

ONCE MORE UNTO THE BEACH: NEW ARCHAEOLOGICAL RESEARCH INTO JORDAN'S PORT ON THE CHINA SEA

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Since Antiquity, Aqaba has been a node on important trade and transportation routes – especially those related to the Red Sea. With the sanctification of Mecca and Madinah in the 7th century AD, and the success of Islam's political expansion, the Hijaz achieved a political and economic standing that it had never had before. The increased influence entailed new commercial opportunities and a re-organisation of intra- and interregional trade, but also involved a rising number of annual pilgrims from all levels of society. This amplified activity demanded a material and social framework in which to unfold, one that was revaluated and adapted continuously, and the archaeological site of Aylah is one such manifestation. Because of the site's intactness and chronological span, it could potentially be one of the most informative sources on the development of both urban and commercial landscapes in the Early Islamic Period (c. 650 - 1100 AD).

Historical Setting

Trade in the northern Red Sea boomed for more than five hundred years as a result of the demand for exotic products in the Greco-Roman world. Activities included the importation of rare and exotic goods such as Indian spices, Arabian frankincense and African ivory.³ While the Roman trade of the 1st centuries BC and AD relied heavily on the southern entrepôts of Egypt (*e.g.* Myos Hormos and Berenike), by the

3rd century AD, trade increasingly depended on a combination of southern middlemen (*e.g.* in Ethiopia and Yemen) and more northern emporia, such as the Sinaitic ports of Aqaba (Aila) and Suez (Clysma). With the territorial expansion of Islam in the 7th century, Aila was among the first Byzantine towns to come under Muslim hegemony. According to al-Baladhuri, control of Aila was surrendered by the local bishop / chief to the Prophet Muhammad via treaty (*sulh*)⁴, and in time this prompted the construction of a new urban unit in close proximity to the extant one. So began Islamic Aylah, which could well be the first town built by a Muslim ruling class specifically for Muslim settlers, and thus among the earliest 'Islamic cities' in the world.

The original town was constructed using many features known from classical cities, including an orthogonal layout, monumental gates indicating cardinal directions and broad streets. It nevertheless evolved differently, with new notions of spatiality and material identity replacing those of Antiquity. Aylah was founded in the mid-7th century AD and remained occupied at least until the early 12th century, when it appears that settlement shifted south to the area that today is dominated by Aqaba Castle.⁵

Although not of major administrative standing, Aylah's strategic location at the head of the Gulf made it an important Muslim trading emporium. The Red Sea littoral had a strong commercial dynamic of its own, but this was ampli-

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3. Tomber, R. (2008). *Indo-Roman Trade. From Pots to Pepper*. London: Duckworth.

4. Hitti, P.K. (2002). *The Origins of the Islamic State. Being a translation of Kitâb Futûh al-Buldan of Abu-l Abbas Ahmad ibn Jabir al-Baladhuri*. Gorgias Press,

Piscataway NJ.

5. al-Shqour, R., J. De Meulemeester and D. Herremans (2009). "The 'Aqaba Castle Project,'" In *Studies in the History and Archaeology of Jordan X*, ed. F. al-Khraysheh, 641-55. Amman: Department of Antiquities.

fied by its role as a maritime corridor between the Indian Ocean and Mediterranean basins. Moreover, Aylah lay at the nexus of Arabia, Syria-Palestine and Egypt: three crucial regions in the Islamic world. In addition to being a trade hub, Aylah became the culmination point of the *Darb al-Hajj* (Pilgrims' Road) across Sinai and a major station for pilgrims coming from North Africa and Spain.⁶ It was, in other words, a town bustling with merchants, seafarers and pilgrims. It even had a vibrant scholastic community.⁷ This interface of cultures, coming together under the aegis of religion and trade, gave Aylah a cosmopolitan atmosphere, which is reflected in the archaeology. The following article presents the preliminary results of a new archaeological initiative that focuses on the hitherto unexplored south-west quadrant of the walled town.

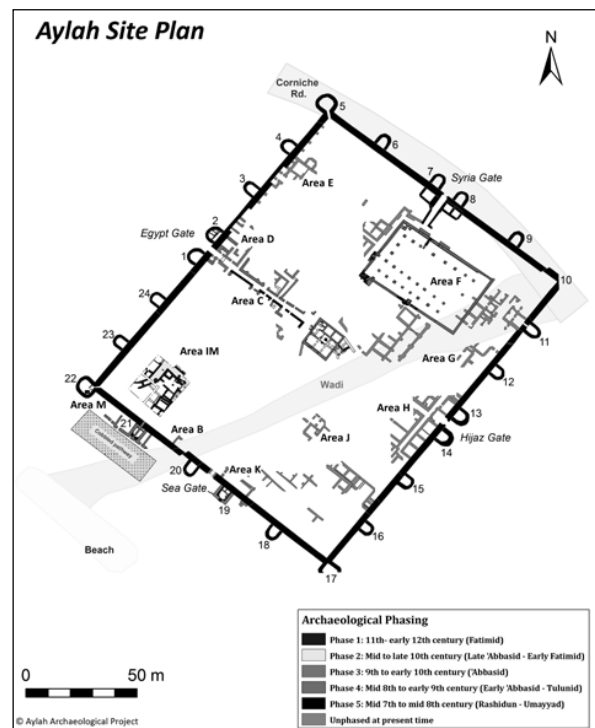
Background of the Aylah Archaeological Project

The following presents the preliminary results of renewed excavations at the archaeological site of Aylah, in modern Aqaba. The current excavations are conducted by the *Aylah Archaeological Project* (henceforth AAP), a joint venture spearheaded by the University of Copenhagen. However, the return to Aylah began under different circumstances. In 2008, the Belgian-British *Aqaba Castle Project* was reconceptualised as the *Islamic Aqaba Project* (IAP) and this saw the expansion of the project's scope to include the Early Islamic urban core as well. The primary scientific aim was a more comprehensive mapping of diachronic settlement patterns in Islamic (650 - 1922 AD) Aqaba, in order to achieve a fuller understanding of the town's settlement history and urban morphology.

The IAP included an exploratory season at Aylah (with Damgaard functioning as field director), which entailed the excavation of a 10 by 10 metre diagnostic trench in the south-west quadrant of the site and a 5 by 2 metre trench along the exterior of the city wall, immediately

south of the so-called Egypt Gate (Fig. 1).⁸ The excavation units were termed IM (*intra muros*) and EM (*extra muros*) respectively. The plan was to return the following year for more large-scale excavations, but sadly IAP director Prof. Johnny De Meulemeester (Universiteit Gent) passed away unexpectedly in early 2009, causing the project to come to a sudden halt and leaving many important questions unanswered. Steps were therefore taken by the authors to acquire independent funding to continue our research and the AAP is the result of these efforts.

Before presenting the results and their implications, it must be stressed that even though the renewed excavations at Aylah have undergone an institutional and a fiscal reorientation, the project has continually been executed as a coherent and clearly defined archaeological endeavour. The following article thus constitutes a prelimi-



1. Phased plan of the archaeological site of Aylah. The new excavations are in the southwest quadrant (© AAP).

6. Tamari, S. (1982). *Darb al-Hajj in Sinai: an historical-archaeological study*. Memorie Scienze Morali, Serie VIII, Vol. 25.4. Accademia Nazionale dei Lincei, Roma.
7. Cobb, P. M. (1995). Scholars and Society at Early Islamic Ayla. *Journal of the Economic and Social History of the Orient* 38: 417-428

8. A preliminary report on this season can be found in Damgaard, K. (2013). Between Castrum and Medina: A preliminary note on spatial organisation and urban development in Medieval Aqaba. In *Egypt and Syria in the Fatimid, Ayyubid and Mamluk Eras VII*, edited by U. Vermeulen and K. D'hulster, pp. 39-65. Peeters, Leuven.

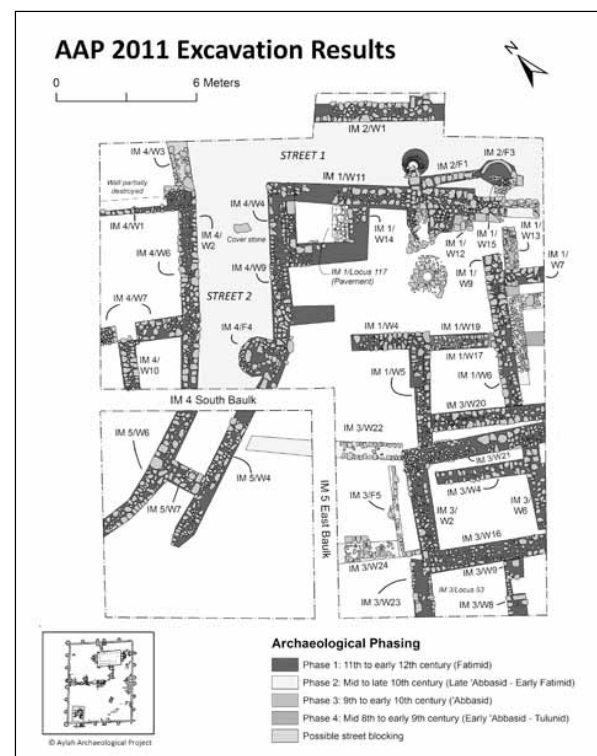
nary report of the totality of results achieved so far; the subdivision of material into the initial 2008 season and subsequent campaigns merely serves to structure the archaeological data and the progress of our work.

The AAP constitutes an effort to illuminate what life was like in an Early Islamic Red Sea port. Aylah was discovered by Donald Whitcomb in the mid-1980s and between 1986 and 1995 his team excavated a large part of the town.⁹ In addition to its independent research objectives, the AAP has been conceptualised as means of framing and augmenting the results of the American excavations, and a joint and full publication of the site is envisaged at the project's completion.

2008: A Diagnostic Season

Owing to the preliminary nature of the 2008 season at Aylah, the ambition was to excavate two diagnostic units and to use these to establish a solid stratigraphic profile. Whitcomb left the south-western quadrant untouched for future archaeological exploration. In addition to the fact that no archaeological exploration had been undertaken in this quadrant before, the selection of this part of the site was guided by a number of rationales. Firstly, the topography generally slopes towards the beach, yet this quadrant, though closest to the sea, is the highest part of the archaeological mound. This suggests a different taphonomic process to the rest of the site. Secondly, because we initially sought to understand the organisation and morphology of Islamic Aqaba as an extended archaeological landscape, identifying specific composite parts of the urban environment was central to extrapolating patterns and off-beats from the archaeological data. Whitcomb's identification of an Abbasid *sug* constructed against the exterior of the western end of the south wall indicated that there was a distinct possibility that this may have constituted part of an expanding commercial district, in which the south-west quadrant may have been the core.

Based on this rationale, an arbitrary 10 by 10 metre grid was established in alignment with the city wall, and an excavation unit (IM1) defined in its centre (Fig. 2). A second excavation unit (EM1) was defined outside the walls, extending 5 metres south-west along the city walls from the Egypt Gate's southern tower (T1). This specific area was selected both because it constituted the only part of city's west wall that had not yet been excavated and, perhaps more importantly, because previous excavations have shown that the Egypt Gate appears to have held dramatically shifting meanings during the lifespan of the town.¹⁰ It was originally adorned with a carved Qur'anic inscription – the *Ayat al-Kursi* (Throne verse) – now on display in Aqaba Museum. This particular inscription seems to have been a constituent part of a Hijazi - Muslim form of urbanism, for it has been located at a number of 8th century foundations in Saudi Arabia (including



2. Phased plan of excavation area in the southwest quadrant of Aylah (© AAP).

9. An extensive corpus of publications exists, many of which can be found in back issues of the *Annual of the Department of Antiquities*. Most recently see Whitcomb, D. (2009): Ayla at the Millennium: Archaeology and History. In *Studies in the History and Archaeology of Jordan 10*. Ed. F. al-Khraysheh, pp.123-32.

Department of Antiquities, Amman.
10. Whitcomb, D. (1995). A Street and the Beach at Ayla: The Fall Season of Excavations at 'Aqaba, 1992. *Annual of the Department of Antiquities of Jordan 39*: 499-507

Rabadhah, al-Jar and Hawra).¹¹

It has previously been suggested that the Egypt Gate constituted the interface between the established Late Antique town and the new Islamic unit.¹² Similarly, it may have functioned as the access point for pilgrims and traders coming from Egypt, North Africa, Sicily and Spain – areas we know brought a significant amount of people and wealth to Aylah. In order to understand the nature of Aylah vis-à-vis the established settlement that continued to function, one cannot avoid a consideration of its walls. Whitcomb effectively challenged the notion that this massive construction was initiated for defence purposes.¹³ Rather, he suggested that the walls were an ‘emblem of urbanity’, emphasizing their symbolic importance.

One may thus presume that this was an access point that at least initially saw a considerable amount of traffic and activity and, if *extra muros* expansion indeed was a norm seen in places other than Whitcomb’s Abbasid *suq*, that this would have been an area particularly susceptible to such a process.

The 2008 excavations confirmed that Aylah has a long and complex depositional history, including numerous periods of destruction, re-use, rebuilding, cutting and in-filling. In some areas of IM1 there was good and clearly defined stratigraphy, but owing to the site’s long history and numerous historical disturbances, a complete and coherent stratigraphic sequence could not be established for the upper strata. Even so, five distinct phases could be clearly defined, independently confirming Whitcomb’s phasing.¹⁴

The historical strata were sealed by a 20th century occupation layer, which was removed after it had been recorded. Most of the subsequent architectural features were left *in situ*, which increasingly limited the area available for excavation. Of the five identified phases of historical occupation, the latest one (Phase 1) was the best represented. From this level, the exposed architectural elements decreased, so that only a single wall was defined in Phase 5. Each phase was associated with a number of strata. While some of these constituted actual use surfaces, most of them consisted of fills or gradual depositions. During a study season in 2009, a tentative chronology was created using the retrieved ceramics. In combination with the architectural and stratigraphic evidence, this allowed the following phases to be defined:

Phase 1 – Fatimid (10th to late 11th Century AD)

The majority of the structures found in IM1 during the 2008 campaign belonged to the most recent identified phase of medieval occupation, which corresponds roughly to the occupation levels termed Phases E and D by Whitcomb.¹⁵ It consists of three main clusters of architecture and the intermediate open spaces created between them. In the southern end of the unit, the corners of two individual building units were identified. In the south-east corner, a north-east to south-west running wall (#6) was abutted on its east side by a somewhat lower return, running north-west to south-east and disappearing into the south-east baulk (#7). These are the

11. Damgaard, K. (2011). *Modelling Mercantilism: An Archaeological Analysis of Red Sea Trade in the Early Islamic Period (650 - 1100 AD)*. Unpublished PhD dissertation, University of Copenhagen.

12. Damgaard, K. (2009). A Palestinian Red Sea Port on the Egyptian Road to Arabia: Early Islamic Aqaba and its many hinterlands. In *Connected Hinterlands: Proceedings of the Red Sea Project IV held at the University of Southampton, September 2008*, edited by L. Blue, J. Cooper, R. Thomas and J. Whitewright, pp. 85-97. Archaeopress, Oxford.

13. Whitcomb, D. (2006). The Walls of Early Islamic Ayla: Defence or Symbol? In *Muslim Military Architecture in Greater Syria. From the Coming of Islam to the Ottoman Period*, edited by H. Kennedy, pp. 61-74. Brill, Leiden & Boston.

14. Even though our chronology was corresponding, a decision was made to re-label the phases. The reason for

this is mostly practical in that the deep probe of the 2008 season opened the possibility that occupation in the south-west quadrant may predate the construction of the Early Islamic settlement. In light of this, we decided on a reverse labelling that allows additional phases to be added below the 7th century foundation of the walled enceinte. Our phasing applies numbers that progress from top to bottom. So the initial historical phase dubbed Phase E by Whitcomb is Phase 1 in our chronology.

15. The extensive area excavated by the OI team permitted a differentiation of the two ‘late’ phases. While Whitcomb’s Phase E mostly consisted of add-ons to the standing, but often deteriorated architecture, Phase D constituted the last period of town-wide spatial re-organization. These two phases appear as one in Area IM.

earlier structures in the south-east cluster. Later, they were augmented by a smaller wall (#18) in the same L-shape as Walls 6 and 7. This was built directly against the east face of Wall 6 and at roughly the same level. Wall 6 was at some stage extended by about 1 meter to the north, but whether this was an expansion of space or a reinforcement of the extant structure remains unclear.

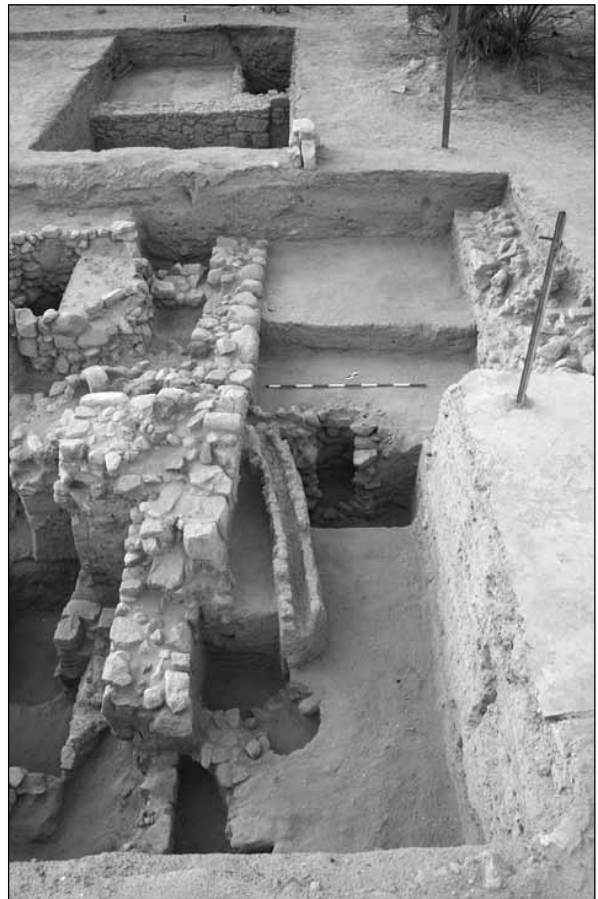
In the south-west corner of the trench, a square unit similar to Walls 6 and 7 was identified (#4 & #5). Again, one is left with the impression of an individual building not fully exposed; however, in this case no additional structures were added. From the exterior it seems that these walls were constructed as a single phase, but excavation inside the walls (L84) showed that the two upper courses constitute a later addition, as they extend almost 20 cm in width beyond the lower courses.

It is noteworthy that the corners of the two abovementioned structures adhere to the presumed orthogonality of Aylah's original grid, and there is a clearly definable open space between them. In the fills associated with this intermediary space, a rich and varied yield of artefacts was retrieved. Worth mentioning was the presence of many diagnostic sherds belonging to small amphora (**Fig. 3**). In addition a number of large basalt grinding tools were discovered here. While the seeming accessibility may indicate that it was a public domain, the associated artefacts would suggest that it was used for some kind of manufacture, treatment or packing of goods.¹⁶

The most prominent and complex set of structures is found in the northern part of the excavation unit and extends across into IM2 (**Fig. 4**). The basic axis of these structures is a substantial north-west to south-east running wall. Its north face constituted the southern boundary of a subsidiary street, parallel to the 'Egyptian Street'. The axis is created by two walls (#8 & #11), breached only by a well-built drain gutter.



3. Selection of miniature amphorae retrieved from central open space in IM1 (© AAP/Henrik Brahe).



4. Fatimid drainage system including two cess-pits dug into the street (© AAP).

16. Uzi Avner and Jodi Magness have published an outline of the ubiquitous production initiatives of the Wadi Arabah and southern Negev in the 7th to early 10th centuries (Avner, U. & J. Magness [1998]. *Early Islamic Settlement in the Southern Negev. Bulletin of the American Schools of Oriental Research* 310: 39-57). In it, the authors suggested that this production

complex was tied to Aylah, which would have functioned as the hub for the collection and redistribution of agricultural produce and ore. While there is little published evidence to suggest this activity was sustained into the Fatimid period, the correlation is obvious and tempting.

The gutter, which originally had a superstructure of fired brick, runs along the west side of a large installation, the exact nature of which remains unclear, but which clearly dealt with the disposal of some kind of liquid. The structure consists of a stone-lined feature with an earth fill that was topped with larger flag-stones. This gives the impression of a solid installation, while allowing liquid to seep between the top course and into the earth fill below. The feature is not intact and, from the section on its fractured side, the internal fill shows a clear micro-stratigraphy, indicating that the in-filling may have been gradual before it was sealed. A drainage canal divides the walls and slopes downwards into the associated street surface. The section of the drain situated in the actual street had originally been subterranean. It was covered by substantial stone blocks and culminated in a large cesspit discussed in detail below. The cesspit's access point was sealed with a circular basalt lid that originally had been a quern-stone. Extending from the covered drain in the street was a second covered drain canal, which culminated in what appeared to be a well that had been re-used as a cesspit.

This installation was located in the northern end of the excavation unit and the unit's dimensions prevented us from exploring its immediate context. However, the drain was an important clue to suggest that the space north of the installation was a street. This notion was further corroborated by the well-built façade of Wall 8's north face and a north baulk consisting of numerous laminated and horizontal strata characteristic of a street surface. A potential street at this location would furthermore create an axis perpendicular to the city's west wall and parallel to the 'Egyptian Street'. Nevertheless, in order to confirm the hypothesis, a decision was made to expand excavations between 1.5 and 3.5 me-

tres north, establishing the irregular excavation unit IM2 shortly before the 2008 season came to an end. Several of the features described above were in fact revealed in IM2. The confirmation of our street hypothesis nevertheless came in the form of a second wall running exactly parallel to IM1's Wall 8 and demarcating the other side of the street. This wall had the same fine coursing towards the thoroughfare, and the short excavated section of this street appears to have the same width as the west end of the Egyptian Street.

The structures of Phase 1 were built using a technique consisting of a socle of uncut stone – mostly local limestone and highly salinized granite – superimposed with a mud-brick superstructure of which little more than traces usually remain. The uncut stones were set in a mud-slurry that deteriorates rapidly after exposure and which would only have functioned in combination with a mud-brick superstructure and the plastering of the wall bases above ground.¹⁷ In a few places cut blocks do appear, but these are *spolia* originating from earlier phases of construction at Aylah or from the nearby abandoned townships of Nabatean, Roman and Byzantine Aila. The finds associated with Phase 1 were similar to those identified by Whitcomb as belonging to the Fatimid period.¹⁸

Phase 2 –Tulunid to Late Abbasid (late 9th to mid-10th century)

Only a few structures were associated with this phase; indeed, it may be considered an intermediary between Phases 1 and 3, or perhaps even a later augmentation of Phase 3.¹⁹ The only structures are an earlier phase of walling (#12) that maintains the axis of Walls 8 and 11, but extends further south-east. It is physically separated from them by a sand fill roughly 50 cm thick, a fragmented crushed limestone floor surface (L46) and an area of plastered paving (Wall 12)

17. This technique has been identified as a common construction technique in the Hijaz and southern Negev. Nevertheless, it cannot be associated with a specifically 'Islamic' building tradition, as preserved walls using the same technique have been identified at Roman and Nabatean Aila (see Parker, S. T. [2002]. The Roman 'Aqaba Project: The 2000 Campaign. *Annual of the Department of Antiquities of Jordan* 46: 409-429; [2003]. The Roman 'Aqaba Project: The 2002 Campaign. *Annual of the Department of Antiquities of Jordan* 47: 321-333). The technique makes efficient

use of local building material and appears to have been used regionally until the early 20th century (for travellers' accounts see *Modelling Mercantilism*, Appendix 1, Table 2.3).

18. See Whitcomb, D. (1988). A Fatimid Residence at Aqaba, Jordan. *Annual of the Department of Antiquities in Jordan* 32: 207-224.

19. It corresponds roughly to Whitcomb's Phase C, which was intermittent and difficult to identify (pers. comm. November 2008).

associated with the circular installation reused as a secondary cesspit in Phase 1. This feature was only partially excavated because it extends into the north baulk of IM1 and its original function thus remains unclear. It is nonetheless located in the street and may have been a public source of water.

Phase 3 – Abbasid (mid-8th to late 9th century AD)

Phase 3 is a substantial period of construction. The surfaces and features associated with this phase were relatively easy to distinguish from Phase 4 because the beginning of this phase is defined by a ubiquitous levelling fill composed of the pink and coarse granite gravel native to Aqaba (**Fig. 5**). The levelling appears to be associated with a period of widespread reconstruction following a significant collapse – perhaps a result of the 749 AD earthquake.²⁰ Most of the structures are built directly on the levelled gravel surface and, unlike previous phases, seem more closely bound together as a single whole. The area is defined by a number of walls. To the south-east it is delineated by Wall 13, of which only the two lowest courses remain. The axis created by this wall is met with the negative profile of a deliberately removed wall (**Fig. 6**).

Although nothing of its foundation remains, the negative is clear and divided the open area of Phase 3 in two parts. That the negative was in fact the remnants of a wall now gone was confirmed by a patterned collapse of mud-brick (including a carbonised wooden beam) on its south side. This contained numerous air pockets under and between the individual bricks, implying that its destruction was sudden and unintentional. The negative runs across the open area and aligns with Wall 16, which belongs to Phase 3. Interestingly, this wall includes a small buttress protruding south-east from the corner and in line with the wall negative. The fact that the negative did not extend all the way to this buttress may signify a possible doorway.

North of the wall negative, a stone-lined well was identified (Feature 14). Although clearly reused in later periods – a substantial pit had been cut into the surface of Phase 2 in order to reach it – this installation was dug into the fill level that was covered by the pink gravel. It could thus potentially be an earlier installation, but this remains unconfirmed. Excavation took place inside the well until the current water table was reached, after which it was abandoned for safety reasons. At this stage the bottom of the well had not been reached and it yielded no



5. View of a section in IM1. The loose pink granite gravel that had been used as a levelling fill is visible in the lower part of the section (© AAP).

20. There has been some debate as to the dating of this seismic event, although our evidence has little to contribute to this. We apply the dating established by Nicolas Ambraseys (2009). *Earthquakes in the Medi-*

terranean and Middle East. A Multidisciplinary Study of Seismicity up to 1900. Cambridge University Press & Academy of Athens, Cambridge & New York.



6. Negative profile of removed wall with associated mud-brick collapse that presumably deriving from the wall's superstructure (© AAP).

artefactual material to indicate its date of use or construction. When excavation was halted, we had reached a depth of 2.70 metres below its top course.

Immediately above the levelling fill defining Phase 3, a thick deposit rich in artefacts was identified (L70). Locus 70 is worth singling out because of its location in our stratigraphic sequence, but also because of the contents of its ceramic assemblage. It is in this fill that the character of our ceramic corpus shifts into what might confidently be termed Abbasid, with a high proportion of local and imported cream wares. We find the local Mahesh ware in many forms at Aylah, from large bowls and basins to jars and jugs.²¹ The imported cream ware – also known as *Islamic Cream Ware* or ICW – usually consists of smaller forms and thinly thrown vessels. Alan Walmsley has dated the appearance of ICW to the mid-8th century and considers it the “distinct beginning of the Abbasid tradition”.²² Something similar can today be said of Mahesh

ware, though a recent petrographic study has demonstrated that the Mahesh tradition resulted from a more gradual development of local ceramic production techniques²³ and may have been a local emulation of the immensely popular cream wares produced in Iraq and eastern Syria. An Abbasid date for this stratum is confirmed by a fragment of a typical cream ware lamp with moulded vegetal decoration.

Phase 4 – Umayyad - Early Abbasid (8th century AD)

This early phase in the occupational history of Aylah is only represented by a few features. However, this is mainly due to the fact that only very little of the excavation area was penetrated to sufficient depth. It has been termed Umayyad both because it is the phase that predates the late 8th century collapse of Phase 3 and because the ceramic material associated with it increasingly takes on characteristic Umayyad traits. We know of extensive local production of ceramics from the late 7th to mid-8th centuries at Aylah from Whitcomb's 1993 kiln excavations.²⁴ Loci from these phases yielded ceramics with typical late Byzantine and Umayyad forms and fabrics, especially variations of the well-known cream surface, often ribbed and sometimes with wavy-line decorations.²⁵

The structures dating to this period consist of a single phase of walling (#17) that follows the axis of Wall 5 and the wall negative in Phase 3. It was, however, constructed using much larger blocks than we see in the later periods, but the stones continue to be either uncut or *spolia*. Wall 17 rests upon an even earlier phase, although it is separated from it by a fill of approximately 40 cm.

21. Whitcomb, D. (1989). Mahesh Ware: Evidence of Early Abbasid Occupation from Southern Jordan. *Annual of the Department of Antiquities of Jordan* 33: 269-285.

22. Walmsley, A. (2001). Turning East. The Appearance of Islamic Cream Ware in Jordan: The “End of Antiquity”? In *La Céramique Byzantine et Proto-Islamique en Syrie-Jordanie (IVe-VIIIe Siècles Apr. J.-C.)*. *Actes du Colloque Tenu à Amman les 3, 4 et 5 Décembre 1994*, edited by E. Villeneuve and P. M. Watson, pp. 305-313. Bibliothèque Archéologique et Historique. Institut Français d'Archéologie du Proche-Orient, Beirut.

23. Raith, M., P. Yule and K. Damgaard (2013). The View from Zafar: An Archaeometric Study of the Aqaba

Pottery Complex and its Distribution in the 1st Millennium AD. *Zeitschrift für Orient-Archäologie* 6.

24. Melkawi, A., K. 'Amr and D.S. Whitcomb (1994). The Excavation of Two Seventh Century Pottery Kilns at Aqaba. *Annual of the Department of Antiquities in Jordan* 38: 447-468; Whitcomb, D. (2001) Ceramic Production at Aqaba in the Early Islamic Period. In *La Céramique Byzantine et Proto-Islamique en Syrie-Jordanie (IVe-VIIIe Siècles Apr. J.-C.)*. *Actes du Colloque Tenu à Amman les 3, 4 et 5 Décembre 1994*, edited by E. Villeneuve and P. M. Watson, pp. 296-303. Institut Français d'Archéologie du Proche-Orient, Beirut.

25. For an update and elaboration on the Aqaba pottery complex see ‘The View from Zafar’.

Phase 5 – Early Umayyad (mid-7th to early 8th century)

The earliest architectural phase identified in the 2008 excavations consisted of a single north-west to south-east running wall (#19). The wall runs directly under Wall 17 but is built of large dressed limestone ashlar of a distinctly higher architectural quality than later structures. The stratigraphic interfaces associated with Phase 5 were difficult to identify because of penetrating ground water.²⁶ In spite of this problem, at least one distinct surface was identified (L101). This deposit contained an extremely high density of ceramic and faunal remains. A preliminary interpretation was therefore that we had reached a 7th or 8th century dump. The deposit also contained a high density of ash and charcoal, of which several samples were collected. An uncontaminated charcoal sample taken from locus 101 yielded a calibrated (sigma 2) radiocarbon dating of between 382 and 576 AD. This cannot be seen as solid evidence for dating the deposit; however, similar samples taken in later seasons (which are discussed below) strongly corroborate the realistic span of this date.

The ceramic finds retrieved from locus 101 are typical of the transition from the late Byzantine to the Early Islamic period and can be attributed to either era (**Table 1, Figs. 7-10**). However, along with a large corpus that could be called late Byzantine in style, locus 101 also contained ceramics clearly datable to the pre-Islamic period. These include four sherds of burnished red ware (possibly sigillata 4), one of which had an incised wild boar, one of the emblems of the *Le-*

gio X Fretensis stationed in Aila from the late 3rd to late 4th century AD (**Fig. 11**). In spite of these indications, the strong representation of 7th century wares prompted an initial reading of locus 101 as Rashidun - Umayyad with earlier inclusions. Continued excavations in the deep probe in the following seasons have since confirmed this supposition and are discussed further below.

EM

Outside the city wall, a 5 by 2 metre trench was laid out (**Fig. 12**). The occupational phases identified in Area IM were not as clear here, although at least two phases of construction and several use surfaces were identified. Most distinct was an architectural phase and associated walking surface consisting of a single wall (#3) built perpendicularly against the city wall and extending in a north-westerly direction beyond the limit of the excavation unit. We attribute this wall to Phase 3 and possibly Phase 4 on the basis of both building technique and its contextual artefact yield. The wall was constructed using a technique similar to that observed in Phase 3. Although highly disintegrated, profiles of mudbricks were clearly identifiable in the deposits on top of the low stone coursing (**Fig. 13**). The ceramic corpus associated with this feature is typical of the Abbasid period, including Mahesh wares, early splash wares and an Abbasid cream ware lamp. Whitcomb's excavations of the Egypt Gate in 1987 and 1989 clearly demonstrated that it became increasingly cordoned off throughout the 9th and 10th centuries, until it was finally reduced to little more than a drain.²⁷

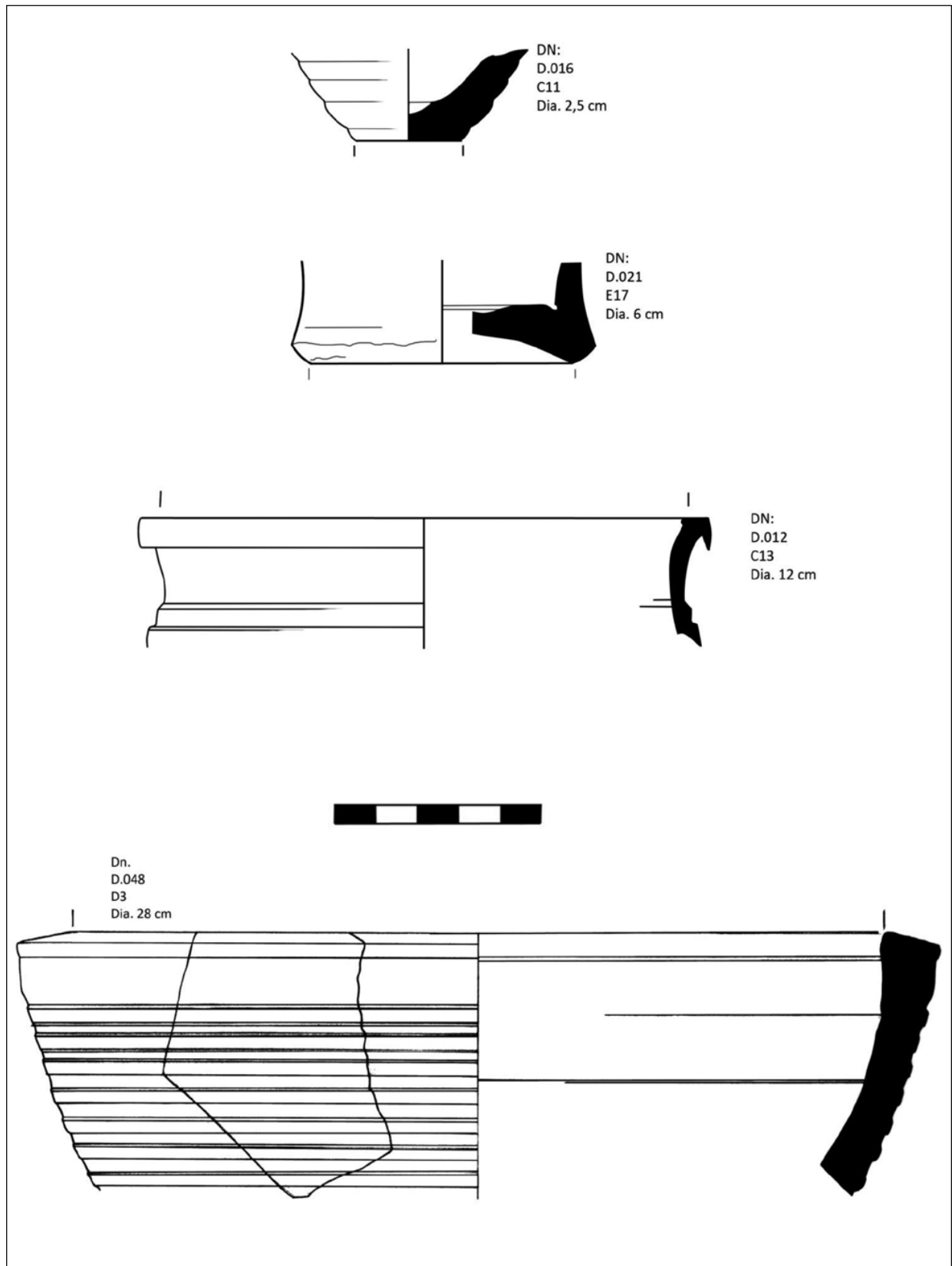
26. The early strata excavated by both Whitcomb and the authors suggest that either the 7th century water table was decidedly lower than today, or that the weight of subsequent strata have 'pushed' these phases into the water table. Observations made by 19th and early 20th century travellers reveal that the shallow water-table was a phenomenon that predates the turn of the century. Alois Musil relays how during ebb, fresh water gushes from natural springs all along the beach (Musil, A. [1926]. *The Northern Heḡāz. A Topographical Itinerary*. New York: American Geographical Society of New York & Czech Academy of Sciences and Arts, p. 88), whereas Nelson Glueck remarks on the many gardens built right along the shoreline (Glueck, N. [1939]. *Explorations in Eastern Palestine III*. New Haven: American Schools of Oriental Research, pp. 1-4). The ability of the Aqaba plain to sustain limited agricultural initiatives is generally commented upon by most 19th century travellers (see *Modelling Mercantilism*, Appendix 1, Table 2.3 for an overview and references) and

has also been confirmed archaeologically (De Meulemeester, J. and D. Pringle [2005]. The 'Aqaba Castle Project 2004-5. *Newsletter of the Council of British Research in the Levant*: 42; De Meulemeester, J. and R. al-Shqour [2006]. The 'Aqaba Castle Project 2006. *Bulletin of the Council for British Research in the Levant* 1: 27-28). Geological analyses have ascertained the presence of a large and shallow aquifer running under the Wadi Arabah, which shifts east at the mouth of the wadi and disperses under the coastal shelf of Aqaba (Cimiotti, U.K. [1980]. On the Geomorphology of the Gulf of Elat - Aqaba and its Borderlands. In *Beiträge zur Geomorphologie und Länderkunde*, edited by B. Hofmeister and A. Steinecke, pp. 155-175. Berliner Geographische Studien 7, Berlin).

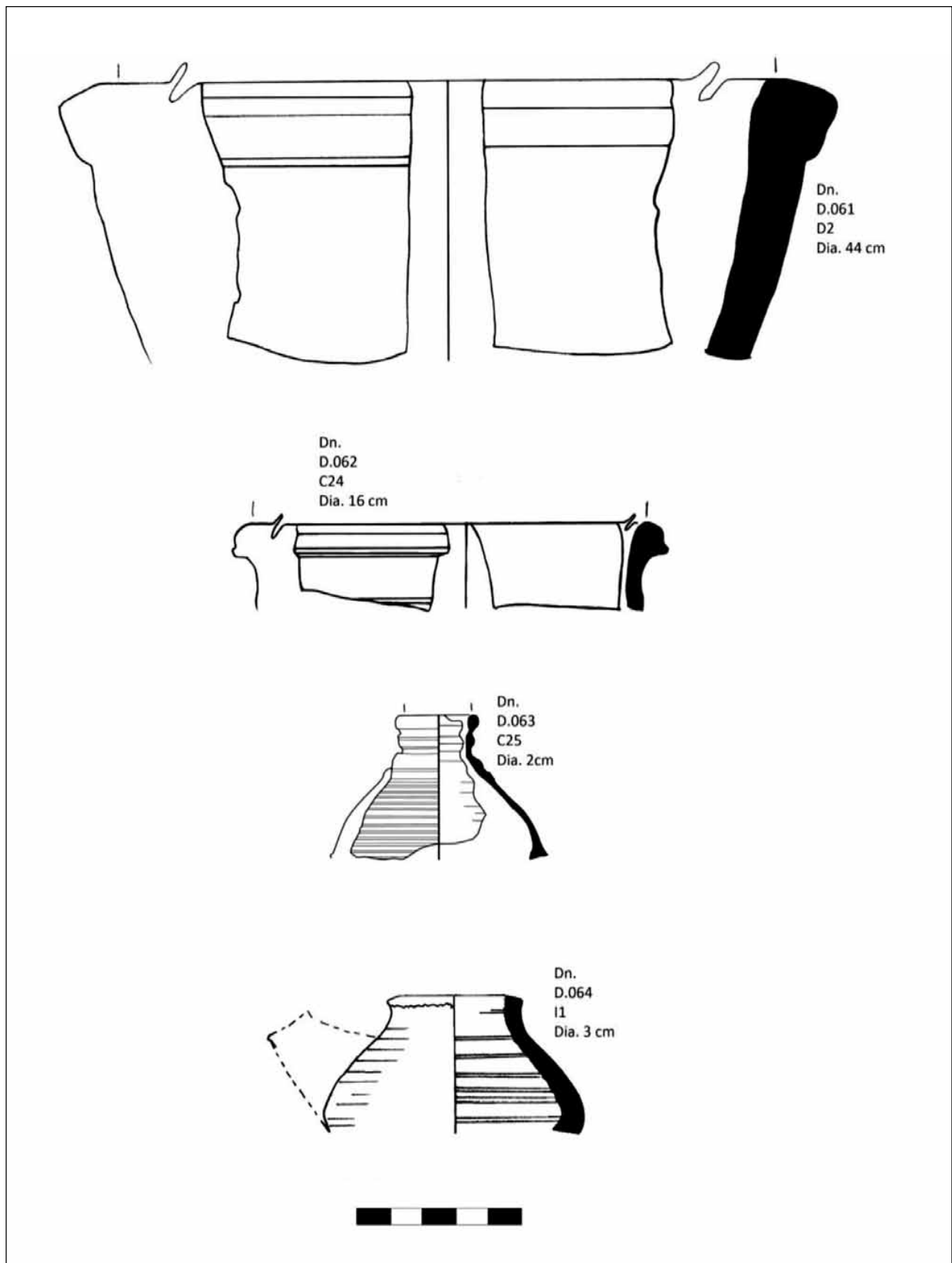
27. Whitcomb, D. (1990). Aqaba. *Oriental Institute Annual Reports* 1989-1990: 41-49; (1995). A Street and the Beach at Ayla: The Fall Season of Excavations at 'Aqaba, 1992. *Annual of the Department of Antiquities of Jordan* 39: 499-507 (especially 499-502).

Table 1: Representative typology of ceramic forms retrieved from the deep probe and tentatively dated as belonging to the 7th century or Byzantine-Umayyad transition (© AAP/Alex Wood).

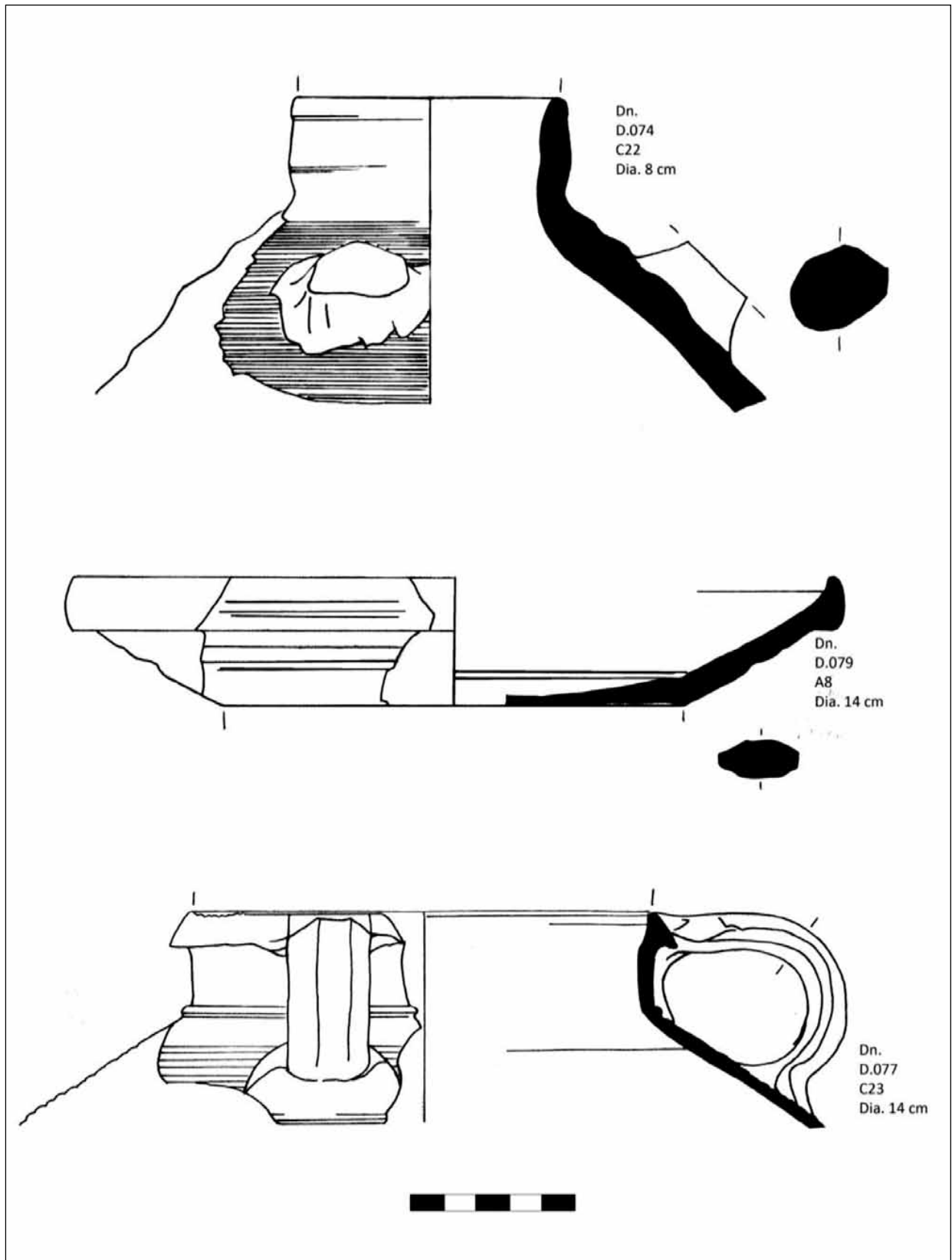
Type	Provenance (unit/locus)	Description	Phase	Drawing No.	Figure No.
C11	IM1/103	Red ware bowl or jar; flat base; ribbed body; medium sand and grit inclusions.	5	D.026	Figure No. 7
E17	IM1/103	Medium cream-surface ware jar; concave base; outward carination; medium sand and mica inclusions.	5	D.021	
C13	IM1/103	Medium red ware jar; out-turned rim; folded lip; sand and mica inclusions.	5	D.012	
D3	IM1/104	Coarse cream-surface ware bowl/basin; wheel-thrown; straight rim; flat lip with slight outward slant; angularly ribbed body; medium sand and crushed lime inclusions.	5	D.048	
D2 (B5)	IM1/106	Coarse red ware basin with cream slip on exterior; orange-reddish fabric; out-turned and folded rim; flat lip; sand, grit and mica inclusions.	5	D.061	Figure No. 8
C24	IM1/106	Medium red ware bowl/basin; wheel-thrown; out-turned rim; rounded lip; incised lines on body; light sand and mica inclusions.	5	D.062	
C25	IM1/106	Fine red ware juglet, wheel-thrown, out-turned rim and rounded lip; ribbed neck and body; fine sand inclusions.	5	D.063	
I1	IM1/106	Medium to fine green-grey ware lamp; folded notched rim; bulbous ribbed body; light sand and possible lime inclusions.	5	D.064	
C22	IM1/106	Medium red ware storage jar; wheel-thrown; straight rim and rounded lip; finely ribbed body; attached vertical handles; medium mica and grit inclusions.	5	D.074	Figure No. 9
A8	IM1/106	Very fine red ware plate of Late Roman type; wheel-thrown; folded and slightly rounded rim; slightly convex base; fine sand inclusions.	5	D.079	
C23	IM1/106	Fine red ware storage jar or cooking pot (traces of soot on exterior); outward folded rim, attached vertical handles (probably 3 in total); medium sand, grit and mica inclusions.	5	D.077	
C47	IM1/108	Red ware jar; flat base; smooth body of varying thickness; rounded base with slight groove; medium sand and mica inclusions.	5	D.168	Figure No. 10
E37	IM1/108	Medium cream-surface ware juglet (orange core); out-turned rim and slightly inward slant on lip; light sand inclusions.	5	D.075	
E38	IM1/108	Medium cream-surface ware bowl; wheel-thrown; slightly out-turned rim with thick rounded groove; outward slanted lip; sand and mica inclusions.	5	D.070	
E21	IM1/108	Medium cream-surface ware bowl or jug; wheel-thrown; flat base; medium sand and mica inclusions.	5	D.073	
E36	IM1/105	Medium cream-surface ware basin or cooking pot; wheel-thrown; out-turned rim with overhang; slanting lip; sand inclusions.	5	D.067	
E32	IM1/108	Medium cream-surface ware basin or large bowl; wheel-thrown; folded rim; outward slant on lip; flat base; sand and mica inclusions.	5	D.080	
E22	IM1/108	Medium cream-surface ware amphora (Aylah type); wheel-thrown; straight rim and flat lip; interior groove for lid; double vertical handles attached to rim; light mica and sand inclusions.	5	D.078	



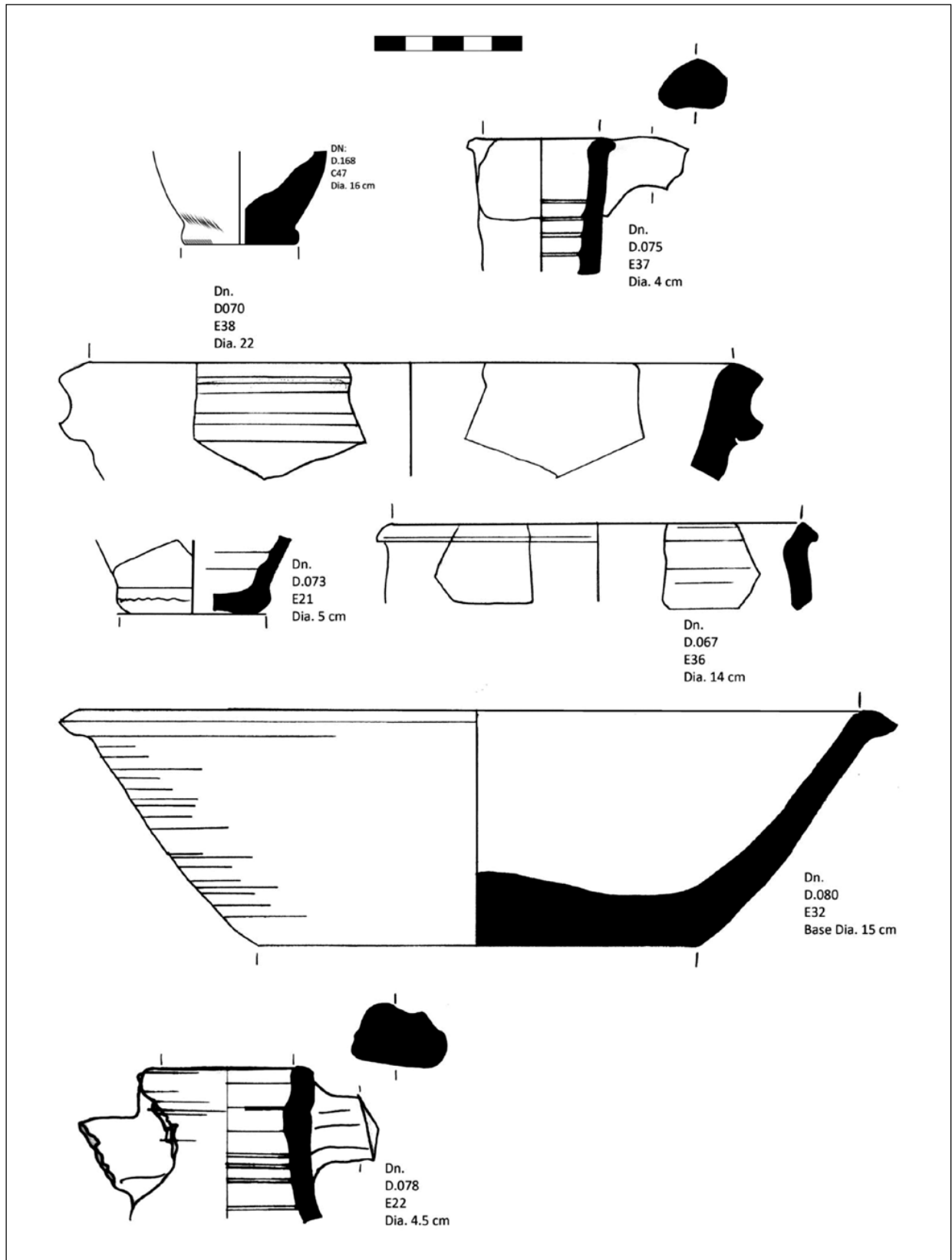
7. Type: C11, E17, C13, D3.



8. Type: D2 (B5), C24, C25, I1.



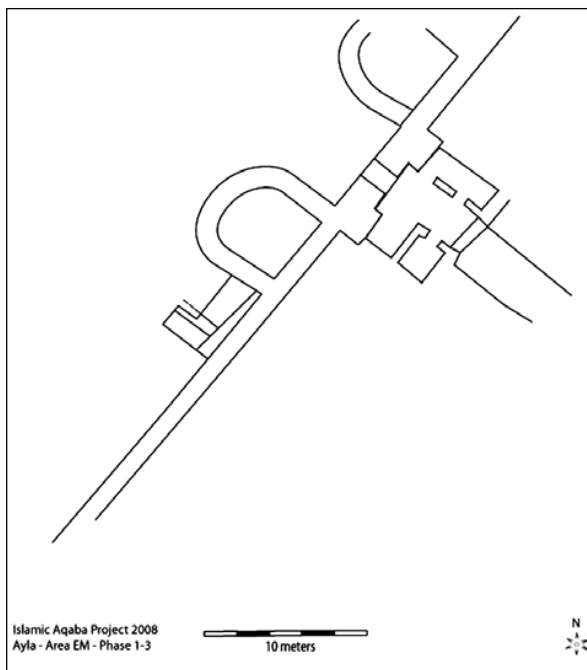
9. Type: C22, A8, C23.



10. Type: C47, E37, E38, E21, E36, E32, E22.



11. Burnished red-ware sherd (possibly sigillata 4) with incised wild boar (© AAP/Henrik Brahe).



12. Plan of EM trench outside Egypt Gate (© AAP).

Whether or not the construction of Wall 3 is related to the cordoning process remains unclear, but its presence is a significant indicator of the existence of *extra muros* structures along Aylah's north-west flank.

The EM trench also provides a window onto the final phase of occupation at Aylah, a traumatic period that saw both a major earthquake in 1068 AD and a serious and ongoing conflict with the Banu Jarrah. Within Area EM, we found both collapsed and standing remains of the city wall, which may constitute the result



13. Vertical view of stone wall with mud brick superstructure identified against the exterior of Aylah's circuit wall (© AAP).

of either. The standing remains were of particular interest because they demonstrated that the city wall itself has been significantly offset from its original axis, most likely due to the violent seismic activity of the 1068 AD earthquake. A destruction layer (locus 4) underneath some collapsed stone blocks abutted the standing, off-axis remains of the city wall and was spread across the entire trench area. This contained a large corpus of glazed ceramics attributable to a late Abbasid cultural horizon, including bright yellow Fayyumi wares, a variety of splash wares, turquoise glazed wares from Raqqa or Zabid, alkaline glazed wares with barbotine decoration and a rim sherd from a lustre ware bowl. Locus 4 was situated above a large fill (loci 5 & 6) that we confidently label as Fatimid, as its loci produced artefacts typologically consistent with our Phase 1, including many sherds of the characteristic hand-made wares.

EM yielded interesting results pertaining to earlier periods as well. In the deepest level of the trench, at the southern end, an earlier phase of walling was identified in section. This appears to run directly below Wall 3, but is separated by a fill approximately 50 cm thick. The material yield from the fill and surfaces associated with this earlier wall phase is predominantly early Abbasid, including some forms known from the kiln site. The wall has therefore been allocated to occupation Phase 4. Finally, at the end of the 2008 season, we exposed a segment of the city wall to below its foundation revealing tantalising but ambiguous evidence that this monumental structure has distinct construction phases and

that the original wall was subjected to significant damage and rebuilding long before the site was abandoned.²⁸

Expanding Our Understanding: The 2010 and 2011 Seasons of the AAP

The work conducted in 2008 was intended as preliminary and diagnostic, and it was no surprise that little could be concluded regarding the exact nature of the area excavated, or indeed of the individual structures identified. What was evident, however, was that the south-western quadrant was occupied and maintained for the entire lifespan of the city. Furthermore, we could identify changing conceptions of urban space over time, yet it was also clear that significant continuities in the occupational history of the city endured. In addition to a partial maintenance of the orthogonal layout, completely new structures were built directly in line with earlier phases both inside and outside the walls – usually separated by an earth fill. The finds, and the deposits from which they were retrieved, also gave no clear indication of whether we were dealing with public or private space. Ultimately, the data that was retrieved in the initial season allowed a glimpse into the occupational history and stratigraphic phasing of the south-west quadrant, but little as to the quadrant's social or economic life. This has since been remedied by the continuation of archaeological work at Aqaba through the *Aylah Archaeological Project*.

Continuing the work begun by the IAP, the AAP has hitherto limited excavations to the south-west quadrant of the site in order to focus our investigations. Two pivotal issues regarding the town's history have defined our efforts so far:

1. Ascertaining the extent and location of mercantile facilities related to the Red Sea / Indian Ocean trade (e.g. warehouses, processing compounds, markets and administration).
2. Explaining the nature and background of the urban morphology between the 9th to 11th centuries.

Excavations have recovered artefacts that demonstrate commercial ties with regions as far away as Yemen, Iraq and China. Yet there is little evidence for the facilities that would have accommodated such a trade. The possibility of a causal relationship between the activities in the south-west quadrant and the Abbasid construction of a *suq* against the Sea Wall was mentioned above. Whether the *extra muros* structures in fact are the remains a *suq* is hard to establish, as they have been buried by the closed beach facilities of the Mövenpick Hotel. Nevertheless, it is possible that these structures accommodated the maritime trade going through Aylah. In this scenario, these well-built structures could for example have constituted part of the town's mercantile administration that registered and taxed goods. Such offices are known from historical descriptions of Fatimid ports of similar size and capacity to Aylah,²⁹ and imply that this was a standardised means of enforcing economic control in the period. The AAP was thus in part launched to investigate whether a similar system was in place at Aylah and, if so, whether the facilities related to the town's mercantile life were located in the south-west quadrant.

The 2010 season saw the excavation of two new trenches, IM3 and IM4, each conceived with a strategic purpose. IM3 was targeted to explore the nature and function of the south-west quadrant of Aylah, especially its morphological relationship with the *extra muros* facilities by revealing structures parallel to the southern city wall. The unit lies directly opposite a secondary entrance way into the city, which in the Abbasid period linked the exterior *suq* with the interior township. For its part, IM4 was laid out to ascertain to what degree the street layout adhered to a regular grid pattern and to verify whether the street exposed in 2008 intersected with a north-south street linking up with the Egypt Street. In 2011, a fifth excavation unit (IM5) was opened south of IM4 and west of IM3 in order to create

28. For a recent overview of the extensive architectural modifications taking place in architecture during the Umayyad period see Arce, I. *The Archaeology of Umayyad Construction. An approach to production processes at Qusayr 'Amra, Hallabat, Qastal & Amman Citadel*. In *Beyond Borders: Recent Advances in Islamic Archaeology. Proceedings from a seminar*

held in Jerusalem, 7th-8th February 2013, edited by K. Damgaard, K. Cytryn-Silverman and D. Whitcomb. Oriental Institute, Chicago (forthcoming).

29. Lev, Y. (1999). *Tinnīs: An Industrial Medieval Town*. In *L'Egypte Fatimide: Son Art et Son Histoire*, ed. M. Barrucand, 83-96. Paris: Presses de l'Université de Paris-Sorbonne.

a larger coherent area of excavation. Work was also continued in IM1 and IM2.

IM1

Since 2008, IM1 has only been subject to focussed excavation in key areas. The primary objective was to document the deposits associated with Aylah's initial construction and occupation systematically, hence the deep probe excavated in 2008 was continued. Based on the experiences of prior archaeological projects at Aylah,³⁰ we expected these deposits to be highly water-logged and difficult to access. The inaccessibility of the Umayyad town is in all likelihood due to a combination of a shallow aquifer, tectonic activity and the subsequent occupation pushing the early phases deeper into the sand. The proximity of the water table to the level reached in 2008 was obvious, and even though the moisture stems from ground water, the high salinity has caused stones to disintegrate (limestone and sandstone) or crumble (granite). These decaying rocks were easy to confuse with patches of coloured sand or gravel deposits. As a result, the deep probe was excavated in arbitrary spits of between 20 and 50 cm.

As noted above, the artefacts retrieved from the deep probe under the IAP were suggestive that we had penetrated a 7th century dump. As part of the continuing excavations here, an additional charcoal sample was taken from what we perceived to be the bottom of the dump (locus 108). This yielded a date (calibrated sigma 2) of 1563 ± 32 BP, corresponding to a chronological range of between 420 - 570 AD (at 95.4% probability). In spite of another pre-Islamic date, we interpret this mixed deposit as the initial filling of the walled enclosure in order to create a level surface on which to construct the new township. While the limited nature of the probe precludes certainty, the proposed date for the fill was corroborated by an abundance of 7th century ceramics (Figs. 7-10), but with no recognisable 8th century wares such as Mahesh wares or

ICW. The deep probe was rich in finds. A large quantity of faunal remains, metal fragments and ceramics were retrieved, including three intact oil lamps and a small basin or large bowl of the locally produced cream-surface ware (Fig. 14).

Moreover, multiple pieces of worked ivory were discovered. This corpus is most interesting as it contained remnants of a variety of artefacts. Most obvious were the pieces of polished ivory, which included aligning fragments of a circular box or pyxis, as well as the remnants of jewellery such as fragments of bracelets and a ring. More tantalising was the recovery of seven fragments that appear to have been deliberately discarded. Their dimensions and form prevented them from being used functionally; most likely these are waste from an ivory workshop located in Aila / Aylah in the 7th century (Fig. 15)³¹ If this is the case, we have evidence for a class of craftsmanship that was directly related to the town's nodal position in the Red Sea trade networks. Furthermore, it implies that ivory was a material with which the inhabitants of Aylah were familiar.

Below locus 108 there was a distinct change in soil composition from highly organic to sandy. At the same time, the density of artefacts



14. Reconstructed cream-surface ware bowl discovered in the deep probe. This ware is locally produced and reflects a long tradition of pottery manufacture that spans the 4th to 9th, and possibly into the 10th centuries (© AAP).

30. Parker, S. T. (2002). The Roman 'Aqaba Project: The 2000 Campaign. *Annual of the Department of Antiquities of Jordan* 46: 409-29 (especially p. 421); Whitcomb, D. 1989. Evidence of the Umayyad Period from the Aqaba Excavations. In *The Fourth International Conference on the History of Bilâd al-Shâm during the Umayyad Period*, eds M.A. Bakhit & R. Schick, 164-84. Amman.

31. In early 2013, small samples were taken from all of the ivory fragments retrieved from IM. These are currently being analysed by Dr Ashley Coutu (University of York) in order to establish a DNA profile that will confirm the artefacts as ivory and identify the species they came from. Isotope analyses will hopefully contribute to identifying the exact region in which the source animals lived.

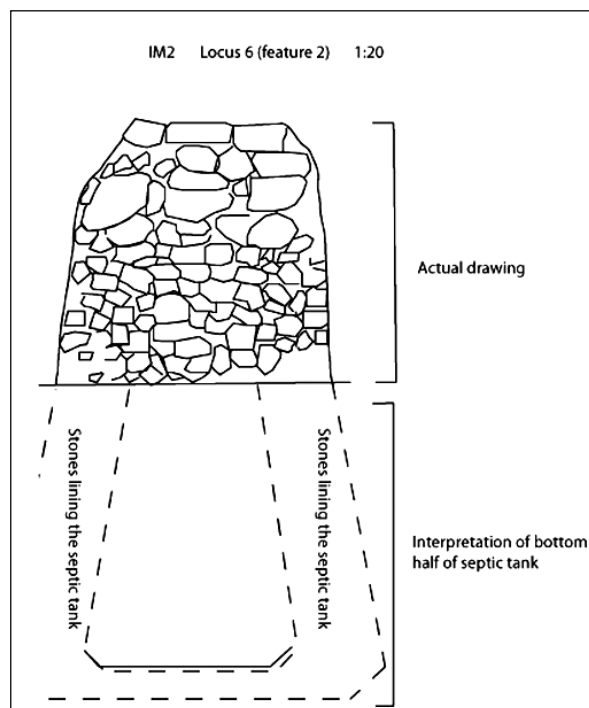


15. Discarded ivory fragments discovered in the deep probe of IM1 (© AAP).

dropped significantly, with no bones or metal at all and only very few ceramics. In the next locus (109) we found the remains of a Late Roman / Byzantine lamp and noticed a general shift in the ceramic corpus to being more Late Roman in character. A new phase was therefore tentatively defined below the 7th century dump, formed by the interface of loci 108 and 109. The subsequent locus (112) continued to contain archaeological material but could not be penetrated further owing to the penetrating ground water and the risk of collapsing baulks. Samples intended for C₁₄ dating were nevertheless retrieved from this point and yielded calibrated dates of 2165 ± 27 BP (mollusc) and 1852 ± 25 BP (charcoal), corresponding to 190 - 580 AD and 85 - 235 AD respectively (with 95.4% probability). When excavation was halted here at the end of the 2010 season, the probe had reached more than 8 metres below the original surface and was partially backfilled for safety reasons.

IM2

IM2 was opened in 2008 as a small trench intended to confirm the presence of a street. The excavated area was delineated by a sturdy wall of a building on the northern flank of the identified street (**Fig. 4**). In 2010, the excavation unit was significantly expanded with the objective of exposing and documenting the Fatimid drainage system that was initially identified in IM1 and which extended into the street in IM2. This consisted of a double canal leading liquid from the large structure in IM1 to a tear-shaped, stone-lined cesspit dug into the laminated strata of the street (**Fig. 16**). The canal was covered with



16. Section drawing of the drainage pit dug into the street surface of IM2 (© AAP).

flat stones and contained a fine sandy soil of the same yellow discolouration seen in the overflow of the second unexcavated cesspit in IM1. No artefacts were found in this fill.

Excavation of the canals and pits allowed us to determine that the longer canal leading to the lower unexcavated cesspit was the earlier of the two. This initial pit (or possibly a re-used well) was eventually filled to the brim, but this did not stop the drainage process as is evidenced by the same yellow deposits superimposing it and constituting a significant overflow. The overflow problem was eventually solved by constructing a short second channel leading to a new stone-lined pit immediately outside the drain exit. Whether this replaced the older drainage system or simply enhanced it is not yet clear, but if this is the case - and the lower pit is much earlier than the tank in IM2 - it implies that Aylah's inhabitants had a solid understanding of the town's morphology and knew how to re-use older installations. This impression is corroborated by the positioning of new walls along the same axes as predecessors, though not necessarily in direct contact with them (often separated by a 30 - 50 cm fill). The western half of the drain was lined with small flat stones along the bot-

tom, presumably to facilitate flow. Why a similar lining was not present in the eastern canal is unclear, but it may have been related to the fact that this canal is both shorter and steeper.

In order to investigate the purpose of these drainage pits, the upper one was excavated and partially dismantled, so as to show a full profile of both installation and content. The exposure allowed the contents to be accessed archaeologically. The first metre was completely sterile. Our supposition is that the feature had not been filled prior to the abandonment of its use and that the sterile upper stratum is the result of seeping loose sand. The deposits stemming from the drain's original function were located underneath a thin layer of gravel separating the sterile from the actual contents.

In spite of clear compositional distinctions between these two phases, there was a paucity of artefacts in the deposits stemming from the pit's original usage as well. If an actual sewage system, one would normally expect a certain quantity of artefacts to have fallen to the bottom. Yet in spite of sieving 100 % of the pit's contents, only a small quantity of ceramic and bone was retrieved. The ceramic profile was quite mixed and contained red ware, cream-surface ware and cream ware fabrics, suggesting a rather broad chronology from the 8th to the 10th centuries. These were all covered with a greenish patina, which was a result of the chemical composition of their context. What exactly this context constitutes requires a detailed analysis of the soil samples collected inside the pit, but a charcoal sample yielded a calibrated date of between 990 and 1155 AD (990 ± 25 BP).

The feature was constructed by excavating a deep pit into the street and lining it with stones from within. A mud-slurry was used as bonding agent. This method of construction explains the amygdaloid form, which lends structural support to the narrow upper part of the pit. The structure consists of an exterior course of large- and medium-sized stones, and an interior course of medium-sized stones. Between these was a fill of smaller stones. The largest stones are used at the very top, presumably to lend extra support to the upper part of the feature, which would have been exposed to the pressure of day-to-day traffic. At the top, the installation was equipped with a manhole no more than 40 cm in diam-

eter. From here, a bottleneck opening opened up into a globular space inside. At its bottom, the feature was both 1.5 metres wide internally and partially open to allow gradual seepage into the ground below. A large basalt lid, consisting of a re-used basalt grinding stone, covered the manhole. Around this was a packing of small stones and pebbles set in mud to keep the lid in place. Both packing and lid were presumably hidden just below street's surface.

In 2011, IM2 was expanded further with the objective of revealing more of the east - west running street and its junction with an equally impressive street discovered in IM4 running parallel to the city wall. The area was taken down to the level of IM4, which corresponds to Fatimid / Jarrahid levels and the latest historical phase of occupation at Aylah (Phase 1). As expected, the strata consisted mainly of laminated fill layers. In the western end of IM2, the modern trash pit identified in IM4 last season was removed and the historical strata under it exposed. The fill consisted of a moist dark brown soil with a high density of burnt olive pits. The complete lack of modern contamination confirmed that historical layers had been reached and samples of the olive pits were taken for future laboratory analysis.

IM3

IM3 was laid out as a southwards elongation of IM1. The main objectives were to investigate what kind of structures bordered the interior Sea Wall and to address our hypothesis that the structures proposed to be an *extra muros suq* could have been facilities to register and tax goods moving in and out of town. An important substantiation of this would be the presence of related infrastructure (e.g. storerooms) behind the city wall.

The excavation unit was opened in 2010 but little progress was made in regard to depth, as the excavation contained a large number of modern walls that had been integrated with the historical Phase 1 walls and were built using the same techniques and materials. This, combined with the sheer number of walls, obfuscated the architectural morphology and limited the area available for excavation. A primary goal of the 2011 season was therefore to document and remove those features that were securely identified as modern. This goal was largely accom-



17. View of Fatimid (Phase 1) period doorway and *in situ* water jug of handmade ware. Insert of vessel after excavation and reconstruction (© AAP).

plished and allowed several historical surfaces and undisturbed archaeological contexts to be exposed; all belonged to Phases 1 - 2 (10th - early 12th centuries).

Two pisé features were also uncovered in this square. The pisé-walls are suggested to function as (possibly temporary) supporting walls to the stone walls they abut (#2 & #16). The outer face of the pisé walls was coated with a thin layer of chalk or lime paste. The same substance was found in high densities in the fill layers, which suggests that these included the detritus of similar structures. In the south-east corner, a structure that had been built using dressed limestone blocks was identified. Excavation confirmed them to be pier-like doorjambs of an entrance to a building that continues eastwards beyond the limits of the excavation unit. Part of this building was at some stage removed to construct other walls and the exact purpose of the doorway is not clear. A hand-made globular storage jar of the type referred to by Whitcomb as ‘tupper-ware’ was found *in situ* standing on the ground west of the entrance way (Fig. 17).³² The position of the jar on the surface in front of the door may indicate that we are within a larger complex,



18. Stamped glass weight from Fatimid period surface associated with a mercantile artefact horizon (© AAP/Henrik Brahe).

but this remains speculation.

The two related surfaces (loc. 53 and 63) were identified on either side of the doorway. This area is the edge of our excavations and the closest we have come to the interior of the ‘Sea Wall’ and its associated structures. Our notion that this area was engaged in mercantile activities was significantly corroborated by the finds on this Fatimid-period surface. Amongst the retrieved artefacts were two intact but illegible glass weights of the stamped, thick-rimmed kind known from other Early Islamic commercial sites (Fig. 18).³³ A third glass weight was found embedded in a lump of highly corroded iron, in which several unidentifiable copper coins were also stuck. In close proximity, three small and thin-sheeted copper bowls were found (Fig. 19). These must originally have been part of a weighing device capable of fine measurements and when seen in light of the broad range of fine weights retrieved by the OI excavations (Fig. 20), it seems reasonable to assume that this was a device used for expensive commodities such as spices or gold dust.³⁴ The same surface also yielded several small hand grinders, a basalt pestle and a whetstone, next to which the

32 For a description of the ware see Whitcomb, D. 1988. A Fatimid Residence at Aqaba, Jordan. *Annual of the Department of Antiquities of Jordan* 32: 207-224.

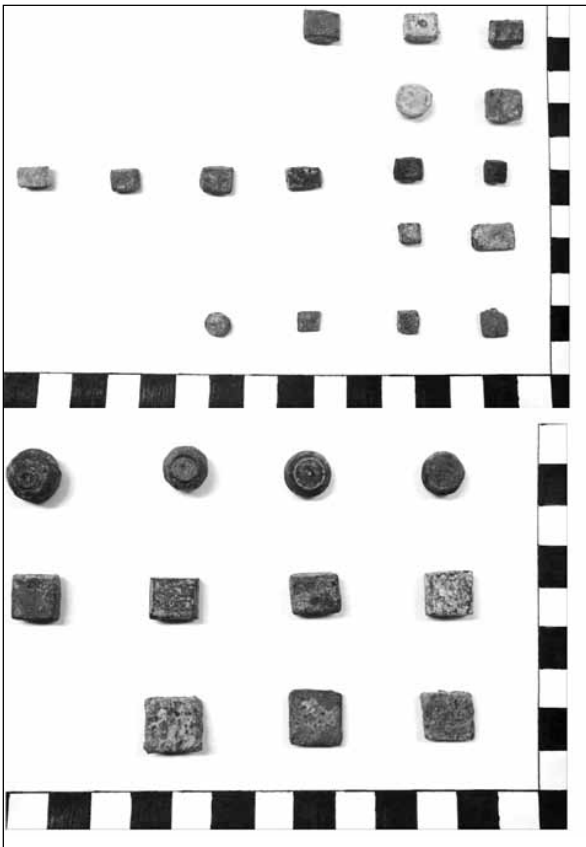
33. See for example Balog, P. (1976). *Umayyad, Abbasid and Tulunid Glass Weights and Stamps*. New York: The American Numismatic Society (see especially nos. 654, 661, 737, 754 and 756); Morton, A.H. (1985). *A Catalogue of Early Islamic Glass Stamps in*

the British Museum. London: British Museum Publications (especially nos. 368 and 535).

34. While spices may have travelled across great distances via the maritime trade networks, gold dust was extracted in the nearby Wadi Tawahin. See Avner, U. & D. Nahieli (1993). Wadi Tawahin (Eilat). *American Journal of Archaeology* 97: 160-62.

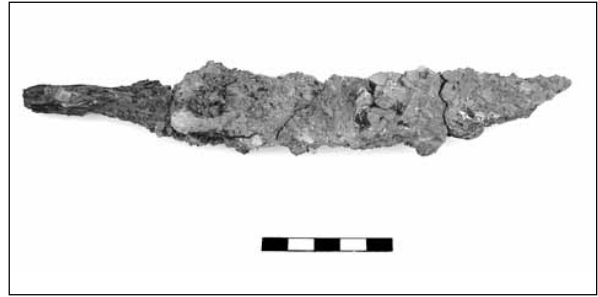


19. Thin copper weighing bowls found in close proximity to several glass weights, an iron knife and several coins (© AAP/Henrik Brahe).



20. Representative sample of weights retrieved by the Oriental Institute excavations and currently held in the archaeological laboratory of the Oriental Institute, Chicago (© OI/Whitcomb; Photo by Damgaard).

corroded remains of a curved iron knife in a beautifully braided iron sheath were found (Fig. 21). The common theme in this remarkable and distinct artefact horizon is that it points unequivocally in a mercantile direction.



21. A highly corroded curved iron knife in its sheath (© AAP/Henrik Brahe).

In 2010, it was not possible to unambiguously connect the structures in IM3 with those in IM1 for safety reasons. However, following the partial backfilling of the deep probe excavation continued. At the beginning of the 2011 season, a number of walls (#1, #3, #10, #11 and #15) were confirmed as modern and removed. This allowed three continuations of walls identified in IM1 to be identified in the northern part of IM3 (#19, #21 and #25). Even so, the complexity and density of walling in IM4 has prevented excavations to penetrate deeper than Phase 2 (10th century) deposits. In the western half of the excavation unit, two fills were excavated, revealing the upper course of a wall (#24) and a more makeshift feature that could be either the remnants of an animal pen or an irregular dilapidated wall. Further excavation of this area is planned for the coming season.

IM4

When this excavation unit was opened, only the north-east half was excavated. This allowed us to use the relatively short 2010 season to establish a diagnostic phasing while confirming the presence of an intersection in the town's street network. Four particular elements were identified: a central street, a large western building (formed by Walls 1 & 2), a cesspit and an eastern building with a threshold (Wall 4). In 2011, the excavated area was expanded in order to gain a greater appreciation of these features and to relate them to the features previously identified in both IM1 and IM3.

The streets

In 2010, an almost three metre-wide strip running north - south between two structures was exposed. This area was quickly identi-

fied as a street based on cumulative evidence. A narrow strip of the east - west running street first identified in IM1 and IM2 was also identified in the process. The latter reached what we currently hold to be an open intersection with IM2's street and was flanked on either side by Walls 2 and 4 (**Fig. 2**). Both walls suggest we are dealing with a street: Wall 2 is constructed of large stone blocks with a dressed outward face. Wall 4 does not present a similar facade to the street, but has suffered from significant damage. A large part of Wall 4 constitutes a threshold that provided access from street into the building with the large drainage installation in IM1. A sealed cesspit had been dug into the street in the same manner as in IM2, but was seemingly never taken into use. Its depth from aperture to current soil level is 290 cm. As with that in IM2, it gradually bulges outward to form a pear-shape. For safety reasons no one ventured inside, and it is unclear whether it contains an artefact horizon.³⁵

The stratigraphic sequence of its installation shows that the pit was dug into an existing street surface and subsequently covered with the cover stone, which in turn was camouflaged with a shallow fill to match the functioning street level. Beneath the stone slab, a subterranean channel extends from under the threshold in Wall 4 and into the pit. The channel was dug into the street and was obviously intended for the discard of liquid waste, being related to the drainage system of IM1. It should be pointed out that the sophisticated hydrological technology identified in this area is unlike anything documented in the rest of the town. Identifying the nature and function of this substantial building and its installations will be an important step in ascertaining what was going on here, but seemingly not elsewhere in town, and thus by implication determining if and how the south-west quadrant differed from the remaining townscape.

In 2011, the rest of the excavation unit was opened. In the southern end of the street, a larger stone-lined well was identified and excavated. The fact that this was a well and not another cesspit is suggested by its open and round shape, a significantly broader diameter and the richness of discarded artefacts found inside it. Several

samples of organic remains were taken from inside the well; in due course these will be dated using C14.

Surprising results in IM 5 force our understanding of the street network to remain tentative. As the street proceeds south, it appears to veer off to the west and in the direction of the south-west corner tower of the circuit wall. This nevertheless remains only an impression, as the possible westward turn is hidden by the baulk between IM 4 and IM 5, and IM5 only has been partly excavated. The fact that the street is narrower and preserved at a higher level in IM5 may indicate that our results here constitute a late remodelling that did not extend as far north as IM4. It is important to understand in what phase the change in orientation occurs, as this would allow us to explore the resilience of Aylah's orthogonal layout.

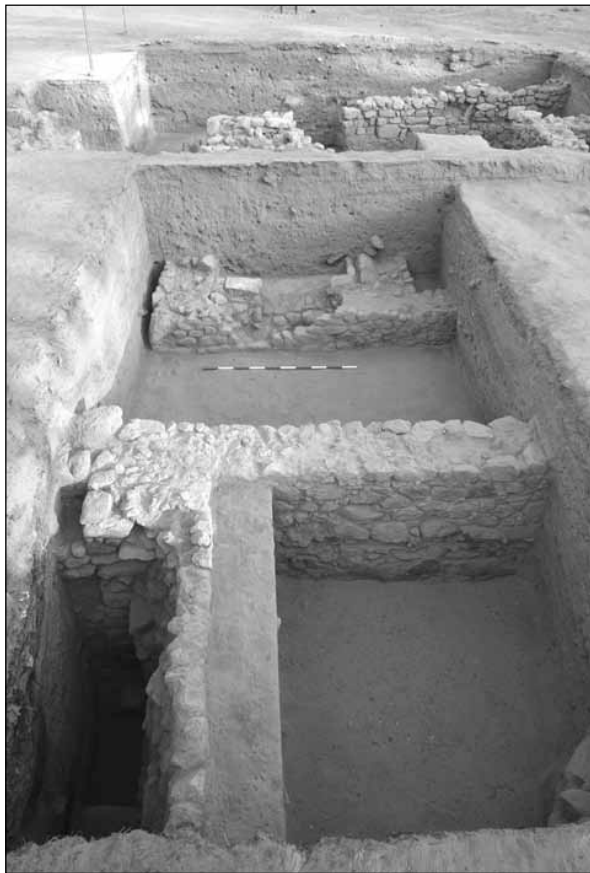
In spite of these difficulties, the discovery of a broad subsidiary street flanked by impressive stone architecture and running roughly in the direction of the Abbasid *extra muros* structures is potentially significant. The north - south running street in IM4 must have been an important thoroughfare leading to and from the beachfront, where presumably a substantial part of the goods passing through Aylah were loaded on and off local watercraft. The current hypothesis is that this street played a role in the transfer of goods into the south-west quadrant for processing and distribution, and thus constitutes an important part of the town's mercantile infrastructure.

The eastern building

The wall (#4) that delineates the east - west oriented street in IM1 continues, but rather than maintain the axis, it turns 90 degrees south-east to form a corner and the junction of two streets. As with most of the Phase 1 architecture, and with the exception of a dressed but highly disintegrated cornerstone, Wall 4 consisted of uneven coursing with medium-sized undressed granite stones. It flanks the north - south running street, but is interrupted by a doorway of which only threshold remains. It was partially cut into by a modern trash pit that contained both asphalt discard and beer bottles. Wall 4 is part of the structure identified in IM1. As it juxtaposes an-

35. A video of the interior, achieved by lowering a small camera into the pit, can found at www.miri.ku.dk/projekts/aap

other building across the street, it is here termed the 'eastern building' for ease of reference. The exposed architecture has several interesting elements, including a damaged threshold that opens directly onto the street. Two stone blocks, one of which is an ashlar, form this feature (**Fig. 22**). On the interior of the threshold and superimposed on Wall 4 we exposed a compact layer of grey ashy mortar that seems to be a sub-floor packing into which some type of paving was set. A chute runs along the southern edge of the



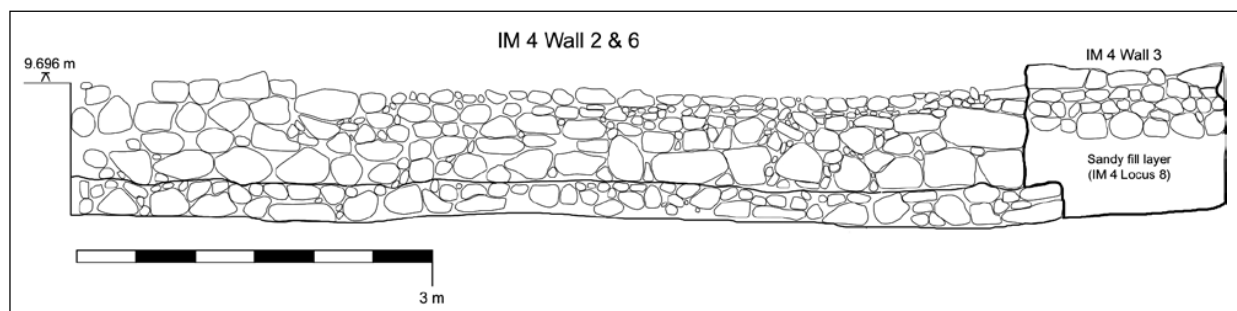
22. IM4's Wall 1 and 2 showing the partly destroyed threshold in Wall 1 (© AAP/Henrik Brahe).

threshold and drops beneath it to become the subterranean channel described above.

In 2011, we removed the east baulk of IM4 in order to gain a better understanding of this building. The removal of the baulk allowed us to begin visualizing the building as a coherent whole (**Fig. 2**) and will be an important step towards understanding and explaining this seemingly anomalous building. When seen in conjunction with the advanced hydrological installations, we currently imagine that the building was engaged into some type of intensive processing, but further excavation and analysis of the soil retrieved from the cesspit of IM2 will be necessary before anything can be concluded.

The western building

The first architectural features exposed in IM 4 were Walls 1 and 2, which align at a right angle and were bonded to form a strong corner of a substantial building unit. Wall 1 was almost completely destroyed by a deep modern pit in which trash had been burned. All that remains is a single row of cobbles, about 14 - 20 cm thick, corresponding to the wall's inner face. Wall 2 has two visible phases, the lower of which has so far only been partially excavated (**Fig. 23**). This runs along a north - south axis facing the street and is mostly comprised of large granite blocks with dressed outer faces at the bottom of the upper phase. With the exception of a large corner stone, the size of the stones diminishes in the upper courses until finishing at an even level suggestive of a missing mud-brick superstructure. The lower phase of the wall belongs to Phase 2 and is 5 - 7 cm wider than the upper phase. At the bottom of a deep trench excavated between Wall 1 and the northern baulk, two large, flat stones were exposed. These continue into the northern baulk, but there is insufficient



23. Profile drawing of the exterior of IM4's Wall 2 showing the phasing as it is currently visible (© AAP).

room to discern whether they are part of a collapse layer or represent an architectural feature.

The uppermost layer excavated inside the western building yielded an abundance of ceramics, including many finely glazed sherds of splash- and green wares, alkaline glazed wares and two sherds of non-figurative lustre ware. These are generally consistent with an Abbasid to Fatimid ceramic horizon. Another stamped (but illegible) glass weight of a late Abbasid or Tulunid style was found here as well. Overall, we speculate that this fill corresponds to Phase 1 but may have contained discarded materials from elsewhere on site and thus contain traces from previous phases. Unfortunately, this layer has been severely disturbed by a buried concrete installation, possibly the cellar of an early 20th century house.³⁶ This is situated in the south-west corner of the excavated area and remains a problem to be dealt with in coming seasons.

To the immediate north of the corner of Walls 1 and 2 is Wall 3, which is constructed atop a fill covering the lower phase of Wall 2 and butting its upper phase. This stratigraphic sequence, along with our general understanding of the urban evolution of Aylah, would place Wall 3's construction at a relatively late date (11th century). Wall 3 was initially thought to be a late addition blocking of the western continuation of the east - west street, but excavations in 2011 revealed that it contained multiple phases and thus seems to have been continually reinforced over an extended period of time. If IM1's street continues into IM 4, then Wall 3 might represent a blocking or narrowing of this street. However, more excavation is needed to corroborate this. It is also possible that Wall 3 was constructed to buttress the corner of Walls 1 and 2 as a means of securing structural stability - perhaps even as a post-earthquake (1068 AD) reinforcement.

IM 5

This excavation unit was opened in 2011 and has not been explored to the same degree as the other units. Here too the upper strata were highly contaminated by modern depositions, including

walls (#1 - #3) and several large and deep cement installations. A number of walls seemingly belonging to Phase 1 were identified and partly excavated. Located centrally in the unit, two walls (#4 & #6) continue north-east into IM4. Consequently, IM5's Wall 6 appears to correspond to IM4's Wall 6, though the odd angling may suggest that it is later. It will be necessary in coming seasons to expose the walls completely and excavate around them before any relations can be unequivocally confirmed. As mentioned above, in IM5 the street veers south-west, seemingly heading towards the corner tower (22), but this also requires further exploration to verify.

Site Preservation

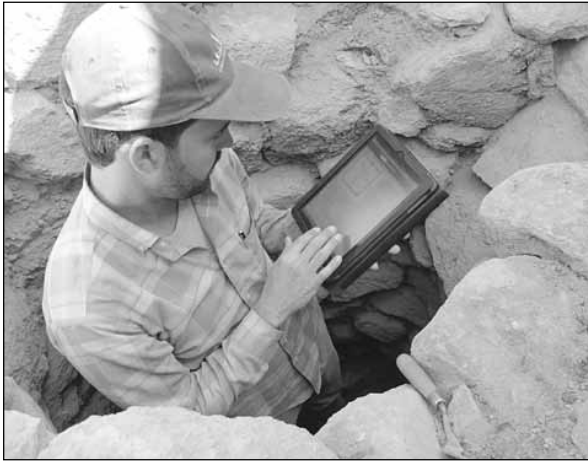
The geological and climatic conditions of Aqaba are unfavourable for preservation once archaeological remains have been exposed. The climate is one of intense heat and sunlight for most of the year, but there are strong prevailing winds from the north-west. Combined with sudden bursts of rain and hail in winter, Aqaba's climate has a devastating effect on the exposed archaeological landscapes unless certain preservation measures are taken. At Aylah, most of the architecture consists of cobbled walls held together by a mud-slurry. Originally, these would have been protected by a plaster coating and superstructures of plastered mud-brick, but these are largely gone. However, for the sake of temporary preservation (*i.e.* while the project is still running), all features and standing architecture are covered with a loosely fastened hessian cover that protects against wind and precipitation. Furthermore, the excavation area has been temporarily cordoned off by a 2.5 metre fence meant as a protective barrier to both visitors and the archaeological remains.

Paperless Archaeology

The AAP has implemented a paperless excavation and registration procedure. All in-field recording is conducted on iPads (**Fig. 24**), including scaled profile and plan drawings, as well as most non-publication photography. For

36. This is presumably part of a 20th century domestic complex known as the 'Sheikh's House' (pers. comm. Whitcomb), which was at least partly removed during the OI excavations at the site. Aylah generally has an interesting site morphology during the 19th and 20th centuries, which would be worth exploring

ethnographically – especially considering Aqaba's extensive development over the last 30 years. Nevertheless, this is not the venue to elaborate upon this. Some preliminary notes, references and images are provided in *Modelling Mercantilism* (pp. 42-52).



24. The use of iPads for in-field registration of all excavation data (© AAP/Henrik Brahe).

important contexts, overview shots, and images intended for publication, high-resolution photographs were taken and subsequently entered into our database. At the end of a season, all data has been systematically recorded directly into a comprehensive database. The use of iPads for recording, drawing and photography saved a lot of time in the field. However, by using a database system with a compatible app (in our case Filemaker Pro and Filemaker Go) an even larger amount of time was saved in post-excavation processing.

The AAP's standard practice of registering finds during the field season is conducted within the same database system as in-field excavation registration. The database currently subdivides finds into field objects, samples (i.e. non-diagnostic glass, faunal remains, metal, stone and architectural fragments) and science samples (everything taken for further testing, e.g. charcoal, soil, plaster etc.). All finds were processed according to find context and find category, allowing for easy cross-referencing. Similarly, all finds and sample bags were allocated a unique catalogue number.

In regard to ceramics, the AAP applies a rigorous procedure of processing that provides statistical information related to a given locus, but which also continually expands our general ceramic typology. During the course of the

first season, 234 individual types were identified, and in 2011 another 358 new types were added, bringing the current typology to 592 types in total.³⁷ Owing to the contexts currently under excavation, these are primarily Fatimid, Tulunid and Late Abbasid (10th- 12th centuries AD) in date, but work in the deep probes of IM1 have caused a significant number of early Abbasid and Umayyad types to be included as well. Rather than using form as the primary sorting criteria, the AAP typology is built first on variations in fabric and the identification of ware types, and secondly on chronological context. The current typology distinguishes between 24 different groups, with local products such as 'cream-surface wares' or 'grey - green wares' being the most frequent. Nevertheless, significant variations of imported glazed and non-glazed wares also occur.

Concluding Remarks

Three excavation seasons – in 2008 under the IAP and 2010 and 2011 under the AAP – constitute a renewed archaeological investigation of the urban history of Aylah. This investigation has targeted the south-west quadrant of the city, an area purposely left untouched for future research by the Oriental Institute excavations under Donald Whitcomb. The main goals of the AAP are to assess the possibility that this part of the city contained structures related to the processing and storage of trade goods, to further our understanding of the site's stratigraphic (depositional and architectural) sequences and to better understand the town plan, including its street networks. Ultimately, it is the ambition to bring the corpuses of archaeological data from both this project and the Oriental Institute excavations together in a joint publication of Jordan's port on the China Sea.

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37. Owing to the incompatibility of the typological criteria, the AAP established an independent type-series of ceramics, which is the one in which currently 592

types have been identified. The typology from the diagnostic IAP season in 2008 (processed in 2009) is available in Appendix 3 of *Modelling Mercantilism*.

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