

PETRA HINTERLAND ANCIENT ROADS PROJECT (PHARP) PRELIMINARY REPORT ON THE 2011 AND 2014 SEASONS

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Introduction

In 2011 and 2014, the Nabataean Centre for Archaeological Studies at al-Hussein Bin Talal University initiated two field seasons to record and map ancient road networks in the hinterland of Petra. This ongoing project is named the Petra Hinterland Ancient Roads Project (PHARP); the study area covers the ash-Sharāh mountains between Shawbak and Rās an-Naqab (**Fig. 1**). The study area was divided into three major areas, each divided into smaller sub-areas. The three major areas, from north to south, are: Shawbak - Petra (Area I); Petra - Şadaqa (Area II); Şadaqa - Rās al-Naqab (Area III).

Previous Studies

Previous work on the road networks of southern Jordan is very scarce, with data usually being obtained either from the accounts and observations of earlier travellers or from archaeological field reports. A number of publications do not address the project study area, but remain a source of information regarding the existence of ancient roads. In the late 19th century, the German scholars Brünnow and Domaszewski (1904: 433-479) recorded sections of ancient road and milestones in *Provincia Arabia*, but none were located in our study area as the German explorers followed a more easterly route. Thomsen's milestone corpus of 1917, which catalogued Roman milestones from Syria, Arabia and Palestine, provides little clarification (Thomsen 1917). In the 1930s, Nelson Glueck discovered a broken

Roman milestone at Ayl and described several ancient roads in the study area (1935: 72-78; for the milestone see Glueck 1935: 75 [published in Graf 1995a: 418]). At around the same time, Sir Aurel Stein examined the *Via Nova Traiana* between Aqaba and Petra (Stein 1940: 436-438; Gregory and Kennedy 1985: 304-352). Important data regarding the road network in the study area were obtained from David Graf's large-scale project on the *Via Nova Traiana* in Arabia Petraea between 1986 and 1989 (Graf 1995b: 242). Graf's main interest was the Roman highway, but he also recorded an ancient road, *viz.* Darb ar-Raşif, in the study area (1995b: 249-250). Darb ar-Raşif is a local name for the so-called King's Highway. In 2012, MacDonald included ancient roads between Ayl and Rās al-Naqab in the results of an archaeological survey of the area (ARNAS), but he did not trace them and consequently did not fully record them (MacDonald *et al.* 2012). In 2013, Jouvenel published a paper on Iron Age roads in Edom that was based on Geographic Information Systems (GIS) analyses (2013: 55-60). The APAAME archive, created by David Kennedy and Robert Bewley, includes aerial photographs of some ancient roads in the study area.¹ Finally, Abudanh recorded a network of ancient roads in the Udhrūḡ area; the idea for this project started then (Abudanh 2004; Abudanh 2006).

Methodology

The team utilised Google Earth and Bing Maps to locate some ancient roads, while others

1. Aerial Photographic Archive for Archaeology in the

Middle East (APAAME): www.apaame.org



1. Map showing the study area, which extends further to the south-east to include the Rās an-Naqab area (© Mechthild Ladurner).

were identified in the field. All traceable routes (including major and minor secondary routes and paths) were measured, photographed and recorded. Wherever possible, team members walked down the centre of the road between the two walls defining its route whilst carrying a GPS. The device was usually set up to record a point every three metres. Accuracy was variable, but remained between ± 1.15 and ± 2 m. The device used for this project was a Sokkia GRX1. The coordinates were then uploaded to ArcMap 10 to trace the paths of the roads and produce a proper map. Roads branching off the King's Highway were given the code KHJ (King's Highway Junction) followed by a number, regardless of the type of road. Ancient sites that were directly or indirectly associated with the King's Highway, or were located along its path, were given the code KHS (King's Highway Site) followed by a three-digit number. The majority of roads do not have names and were therefore named

after the sites they terminate at, serve or pass.

The team collected ceramic material from a number of sites in order to better date stretches of road and a handful of sites. The team's ceramist, Sarah E. Wenner, reviewed the material at the Nabataean Centre for Archaeological Studies at al-Hussein Bin Talal University. On examination of the classical-era diagnostic sherds, whenever possible she identified the production location, vessel part and vessel type, and dated the sherds to the Nabataean (ca 63 BC – 106 AD), Roman (ca 106 – 324 AD) or Early Byzantine (ca 324 – 500 AD) periods.² The classical-era sherds were almost entirely locally made and were comparable to both published material from az-Zanṭūr (Schmid and Kolb 2000) and to material recovered by the Udhrūḥ Archaeological Project. Unless otherwise specified, all sherds were Petra fabric from the az-Zurrāba / Wādī Mūsā kilns ('Amr 1987, 1991, 1999). The ceramic data have been fully presented in another paper (Abudanah et al. 2015).



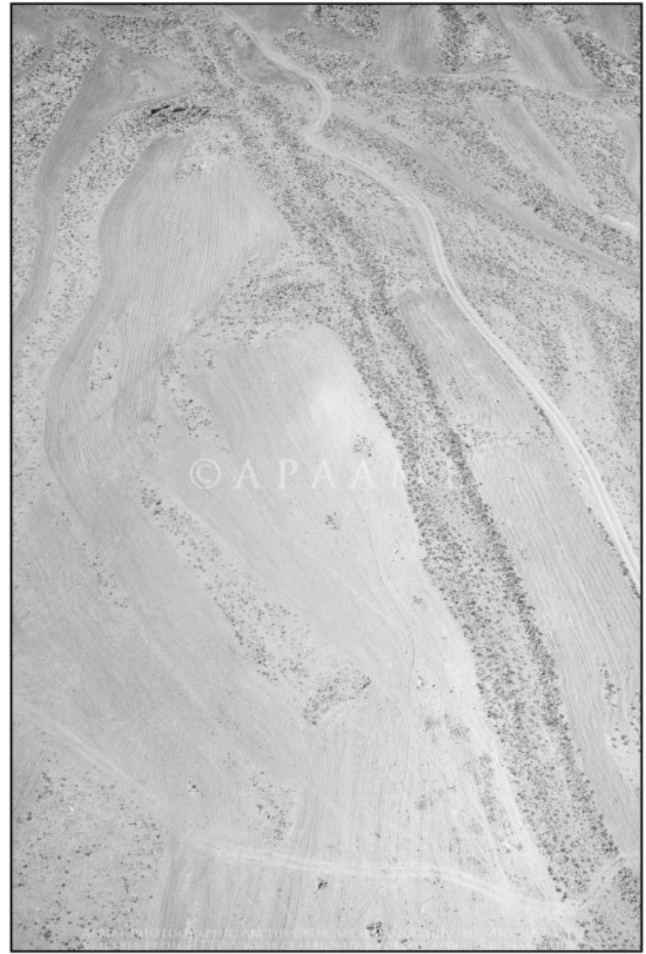
2. Path of a major secondary road south-east of ar-Rājif (© M.B. Tarawneh).

2. The authors do not make claims for cultural identity on the basis of period names. Rather, 'Nabataean', 'Roman' and 'Early Byzantine' are used as rough historical markers. The ceramic traditions do not necessarily change at these markers (e.g. the Roman annexation in AD 106, marking the start of the so-called 'Roman' period), but a number of forms, fabrics and decorative styles can be dated to a specific chronological range. When

more precise dating was available, this was included. Nabataean painted fine ware sherds are especially useful in this regard, as phases often span just a few decades and are easily identifiable. Stephan Schmid has published a chronological typology based on excavations at az-Zanṭūr (Schmid 1997; Bignasca et al. 1996; Schmid and Kolb 2000); no significant revisions have so far been made to this chronology.



3. (a) Aerial photo showing an ancient road on the hills south-west of Ayl (© APAAME_20141019_DDB-0363.jpg).



3. (b) Aerial photo showing an ancient road near Bīr Khidād (© APAAME_20101016_DLK-0221.dng).

Layout and Stonework of Roads

Ancient roads, regardless of their type, share similar characteristics throughout the study area. Two stone walls define the route; each wall consists either of two parallel rows of stones or, in a few cases, a single row (Fig. 2). No mortar or rubble was seen filling the gap between the two rows of stones, but the first course of stones is firmly fixed into the ground. No correlation between stone size and road type was noted. Different sizes and types of stone were used to define the route of a single road. The stones were quarried locally or collected from the nearby ground surface. Standing stones were seen in the walls of some roads, but it is not clear whether these had a particular function. Generally speaking, the stone walls stand to a considerable height, making the roads a visible landmark - even from the air (Fig. 3a-b). The

height of some walls was three courses, or between 1 and 1.5 m. However, retaining walls standing up to 2 m high define the paths of some roads, particularly in *wadi* beds or on slopes (Fig. 4). These walls had a twofold function, as they both defined the road and helped to protect it from landslide or soil erosion. Remarkably, the majority of roads appear not to have been paved. Paving may not have been necessary as these roads were most likely used for normal traffic of people and animals. Moreover, there is no evidence that carriages were used in the study area in ancient times for carrying crops or goods. Camels, horses and other domestic animals were and still are the most common means of transportation. The excavation of test trenches on some roads would however confirm the presence or absence of flagstones. The width of roads is variable and inconsistent, even on the



4. Photo of two retaining walls defining the path of the *Via Nova Traiana* south-east of Petra (© F. Abudanah).

same road. The typology below includes more information on the widths of different types of road, which typically range from 2 m to 8 - 10 m.

Road Typology

Four types of road or pathway were recognised in the study area, *viz.* major primary roads, major secondary roads, minor secondary roads and pathways. The major roads usually run north - south and follow the highest and longest ridges. Their layout and construction technique closely resembles those of the other types of road, but their width is normally about 6m and in some places exceeds 8m. The monumentality of the major roads is apparent from their width and the height of the curb stones.

Major secondary roads branch off major roads and run for long distances, both serving and passing ancient sites. Their curb stone walls are not as high as those of the major roads and their width ranges from 3 to 4m. Although not as monumental as the major roads, they are easily noticed in the landscape as they run mostly over high, long and contiguous ridges.

Minor secondary roads branch off major primary and major secondary roads, but only run for short distances. They typically connect sites with the road network of the area and also provide a link between major secondary roads.

They sometimes run between fields to connect them with other minor or major roads and likely facilitated the movement of farmers and their animals. This type of road has mostly low curb stone walls; road widths range from 2 to 3m.

Pathways usually run between fields, on slopes or on difficult terrain. They likely linked fields with settlement sites where the terrain made a normal road impossible. Pathways are about 1.5m wide and are defined by two stone walls.

Significant Results

What follows is a summary of the results; detailed information and full discussion of the findings will appear in forthcoming publications. The 2011 and 2014 fieldwork revealed ancient roads in the three major areas of the study area. However, the frequency of roads varies considerably according to the number of ancient sites and the general state of preservation in each area. Many well-preserved roads were recorded between Petra and Şadaqa (Area II) and between Şadaqa and Rās an-Naqab (Area III). Ancient roads do exist between Shawbak and Petra (Area I), but these are not well-preserved and require further investigation. In Area I, the most significant result was locating stretches of the Roman *Via Nova Traiana* parallel to the modern road between Shawbak and Petra.



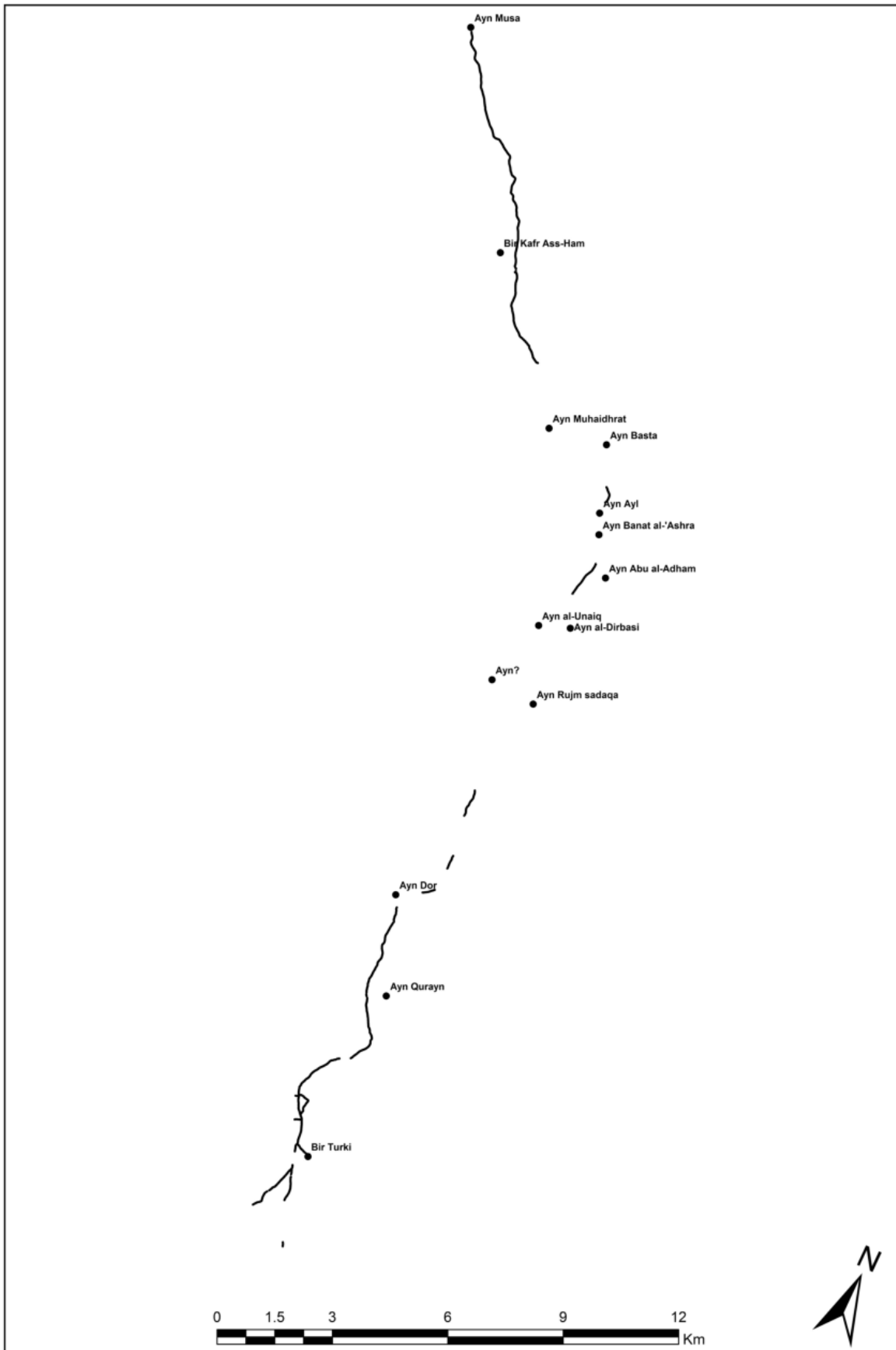
5. Photo of the ancient road to Khirbat Umm Finain north-east of Petra (© F. Abudanah).

A road network was also recorded around the spring and ancient site of Malghān (Abudanh 2006) and south of Bīr Khidād in the same area (**Fig. 5**). In Areas II and III, the *Via Nova Traiana* was traced from a point south of ‘Ayn Mūsā to Rās al-Qana via Baṣṭa, Ayl and Ṣadaqa. Several minor roads, intersecting its path and leading towards ancient sites, were also recorded between these two locations (**Fig. 6**). A cluster of ancient roads was uncovered in Area II south-east of Petra between Ayn al-Hujaim and Ayn al-Majdal (Abudanah and Twaissi forthcoming). The King’s Highway is another significant ancient road in Areas II and III; reasonably well-preserved sections of this road were recorded from a point west of ‘Ayn Mabrak southward to a point west of the modern Desert Highway in the Rās an-Naqab area. In the area between the modern police station at Dilāghah and the modern junction of Darb ar-Raṣīf with the Desert Highway alone, no less than twenty-four major and minor secondary roads were recorded branching off either side of the ancient highway (Abudanah *et al.* 2015). The secondary roads run for several kilometres and connect ancient settlements with the major road. KHJ002, for instance, branches off the King’s Highway and runs for about five kilometres serving many ancient sites via minor roads before terminating

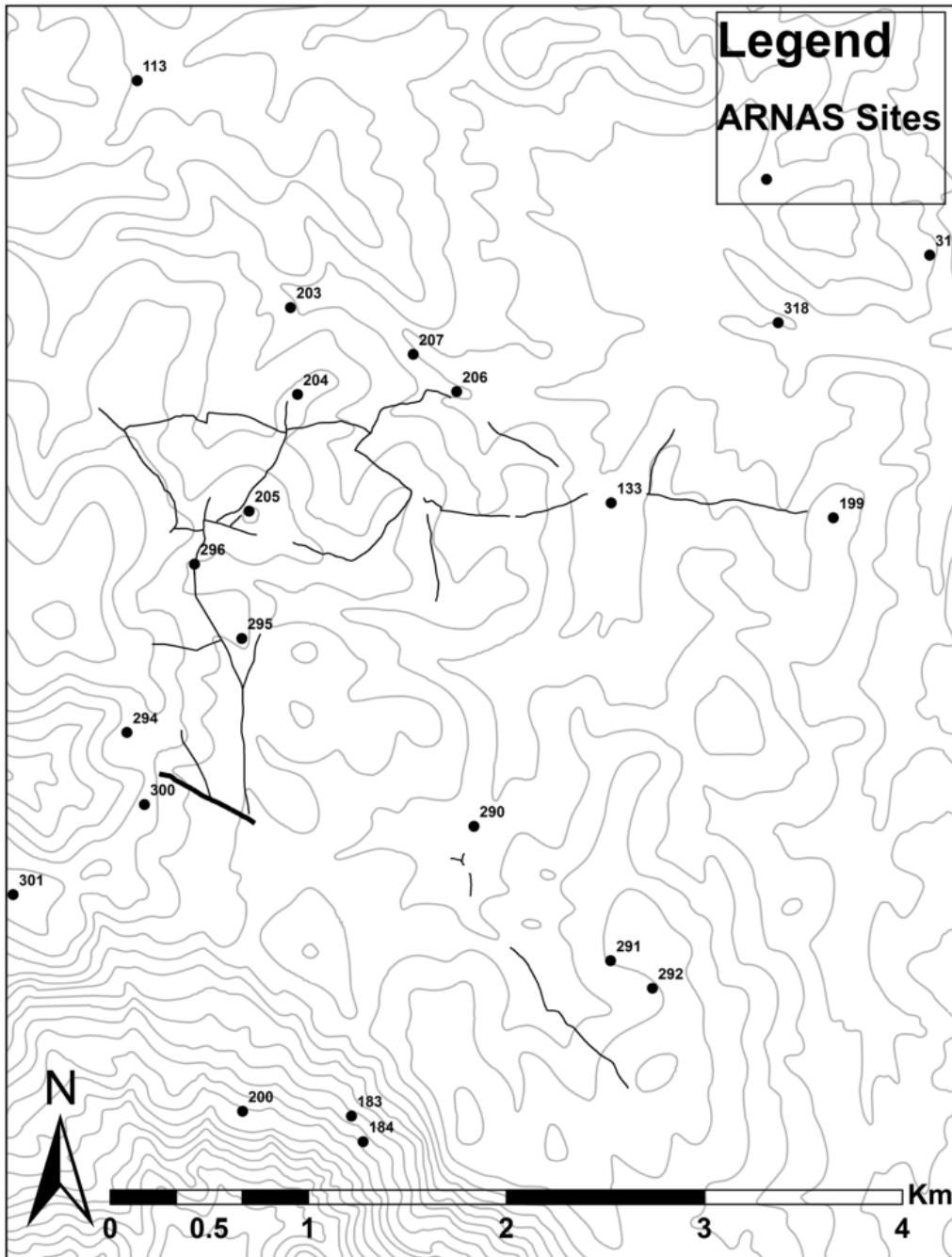
at Dor. The ancient road to Umm Ḥamātah is another example, as it connects with other minor roads south-west of Tasan to form a network of roads connecting ancient settlements in the area with Khirbat Abū al-Lisān (ARNAS site 199; **Fig. 7**) to the east. Another important group of ancient roads were found around the ancient site of Ṣadaqa, to the west and south-west of the site. At Rās an-Naqab, which lies in Area III of the study area, the survey also revealed ancient roads, especially west and north-west of the site of al-Qarana (Kennedy 2004: 188-190). A major road was traced from a point close to Khirbat al-Qaran to a point south of Abū al-Lisān, passing several ancient sites including ‘Ayūn.

What Were the Roads For?

The sheer quantity of roads and the effort and planning that went into them point to their importance. Amongst their multiple functions was the traditional one of facilitating and encouraging trade. Trade appears to have been active in the region on two levels, local and international, at least during periods of prosperity. Iron Age II and the Nabataean, Roman, Byzantine and Early Islamic periods experienced cycles during which long-distance trade flourished (Fiema 1991: 50-100). At least two roads in the study area seem to have been



6. Map showing preserved sections of the Via Nova Traiana between Petra and 'Ayn al-Qana (© F. Abudanah).



7. Map showing network of ancient roads south-west of Tasan (for ARNAS sites see MacDonald et al. 2012) (© F. Abudannah).

used for regional and international trade, viz. the King’s Highway and the *Via Nova Traiana*. The date of the former is problematic, but the latter was heavily used and may have been first constructed during the Roman period (Graf 1995b: 241-268). The roads of the study area were also used for regional and local transportation in the first millennia BC and AD, during which the ancient land of Jordan bore witness to the emergence of several political and urban centres, including ‘Amman, Dhībān and Buṣayra in the

Iron Age (Herr and Najjar 2001: 323-345), the Decapolis in the Greco-Roman period, and Petra, Ḥumayma, Bostra and Umm al-Jimāl in the Nabataean period (Freeman 2001:427-459; Schmid 2001: 367-426). Evidence from the study area shows that roads connected many villages and towns with the political and urban centre of Petra during the Nabataean period. The Roman *Via Nova Traiana* offered a safe and easy transportation between ‘Aqaba on the Red Sea and Petra, whilst also connecting several

major settlements between these two points. Roads connected remote sites with each other and with major sites in the Petra hinterland. They facilitated the movement of people between their settlements (whether permanent or seasonal) and water sources in the study area. The location of agricultural fields was carefully considered when roads were constructed, as the latter eased the movement of people and of animals laden with crops between fields and settlements. Some roads terminate at threshing floors, which were usually located on exposed bedrock both close to and somewhat distant from fields. Roads followed the natural topography, avoiding agricultural fields whenever possible. In some cases, the bedrock was modified to keep roads away from land suitable for agriculture.

Modern Threats

The ancient roads of the study area are seriously threatened by natural and human factors. Human interference with the landscape owing to the many demands made on the latter has caused serious damage to and the disappearance of many ancient roads. Threats include the construction of modern roads, bulldozing of dirt tracks, agricultural activity and urban development. For example, the construction of the modern Petra - 'Aqaba

road, better known as Darb ar-Rasīf, destroyed considerable parts of the ancient road known as the King's Highway. Modern dirt tracks, built to facilitate the movement of farmers to and from fields, have also had a negative impact. Indeed, some ancient roads have already been destroyed by bulldozing since first being documented by the project. In some cases, the damage caused by modern tracks has been partial, but in other cases the ancient roads have been obliterated (**Fig. 8**). Recently, there has been intensive construction of dirt tracks in the area between Rājif and Rās al-Qana. Some agricultural activities, particularly ploughing, fencing and the construction of terrace walls, can also endanger the survival of ancient roads. In some cases, farmers have removed curb stones for the construction of field boundaries or to build protective stone walls. Flooding, mostly seasonal, is the only natural reason for the disappearance of ancient roads as they typically run along *wadi* beds that are prone to flooding. For example, floods have destroyed a small section of the *Via Nova Traiana* in the al-Biqaaah area south-east of Petra.

Conclusion

Some preliminary remarks can be made on the basis of the results presented here. The construction of roads in the study area was not



8. Section of the King's Highway partly disturbed by a modern dirt track north-east of ar-Rājif (© Saad Twaissi).

unusual or restricted to certain time periods. Rather, it was part of the process of urbanisation during periods of prosperity in the region. Roads maintained a direct and permanent connection between Petra and its hinterland. The hinterland of Petra would have been economically and strategically important to any authority during times of prosperity. It had fertile land for agriculture, sources of water, villages, hamlets, farmsteads and strategic locations important for the security of the region. Archaeological evidence clearly indicates that roads were constructed and reconstructed through collective effort, mostly likely at state-level. Road-building had the potential to result in legal clashes with the owners of agricultural fields. However, it seems clear that roads seldom disturbed agricultural fields as they followed hard ground or ran between fields, thereby keeping loss of cultivable land to a minimum. Such a system may have relied on the imposition of certain laws by a central authority in order to maintain order. Finally, this project has demonstrated that traditional survey methods that focus on sites with structures may result in the loss of important archaeological data such as roads, the physical existence of which reflects the need for further archaeological investigation of the landscape.

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aerial photographs of ancient roads from the study area. Finally, the support of al-Hussein Bin Talal University, represented by the Nabataean Centre for Archaeological Studies, has been priceless and deserves a great deal of respect and appreciation.

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