomkom živalske kosti ali zoba. Porazdelitev najdb po arheoloških plasteh je torej sorazmerno enakomerna (*razpr. 12*).

Najbolje zastopan takson v gradivu je drobnica (Caprinae), kar za zgodnjerimskodobna najdišča na Slovenskem ni običaj. Praviloma namreč v tovrstnih kontekstih po številu najdb prevladuje govedo (*Bos*

taurus),[44] ki na Dolgih njivah zaseda drugo mesto. Razlika v številu ostankov obeh omenjenih taksonov sicer meje statistične značilnosti ne presega,[45] kar je ob sorazmerno pičlem številu izkopanih kosti tudi pričakovano.[46] Vendar je treba k temu dodati, da je med taksonomsko neopredeljenimi živalskimi ostanki delež malih rastlinojedov (domnevno večinoma prav ovac in koz) trikrat višji od deleža velikih rastlinojedov (domnevno predvsem goveda). O prevladi drobnice znotraj analiziranega arheozoološkega gradiva z Dolgih njiv torej ne kaže dvomiti, bolj odprto pa ostaja vprašanje reprezentativnosti tako skromnega nabora najdb.[47] Čeprav je namreč ugotovljeno medvrstno razmerje na načelni ravni dejansko mogoče razumeti tudi kot odsev specifičnih človekovih aktivnosti,[48] je v trenutni fazi raziskav pred očmi vseskozi treba imeti tudi nekoliko bolj pragmatično interpretacijo dobljenih rezultatov, po kateri so ti zgolj naključna posledica skromnega števila izkopanih/analiziranih arheozooloških najdb.

Stopnja ohranjenosti ostankov drobnice, med katerimi prevladujejo posamezni izolirani zgornji zobje in manjši odlomki kosti (*razpr. 13*), zanesljivega razlikovanja med ovco (*Ovis aries*) in kozo (*Capra hircus*) ni dopuščala. Nekaj več je mogoče sklepati o razmerju med domačim prašičem (*Sus domesticus*) in divjim prašičem (*Sus scrofa*). Na podlagi velikosti analiziranih najdb smo namreč vseh šest razpoložljivih primerkov z gotovostjo pripisali domači vrsti.

Red glodavcev (Rodentia) je v gradivu zastopan s prvim spodnjim kočnikom navadnega polha (*Glis glis*; vzorec 2) in prvim zgornjim kočnikom črne podgane (*Rattus rattus*; vzorec 7). Da ne gre za sivo podgano (*Rattus norvegicus*) dokazujeta prisotnost cingulumu podobnega roba na mezialnem delu zoba in lepo oblikovana grbica t3.[49] Poleg tega se naj siva podgana ne bi pojavila v Evropi pred 10. stoletjem,[50] medtem ko so najstarejše doslej poznane najdbe črne podgane na Slovenskem datirane v starejšo železno dobo.[51] Navadni polh jugovzhodnoalpski prostor naseljuje najmanj od sredine zadnje poledenitve dalje.[52]

[44] Toškan 2013, tab. 1 in 2.
[45] χ^2 test: $\chi^2 = 1{,}94$; stop. prostosti: 1; $p = 0{,}163$.
[46] Drennan 1996, 194.
[47] Davis 1987, 46.
[48] Prim. Toškan 2013, 56–59.
[49] Wolff, Herzig-Straschil, Bauer 1980, 165.
[50] Kryštufek 1991, 164.
[51] Toškan, Kryštufek 2006, 100–101.
[52] Toškan 2011, 165.

Oris favne

Ugotovitve o starosti posameznih živali ob poginu (*razpr. 14*) in zbrani metrični podatki (*razpr. 15*), čeprav maloštevilni, so v splošnem skladni z dosedanjimi spoznanji o (zgodnje)rimski živinoreji v tem delu Evrope.[53] To denimo velja za prevlado ostankov odraslih goved nad teleti in za odsotnost mladih primerkov drobnice, obenem pa oboje kaže na intenzivno izkoriščanje sekundarnih proizvodov reje teh živali. V nasprotju s tem je bila rimskodobna prašičereja praviloma usmerjena v prirejo mesa in maščob, zato lahko domnevamo sorazmerno nizko klavno starost. Edina ustrezno ohranjena najdba prašiča v gradivu z Dolgih njiv – gre za odlomek spodnje čeljustnice pod 20 mesecev stare živali s komaj izraščajočim tretjim kočnikom – takšno domnevo podkrepljuje.

Analiza metričnih podatkov govejih, ovčjih/kozjih ter prašičjih kosti in zob je pokazala, da gradivo vključuje tako ostanke nizkoraslih lokalnih form z železnodobno tradicijo, kakor tudi naprednih rimskih pasem. Opaziti pa je, da večinski del najdb z Dolgih njiv velikostno vendarle nekoliko zaostaja za povprečnimi vrednostmi, ugotovljenimi pri istovrstnih živalih iz nekoliko mlajših rimskodobnih kontekstov (tj. iz časa od 1. do 4. stoletja). Če pri tem ne gre za naključno razliko zaradi skromnega vzorca, bi navedena ugotovitev utegnila kazati na še ne v celoti zaključen proces romanizacije lokalne živinoreje v času obstoja Dolgih njiv. Navsezadnje je velikost najdb z omenjene naselbine povsem skladna z velikostjo tistih iz poznoantičnih najdišč v tem prostoru,[54] ko se je težišče živinoreje z velikih rimskih pasem znova prestavilo na tradicionalne lokalne forme nizke rasti.[55]

Razprava

Nabor sesalskih ostankov z Dolgih njiv se v mnogočem sklada z drugimi okvirno sočasnimi arheozooloških vzorci na Slovenskem. To velja tako za odsotnost lovnih vrst, pičlost kosti in zob telet, jagenj in kozličev, prisotnost ostankov napredne rimske pasme goveda kakor tudi odkritje zoba črne podgane, ki je izrazito sinantropna vrsta in danes na Slovenskem v prosti naravi dejansko živi

[53] MacKinnon 2004; Toškan 2013.
[54] Turk 2000, 170–171; Toškan, Dirjec 2011, pril. 8.1.
[55] Boschin, Toškan 2012; Toškan 2013, 59–60.

Takson / Taxa	Faza / Phase							Σ
	2 A			2 B			2 C	
	Plast / Layer 7	Plast / Layer 8	Plast / Layer 9	Plast / Layer 11	Plast / Layer 13	Plast / Layer 14	Plast / Layer 16	
Bos taurus	-	1	-	7	-	3	2	13
Caprinae	1	3	5	7	3	1	5	25
Sus domesticus	-	2	-	2	-	1	1	6
Rattus rattus	-	-	-	-	1	-	-	1
Glis glis	-	-	-	-	-	-	1	1
Nedoločeno/ Unidentified	2	2	17	16	7	13	14	71
Σ	3	8	22	32	11	18	23	117

Razpr. 12: Vrhnika, Dolge njive. Izkop 1. Zastopanost posameznih sesalskih taksonov po plasteh faz 2 A–C.
Table 12: Vrhnika, Dolge njive. Sector 1. Representation of individual mammal taxa through the layers of the Phases 2 A–C.

Takson / Taxa	Mandibula	Dentes	Vertebrae	Scapula	Humerus	Radius	Carpalia	Metacarpalia	Pelvis	Tibia	Tarsalia	Metatarsalia	Phalanges
B. taurus	1	2	1	1	-	-	1	1	-	2	2	-	2
Caprinae	1	10	2	-	1	1	-	1	2	1	1	2	3
S. domesticus	1	-	-	-	1	-	-	-	3	-	1	-	-

Razpr. 13: Vrhnika, Dolge njive. Izkop 1. Zastopanost posameznih skeletnih elementov po taksonih za gradivo iz faz 2 A–C.
Table 13: Vrhnika, Dolge njive. Sector 1. Representation of individual skeletal elements according to taxa for the material from the Phases 2 A–C.

Takson / Taxon	Sk. element	Opis / Description	Starost / Age	Vir / Source
Bos taurus	tibia (proks.)	zraščena / fused	>3,5–4 leta / years	Silver 1969
	calcaneus	zraščen / fused	>3–3,5 leta / years	Silver 1969
	phalanx 2 (2x)	zraščen / fused	>1,5 leta / years	Silver 1969
	M_1	stopnja / stage K	>4 leta / years	Grant 1982
Caprinae	humerus (dist.)	zraščen / fused	>1–1,5 leta / years	Silver 1969
	tibia (dist.)	zraščena / fused	>1,5–2 leti / years	Silver 1969
	phalanx 1	zraščen / fused	>1,5 leta / years	Silver 1969
	phalanx 2	zraščen / fused	>1–1,5 leta / years	Silver 1969
	M_2	stopnja / stage 9A	2–6 let / years	Silver 1969
Sus domesticus	M_3	stopnja / stage 0	< 20 mesecev / months	Rolett, Chiu 1994

Razpr. 14: Vrhnika, Dolge njive. Izkop 1. Starost živali ob poginu, ocenjena na podlagi podatkov o stopnji obrabe žvekalne površine kočnikov ter (ne)zraščenosti epifiz. Ugotovitve se nanašajo na gradivo iz faz 2 A–C.
Table 14: Vrhnika, Dolge njive. Sector 1. Age-at-death of the animals, estimated by the degree of epiphyseal fusion and teeth wear. Determinations refer to the material from the Phases 2 A–C.

le na Obali.[56] Povečanje lokalne populacije črne podgane v rimskem obdobju namreč povezujemo prav s tedanjim intenzivnim širjenjem urbanih površin in z razcvetom trgovine.

Kot edino vsaj do neke mere nepričakovano ugotovitev predstavljene arheozoološke študije lahko tako pravzaprav poudarimo zgolj to, da je med zbranim gradivom najbolje zastopan takson drobnica in ne govedo. Nedavne arheozoološke raziskave gradiva z lokacije NUK II (Emona; prehod

[56] Kryštufek 1991, 164.

Takson / Taxa	Sk. element	Dimenzija / Dimension	Mere / Measurements	
Bos taurus	dens inf. (M_1)	dolžina / length	21,5	
		širina / breadth	14,5	
	tibia	širina proksimalne epifize breadth of proximal epiphysis	88,0	
	phalanx 2	širina proksimalnega dela breadth of proximal end	24,0	29,0
		širina distalnega dela breadth of distal end	21,5	24,0
		največja dolžina greatest length	33,5	41,5
Caprinae	humerus	najmanjša širina diafize smallest breadth of diaphysis	14,5	
	metacarpus	širina proksimalnega dela breadth of proximal end	24,0	
		višina proksimalnega dela depth of proximal end	16,0	
		najmanjša širina diafize smallest breadth of diaphysis	14,0	
	tibia	širina distalnega dela breadth of distal end	25,5	
		debelina distalnega konca depth of distal end	18,0	
		najmanjša širina diafize smallest breadth of diaphysis	14,5	
	metatarsus	širina distalnega dela breadth of distal end	9,0	
	astragalus	največja dolžina na lateralni strani greatest length of the lateral half	31,0	
		največja dolžina na medialni strani greatest length of the medial half	28,5	
		širina distalnega dela breadth of distal end	19,5	
Sus domesticus	dens (M_3)	širina / breadth	15,0	
	humerus	najmanjša širina diafize smallest breadth of diaphysis	13,5	
	astragalus	največja dolžina na lateralni strani greatest length of the lateral half	37,0	
		največja debelina na lateralni strani greatest depth of the lateral half	19,0	

Razpr. 15: Vrhnika, Dolge njive. Izkop 1. Metrični podatki bolje ohranjenih kosti in zob iz faz 2 A–C. Posamezni pravokotniki v rubriki "Mere" zaobjemajo vrednosti, ki se nanašajo na isto kost. Vse mere so v mm.
Table 15: Vrhnika, Dolge njive. Sector 1. Measurements of the better preserved bones and teeth from Phases 2 A–C. Separate rectangles in the section 'Measurements' include size values which refer to the same bone. All the measures are in millimetres.

1. st. pr. Kr. v 1. st. po Kr.) so dale podoben rezultat, le da v tem primeru kot vodilna vrsta izstopa prašič. V skladu s preliminarno interpretacijo bi pri tem lahko šlo za odsev kulinaričnih preferenc vojaškega moštva, ki je Emono gradilo, in morebiti tudi njenih prvih civilnih naseljencev.[57] Gre namreč za ljudi večinoma severnoitalskega porekla, pri katerih je bila svinjina zelo priljubljena zvrst mesa. Pri tem je pomenljivo, da je bil večinski delež prašiča nedavno ugotovljen tudi v okviru edinega drugega arheozoološko obdelanega najdišča z gradivom iz prve polovice 1. stoletja po Kr. v neposredni bližini lokacije NUK II, tj. z Gregorčičeve ulice 1.[58]

[57] Andrič et al. 2012, 413–414.

[58] Rozman 2014; lastni neobjavljeni podatki.

Žal obe zgoraj omenjeni gradivi označuje pičlost zbranih ostankov, zaradi česar lahko upravičeno dvomimo o njihovi reprezentativnosti. Navsezadnje število taksonomsko opredeljenih kosti in zob niti v primeru NUK II niti v primeru Gregorčičeve 1 ni večje od dvesto. Ker pa je ugotovitev o visokem deležu zastopanosti prašiča skupna obema omenjenima vzorcema, v ozadju najbrž vendarle ne gre za golo naključje. V nasprotju s tem vodilna vloga drobnice v gradivu z Dolgih njiv analogij v neposredni okolici za zdaj nima. Prostorsko in časovno najbližji primerjalni zbir arheozooloških najdb izvira s severnega dela najdišča Kočevarjev vrt na Vrhniki na levem bregu Ljubljanice, ki je bil pridobljen z zaščitnimi izkopavanji v letu 2006.[59] Najdbe sodijo v čas od zadnjega desetletja pr. Kr. do sredine prvega stoletja po Kr. in – pomenljivo – izkazujejo očitno prevlado goveda (*B. taurus*: 52,8 %; Caprinae: 29,5 %; NISP = 171).[60] Takšni rezultati pa seveda zgolj dodatno podkrepljujejo dvome o relevantnosti vodilne vloge drobnice na Dolgih njivah.

ZAKLJUČKI

Zaščitna izkopavanja leta 2007 na Dolgih njivah so dopolnila vedenje o razvoju poselitve na območju Vrhnike oziroma Navporta v prazgodovinskem in rimskem obdobju, hkrati pa so dodatno osvetlila pomen reke Ljubljanice kot velike prometne osi.

Zahodno območje raziskav leta 2007 (izkop 1, sonda 2) je bilo umeščeno na desni breg Ljubljanice, v prostor med reko in obzidjem rimske postojanke na Dolgih njivah (*sl. 4*). V izkopu 1, kjer so bile arheološke plasti najbolj številne in najbolje ohranjene, so bila dobro vidna dogajanja v treh velikih obdobjih: v prazgodovini, v času obstoja rimske naselbine in v času po njeni opustitvi (*razpr. 3*).

Vzhodno območje raziskav (izkopa 2 in 3 ter sonda 7) je ležalo v notranjosti rimske postojanke (*sl. 4*) in tu smo odkrili samo rimskodobne ostanke (*razpr. 2; 3*).

Prazgodovinsko obdobje

Dogajanje v predrimskem času smo v izkopu 1 lahko razdelili na pet faz, od 1 A do 1 E. Vsako od faz predstavlja po ena arheološka plast. Vse plasti, razen najvišje iz faze 1 E, so bile zelo mokre, zato se je dobro ohranil les in drugi rastlinski ostanki. Malo je bilo drobcev oglja, koščki keramike so bili izjemno redki, živalskih kosti ni bilo. Les je torej najpomembnejši, večkrat celo edini ostanek človekove dejavnosti.

K razumevanju sočasnega dogajanja na širšem območju Vrhnike pa so pomembno prispevale raziskave peloda. Te so predstavljene v posebnem članku (glej dalje Andrič 2016), vendar povzemamo nekatere ugotovitve, ki so pomembne za celovito sliko razvoja.

Pred prvimi človekovimi sledovi (plast 1)

V plasti 1, ki kot rečna naplavina predstavlja geološko osnovo, ni sledi prisotnosti človeka (npr. predmetov, drobcev oglja).

Po drugi strani pa analize peloda iz plasti 1 kažejo sestavo vegetacije in dogajanje na širšem območju Vrhnike. Bližina Ljubljanice je bila zamočvirjena, v okolici je rasel mešan gozd. Pelod kaže tudi na intenzivne kmetijske dejavnosti – polja in pašnike. Ugotovljeni sta bili dve obdobji močnejšega človekovega vpliva na okolje, med katerima je kratko obdobje regeneracije gozda (glej Andrič 2016: na globinah sedimentnega stolpca 198–182 in 178–166 cm; absol. viš. 288,19–288,35 m n. m. in 288,39–288,51 m n. m.). Po datacijah sedimenta z metodo izotopa 14C lahko to dogajanje postavimo v 1. tisočletje pr. Kr., od 10./9. st. pr. Kr. dalje. Če upoštevamo še datacijo mlajše plasti (faza 1 A), gre zelo verjetno za čas pred 4. ali 3. st. pr. Kr.

Faza 1 A

V fazi 1 A se pojavijo prvi znaki človekove dejavnosti. Neposredno na geološki podlagi so neurejeno ležala debla, veje in manjši kosi lesa s sledmi obdelave, kot so zaseki, klanje in morda žaganje. Po sestavi vrst (hrast, jelša ali leska, bukev, vrba ali topol, gaber; *razpr. 7*) sodimo, da je bil les verjetno posekan v bližini, neuporabni grčavi in krivi kosi pa so bili odvrženi na rečni breg. Morda so bili celo namerno odloženi za utrditev mehkega obrežja. Mogoča je tudi druga razlaga, ki pa se zdi manj verjetna, da je bil les posekan više ob reki in naplavljen. V obeh primerih bi lahko šlo za čiščenje zaraščenih površin ob reki. Dogajanje na podlagi analize radioaktivnega ogljika v vzorcu lesa postavljamo v 4. ali 3. st. pr. Kr., torej na konec halštatske oziroma začetek latenske dobe.

[59] Tica, Pavlovič, Rutar 2006.

[60] Lastni neobjavljeni podatki.

Faza 1 B

V fazi 1 B se je ob bregu Ljubljanice skozi daljše obdobje, verjetno kot rečni sediment, odložila okoli 40 cm debela plast melja. Vsebovala je manjše kose obdelanega lesa in drobce oglja, kar bi kazalo na hodno površino in tudi na bližino človekovih dejavnosti, ni pa šlo za naselbinski prostor.

Ostanki lesa, semen in plodov kažejo obrežno rastlinje, vlagoljubno drevesno-grmovno vegetacijo (črna jelša, leska) in mešani gozd v zaledju (jelka, hrast in cer). Med ostanki semen in plodov ni bilo kulturnih in drugih prehranskih rastlin (*razpr. 4*).

Sliko pomembno dopolnjuje pelodna analiza, ki kaže podobno okolje kot v času nastajanja plasti 1 (prva polovica in sredina 1. tisočletja pr. Kr.): zamočvirjeni predeli ob reki, v zaledju pa mešan jelovo-bukov gozd (jelka, smreka, bukev, hrast, gaber), odprta krajina s travišči in kultivirana območja (glej Andrič 2016).

Fazo 1 B lahko datiramo posredno, na podlagi datacij faz 1 A in 1 D, v 3. ali 2. st. pr. Kr., torej v latensko dobo.

Faza 1 C

Fazo 1 C smo opazili kot plast manjših kosov lesa. Vrste lesa kažejo na obrežno rastje (npr. jelša) in mešan jelovo-bukov gozd (hrast, jesen, bukev) (*razpr.* 8). Poleg vej je bilo najdeno veliko majhnih desk in oklešč̌kov, ki so odpadek pri obdelavi lesa. Menimo, da gre za les odložen namenoma za utrditev mehkega obrežja. Manj verjetno se zdi, da bi bil naravno naplavljen. Naselitvenega prostora ni bilo v bližini.

Tudi to fazo lahko posredno, glede na fazi 1 A in 1 D, datiramo v 3. ali 2. st. pr. Kr. oziroma v latensko dobo.

Faza 1 D

V fazi 1 D se je verjetno v daljšem časovnem razdobju kot naplavina odložila do 20 cm debela plast melja. Domnevamo, da je bila v rabi kot hodna površina. Človekove dejavnosti so pustile sled v številnih razmetanih manjših kosih obdelanega in neobdelanega lesa ter v drobcih oglja. Les, večinoma odpadek pri intenzivni obdelavi, ni bil odložen s posebnim namenom. Odkrit je bil samo en košček keramike. Naselitveni prostor je bil torej še vedno razmeroma oddaljen.

Pelodna analiza kaže na postopen umik gozda v širši okolici najdišča (glej Andrič 2016; globine sedimentnega stolpca med 135 in 128 cm; absol. viš. 288,82–288,89 m n. m.).

Datacija vzorca lesa z analizo radioaktivnega ogljika postavlja fazo 1 D v 2. st. in v prvo polovico 1. st. pr. Kr. Na podlagi odlomka vretenastega kozarca iz keramike tankih sten (*sl. 19*) pa lahko zožimo datacijo od konca 2. do sredine 1. st. pr. Kr. Gre torej za poznolatensko dobo.

Faza 1 E

V fazi 1 E je bil breg Ljubljanice pokrit z do 40 cm debelo plastjo melja, v kateri skoraj ni sledi človekovih dejavnosti. Drobci oglja so bili prisotni, čeprav niso bili vidni s prostim očesom. Odkrita je bila ena sama majhna črepinja prostoročno izdelanega lonca. V nasprotju s starejšimi plastmi je bila ta že tako suha, da se organski ostanki niso ohranili. Po debelini in sestavi bi lahko šlo za naplavino, ki se je odlagala daljše obdobje na neobljudenem prostoru. Mogoče pa je tudi, da gre za namerno nasutje, s katerim so dvignili in utrdili teren pred prvimi gradnjami v rimski dobi. Datiramo jo posredno, po datacijah faz 1 D in 2 A, okoli sredine 1. st. pr. Kr.

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Po skoraj popolni odsotnosti keramike, živalskih kosti in ostankov prehranskih rastlin sklepamo, da raziskovano območje v času faz 1 A do 1 E ni bilo poseljeno. So pa sled pustile človekove dejavnosti, med katerimi prepoznamo obdelavo lesa in verjetno tudi namensko odlaganje neuporabnega lesa in odpadkov obdelave. Bližino dejavnosti opazimo tudi v drobcih oglja iz plasti 1 B, 1 D in 1 E.

Dejavnosti na bregu Ljubljanice in kultivirana območja, opažena v pelodnem diagramu, lahko povežemo s poselitvijo na širšem območju Vrhnike. Poselitev v srednji in mlajši bronasti dobi nakazujejo posamične najdbe iz strug vodotokov ter z ravnice severno od Vrhnike. Osrednjo prazgodovinsko naselbino lahko prepoznamo v gradišču na hribu Tičnica, ki leži okoli 1 km zahodno od Ljubljanice in ima dober pregled nad prometnimi potmi po kopnem in vodi (*sl. 1*). Gradišče še ni natančneje datirano.[61]

V izsekavanju gozda in utrjevanju obrežja v fazi 1 A, to je na koncu halštatske ali na začetku latenske dobe, lahko vidimo sled dejavnosti, ki so bile povezane s krčenjem gozda. Morda je pri izsekavanju in utrjevanju brega šlo celo za pripravo prvega, preprostega "rečnega pristana".

V fazi 1 B se je čez posekan les v daljšem obdobju odložila debela plast sedimenta, ki je bila

[61] Gaspari, Masaryk 2009.

ves čas v rabi kot hodna površina, v bližini pa so potekale nedoločene dejavnosti.

V fazi 1 C je bila na breg ponovno nametana plast lesa, sestavljena iz manjših kosov, med katerimi so mnogi odpadek obdelave. Morda je bilo obrežje ponovno namenoma utrjeno. Fazi 1 B in 1 C sta datirani v 3. ali 2. st. pr. Kr., to je okvirno v srednjelatensko dobo.

V poznolatenski dobi, torej v času faze 1 D, smo ponovno ugotovili sledi intenzivne obdelave lesa, ki je morala potekati v bližini. Odkrit pa je bil tudi en arheološki predmet – odlomek vretenastega kozarca iz keramike tankih sten, ki je datiran od konca 2. do sredine 1. st. pr. Kr. (*sl. 19*). Uvožen je bil iz Italije in je eden najstarejših odlomkov rimske keramike v osrednji Sloveniji.

Z vretenastim kozarcem iz faze 1 D lahko povežemo sicer maloštevilne najdbe s širšega območja rimske naselbine na Dolgih njivah. V poznolatensko dobo sodi fibula vrste Picugi, odkrita okoli 80 m severno od izkopa 1.[62] Na istem območju je bil najden tudi keltski meč, datiran v starejši del poznega latena.[63] Z Dolgih njiv, a brez ožjih najdiščnih podatkov, prihajata fibula vrste Nauheim različice A, datirana v starejši del poznega latena,[64] in jugovzhodnoalpska palmetasta fibula iz mlajšega dela poznega latena.[65] Morda sodijo poznolatensko obdobje tudi nekateri primerki keltske in uvožene italske keramike[66] ter zaklad keltskih srebrnikov, najden okoli 150 m severno od izkopa 1.[67] Nekaj latenskih predmetov je bilo odkritih v strugi Ljubljanice ob Dolgih njivah.[68]

Te raznovrstne najdbe kažejo, da v fazi 1 D oziroma v poznolatenskem času morda lahko pričakujemo na okljuku Ljubljanice, 100–150 m severno od izkopa 1, manjšo naselbino ali postojanko, povezano z rečnim prometom, ki je bila prehodnica velike rimske naselbine na Dolgih njivah. Naselbina iz 2. in 1. st. pr. Kr., ki bi bila umeščena na obrežje Ljubljanice, ne bi bila presenetljiva. Domnevamo jo lahko že na podlagi Strabonovega opisa, ko na podlagi virov iz 2. in 1. st. pr. Kr. poroča, kako so v Navportu blago, ki so ga pretovorili iz Akvileje, preložili na ladje.[69] O velikem pomenu Ljubljanice kot prometne osi pričajo tudi številni latenski predmeti, med katerimi prevladuje orožje, ki so bili odkriti na različnih mestih vzdolž skoraj celotnega toka reke.[70]

Kozarec iz faze 1 D (*sl. 19*) je še posebej zanimiv, saj je materialna sled prometnih povezav med rimskimi trgovci in keltskimi Tavriski, ki so takrat po pisnih virih izpričani v Navportu.[71] Ob poti, ki vodi iz Italije v Navport, zasledimo sočasno rimsko keramiko v postojanki na prelazu Razdrto.[72] Vzhodno od Navporta pa je tako zgodnja rimska keramika izjemno redka. Odkrita je bila npr. v Stični[73] in na Frauenbergu na Štajerskem.[74]

Zgodnja rimska doba

Obrežje Ljubljanice

V izkopu 1 smo ugotovili tri arheološke faze – 2 A, 2 B in 2 C –, ki odsevajo dejavnosti na rečnem bregu v rimskem obdobju. Vsako posamezno fazo predstavljajo podlaga za tlak, tlak in hodna površina. V vseh fazah so bili najdeni arheološki predmeti in živalske kosti, zelo slabo pa so bili ohranjeni botanični ostanki in pelod.

Tudi v sondi 2, ki leži 5 m severno od izkopa 1, smo zasledili podobne plasti kot v izkopu 1: tri zaporedna utrjevanja površine z nanosi kamenja in peska in vmesne hodne površine.

Faza 2 A

V fazi 2 A je bil obrežni pas pokrit z velikimi kamni, lomljenci, ki so bili naloženi do 60 cm visoko v več slojih. Čeznje je bila nasuta do 20 cm debela plast grušča in peska. Šlo je torej za kamnito podlago in peščeni tlak. Površina tlaka je padala v smeri proti reki. Na tlaku je ležal meljast sediment, ki je bil ostanek hodne površine.

[62] Horvat 1990, t. 5: 1; iz vmesnega prostora med stavbama 13 in 14, glej Mušič, Horvat 2007, sl. 39. Razširjenost in datacija: Guštin 1991, 38–39.

[63] Horvat 1990, 114, 217, t. 4: 14; najden v vmesnem prostoru med stavbama 13 in 14, glej Mušič, Horvat 2007, sl. 39.

[64] Božič 1993, 142, 150, sl. 4: 2; Horvat 1996, sl. 9: 2. Stopnja Mokronog IIIa oz. Lt D1b: Božič 2008, 59–65, 145. Absolutna kronologija stopnje: Horvat, Bavdek 2009, 52–53, razpr. 6.

[65] Horvat 1996, sl. 9: 3. Razširjenost in datacija: Guštin 1991, 46; Demetz 1999, 76–77.

[66] Mušič, Horvat 2007, 256–258, sl. 40–41.

[67] Horvat 1990, 89–90, 95, 197–198, 203; v vmesnem prostoru med stavbama 4 in 5; glej Mušič, Horvat 2007, sl. 39.

[68] Gaspari, Masaryk 2009, 197–198.

[69] Strabon 4, 6, 10; 7, 5, 2; Šašel Kos 1990, 17–20, 143–147.

[70] Gaspari 2009a.

[71] Šašel Kos 1990.

[72] Horvat, Bavdek 2009.

[73] Grahek 2013, 213–216.

[74] Sedlmayer 2005, 129–136.

Faza 2 B

V fazi 2 B je bilo tlakovanje obrežja popravljeno: površino so utrdili z enim slojem velikih kamnov in novim peščenim tlakom. V tlak je bila vkopana jama neznanega namena, a kmalu izravnana z glinenim meljem. Tlak in polnilo jame sta pokrivala dva sedimenta, ki predstavljata dve zaporedni hodni površini.

Faza 2 C

V fazi 2 C je bilo tlakovanje obrežja še drugič popravljeno s plastjo kamenja v enem sloju in debelim peščenim tlakom. Hodna površina na tlaku se ni ohranila.

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V treh fazah smo ugotovili tlakovan obrežni pas, ki je bil po izgradnji (faza 2 A) še dvakrat popravljen (fazi 2 B in 2 C). Odkrit je bil samo njegov zgornji rob na trdinski strani, ni pa jasno, kako daleč in globoko je segel proti reki. Na območju izkopavanj je bil najstarejši tlak (faza 2 A) 5 m oddaljen od jugovzhodnega stolpa rimske naselbine oziroma 8 m od obzidja. V popravilih (fazi 2 B in 2 C) so tlakovanje razširili proti naselbini za 1–2 m. Profil sonde 2 kaže, da se je tlakovanje širilo proti severu, v pasu med reko in obzidjem rimske naselbine.

Zaradi enotne tehnike gradnje tlakov in zelo sorodnega drobnega gradiva med tremi rimskodobnimi fazami verjetno ni velike časovne razlike. Drobno gradivo iz faze 2 B je zanesljivo datirano v avgustejsko obdobje, s težiščem na srednje ali poznoavgustejskem času. Torej lahko vse tri faze tlakovanja postavimo v avgustejsko obdobje, pri čemer prva utrditev verjetno sodi v zgodnje- ali najpozneje v srednjeavgustejski čas, druga in tretja pa v srednje do poznoavgustejski čas. Po koncu faze 2 C, to je po koncu avgustejskega obdobja, prostor ni bil več intenzivno v rabi (faza 3).

Obdobje faz 2 A do 2 C, to je čas gradnje, uporabe in dveh popravil tlakov, se popolnoma ujema z obstojem rimske naselbine na Dolgih njivah. Skladišča in obrambno obzidje na Dolgih njivah so bili zgrajeni po enotnemu načrtu v oktavijanskem ali v zgodnjeavgustejskem obdobju, opuščeni pa so bili kmalu po koncu avgustejskega obdobja.[75] Prvi tlak (faza 1 A) torej zelo verjetno sovpada z začetkom gradnje naselbine na Dolgih njivah.

Brezoblični odlomki prežgane gline, ki so znani iz vseh plasti faz 2 A do 2 C, so ostanki glinenega ometa lesenih stavb ali pa ostanki oblog ognjišč oziroma peči. V plasteh 2 B in 2 C so bili odkriti tudi odlomki opek in imbreksov. Koščki keramike so drobni in razmeroma maloštevilni. Iz severnoitalskih lončarskih delavnic so bile uvožene amfore, fina namizna keramika in navadna namizna keramika iz prečiščene gline, med katero je največ vrčev. Med grobo kuhinjsko keramiko prevladujejo lonci, delani ali dodelani na roko, ki so lokalnega porekla. Po oblikah in izvoru keramike gre torej za sklop, ki je značilen za tista naselja osrednje Slovenije, kamor so se v avgustejskem obdobju intenzivno priseljevali iz Italije.[76]

Med ostanki živalskih kosti prevladuje drobnica, s čimer se najdišče razlikuje od drugih rimskodobnih najdišč na območju Slovenije. Drobnici sledita govedo in domači prašič. Kostno gradivo se sklada z drugimi znanimi rimskodobnimi najdišči po tem, da pri govedu in drobnici prevladujejo odrasle živali, kar kaže na intenzivno izkoriščanje sekundarnih proizvodov reje. Tako kot drugod je bila tudi tu ugotovljena nizka klavna starost prašičev. Kostno gradivo vključuje tako ostanke nizkoraslih oblik domačih živali z železnodobno tradicijo kakor tudi višjih rimskih pasem. To bi morda nakazovalo še ne v celoti zaključen proces romanizacije lokalne živinoreje.

Zanimivo je tudi odkritje kosti črne podgane, ki je izrazito sinantropna vrsta (povezana s človekom), in bi lahko njeno prisotnost na Dolgih njivah povezali s širjenjem urbanih površin in razcvetom trgovine v rimskem obdobju.

Pristanišče

Tri faze tlakovanja obrežja Ljubljanice, za katerega sklepamo, da je pokrival celotni pas med reko in zahodnim obzidjem naselbine, lahko dobro povežemo z ugotovitvami starejših raziskav na območju Dolgih njiv.

Geofizikalne meritve rimske naselbine na Dolgih njivah niso posegle na prostor pred zahodnim in južnim obzidjem. So pa pokazale, da je bilo območje med severnim obzidjem in bregom Ljubljanice tlakovano (*sl. 2*).[77] Z izkopavanji leta 1985 je bilo ugotovljeno, da je bilo obrežje ob severnem obzidju še dodatno utrjeno z navpičnimi lesenimi koli. Na

[75] Mušič, Horvat 2007, 254–261, 278–279.

[76] Npr. Horvat 1990; Horvat 2010; Gaspari 2010.

[77] Mušič, Horvat 2007, 237, 261, 275, 280, sl. 36.

dno reke, pred severnim vhodom v naselbino, pa so bili na pravokotni površini na gosto zabiti leseni piloti, ki jih razlagamo kot ostanek temelja neke posebne konstrukcije, morda povezane z rečnim pristajališčem in dostopom v naselje.[78]

Na rezultatih geofizikalnih meritev se vidi tudi tlakovan pas na zunanji strani vzhodnega obzidja, to je med vzhodnim vhodom v naselbino in domnevnim obrambnim jarkom (*sl. 2*).[79] Manj kompaktno tlakovanje, samo s kamni in brez plasti peska, so zasledili tudi leta 1969 med izkopavanji pred južnim krakom obzidja, blizu jugovzhodnega stolpa.[80]

Primerjava rezultatov torej kaže, da je bilo verjetno tlakovano vse rečno obrežje vzdolž severnega in zahodnega obzidja. Tlakovanje je moralo biti del enotne ureditve prostora in je potekalo bolj ali manj istočasno z gradnjo naselbine na Dolgih njivah, to je predvidoma v oktavijanskem ali zgodnjeavgustejskem obdobju.

Ker po eni strani pisni in arheološki viri pričajo o intenzivnem prometu po Ljubljanici v zgodnjerimski dobi,[81] po drugi strani pa so na Dolgih njivah stala velika skladišča,[82] lahko v tlakovanju obrežja prepoznamo rečno pristanišče s pristajalno obalo, dolgo vsaj 270 m.

Na Ljubljanskem barju sta bili odkriti dve ladji iz avgustejskega obdobja. Ladja iz Lip je bila okoli 30 m dolga in široka 4,8 m, z nizkim ugrezom in teoretično nosilnostjo 40 ton. Zelo podobnih dimenzij je morala biti tudi ladja iz Sinje Gorice.[83] Dolžina urejene obale na Dolgih njivah bi torej teoretično lahko omogočala pristan tudi desetih podobnih ladij hkrati. Razmeroma veliko zmogljivost pristanišča potrjujejo še razsežni skladiščni prostori v naselbini.[84]

Notranjost naselbine

V treh majhnih arheoloških izkopih (izkopa 2 in 3, sonda 7) je geološko osnovo prekrival tlak iz peska in grušča. Nad tlakom je bila tanka ruševinska plast z zgodnjerimskimi najdbami. Verjetno smo naleteli na tlak med objekti v jugozahodnem vogalu rimske naselbine na Dolgih njivah. V nasprotju s tremi zaporednimi tlakovanji obrežja je bila tukaj opažena samo ena hodna površina. Menimo, da zaradi oddaljenosti od reke verjetno niso bila potrebna popravila tlaka. Samo en tlak dodatno potrjuje razmeroma kratek čas obstoja naselbine na Dolgih njivah.

Pozna rimska doba

Naselbina in pristanišče na Dolgih njivah sta bila opuščena po avgustejskem obdobju. Na območju izkopa 1 se je že v 1. st. po Kr. začela odlagati plast 17 (faza 3), v kateri ni več zanesljivih znakov urejanja in rabe prostora.

Navport je živel dalje na nasprotnem bregu Ljubljanice, ob glavni cesti Akvileja–Emona. Na levem bregu reke lahko pričakujemo tudi stalno rečno pristanišče.[85] Promet po reki se je nadaljeval skozi vso rimsko dobo, čeprav se je količina tovora po izgradnji ceste in umiritvi razmer v Iliriku precej skrčila.[86]

Na naših izkopavanjih na Dolgih njivah je bila v premešani plasti odkrita fibula s čebuličastimi gumbi (*sl. 20:* 71). Sodi v starejšo obliko tega tipa, ki je ozko datirana na konec 3. in začetek 4. st.[87] Z Dolgih njiv izvira še več poznorimskih predmetov, ki so bili najdeni na površini oziroma izhajajo iz neznanih sklopov. Nekaj je novcev iz 3. in 4. st.[88] Zažigalno konico izstrelka, odkrito na severnem delu naselbine,[89] verjetno lahko datiramo v drugo polovico 3. st.[90] Dokaj verjetno izvira z Dolgih njiv ali bližnje okolice tudi zakladna najdba novcev, zakopana okoli leta 271.[91] Na konec 3. in 4. st. kažejo še odlomki čebuličastih fibul in poznorimska oljenka.[92] Na osnovi geofizikalnih meritev sta na Dolgih njivah vidni dve enoprostorni pravokotni stavbi z osrednjima stebroma, ki odstopata od zasnove avgustejske naselbine. Morda bi ju lahko

[78] Logar 1986; Mušič, Horvat 2007, 237, 261, 275, 280, sl. 36.

[79] Mušič, Horvat 2007, 237, 275, sl. 4A–B, 5–6, 12, 15, 18; 36.

[80] Mikl Curk 1974, 373, pril. 2.

[81] Šašel Kos 1990; Istenič 2009a.

[82] Horvat 1990; Horvat 2008; Mušič, Horvat 2007.

[83] Erič et al. 2014, 213–223, 242–248.

[84] Mušič, Horvat 2007, 243–244, 262–264, 276, 280–281.

[85] Horvat 1990; Horvat, Mušič 2007, 167–170.

[86] Šašel Kos 1994, 119–121; Istenič 2009a.

[87] Pröttel 1988, 349–353.

[88] Horvat 1990, 88–89, 96, 196–197, 204.

[89] Horvat 1990, 269, sl. 32a.

[90] Dva podobna katapultna izstrelka sta znana z Gradu pri Šmihelu: Horvat 2002, 146, 161–162, sl. 6: 8; t. 21: 1. V Duri Europos so datirani v sredino 3. st.: James 2004, 220–221, sl. 130: 804.

[91] Kos 1988, 206/3; Horvat 1990, 93–94, 96, 201–202, 204.

[92] Horvat 1990, 270, sl. 32b: 2; Horvat 1996, sl. 9: 8–10.

postavili v čas, ki ga nakazujejo poznorimske drobne najdbe.[93]

Vprašanje, ali lahko posamezne poznorimske predmete povežemo z oživitvijo naselja na Dolgih njivah ali samo s povečano dejavnostjo na obeh bregovih teke, ostaja odprto. Je pa v najdbah iz reke Ljubljanice, ki imajo pogosto vojaški značaj, dobro vidna okrepitev prometa po rečni osi Ljubljanica–Sava–Donava v poznorimski dobi.[94] O takratnem izjemnem pomenu Navporta najbolje pričajo trdnjava na Gradišču, domnevno postavljena na koncu 3. st., in Ajdovski zid – zaporno zidovje v zaledju Navporta, verjetno zgrajeno v 4. st.[95]

KATALOG PREDMETOV

Gradivo hrani Mestni muzej Ljubljana. Številke predmetov so začasne.

Izkop 1 – **faza 1 D** (plast 5)

1. Odlomek ostenja visokega vretenastega kozarca iz keramike tankih sten. Keramika oksidacijsko žgana, rdeča s sivimi lisami, trda, prečiščena, prisotni zelo fini delci sljude. Površina zelo gladka, na zunanji strani drobne luknjice. Izdelano na hitrem vretenu. Št. 1043-34. SE 1043, kv. C6, PN 025; 288,85 m n. m. – (*Sl. 19*).

Izkop 1 – **faza 1 E** (plast 6)

2. Odlomek ostenja lonca, prostoročne izdelave. Trda keramika, brez vidnih primesi; malo hrapava površina; zunaj rjava, notri črna barva. Št. 1031-35. SE 1031, kv. B6.

Izkop 1 – **faza 2 A** (plast 7)

3. Odlomki navadne namizne keramike: oranžna, prečiščena, mehka, mazasta površina (3 kosi).
4. Brezoblični kosi prežgane gline (21 kosov).

Izkop 1 – **faza 2 A** (plast 8)

5. Novec. Republika; prva polovica 2. st. pr. Kr. As, Roma, RRC? T.: 28,89g. Dim.: 32,5 × 35 mm. Pol. peč.: 6. Zelo močno izrabljen. Kons. št. 403/2013. ZŠ: 162104. Določila: Alenka Miškec, Narodni muzej Slovenije. SE 1037, kv. B6, PN 022.
6. Kos železa, nedoločljive oblike. SE 1037, kv. B6, PN 019.
7. Odlomki ostenja bikoničnega vrča (3 kosi). Keramika svetlo oranžna, prečiščena, mehka, mazasta površina. Št. 1037-36. SE 1037, kv. C6.
8. Odlomki navadne namizne keramike: oranžna, prečiščena, mehka, mazasta površina (2 kosa).
9. Brezoblični kosi prežgane gline (16 kosov).

Izkop 1 – **faza 2 A** (plast 9)

10. Kos železa, nedoločljive oblike. SE 1035, kv. C6, PN 020.
11. Kos železa, oblika stožca. Višina 2,7 cm. SE 1035, kv. C6, PN 021.
12. Ustje in dva odlomka ročaja vrča. Navadna namizna keramika: oranžna, mehka, prečiščena (zelo redke primesi zdrobljene keramike), mazasta površina. Št. 1035-25 in 1035-27. SE 1035, kv. B6 in C6. – (*Sl. 20*).
13. Dno vrča. Navadna namizna keramika: oranžna, mehka, prečiščena (zelo redke primesi zdrobljene keramike), mazasta površina. Št. 1035-2. SE 1035, kv. B6, PN 017. – (*Sl. 20*).
14. Odlomek ostenja kozarca iz keramike tankih sten: oranžna, trda, prečiščena, gladka površina. SE 1035, kv. B6.
15. Odlomek ostenja posode iz keramike tankih sten. Oranžna in mazasta površina. SE 1035, kv. C6.
16. Odlomki navadne namizne keramike: oranžna, prečiščena, mehka, mazasta površina (3 kosi).
17. Odlomki različnih loncev iz grobe kuhinjske keramike: prostoročne izdelave; raskava površina; lisasta oranžna, rjava in črna; številne primesi (6 kosov).
18. Brezoblični kosi prežgane gline (17 kosov).

Izkop 1 – **faza 2 B** (plast 11)

19. Ustje skodelice. Tera sigilata, padska B. Verjetno oblika Consp. 22.6. Št. 1032-29. SE 1032, kv. B6. – (*Sl. 20*).
20. Ustje vrča z odlomljenim ročajem. Navadna namizna keramika: svetlo oranžna, mehka, prečiščena, mazasta površina. Št. 1032-28. SE 1032, kv. B6. – (*Sl. 20*).
21. Dno lonca. Groba kuhinjska keramika: malo raskava površina, zunaj oranžna, notri črna; številne bele primesi, srednje velikosti in fine. Zunaj okrašeno s pasovi navpičnega in zelo finega metličenja. Št. 1032-30. SE 1032, kv. B6. – (*Sl. 20*).
22. Dno in ostenje skodelice iz keramike tankih sten: oranžna, mehka, prečiščena, mazasta površina.
23. Odlomki različnih posod iz navadne namizne keramike: oranžna, prečiščena, mehka, mazasta površina (8 kosov).
24. Odlomki različnih loncev iz grobe kuhinjske keramike. Prostoročne izdelave; raskava površina; lisasta siva in rjava; številne primesi (9 kosov).
25. Odlomki različnih amfor (3 kosi).
26. Brezoblični kosi prežgane gline (8 kosov).
27. Odlomek opeke.

Izkop 1 – **faza 2 B** (plast 12)

28. Žebelj, železo. Ohranjena dolž. 7,5 cm. SE 1033, kv. B6, PN 012.

[93] Mušič, Horvat 2007, 264–265, 281–282; sl. 39: 6,24,26.
[94] Knific, Bitenc 2009a, 119–122.
[95] Horvat 1990, 74–77, 185–187; Pröttel 1996, 138–139; Kusetič 2014, 72–78; Kos 2014.

29. Verjetno železen žebelj. Dolž. 4,5 cm. SE 1033, kv. B5, PN 015.

30. Kos železa, morda žebelj. SE 1033, kv. B6, PN 014.

31. Železna ploščica. SE 1033, kv. B5, PN 013.

32. Odlomek pekve iz grobe kuhinjske keramike. Prostoročne izdelave; raskava površina; lisasta siva in rjava; številne primesi. Št. 1033-37.

33. Odlomek amfore.

Izkop 1 – **faza 2 B** (plast 13)

34. Žebelj, železo. Ohranjena dolž. 10,5 cm. Št. 1029-11. SE 1029, kv. B6, PN 011. – (*Sl. 20*).

35. Odlomki ustja, ostenja in dna lonca. Groba kuhinjska keramika: groba površina, lisasta siva in rjava; primesi bele, srednje in fine, goste. Zunaj okrašena z globokim glavničenjem: na ramenu v različne smeri, na trebuhu in ob dnu navpično. Št. 1020-13, 1020-32, 1029-22, 1029-23, 1029-24. **Plast 13** (33 kosov; SE 1029, kv. B5, B6) in **plast 14** (3 kosi; SE 1020, kv. B5, C6). Med izkopavanjem je bilo te dve plasti težko razlikovati. – (*Sl. 20*).

36. Odlomek ostenja lonca. Groba kuhinjska keramika: malo groba površina, zunaj siva, notri oranžna; primesi bele in sive, srednje in fine, goste. Zunaj okrašena z navpičnim metličenjem. Št. 1029-01. SE 1029, kv. B5. – (*Sl. 20*).

37. Ostenja različnih loncev iz grobe kuhinjske keramike. Postoročne izdelave; raskava površina; lisasta siva in rjava; številne primesi (4 kosi).

Izkop 1 – **faza 2 B** (plast 14)

38. Žebelj, železo. Dolž. 7,3 cm. Št. 1020-08. SE 1020, kv. B6, PN 008. – (*Sl. 20*).

39. Kos železa, morda žebelj. SE 1020, kv. C5, PN 007.

40. Žebelj, železo. SE 1020, kv. C6, PN 009.

41. Dva kosa železa. SE 1020, kv. C7, PN 010.

42. Pet odlomkov krožnika. Keramika s črnim premazom, srednjepadska (premaz črn, trd, nebleščeč; jedro svetlo oranžno, mehko, mazasto). Št. 1020-07 in 1015-11. En kos najden v **plasti 14** (faza 2 B; SE 1020, kv. B6), štirje pa v **plasti 16** (faza 2 C; SE 1015, kv. C5). Med izkopavanjem je bilo te dve plasti težko razlikovati. – (*Sl. 20*).

43. Dva odlomka ustja in ostenja krožnika. Keramika s črnim premazom, srednjepadska. Št. 1020-10. SE 1020, kv. B6. – (*Sl. 20*).

44. Štirje odlomki dna in ostenja kozarca vrste Aco. Morda ohranjen rob ustja. Nezanesljiva rekonstrukcija oblike. Keramika oranžna, mehka, prečiščena, mazasta površina. Reliefni okras z motivom cveta. Št. 1020-06. SE 1020, kv. B6. – (*Sl. 20*).

45. Dva odlomka ustja pokrova. Keramika oranžna, mehka, malo groba površina, zelo fine bele primesi, srednje goste. Št. 1020-04 in 1015-12. En kos najden v **plasti 14** (faza 2 B; SE 1020, kv. B6), drugi pa v **plasti 16** (faza 2 C; SE 1015, kv. C5). Med izkopavanjem je bilo te dve plasti težko razlikovati. – (*Sl. 20*).

46. Odlomek ustja sklede ali pokrova. Keramika sivo rjava, mehka, gladka površina, goste primesi zelo fine sljude. Št. 1020-21. SE 1020, kv. B6. – (*Sl. 20*).

47. Odlomek ustja lonca ali vrča. Keramika svetlo oranžna, trda, malo groba površina; primesi: sljuda in bele, zelo fine, srednje goste. Št. 1020-05. SE 1020, kv. B6. – (*Sl. 20*).

48. Odlomek ustja lončka. Keramika rjava, trda, groba površina; primesi sive, goste. Št. 1020-20. SE 1020, kv. B6. – (*Sl. 20*).

49. Dva odlomka ostenja posode iz fine rjave keramike z veliko sljude.

50. Odlomki različnih posod iz navadne namizne keramike: oranžna, prečiščena, mehka, mazasta površina (37 kosov).

51. Odlomki ostenij različnih loncev iz grobe kuhinjske keramike. Prostoročne izdelave; raskava površina; lisasta siva in rjava; številne primesi (27 kosov).

52. Odlomki amfor (11 kosov).

53. Brezoblični kosi prežgane gline (35 kosov).

54. Odlomki opek (6 kosov).

55. Odlomek imbreksa.

Izkop 1 – **faza 2 C** (plast 15)

56. Novec. Republika; prva polovica 2. st. pr. Kr. As, Roma, RRC ? Polovičen. T.: 6,8g. Zelo močno izrabljen. ZŠ: 162103. Določila Alenka Miškec, Narodni muzej Slovenije. Na meji med **plastmi 15** in **17**. SE 1012 in SE 1016, kv. B6, PN 001.

Izkop 1 – **faza 2 C** (plast 16)

57. Košček bronaste pločevine. SE 1015, profil 7, kv. C6, PN 006.

58. Žebelj, železo. Dolž. 5,5 cm. SE 1015, kv. C6, PN 003.

59. Šest koščkov železnih predmetov nedoločljive oblike. SE 1015, kv. B6, PN 002.

60. Dva odlomka dna lonca. Groba kuhinjska keramika: trda, malo groba površina, rjava lisasta; primesi bele srednje in velike, goste. Zunaj okrašena z navpičnim metličenjem. Št. 1015-03. SE 1015, kv. B6. – (*Sl. 20*).

61. Trije odlomki dna lonca. Groba kuhinjska keramika: trda, malo groba površina, rjava lisasta; primesi bele srednje in velike, goste. Zunaj okrašena z vodoravnim metličenjem in deloma z navpičnim metličenjem. Št. 1015-26. SE 1015, kv. C5 in kv. C6. – (*Sl. 20*).

62. Keramika tankih sten: oranžna, prečiščena, mazasta površina (2 kosa).

63. Odlomki različnih posod iz navadne namizne keramike: oranžna, prečiščena, mehka, mazasta površina (31 kosov).

64. Odlomki različnih loncev iz grobe kuhinjske keramike. Prostoročne izdelave; raskava površina; oranžna ali lisasta siva in rjava; številne primesi; enkrat metličen okras (9 kosov).

65. Odlomki različnih amfore (5 kosov).

66. Brezoblični kosi prežgane gline (13 kosov).

67. Odlomki opek (12 kosov).

68. Kos žlindre.

Izkop 1 – **faza 3** (plast 17)

69. Ustje sklede. Keramika svetlo siva, mehka, gladka, mazasta površina; primesi: sive, velike, redke; zelo fina sljuda, srednje gosta. Okras z žlebom. Št. 1012-19. SE 1012, kv. C6, B6. – (*Sl. 20*).

70. Več drobcev rimske navadne namizne keramike, grobe kuhinjske keramike in opeke.

Izkop 1 – **faza 5** (plast 21)

71. Fibula s čebuličastimi zaključki gumbov. Bakrova litina. Vrezan okras. Odlomljena en krak tečaja in igla. SE 1013, kv. B5, PN 018. – (*Sl. 20*).

Izkop 3 – (plast 2)

72. Brezoblični kosi prežgane gline (3 kosi).

Izkop 3 – (plast 3)

73. Ustje posode, nedoločljive oblike. Navadna namizna keramika: oranžna, prečiščena, mazasta površina. Št. 1041-14. SE 1041, kv. D2.

74. Odlomki različnih amfor (19 kosov).

75. Brezoblični kosi prežgane gline (3 kosi).

76. Odlomki opek (19 kosov).

Izkop 3 – (plast 4a)

77. Ostenje skodelice iz keramike tankih sten. Svetlo siva, zelo trda, s primesmi zelo fine sljude. Zunaj okrašena z vodoravnim žlebom in peresnim okrasom. Št. 1006-31. SE 1006, kv. D2, PN 023. – (*Sl. 20*).

78. Odlomki opek (6 kosov).

KATALOG LESA

Po zaključku analiz vzorci lesa niso bili ohranjeni.

Izkop 1 – **faza 1 A** (plast 2)

Opisi vseh pobranih vzorcev. Katalog dopolnjuje pregled značilnosti v *razpredelnicah 6, 7*.

1. Hrast. Deblo; brez ohranjene skorje, z grčo in vsaj dvema odsekanima vejama; jasno zasekano na eni strani (zasek globok 1 cm, dolg 9 cm); premer neenakomeren, od 6 do 15 cm; ohranjena dolžina 215 cm; datacija z ogljikom 14C (Poz-46646): kalibrirano 379–204 BC. VRH07-086a. – (*Sl. 21:* 1; *22:* 1). Lega: *sl. 7a,c*.

2. Hrast. Deblo; vzdolžni del manjka – morda klano; na površini vidnih pet prečnih zasekov oziroma zarez, dolgih do 10 cm; premer okoli 30 cm; ležalo še izven izkopnega polja – vidno v dolžino 106 cm. VRH07-627. – (*Sl. 22:* 2). Lega: *sl. 6; 7a,c*.

3. Hrast. Deblo; brez ohranjene skorje; en konec obsekan, morda celo sledovi žaganja; premer 6 cm; ohranjena dolžina 21,5 cm. VRH07-087. – (*Sl. 21:* 3; *22:* 3).

4. Hrast. Deblo z grčo, brez ohranjene skorje; en konec obsekan; premer 6 cm; ohranjena dolžina 38 cm. VRH07-142. – (*Sl. 22:* 4). Lega: *sl. 7a*.

5. Hrast. Spodnji del debla nad koreninami, brez ohranjene skorje; morda sledovi sekanja; premer 22 cm; ohranjena širina 46 cm. VRH07-102. – (*Sl. 22:* 5). Lega: *sl. 6; 7a*.

6. Bukev. Deblo s skorjo in z grčami; odsekana veja in na enem koncu trije globoki ostri zaseki, dolgi 8 cm; premer 9 cm (stisnjeno); ohranjena dolžina 41,4 cm. VRH07-090. – (*Sl. 22:* 6). Lega: *sl. 7a*.

7. Bukev. Tangencialna deščica; klana; debelina 2 cm, širina 5 cm, dolžina 9,7 cm. VRH07-089. – (*Sl. 22:* 7).

8. Vrba ali topol. Veja brez ohranjene skorje; lateralni del veje je pooglenel; premer 2 cm; ohranjena dolžina 9 cm. VRH07-088. – (*Sl. 22:* 8).

9. Hrast. Veja s skorjo; en konec dvakrat obsekan, dolžina obsekov 11,5 in 7,5 cm; premer 3 cm, od strani stisnjena; dolžina 62,5 cm. VRH07-613. – (*Sl. 22:* 9). Lega: *sl. 7a,b*.

10. Vrsta ni določena. Veja brez skorje, grča in odlomljene stranske veje; brez sledov obdelave; premer 1,5 cm (stisnjeno); ohranjena dolžina 50 cm. VRH07-261. Lega: *sl. 7a,b*.

11. Beli gaber. Veja z ohranjeno skorjo; odlomljene stranske veje; brez sledov obdelave; premer 3,5 cm (stisnjeno); ohranjena dolžina 26,2 cm. VRH07-170. Lega: *sl. 7a,c*.

12. Jelša ali leska. Veja z ohranjeno skorjo; odlomljene stranske veje; neobdelana; premer 3 cm (stisnjeno); ohranjena dolžina 71 cm. VRH07-260. Lega: *sl. 7a*.

13. Bukev. Veja s skorjo; zaključuje se z rogovilo; brez sledov obdelave; premer do 4 cm; ohranjena dolžina 57 cm. VRH07-085. Lega: *sl. 7a,c*.

14. Hrast. Veja z ohranjeno skorjo; brez sledov obdelave; premer 4,5 cm (stisnjeno), ohranjena dolžina 31 cm. VRH07-633.

Izkop 1 – **faza 1 B** (plast 3)

15. Hrast. Veja z lubjem, brez stranskih vej; več grč; en konec obsekan; dolga 37,3 cm, široka do 2,7 cm, rahlo stisnjena. VRH07-029. Lega: *sl. 8a*.

Izkop 1 – **faza 1 C** (plast 4)

Opisi vseh pobranih vzorcev. Katalog dopolnjuje pregled značilnosti v *razpredelnicah 6, 8*.

16. Bukev. Tangencialno klan kos ob periferiji; dolžina 9,5 cm, širina 2,5 cm. VRH07-044. Lega: *sl. 8a*.

17. Hrast. Veja brez lubja; en konec obsekan; dolžina 33 cm, širina do 2,7 cm. VRH07-169. Lega: *sl. 8a,b*.

18. Vrsta lesa ni identificirana. Radialna deščica; klana, en rob zasekan in odsekan; velikost 11 × 6 × 0,5 cm. VRH07-038. – (*Sl. 23:* 18). Lega: *sl. 8a*.

19. Vrsta lesa ni identificirana. Tangencialni oklešček z ohranjeno periferijo; rob odsekan; velikost 6,4 × 2,2 × 0,1 cm. VRH07-053. – (*Sl. 23*: 19). Lega: *sl. 8ab*.

20. Jesen. Veja z rogovilo, ohranjena skorja; konec odsekan; dolžina 32 cm, širina do 1,5 cm. VRH07-055. Lega: *sl. 8a*.

21. Vrsta lesa ni identificirana. Vejica s skorjo in grčami; brez sledov obdelave; dolžina 19,3 cm, širina do 1,8 cm. VRH07-018. Lega: *sl. 8a,b*.

22. Jelša ali leska. Vejica s skorjo in grčami; brez sledov obdelave; dolžina 15,9 cm, širina do 2,4 cm, stisnjena od strani. VRH07-049. Lega: *sl. 8a,b*.

23. Vrsta lesa ni identificirana. Polovica veje z grčami; brez sledov obdelave; dolžina 11,4 cm, širina do 3 cm. VRH07-022. Lega: *sl. 8a,b*.

24. Vrsta lesa ni identificirana. Dva odlomka luske; brez sledov obdelave; velikost 5,4 × 0,9 × 0,4 cm. VRH07-054. Lega: *sl. 8a,b*.

25. Vrsta lesa ni identificirana. Veja z lubjem; brez sledov obdelave; dolžina 7,4 cm, širina 1,8 cm. VRH07-051. Lega: *sl. 8a,b*.

26. Vrsta lesa ni identificirana. Deformiran kos lesa; brez sledov obdelave; velikost 9 × 4 × 0,5 cm. VRH07-052. Lega: *sl. 8a,b*.

27. Vrsta lesa ni identificirana. Veja, brez lubja in stranskih vej; dolga 31 cm, široka do 2 cm ter stisnjena od strani. VRH07-047.

28. Listavec. Veja, brez stranskih vej; radialni segment - morda klano; dolga 32 cm, široka do 2,2 cm ter stisnjena od strani. VRH07-037.

Izkop 1 – **faza 1 D** (plast 5)

Opisi izbranih kosov lesa od skupno 329 v plasti pobranih vzorcev. Pregled značilnosti vseh vzorcev iz plasti je viden v *razpredelnicah 6, 9–11*.

29. Leska. Veja, z lubjem in grčo; konica obsekana z dveh strani; dolžina 14 cm, širina 3 × 1,6 cm (stisnjena). VRH07-115. – (*Sl. 21:* 29; *24:* 29).

30. Hrast. Radialno klana deska z obsekanim koncem; 5 odlomkov; skupna dolžina 21 cm. VRH07-183. – (*Sl. 21:* 30).

31. Hrast. Radialno klana deščica s sledovi žaganja na dveh ožjih stranskih ploskvah; dolžina 5,6 cm, širina 2,5 × 0,8 cm. VRH07-113. – (*Sl. 21:* 31; *24:* 31).

32. Jesen. Tram, s štirimi klanimi vzdolžnimi ploskvami; na eni konici trije, na drugi dva zaseka; verjetno ožgan; dolžina 10 cm, širina 6 × 6 cm; datacija z ogljikom 14C (Poz-46647): kalibrirano 194-45 pr. Kr. VRH07-178. – (*Sl. 21:* 32).

33. Hrast. Oklešček, s štirimi klanimi in tremi odsekanimi ploskvami; 6,5 × 4 × 3,5 cm. VRH07-270. – (*Sl. 21:* 33).

34. Javor. Veja, katere konec je obsekan z več strani; dolžina 16 cm, širina 2 × 1,5 cm. VRH07- 056. – (*Sl. 24:* 34a,b).

35. Iglavec. Klana radialna deščica; 2 kosa, oba na koncih obsekana; 7,5 × 3,4 × 0,8cm; 9 × 4,4 × 1 cm. VRH07-136. – (*Sl. 24:* 35).

36. Jesen. Klana radialna deščica; 9,6 × 4,6 × 1,3 cm. VRH07-166. – (*Sl. 24:* 36).

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ANDRIČ, M. 2016, Človekov vpliv na rastlinstvo zahodnega Ljubljanskega barja v pozni prazgodovini (pribl. 1000–50 pr. n. št.). Primer: Vrhnika (Dolge njive) / Human impact on the vegetation of western Ljubljansko barje in late prehistory (ca. 1000–50 cal. BC). Case study: Vrhnika (Dolge njive). – *Arheološki vestnik* 67, 259–275.

ANDRIČ, M., T. TOLAR, B. TOŠKAN 2016, *Okoljska arheologija in paleoekologija: palinologija, arheobotanika in arheozoologija.* – Ljubljana.

ANDRIČ, M., B. TOŠKAN, J. DIRJEC, A. GASPARI 2012, Arheološki in okoljski zapis v sedimentu vodne kotanje iz začetka 1. stoletja n. št. na lokaciji NUK II v Ljubljani. – V / In: A. Gaspari, M. Erič (ur. / eds.), *Potopljena preteklost. Arheologija vodnih okolij in raziskovanje podvodne kulturne dediščine v Sloveniji,* 409–416, Radovljica.

BEIJERINCK, W. 1947, *Zadenatlas der Nederlandsche flora. H. Veenman und Zonen.* – Wageningen.

BOESSNECK, J., H.-H. MÜLLER, M. TEICHERT 1964, Osteologische Unterscheidungsmerkmale zwischen Schaf (*Ovis aries* Linné) und Ziege (*Capra hircus* Linné). – *Kühn-Archiv* 78, 1–129.

BOJNANSKÝ, V., A. FARGAŠOVÁ 2007, *Atlas of Seeds and Fruits of Central and East-European Flora.* – Dordrecht .

BOSCHIN, F., B. TOŠKAN 2012, Changes in cattle body size in Slovenia from the Iron Age to the Early Middle Age. – V / In: J. De Grossi Mazzorin, D. Saccà, C. Tozzi (ur. / eds.), *Atti del 6º Convegno nazionale di archeozoologia,* Parco dell'Orecchiella, 2009, 393–395, Lecce.

BOŽIČ, D. 1993, Slovenija in srednja Evropa v poznolatenskem obdobju (Slowenien und Mitteleuropa in der Spätlatènezeit). – *Arheološki vestnik* 44, 137–152.

BOŽIČ, D. 2008, *Late La Tène-Roman cemetery in Novo mesto. Ljubljanska cesta and Okrajno glavarstvo / Poznolatensko-rimsko grobišče v Novem mestu. Ljubljanska cesta in Okrajno glavarstvo.* – Katalogi in monografije 39.

CAPPERS, R. T. J., R. M. BEKKER, J. E. A. JANS 2006, *Digitale Zadenatlas van Nederland (Digital Seed Atlas of the Netherlands)*. – Groningen.

CONSPECTUS 2002 = *Conspectus formarum terrae sigillatae Italico modo confectae* (Materialien zur römisch--germanischen Keramik 10), Bonn 2002[2].

DAVIS, S. J. M. 1987, *The archaeology of animals.* – London.

DEMETZ, S. 1999, *Fibeln der Spätlatène- und frühen römischen Kaiserzeit in den Alpenländern.* – Frühgeschichtliche und Provinzialrömische Archäologie 4.

DOLENZ, H. et al. 2008 = Dolenz, H., St. Krmnicek, E. Schindler-Kaudelka, H. Sedlmayer, S. Zabehlicky-Scheffenegger 2008, Zur vorannexionszeitlichen Siedlung auf dem Magdalensberg. – *Fundberichte aus Österreich* 47 (2009), 235–266.

DRENNAN, R. D. 1996, *Statistics for archaeologists. A commonsense approach.* –New York, London.

DRIESCH, A. VON DEN 1976, A guide to the measurement of animal bones from archaeological sites. – *Peabody Museum Bulletin* 1, 1–136.

DRAKSLER, M., B. NADBATH 2007, *Poročilo o arheološkem terenskem pregledu na območju predvidene rekonstrukcije mostu AC priključka na Vrhniki,* Ljubljana. (Neobjavljeno poročilo / Unpublished report; arhiv ZVKDS, Ljubljana).

ERIČ, M., A. GASPARI, K. ČUFAR, F. SOLINA, T. VERBIČ 2014, Zgodnjerimska ladja iz Ljubljanice pri Sinji Gorici / Early Roman barge from the Ljubljanica River at Sinja Gorica. – *Arheološki vestnik* 65, 187–254.

GAMPER, P. 2007, Tiberius ac Noricos imperio nostro armis subiunxit - neue Erkenntnisse zur römischen Besetzung Noricums durch die Grabungskampagne 2005 auf der Gurina. – *Archäologisches Korrespondenzblatt* 37/3, 421–440.

GASPARI, A. 2009a, Keltski bojevniki in Ljubljanica. – V: *Ljubljanica, kulturna dediščina reke,* 68–73, Ljubljana.

GASPARI, A. 2009b, Celtic warriors and the Ljubljanica. – In: *The Ljubljanica – a River and its Past,* 72–78, Ljubljana.

GASPARI, A. 2010, *"Apud horridas gentis ...". Začetki rimskega mesta Colonia Iulia Emona / Beginnings of the Roman Town of Colonia Iulia Emona.* – Ljubljana.

GASPARI, A., R. MASARYK 2009, Na sledi prazgodovinskega Navporta / Tracing the prehistoric Nauportus. – *Arheološki vestnik* 60, 195–206.

GRAHEK, L. 2013, *Železnodobno gradišče Cvinger nad Virom pri Stični.* – E-Monographiae Instituti Archaeologici Sloveniae 3 (http://iza.zrc-sazu.si/si/e_monografije/Sticna.html).

GRANT, A. 1982, The use of tooth wear as a guide to the age of domestic ungulates. – V / In: B. Wilson, C. Grigson, S. Payne (ur. / eds.), *Ageing and sexing animal bones from archaeological sites,* BAR. British series 109, 91–108.

GRAYSON, D. K. 1984, *Quantitative zooarchaeology.* – Orlando.

GUŠTIN, M. 1991, *Posočje. Posočje in der jüngeren Eisenzeit / Posočje v mlajši železni dobi.* – Katalogi in monografije 27.

HORVAT, J. 1990, *Nauportus (Vrhnika).* – Dela 1. razr. SAZU 33.

HORVAT, J. 1996, Nauportus. Vrhnika v arheoloških obdobjih. – *Vrhniški razgledi* 1, 89–106.

HORVAT, J. 2002, The Hoard of Roman Republican Weapons from Grad near Šmihel / Zaklad rimskega republikanskega orožja z Gradu pri Šmihelu pod Nanosom. – *Arheološki vestnik* 53, 117–192.

HORVAT, J. 2008, Early Roman horrea at Nauportus. – *Mélanges de l'Ecole française de Rome, Antiquité,* 120/1, 111–121.

HORVAT, J. 2009a, *Nauportus* – naselje na začetku transportne poti po Ljubljanici. – V: *Ljubljanica, kulturna dediščina reke,* 89–94, Ljubljana.

HORVAT, J. 2009b *Nauportus* – a settlement at the beginning of the transportation route along the Ljubljanica. – In: *The Ljubljanica – a River and its Past,* 96–101, Ljubljana.

HORVAT, J. 2010, Skupek keramike iz prve polovice 1. stoletja iz Navporta (Assemblage of ceramic ware from the first half of the 1st century AD from Nauportus). – V / In: I. Lazar, B. Županek (ur. / eds.), *Emona med Akvilejo in Panonijo / Emona between Aquileia and Pannonia,* Annales Mediterranei, 273–299, Koper.

HORVAT, J. 2012, Zgodnjerimska utrjena naselbina na Dolgih njivah na Vrhniki (Early Roman fortified settlement at Dolge njive in Vrhnika). – V / In: A. Gaspari, M. Erič (ur. / eds.), *Potopljena preteklost. Arheologija vodnih okolij in raziskovanje podvodne kulturne dediščine v Sloveniji,* 287–292, Radovljica.

HORVAT, J., A. BAVDEK 2009, *Okra. Vrata med Sredozemljem in Srednjo Evropo / Ocra. The gateway between the Mediterranean and Central Europe.* – Opera Instituti Archaeologici Sloveniae 17.

HORVAT J., MUŠIČ B. 2007, Nauportus, a commercial settlement between the Adriatic and the Danube. – V / In: M. Chiabà, P. Maggi, C. Magrini (ur. / eds.), *Le Valli del Natisone e dell'Isonzo tra Centroeuropa e Adriatico,* Studi e ricerche sulla Gallia Cisalpina 20, 165–174.

HORVAT, J., P. PETERLE UDOVIČ, T. ŽERJAL 2007, *Poročilo o arheoloških izkopavanjih,* Ljubljana. (Neobjavljeno poročilo / Unpublished report; arhiv IzA ZRC SAZU, Ljubljana).

ISTENIČ, J. 1999, *Poetovio, zahodna grobišča* I. / *Poetovio, the Western Cemeteries* I. – Katalogi in monografije 32.

ISTENIČ, J. 2009a, Ljubljanica – rimska trgovska in prometna pot. – V: *Ljubljanica, kulturna dediščina reke,* 74–80, Ljubljana.

ISTENIČ, J. 2009b, The Ljubljanica – a Roman trade and transport route. – In: *The Ljubljanica – a River and its Past,* 79–85, Ljubljana.

JAMES, S. 2004, *The Excavations at Dura-Europos conducted by Yale University and the French Academy of Inscriptions and Letters 1928 to 1937. Final Report* VII. *The Arms and Armour and other Military Equipment.* – London.

JONES, S., J. TAYLOR, F. ASH 2004[2], *Seed Identification handbook. Agriculture, Horticulture and Weeds.* – Cambridge.

KNIFIC, T., P. BITENC 2009a, Barbarski vojščaki na Ljubljanici. – V: *Ljubljanica, kulturna dediščina reke,* 119–122, Ljubljana.

KNIFIC, T., P. BITENC 2009b, Barbarian soldiers on the Ljubljanica. – In: *The Ljubljanica – a River and its Past,* 131–135, Ljubljana.

KOS, P. 1988, *Die Fundmünzen der römischen Zeit in Slowenien* I. – Berlin.

KOS, P. 2014, Izgradnja zapornega sistema Claustra Alpium Iuliarum / Construction of the Calustra Alpium Iuliarum fortifications. – V / In: J. Kusetič (ed.), *Claustra Alpium Iuliarum – med raziskovanjem in upravljanjem / Claustra Alpium Iuliarum – Between Research and Management,* 112–132, Ljubljana.

KRAJŠEK, J., P. STERGAR 2008, Keramika z rimskega svetiščnega območja v Podkraju pri Hrastniku (The pottery material from the Roman sanctuary area at Podkraj near Hrastnik). – *Arheološki vestnik* 59, 245–277.

KRYŠTUFEK, B. 1991, *Sesalci Slovenije.* – Ljubljana.

KUSETIČ, J. 2014, Claustra Alpium Iuliarum – topografski in arheološki pregled / Claustra Alpium Iuliarum – a topographical and archaeological overview. – V / In: J. Kusetič (ur. / ed.), *Claustra Alpium Iuliarum – med raziskovanjem in upravljanjem / Claustra Alpium Iuliarum – Between Research and Management,* 27–111, Ljubljana.

LOGAR, N. 1986, Vrhnika / Dolge njive. – *Arheološki pregled 1985* (1986) 126–127.

MacKINNON, M. 2004, *Production and consumption of animals in Roman Italy. Integrating the zooarchaeological and textual evidence.* – Journal of Roman Archaeology, Supplemetary series 54.

MARTINČIČ, A., T. WRABER, N. JOGAN, V. RAVNIK, A. PODOBNIK, B. TURK, B. VREŠ 2007, *Mala flora Slovenije, Ključ za določanje praprotnic in semenk.* – Ljubljana.

MELIK, A. 1946, *Ljubljansko mostiščarsko jezero in dediščina po njem.* – Ljubljana.

MIKL CURK, I. 1974, Utrdbe Nauporta ob Ljubljanici na Vrhniki (Nauportus fortresses by the river Ljubljanica at Vrhnika). – *Arheološki vestnik* 25, 370–386.

MUŠIČ, B., J. HORVAT 2007, Nauportus - an Early Roman trading post at Dolge njive in Vrhnika / *Nauportus* - zgodnjerimska trgovska postojanka na Dolgih njivah na Vrhniki. – *Arheološki vestnik* 58, 219–283.

PAYNE, S. 1973, Kill-off patterns in sheep and goats: the mandibles from Aşvan Kale. – *Anatolian studies* 23, 281–303.

PAYNE, S. 1987, Reference codes for wear states in the mandibular cheek teeth of sheep and goats. – *Journal of archaeological science* 14, 609–614.

PRÖTTEL, Ph. M. 1988, Zur Chronologie der Zwiebelknopffibeln. – *Jahrbuch des Römisch-Germanischen Zentralmuseums Mainz* 35, 347–372.

PRÖTTEL, Ph. M. 1996, *Mediterrane Feinkeramikimporte des 2. bis 7. Jahrhunderts n. Chr. im oberen Adriaraum und in Slowenien.* – Kölner Studien zur Archäologie der römischen Provinzen 2.

RICHTER, H. G., M. J. DALLWITZ 2002, *Commercial timbers: descriptions, illustrations, identification, and information retrieval* (INTKEY).

ROLETT, B. V., M.-Y. CHIU 1994, Age estimation of prehistoric pigs (*Sus scrofa*) by molar eruption and attrition. – *Journal of Archaeological Science* 21, 377–386.

ROZMAN, L. 2014, *Prvo strokovno poročilo o zaščitnih arheoloških raziskavah na lokaciji Gregorčičeva ul. 1, Ljubljana, parc. Št. 178/6, k.o. Gradišče I, EŠD 329.* – Neobjavljeno poročilo / Unpublished report, Kranj, Magelan skupina d.o.o.

SCHINDLER, M. 1967, *Die "Schwarze Sigillata" des Magdalensberges.* – Kärntner Museumsschriften 43, Archäologische Forschungen zu den Grabungen auf dem Magdalensberg 1.

SCHINDLER, M. 1986, Die "Schwarze Sigillata" des Magdalensberges 2. Neufunde seit 1965. – V / In: H. Vetters, G. Piccottini (ur. / eds.) *Die Ausgrabungen auf dem Magdalensberg 1975 bis 1976,* Magdalensberg-Grabungsbericht 15, 345–390.

SCHINDLER, M., S. SCHEFFENEGGER 1977, *Die glatte rote Terra sigillata vom Magdalensberg.* – Kärntner Museumsschriften 62, Archäologische Forschungen zu den Grabungen auf dem Magdalensberg 5.

SCHINDLER-KAUDELKA, E. 1975, *Die dünnwandige Gebrauchskeramik vom Magdalensberg.* – Kärntner Museumsschriften 58, Archäologische Forschungen zu den Grabungen auf dem Magdalensberg 3.

SCHINDLER KAUDELKA, E. 2000, Ceramica norditalica decorata del Magdalensberg: problemi aperti. – V / In: G. P. Brogiolo, G. Olcese (ur. / eds.), *Produzione ceramica in area padana tra il II secolo a. C. e il VII secolo d. C.: nuovi dati e prospettive di ricerca,* Documenti di archeologia 21, 53–67.

SCHINDLER-KAUDELKA, E. 2002, La datation des premiers contextes du Magdalensberg. – *SFECAG, Actes du Congrès de Bayeux,* 263–274.

SCHMID, W. 1943, Das Eindringen der römischen Kultur in Noricum. – *Das Joanneum* 6, 7–28.

SCHOCH, W. H., B. PAWLIK, F. H. SCHWEINGRUBER 1988, *Botanical macro-remains. An atlas for the determination of frequently encountered and ecologically important plant seeds.* – Stuttgart.

SCHWEINGRUBER, F. H. 1990, *Mikroskopische Holzanatomie.* – Birmensdorf.

SEDLMAYER, H. 2005, Kontextbezogene Analysen des prähistorischen und römischen Fundmaterials. – V / In: S. Groh, H. Sedlmayer, *Der norisch-römische Kultplatz am Frauenberg (Österreich),* Protohistoire Européenne 9, 124–155.

SENA CHIESA, G. 1985, Ceramica a pareti sottili. – V / In: G. Sena Chiesa (ur. / ed.), *Angera romana,* Archaeologica 44, 389–426.

SILVER, I. A. 1969, The Ageing of Domestic Animals. – V / In: D. R. Brothwell, E. S . Higgs (ur. / eds.), *Science in archaeology: a comprehensive survey of progress and research,* 283–302, London.

STOKIN, M. 1992, Naselbinski ostanki iz 1. st. pr. n. št. v Fornačah pri Piranu (Settlement remains from the first century B. C. at Fornače near Piran). – *Arheološki vestnik* 43, 79–92.

ŠAŠEL, J. 1966, Keltisches portorium in den Ostalpen (zu Plin. n. h. III 128). – V / In: *Corolla memoriae Erich Swoboda dedicata,* Römische Forschungen in Niederösterreich 5, 198–204 (= *Opera selecta*, Situla 30, Ljubljana 1992, 500–506).

ŠAŠEL KOS, M. 1990, Nauportus: antični literarni in epigrafski viri / Nauportus: Literary and Epigraphical Sources. – V / In: Horvat 1990, 17–33, 143–159.

ŠAŠEL KOS, M. 1994, Savus and Adsalluta / Savus in Adsalluta. – *Arheološki vestnik* 45, 99–122.

ŠAŠEL KOS, M. 1997, The End of the Norican Kingdom and the Formation of the Provinces of Noricum and Pannonia. – V / In: *Akten des IV. internationalen Kolloquiums über Probleme des provinzialrömischen Kunstschaffens,* Situla 36, 21–42.

ŠAŠEL KOS, M. 1998, Caesarian inscriptions in the Emona basin? – V / In: G. Paci (ur. / ed.), *Epigrafia romana in area Adriatica,* 101–112, Pisa, Roma.

ŠAŠEL KOS, M. 2000, Caesar, Illyricum, and the hinterland of Aquileia. – V / In: G. Urso (ur. / ed.), *L'ultimo Cesare,* 277–304, Roma.

TICA, G., D. PAVLOVIČ, G. RUTAR 2006, *Poročilo arheoloških izkopavanj na lokaciji Kočevarjev vrt – elektro – Vrhnika.* – Neobjavljeno poročilo / Unpublished Report, Planina, Tica sistemi d.o.o.

TORELLI, N. 1991, *Makroskopska in mikroskopska identifikacija lesa (ključi).* – Ljubljana.

TOŠKAN, B. 2011, Velike podnebne spremembe razkrite na podlagi malih fosilov. Nekdanje okolje na meji med zgodnjim in srednjim würmom v okolici Divjih bab I / Big climatic changes revealed by tiny fossils. Palaeoenvironment at the boundary between the early and middle Würm in the surroundings of Divje babe I (W Slovenia). – V / In: B. Toškan (ur. / ed.), *Drobci ledenodobnega okolja / Fragments of Ice Age environments,* Opera Instituti Archaeologici Sloveniae 21, 155–179.

TOŠKAN, B. 2013, Domače govedo v romaniziranem jugovzhodnoalpskem prostoru: arheozoološki pogled. – *Keria* 15/1, 35–72.

TOŠKAN, B., J. DIRJEC 2011, Mammalian macrofauna / Sesalska makrofavna. – V / In: Z. Modrijan, T. Milavec, *Poznoantična utrjena naselbina Tonovcov grad pri Kobaridu. Najdbe / Late Antique fortified settlement Tonovcov grad near Kobarid. Finds,* Opera Instituti Archaeologici Sloveniae 24, 303–388.

TOŠKAN, B., B. KRYŠTUFEK 2006, Noteworthy rodent records from the Upper Pleistocene and Holocene of Slovenia. – *Mammalia* 70/1–2, 99–105.

TURK, I. 2000, Favna. – V / In: S. Ciglenečki, *Tinje nad Loko pri Žusmu. Poznoantična in zgodnjesrednjeveška naselbina / Tinje oberhalb von Loka pri Žusmu. Spätantike und frühmittelalterliche Siedlung*, Opera Instituti Archaeologici Sloveniae 4, 167-171.

WOLF VON, P., B. HERZIG-STRASCHIL, K. BAUER 1980, *Rattus rattus* (Linné 1758) und *Rattus norvegicus* (Berkenhout 1769) in Österreich und deren Unterscheidung an Schädel und postcranialem Skelett. – *Mammalia austriaca* 4, *Mitteilungen der Abteilung für Zoologie am Landesmuseum Joanneum in Graz* 9/3, 141–188.

ZEDER, M. A., S. E. PILAAR 2010, Assessing the riability of criteria used to identify mandibles and mandibular teeth in sheep, *Ovis*, and goats, *Capra.* – *Journal of Archaeological Science* 37, 225–242.

ŽERJAL, T., P. PETERLE UDOVIČ 2007–2008, Vrhnika – arheološko območje trško jedro. – *Varstvo spomenikov. Poročila* 44 (2008), 300–301.

The port area of Nauportus

Translation

Contents

INTRODUCTION

The settlement of the western part of the Ljubljana basin has always been strongly influenced by a major land route connecting the Italian peninsula and middle Danube region. On its way, the route traversed a mountain barrier representing a watershed between the Adriatic and Black Seas and descended into the lowland at Vrhnika. Here, the Ljubljanica River emerges from several springs and with it began the long navigable route towards the east, along the Ljubljanica, Sava and Drava Rivers.[1]

The archaeological finds from the beds of the Ljubljanica and Ljubija Rivers as well as stray finds from the plain to the north of Vrhnika indicate that the area was inhabited already from the Middle Bronze Age onwards.[2] A hillfort was located on the Tičnica hill which, due to its size, high defensive

[1] Horvat 1990; Šašel Kos 1997, 33–35; Istenič 2009b.
[2] Horvat 1990; Gaspari, Masaryk 2009.

ramparts and strategic location, could probably be recognised as a central prehistoric settlement of the area (*Fig. 1*), although a more precise dating of the site has yet to be developed.[3]

Strabo reported that there was a settlement called Nauportus, in the second century BC, situated along the Ljubljanica River, which was in the hands of the Celtic tribe of Taurisci. The settlement represented a transit post on the way from Italy towards the east, where goods that had been transported from Italy were loaded onto ships.[4] Nauportus was controlled by the Romans in the middle of the first century BC and incorporated as a *vicus* in the territory of the colony of Aquileia.[5] The Roman settlement evolved in the plain by the river. On its right bank and at the bend of the Ljubljanica River, in an area called Dolge njive, a fortified settlement with a central square and large warehouses were built in the pre-Augustan or early Augustan period. The post had a function of transit and reloading station on the route toward the east and was managed by Aquileian merchant families. Most probably it also functioned as a logistics base, supporting the Roman army in the occupation period (*Figs. 1; 2*).[6]

At the beginning of the first century AD, a second settlement area developed at Breg, on the opposite, left bank of the Ljubljanica River, where a newly constructed road between Aquileia and Emona was also placed (*Fig. 1*). The settlement at Dolge njive was abandoned soon after the end of the Augustan period, while the area of Breg was inhabited without interruption until the beginning of the fifth century AD.[7]

RESCUE EXCAVATION IN 2007

The planned reconstruction and widening of the highway bridge across the Ljubljanica at Vrhnika endangered the margins of the Roman settlement at Dolge njive and at Breg (*Figs. 1–3*). Trial excavation was conducted in the areas where the construction works had been planned in June 2007 by the Zavod za varstvo kulturne dediščine Slovenije, OE Ljubljana. Six trial trenches were excavated on the right bank of the Ljubljanica River, at Dolge njive (*Fig. 4:* Trenches 2–7), and one was excavated on the opposite bank of the river, at Breg.[8]

Rescue archaeological excavation was conducted by the Inštitut za arheologijo ZRC SAZU from the 25th of September until the 7th of November 2007. The excavation works were led by Pavla Peterle Udovič at Dolge njive (right bank of the river) and by Tina Žerjal at Breg (left bank of the river).[9] In the article, the excavation results from the right bank of the river are presented. The intervention there uncovered the margins of the Roman settlement at Dolge njive.

RESEARCH METHODS

Excavation

The *research area* covered a surface of 146 m², north of the highway interchange, and adjusted to the planned construction works (*Figs. 3; 4*).

Trenches:

Six trenches of varying sizes (Trenches 2–7) were excavated prior to the main excavation in order to establish the depth and state of preservation of the archaeological layers. Trenches 2, 3 and 7 were cleaned and documented once again at the beginning of the rescue excavation (*Figs. 4; 5; 16; 17*). It became evident that in Trench 3 modern deposits were present at a depth of 1.85 m, where excavation had to be stopped due to the intrusion of the river water (*Figs. 4; 5*). Trenches 5 and 6 located in the central part of the research area showed that the archaeological layers had been destroyed when constructing the road and the bridge in 1969–1970. The north-eastern part of the research area (Trenches 4 and 7) was heavily damaged with various modern features, such as drainage ditch, cart track and road dike (*Fig. 4*).

Sectors:

In order to better document the small finds, the research area was divided into grid squares, measuring 4 × 4 m and marked with a letter and number. Mechanical equipment was used on the entire research area for the removal of the upper 30 cm of the topsoil, while afterwards the excavations continued only in Sectors 1, 2 and 3, as only there the undamaged archaeological layers

[3] Gaspari, Masaryk 2009.

[4] Strabo 7, 5, 2; Šašel Kos 1990, 17–20, 143–147.

[5] Šašel Kos 1990; Šašel Kos 1998; Šašel Kos 2000, 294–297.

[6] Horvat 1990; Mušič, Horvat 2007; Horvat 2008.

[7] Horvat, Mušič 2007; Horvat 2009b; Horvat 2012.

[8] Draksler, Nadbath 2007.

[9] Horvat, Peterle Udovič, Žerjal 2007; Žerjal, Peterle Udovič 2008.

had been detected. *Sector 1* was located between the bank of the Ljubljanica River on the west and the damaged area on the east, and extended over parts of the grid squares B5–B7 and C5–C7 (*Fig. 4*). The excavation was conducted with the removal of arbitrary layers regarding the archaeological stratigraphy units (cross section: *Fig. 6*; plan views: *Figs. 7–15*). On the site, it was sometimes difficult to discern individual occupation surfaces (e.g. Layers 13 and 14) and in particular the lower waterlogged Layers 1–5. The excavation of the deepest layers was seriously hindered by the groundwater; therefore, much smaller areas were unearthed and accurately documented in the lowest strata than at the top. The northern cross section of Sector 1 (Cross section C–D; *Figs. 4; 6*) could be reasonably connected with the northern cross section of the Trench 3 (Cross section A–B; *Figs. 4; 5*). The small Sectors 2 and 3 were positioned in the middle of the badly damaged area, which presumably lay inside the fortified area of the Roman settlement (*Figs. 4; 17*).

Sampling and scientific analyses

Macrobotanical analysis

Seeds and fruits

Sampling:

The samples for archaeobotanical analyses were collected only in Sector 1. Sampling was conducted in two ways.[10]

– 1. systematic sampling from each layer from the top to the bottom of Sector 1, in the vicinity of the border between grid squares B6 and C6;

– 2. judgment sampling, when archaeobotanically interesting finds were collected additionally (i.e. seeds, fruits, charcoal, wood, tree leaves and needles).

Sixteen sediment samples were collected systematically, each amounting to 2–4 litres. With judgement sampling additional 9 samples (macrobotanical finds) were collected. Samples were numbered, while their position was designated on the plan views (*Figs. 7–11; 13; 15*).

All the samples were wet-sieved over two sieves with a mesh size of 2 mm and 0.355 mm. Organic remains that caught in the sieves were examined under the stereomicroscope *Leica MZ75* at 6.3–50× magnification. As the samples were mostly waterlogged, they were continuously kept wet.

Analysis:

A preliminary analysis was conducted on the chosen systematically collected sediment samples originating from the dry upper layers (6, 9, 13, 16). Since the organic remains were poorly preserved and not carbonised, the remaining samples from the dry layers were not analysed. The organic remains were better preserved in the nine samples collected according to the judgement sampling, which originated from the lower waterlogged layers (2, 3, 5). Altogether, 13 samples were analysed, which gave a relevant archaeobotanical insight into all archaeological phases on the site (see *Tab. 1*).

Identification of seeds and fruits was carried out with the help of the reference collection at the Inštitut za arheologijo ZRC SAZU and archaeobotanical literature.[11]

Wood

A large amount of non-carbonised waterlogged wood was discovered in the waterlogged Layers 2–5 of Sector 1 (*Figs. 4; 6–9*). Only root remains of modern plants were preserved in the superposed Layers 6–18 (*Fig. 6*). No evidence of a causal or functional relationship between the different archaeological layers containing wood was recorded during the excavations; therefore, the wood from each layer has been analysed separately.

Sampling:

All the wood that showed clear traces of working was collected, as well as all large pieces from individual layers (altogether 357 samples of wood). The samples were cleaned, photographed and described. The state of degradation, wood's primary orientation in the tree and eventual traces of working have been determined. All samples have been measured while the especially interesting specimens have also been drawn (*Fig. 21*). Each sample was given a special code for laboratory analysis. These are indicated on the figures (*Figs. 6–9*) without their initial part, which represents the site code (VRH07-), while the entire code of the samples is stated through the text and in the catalogue. The relatively few pieces of wood originating from Layers 2–4 are described more precisely in the catalogue, as they represent large and characteristic specimens (*Catalogue of wood,*

[10] Jacomet, Brombacher 2005, 77; Andrič, Tolar, Toškan 2016, 64.

[11] E.g. Beijerinck 1947; Schoch et al. 1988; Jones et al. 2004; Cappers et al. 2006; Bojnanský, Fargašová 2007.

nos. **1**–**28**). However, only selected specimens have been chosen for the catalogue description among the numerous samples of wood from Layer 5 (*Catalogue of wood,* nos. **29**–**36**). The descriptions are complemented with the tables (*Tabs. 6–11*).

Identification of the wood species:

Botanical identification of the selected wood samples was carried out in the laboratory of the Oddelek za lesarstvo, Biotehniška fakulteta, Univerza v Ljubljani. Out of the altogether 357 samples, 120 have been analysed. Only two of the latter were also suitable for dendrochronological research.

Waterlogged wood samples were first deeply frozen and then prepared for the identification and wood anatomy characterization. The analysis was conducted with stereomicroscope and microscope, whereas the dendrochronological analysis was conducted with the measuring table and computer program TSAP/X and TSAP/Win. In cases in which the wood species could not be determined with 50× magnification (that is with stereomicroscope), the wood anatomical slides were prepared and observed under the microscope at 1000× magnification. The reference collections of the Inštitut za arheologijo ZRC SAZU and of the Oddelek za lesarstvo, Biotehniška fakulteta, Univerza v Ljubljani as well as archaeobotanical literature were used for the identification of wood species.[12]

After the analysis, the wood samples were not retained.

Pollen

From the northern edge of Sector 1 (C–D) a 2 m long sedimentary column was taken for pollen analysis (altitude from 288.17 to the 290.17 m a.s.l.; *Fig. 6*). The analysis is presented in a separate article;[13] thus, we repeat here only on the most important conclusions.

Archaeozoology

Sampling:

Animal remains were primarily gathered manually. In addition, two buckets of sediment with the volume of 10 litres were collected for wet-sieving (mesh size: 3 and 1 mm) on the border of square grids B6 and C6 in Sector 1 from each layer of the stratigraphic sequence. Consequently, at least in this sector, an adequate collection of small archaeozoological finds has been achieved, including small size remains, such as isolated rodent teeth. Among 13 samples collected, two contained animal remains (*Tab. 1*). The sampling locations are shown on plan views with the indication of the sample number (*Figs. 13; 15*).

Analysis:

Only teeth have been considered when determining the small mammal fauna, as the differentiation between closely related species on the basis of fragmented postcranial bones is extremely difficult. In the case of large mammals, in contrast, the remains of all skeletal elements were taken into consideration except ribs; the latter were classified only according to size, either conforming to 'small ruminant' or 'large ruminant' size groups. Differentiation between sheep and goat remains has been based on the morphological characteristics,[14] while the metric data was used in distinguishing between the domestic pig and wild boar. For the latter, standard archaeozoological measurements published by von den Driesch (1976) have been applied. The age-at-death was estimated by the degree of epiphyseal fusion[15] and teeth wear.[16] The share of representation of individual taxa was calculated according to the Number of Identified Specimens (NISP).[17] In evaluating the NISP, the fragments which undoubtedly belonged to the same bone/tooth have been joined and counted as a single specimen (i.e. NISP = 1).

Dating methods

Radiocarbon dating:

– 1. Three sediment samples were selected from the palynological column in the Cross section C–D of Sector 1: two from Layer 1 and one from Layer 3 (positions on *Fig. 6*).[18]

– 2. Three macrobotanical samples were chosen from Sector 1: a sample of oak log (VRH07-086a; position on *Fig. 7*) from Layer 2, a sample of ash log (VRH07-178) from Layer 5 and a fir needle (taken from the archaeobotanical sample no. 74; position on *Fig. 9*).

[12] E.g. Schweingruber 1990; Torelli 1991; Richter, Dallwitz 2002.

[13] See Andrič 2016 (this issue of *Arheološki vestnik*).

[14] Boessneck, Müller, Teichert 1964; Zeder, Pilaar 2010.

[15] Silver 1969.

[16] Payne 1973; Payne 1987; Grant 1982; Rolett, Chiu 1994.

[17] Grayson 1984.

[18] See Andrič 2016 (this issue of *Arheološki vestnik*).

Dendrochronological analysis:

Despite the numerous samples of wood, it was possible to carry out the dendrochronological analysis only on two specimens, both deriving from Layer 2 of Sector 1 (VRH07-086a and VRH07-102).

FIELD REPORT

Sector 1

(*Figs. 4; 6–15*)

Sector 1 was positioned in the vicinity of the river bank, among the previously excavated trial Trenches 3, 5 and 6. Its surface measured 6.75 × 3.5 m, while the maximum excavated depth reached 2.25 m. Due to the intrusion of the groundwater, the excavated area was narrowing towards the bottom. The original surface, covered with grass, was sloping towards the river. A similar inclination was noticed in the majority of the archaeological layers. Stratigraphic sequence of the archaeological layers could be observed in the Cross section C–D at the northern edge of Sector 1 (*Fig. 6; Tab. 1*). The same and similar layers were also discovered in Trench 3 on the bank of the river, in Cross section A–B (*Fig. 5*).

Layer 1

At the bottom of Sector 1, there was an extremely moist layer, dark grey and dark brown in colour, which consisted of patches of fine sand and clayey silt (*Figs. 6; 7*). Because of the intrusion of the groundwater, Layer 1 was documented only in a 1 m wide stripe along Cross section C–D and to the depth of around 30 cm. The layer was sloping towards the river and was no longer visible in Cross section A–B (cf. *Fig. 5*). The logs VRH07-102 and VRH07-627 most probably sank into Layer 1 and originally belonged to Layer 2.

– *Artefacts*: The layer did not contain any archaeological artefacts.

– *Samples*: The sediment sample and the sample of plant macroremains, collected at the altitude 288.25 m a.s.l., have been radiocarbon dated (see further *Dating*).

– *Determination*: The layer represents a geological base of the area and is probably the result of the river alluvium.

Layer 2

Layer 2 consisted only of pieces of wood that were lying disordered on the geological base. An area measuring 1 × 2 m was excavated with the volume of around 0.7 m^3 (*Figs. 6; 7*). Large logs and branches of wood were discovered as well as small wood fragments and pieces of charcoal. Two logs, which most likely originate from Layer 2, sank, due to their weight, deep into Layer 1 (VRH07-102 [*Catalogue of wood,* no. **5**] down to the altitude of 288.40 m a.s.l.; VRH07-627 [*Catalogue of wood,* no. **2**] down to the altitude of 288.22 m a.s.l.). The rest of the wood was discovered on the altitude from 288.40 up to the 288.75 m a.s.l., in the layer with a thickness from 30 to 40 cm, which was set between Layers 1 and 3. These pieces of wood are not visible in the cross section (cf. *Fig. 6*). Their arrangement gave an impression of randomly dumped pieces.

– *Artefacts*: The layer did not contain any archaeological artefacts.

– *Samples*: Archaeobotanical samples 92 (position on *Fig. 7*) and 100[19] have been collected, as well as all the large pieces of wet wood (14 specimens; *Figs. 6; 7; 21:* 1,3; *22; Catalogue of wood,* nos. **1**–**14**; *wood samples,* nos. VRH07-085, -086a, -087, -088, -089, -090, -102, -142, -170, -260, -261, -613, -627, -633). The sample VRH07-086a was radiocarbon dated, while two samples of oak logs (VRH07-086a, VRH07-102; *Catalogue of wood,* nos. **1**, **5**) have been analysed dendrochronologically.

– *Determination*: The layer represents remains of wood, which were either intentionally deposited or naturally washed ashore by the river.

Layer 3

Layer 3 consisted of grey clayey silt, which included numerous small pieces of wood and various fragments of plant and animal origin. Pieces of charcoal were also present (*Figs. 6; 8*). The layer was around 40 cm thick (altitude approx. from 288.50 up to the 288.90 m a.s.l.) and inclined towards west and south. It has been excavated over the surface measuring around 3 × 3 m (the volume of the excavated layer around 3.15 m^3). Only a part of the upper layer surface can be seen in *Fig. 8*, representing the area that was documented more precisely.

[19] Sample no. 100 is not visible on *Fig. 7,* while it was located below the log VRH07-627.

– *Artefacts*: The layer did not contain any archaeological artefacts.

– *Samples*: The sediment sample lying at the altitude 288.57 m a.s.l. was radiocarbon dated (position of *Fig. 6*; see further *Dating*). Five archaeobotanical samples were collected: 77, 79, 80, 82 (*Fig. 8*), 93[20]. Only one large specimen of wood was collected: an oak branch (*Fig. 8*; VRH07-029; *Catalogue of wood,* no. **15**).

– *Determination*: The layer probably formed through a relatively extended period due to its thickness and evenly dispersed fragments of wood. Thus, it could represent the river sediment which was partially washed ashore, although later it was also used as a walking surface.

Layer 4

Layer 4 was distinguished by a significant amount of wood that lay on the surface of the Layer 3 (*Fig. 8*), at an altitude from 288.80 to 288.90 m a.s.l. However, the layer was not visible in Cross section C–D (cf. *Fig. 6*). It was inclined towards west and south. Small pieces of wood were particularly concentrated in the area measuring around 1.4 × 1.4 m (volume approx. 0.2 m³).

– *Artefacts*: The layer did not contain any archaeological artefacts.

– *Samples*: Thirteen well-preserved pieces of wood have been collected (*Fig. 8; 23; Catalogue of wood,* nos. **16**–**28**; *wood samples*, nos. VRH07-018, -022, -037, -038, -044, -047,-049, -051, -052, -053, -054, -055, -169), among which short branches (up to 33 cm long), small boards and woodchips predominated. Marks of woodworking, such as splitting and chopping, have been noticed on six specimens.

– *Determination*: The remains can be explained as a wood residue, which resulted from woodworking.

Layer 5

Layer 5 was composed of clayey silt, which showed miscellaneous dark grey and reddish brown colour (*Fig. 6; 9*). Along Cross section C–D, it was 15 to 20 cm thick and was sloping sharply towards the Ljubljanica River, as it lowered by 50 cm for a length of two metres. The layer was unearthed in an area of approximately 3.5 × 2.5 m (volume approx. 1.75 m³).[21] Small, very fragmented pieces of wood were evenly dispersed over the entire layer, which also contained fragments of charcoal and other organic material as well as rare stones.

– *Artefacts*: A fragment of a ceramic beaker (*Fig. 19*; *Catalogue of artefacts,* no. **1**).

– *Samples*: Archaeobotanical samples, nos. 74 (*Fig. 9*) and 234.[22]

In addition, as much as 329 well-preserved pieces of wood were collected (*Figs. 21:* 29–33; *24; Catalogue of wood,* nos. **29**–**36**; *wood samples,* nos. VRH07-001–007, -009–017, -019–021, -026–028, -030–036, -039–043, -045–046, -048, -050, -056–084, -086b, -091–101, -104–141, -143–168, -171–176, -178–179, -181–188, -190–196, -198–259, -263–334, -660–661, -663–671).

Two samples were radiocarbon dated; one was taken from the ash log with working traces (VRH07-178; *Catalogue of wood,* no. **32**) and the other was a fir needle sample (archaeobotanical sample no. 74, depth of 288.72 m a.s.l.).

– *Determination*: The layer was probably formed as river sediment, although later it was also used as a walking surface.

Layer 6

Layer 6 consisted of clayey silt, mottled brown and grey in colour, and of fine sand (SE 1077, SE 1031). It included a lens of greyish brown silty clay (SE 1076).[23] The maximum thickness of the layer was 40 cm. It inclined towards the river, gradually becoming thinner until it disappeared (*Figs. 6; 10–13)*. Otherwise, imperceptible pieces of charcoal were detected under magnification when analysing the archaeobotanical sample no. 33.

– *Artefacts*: A wall fragment of coarse kitchenware (*Catalogue of artefacts,* no. **2**).

– *Samples*: Archaeobotanical sample no. 33 (*Fig. 10*).

– *Determination*: The formation of the layer is not clear. Either it could be the result of fluvial deposition or it was intentionally deposited.

[20] The detailed location of the sample is not known.

[21] Layer 5 has been excavated to a greater extent than it is shown on *Fig. 9*.

[22] The detailed location of the sample is not known.

[23] SE 1031, 1076 and 1077 are not visible in the figures (SE = Stratigraphic unit).

Layer 7

Layer 7 was composed of quarry stones (measuring from 5 × 10 cm up to 20 × 30 cm; individual stones could reach up to 40 × 30 cm) that were deposited without any apparent order. In the central area they were lying in several strata and up to 60 cm high. The spaces between the stones were filled with clayey silt mixed with sand. The stones covered Layer 5 and also extended over the western, lower part of the layer 6 in a width of at least 1.5 m. East from the area where Layer 7 was compact, several groups of stones were lying on the surface of Layer 6, which most probably also belong to Layer 7 (*Figs. 6; 10*).

– *Artefacts*: Wall fragments of the Roman coarse tableware and amorphous pieces of burnt clay (*Catalogue of artefacts,* nos. **3**, **4**).

– *Determination*: The layer represents an intentional deposit and can be explained as a consolidation of the area, forming a base for the pavement.

Layer 8

Layer 8 consisted of greyish brown and yellowish brown gravel and sand (with a maximum particle size of 2 cm) and covered Layers 7 (stones) and 6 (clayey silt). The sand also made its way into the spaces between the stones of Layer 7, where its thickness could reach as much as 20 cm. Otherwise, Layer 8 was only a few centimetres thick on the places where it covered Layer 6 and was preserved only in lenses. It contained fragments of charcoal (*Figs. 6; 10*).

– *Artefacts*: A Roman coin, a piece of iron, fragments of coarse tableware and amorphous pieces of burnt clay (*Catalogue of artefacts,* nos. **5**–**9**).

– *Determination*: The layer was intentionally deposited and can be explained as a sandy pavement.

Layer 9

Layer 9 consisted of a combination of clayey silt and sand and also contained fragments of charcoal. It was up to 5 cm thick and unevenly preserved, spreading over the sand of Layer 8 (*Figs. 6; 11*).

– *Artefacts*: Pieces of iron, fragments of fine and coarse tableware as well as of coarse kitchenware and amorphous pieces of burnt clay (*Fig. 20:* 12,13; *Catalogue of artefacts,* nos. **10**–**18**).

– *Samples*: Archaeobotanical sample no. 19 (*Fig. 11*).

– *Determination*: The layer can be interpreted as the sediment that was formed on the walking surface level of the pavement (Layer 8).

Layer 10

Layer 10 was made of large stones (diameter 10–30 cm), which have partly sunk into Layer 9. They were disorderly placed in one stratum, but not in a compact manner, and covered approximately the area of the former sandy pavement and the walking surface level above it (Levels 8, 9). The stones were placed directly on Layer 6 in the eastern part of Sector 1, where the sandy pavement of Layer 8 has been poorly preserved (*Figs. 6; 10–13*).

– *Artefacts*: The layer did not contain any archaeological artefacts.

– *Determination*: The layer of stones was intentionally deposited to consolidate the area and served as a base for pavement.

Layer 11

Layer 11 consisted of sand, which covered the stones of Layer 10 as well as Layer 6 in the eastern part of Sector 1. The layer was up to 25 cm thick in its western part and sloped steeply towards the Ljubljanica River, while it became thinner on the east where it was only 5 cm thick. It contained fragments of charcoal (*Figs. 6; 11–13*).

– *Artefacts*: Small and relatively rare fragments of fine and coarse tableware as well as of coarse kitchenware, fragments of amphorae, bricks and amorphous pieces of burnt clay (*Fig. 20:* 19–21; *Catalogue of artefacts,* nos. **19**–**27**).

– *Determination*: An intentional deposit of sand which can be interpreted as a sandy pavement.

Pit and fill Layer 12

The shallow pit was cut into sandy pavement (Layer 11). With its depth of 11 cm it reached the stones of Layer 10. The preserved length was 3.8 m, while it was only 0.7 m wide as the edge of the pit has been damaged with modern cut (i.e. with Layer 21). The pit was filled with clayey silt, stones and fragments of charcoal. This fill was designated as Layer 12 (*Fig. 12*).

– *Artefacts*: An iron object and fragments of coarse kitchenware and amphora (*Catalogue of artefacts,* nos. **28–33**).

– *Determination*: The function of the intentionally excavated pit is not known. The filling of the pit (Layer 12) was carried out in order to level the surface.

Layer 13

Dark grey and brown clayey silt (Layer 13) partly covered the sandy pavement (Layer 11) and the fill of the pit (Layer 12). The layer was preserved only in lenses and was 3 cm thick (*Fig. 13*), whereas it was not visible in Cross section C–D (cf. *Fig. 6*). It contained fragments of charcoal.

– *Artefacts*: An iron nail and small and relatively rare fragments of coarse tableware (*Fig. 20:* 34–36; *Catalogue of artefacts,* nos. **34–37**).

– *Samples*: Archaeobotanical sample no. 8, archaeozoological sample no. 7 (*Fig. 13*).

– *Determination*: The layer can be interpreted as sediment, which formed on the walking surface of the sandy pavement (Layer 11) and covered the fill of the pit (Layer 12).

Layer 14

Layer 14 was up to 10 cm thick and consisted of yellow silty sand, rare stones, small patches of burnt earth as well as numerous fragments of charcoal (*Figs. 6; 14; 15*).

– *Artefacts*: Iron objects, small fragments of fine and coarse tableware as well as of coarse kitchenware, amphorae, bricks, an imbrex and amorphous pieces of burnt clay (*Fig. 20; Catalogue of artefacts,* nos. **38–55**). In some cases, it was difficult to differentiate the walking surfaces of separate archaeological phases during the excavations. Fragments of the same vessels (*Fig. 20:* 42,45; see *Catalogue of artefacts,* nos. **42**, **45**) were assigned both to Layers 14 and 16. All vessel fragments have been assigned in the catalogue to Layer 14, as the latter presumably was not immediately distinguished from the above-lying Layer 16.

– *Determination*: The layer most likely represents a sediment of walking surface, which was deposited on the sandy pavement (Layer 11) and over the remains of the earlier walking surface (Layer 13).

Layer 15

Layer 15 consisted of quarry stones, measuring for the most part from 5 × 5 to 20 × 10 cm. In the part closer to the Ljubljanica River the stones were smaller and more tightly packed in one stratum, forming a layer of 10 cm thickness. In contrast, the part that was more distant from the river contained larger and sparsely spread stones (*Figs. 6; 14; 15*).

– *Artefacts*: A Roman coin has been discovered on the surface of Layer 15 (*Catalogue of artefacts,* no. **56**). Also, singular pieces of bricks have been found.

– *Determination*: Intentional deposition to consolidate the surface and make a base for the pavement.

Layer 16

Up to 25 cm thick, Layer 16, which was spread over the stones of Layer 15, was made of sandy silt, sand and gravel together with numerous fragments of charcoal (*Figs. 6; 15*).

– *Artefacts*: Metal objects, small and rare pottery fragments, pieces of bricks, individual pieces of burnt clay and slag (*Fig. 20*: 60,61; *Catalogue of artefacts,* nos. **57–68**).

– *Samples*: Archaeobotanical sample no. 1, archaeozoological sample no. 2 (*Fig. 15*).

– *Determination*: Intentional deposit that was used as a sandy pavement.

Layer 17

Layer 17 was up to 70 cm thick and consisted of brown sandy silt and rare stones (*Figs. 5; 6*).

– *Artefacts*: Pieces of bricks, some Roman pottery fragments (*Fig. 20:* 69; *Catalogue of artefacts,* nos. **69–70**) and fragments of modern pottery.

– *Determination*: To some extent the layer is probably the result of fluvial deposition and has formed through a longer time period.

Layers 18–22

Layer 18:

It represented a former turf layer, which covered the area before the construction of the bridge in the 1970s (*Fig. 6*). The layer was not detected in the immediate vicinity of the river (cf. *Fig. 5*).

Layers 19–22:

They are later in date and probably formed by the construction of the modern bridge and during the regulation of the river bed.

Layers 19 and 20 contained among else the remains of plastic material (*Figs. 5; 6*).

Layer 21 filled up an extensive pit, which destroyed archaeological layers in the south-eastern part of Sector 1 as well as in the large area comprising Trenches 5 and 6 (*Figs. 4; 6; 10–15*). The pit contained modern finds, although a crossbow fibula has also been discovered (*Fig. 20:* 71; *Catalogue of artefacts,* no. **71**).

Layer 22 was created during the last regulation of the river banks (*Fig. 5*).

Trench 2 (*Figs. 4; 16*)

Trench 2 measured approximately 5.6 × 1 m and was around 1.5 m deep, although the geological base has not been reached. The trench was cleaned again during the excavations and several layers could be identified in Cross section E–F (*Fig. 4*).

The layers were sloping towards the river (*Fig. 16*). They are described from the bottom to the top of the cross section.

Layer 1: Dark brown sandy silt with rare stones, measuring in the diameter up to 20 cm (not visible on *Fig. 16*). The layer has not been excavated to the end.

Layer 2: Clayey silt, brown in colour.

Layer 3: Brown sandy silt with sand and gravel, fragments of charcoal and bricks; in the transverse cross section of the trench rare stones with diameter up to 10 cm could be seen (not visible on *Fig. 16*).

Layer 4: Clayey silt, brown in colour.

Layer 5: Brown sandy silt with sand, gravel, stones, pieces of bricks and mortar, fragments of charcoal and with lenses of pure sand.

Layer 6: Brown sandy silt with sand and gravel, small stones and fragments of charcoal. Layer 6 contained somewhat more gravel and less stone than Layer 5.

Layer 7: Brown sandy silt with rare stones, fragments of bricks and ceramic.

Layer 8: Bright brown clayey silt.

Layer 9: Brown clayey silt.

Layer 10: Turf.

Sectors 2–3 and Trench 7 (*Figs. 4; 17; 18*)

Trenches 4 and 7 had previously been excavated in the eastern part of the research area by the Zavod za varstvo kulturne dediščine Slovenije. This part of the research area has been badly damaged with various modern interventions. Trench 7 was partly cleaned and documented again during our research. Additionally, the relatively small Sectors 2 and 3 was excavated at the edges of the former Trench 4 (*Figs. 4; 17*).

A similar stratigraphy could be observed in all areas (*Tab. 2*).

Layer 1

Layer 1 represented a geological base, composed of brown clayey silt (*Fig. 17*). Its upper surface was coloured grey and had an undulating plane due to recent interventions. This layer was most probably the result of alluvial activities.

Into the geological base of Trench 7 a *posthole* was dug, having a diameter of 20 cm and containing stones (*Figs. 17a; 18a;* SE 1046–1047). A structure made from irregularly arranged limestone quarry stones (size up to 30 × 15 cm) was also dug into the geological base. The structure spread on an area measuring 1 × 0.6 m, although it also clearly continued outside the trench. It might represent the *foundation* remains of some sort (*Figs. 17a; 18b;* SE 1059). Neither the posthole nor the foundation have been researched in detail.

Layer 2

Layer 2 contained coarse sand and gravel (particle size app. 3 × 2 cm) as well as fragments of bricks. The layer was covering the geological base and was badly damaged. It was up to 10 cm thick in Sector 3, while it appeared only as a 2 cm thick patch in Sector 2. In Trench 7, the layer was preserved on a small area measuring 1.8 × 0.6 m, having a thickness up to 7 cm (*Fig. 17*). It contained some

amorphous pieces of burnt clay (*Catalogue of artefacts,* no. **72**). Layer 2 probably represents the remains of a sandy pavement.

Layer 3

Layer 3 consisted of dark greyish brown clayey silt, which covered Layer 2 and the stone foundation (SE 1059) in Trench 7. It contained limestone quarry stones (up to 44 × 25 cm), small stones, pieces of bricks as well as fragments of charcoal and mortar. The layer was up to 20 cm thick in Sector 3 and in Trench 7 (*Fig. 17*), whereas it was not preserved in Sector 2 due to the recent interventions. Small and rare fragments of the Roman pottery have been discovered in the layer: coarse tableware, amphorae, bricks and amorphous pieces of burnt clay (*Catalogue of artefacts,* nos. **73**–**76**). Layer 3 was interpreted as a debris layer.

Layers 4a and 4b

Layer 4a consisted of up to 20 cm of thick dark greyish brown sandy silt. It lay directly above the geological base in Sector 2, while in Sector 3 it was positioned above Layer 3 (*Fig. 17*) and partly also above the sandy pavement of Layer 2 (no figure). A fragment of a thin-walled pottery cup and some pieces of bricks were discovered in the layer (*Fig. 20:* 77; *Catalogue of artefacts,* nos. **77**–**78**). Several limestone quarry stones (up to 30 × 13 cm) were included into the layer in Sector 2 on a width of 1.35 m (the limit between the squares C3 and C4, *Fig. 17a*).

Layer 4a changed at its side without any clear limit into Layer 4b, which was 25 cm thick and made from greyish brown sandy clay with not much gravel, fragments of bricks and charcoal. It directly covered the geological base in Sector 2, while it lay above Layer 3 in the Sector 3. In Trench 7, it partly covered the geological base (Layer 1), the fill of the posthole (SE 1046–1047), as well as Layers 2 and 3 (*Fig. 17*).

Layers 4a and 4b, which show no clear limit between each other, probably represent the original turf level. Layer 4a was badly damaged, disturbed and partly also removed during the construction of the highway. In contrast, Layer 4b which lay farther away from the road was probably preserved in the original state.

Layers 5–9

All later layers turned out to be recent deposits (Layers 5–7), representing an integral part of the highway earthworks (*Figs. 17b,c*). Between Trench 7 and Sectors 2 and 3 lay a 1.5 m wide drainage ditch (*Fig. 4*). Layer 8 represented a filling layer at the edges of the mentioned ditch (*Figs. 17b,c*). The turf layer, Layer 9, which covered the area of Trench 7, was the most recent (*Fig. 17c*).

INTERPRETATION OF THE ARCHAEOLOGICAL LAYERS

Traces of human presence have been separated into five periods comprising of several archaeological phases. Phases 1 A–E represent layers deposited before the beginning of the Roman settlement at Dolge njive, whereas Phases 2 A–C are associated with the existence of the Roman settlement. Phase 3 constitutes the developments after the abandonment of the settlement and Phases 4 and 5 represent modern interventions (*Tab. 3*).

Sector 1

With the help of the archaeological phases defined in Sector 1, it was possible to understand the development of the entire research area (*Tab. 3*).

Phases 1 A–E (Layers 2–6)

Human activity could be identified in Layers 2–6, especially by the pieces of wood showing traces of working and by the fragments of charcoal.

Phase 1 A

This phase is represented by Layer 2, which consisted of large chunks of wood lying on the geological base. The logs and branches showing traces of chopping indicate potential clearing of woods, while the superfluous or less usable wood ended up as refuse on the bank of the Ljubljanica River. However, the situation could also be explained in another way: the wood has been cut down somewhere up the river and later washed ashore on the research area (see further *Results of archaeobotanical analyses. Wood*). Signs which would indicate the vicinity of the settlement were absent.

Phase 1 B

This phase is represented by Layer 3, which most likely formed through a relatively long time period and at least partly as alluvium at the river bank. It contained fragments of charcoal and numerous small pieces of wood, among which specimens with traces of working have also been recognized. It appears that the layer was used as a walking surface and that the context indicates the vicinity of human activities.

Phase 1 C

This phase is represented by Layer 4 that consisted exclusively of small pieces of wood. Traces of chopping and splitting on the branches together with small boards and woodchips indicate that the remains could be interpreted as a wood residue, which resulted from woodworking (see further *Results of archaeobotanical analyses. Wood*). This layer points to the human activity in the area, though not necessarily in the vicinity of the settlement. The possibility that the wood would be washed ashore seems small.

Phase 1 D

This phase is represented by Layer 5, which (in regard to its thickness and dispersed remains of different origin) formed through a relatively long time period and could be in part the result of alluvial deposit. It contained many fragments of charcoal, a fragment of Roman pottery (*Fig. 19*) and numerous small pieces of wood, representing waste from woodworking (see further *Results of archaeobotanical analyses. Wood*). The context can be interpreted as a walking surface and points to the vicinity of human activities. At the same time, the rarity of archaeological artefacts indicates that the settlement area was rather far away.

Phase 1 E

This phase is represented by Layer 6: clayey silt which contained very small pieces of charcoal and one pottery fragment. It is possible that the layer formed as river alluvium in the period when there was no settlement or intensive human activity in the area. However, it may well be that the thick sediment of silt has been placed intentionally to consolidate the occupation surface. In this case, Layer 6 should be associated with the initial activities in Phase 2 A.

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The layers of Phases 1 A–E formed through a relatively long time period and each of them represents a trace of separate events. Phases 1 A (Layer 2) and 1 C (Layer 4) were formed with short episodes of intentional deposition of wood. This seems more likely than the possibility of a natural alluvium deposit. Phases 1 B and 1 D are interpreted as two longer periods of mostly natural deposition of alluvial Layers 3 and 5 with the simultaneous use of the area as a walking surface. Traces of human activities can be seen in all four phases, although the settlement area was evidently distant. The formation and meaning of Phase 1 E or Layer 6 containing only scanty traces of human presence cannot be explained in a satisfactory manner: either it represents a single event of intentional deposit or natural alluvium.

Phases 2 A–C (Layers 7–16)

Phase 2 A

The river bank area was covered with a thick layer of stones (Layer 7), above which a layer of sand has been put (Layer 8). These layers can be interpreted as the consolidation and arrangement of the river bank with the stone base and sandy pavement. A thin layer of silty clay (Layer 9) that has been deposited over the sand probably represents the remains of the walking surface.

Phase 2 B

The river bank area was once again consolidated with stones (Layer 10) although not in such a compact layer as in the case of the first consolidation. A thick layer of sand (Layer 11) has been placed above the stones. Obviously, a renovation was carried out with a new stone foundation and a new sandy pavement. Two successive sediments of walking surface deposited over the pavement (Layers 13 and 14). A pit of unknown purpose was dug into Layer 11 and soon filled up (Layer 12).

Phase 2 C

The area was consolidated once again, this time with small stones (Layer 15), covered by a new layer of sand (Layer 16). The walking surface, which was expected above the sand layer, was not preserved.

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The activities of Phases 2 A–C begin with consolidation and pavement of the river bank, which was subsequently followed by two repairs.

Phase 3 (Layer 17)

Phase 3 is represented by a thick Layer 17 made of sandy silt with scanty remains originating from various periods, ranging from the Roman period to the modern era. It probably formed over a long time and outside of the settlement area. Possibly, Layer 17 could be recognized as the elevated alluvial zone that formed along the Ljubljanica riverbed, traversing the marsh.[24]

Phases 4 and 5 (Layers 18–21)

Layer 18 represents the primary soil and turf, which covered the surface prior to the modern construction of the bridge and the road (**Phase 4**). Layers 19–21 formed with the construction works and bank regulations in the last decades (**Phase 5**).

Trench 2

The layers in Trench 2 (*Fig. 16*) are well comparable with the layers in Sector 1 (*Fig. 6*). Both areas lie only 5 m apart and are positioned between the walls of the Roman settlement and the river (*Fig. 4*).

Similarly as in Sector 1, the stratigraphic sequence in Trench 2 displays three successive consolidations with layers of sand (Layers 1, 3 and 6). Layer 5 contains more stones; thus, it could be interpreted as the base for the sandy pavement (Layer 6). The intermediate Layers 2 and 4, both consisting of clayey silt, could represent the remains of either walking surfaces or intentional deposits. Layers 1–6 could thus be correlated with Phases 2 A–C in Sector 1 (*Tab. 3*).

Layer 7 from Trench 2, made of brown sandy silt, can be compared with Layer 17 of Sector 1, which has been interpreted as an alluvium formed after the Roman period (*Tab. 3*).

Sectors 2–3 and Trench 7

Due to previous research, it was clear, that Sectors 2 and 3 are positioned within the south-eastern corner of the Roman settlement at Dolge njive (*Figs. 4; 17*).

The first two interventions into the geological base (Layer 1) are represented by a posthole and an irregular stone structure. The geological base and both above-mentioned features have been covered with a pavement of coarse sand and gravel (Layer 2). A poorly preserved layer of debris (Layer 3) lay above the pavement. According to the rare finds, both the pavement and the debris layer above it can be dated to the Roman period (see further *Dating according to the artefacts*).

Several scattered stones from Layer 4a in Sector 2 are most likely the last remains of the eastern fortification wall of the Roman settlement.

Layers 4a and 4b could be identified as a former arable land, which formed after the abandonment of the Roman settlement.

Layers 5–7 represent the most recent sediments, dating to the modern period.

DATING

Radiocarbon dating

The radiocarbon analysis was conducted on six samples (*Tab. 1*) by the laboratories Poznań Radiocarbon Laboratory and Beta Analytic Radiocarbon Dating. Data was calibrated by the programme Calib Rev 7.0.2.

Sector 1 – **geological base** (Layer 1)

One sediment sample and one organic sample were dated from Layer 1, both coming from the same sediment column and altitude.

– Sediment sample was taken from the palynological sediment column at the altitude 288.25 m a.s.l. (position *Fig. 6*; see further Andrič 2016).

Beta-241775: 2730±40 BP; Cal 2923–2756 BP or Cal 973–806 BC (2 sigma).

– Unidentified plant macroremains were sorted out from the palynological sediment column at the altitude 288.25 m a.s.l. (position *Fig. 6*; see further Andrič 2016).

Beta-242460: 2300±40 BP; Cal 2363–2156 BP or Cal 413–206 BC (2 sigma).

Although both samples were collected from the same depth in Layer 1 and were deposited one by another the difference between the dates is very big. The first sample (Beta-241775) is dated to 973–806 BC, while the second sample (Beta-242460) dates to 413–206 BC. Considering the fact that the date of the second sample matches with the date of the log from Layer 2 (Phase 1 A; VRH07-086a;

[24] Melik 1946, 41; Horvat 1990, 35–36, 49, 161, 171.

see further), there exists the possibility that the dated plant macroremains sunk into Layer 1 from above-lying Layer 2. A similar situation happened with the two large logs from Layer 2. Taking into account this fact, the first sample (973–806 BC) is more appropriate for dating the sediment at an altitude of 288.25 m a.s.l. in Layer 1 (see further Andrič 2016).

Sector 1 – Phase 1 A (Layer 2)

A sample taken from the periphery of an oak log (VRH07-086a) with traces of working has been radiocarbon dated (*Figs. 7; 21; 22; Catalogue of wood,* no. **1**).

Poz-46646: 2225±30 BP; Cal 2329–2154 BP or Cal 379–204 BC (2 sigma).

The analysis showed the approximate felling date of the oak tree, that is 379–204 BC.

Sector 1 – **Phase 1 B** (Layer 3)

Organic sediment from the Layer 3 has been dated. It was collected from the palynological sediment column at an altitude of 288.57 m a.s.l. (position *Fig. 6*; see further Andrič 2016).

Beta-259684: 3050±40 BP; Cal 3366–3085 BP or Cal 1416–1135 BC (2 sigma).

The estimated age of the sediment (1416–1135 BC) from Layer 3 is almost 1000 years older than the dates acquired for the underlying Layers 1 and 2 and as such does not accord with the stratigraphic sequence in the area. It is possible that the dating indicates the irregular deposition or transference of the river sediment. The reason for such a result could also be sought in the presence of the aquatic plant material in the sediment, which would cause older dates as expected due to its specific cycle of the photosynthesis (see further Andrič 2016).

Sector 1 – **Phase 1 D** (Layer 5)

Two organic samples were radiocarbon dated, one wood sample and the fir needle sample.

– A sample was taken from the periphery of the ash log (VRH07-178) which showed traces of working (*Fig. 21; Catalogue of wood,* no. **32**).

Poz-46647: 2095±30 BP; Cal 2144–1995 BP or Cal 194–45 BC (2 sigma).

– A fir needle was sorted out from the archaeobotanical sample no. 74, collected at an altitude of 288.72 m a.s.l. (position *Fig. 9*).

Poz-46649: 2225±35 BP; Cal 2331–2153 BP or Cal 381–203 BC (2 sigma).

The date obtained from the fir needle (Poz-46649: 381–203 BC) seems to be too old according to the stratigraphic sequence. The reason could be the sediment transfer caused by the river. Another possibility could be that the sample has been attributed to the wrong layer (to Layer 5 instead of to Layer 3), as the distinction between the archaeological layers during the excavation was rather uncertain and difficult.

The date 194–45 BC obtained for the ash log (Poz-46647) is stratigraphically more adequate.

Dendrochronology

Two samples of oak logs (VRH07-086a and VRH07-102; *Figs. 6; 7; 21:* 1; *22:* 1,5; *Catalogue of wood,* nos. **1**, **5**), both attributed to Layer 2 (Phase 1 A) of Sector 1, were suitable for dendrochronological analysis. The span of the annual growth rings was 45 years, which proved to be insufficient for the successful cross-dating with the help of the reference oak chronology (Katarina Čufar, Oddelek za lesarstvo, Biotehniška fakulteta, Univerza v Ljubljani).

Dating according to the artefacts

Sector 1

Phase 1 D (Layer 5)

Only one artefact was discovered in Layer 5: a wall fragment of a tall spindle-shaped beaker made of thin-walled pottery (*Fig. 19; Catalogue of artefacts,* no. **1**). Such beakers spread from the Tyrrhenian coast over the entire Italian peninsula and the western Mediterranean in the middle of the 2nd century BC. In the Slovenian interior, they first appear at the Roman post Mandrga on the Razdrto pass, where they are dated to the end of the 2nd or to the beginning of the 1st century BC or in the LT D1a period.[25] The specific variant of the beaker decorated with relief dots appeared in the south-eastern Alpine region in the first third

[25] Horvat, Bavdek 2009, 68–72, 94.

of the 1st century BC,[26] as for example at Preval at Razdrto[27] and at Fornače.[28] The archaeological context from the building OR/20c c at Magdalensberg demonstrates that the mentioned beaker variant was already extremely rare in the third quarter of the 1st century BC.[29] The wall fragment from Layer 5 cannot be attributed to any specific variant of the tall spindle-shaped beakers.

Thus, according to the beaker fragment Layer 5 can be dated between the end of the 2nd century BC and the early Augustan period at the latest.

Phase 1 E (Layer 6)

Only one wall fragment of a handmade pot has been found in Layer 6 (*Catalogue of artefacts,* no. **2**). The fabric is similar to the prehistoric ceramic, although more exact determination is not possible.

Phase 2 A (Layers 7–9)

Layer 7: *Catalogue of artefacts,* nos. **3**, **4**. A few fragments of the Roman coarse tableware and amorphous pieces of burnt clay.

Layer 8: *Catalogue of artefacts,* nos. **5–9**. A heavily worn As minted in the first half of the 2nd century BC (cat. no. **5**). A biconical jug (cat. no. **7**) stands out among the small number of the Roman coarse tableware fragments.

Layer 9: *Fig. 20:* 12,13. *Catalogue of artefacts,* nos. **10–18.** Several iron objects and above all pottery has been discovered, e.g. a thin-walled beaker fired under oxidizing conditions (cat. no. **14**), two coarse tableware jugs (*Fig. 20:* 12,13) and handmade coarse kitchenware pots (cat. no. **17**).

The fragments of Roman pottery are not numerous in the three layers of Phase 2A, although all three of the most common pottery groups are represented: fine tableware, coarse tableware and kitchenware. The thin-walled pottery fired under oxidizing conditions, the biconical jug, and the jug with wide rim point to the early Roman period, while it is hard to date them more precisely. Also, the coin is not suitable for the more precise dating of the layer. The amorphous fragments of orange burnt clay scattered in all the layers could represent the remains of daub from hearths or ovens. Several iron fragments of indeterminable shapes have been discovered as well.

Phase 2 B (Layers 10–14)

Layer 10: Without artefacts.

Layer 11: *Fig. 20:* 19–21. *Catalogue of artefacts,* nos. **19–27**. The rim (*Fig. 20:* 19) most probably belongs to the sigillata cup of the Padana B production of the form Consp. 22.6., which is characteristic from the second decade BC up to the end of the Augustan period.[30] The remaining pottery cannot be dated more precisely.

Layer 12: *Catalogue of artefacts,* nos. **28–33**. The artefacts cannot be more narrowly dated.

Layer 13: *Fig. 20:* 34–36. *Catalogue of artefacts,* nos. **34–37**. The artefacts cannot be more narrowly dated.

Layer 14: *Fig. 20:* 38,42–48. *Catalogue of artefacts*, nos. **38–55**. Two vessels made of the black-slip pottery (*Fig. 20:* 42,43) correspond to the Central Po valley black-slip ware or porous fabric from Magdalensberg.[31] The plate (*Fig. 20:* 42) displays a flat base and a sloping wall, which evenly narrows towards the rim. A plate with similarly formed walls had been discovered by the former excavations at Dolge njive.[32] Related forms can be also found among the porous fabric from Magdalensberg[33] and in the pottery from the earliest Roman layers at Gurina.[34] They represent late forms of the black-slip pottery, which in the majority can be placed in the pre-Augustan and early Augustan period.[35] Another closely similar shape of the plate walls also appears on the early sigillata of the form Consp. 1.[36] The plate (or bowl) with slanted walls and plain rim (*Fig. 20:* 43) is closely related to forms Lamboglia 5/7 and 7/16, characteristic for the Augustan period.[37] The uncoated Aco beakers (*Fig. 20:* 44) are numerous at Magdalensberg in the second decade BC, while in the late Augustan period they are already extremely rare.[38]

The layers of Phase 2 B contain various types of Roman pottery. The fine tableware (plates, beakers, cups) was imported from the northern Italy. The

[26] Božič 2008, 128.

[27] Horvat, Bavdek 2009, 112, 121.

[28] Horvat, Bavdek 2009, 71–72; Stokin 1992, Pls. 1: 8–9,12; 3: 10–12.

[29] Schindler-Kaudelka 2002, 266.

[30] Conspectus 2002, 90.

[31] Horvat, Bavdek 2009, 57–58.

[32] Horvat 1990, 116, Pl. 22: 4; Mušič, Horvat 2007, 257–258, 278–279.

[33] Schindler 1967, Pl. 5: 7,8; Schindler 1986, 356, Fig. 4: 9–11.

[34] Gamper 2007, Fig. 4: 2,4; 11–13.

[35] Mušič, Horvat 2007, 257–258, 278–279.

[36] Schindler, Scheffenegger 1977, 41–50, Pl. 8: 8–9; Conspectus 2002, 52.

[37] Božič 2008, 133–134; Dolenz et al. 2008, 258–260; Horvat, Bavdek 2009, 118.

[38] Schindler Kaudelka 2000, 62.

coarse tableware of Italian origin was made from depurated clay and fired under oxidizing conditions (jugs, lid and bowl). The coarse kitchenware pots, which were handmade or at least finished by hand (*Fig. 20:* 21,35,36), are presumably of local origin. Numerous pieces of burnt clay daub as well as fragments of amphorae, bricks and a piece of imbrex appear in the layers. Moreover, several nails and various fragments of iron (*Fig. 20:* 34,38) have been discovered.

The black-slip plate (*Fig. 20:* 42) and Aco beaker (*Fig. 20:* 44) suggest the early or middle Augustan period, while the sigillata cup (*Fig. 20:* 19) clearly dates Phase 2 B to the middle to late Augustan period.

Phase 2 C (Layers 15 and 16)

Layer 15: *Catalogue of artefacts,* no. **56**. A heavily worn As minted in the first half of the 2nd century BC.

Layer 16: *Fig. 20:* 60–61. *Catalogue of artefacts,* nos. **57–68**. The coarse tableware pots (*Fig. 20:* 60,61 and cat. no. **64**), thin-walled pottery (cat. no. **62**), coarse tableware (cat. no. **63**), fragments of amphorae, bricks and burnt clay (cat. nos. **65–67**) as well as several metal objects (cat. nos. **57–59**) and a piece of slag (cat. no. **68**) can all be found in this layer.

Regarding the finds, the layer of Phase 2 C cannot be more precisely dated within the early Roman period.

Phase 3 (Layer 17)

Several small fragments of the Roman pottery have been found in Layer 17 (*Catalogue of artefacts,* nos. **69–70**), among them an everted rim of the bowl (*Fig. 20:* 69). Bowls with everted rims were very popular and long-lived as they were in use between the second half of the 1st and the beginning of the 3rd centuries AD.[39]

Phase 5 (Layer 21)

A crossbow fibula has been discovered in the area damaged by modern interventions, lying east of Sector 1 (*Fig. 20:* 71; *Catalogue of artefacts,* no. **71**). It can be classified as type I A, which occurs most frequently at the end of the 3rd and in the beginning of the 4th century AD, that is between the years 280 and 320 AD.[40]

Sector 3

Layer 2: *Catalogue of artefacts,* no. **72**. Only amorphous pieces of burnt clay daub have been found.

Layer 3: *Catalogue of artefacts,* no. **73–76**. A few pottery fragments can be placed in the Roman period, although they cannot be dated more precisely.

Layer 4a: *Fig. 20:* 77. *Catalogue of artefacts,* nos. **77**, **78**. The thin-walled cup (*Fig. 20:* 77) made of grey and hard pottery without slip is close to the fabric C from Magdalensberg, which was popular from the Tiberian period onwards.[41] The cup could also be compared with the thin-walled pottery type A from Angera, where it is dated to the Tibero-Claudian period.[42]

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The fact that very few pottery fragments have been discovered in Phases 1 D and 1 E indicates that these phases can be placed before the construction of the Roman settlement at Dolge njive. The thin-walled beaker (*Fig. 19*) from Phase 1 D represents the earliest artefact in the excavated area and dates the phase from the end of the 2nd to the middle of the 1st century BC. At the same time, the beaker demonstrates that the fine tableware from Italy had been arriving to Nauportus in this early period.

A relatively small number of artefacts have been discovered in Phases 2 A–C. They are mostly represented by heavily fragmented pottery and a few metal objects. The finds from all of the phases are very similar: Roman coins, fine and coarse tableware imported from Italy and local coarse kitchenware. More accurate dating of Phases 2 A and 2 C is not possible due to the scarcity of the finds. In contrast, Phase 2 B can be dated fairly well by the characteristic forms of the fine tableware. The plates made of black-slip pottery (*Fig. 20:* 42,43), the sigillata cup (*Fig. 20:* 19) and the Aco beaker (*Fig. 20:* 44) were all in use in the middle Augustan period. Very likely, all three phases (2 A, 2 B and 2 C) followed each other in a relatively short sequence and can be dated to the Augustan period.

The thin-walled cup (*Fig. 20:* 77) of the first half of the 1st century AD, which was discovered

[39] Istenič 1999, 96–99; Krajšek, Stergar 2008, 253.
[40] Pröttel 1988, 349–353.
[41] Schindler-Kaudelka 1975, 31–32.
[42] Sena Chiesa 1985, 393.

in the former arable land layer in Sector 3, can be associated with the Roman settlement at Dolge njive.

The fragment of a bowl (*Fig. 20:* 69) dated between the second half of the 1st and the beginning of the 3rd century AD was found in Layer 17 (Sector 1, Phase 3). It originates from the period after the abandonment of the settlement at Dolge njive.

The latest archaeological artefact is the crossbow fibula (*Fig. 20:* 71) dated to the end of the 3rd and the beginning of the 4th century AD. It was found in the area damaged by modern interventions (Phase 5).

RESULTS OF THE ARCHAEOBOTANICAL ANALYSES

Seeds and fruits

All of the nine archaeobotanical samples collected by judgement sampling from the deepest waterlogged layers of the Sector 1 (*Tab. 1:* Layers 2, 3, 5; Phases 1 A, 1 B, 1 D) contained various plant and animal remains (*Tab. 4*).

Among the plant remains seeds and fruits of natural vegetation are in the majority. Mostly they represent the riverine and water plants (e.g. water dropwort, common water-crowfoot, various sedges, bulrushes, and pondweeds). The remains of tree species are also frequent, mostly of fir, alder, hazel, oak and beech (seeds/fruits, leaves/needles, buds, wood). However, there are no remains of cultivated or domesticated plants. Among the possible plants that were intentionally gathered, the seeds of strawberry, raspberry and wild apple or pear as well as fruits of hazel, oak and beech could be identified.

Small animal remains which were sorted out during the wet sieving point to aquatic (e.g. aquatic insects, molluscs, fishes) and anthropogenic environments (coprolites of small mammals, e.g. mouse size class).

A preliminary examination of the four systematically collected samples (from Phases 1 E, 2 A, 2 B, 2 C) showed that they contained extremely few or no plant remains (*Tabs. 1; 5*). Moreover, it is significant that there are no preserved remains of cultivated plants or any other traces of human plant nutrition (cultivated of gathered). Consequently, the remaining systematically taken samples were not analysed.

Wood

Different quantities of wood samples were collected from Layers 2–5 of Sector 1. The differences in their number are the result of size, state of preservation and quantity of the preserved pieces of wood, but also of the volume of the excavated layers (*Tab. 6*).

Description of the wood:

The sampled wood mostly originated from *trunks* and *branches*. In cases in which such distinction was not entirely possible (in the case of smaller and damaged pieces) the specimens were determined according to their diameter: those with the diameter of 5 cm or more were described as *trunks*, while the specimens with the diameter smaller than 5 cm were defined as *branches*. The trunks and branches had usually no preserved side branches. It was not possible to determine whether this is the result of cutting or natural processes. Traces of intentional peeling were absent in all cases, irrespective of whether the tree bark (with or without the outer bark) has been preserved or not.

According to its original location within the tree and preserved traces of working the wood was determined as *unworked* and *worked trunks* (trunks split in segments or beams), *boards*, *worked* and *unworked branches*, *woodchips*, *shavings* and pieces of *bark* (*Tabs. 6–9*). Small split and chopped pieces (with or without periphery) were defined as *woodchips* and interpreted as wood waste. *Shavings* represent small and thin pieces of wood, the formation of which is hard to ascertain.

Traces of splitting, chopping and sawing as well as traces of burning on the wood samples were determined.

Phase 1 A (Layer 2)

All fourteen samples of wood represent deciduous trees; the variability of wood species is rather great. Oak predominates, followed by beech, while other species are present only with single specimens (*Tab. 7; Figs. 6; 7; 21:* 1,3; *22; Catalogue of wood,* nos. **1–14**).

The trunks, five from oak and one from beech, showed irregular thickness and were knotty; their diameters ranged from 6 to 30 cm. The preserved length varied between 20 and 215 cm, whereas two trunks extended beyond the excavation area (*Figs. 6; 7; 21:* 1,3; *22:* 1–6; cat. nos. **1–6**).

Traces of working could be observed rather frequently (*Tabs. 6; 7).* The trunks revealed chopped branches, lopped off ends, and cuttings (*Figs. 21*:

1,3; *22:* 1–6; cat. nos. **1–6**), in one example even the traces of sawing were visible (*Figs. 21:* 3; *22:* 3; cat. no. **3**). A small board that had been split (*Fig. 22:* cat. no. **7**) was discovered, while the end of one of the branches had clearly been lopped off (*Fig. 22:* cat. no. **9**). Six branches showed no traces of working and were without side branches (cat. nos. **8**, **10–14**); one of them was probably burnt (*Fig. 22:* cat. no. **8**).

Large trunks and branches point to tree cutting, while the split board could be interpreted as a wood waste produced by the woodworking.

The oak trunk VRH07-086a (*Figs. 21:* 1; *22:* cat. no. **1**) has been radiocarbon dated.

Phase 1 B (Layer 3)

Only one large piece of wood was collected in the layer: an oak branch with the end lopped off (*Tab. 6; Catalogue of wood,* no. **15**).

Phase 1 C (Layer 4)

Layer 4 consisted only of scattered and dumped small pieces of wood (*Fig. 8*), similarly as in Layer 2. Short branches (length up to 33 cm), small boards and a woodchip have been collected (*Tab. 6; Catalogue of wood,* nos. **18–28**). Wood species of nine samples have not been determined, while the remaining four samples belonged to four diverse species of deciduous trees (*Tab. 8*).

However, the composition of the wood remains in Layer 4 differs from that in Layer 2. The pieces of wood are smaller and branches predominate (*Catalogue of wood,* nos. **17**, **20–23**, **25**, **27**, **28)**. Moreover, boards (*Fig. 23:* 18; *Catalogue of wood,* nos. **16**, **18**) and woodchips (*Fig. 23:* cat. no. **19)** are present, whereas there are no large trunks. Boards and woodchips could be indication for the wood residue, resulting from woodworking. It seems probable that the wood residue was used intentionally for the consolidation of the loose soil at the river bank.

Phase 1 D (Layer 5)

A total of 329 samples of wood were collected, which were lying scattered in Layer 5. The principal information about the wood is shown in the tables (*Tabs. 6; 9–11)*, whereas only specimens presented on figures have been described in the catalogue (*Figs. 21:* 29–33; *24; Catalogue of wood,* nos. **29–36**).

More than 90% of the collected specimens are small, with length around 20 cm or less, and only a few branches were long up to 50 cm. Consequently, the possibility that parts of the same tree have been examined repeatedly is rather large.

The wood species of 104 samples have been determined. The oak wood predominates with 31% (n = 32 samples), followed by alder (n = 13–16), ash (n = 12), maple (n = 9–10) and beech (n = 8) as well as coniferous trees (n = 11) (*Tab. 9*).

The number of pieces with traces of working (n = 155) as well as those without them (n = 174) is more or less balanced (*Tab. 10*). A few specimens also showed traces of burning (n = 10), representing only 3% of the sampled wood (*Tab. 11*).

Half of the wood remains is represented by branches (n = 166), from which the majority (80%) was shorter than 20 cm; 80% of branches (n = 132) show no traces of working, at the same time they also have no side branches and are frequently without bark. Thus, the identification of intentional peeling or removal of the side branches was not possible. Traces of working have been detected on 20% of the branches (n = 34). They show the cuts with which they were dissected from the trunk and provide evidence for the lopping of the branch ends or for the lengthwise splitting (*Tabs. 6; 9; Figs. 21:* 29; *24:* 29,34ab; cat. nos. **29**, **34**).

The trunks were rather rare (n = 18; 5.5% of the sampled wood) and had small diameters (5–8 cm). They have been worked more often than not (n = 16), either split lengthwise to obtain the trunk sections or worked into beams (*Tabs. 6; 9; Fig. 21:* 32; cat. no. **32**).

The fragments of boards were better represented (n = 65; 19.7% of sampled or 42% of worked wood) and were always shaped by splitting. They are differentiated according to their primary position in the trunk as radial boards (including half-radial), which predominate (n = 40), and as tangential boards (n = 25). Tangential boards which were split near the periphery of the trunk are more frequent and could be possibly explained as the product of the beam forming (*Tabs. 6; 9; Figs. 21:* 30,31; *24*: 31,35,36; cat. nos. **30**, **31**, **35**, **36**). Some of the small boards show obliquely lopped-off edges (e.g. *Figs. 21:* 30; *24*: 35,36; cat. nos. **30**, **35**, **36**); one of them was cut with a saw (*Figs. 21; 24*: cat. no. **31**).

The majority of the wood with traces of working can be explained as the remains of woodworking. This holds true above all in the case of split logs, woodchips (19.4% of the worked wood; *Tabs. 6; 9; Fig. 21*: cat. no. **33**), tangential boards from the periphery of the trunk and chopped branches. The boards and beams could potentially indicate the

preparation of construction or building elements. The scattered position in the layer indicates that the pieces were not deposited at the same time or with particular intention.

The ash beam VRH07-178 (*Fig. 21:* 32; cat. no. **32**) has been radiocarbon dated.

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The wood was deposited on the bank of the Ljubljanica River in the phases from 1 A to 1 D, showing numerous signs of working, among which chopping and splitting prevail. It seems that in the researched area and in its immediate vicinity woodworking frequently or even permanently took place. The selection of the wood species was obviously unintentional, that is, diverse, which means that the people were using the wood present in their surroundings.

According to the identified wood species and the amount of the trunks and branches in Layer 2, it can be stated that deforestation or clearing of the area near the river took place in Phase 1 A. Relatively large pieces of low quality wood (knotty and curved trunks and branches) were deposited on the river bank during this phase. In view of the chopping traces and the wood selection, the intentional accumulation of unusable wood seems more probable than the fluvial deposition of the material coming from the areas further afield. Potentially, the wood was placed to consolidate the area with loose and muddy soil along the river.

Layer 3 of Phase 1 B did not contain much wood. The only sampled piece was chopped, which indicates unclearly defined activities.

Layer 4 of Phase 1 C consisted of a large amount of small pieces of wood, among which the remains of woodworking were also present. Potentially also these represent the intentional consolidation of the river bank with wood waste. The interpretation that they were the result of fluvial deposition seems less credible.

A large amount of wood was found in Layer 5 of Phase 1 D. Small specimens prevail; nevertheless, they bear numerous signs of working. This wood has not been deposited with particular intention, but could be interpreted as a waste from the intensive woodworking, which took place somewhere in the vicinity.

RESULTS OF THE ARCHAEOZOOLOGICAL ANALYSIS

The assemblage of mammal remains from Vrhnika contains 81 mostly fragmented bones and teeth, one third of which could be taxonomically identified. All the remains have been collected in the area of Sector 1, with the exception of two fragments coming from Layer 4b (arable land layer, formed after the Roman period) in Trench 7. As the majority of the finds comes from Phases 2 A–C (i.e. from the Augustan period, Layers 7–16; *Tabs. 1; 3*), more attention will be paid to them.

Taxonomy

Among the taxonomically identified mammal remains from Phases 2 A–C, at least five different species from four families are represented. With the exception of two rodent taxa, wild animals are completely absent. The species diversity is comparable to other similarly small assemblages from Roman sites of the south-eastern Alpine region. The average number of archaeozoological finds per layer is 16.7. From altogether seven layers containing animal remains, five fall within one standard deviation of this mean (SD = 9.99). Thus, the vertical distribution of finds appears to have been relatively even (*Tab. 12*).

Most of the remains were ascribed to ovicaprids (Caprinae), which is rather unusual for the early Roman sites in Slovenia. Generally, in such contexts cattle (*Bos taurus*) prevails[43] whereas at Dolge njive they occur only as the second most numerous species. Actually the difference in the number of finds of the two mentioned taxa does not exceed the level of statistical significance,[44] which is not surprising in regard to the relatively small number of excavated bones.[45] However, it should be emphasized that among the taxonomically unidentified faunal remains the share of smaller specimens (i.e. 'small ruminants' size class; presumably for the most part sheep and goats) exceeds threefold the share of larger ones (i.e. 'large ruminants' size class; presumably for the most part cattle). Hence, there can be no doubt that ovicaprids were predominant within the analysed archaeozoological material from Dolge njive, although the question

[43] Toškan 2013, Tabs. 1 and 2.

[44] χ^2 test: $\chi^2 = 1.94$; degrees of freedom: 1; $p = 0.163$.

[45] Drennan 1996, 194.

to what degree such a small assemblage of finds is representative of the whole site remains open.[46] There is no proof that the ascertained proportions between the species could be a reflection of specific human activities.[47] Rather the obtained data should be seen as a 'chance' result caused by the modest sample size.

The level of preservation of ovicaprid remains, among which isolated upper teeth and small bone fragments predominate (*Tab. 13*), has not been sufficient for a reliable differentiation between sheep (*Ovis aries*) and goats (*Capra hircus*). More can be said about the ratio between domestic pigs (*Sus domesticus*) and wild boars (*Sus scrofa*). According to metric data all the six available specimens could be attributed with certainty to the former.

Rodents are represented by two species: the edible dormouse (*Glis glis*; sample 2: first lower molar) and the black rat (*Rattus rattus*; sample 7: first upper molar). The possibility of the latter belonging to a brown rat (*Rattus rattus*) can be reliably ruled out due to the presence of a cingulum resembling a ridge on the mesial surface of the tooth and of a neatly formed cusp t^3.[48] Moreover, the appearance of the brown rat in Europe presumably does not predate the 10th century AD,[49] whereas the earliest known finds of black rat from the Slovenian territory date to the Early Iron Age.[50] The edible dormouse, in contrast, inhabits the south-eastern Alpine area from at least the middle of the last (i.e. Würmian) glaciation onward.[51]

Description of fauna

Estimations of the age-at-death (*Tab. 14*) and the gathered metric data (*Tab. 15*), although small in number, are generally congruent with the insights gained so far about the (early) Roman animal husbandry in this part of Europe.[52] This is true when considering, e.g. the predominance of adult cattle remains over those of calves or the absence of juvenile specimens of ovicaprids. Both characteristics point to the intensive exploitation of secondary products of animal husbandry. In contrast, pig-breeding was principally aimed at the production of meat and fat, a fact which consequently lowered their slaughtering age. The only adequately preserved pig remain in the assemblage from Dolge njive (a lower mandible fragment of an under 20-month-old animal with freshly outgrown third molar tooth) confirms such a supposition.

The analysis of metric data for cattle, sheep/goat and pig showed that the assemblage includes both the remains of small local forms of Iron Age tradition, as well as those of the advanced Roman breeds. Nevertheless, it could be observed that the majority of finds from Dolge njive lags a little behind the median values for the mentioned domesticates coming from somewhat later Roman period contexts (i.e. from the period between the 1st and 4th century AD). Again, this difference might well be purely coincidental due to the small sample size. However, it could also indicate that the transition to the improved, Roman-style animal husbandry had not yet been completed at Dolge njive. Notably, the metric data presented here fully conform to those from the Late Antiquity sites in the wider region,[53] where the small-sized traditional local breeds also predominate over the larger Roman ones.[54]

Discussion

The assemblage of mammal remains from Dolge njive is in many aspects consistent with other approximately contemporaneous material from the Slovenian territory. This holds true for the absence of wild species, for the scarcity of bones and teeth of calves, lambs and goat kids, for the presence of advanced Roman breeds of cattle, as well as for the discovery of an isolated black rat molar. This rodent is markedly synanthropic and, in fact, occurs today in natural habitats only on the Slovenian coastline.[55] The increase in the local population of black rats in the Roman period can be thus explained with the then dynamic spread of urban areas and development of trade.

The only result of the analysis presented here that could be described as specific to some extent is the fact that the best represented species is not cattle, but sheep/goat. This is similar to the situation at the NUK II location in Ljubljana (the

[46] Davis 1987, 46.
[47] Comp. Toškan 2013, 56–59.
[48] Wolff, Herzig-Straschil, Bauer 1980, 165.
[49] Kryštufek 1991, 164.
[50] Toškan, Kryštufek 2006, 100–101.
[51] Toškan 2011, 165.
[52] MacKinnon 2004; Toškan 2013.
[53] Turk 2000, 170–171; Toškan, Dirjec 2011, App. 8.1.
[54] Boschin, Toškan 2012; Toškan 2013, 59–60.
[55] Kryštufek 1991, 164.

Roman Emona; chronological framework of the considered archaeozoological material: transition from the 1st century BC to 1st century AD), with the exception that the leading taxon there is the pig. Such a prevalent share for pigs was preliminarily interpreted as reflecting culinary preferences of military ranks, which were engaged in building Emona, and eventually also of its first civilian colonists.[56] Both were of north Italian descent, where pork has been a highly valued kind of meat. Interestingly, the pig is predominant also at the recently excavated site of Gregorčičeva ulica 1, which lies in the immediate vicinity of NUK II and dates to the first half of the 1st century AD.[57]

Unfortunately, both above-mentioned case studies are limited by their small and potentially non-representative archaeozoological samples: the number of taxonomically identified bones and teeth does not exceed two hundred, neither in the case of the NUK II site nor in the case of the Gregorčičeva ulica 1 site. However, in this case the two assemblages are at least in agreement with each other concerning the high share of pig, thus the results may not be merely coincidental after all. Contrary to this, the leading role of ovicaprids in the assemblage from Dolge njive does not have any analogies in the immediate neighbourhood. The archaeozoological assemblage of finds that is spatially and temporally the closest comes from the northern part of the site of Kočevarjev vrt at Vrhnika, lying at the left bank of the Ljubljanica River and excavated in the year 2006.[58] The material is dated between the last decade BC and the middle of the 1st century AD. It is characterized by the predomination of cattle (*B. taurus*: 52.8%; Caprinae: 29.5%; NISP = 171)[59] and, therefore, additionally reduces the relevance of the leading share of ovicaprids at Dolge njive.

CONCLUSIONS

The rescue excavations conducted in 2007 at the site of Dolge njive complemented the knowledge about the settlement evolution in the region of Vrhnika, i.e. Nauportus, in the prehistoric and Roman periods. Moreover, they highlighted once again the crucial role of the river Ljubljanica as a major communication route.

[56] Andrič et al. 2012, 413–414.
[57] Rozman 2014; own unpublished data.
[58] Tica, Pavlovič, Rutar 2006.
[59] Own unpublished data.

The western research area (Sector 1, Trench 2) was located on the right bank of the Ljubljanica River, in a place extending between the river and the fortifications of the Roman settlement at Dolge njive (*Fig. 4*). Three main periods were visible in Sector 1, where the archaeological layers were most numerous and well preserved: the prehistoric period, the time of the Roman settlement and the period after the abandonment of the latter (*Tab. 3*).

The eastern research area (Sectors 2 and 3, Trench 7) lay in the interior of the Roman settlement (*Fig. 4*) and here only the remains from the Roman period have been discovered (*Tabs. 2; 3*).

Prehistoric period

The development in the Pre-Roman period could be delineated in five phases: 1 A–E. Each of these phases is represented by one archaeological layer. All the layers, with the exception of the latest from Phase 1 E, were waterlogged, thus the wood and other plant remains have been well preserved. However, layers contained few charcoal fragments and the pottery fragments were extremely rare, while the animal bones were absent altogether. Hence wood represented the most important and sometimes even the sole evidence of the human activity in the area.

The understanding of the contemporaneous development in the wider region of Vrhnika has been greatly enhanced by pollen research. Though the latter is presented in a separate article (see further Andrič 2016), certain results are summarised here as they are important for the integral presentation of the site.

Before the first traces of human activity (Layer 1)

Layer 1, which represents a geological base and was formed by alluvial deposits, contained no traces of human activity (e.g. artefacts, pieces of charcoal).

In contrast, the pollen analysis from Layer 1 provides insights into the vegetation and human activities in the wider region of Vrhnika. The land next to the Ljubljanica River was marshy, while mixed forest was growing in the vicinity. However, the pollen also points to the intensive agricultural activities, such as the existence of fields and pastures. Two periods of stronger human impact on the environment could be detected, between which there was a short period of forest regeneration (see Andrič 2016: at a depth of sedi-

ment column between 198–182 and 178–166 cm; altitude 288.19–288.35 m a.s.l. and 288.39–288.51 m a.s.l.). According to the radiocarbon dates of the sediments, these events can be placed in the first millennium BC, from the 10th/9th century BC onwards. If we also take into consideration the date of the above-lying layer (Phase 1 A), Layer 1 can be dated to before the 4th or 3rd century BC.

Phase 1 A

The first direct evidence of human activity appears in Phase 1 A. Scattered trunks, branches and small pieces of wood were lying directly above the geological base and showed obvious traces of working, such as cuts, splits and probably also traces of sawing. Considering the composition of wood species (oak, alder or hazel, beech, willow or poplar, common hornbeam; *Tab. 7*) it could be concluded that the wood was cut in the vicinity. Wood of lower quality with curves and knots was discarded on the river bank. It could have been deposited also intentionally to consolidate the soft soil of the river bank. It is also possible that the wood had been cut upstream and then washed up, but this seems less probable. In both cases, the overgrown areas along the river were probably cut down. According to the radiocarbon date, the described activities could be placed in the 4th or the 3rd century BC, i.e. to the end of the Hallstatt and the beginning of the La Tène period.

Phase 1 B

A layer of silt around 40 cm thick probably representing an alluvial sediment formed over a relatively long time period on the bank of the Ljubljanica River. It contained small pieces of wood with traces of working and fragments of charcoal, which could indicate a walking surface as well as the vicinity of human activities. However, there is no sign of settlement area.

Remains of wood, seeds and fruits clearly suggest the presence of marshy and riverine trees and shrub species (e.g. black alder, hazel) as well as mixed forest in the hinterland (containing fir and oak). Among the remains of seeds and fruits, no cultivated or any other nutrition plant species could be identified (*Tab. 4*).

The presented macrobotanical picture is significantly complemented with the pollen analysis, which shows a similar environment as in the period when Layer 1 was formed (first half and the middle of the first millennium BC): marshy areas along the river, mixed fir-beech forest in the hinterland (fir, spruce, beech, oak, common hornbeam), open country with grassland and cultivated areas (see Andrič 2016).

With regard to the dates from Phases 1 A and 1 D, Phase 1 B can be dated indirectly to the 3rd and 2nd centuries BC, i.e. to the La Tène period.

Phase 1 C

Phase 1 C was detected as a layer of small pieces of wood. The wood species demonstrate marshy vegetation (alder) and mixed fir-beech forest (oak, ash, beech) (*Tab. 8*). Branches, numerous small boards and wood chips have been discovered, which clearly represent a residue of woodworking. The wood was probably deposited intentionally to consolidate the soft soil of the river bank. It appears less likely that the wood would be washed up by the river. No settlement area was present in the vicinity.

Taking into account the dates from Phases 1 A and 1 D, Phase 1 C can be dated indirectly to the 3rd and 2nd century BC or in the La Tène period.

Phase 1 D

Phase 1 D is represented by a layer of up to 20 cm thick silt, which formed over a relatively long time period and was probably of alluvial origin. It seems that it was used as a walking surface. Human activity is testified by the numerous scattered small pieces of worked or unworked wood as well as by charcoal fragments. The wood, which in the majority represents a residue of intensive woodworking, was not deposited with a specific purpose. Only one pottery fragment was found. Thus, the settlement area was obviously still relatively far away.

The pollen analysis points to the gradual deforestation in the wider surroundings of the site (see Andrič 2016; depth of sediment core between 135 and 128 cm; altitude 288.82–288.89 m a.s.l.).

The radiocarbon dating of the wood sample places Phase 1 D into the 2nd and the first half of the 1st century BC. However, Phase 1 D can be dated more precisely due to the presence of the thin-walled beaker between the end of the 2nd and up to the middle of the 1st century BC, i.e. to the late La Tène period.

Phase 1 E

The river bank has been covered in this phase with a layer of up to 40 cm thick silt, which contained almost no traces of human activity. The remains of charcoal were so tiny that they could

be noticed only later under the microscope. Only one small fragment of a handmade pot has been discovered. Contrary to deeper layers, this layer was dry to such a degree that the organic remains were not preserved. In view of the thickness and its composition the layer could represent alluvial sediment, formed over a longer period of time in an area without settlement. It would also be possible that the layer had been intentionally deposited to rise and consolidate the area before the first construction works in the Roman period. Phase 1 E can be dated indirectly with dates of Phases 1 D and 2 A around the middle of the 1st century BC.

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Due to the almost complete absence of pottery, animal bones and remains of nutrition plants, it can be inferred that the research area was not inhabited in the period between Phases 1 A to 1 E. However, traces of human activities were present, such as woodworking and probably also the intentional deposition of wood waste and residue. The proximity of the human activities can be recognized also from charcoal fragments from Phases 1 B, 1 D, and 1 E.

The activities on the Ljubljanica River bank as well as cultivated areas detected by the pollen diagram can be associated with the settlement located in the wider area of Vrhnika. Stray finds from river beds and from the plain to the north of Vrhnika give evidence of the middle and late Bronze Age settlement. The central prehistoric settlement was recently recognised in the hillfort on the Tičnica hill, lying approximately 1 km west from the Ljubljanica River and provided with a good outlook over the land and water communication routes (*Fig. 1*). The hillfort has not yet been dated precisely.[60]

The cutting of trees and the consolidation of the river bank in Phase 1A, i.e. at the end of the Hallstatt or in the beginning of the La Tène period, represent the traces of activities connected with deforestation. It is possible that these activities even point to the development of the first simple 'river port'.

In Phase 1 B, a thick layer of sediment was deposited through a relatively long time period. The layer was used over the entire phase as a walking surface, while unidentified activities took place in the vicinity.

In Phase 1 C, a layer of scattered wood was deposited once again, composed of small pieces, among which many represent residue from woodworking. The river bank was perhaps once again intentionally consolidated with the wood waste. Phases 1 B and 1 C can be dated to the 3rd or 2nd centuries BC, i.e. to the middle La Tène period.

Traces of intensive woodworking, which had to take place in the vicinity, was confirmed in the late La Tène period (Phase 1 D). The only archaeological artefact is a spindle-shaped beaker from thin-walled pottery, which can be dated from the end of the 2nd and up to the middle of the 1st century BC (*Fig. 19*). It was imported from Italy and, therefore, represents one of the earliest fragments of Roman pottery in central Slovenia.

The spindle-shaped beaker from Phase 1 D can be related to the rare finds from the wider area of the Roman settlement at Dolge njive. The late La Tène fibula of the Picugi type was discovered approximately 80 m to the north of the Sector 1.[61] A Celtic sword has been found in the same area and can be dated into the earlier part of the late La Tène period.[62] Two other finds also originate from Dolge njive, albeit without their precise location: a fibula of the Nauheim type, variant A, which can be dated to the earlier part of the late La Tène period,[63] and a south-eastern Alpine *Palmettenfibel* from the later part of the late La Tène period.[64] Some examples of Celtic and imported Roman pottery can possibly be placed into the late La Tène period[65], as well as the hoard of Celtic silver coins, found around 150 m to the north of Sector 1.[66] Finally, several La Tène finds have been discovered in the Ljubljanica River bed at Dolge njive.[67]

These diverse finds suggest that in Phase 1 D or in the late La Tène period, a small settlement or post connected with river transport could be expected

[60] Gaspari, Masaryk 2009.

[61] Horvat 1990, Pl. 5: 1; from the space between the buildings 13 and 14, see Mušič, Horvat 2007, Fig. 39. Distribution and chronology: Guštin 1991, 38–39.

[62] Horvat 1990, 114, 217, Pl. 4: 14; from the space between the buildings 13 and 14, see Mušič, Horvat 2007, Fig. 39.

[63] Božič 1993, 142, 150, Fig. 4: 2; Horvat 1996, Fig. 9: 2. Phase Mokronog IIIa / Lt D1b: Božič 2008, 59–65, 145. Absolute chronology of the phase: Horvat, Bavdek 2009, 52–53, Tab. 6.

[64] Horvat 1996, Fig. 9: 3. Distribution and chronology: Guštin 1991, 46; Demetz 1999, 76–77.

[65] Mušič, Horvat 2007, 256–258, Figs. 40–41.

[66] Horvat 1990, 89–90, 95, 197–198, 203; from the space between the buildings 4 and 5, see Mušič, Horvat 2007, Fig. 39.

[67] Gaspari, Masaryk 2009, 197–198.

in the area of the river bend of Ljubljanica, lying 100–150 m north from Sector 1. Such a settlement would represent a forerunner of the large Roman settlement at Dolge njive. A settlement from the 2nd and 1st centuries BC positioned on the riverbank of Ljubljanica would not be surprising. It can be postulated on the basis of Strabo's descriptions, in which he reports, referring to the sources from the 2nd and 1st centuries BC, how the goods that had been transported from Aquileia were then reloaded at Nauportus to boats.[68] The great significance of the Ljubljanica River as a communication route is further enhanced by the numerous La Tène objects, among which weapon prevails and which have been discovered at different places along almost the entire current of the river.[69]

The beaker from Phase 1 D (*Fig. 19*) is especially interesting inasmuch as it represents a material trace of the transport relations between the Roman tradesmen and Celtic Taurisci, which are attested to in this period at Nauportus by written sources.[70] Along the road, which led from Italy to Nauportus, contemporaneous Roman pottery appears in the settlement at the Razdrto pass.[71] However, to the east of Nauportus such early Roman pottery is extremely rare. It was discovered for example in Stična[72] and at Frauenberg in Styria.[73]

Early Roman period

Ljubljanica River bank

Three archaeological phases (2 A, 2 B and 2 C) reflect the development in the Roman period in Sector 1 at the river bank. Each phase is represented by a base for pavement, a pavement and a walking surface. The archaeological artefacts and animal bones have been discovered in all the phases, while the botanical remains and pollen were poorly preserved.

Similar layers as in Sector 1 have been observed in Trench 2, which lay only 5 m to the north: three subsequent consolidations of the area with layers of stones and sand together with intermediate walking surfaces.

Phase 2 A

In Phase 2 A, the river bank area was covered with large quarry stones, which were piled up to 60 cm high in several strata. A 20 cm thick layer of gravel and sand was placed above them. These layers can be interpreted as a base made of stones covered by a sandy pavement. The surface of the pavement sloped towards the river. Silty sediment, which represented the remains of the walking surface, lay over the pavement.

Phase 2 B

The pavement of the river bank was repaired in Phase 2 B. The surface was strengthened with a layer of large stones covered by a sandy pavement. A pit of unknown purpose was cut into the pavement, but was soon levelled with a fill of clayey silt. The pavement and the fill of the pit was overlaid by two sediments, which represent two subsequent walking surfaces.

Phase 2 C

In Phase 2 C, the pavement of the river bank was repaired for the second time with the layer of stones and a thick sandy pavement. The walking surface above the pavement has not been preserved.

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A paved river bank area was constructed in Phase 2 A and then renovated twice in Phases 2 B and 2 C. The pavement edge was unearthed only on the higher lying area away of the river, while it remains unclear how far the pavement actually stretched towards the river. The earliest pavement (Phase 2 A) lay at a distance of 5 m from the south eastern fortification tower of the Roman settlement and 8 m away from the fortification walls. The paving was widened towards the settlement for 1 to 2 m with renovation works (Phases 2 B and 2 C). The situation in Trench 2 offered clear indications that the paving continued to the north in the zone between the river and the fortification walls of the Roman settlement.

There is probably no considerable time difference among all the three Roman phases in view of the uniform construction techniques used for the pavements and the closely related small finds. According to the latter, Phase 2 B can be firmly dated to the Augustan period, with an emphasis on its middle and late phases. Therefore, all the three phases of paving could be placed into the Augustan period, wherein the first consolidation

[68] Strabo 4, 6, 10; 7, 5, 2; Šašel Kos 1990, 17–20, 143–147.
[69] Gaspari 2009b.
[70] Šašel Kos 1990.
[71] Horvat, Bavdek 2009.
[72] Grahek 2013, 213–216.
[73] Sedlmayer 2005, 129–136.

and paving would date to the early or middle Augustan period at the latest, while the second and third would be placed to the middle and up to the late Augustan period. After the end of Phase 2 C, i.e. after the end of the Augustan period, the area has not been intensively used anymore (Phase 3).

Phases 2 A, 2 B, and 2 C, designating the time of construction, use and two subsequent renovations of the pavement, completely correspond with the existence of the Roman settlement at Dolge njive. The warehouses and the fortification walls have been built according to the uniform plan in the Octavian or early Augustan period and abandoned soon after the end of the Augustan period.[74] Thus, the first pavement (Phase 1 A) most likely coincides with the beginning of the settlement construction at Dolge njive.

The amorphous fragments of burnt clay that have been found in all the layers from Phases 2 A to 2 C represent the remains of clay daub from wooden houses or the remains of coating from hearths or ovens. Fragments of bricks and imbrices have been discovered in Phases 2 B and 2 C. Pottery fragments were small and rather few in number. Imports from the north Italian pottery workshops are represented by amphorae and fine and coarse tableware made from depurated clay, among which jugs predominate. The coarse kitchenware is represented mostly by locally produced pots, which could be completely handmade or wheel turned and then finished by hand. Considering the pottery forms and their production areas, the assemblage is typical for the settlements in central Slovenia, which experienced an intensive immigration from Italy in the Augustan period.[75]

Among the animal bone remains, ovicaprids predominate, followed by cattle and pig, which makes this site different from other archaeozoologically investigated Roman period sites in the region. In spite of this, the absence of calves, lambs and goat kids (a clear indication of the exploitation of secondary products: draft animals, dairy, wool) is perfectly in line with expectations. The same holds true for the probable low slaughtering age of pigs, which were evidently raised for meat. The analysed material includes the remains of both traditional small-sized local forms of cattle, as well as larger breeds of Roman origin, which almost completely prevailed over the former with the ongoing Romanization in the wider region.

The discovery of an isolated molar of a black rat is also worth noting since it indicates a distinctly synanthrope species (i.e. closely linked with humans). Its presence at Dolge njive could potentially be associated with the spread of urban areas and the development of trade in the Roman period.

Port-area

It can reasonably be inferred that the three phases of the pavement on the Ljubljanica River bank spread over the entire area between the river and the western part of the settlement fortifications. This conclusion concurs fairly well with the previous research results.

Geophysical investigation of the Roman settlement at Dolge njive did not include the area outside the western and southern fortification wall. However, it showed that the area between the northern fortification wall and the river bank of the Ljubljanica had been paved (*Fig. 2*).[76] The excavation in 1985 showed that the river bank along the northern fortification wall had been additionally reinforced with vertical wooden posts. Another group of wooden posts, which were densely arranged in a rectangular area, was discovered in the river bed, exactly in front of the northern entrance to the settlement. This group can be interpreted as the remains of a foundation for a specific structure, probably connected with a landing stage and the access to the settlement.[77]

A paved zone located outside the eastern fortification wall, between the eastern entrance to the settlement and the presumed defensive ditch (*Fig. 2*) has also been confirmed by the geophysical investigation.[78] Less compact paving, which contained only stones and had no layers of sand, was discovered with excavations in 1969, conducted in front of the southern fortification wall, and near the south-eastern tower.[79]

The collected data therefore points to the fact that most likely the entire river bank along the northern and western fortification wall was paved. The pavement had to be part of the uniform arrangement of the area and was constructed more

[74] Mušič, Horvat 2007, 254–261, 278–279.

[75] E.g. Horvat 1990; Horvat 2010; Gaspari 2010.

[76] Mušič, Horvat 2007, 237, 261, 275, 280, Fig. 36.

[77] Logar 1986; Mušič, Horvat 2007, 237, 261, 275, 280, Fig. 36.

[78] Mušič, Horvat 2007, 237, 275, Figs. 4A–B, 5–6, 12, 15, 18; 36.

[79] Mikl Curk 1974, 373, App. 2.

or less simultaneously with the settlement at Dolge njive, presumably in the Octavian or early Augustan period.

The paving of the river bank can be recognized as a landing shore of a river port stretching along the entire settlement for at least 270 m. This interpretation is further corroborated by the large warehouses that were placed at Dolge njive[80] and by both the written and archaeological sources which clearly point to the intensive traffic on the Ljubljanica River in the early Roman period.[81]

Two ships from the Augustan period have been discovered in the marshland of Ljubljansko barje, east of Nauportus. The barge from Lipe was flat-bottomed, approximately 30 m long and 4.8 m wide, and had a theoretical carrying capacity of 40 tons. The ship from Sinja Gorica also had to have very similar dimensions.[82] The length of the paved river bank at Dolge njive could thus theoretically enable the landing of up to ten such ships at the same time. The rather large capacity of the port is indirectly also confirmed by the spacious warehouses in the settlement.[83]

Settlement interior

The geological base in Sectors 2–3 and in Trench 7 was covered with the layer of sand and gravel, above which a thin debris layer containing early Roman finds could be identified. The layer of sand and gravel probably represents the pavement between the buildings in the south eastern corner of the Roman settlement at Dolge njive. Contrary to the three subsequent pavements documented at the river bank, only one walking surface could be observed in the settlement interior. In view of the longer distance from the river, the repairs of the paving were presumably not necessary. Only one pavement further confirms a relatively short existence of the settlement.

Late Roman period

The settlement and the port at Dolge njive were abandoned after the Augustan period. Layer 17 (Phase 3) from Sector 1, which contains no reliable signs of the organization or use of the site, started to form in the 1st century AD.

Nauportus continued to develop on the opposite bank of the Ljubljanica River, along the main Aquileia–Emona road. A permanent river port might also be expected on the left bank of the river.[84] The traffic on the river continued through the entire Roman period, although the load was considerably reduced after the construction of the road and the political stabilisation in Illyricum.[85]

The crossbow fibula (*Fig. 20:* 71), discovered in a layer that was damaged with modern interventions, represents an earlier form of the type and can be dated to the end of the 3rd and the beginning of the 4th centuries AD.[86] Several other late Roman finds have also been found in the past at Dolge njive, either on the surface or they come from unknown contexts. Several coins can be dated to the 3rd and 4th centuries AD.[87] The incendiary projectile point discovered in the northern part of the settlement[88] can be most likely dated to the second half of the 3rd century AD.[89] It is highly probable that the hoard of coins, deposited around the year 271 AD, also originates from Dolge njive or its surroundings.[90] Other fragments of crossbow fibulae and a late Roman oil-lamp also point to the end of the 3rd and in the 4th centuries AD.[91] Moreover, the geophysical investigation at Dolge njive revealed two rectangular one-roomed structures with two central pillars, which clearly deviate from the scheme of the Augustan settlement. They might be placed in the period indicated by the late Roman small finds.[92]

The question of whether the late Roman finds could be explained with the revival of the settlement at Dolge njive or only with the increased activity on both river banks must remain open. However, the finds from the Ljubljanica River,

[80] Šašel Kos 1990; Istenič 2009b.

[81] Horvat 1990; Horvat 2008; Mušič, Horvat 2007.

[82] Erič et al. 2014, 213–223, 242–248.

[83] Mušič, Horvat 2007, 243–244, 262–264, 276, 280–281.

[84] Horvat 1990; Horvat, Mušič 2007, 167–170.

[85] Šašel Kos 1994, 110–113, 119–121; Istenič 2009b.

[86] Pröttel 1988, 349–353.

[87] Horvat 1990, 88–89, 96, 196–197, 204.

[88] Horvat 1990, 269, Fig. 32a.

[89] Two similar catapult bolts are known from the site Grad near Šmihel: Horvat 2002, 146, 161–162, Fig. 6: 8; Pl. 21: 1. In Dura Europos, they are dated in the middle of the 3rd century AD: James 2004, 220–221, Fig. 130: 804.

[90] Kos 1988, No. 206/3; Horvat 1990, 93–94, 96, 201–202, 204.

[91] Horvat 1990, 270, Fig. 32b: 2; Horvat 1996, Fig. 9: 8–10.

[92] Mušič, Horvat 2007, 264–265, 281–282, Fig. 39: 6,24,26.

which frequently a convey military character, clearly point to the revival of traffic along the river route of Ljubljanica–Sava–Danube in the late Roman period.[93] The exceptional significance of Nauportus in this period is best illustrated with the stronghold at Gradišče, presumably constructed at the end of the 3rd century BC, and with a long defence wall named Ajdovski zid, a barrier wall in the hinterland of Nauportus, in all likelihood built in the 4th century AD.[94]

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[93] Knific, Bitenc 2009b.

[94] Horvat 1990, 74–77, 185–187; Pröttel 1996, 138–139; Kusetič 2014, 72–78; Kos 2014.