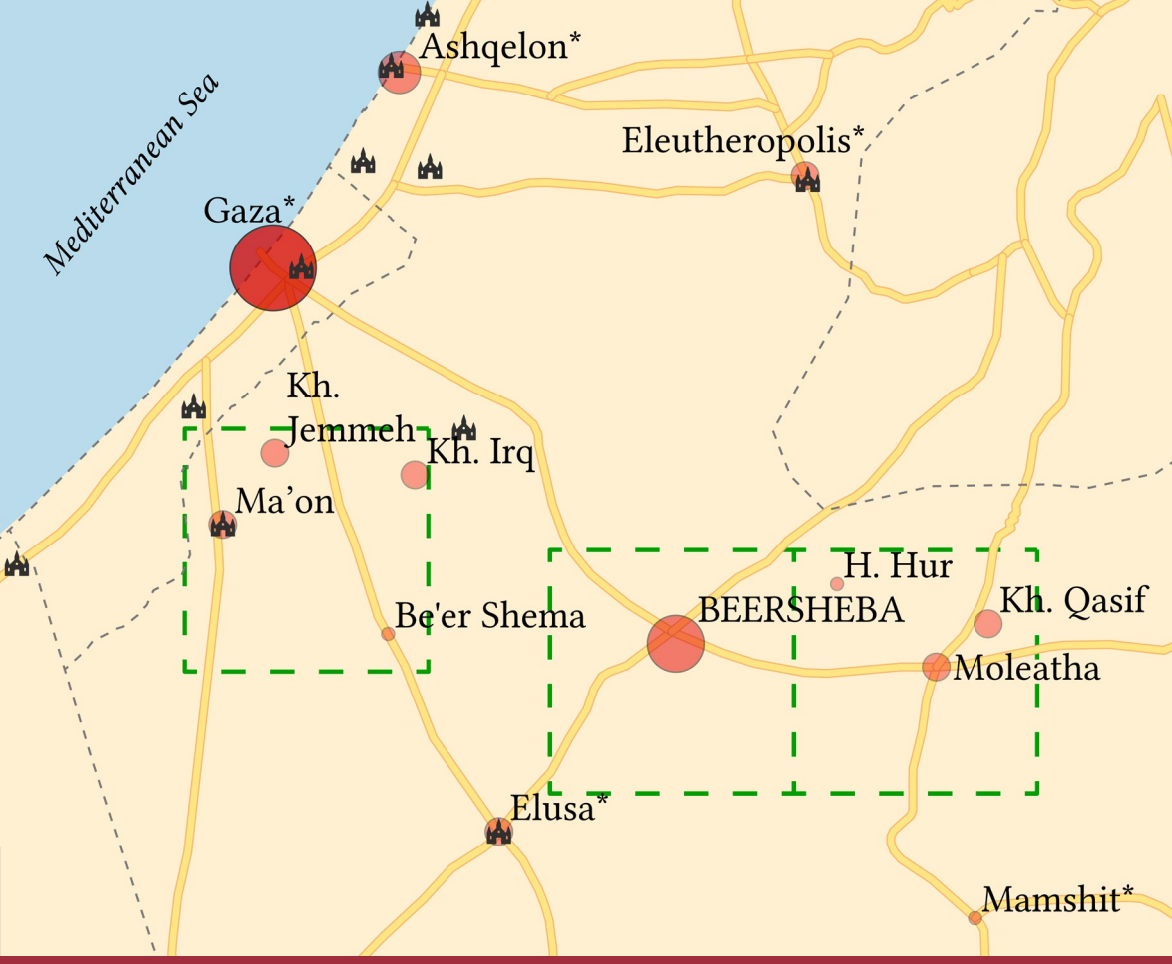

Settlement Patterns

in the Northern Negev from the Hellenistic through the Early Islamic Periods

Noé D. Michael

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ABBREVIATIONS

ASI	The Archaeological Survey of Israel
BGU	Ben-Gurion University of the Negev, Be'er Sheva
DEM	Digital Elevation Model
ESI	Excavations and Surveys in Israel
HA-ESI	Hadashot Arkheologiot—Excavations and Surveys in Israel
HUJI	The Hebrew University of Jerusalem
IAA	Israel Antiquities Authority
IDAM	Israel Department of Antiquities and Museums
IEJ	Israel Exploration Journal
IES	Israel Exploration Society
JPOS	Journal of the Palestine Oriental Society
KDE	Kernel Density Estimation
LA	Liber Annuus
NEAEHL	New Encyclopedia of Archaeological Excavations in the Holy Land
NIG	New Israeli Grid (Israeli TM Grid—EPSG projection: 2039)
PEF	Palestine Exploration Fund
RB	Revue Biblique
TAU	Tel Aviv University

ABSTRACT

The focus of this study is the changes in settlement patterns, including political, social, economic, and environmental trends of the northern Negev, from the Hellenistic through the Early Islamic periods. This interval is also generally known as the "Classical" period and "Late Antiquity", which began with the conquest of the area by Alexander the Great (332 BCE) and ended after the Muslim conquest (~640 CE) sometime in the 10th/11th centuries CE. The archaeology of both the Classical period and Late Antiquity are referred to as 'Classical' in this research.

This Abstract begins with an overview of the geographic location at the center of the research, introducing the study area and the survey samples. Then the Environmental and Sociocultural Background to the research is reviewed, followed by the Statement of the Problem, including the Significance of the Study and Research Questions. After the methodology is described, the findings are presented, both for the study area and then for the Northern Negev as a whole. Finally, the Conclusions and the Recommendations for future studies are provided.

Geographical scope

This research focused on the northern Negev. The geographic borders of the study area are roughly defined as follows: to the north, the foothills of the Judean Mountains; to the east, the watershed of the Be'er Sheva–Arad Basin and the Arava; to the south, the Negev Highlands; and to the west, Nahal Besor (Wadi Gaza). In this research, three different geographical areas of the northern Negev have been analyzed: 1) the western part, centered on Nahal Besor, close to Gaza (400 square km); 2) the central part, centered on the city of Be'er Sheva (400 square km); and 3) the eastern part (400 square km).

Environmental and sociocultural background

The three study areas, all located within the northern Negev, differ in several aspects, including altitude, access to water, rainfall per year, and flora and fauna. In the western study area, elevations are relatively low, up to 150 m above sea level. The study area is located close to Gaza and the Mediterranean Sea. Nahal Besor is a stream with deep wadis that runs through the whole study area, and its springs are the only perennial water sources in the northern Negev. The central study area is part of the Be'er Sheva–Arad basin, which is mostly flat and to the north and south of it are low hills that reach up to 450 m above sea level. The basin is covered by windblown loess, and there are no perennial rivers, but its structure allows for the collection of large quantities of groundwater. The eastern study area is located to the east of the central study area and comprises the eastern part of the Be'er Sheva–Arad basin. It is mainly flat. To its north are the slopes of the southern Hebron hills and, to its south, are the Northern ridges of the Negev Highlands. The altitude of the area is between 300 and 720 m above sea level.

Although there are several studies that point to climatic fluctuations and environmental shifts, but others claim that the climate has not changed significantly over the last couple of thousand years in the northern Negev. It is unclear what kind of influence such climatic shifts could have had on settlement patterns and populations during the Classical period. The settlements and population of the northern Negev expanded and declined several times during the Classical period, and some scholars have argued that climate change was the main factor in the expansion and decline of settlements and population in the area.

The northern Negev was chosen as a case study to analyze the settlement patterns as the area is environmentally sensitive. The region constitutes a transitional steppe zone, the edge of subsistence dry-farming practicability, with regions farther south requiring runoff irrigation systems and those farther north falling well within the Mediterranean zone. Therefore, the northern Negev is the ideal area for analyzing patterns and the forces of change (environmental, political, economic, and social).

Methodology

The analyses presented here were based mainly on the results of systematic surveys conducted by the Archaeological Survey of Israel (ASI) and the Israel Antiquities Authority (IAA). These surveys have been conducted over the last five decades and have produced a large number of archaeological legacy survey data. In order to analyze the northern Negev, the spatial and temporal distribution of sites from 12 selected archaeological surveys were analyzed, reconstructing the settlement patterns and site hierarchies throughout the northern Negev. Each study area consists of a block of four archaeological surveys (each 10 × 10 km;

x = 20 km, y = 20 km) covering an area of 400 square km. These (legacy) survey data were obtained by different survey teams, working with different methods and definitions. Therefore, in order to analyze the settlement patterns each archaeological site was defined according to its different attributes, such as site type, size, number of structures, dating, permanent/non-permanent site, etc. The synthesized survey data were then considered chronologically by reference to key excavations in the region as well as numismatic evidence. These data were compiled in a spatial database that contains several thousand entries (over 1500 sites, many multi-period sites).

The proximate goal was to construct areal maps showing settlement patterns for each period (and subperiods) with the finest chronological resolution possible. GIS technologies were used in the actual construction of the maps, which served as a basis for understanding the structures of each settlement system (social, political, economic, etc.). These structures were examined at three different scales. The region has been examined holistically as the northern Negev, according to the three study areas, west (Nahal Besor region), central (Be'er Sheva and surroundings) and east (eastern Be'er Sheva–Arad Basin), and finally, individual survey squares (10 × 10 km) were also examined. Furthermore, large settlements and their connections to the hinterland were analyzed. Graphs of site frequencies, sorted by site size and function, were constructed for the entire period (and at different scales), offering long time perspectives on settlement trends

Analysis of the three study areas

Western Study Area

In the western study area, 415 identified sites were added to the database. The sites had been discovered during surveys, excavations, inspections, and trial trenching in the past. Of these sites, 77 were multi-period sites, however, it is likely that the majority of the sites were not continuously settled, but rather resettled in several periods. The vast majority of settlements in the western study area during the Classical periods were rural sites. The study area shows the following general trends during the Classical period: low activity in the Hellenistic, Early Roman, and Late Roman periods, with a gradual rise in sites during these periods; a sharp rise in settlement activity during the early fourth century CE; a drop in the fifth century followed by a peak during the sixth to seventh century CE; and a gradual decline during the Early Islamic period.

During the Hellenistic period, most sites were strategically placed, many near a water source or along essential roads. A few settlements were occupied during the entire Hellenistic period, and those settlements were all tells that were also settled in previous periods. Sites were relatively small, consisting of one or a few structures and possibly installations. There are indications of commercial ties

with western Mediterranean locations, as indicated by imported pottery wares. However, this seems only to be the case for the Early Hellenistic period. During the Late Hellenistic period, only a few sites were settled, and there may be a settlement gap between the Late Hellenistic and the Early Roman period. During the Early Roman period, the most important site was Tell el-Far'ah (south). The majority of sites were clustered around it. Based on coin finds, there was a settlement gap between the early second century and the late-third century CE. Based on the settlement analysis many of the Late Roman sites actually date to the Byzantine period. This fact is supported further with the coin finds, which date to the early fourth century, and after 324 CE a strong rise in those finds is evident. However, it seems that Ma'on and Be'er Shema were larger settlements (large villages) during the Late Roman period.

From an analysis of the Byzantine settlements, it becomes evident that several large settlements were located close to the trade routes, the Elusa–Gaza Road (formerly part of the Incense Road), and the Gaza/Ashkelon–Ma'on–Central Negev Road. Several smaller sites are also located alongside. Based on the findings, it seems that many settlements were founded in the late fourth/fifth centuries CE. In the early to mid-sixth century CE, many public buildings (e.g., churches, monasteries) were built, as proven by the numerous mosaic floors found within the structures dating to this era. Coin finds indicate two peaks during the Byzantine period, during the fourth century CE and the sixth/seventh centuries CE, which is consistent with the other findings. After the Arab conquest, settlement activity slowly declined, however, most settlements continued to function, especially larger ones like Ma'on. Much of the pottery dates to the seventh century CE, the beginning of the Umayyad period, with a few sites continuing to be settled until the Mamluk period.

Central Study Area

Most sites were found in the central study area. For this study, 951 identified sites were added to the database. Those sites have been discovered during past surveys, excavations, inspections, and trial trenching. About 200 sites (mainly burial sites) have been recorded in surveys conducted for this research in Be'er Sheva and its environs. Of these sites, 183 were multi-period sites, and 17 sites date over three archaeological periods, including three which were settled from the Hellenistic through the Early Islamic period. Two of the larger sites that date from the Hellenistic through the Early Islamic periods are Khirbat Amra and Tel Sheva. However, the settlement at Tel Sheva is divided between a settlement on top of the tell (Hellenistic to Roman, Early Islamic) and a settlement at the foot of the tell (Late Roman to Early Islamic). The settlement at Khirbat Amra was abandoned and resettled several times during the Classical period. The overwhelming majority of

settlements in the central study area were rural sites. Only Be'er Sheva was a large urban center, settled from the Late Roman through the Early Islamic period. In the area of modern Be'er Sheva, some small Hellenistic period sites were discovered, however in the location of Byzantine Be'er Sheva, no Hellenistic or Early Roman architectural find were discovered so far. The study area shows the following general trends during the Classical period: low activity in the Hellenistic and Early Roman period, a sharp rise in settlement activity during the late third to early fourth centuries CE, a small drop in the fifth century followed by a sharp rise in the sixth century, and a gradual decline during the Early Islamic period.

In the Hellenistic period, Tel Sheva was clearly the most prominent site. The temple, as well as the Hellenistic period fortress, demonstrate its importance. Furthermore, the large number of Nabatean coins prove the existence of trade ties with the neighboring Nabataean kingdom. The rural settlements at Khirbat Amra and near Nahal Beersheva were probably somehow connected to Tel Sheva. It seems that only Tel Sheva was occupied from the third to the first century BCE without interruption. During the Early Roman period, few settlements existed in the study area. The two larger settlements of Tel Sheva and Rakafot 54 were probably connected by a road, which most likely led to the southern coastal plain. Coin finds indicate very low activity in the area during the Early Roman period. After the Bar Kokhba revolt, it is probable that no other settlement existed in the study area in addition to Tel Sheva. During the Hellenistic and Early Roman periods, no settlements were established south of Nahal Beersheva within the study area. Nabatean settlements were built along their trade routes, therefore the area south of Nahal Be'er Sheva up to the Nabatean trade route was empty of permanent settlements.

In the Late Roman period, settlement activities started to increase. The coin finds, as well as the results from excavations, show that there was low settlement activity until the final quarter of the third century CE. Probably the foundation of Be'er Sheva was laid in the late third century, which was most likely connected to the reforms of Diocletian (284–305 CE). Based on the findings at Be'er Sheva, which included public buildings, possibly a large army camp, and several structures, and taking into consideration the historical sources, one can conclude that Be'er Sheva was a large village during the Late Roman period. If coin finds are also considered, the foundations of Be'er Sheva were laid in the mid-to-late third century CE, and building activities strongly increased until the early fourth century CE. As the excavation results of the area of the army camp revealed, there were only meager finds dating to the Late Roman period. The Late Roman period in the central study area can be classified as following: (1) a substantial rise in settlement activities in the northern Negev started after 250 CE; (2) the foundations of Be'er Sheva were laid in the late third century, possibly connected to the re-

forms of Diocletian; (3) an army camp existed in Be'er Sheva that, based on current findings, dates to the Early Byzantine period rather than the Late Roman or earlier periods; (4) a garrison is already mentioned by Eusebius, *Onomasticon,* at the end of the third century, beginning of the fourth century. Therefore, it is possible that the army camp was smaller than previously thought, and no excavations were conducted there; the Late Roman period army camp was in another location, or, in the mid-fourth century, the Late Roman army camp had been rebuilt, and (5) the area south of Nahal Beersheva was settled for the first time during the Late Roman period, and several rural villages and farmsteads were built.

During the Byzantine period the area showed the highest density of sites, as well as in terms of population. Christianity became the main religion in the area, as evidenced by the large number of churches and monasteries, especially in the city of Be'er Sheva (n = 6). However, most likely the majority of the population was polytheist until the fifth century CE. Only in the late fifth, beginning of sixth century CE, did the full Christianization of the area take place, when it is assumed that large parts of the population converted to Christianity. Several excavated churches with a *baptisterium* were found in the northern Negev. Several large villages, some with churches, were founded. Be'er Sheva became the largest and most important urban center of the region, with a monumental church, additional churches and monasteries, an army camp, bathhouses, and houses and villas with mosaic floors. The city, which was located at an important crossroads, to Gaza/Ashkelon to the northwest, Hebron/Jerusalem to the northeast, Elusa to the southwest, and to Tel Malhata and the Dead Sea to the southeast, had no city wall. The city was surrounded by industrial areas: a pottery workshop, wine-presses, dovecote towers, and fish-farming pools, as well as tombs and cemeteries. Be'er Sheva grew sharply at the end of the third and during the fourth centuries and reached its peak during the sixth to seventh centuries CE, where it probably reached its largest area at 90 to 140 ha. There is no evidence of destruction or abandonment at the end of the Byzantine period in Be'er Sheva, as many structures also showed large quantities of Early Islamic pottery. Furthermore, in most cases, it is not possible to distinguish between Late Byzantine and Early Islamic pottery as the same pottery continued to be used in the second half of the seventh century CE. There is evidence that several of the churches and other public buildings continued to function during the Early Islamic period.

The Byzantine and Early Islamic periods in the central study area can be characterized as following: (1) most Byzantine period farmhouses and villages, as well as the city of Be'er Sheva, remained uninterrupted into the Early Islamic period—there are no signs of destruction or abandonment at the end of the Byzantine period. (2) Several large rural estates were built in the hinterland of Be'er Sheva, as well as throughout the northern Negev during the Early Islamic period.

(3) many structures show a new construction phase at the end of the eighth century, when rooms were made smaller or added and other changes to the structure were conducted. Most of these additions included dressed stones and architectural elements in secondary use. Additionally, (4) these changes seem to join with the end of the Umayyad period and the beginning of the Abbasid period in the mid-eighth century CE. (5) Settlements were either abandoned during the mid-to-late eighth century CE or continued to be settlements until the late ninth/early tenth century CE. (6) By the late ninth/early tenth century CE, most settlements in the central study area were abandoned. (7) The majority of churches continued to be in use at least until the early eighth century, some longer, either as a church or for secular usage, and (8) socio-political changes were gradually introduced during the Early Islamic period. Mosques were built first in urban centers, such as Jerusalem or Ramle. Early Islamic mosques in rural environments such as the northern Negev were rare. In the three study areas, only two possible mosques were discovered in the eastern study area, as well as two outside the central study area near Rahat. It seems that the city of Be'er Sheva was populated until the late ninth or early tenth century CE. However, by the mid-eighth century, its size must have been smaller than in the previous period.

Eastern Study Area

In the eastern study area, 438 identified sites were added to the database. These sites had been discovered and recorded during past surveys, inspections, trial trenching, and excavations. Of these sites, 371 were single-period sites, and 67 were multi-period sites. Four sites were occupied during the Hellenistic through Early Islamic periods However, none of the sites were inhabited without interruption. The majority of multi-period sites were settled during three periods, either Hellenistic–Early Roman, Late Roman–Byzantine, or Byzantine–Early Islamic. It seems that all sites that were settled during the Hellenistic period were abandoned and, in the Early Roman period, resettled. As in the central study area, Tel Malhata shows a similar occupation history to Tel Sheva. Both Iron Age tells have Roman and Early Islamic fortresses on top of them and a civil settlement at the foot of the tell. They are located close to the main route connecting Gaza with the Dead Sea during the Classical period.

The study area shows the following general trends during the timespan of the Classical period. First, there was relatively low settlement activity in the Hellenistic and Early Roman period. The settlement history during the Hellenistic period can be divided between the Ptolemaic/Seleucid rule and the Hasmonean period. The largest site was Tel Ira during the Hellenistic period, and some of the Hellenistic sites were settled continuously during the Hasmonean period and abandoned afterwards. Most of these sites were resettled in the Early Roman period.

In contrast to the other two study areas, many sites contain fortifications. This might be due to the border with the Nabatean kingdom, or perhaps because many sites were located in more isolated spots and needed, therefore, greater protection. However, many fortresses and fortified manor houses with towers have been discovered during surveys or excavations in the eastern study area that date both to the Hasmonean period and later the Early Islamic period. During the Late Hellenistic/Early Roman period, many sites show "Jewish" occupation. Most of these sites were abandoned at the latest by the Second Jewish revolt (135 CE). After the Second Jewish Revolt, a few sites were occupied during the second and early third century CE, as for example, the fortress on top of Tel Malhata.

In the Late Roman period, toward the late third and early fourth centuries, settlement activities started to rise again. Based on the coin-finds, a rise is particularly visible during the final quarter of the third century CE. This might be connected to the reforms by Diocletian (284–305 CE). Larger sites like Tel Ira and Tel Malhata/Moleatha were resettled, and new settlements were constructed. The highest site density during the Classical period was during the Byzantine period. During the Islamic period, the number of sites dropped to 49. However, Late Byzantine pottery continued to be used at the beginning of the Early Islamic period, meaning that most sites were not abandoned right after the Arab conquest, but rather continued to be settled, and over time were gradually abandoned. This is shown by churches and monasteries, most of which continued into the Early Islamic period, but were then abandoned at some point during the late seventh–early eighth centuries CE. The same might be true for settlements. However, about one-fifth of the sites persisted into the late eighth/ninth centuries CE, if not longer.

Significance of the study and contribution to new knowledge

The northern Negev shows a long settlement history. As the region is a transitional steppe zone, which allows still dry-farming practicability, factors such as climate, politics, economic or social can strongly influence the settlement patterns. The thesis analyzes the dynamics of the settlement patterns and its changes and ties the changes to different factors behind the changes.

The importance of the research lies in the synthesis of a large dataset, using new tools that have not previously been applied, thus offering both a more detailed perspective on settlement change and testing these methods in an environmentally sensitive zone. This has general implications for understanding how peripheral zones operate historically. Beyond examining historically specific trends, broad conceptualizations of how arid peripheries work on the edge of empires will be developed.

Analyses of the three study areas show that relative settlement density in all three areas is similar. After the early second century CE, only a handful of set-

tlements existed in the northern Negev, with a strong rise towards the end of the third century CE, which is most likely connected to the reforms by Diocletian. Over 60% of all sites date to the Byzantine period. The growth of population and settlements during the Byzantine period is impressive. Research suggests that the population of Palestine was between one and several millions, reaching its peak in the mid-sixth century CE. Based on the analyzed data, the population of the northern Negev in the mid-sixth century probably exceeded 100,000 people. Large urban centers only existed during the Byzantine and Early Islamic period in the northern Negev. All larger urban centers in the northern Negev had their foundation in the Late Roman–Early Byzantine period, most in the mid-to-late Roman period. The date of abandonment of urban settlements varies. But, within the three study areas, no difference according to area is evident, showing that those urban sites were abandoned between the seventh and 10th/11th century CE. In the northern Negev, most sites were abandoned during the eight/ninth centuries CE (n = 46%), but about 30% of the sites continued beyond the ninth/tenth century. Only 16% (n = 2) of sites were abandoned in the late seventh century CE. In general, on can say that over 75% of all large sites continued at least until the eight/ninth centuries CE. The largest site in the study area, the city of Be'er Sheva, was probably abandoned in the ninth/tenth century CE. By analyzing cult sites over these periods, it is evident that religion and probably also parts of the population changed several times during the Classical period. Based on the establishment of churches, most of the population did not become Christian before the fifth century CE. Christianity then became the main religion, most likely until the eight century CE. The earliest churches were built in the northern Negev in the fifth century CE, and the majority of churches were built in the sixth century. Most churches were abandoned in the eighth century and the same is true for the monasteries found in the study areas.

The thesis reports on the dynamics of settlement patterns and changes as well as the different catalysts for change. Furthermore, it shows changes in population and culture of the inhabitants of the northern Negev over a long-time span. As the study shows, the influence of the different catalysts of change, the urban centers of the entire Negev, could be analyzed in a future study, applying the different factors outlined in this thesis to reach a final conclusion on the reasons for the rise and fall of the settlements in a desert environment. The thesis has also documented ways to incorporate legacy survey data into archaeological research, as well as noting limitations of the use of such data for this kind of research. Legacy survey data have become more and more important, as many archaeological sites are being destroyed, through construction, agriculture, erosion etc. In many cases, only legacy survey data of settlements exist, therefore working with such data is essential for future archaeological research.

Keywords: settlement patterns, settlement history and shifts, Classical period, Late Antiquity, northern Negev, spatial analysis, GIS, archaeology of the Be'er Sheva–Arad valley, Be'er Sheva, population, forces of change

1 INTRODUCTION

> "The time machine, which has enchanted generations of readers and moviegoers, is a fictional artifact for transporting people through time. Although archaeologists would welcome a time machine, we are satisfied by the remarkable fact that objects made, used, and deposited in the past survive into the present. We need not go to the past, for it comes to us." (Schiffer, 1987: 3)

1.1 Background

Through field surveys, archaeologists detect surface samples of ancient settlements and material culture. Based on these findings, conclusions about ancient settlements and population that settled the landscape can be drawn. However, the material remains of ancient settlements might be re-used, displaced, or destroyed, and their visibility changes in the depositional process (Casarotto, 2018: 11; Schiffer, 1987: 20). As archaeologists in most cases do not see the "full picture" during surveys, but only a part of the ancient settlement and material culture, the collected survey data are biased. However, systematically collected survey data can be used to reconstruct ancient settlement patterns, and even if biased, can still give very important insights into ancient settlement patterns. In many cases survey descriptions are also the only data available of ancient settlements, either the because ancient sites were destroyed, or no further investigations were conducted.

The northern Negev has an extensive settlement record, much of which is derived from systematic archaeological surveys and excavations. This study will present the long-term view on the settlement patterns of the northern Negev from the Hellenistic through the Early Islamic periods. This interval is also generally

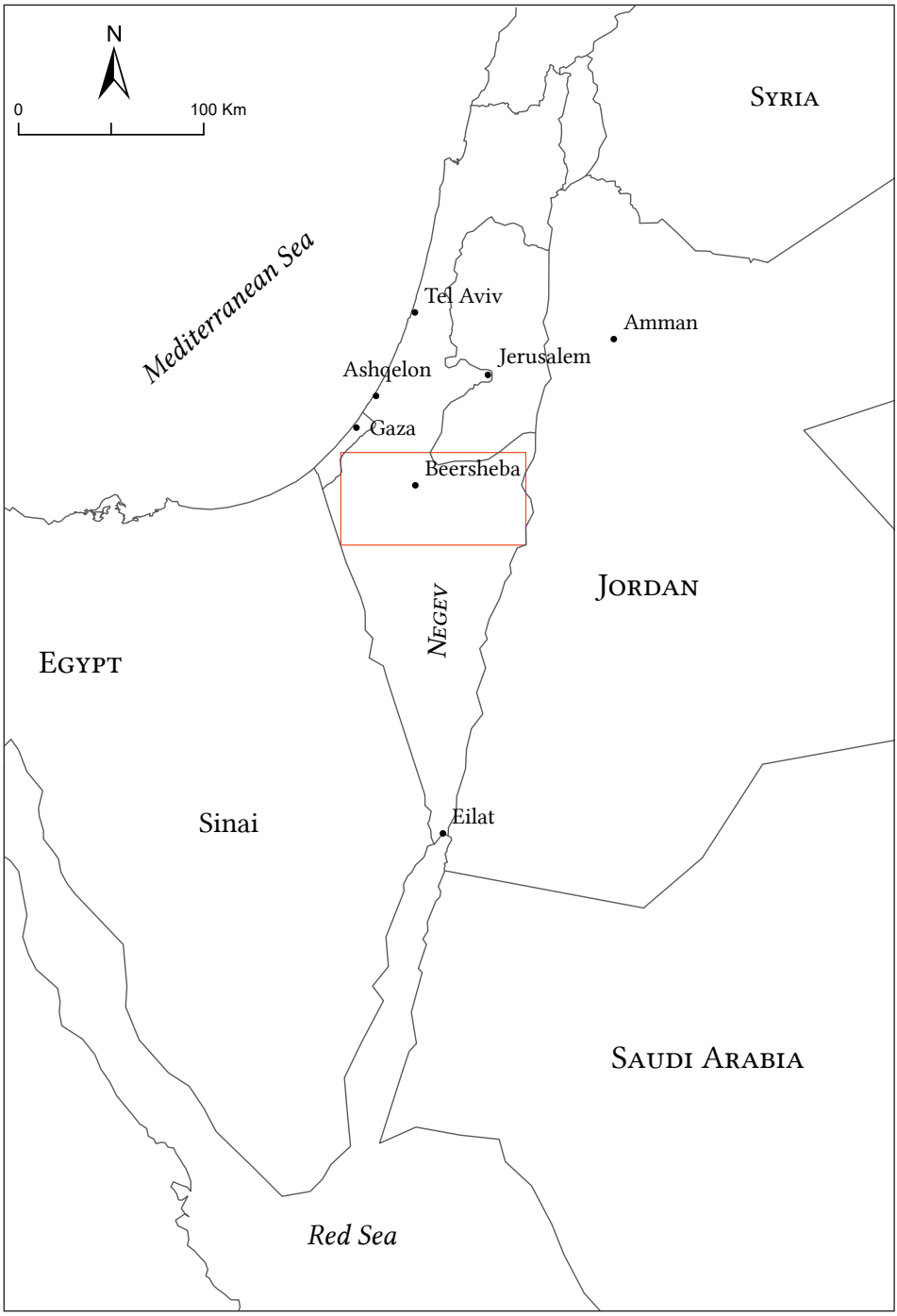

Figure 1.1 The northern Negev in regional context.

known as the "Classical" period and "Late Antiquity", which started with the conquest of the area by Alexander the Great (332 BCE) and ended after the Muslim conquest (~640 CE) sometime in the 10th/11th centuries CE. The archaeology of both the Classical period and Late Antiquity are referred to as "Classical" in this research.

The study focuses on the dynamics and changes in settlement patterns, which include social, political, and environmental factors. The northern Negev, located on the edge of dry-farming practicability, is especially sensitive to environmental and climatic fluctuations with significant impacts on farming potential (Rosen, 2016; Figure 1.1). The area also bridges different regions, the desert and the Mediterranean zone, and interior regions with the coastal plain, thus a major locus of trans-shipment and trade. In these, political, social, and economic trends over the long millennium of the Classical Era played a role in settlement systems.

Since the 19th century the northern Negev has been the subject of intensive archaeological investigation. Large areas have been surveyed, many sites have been excavated, and a significant amount of data have been collected. As such the main goal of this study was to build a model of the region containing the spatial and temporal distributions of the settlements from the Hellenistic through the Early Islamic periods.

The study is based on data collected mainly from the Archaeological Survey of Israel (ASI), and the Israel Antiquities Authority (IAA). The model that was built allowed the application of knowledge and hypotheses from observations made at single archaeological sites to the landscape surrounding them, moving these observations from single-location to area-based descriptions of the Classical landscape of the northern Negev. These depictions are then developed to demonstrate how to build a geospatial database that combines social, political, and environmental variables, outlining productive ways to analyze the available data collected by the ASI, IAA, and other research institutes.

1.2 Rational for the study

This research was based on different parameters. Specifically, the northern Negev as a research region has been chosen because it is an environmentally sensitive area, and climatic fluctuations might have a strong impact on the settlement patterns. The survey variables analyzed in the study have been chosen based on numerous attributes, such as location, rainfall per year, altitude, access to water, etc.

The northern Negev has an extensive history of research and has been studied since the early 19th century. But the most important data for this study stem

from the ASI which has conducted systematically map surveys in the northern Negev in course of the last five, six decades. Much of the data has been collected in course of the Negev Emergency Survey. A small part of these data have been published, starting in the 1990s onwards, as monographs. However, most map survey are only now available, as they have been published online in two languages (Hebrew/English). The online publications of much of the available survey data were done during the last decade. These online surveys data give easy access for researchers to work on specific regions, or historical periods.

Since the 1970s, several large research excavations have been conducted by different universities, such as at Tel Malhata, Tel Ira, Tel Sheva, and Tel el-Far'ah (south). Much has been published from these excavations. Another, very important source are the salvage excavations, mainly conducted since 1990s in the northern Negev (there are some earlier salvage excavations from the 1950s onwards). The locations of such salvage excavations are random and not preselected by archaeologist, they are based on construction projects (Avni, 2014: 20). This reduces bias of the archaeologist as they are not selected based on personal preference or interest (Avni, 2014: 20). Therefore, these salvage excavations produce very important data; furthermore many smaller sites, such as farmhouses or installations have been thus excavated, which would in many cases not been chosen for research excavations. In the last 30 years, a large number of such salvage excavations were conducted, reaching several hundreds in total. Most of these excavations have been published in *Hadashot Arkheologiyot, Excavations and Surveys in Israel* and some larger excavations in *'Atiqot*. Since 2004/2005, those excavations reports were also published online. Furthermore, the large amount of archaeological data available has also led to much new archaeological research, conducted by Israeli and international research institutes, concerning the northern Negev.

The systematic survey of large areas of the northern Negev, the numerous research and salvage excavations, as well as research conducted in the Negev by research institutes, have given a large amount of data that allowed for reconstruction of the settlement patterns of the region in a most accurate and detailed way. The study is timely because of the availability of the large amount of data, and this provides a rationale for this study.

1.3 Research parameters

In this research, the spatial and temporal distribution of sites are modeled from selected archaeological surveys in the northern Negev. The synthesized survey data compiled by the ASI over the course of several decades have been compared chronologically by reference to key excavations in the region as well as numismatic evidence. The data were analyzed to establish the settlement patterns and site hierarchies throughout the region from the Hellenistic through Early Islamic periods (4th century BCE–9th/10th century CE). As mentioned above, the survey data served as the primary material for this research since archaeological surveys provide valuable information that must be evaluated critically. The distribution of sites was analyzed carefully and compared among the different study areas. This allowed for the establishment of site hierarchies, site frequency and density. Additionally, the organization of larger urban centers and their hinterlands was analyzed, as well as the influence of the hinterlands. Maps were established by archaeological period and when possible by subperiod. The role of environmental, political, economic, and social factors was analyzed critically in order to explain changes that occurred in the settlement patterns.

Several researchers explain change in settlement patterns in the Negev in reference to shifts in climate; others claim that the changes were based on political, economic, and/or social factors. Based on the analysis of the settlement patterns and its changes, the main factors that led to these changes were analyzed.

1.4 Methodology

The research here involved quantitatively synthesizing a significant volume of survey and excavation data from the northern Negev in order to explicate long term settlement trends in the region during the Classical Era (Hellenistic through Early Islamic). The methods consisted of three primary stages. The first included the collection of all known archaeological sites for each of the three study areas dating to the Classical period. The systematic surveys conducted by the ASI and IAA served as the primary sources. Furthermore, data from excavations, development surveys and inspections were added. In a second phase, the data were interpreted and standardized according to a catalogue of different parameters and defined attributes (see Appendix 1—Database format and attributes). These data were added to a spatial database, according to the specific parameters and attributes. In a third phase, the data were compared chronologically by reference to key excavations in the region, as well as from numismatic evidence. The goal was

to construct areal maps that show settlement patterns for each period (and subperiods) with the finest chronological resolution possible. GIS technologies had been used in the actual construction of the maps, which then served as a basis for understanding the structures of each settlement system (social, political, economic, etc.). These structures were examined using three different scales: the region was examined holistically as the northern Negev, the three study areas—west (Nahal Besor region), central (Be'er Sheva and surroundings) and east (eastern Be'er Sheva–Arad Basin), and finally, individual survey squares (10 × 10 km) were also examined. Furthermore, large settlements and their connections to the hinterland were analyzed. An examination of urban centers had extensive political and economic facilities, which impacted land-use strategies and settlement density, as well as the settlement types in the hinterland. Graphs of site frequencies, sorted by site size and function, were constructed for the entire period (and at different scales), offering long-time perspectives on settlement trends which, of course, reflect general historical processes.

1.5 Summary of the thesis contents

Chapter 2 discusses the history of research in the northern Negev. The chapter starts with the first "biblical" investigations in the early 19th century, including early explorers such as Robinson, and the reconnaissance surveys. This discussion is followed by the different stages of archaeological research in the northern Negev, which covers both the influence on archaeological research of the founding of the modern state of Israel, and the modern research conducted in the northern Negev in recent decades.

Chapter 3 then deals with present-day and paleoclimatic and environmental conditions, including the topography, lithology, soils, climate, and vegetation of the present-day northern Negev. It also provides a tentative reconstruction of the paleoclimate during the Classical period.

Next, Chapter 4 opens with a short introduction to the theoretical and methodological background of this research. This is followed by an introduction to survey methodology, the problems and limitations of surveys, and the process of using legacy survey data. The next section of the chapter deals with the settlement analysis methodology and the survey samples. The subsequent discussion reviews how the database was built, what GIS data have been used for analysis, the categorization and definition of settlement types, the calculation of site size, and the chronological considerations used in this research.

Detailed examinations of the three study areas are presented in Chapters 5 to 7. They consist of detailed analyses of the three study areas in the northern Negev: west (Nahal Besor region), central (Be'er Sheva and surroundings) and east (eastern Be'er Sheva–Arad Basin), from the Hellenistic through the Early Islamic periods. Each analysis is based on data from surveys conducted and published by the ASI, and inspection, development survey, and excavation data collected by the IAA and universities. Site density, settlement distribution, site size, and site continuity are explored according to archaeological periods. Where possible, the sites have been dated to subperiods. The survey data are compared with excavation data, which helps in dating the sites. These results are supported by numismatic finds from excavations, which serve as a base line to analyze the peaks and troughs of different periods and specific settlements. After establishing the settlement patterns, site hierarchies, site size, and settlement continuity in the northern Negev, these data were analyzed and compared.

In chapter 8, the Byzantine population, land use, and the connection between the settlements was discussed. Although the majority of the population during the Byzantine period was rural, with most people living in small villages, hamlets, and farmhouses spread throughout the northern Negev, there was also an urban population. The larger urban centers, examined in this study, were Be'er Sheva, Ma'on, Khirbat Jemmeh, Khirbat Irq, Tel Malhata/Moleatha, Khirbat Qasif, Horvat Hur, and Be'er Shema; their respective populations have been calculated based on site size and different settlement density estimations. The hypothesis was that urban centers adopted specific land-use strategies, which, in turn, impacted settlement density and settlement types in the hinterland. This hypothesis has been analyzed and discussed based on the settlement patterns established in previous chapters. A focus was given to the city of Be'er Sheva and its hinterland, as the city served as the center of the northern Negev.

Chapter 9 discusses the dynamics of settlement patterns, by analyzing the results of the survey samples (Chapter 5–7) and population (Chapter 8), and then outlines some general trends for the northern Negev. Furthermore, the emergence and abandonment of urban centers and cult sites is discussed, with its impact on the settlement patterns as well as the longue durée processes of change and the different political, environmental, social, and economic factors.

The Conclusion is presented in Chapter 10, which presents the research results as well as a new interpretation of the settlement patterns of the northern Negev. Furthermore, the significance of the research and its limitations are discussed. The chapter ends with recommendations for future research.

Appendix 1 contains the database format and its attributes. Appendix 2 comprises the coin database. Appendix 3 includes a table with the density of Classical

sites and the percentage of total sites for each survey map, as well as a table containing the number of sites according to period for each survey map. Appendix 4 lists all the cities and towns of the three study areas and their subsequent abandonment date. Appendix 5 inventories all the cult sites found within the study area, details the date of establishment and abandonment, and includes distribution maps of all sites according to dating conventions. Appendix 6 catalogs all the sites included in the settlement analysis in tabular format, with site name, study area, coordinates (NIG), and period(s) of occupation as well as references.

2 HISTORY OF RESEARCH OF THE NORTHERN NEGEV

The northern Negev has been of interest since the early 19th century, the beginning of modern biblical archaeology, mainly because it is mentioned in the Bible as the Negeb of Judah. The early 19th century investigations of the Negev started with visits by early explorers and reconnaissance surveys, which were inspired by the desire to study the biblical geography of the country and were focused on identifying ancient sites by their names and linking them to the Bible. Therefore, the first phase of research conducted in the region can be called biblical explorations. One such early archaeological survey of Palestine was conducted by Robinson (1841), who engaged in a three-month journey from Suez to Beirut and, along the way, he identified ancient sites and names that he linked to the Bible.

The second phase of archaeological research in the northern Negev commenced in the middle of the 19th century. Surveys were no longer adventures, having become more systematic. This rise in systematic surveys was based on geographic coverage as opposed to the search for biblical sites. The first attempt at a geographical, historical, and archaeological survey was conducted by Guerin, a French researcher in the 1860s (Schloen, 2008: 148) who carried out several explorations of Judea. Guerin was the first to explore the region in such a systematic way, which was a significant contribution to the archaeology of the area. Guerin's surveys are considered part of the pre-archaeological phase of the exploration of Palestine, as many ancient remains were not destroyed yet by development. However, archaeological periodization based on ceramic sherds was not yet common practice and was, therefore, not applied.

Between 1868–1870, Palmer, working for the Palestine Exploration Fund, explored the Northern Sinai and the Negev, providing descriptions of archaeological sites including those in the northern Negev. After the British occupation of Egypt,

Palmer worked for the government until he was killed on a mission in Wadi Sudr in 1881 (Besant, 1883). In 1875, the *Survey of Western Palestine* was published, providing a more systematic and detailed survey than Guerin's earlier work. The Palestine Exploration Fund (PEF) survey focused on the area north of the Gaza–Be'er Sheva line (Condor and Kitchener, 1883). The published work included the results of the survey and a detailed map of the area showing the surveyed ancient sites.

At the beginning of the 20th century, systematic ethnography began in the northern Negev. In 1902, the Czech orientalist and ethnographer Musil (1907) visited and described several archaeological sites, including Be'er Shema and Be'er Sheva. Although these surveys added new data, they mainly focused on large sites. However, some of the new data were important as they described sites that were fully or partially destroyed shortly afterward. Thus, Musil described the Byzantine ruins of Be'er Sheva, which were dismantled when the Ottomans started building the modern town. His work was published in four books called *Arabia Petraea* (Musil, 1907).

Prior to World War I, the British realized that they had no exact maps of some southern Palestine regions. Therefore, they had a military interest in creating a new, updated survey of the area, but to hide its true purpose, it was conducted by the PEF. To provide the survey with the seal of legitimacy and fulfill the PEF's survey goals, the archaeologists Woolley and Lawrence joined the project (Richter, 2008). Based on their surveys of the region, Woolley and Lawrence (1914) disputed Huntington's (1911) environmental determinist frameworks, which had proposed that the rise and fall of civilizations in the Near East were based on climatic change. For example, Huntington (1911: 129) argued that the climate during the Roman-Byzantine period was more favorable than in later eras, spreading settlements also to the desert areas and, as a result of desiccation, leading to the desertification and consequent abandonment of Palestine after the Arab conquest.

In 1914, the Jewish Palestine Exploration Society, later known as the Israel Exploration Society (IES), was founded in Jerusalem to explore Jewish antiquities. The IES continues to influence archaeological research in the country significantly. The first excavation permit issued by the Israeli government was given in 1948 to the IES. Furthermore, the IES has published a large range of books concerning the archaeology of Israel.

Shortly after World War I, Albright surveyed the Negev and Dead Sea area (Albright, 1924). Albright practiced interdisciplinary research that included history, philology, Bible studies, historical geography, and archaeology (Running and Freedman, 1997: 61–62). Like the first researchers in the region, he searched specifically for archaeological sites described in the Bible and did not look for later sites. Albright furthermore excavated Tell Beit Mirsim, which is located a few kilometers north of the study area. As a result of this excavation, he estab-

lished a pottery chronology for western Palestine during the Bronze and Iron Age periods. Simultaneously, in the early 1920s, Petrie and the British School of Archaeology in Egypt were conducting excavations at Tel Jemmeh and Tell el-Far'ah south (Beth-Pelet[1], Tel Sharuhen) in the western northern Negev, which also revealed, among others, Classical period strata that included the Roman fortress on top of the tell (Petrie, 1930).

According to Mazar (1997: 48) several factors influenced archaeological research in Israel after the foundation of the State of Israel in 1948: (1) for Israeli scholars, direct contact with colleagues in other parts of the Near East was not possible; (2) the archaeological investigation of Jewish heritage was encouraged by the state; (3) and the country was developing rapidly (Mazar, 1997: 48). The British Mandatory Department of Antiquities was replaced by the newly established Israel Department of Antiquities and Museums (IDAM), which conducted salvage excavations at numerous sites (Mazar, 1997: 48). A key focus during the early history of the Israeli state was the area described as the Negeb of Judah in the Bible, with Beersheba as its center, which inspired several research projects in the second half of the 20th century.

Among the scholars who surveyed the northern Negev during this time were such figures as Alon (1979), Aharoni (1958), Glueck (1961), and Gichon (1975). Aharoni was one of the most prominent archaeologists working in the northern Negev, his primary focus being the Iron Age. He conducted a regional study examining the Be'er Sheva–Arad Valley (Aharoni, 1958), but, as noted previously, he was not interested in Classical period sites. He also initiated the large-scale excavations at Arad (Aharoni, 1975), Tel Malhata (Beit Arieh and Freud, 2015), Tel Masos (Kempinski et al., 1981), Tel Sheva (Aharoni, 1973), and Tel Ira (Beit Arieh, 1999). Tel Sheva was actually known as Tell es-Seba, or Tell Sheva, and its name later changed to Tel Be'er Sheva to conform to a biblical interpretation. These excavations mainly uncovered remains dating to earlier (biblical) periods and several important Classical remains were also excavated (in most sites in the region, the upper layers date from the Hellenistic to the Early Islamic periods). A detailed stratigraphy and pottery chronology does not always exist for these sites, as not all researchers were interested in that material. In general, the reason the Classical (and non-Jewish) remains were researched less carefully can be attributed to the desire to build a national identity.

In the 1970s, following the 1967 war and the opening up of the Negev to research, archaeological interests expanded greatly, and many new studies focused on non-biblical periods, both Classical and prehistoric. Among others, Negev (e.g.,

1 Petrie identified the site as Beth-Pelet (Joshua, 15: 27; Berlin and Brettler, 2014: 473), the excavation report was therefore published under the name Beth-Pelet (Petrie, 1930).

1971; 1986) intensively researched the Nabateans. Based on his research, today, many Byzantine sites in the central Negev are still described as Nabatean, such as Elusa, Oboda, or Mampsis. Gichon (e.g., 1967; 1975; 1979) researched the Classical sites in the northern Negev associated with the *Limes Palestina.* As a military historian, Gichon was interested in its protection to the south and therefore studied fortresses and fortifications along the *Limes Palestina.*

A new phase of archaeological research in the Negev began with the Negev Emergency Survey (1978–1988), a branch of the ASI. The ASI operated under the auspices of the IDAM (the present-day IAA) and was founded in 1964 with several archaeological mapping surveys. Each map consisted of grid squares of 10 x 10 km (100 square km). Different teams conducted the surveys, and all archaeological sites and occurrences were mapped and described. Survey activities in the Negev were limited in the early phase of the ASI. A response to the peace treaty with Egypt and the planned redeployment of the Israel Defense Forces in the Negev, the Negev Emergency Surveys received more attention, and many areas in the Negev were systematically surveyed (Cohen, 1982).Archaeological research on the ancient city of Be'er Sheva, the core site of the entire region, began in the 1950s. The modern city was built at the beginning of the 20th century by the Turks on the remains of a Roman-Byzantine town (Gophna and Yisraeli, 1973: 115), and it underwent further development from the 1950s onwards. As a result, salvage excavations carried out by the IDAM and later the IAA took place. The excavations of Be'er Sheva revealed the remains of the Classical period city in several locations, mainly in today's Old City and its vicinity. Furthermore, with the help of aerial photos from World War I, the remains of a possible Late Roman army camp were discovered within the city limits of Be'er Sheva (Fabian, 1995a; 1995b) and, in recent years, parts of this site have been excavated. In addition to the excavations in Be'er Sheva, many rural settlements have also recently been excavated in a belt around the ancient city. The rural sites include mainly villages, farmhouses, watchtowers, installations, cisterns, and agricultural terraces. Since the 1990s, a growing number of construction projects have been conducted in the northern Negev, especially within and surrounding the city of Be'er Sheva. Due to the high volume of urban development projects, the IAA has conducted many development surveys, inspections, trial trenching, and salvage excavations. Therefore, in this period, the knowledge of sites and settlement patterns in the northern Negev has grown rapidly.

3 ENVIRONMENTAL BACKGROUND

Current environmental data about vegetation, soils, and climate (rainfall) are used to represent the past. This approach is problematic as landscapes change over long periods, but research has shown that the distribution of rainfall (which controls the vegetation and the availability of dry farming) generally remained similar in the northern Negev during the last 2,500 years (Vaks et al., 2006; see below Chapter 3.2 Paleoclimate). Nowadays, the Be'er Sheva–Arad Basin receives on average approximately 200 mm of rain. This is precisely the edge of dry farming practicability for barley, although for wheat about 250 to 300 mm is needed (Grigg, 1974; Rosen, 2017: 88). Minor shifts of rainfall would significantly affect whether farming is viable without run-off irrigation technologies. However, during the Classical period new technologies were introduced and a sophisticated understanding of flashflood water harvesting was established. These new technologies could mitigate, to an extent, the impact of climatic fluctuations.

In the first sub-section below, current environmental data for the northern Negev are presented, and in the second, the paleoclimate data available for the northern Negev during the Classical period are analyzed.

3.1 Present-day environmental conditions in the northern Negev

The Negev, in its modern configuration, is located in the southern part of present-day Israel (Stern et al., 1986; Rosen, 2015; Vaiglova et al., 2020: 2). It is a triangular area stretching from the Mediterranean coast to the southern tip of the Dead Sea and south on each side to the Red Sea, Gulf of Aqaba/Eilat (Evenari et al., 1982: 31–32; Stern et al., 1986; Rosen, 2015). It can be divided into four geographical re-

gions and climatic zones: the northern, central, and southern Negev. Along the eastern side of the Negev, between modern Jordan and Israel, the Jordan Rift Valley runs. The Jordan Rift Valley is a geological graben and part of the Syro-African Rift system (Rosen, 2017: 76). South of the Dead Sea in the Jordan Rift Valley, the Arava Valley (Wadi Arabah) is embedded between the hills of the central Negev and those of the Jordanian Plateau (Rosen, 2017: 76). In total, the Negev covers an area of about 12,000 square km, equivalent to some 60% of the country. It is also a continuation of the Sinai Desert.

The geographic borders of the northern Negev (study area) are roughly defined as follows: to the north, the foothills of the Judean Mountains; to the east, the watershed of the Be'er Sheva–Arad Basin and the Arava Valley; to the south, the central Negev Highlands; and to the west, Nahal Besor (Wadi Gaza). The study area is a transitional region between the Mediterranean Coastal Plain and the coastal cities of Gaza and Ashkelon, and the desert to the south. It is a transitional steppe zone, at the edge of subsistence dry-farming practicability, with regions farther south absolutely requiring runoff irrigation systems, and those farther north falling well within the Mediterranean zone.

The elevation in the northwestern part of the study area is relatively low, up to 150 m above sea level. Further to the east, the elevation grows to 700 m above sea level, forming hilly ridges mainly composed of bare limestone (Horowitz, 1979: 15) as shown in Figure 3.1.

The springs resulting from the Besor stream, part of the western study area, are the only natural perennial water sources in the region. Nahal Besor and its tributaries serve as the main drainage channel of the area and run from southeast to northwest. To the north of the study area, Nahal Gerar and Nahal Assaf flow into Nahal Besor, and about 9 km to the southwest, Nahal Besor runs into the Mediterranean Sea (ca. 5 km south of modern Gaza). Deep wadis partially dissect the banks of Nahal Besor. The Be'er Sheva–Arad Basin is located to the east (central and eastern study area), spanning the majority of the northern Negev. Narrow at the eastern part, it widens as it expands westward. Its wadis drain into both the Mediterranean Sea and the Dead Sea (Magness, 2003: 130). Nahal Beersheva is one of the important tributaries of Nahal Besor, and all wadis in the study areas flow directly or indirectly into Nahal Besor. The Be'er Sheva–Arad Basin is mostly covered by reworked loess, and its elevation is about 400 m above sea level in the east, grading toward the west to about 150 m above sea level. There are no perennial rivers in the basin, but its structures allow for the collection of large quantities of groundwater (Horowitz, 1979: 15).

The soil in the northern Negev consists mainly of three types: loess, calcareous steppic soil, and sandy regosols. While loess covers the majority of the western and central northern Negev, the eastern part has more calcareous steppic soil

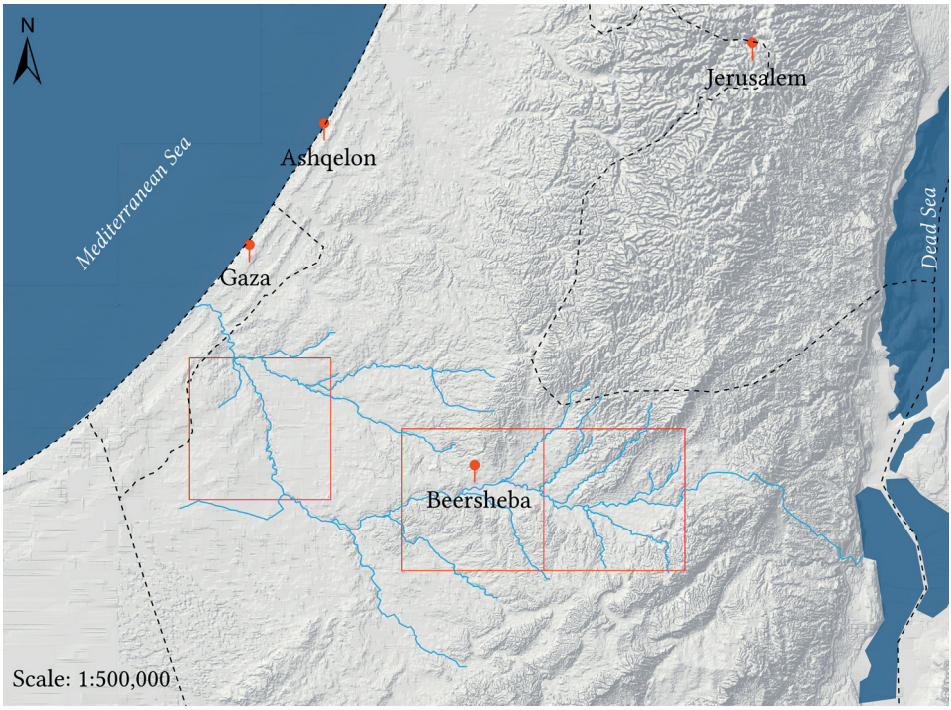

Figure 3.1 Hillshade map of the northern Negev and the surrounding area.
The map includes the location of the three study areas, modern cities, and the main wadis of the northern Negev. ArcGIS pro 2.5 Hillshade tool. Background was created from the 12.5 m-resolution ALOS-PALSAR DEM.

(Figure 3.2). Around Nahal Besor, the western study area, the northern region is covered by loess soil and the southern part by sandy regosols. There are some kurkar ridges (calcareous sandstone), especially in the northwestern part (Sneh et al., 1998). The loess soil is in many places deeper than 15 meters (Gat, 2012). Some areas, such as wadi beds, are covered with red-brown soil from sand from eroded kurkar (Gat, 2012).

The northern Negev is a semi-arid region where the vegetation is classified as Irano-Turanian steppe (semi-desert vegetation), comprising scrub and brush vegetation. To its north is the Mediterranean zone, and the degraded steppe and Saharo-Arabian Desert zone lies to the south. The flora of the Irano-Turanian steppe makes up only about 13% of Israel's plant species, and animals comprise about 15% (Horowitz, 1979: 31). Riverbeds, or wadis, are ephemeral streams running only after rainfall during the rainy season, with the exception of Nahal Besor.

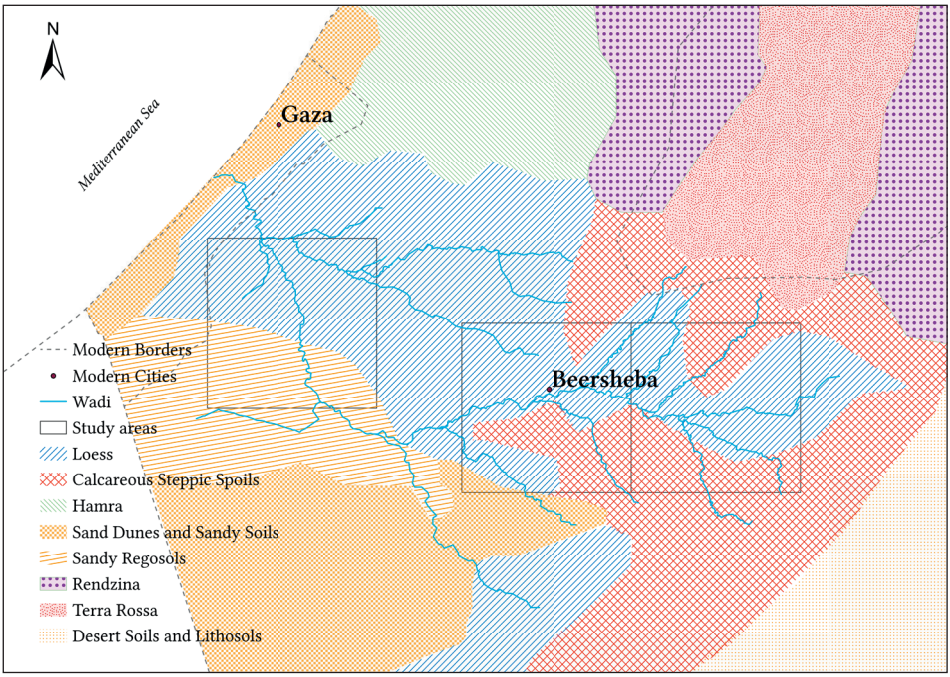

Figure 3.2 Soil map of the northern Negev (after Horowitz, 1979).

Soil map of the northern Negev with the three study areas, most of the study area are covered by loess. The southern part of the western study area is covered by sandy regosols and the mountain range in the Be'er Sheva–Arad basin are calcareous steppic soils and the area in between by loess.

In general, there is no rain from June until September, and the region receives rainfall mainly in the winter months, November through April, concentrated from December to March (Tsoar and Yekutieli, 1992; Vaks et al., 2006; Rosen, 2017: 73). Yearly rainfall in the northern Negev averages between ca. 150 and 300 mm, based on the annual mean rainfall between 1931 and 1960 (Sharon and Kutiel, 1986). Similar rainfall was recorded between 1981 and 2010 (Ziv et al., 2013), which is the barest minimum for subsistence dry farming[2] (Magness, 2003: 131; Rosen, 2017: 76). Today, a clear shift is visible between the northwestern part, where the average yearly rainfall is between 250 and 350 mm, and the southeastern part, where it is between 150 and 250 mm (Figure 3.3).

2 Dry farming: about 250 to 300 mm of rainfall per year is needed for wheat (Grigg, 1974; Rosen, 2017: 88) and 200 mm for barley (Rosen, 2017: 88).

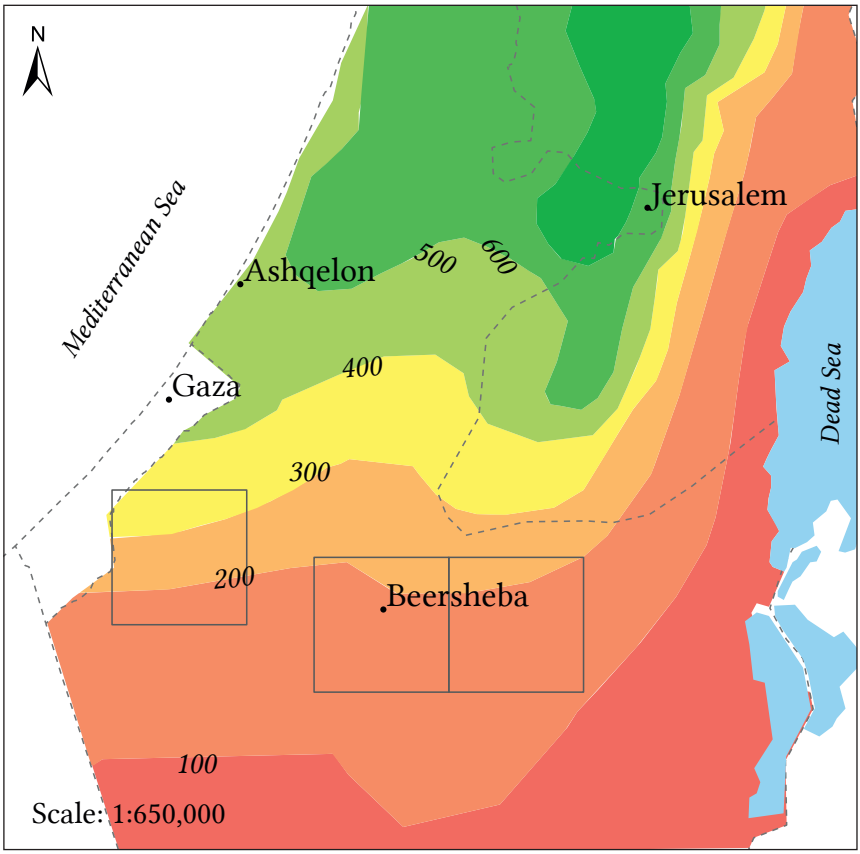

Figure 3.3 Present-day average precipitation (after Halfon, 2021)
Annual average rainfall in Israel (1991–2020). The northern Negev is located between the 100 mm isohyet and the 400 mm isohyet, including the three study areas.

However, the rainfall has a high annual variability: the 200 mm isohyet, which represents the border between the semi-arid and arid regions, varies strongly and can differ each year. For example, in the extremely dry year 1998–1999, the most northward transition of the 200 mm isohyet took place; it was located about 50 km to the north, far into the Mediterranean zone. When there is a year with a high amount of rain, the border can transit as far south as the borders of the central Negev Highlands (see Ziv et al., 2013). As previously stated, the 200 mm border also represents the bare minimum for dry farming, which is important to note considering the high annual variability. It most likely influenced the settlement patterns of the northern Negev.

All these different factors, topography, geology, and climate, have influenced the three study areas. The vegetation varies in all parts of the northern Negev (Figure 3.4).

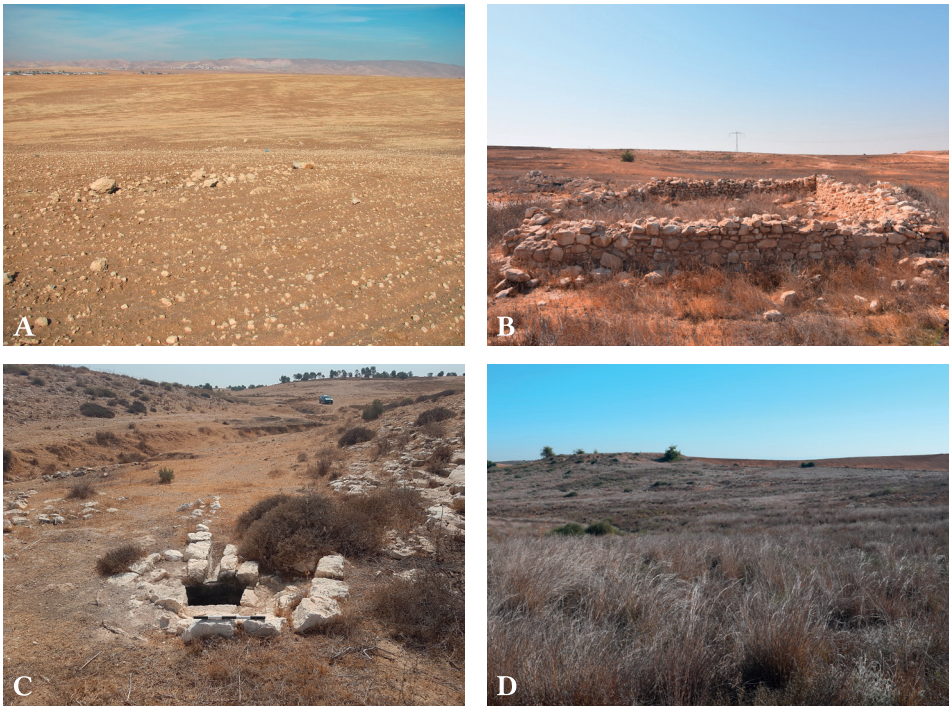

Figure 3.4 Vegetation of the northern Negev.
(A) Eastern study area: fields near the Bedouin town of Kuseife; winter 2018. (B) Central study area: fields near Be'er Sheva (north) with a Byzantine field tower; summer 2019. (C) northern Negev: scrub and bush vegetation and a Classical period cistern with channel south of Rahat (outside survey sample, ca. 10 km north of Be'er Sheva); summer 2019. (D) Vegetation in the western part of the study area; autumn 2017 (pictures taken during archaeological surveys by the author).

3.2 Paleoclimate

The ancient environments and climates can be analyzed using a range of methods. Methods that have been applied in the region include analyzing isotopes data from karstic caves (Bar-Matthews and Ayalon, 2004; 2011; Vaks et al., 2006), Dead Sea Lake levels and hydrological analysis (Frumkin et al., 1991; Bookmann et al., 2004), radiocarbon dating of wood collected from caves at Mount Sedom in the

Dead Sea area (Frumkin et al., 1991), and alluvium dating (Rosen, 2007: 95–96). Bar-Matthews and Ayalon (2004) calculated the average paleorainfall during the last 7,000 years using carbon and oxygen isotopes from the Soreq Cave in Israel. The cave is located ca. 60 km north of Be'er Sheva, so the rainfall reflected in Figure 3.5 represents the calculated rainfall of the Soreq Cave area, located well inside the Mediterranean climate zone. The authors showed an increase in rainfall at the end of the 1st Millennium BCE, followed by a period of relatively low rainfall during the Roman-Byzantine period that increased in the Early Islamic period. The data from the Soreq Cave speleothems indicate changes of up to 10% of calculated rainfall during the Classical period. Between 1000 BCE and 1000 CE the results show calculated rainfall varies between ca. 450 mm and 520 mm per year (Figure 3.5).

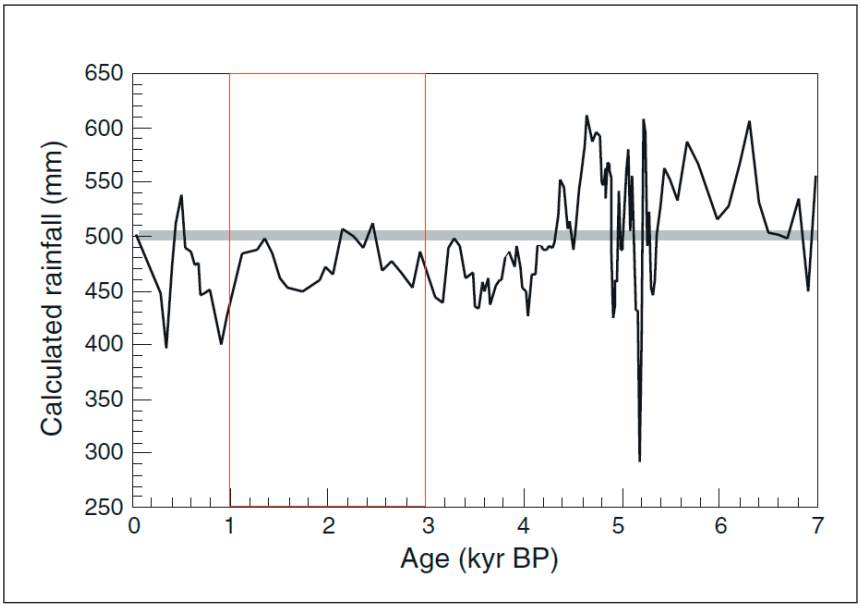

Figure 3.5 Paleorainfall during the last 7,000 years.
Age (kyr BP 1–3) 1000 CE to 1000 BCE, highlighted in red (Classical period, fourth century BCE–9th/10th century CE). Adapted from Bar-Matthews and Ayalon (2004: 382).

In contrast, Vaks et al. (2006: 396) analyzed speleothem deposits in karstic caves in the northern Negev in order to reconstruct the paleoclimate of the border between the Mediterranean climate region and the Saharo-Arabian Desert, concluding that the climate in the northern Negev during the last 13,000 years was

similar to the present, or even more arid. The karstic caves studied in the research by Vaks et al. (2006) are located in the northern Negev, just outside the eastern study area, to its north: Ma'ale Dragot cave systems and to its east, the Tzavoa cave. Frumkin et al. (1991: 196) analyzed data collected from caves at Mount Sedom (Dead Sea area): passage elevation of the caves' width ratio and driftwood distribution. The wood samples were used for radiocarbon dating. Their results suggest a dry period between the years 1000 BCE and 0, followed by a short, moister period (0 to 300 CE). This was followed again by a dryer period between 300 CE and 900 CE. After 900 CE, a moister period followed again. Similar results were reported by Bookman et al. (2004), who determined a rise in the Dead Sea level at the end of the 1st Millennium BCE and the beginning of the 1st Millennium CE. The authors also indicated that the level was relatively low during the sixth century CE, rising again only toward the end of the 1st Millennium CE. These results correlate well with the paleorainfall data from the Soreq Cave (Bar-Matthews and Ayalon, 2004); however, the sea-level results indicate a longer, wet period during the first Millennium CE up until 300 CE, followed by a dry phase between 300 and 900 CE and a further increase in rainfall in the 9th and 10th centuries CE (Frumkin et al., 1991). It has to be taken into consideration that the Dead Sea level is not only affected by rainfall, because it also receives water from the Jordan river and runoff rainwater; therefore the data presented are influenced by areas with higher paleorainfall (i.e., the Galilee and Jerusalem area) more than the northern Negev.

In general, all the researchers mentioned (Frumkin et al., 1991; Bar-Matthews and Ayalon, 2004; Bookman et al., 2004), with the exception of Vaks et al. (2006), point to climatic fluctuations and environmental shifts in the northern Negev during the Classical period. However, several questions have to be asked (1) can the data from central Israel or the Dead Sea be extended, even partially, to the northern Negev? (2) If there were fluctuations, were they enough to impact settlements, especially in an environmentally marginal or transitional area? (3) what kind of influence these climatic shifts had on settlement patterns and populations in the northern Negev during the Classical period?

During the Roman-Byzantine period, the area saw a settlement boom (Avni, 2014: 191), followed by a gradual decline after the Muslim conquest. Some scholars have claimed that climate change was the main factor in the expansion and decline of settlements in the area (see Issar and Govrin, 1991; Issar, 1995; 1998; Hirschfeld, 2004a; 2006; 2007;), while others have argued that agriculture and settlement flourished during the Roman-Byzantine period as a result of historical and cultural factors, not as a result of climate change (see Rubin, 1989; 1991; Rosen, 2000; Avni, 2014).

A recent study by Vaiglova et al. (2020) measured stable isotopic proxies from zooarchaeological remains (goats and sheep) from Nessana, Shivta, and Elusa;

the authors concluded that during the 6th and 7th centuries CE, no significant climate deterioration took place. They argued that other factors such as the collapse of trade patterns (connecting the Arabian Peninsula with the Mediterranean world) or the Justinian plague led to a decline in the Byzantine population. Furthermore, they concluded that the settlement abandonment at the end of the Byzantine period was more likely the result of a reorganization of economic or territorial priorities within the wider Byzantine empire (Vaiglova et al., 2020).

The studies from Vaks et al. (2006) and Vaiglova et al. (2020) point to the fact that during the Classical period no significant climate fluctuation took place in the northern and Central Negev. An additional point to take into consideration is that according to Bar-Matthews et al. (1998) the period from ca. 1050 BCE to 950 CE was the most stable period in terms of rainfall amount, and according to A. Rosen (2007: 168) the stability of rainfall quantities is far more important than the rainfall quantities in marginal farming areas such as the Negev.

4 METHODOLOGY

4.1 Introduction

The theoretical and methodological background of this study is based mainly on the results of systematic surveys conducted by the ASI in the study area, additional excavations results, numismatic evidence, and historical sources. These sources and the accompanying methodology are outlined in greater detail below.

4.2 Survey archaeology: northern Negev

In recent decades, particularly since the 1950s, systematic archaeological surveys have been conducted throughout the Mediterranean and Near East (Barker and Llyod, 1991; Barker, 1996; Bintliff, and Sbonias, 2016; Alcock and Cherry, 2004; Witcher, 2008). In Israel, since the 1960s an impressive amount of survey data has been collected. Today, over 150 survey maps, each consisting of grid squares of 10 × 10 km (100 square km) have been published, containing thousands of archaeological sites, dating from prehistory to the Ottoman/early Mandate periods. The surveys conducted were site-based, meaning that only well-visible remains were registered (e.g., settlements, buildings, tombs, and large pottery concentration). The sites have been dated primarily based upon sherds found on the surface (Mayerson, 1996: 102). However, each team had its own definition as to what defines a site. In many surveys, however, the definition of what qualifies as a site or other methodological consideration was not published. Each site was registered with a site name and number, coordinates, dating, a general description, and a more specific description of the finds and remains discovered. Some of the sites added drawings of finds, illustrations (site maps), and photographs, which

were mostly taken by members of the survey team. All publications have been published online in bilingual (Hebrew/English) format. At the time of writing, 152 survey maps are available online, ten survey maps are in preparation for publication, surveys have been completed for five additional map areas, and a further 18 surveys are ongoing (Archaeological Survey of Israel n.d.).

Survey activities in the Negev were limited in the early phase of the ASI. With the Negev Emergency Survey, a response to the peace treaty with Egypt and the planned redeployment of the Israel Defense Forces in the Negev, these surveys received greater attention, and many areas in the Negev were systematically surveyed. The surveys in the northern Negev were conducted mostly from the 1970s onwards. For the northern Negev, 22 survey maps had been published by the year 2021 (see Figure 4.1), from which 12 have been chosen for analysis in this study.

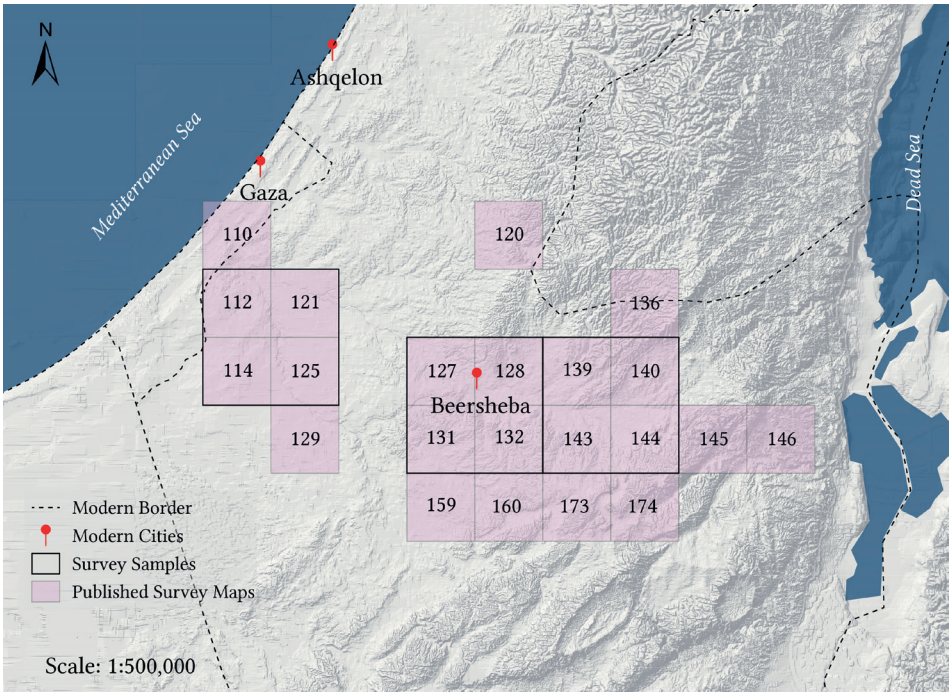

Figure 4.1 ASI—Published survey maps of the Northern Negev.

Published survey maps of the northern Negev, numbered as recorded in *Reshumot–Yalqut Ha-Pirsumim* (IDAM, 1964). Each square represents a 10 × 10 km area. All maps have been published online: The Archaeological Survey of Israel. [Online] Available at: http://www.antiquities.org.il/survey/new/default_en.aspx [Accessed 21 September 2021]. The survey samples identify the area analyzed for this research. The bold face squares are the basis for this work. Background: Hillshade from 12.5 m-resolution ALOS-PALSAR DEM.

The following archaeologists and researchers conducted the surveys in the areas analyzed in this work: Gat conducted the survey of Nirim (map 112) as well as the map of Patish (map 121) between the years 1999 and 2001 (Gat, 2012; 2014). Different teams surveyed Mivtahim (map 114). The first survey began in the late 1950s and was led by Gophna from Tel Aviv University (TAU); it was conducted before the founding of the ASI and its subsequent work on systematic surveys (Gal, 2017). During the late 1980s and early 1990s, Gazit surveyed the area (Gal, 2017). Lehmann, from Ben-Gurion University of the Negev (BGU), further surveyed the area between 2000 and 2008 (Gal, 2017). These three researchers surveyed different parts of the area (Gal, 2017). Gazit (1996) surveyed the Urim map from 1978–1985, and the results were published as a monograph and online. Maps 131 and 132 (Nahal Secher and Nachal Be'qa) were surveyed by Baumgarten (2014a; 2014b) and published online. These areas made up part of the Negev Emergency Survey, and the field work was conducted in the early 1980s. Thus, the maps were published many years after the research was completed. The survey maps of Be'er Sheva consist of a collection of the excavations and development surveys that were conducted during the last decades. The areas were never systematically surveyed, as the modern city of Be'er Sheva covers most of the area (Shemesh, 2018a; 2018b). Nahal Yattir (map 139) was surveyed in 1983–84 under the Negev Emergency Survey framework and published as a monograph (Govrin, 1991). The map of Qasif (map 140) was surveyed by Yehuda Govrin (2016) in the 1980s and published online. The map of Khirbat Aroer (map 143) was surveyed by Eldar-Nir (2015) in the early 1980s and published online in 2015. Finally, the map of Tel Malhata was surveyed in 1979 and the early 1980s by Beit-Arieh and students from TAU. The surveys were conducted in connection with the TAU excavation at Tel Ira (Beit-Arieh 2003: 8).

Despite discrepancies among site-based surveys and site definitions, these datasets are crucial for studying ancient settlement patterns (cf. Bintliff, 2000). Modern disturbances, including agriculture, urbanization, erosion, and other land use types, are threatening the archaeological material on and beneath the surface. Consequently, these datasets will gain even greater importance in the future when researchers must rely on survey data for regional settlement pattern analysis, because the physical remains are no longer preserved (Witcher, 2008).

4.2.1 Limitations of survey data

Surveys provide a systematic means of looking at the regional distribution of the archaeological record. Consequently, archaeological surveys provide valuable information that must be evaluated critically. Several limitations must be consid-

ered: the method of the survey (vehicular, pedestrian); resolution of the survey (coverage, sampling procedures); surveyor's expertise and biases; predetermined methods (what is registered, what defines a site, what are the types of information collected); season during which the survey took place (vegetation cover may vary seasonally); topographic features; general vegetation cover; and degree of development of previous human activities. Furthermore, and most importantly, the degree to which the surface material represents the archaeological site can vary greatly (Cherry, 1983: 398–99; Barker, 1991: 5; Gaffney, 2000), which can result in problems when estimating the size, chronology, and function of the archaeological site (Cherry, 1983: 379; Gill et al., 1997: 67; Bintliff, 2000: 200). The visibility varies widely in the northern Negev and between the study areas. Specifically, the vegetation in the Be'er Sheva–Arad basin is mainly spare, and topsoil finds are visible, whereas, in the southern Hebron hills, or the western study area, the visibility is lower because of denser vegetation.

Another limitation of the study is that the dating of the sites surveyed in the northern Negev is based primarily on pottery sherds. Chronological precision is limited in many instances, making it challenging to establish period-specific settlement maps (Magness, 2003: 7). Chronological precision is especially challenging to establish during the Late Roman–Early Byzantine, and the Late Byzantine to the beginning of the Early Islamic period. Many Byzantine period sites show continuity throughout the seventh century without a break, e.g., a destruction layer or significant shift in the material culture (Foss, 1995: 230).

A further limitation is that the survey data used in this study were collected and published by different teams; consequently, the dating and classification of the sites may vary. In the relevant surveys, the following periods were used for classification: Hellenistic, Hellenistic–Roman, Early Roman, Nabatean, Roman, Late Roman, Roman-Byzantine, Byzantine, Byzantine–Early Islamic, and Early Islamic. Therefore, in this study, it was essential to use excavations to compare the data, and only the combination of both datasets could provide a more detailed picture of the settlement patterns, allowing for a more precise analysis of the cultural landscape. To create settlement maps that were as accurate as possible, surveys and excavations were considered. In light of the new understanding of the ceramics sequences, published ceramics from the surveys and appropriate excavations were critically reviewed to ensure that chronological attributions were as precise as possible.

4.2.2 Theory, methods, and the problems of using legacy survey data

The data provided by the ASI can be defined as legacy survey data. Such data are archaeological information collected from the 1950s (some even earlier) onwards. Since the 1990s survey methodology has developed sharply (Witcher, 2008). However, legacy survey data are vital for comparative surveys and the exploration of inter-regional variability (Witcher, 2008). The problem when comparing such survey data from different maps is based on variations in their methodological approaches. The surveys were conducted during different periods (1950s–2000s). Some were published by the lead surveyor right away, but others were published decades later—some by people who did not participate in the survey.

Because different teams and lead surveyors conducted the surveys, the results and their interpretations vary. However, the lead surveyor: Baumgarten, Gat and Govrin, each surveyed two maps (Baumgarten, maps 131 and 132; Gat, maps 112 and 121; Govrin, maps 139 and 140), which somewhat reduces the variability in methods and interpretation in each study area. Nevertheless, in the eastern and western study area, three different surveyor teams were involved. The central study area has only two systematically surveyed maps, as the northern two maps are collections of all the field work conducted in the areas, which also includes sites that were excavated.

A further problematic point when comparing survey data is the lack of sufficient metadata, e.g., site definitions or the criteria of the survey strategy adopted by each survey team (cf. Witcher, 2008). In many cases, such metadata were not or were only very briefly described. As an example, Gat described some of the methodological considerations he used during the survey of Patish (Gat, 2014).[3] In the three study areas, this is the only survey that published any methodological considerations. Each team used different methods, and the lack of detail of the considerations limits the possibility of comparing the different regional datasets and analyzing inter-regional variability. As an example, in the western study

3 Methodology: "The survey was conducted by vehicle, mainly along the roads separating the cultivation plots and the channels of the streams. In those regions where there is limited vehicle access the survey was performed on foot. The aeolian soil (the different types of loess) facilitated identifying sites that are of a different shade, and where there are concentrations of stones, ash patches and pottery sherds. The survey was conducted in 2001 and the sites were revisited numerous times in different seasons. The artifacts gathered in the survey consisted mainly of ceramics and flint implements, architectural elements: such as a fragment of a marble chancel screen, bricks and bathhouse remains, stone pavers and wall liners, fieldstones and river pebbles next to the remains of public buildings, dwellings, industrial installations, cisterns and tombs." (Gat, 2014: D. Methodology)

maps 112, 114, and 121, between 41 and 53 Classical periods sites were registered. In map 125, however, 226 Classical sites have been indicated. This difference in such a small area cannot be explained as a real variation in the settlement intensity during the Classical period.

Similarly, Gazit registered 40 encampment sites dating to the Byzantine period; however, in the other three study areas, only three Byzantine campsites were discovered. These different survey results are mainly based on different site definitions rather than differences in human occupation. In other publications comparing the different survey maps, clear definitions for the described survey results were given (see Chapter 4.5—Settlement types).

4.3 GIS data

Digital Elevation Model

The digital elevation model (DEM) used in this study was ALOS-PALSAR[4]. The ALOS-PALSAR 12.5 m data is the highest-resolution of freely available data for this research area. The dataset was merged (Mosaic to New Raster tool in ArcGIS) with the Elevation Void Fill function and was applied to correct the DEM. Furthermore, the raster file was clipped to the extent of the northern Negev.

Water sources

In the early 20th century, Newcombe (1914; Zohar and Erickson-Gini, 2019: 6) mapped the southern Levant for the British military. The resulting map included routes as well as water sources. The water resources were digitized by Zohar and Erickson-Gini (2019), and their digitized shapefile of the water sources was used in this study (Figure 4.2). It is assumed that permanent water sources had not changed significantly from the Classical period to the early 20th century.

4 Advanced Land Observation Satellite-Phased Array type L-band Synthetic Aperture Radar, with a resolution of 12.5 m. [Online]. Available at: http://www.eorc.jaxa.jp/ALOS/en/about/palsar.htm; retrieved from: https://vertex.daac.asf.alaska.edu/#/ [Accessed: 20 October 2019]

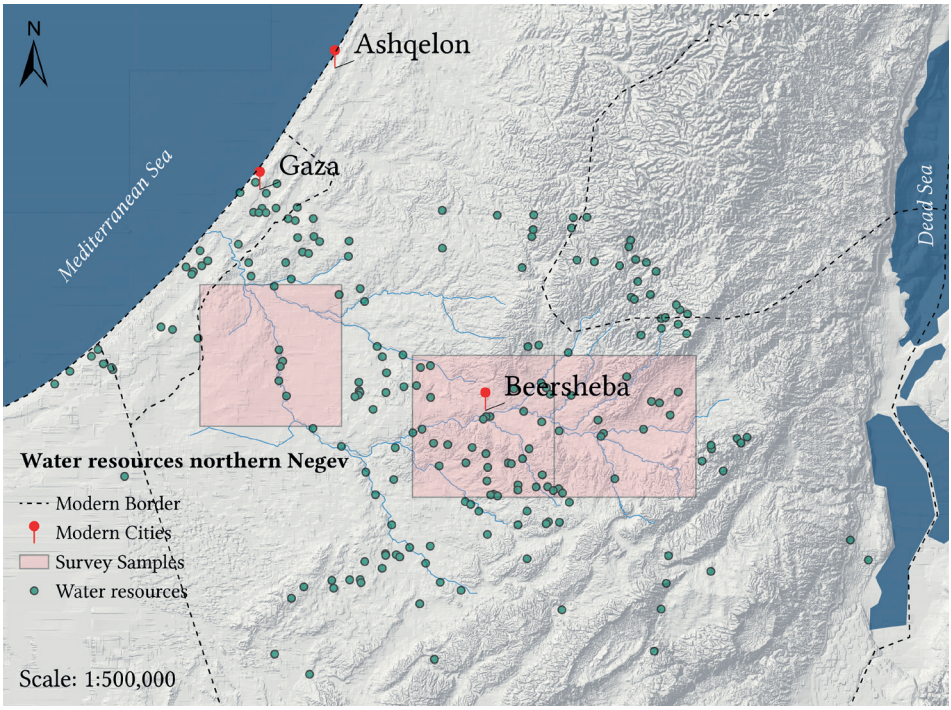

Figure 4.2 Water resources northern Negev (after Newcombe, 1914).
Water resources according to Newcombe (1914), digitized by Zohar and Erickson-Gini (2019). Northern Negev and the three study areas as well as the major wadis of the area. Modern cities of the area are marked in italics. Background: Hillshade from 12.5 m-resolution ALOS-PALSAR DEM.

Settlement data

The GIS coordinates are taken mainly from the ASI map surveys, published surveys reports, excavations, and internal inspection reports. However, some sites—for which no recorded grid-coordinates were available—were recorded in the field with a handheld GPS, mainly in the city of Be'er Sheva and its surroundings. In several cases, published maps were used to determine the exact coordinates of certain features. For example, the following map of Be'er Sheva (Figure 4.3) shows the locations of 26 tombs discovered during inspections on Balfour Street (Abadi-Reiss and Eisenberg-Degen, 2013). The map was georeferenced with the help of the published coordinates, after which the exact location of each tomb could be determined.

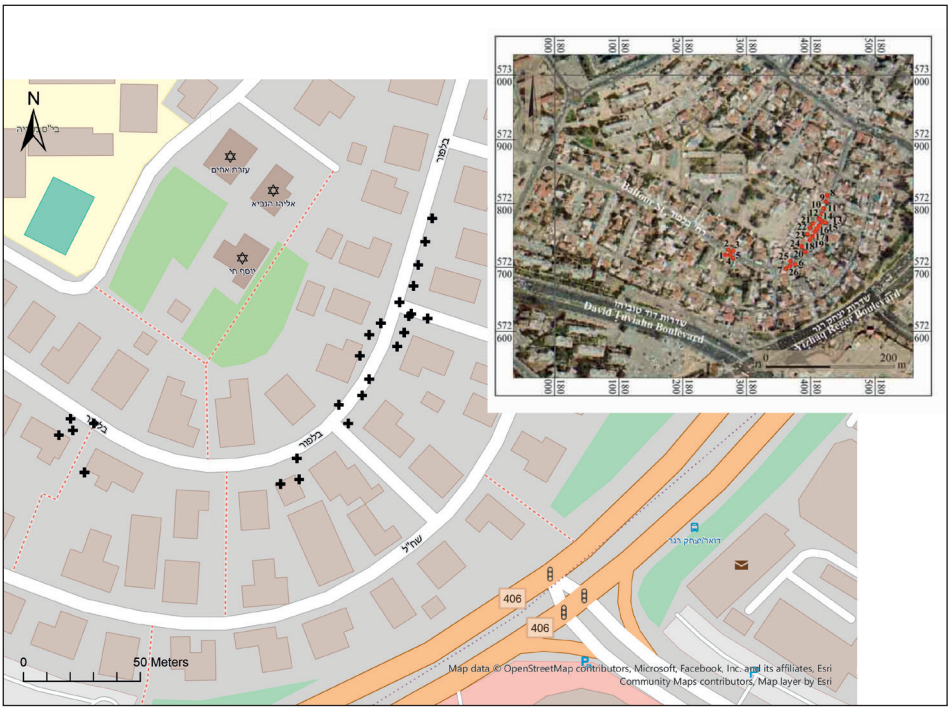

Figure 4.3 Example of georeferenced map.
Published map (right upper corner) (Abadi-Reiss and Eisenberg-Degen, 2013; Courtesy of the Israel Antiquities Authority) and exact location of tombs after the map has been georeferenced. Background: Open Street Map, map layer by ESRI.

Roads

The road system presented in this study is based mainly on data drawn from the Digital Atlas of Roman and Medieval Civilizations (McCormick et al., 2018) at Harvard University,[5] which provides a digital version of the Roman roads identified in the *Barrington Atlas* (Talbert 2000). However, the large scale of these vector data file means that high-resolution digitization is problematic. Wherever possible, the roads have been corrected with the help of different maps and suggestions proposed by researchers (e.g., Roll, 2002; 2007; Tsoar and Yekutieli, 1992; Tsafrir et al., 1994; Gazit, 1996; Zohar and Erickson-Gini, 2019), as well as survey

5 The Digital Atlas of Roman and Medieval Civilizations. [Online] Available at: https://darmc.harvard.edu/data-availability [Accessed; 20 October 2019].

finds, such as parts of roads, milestones, etc. Furthermore, parts of some roads could be digitized with the help of satellite imagery, such as the Ma'aleh Deragot road. This road runs from Tel Malhata toward Jerusalem and is visible via satellite imagery from Digital Globe (ArcGIS World Imagery base map) provided by ESRI (Figure 4.4), and so could be corrected and digitized.

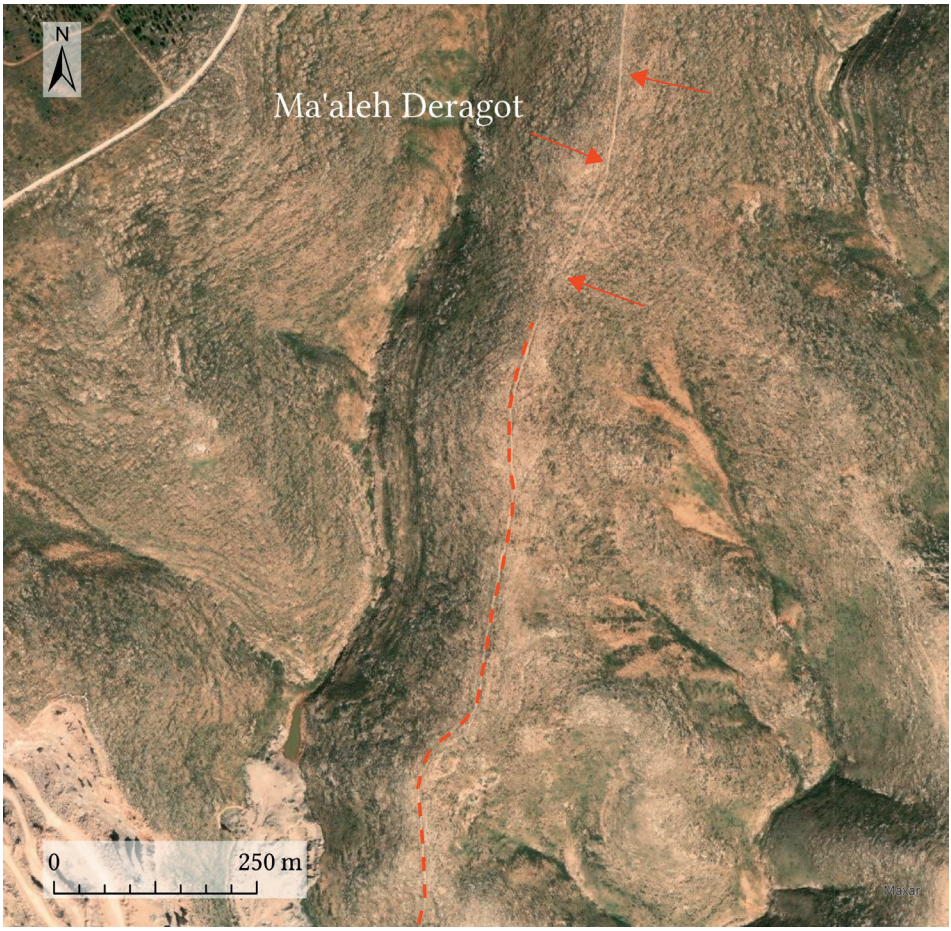

Figure 4.4 Roman road, Ma'aleh Deragot.
Satellite Imagery with the Roman road, Ma'aleh Deragot, clearly visible and partially digitized (in red). Background: Satellite Imagery ESRI—DigitalGlobe.

4.4 Database

The database was built by recording the information for each archaeological site (see Appendix 1—Database format and attributes). A general concept of the database needed to be built, to analyze the data with GIS software. Each archaeological site received a primary key (Site number, ID), which enabled the identification of each site individually as well as the ability to assign different attributes to each site, e.g., a farmhouse during the Late Roman period developed into a large farming village during Byzantine period, growing to include a church, winepress, and other attributes. This is still the same site (geographically speaking), but its attributes have changed. The same is true for a site that was abandoned and in a later phase resettled at the same location.

Each recorded site was given a name (either according to the ASI, geographic location, or map reference). Different definitions and categories were used to classify each archaeological site, e.g., site type (see Chapter 4.5 Settlement types). Wherever possible, the size of the settlement was calculated (see 4.6 Calculation of site size). Furthermore, the number of structures, area in hectares, periods of occupation, status as permanent or non-permanent site, a site description, and additional information were recorded.

4.5 Settlement types

Among the difficulties of comparing data from different surveys are the differences in site definitions, chronological definitions, and the details of the published data (see above 4.2—Survey archaeology: northern Negev). Therefore, it was necessary to specify clear definitions for the surveyed remains. For the purposes of this thesis, the surveyed sites were grouped into six general categories (settlements, installations, cult sites, burial sites, encampment sites and findspots. Each category has been further divided into types and subtypes (Table 4.1).

In the eastern Roman empire, there is archaeological evidence of a small farm-and-village-based economy. The economic prosperity of farms and villages began to take root in the Hellenistic period and continued through the Byzantine period and the Early Islamic period. During the Byzantine period, rural settlements covered all of Palestine, including previously unsettled regions (Hirschfeld, 1997). In the study area, agricultural settlements are mainly small to large single farms, groups of farms (three or more) categorized as small villages (hamlets), medium to large villages, and a few larger towns and cities.

Table 4.1 Categories, types, and subtypes of archaeological remains.

Settlements	Installations	Cult Sites	Burials	Camps	Findspots
Urban/ Administrative: City, Town	Industrial: Kilns, Quarries	Temples, Shrines, Churches, Synagogues, Mosques	Tombs, Built tombs, Cemeteries	Encamp-ment sites	Pottery scatters, Coins, Additional archaeological finds
Rural/ Agricultural: Villages, Farms, Single Structures	Agricultural: Winepress, Olive press, etc.	Additional structures that belong to cult sides such as: Miqves or baptismal fonts, etc.			
Military structures	Water: Cisterns, Wells, Pools, Aqueducts				

Urban/Administrative Settlements—Cities and Towns: During the Hellenistic period, a new type of urbanism was introduced in Palestine, and life changed significantly. In particular, new traditions (Greek-Hellenistic, then Roman) grew increasingly critical. These changes also affected how the locations were chosen for new settlements and how these settlements were planned and built. During the Classical period, the northern Negev was primarily an agricultural area with few large settlements. It served as a connection between the desert and the port cities of Gaza and Ashqelon. In the Late Roman period and throughout the Byzantine period, Be'er Sheva transformed into a large city and was designated the capital of northern Negev.

Villages: In this study, the term "village" was used for both smaller and larger rural settlements. Small villages are defined as more than four large structures (e.g., farmhouses). When possible, villages in the database were distinguished as small (four to nine structures) or large (villages containing ten or more structures). Several of the large Byzantine period villages had one or more churches; some also contained monasteries. An example of a large village can be seen at Khirbat Amra, a site that consists of several farmhouses, a large church, installations, etc. Some of these have central courtyards and are surrounded by rectangular rooms—the village dates to the Byzantine and Early Islamic periods, the area was settled from

during the Classical period, from the Hellenistic period onwards (cf. Tahal 1996; 2000).

Farmhouses: Farmhouses can be found throughout the three study areas and are the most common structure category. Three main types of farmhouses can be found in the northern Negev, the most common of which is a simple, small dwelling, consisting of one to three rooms, measuring in total some 50 to 100 square m. A second type consists of watchtowers, which were used as seasonal dwellings, mostly in the area surrounding towns and villages. They did not serve as family residences (Haiman and Fabian, 2009: 46). The third type includes large, mostly rectangular structures consisting of several rooms grouped around an inner courtyard. The largest such farming estates were built as manor houses, usually containing a closed compound, and ranging in size between 200 and 500 square m. Many farmhouses are accompanied by additional agricultural structures, such as animal pens, installations, and cisterns. Farmhouses could not always be categorized based on their description in the survey text. In most cases, buildings were categorized as "structures." Only if it was deemed likely that the building served as a farmhouse (e.g., if there were agricultural structures connected to the building, based on a published map or other indications) were the sites then categorized as such.

Structures: The category "structures" includes all sites that do not fit into any other category or where no further surface finds indicating a specific usage of the structure have been found. Examples are dwellings in an urban environment, temporary dwellings, small farms, and structures of unknown purpose.

Installations: Installations are defined as structures in which there is archaeological evidence of a specific activity. Most installations are either agricultural (e.g., winepress, oil press, (donkey) mill, fish farming pools) or industrial (e.g., pottery kilns, quarries). Many installations surround towns, villages, and large farmhouses.

Military Structures: Several military structures were discovered in the study areas. These were mainly fortified structures, for example, farmhouses with fortification towers, fortresses, military camps, and associated structures. Such structures have been found in all three study areas, dating from the Hellenistic to the Early Islamic period.

Cult Sites: This category includes all cult sites: temples, shrines, churches, monasteries, synagogues, and mosques as well as related structures such as miqve, bap-

tismal fonts, etc. Within the study areas, a Hellenistic temple, churches (n = 27), monasteries (n = 11), synagogues (n = 2), and two mosques (n = 2) were found. The Hellenistic temple was discovered at Tel Sheva (Aharoni, 1973: 34; Derfler, 1981: 97), Churches and monasteries appear from the fifth century CE in the study area and were abandoned the latest around the eight century CE. A Byzantine period synagogue has been found at Ma'on (Levy, 1960: 265; Grabar, 1962: 117; Barag, 1993: 944–946), and indications for a synagogue in Be'er Sheva have also been discovered (Figueras, 1980: 154; 2013: 9). Early mosques dating to the Early Islamic period have been discovered within the eastern study area. Further, north of Be'er Sheva, just outside the study area and close to the Bedouin town of Rahat, a small open-air mosque was discovered that dates possible to the eighth century CE (Seligman and Zur, 2021: 25–41).

Burial Sites: There were several cemeteries and burial sites in the study areas, mainly close to wadis, where winter rains and erosion had exposed the burials. However, most burial sites have been discovered during test trenches, inspections, and excavations (e.g., Be'er Sheva, Tel Sheva, Tel Malhata). At Tel Malhata in particular, a large cemetery has been excavated in recent years (Talis et al., 2017). The majority of the tombs found in the northern Negev are cist tombs built from dressed limestone slabs. These tombs date from the Late Roman to the Early Islamic period. As the Byzantine burial tradition continued into the Early Islamic period, it is not always possible to date a burial precisely to one of these periods. Other burials found in the study area include pit graves and burial caves.

4.6 Calculation of site size

Wherever possible, the size of the settlement was calculated. However, this was not possible in all cases, and there are several sites for which the exact size is unknown. If no size was indicated in the publication or survey file, it was estimated (if possible) based on the described findings or attached site plans and photos. It is assumed that measurements of site size and its perimeters always represent the site during its maximal extent of growth.

Five site size categories were defined: unknown, small sites up to 1 ha, larger sites between 1.1–3.0 ha, large sites between 3.1 and 10.0 ha, and sites larger than 10.1 ha. It was not possible, based on the given data, to define a more precise category. Most sites were in the 0.0–1.0 ha category, which contains all sites from a few square m to 1 hectare. These include mostly farmsteads, installations, small villages (hamlets), isolated structures, cisterns, aqueducts, and agricultural terraces.

In the larger category (< 10 ha), many sites are non-permanent, such as campsites and findspots. These were used over a long period and consequently show large pottery scatters. It is impossible to establish the exact size of non-permanent sites for a specific period, as those sites were in use over a long time. During the Late Roman to Early Islamic period, several urban centers were also recorded for the study areas, and to calculate the actual the size of these sites several different methods were used (see below).

4.6.1 Different methods of calculating site size

Calculating site size according to the approximate radius of field scatters

It is important to note that, in most cases, a general radius of the scatter of archaeological remains was given in the survey description with little additional detail. To establish the size of the archaeological site itself (e.g., the set of buildings, villages), it is necessary to consider the approximate radius of significant field scatters surrounding the sites (Wilkinson, 1989: 44; Bintliff, 2000: 209). For the calculation of site size according to field scatter radius, the following calculations, suggested by Wilkinson (1989), were used (Table 4.2).

Table 4.2 Calculating site size from the radius of field scatters.
The approximate radius of significant field scatters surrounding archaeological sites in the Middle East (from Wilkinson, 1989: 44).

Settlement size	Radius of scatter (km)
Hamlets and farmsteads < 1.5 ha	0.2–0.4
Villages 2–9 ha	0.6–1.0
Small town* 10–29 ha	1.3
Large town/city > 40 ha	2.2–6.0

* One example only: site 48 in the North Jazira

Calculating site size according to aerial/satellite imagery

In certain cases, free, available, aerial and satellite images (Digital Globe pictures—ArcGIS World Imagery base map, and in some cases drone aerial pictures) were used to calculate the approximate size of a site. In most cases in the north-

ern Negev, large archaeological sites have good visibility, especially as the vegetation is not dense. Therefore, calculating the size based on the settlements borders was possible. However, these calculations always represent the maximum possible size of the settlement. If areas within the settlement remained unsettled, in most cases this was not possible to establish. Also, only the maximum extent of the settlement could with this method be calculated, not site size based on specific periods. The method was also used to confirm the site size calculation based on approximate radius of field scatters. In all cases the analysis of the imagery confirmed the estimated site size calculated.

Calculating site size according to kernel density estimation

For most sites, the above-mentioned methods to establish site sizes were sufficient, but for the Roman-Byzantine settlement of Be'er Sheva, these methods were not possible. Modern Be'er Sheva covers the ancient settlement, making it impossible to analyze the site based on the field scatters or visible remains. Therefore, the kernel density tool (KDE) in ArcGIS Pro was used to calculate its size. The kernel density tool calculates the density of features in a neighborhood around each cell in a raster (ESRI, 2020a). Kernel density is highest at the position of a calculated central point and decreases gradually with increasing distance from that point. Using the KDE, the location of the ancient settlement and its size could be calculated (see below: Chapter 6.6.1—Be'er Sheva in the Byzantine period).

4.7 Chronological considerations

This research followed the chronology for Israel proposed by Stern (2008: 2126–29). The Classical period in the Negev is generally dated from the late fourth century BCE, beginning with Ptolemaic rule, through the Early Islamic periods (tenth/eleventh centuries CE). The general chronology and sequence of events are summarized in Table 4.3.

These social, political, and economic perturbations can be traced archaeologically and are presumably reflected in the settlement systems.

Table 4.3 Classical chronology and sequence of events (after Stern, 2008).

PERIOD	CHRONOLOGY	EVENTS
Early Hellenistic	332–167 BCE	• ***Ptolemaic Kingdom*** ○ Ptolemaic rule, established after the death of Alexander the Great ○ Palestine was part of the Ptolemaic Kingdom through the late fourth and most of the third centuries BCE ○ Beginning of the incense trade to Gaza by the Nabateans • ***Seleucid Kingdom*** ○ Stronger Hellenization of Palestine ○ Jewish revolt against the Hellenistic ruler
Late Hellenistic	167–37 BCE	• ***Hasmonaean Kingdom*** ○ 167–147 BCE, Maccabean revolt and years of struggle ○ By 142 BCE, the Hasmoneans had seized power in Judea as well as larger parts of the country ○ ~ 100 BCE, conquest of Gaza by Alexander Jannaeus; blocking of the Nabatean trade route until the Roman conquest ○ 64 BCE, Roman conquest of Palestine; northern Negev divided between the Nabateans, Jews, and Greek coastal cities (e.g., Gaza, Raphia)
Early Roman	37 BCE–132 CE	• ***Herodian period*** ○ 37 BCE, end of Hasmonaean Kingdom; Herod client-king of Rome ○ 4 BCE marks the division of Herod's Kingdom between his sons ○ 66–70 CE, First Jewish Revolt; end of the Herodian period ○ 106 CE, Nabatean Kingdom annexed by the Roman army ○ 132–135 CE, Bar Kokhba revolt
Late Roman	132–324 CE	○ 284 CE, reform by Diocletian; splitting of provinces into smaller units; division of army into field forces and frontier guards ○ Creation of *Limes Palestina*, a line of several forts in the northern Negev
Early Byzantine	324–491 CE	○ 324 CE, Emperor Constantine takes control of the eastern Roman Empire ○ Late fourth century CE, territory officially becomes Christian ○ ~ 358 CE, division into two provinces (north and south) along the *Limes Palestina* ○ 363 CE, earthquake ○ ~ 400 CE, reorganization of Palestine and division into three separate provinces: *Palaestina Prima, Palaestina Secunda,* and *Palaestina Tertia* (the northern parts of the study area are located in what was the *Palaestina Prima;* the southern parts in *Palaestina Tertia*)

Table 4.3 ***(continued)***

PERIOD	CHRONOLOGY	EVENTS
Late Byzantine	491–640 CE	○ 541–542 CE, Justinianic plague ○ Peak of desert urbanism and population, Elusa becomes district city of the region ○ 614 CE, Persian raids; military confrontation between the Byzantine and Persian empires which weakened both powers ○ 634–640 CE, Arab conquest ○ During the Late Byzantine period, several earthquakes took place in the northern Negev (551 CE; 633 CE)
Early Islamic	640–750 CE (–1099 CE)	• ***Umayyad caliphate ca. 661–750 CE*** ○ Consolidation of the Umayyad caliphate, capital: Damascus ○ Reorganization of Palestine; most of *Palaestina Prima* and *Palaestina Tertia* (i.e., most of the northern Negev) became part of Jund Filastin ○ Shift away from urbanism ○ 695 CE, 'Abd al-Malik's reforms (Language: Arabic; new Islamic coinage; administrative reforms) ○ 712–715 CE, foundation of the City of Ramle as new capital of Jund Filastin ○ Crystallization of Islam and slow displacement of Christianity • Abbasid dynasty ca. 750–969 CE • Fatimid dynasty ca. 969–1099 CE

4.8 Coins

To analyze the general trends in the dating of the settlements in the study area, next to ceramic finds, approximately 750 coins, found at various excavations within the study areas, were included in a database (see Appendix 2—Coin finds from excavations). The coins were retrieved from different archaeological excavations, and about 60% of the coins were registered in the IAA database. Additionally, publications of relevant material (excavation reports), which the IAA did not record, were added to the database. The coins selected for inclusion in the database were discovered in larger towns and villages and in the city of Be'er Sheva. In total, 18 archaeological settlements were analyzed. Most coins were found in Be'er Sheva (n = 339) from 31 different excavations (Figure 4.5).

The coins were categorized according to archaeological periods and dating (see above, Chapter 4.7—Chronological considerations). They were divided into categories of generally 50 years with some exceptions (e.g., 50 to 70, 300 to 324 CE, 600 to 638 CE) that resulted from historical events. After the Arab conquest, By-

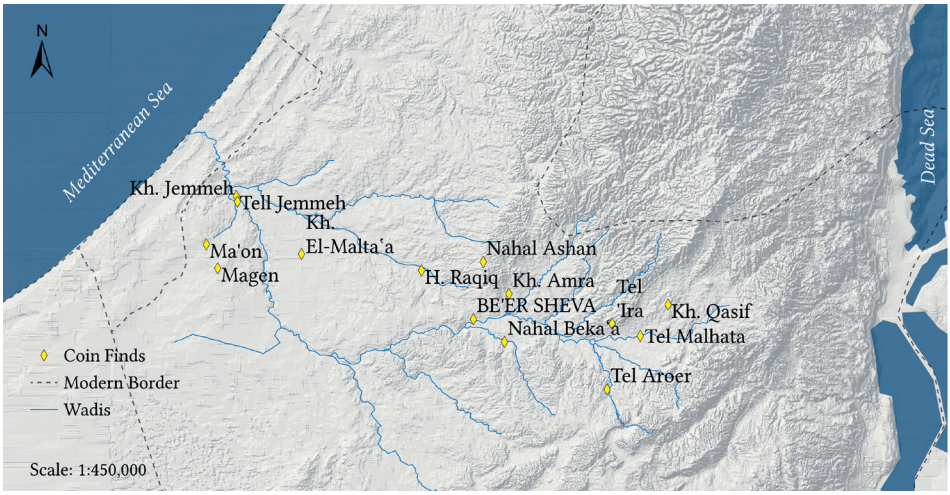

Figure 4.5 Coins from excavations in the northern Negev.
Coins were collected from archaeological excavations, mainly from cities, towns, and villages. About 750 coins, dating from the fourth century BCE to the ninth/tenth century CE, were analyzed. Background: Hillshade created from the 12.5 m-resolution ALOS-PALSAR DEM. For list of excavations see Appendix 2—Coin finds from excavations.

zantine coins continued to be used, and Arab-Byzantine (pre-reform Islamic) coins were introduced in the area. In 696/697 CE, 'Abd al-Malik's reforms were enacted, and the discontinuation of Byzantine coins in Palestine was taken into consideration (Gitler and Weisburd, 2005: 540). After the reform, three standard denominations were introduced: gold (*dinar*), silver (*dirham*), and copper (*fals*) (Avni, 2014: 35). The coinage for the seventh and eighth century CE was clearly dated and categorized, but this is not the case with coins from the ninth and tenth centuries CE. As copper coins ceased to be used, the number of coin finds dropped significantly (Avni, 2014: 35).

The total number of coins of each dating was divided by the total coins discovered from each study area and multiplied by 100 to obtain the percentage of coins that appear. The same was done for the total coin finds to detect general patterns (Figure 4.6). However, even after standardizing the results, several problems persisted with using coin finds for dating. According to Walmsley (1999), Byzantine coins were still widely in circulation one or two centuries after their production. However, he concludes that "numismatic evidence from controlled excavations can expand our understanding of socio-economic conditions in the late antique East" (Walmsley, 1999).

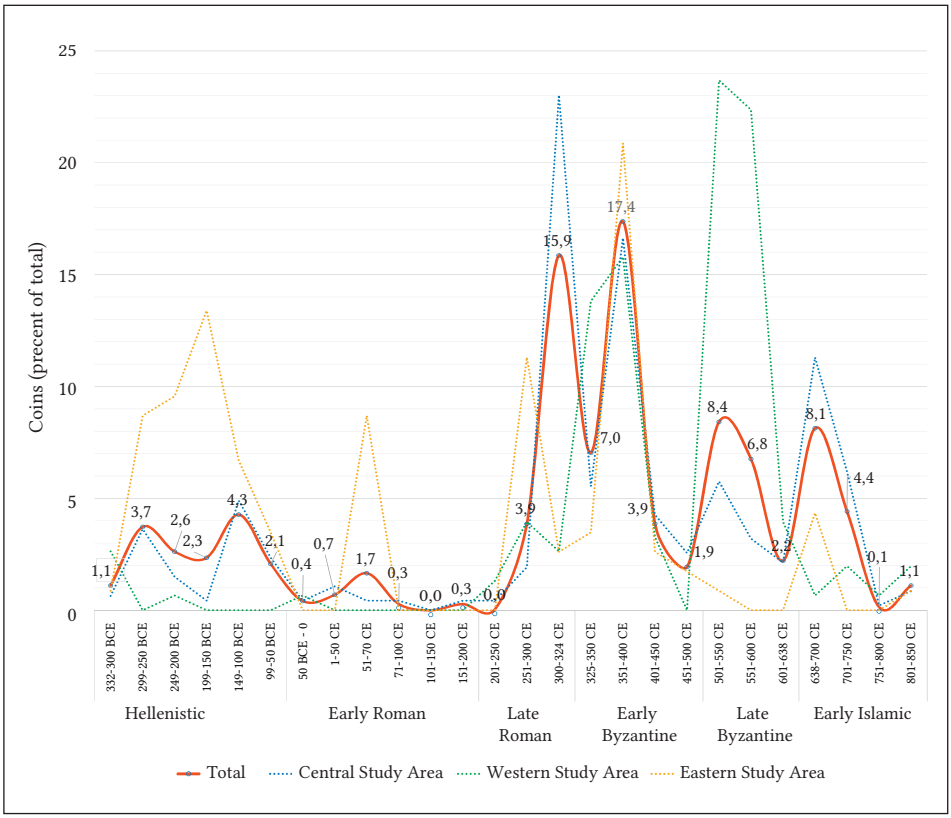

Figure 4.6 Coin finds from the study areas according to dating.
To compare the chart figure from the different study areas, the percentage of coins was calculated based on the total amount of coins from each study area. Coin data from the IAA internal database (*Menorah*) see Appendix 2.

Furthermore, there were problems based on the data used to compile the database: the coins had been categorized in groups of about 20–50 years. Thus, the coin dating might fit more than one group, e.g., a coin dated from 114–96 BCE. Therefore, the data could only be used to indicate settlements in the northern Negev and analyze general trends. However, coins are an essential tool to support arguments based on settlement patterns and ceramic dating. For the eastern study area, coin finds from only a few sites were recorded: over 90% came from Tel Aroer, Tel Ira, and Tel Malhata. Therefore, the sample was too small to analyze general trends for the whole study area (see Chapter 7.8—Coin finds from the eastern study area).

The coin finds show a moderate activity in the Hellenistic period, with a strong decline during the first century BCE. There is a small rise in the mid-first century CE, during the Early Roman period, but it flattened after the Jewish Revolt. Almost no coins date between 100 CE and 250 CE, which changes strongly after 250 CE. Most coins date to the late third and early fourth century CE, and there is a substantial decrease in coins in the fifth century CE, with almost no coins dating between 430 CE and 490 CE. Safrai (1998) explains the drop in coins in the fifth century CE (408–491 CE) due to a decline in demographic and economic vitality in the region. Gitler and Weisburd (2005: 552) analyze the coin finds from villages and towns from Palestine and argue that the decline in the fifth century appears because, during the fourth century, an unusually high level of coinage production took place—during the fifth to seventh century, coinage production returned to standard levels. Roughly 67% of all coin finds date between 300 and 638 CE, meaning from the last part of the Late Roman period to the beginning of the Early Islamic periods. The coin finds from each study area and general trends are discussed separately in each study area chapter separately (see: Chapters 5 to 7).

4.9 Settlement analysis: survey samples

The analysis of the northern Negev settlements was based mainly on the survey data of the ASI and the interpretation of the settlement patterns reflected in this data. Surveys, excavations, and inspections over the last seven decades have documented the location and chronology of over 1,800 permanent sites and many non-permanent sites—such as campsites and findspots—dating to the Hellenistic, Roman, Byzantine, and Early Islamic periods. Roughly 10% of the sites have been excavated. The regional changes in settlement data over time are reflected in the data from the different surveys.

Before beginning the settlement analysis, the problems and limitations of using (legacy) survey data had to be acknowledged (see Chapter 4.2.1—Limitations of survey data). Careful consideration had to be given to the classification of sites (see Chapter 4.5—Settlement types), their division into site size categories (see 4.6—Calculation of site size), and the use of excavation data to consider chronological sequences of the surveyed sites. After the classification and site size of each site had been established, the examination of the spatial and temporal changes in settlement patterns and site hierarchies were done. The changes in settlement patterns and site hierarchies are presented through distribution maps (according to archaeological period) and statistics. The different distribution maps for each study area are compared and analyzed.

4.9.1 Survey samples

In this research, three different geographical areas of the northern Negev were analyzed. Each study area had been divided into four 10 × 10 km survey areas (Figure 4.7). The total size of the study areas was 1194,87 km², and each study area had a size of:

1) Western study area, centered on Nahal Besor, close to Gaza (394.87 sq km)
2) Central study area, centered on the city of Be'er Sheva (400 sq km)
3) Eastern study area (400 sq km)

The three study areas were systematically surveyed by teams from the ASI or its Negev Emergency Survey branch. The analysis presented here capitalizes on the rich datasets compiled during their systematic surveys. In total, the three study areas were compiled from ten systematically conducted surveys and two compilations of development survey data and excavations (Be'er Sheva East and Be'er Sheva West; 127, 128). Survey maps 127 and 128 were not systematically surveyed

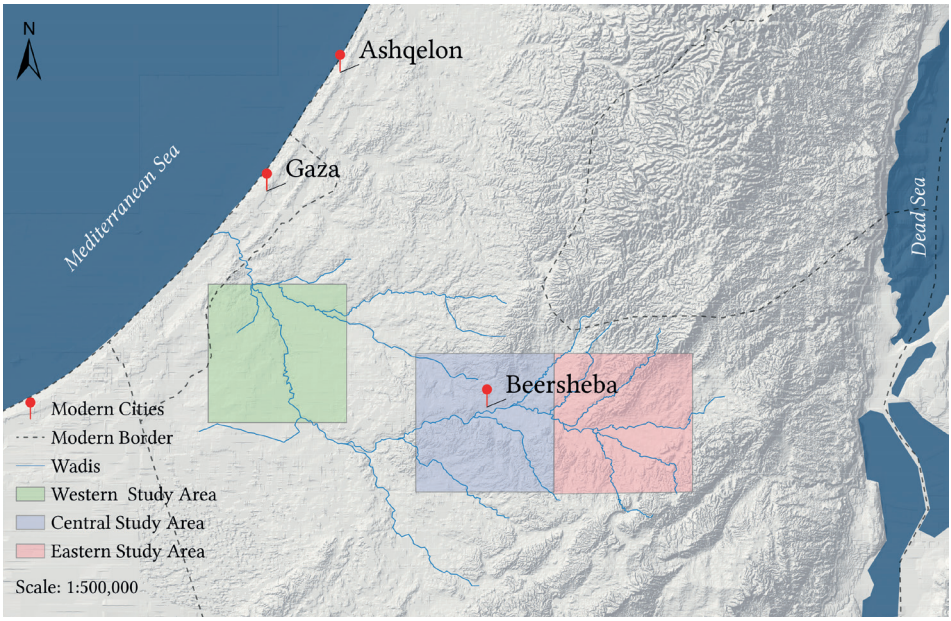

Figure 4.7 Detailed map of the northern Negev and the three study areas.
Each study area comprised of 400 km² (total 1200 sq km). A small part of the western study area is located within the Gaza Strip, in total 5.13 sq km, which most likely have not been surveyed (see below). Background: Hillshade created from the 12.5 m-resolution ALOS-PALSAR DEM.

(Shemesh, 2018a; 2018b). The modern city of Be'er Sheva, founded in the first years of the 20th century, comprises a large part of these survey maps, and therefore a regular, systematic survey was not possible.

Since the early 1960s, many development surveys, inspections, and excavations have been conducted, and numerous Classical archaeological sites have been discovered and registered. The published "survey maps" of Be'er Sheva from the ASI are a compilation of all surveys and excavations conducted in the area. In addition to these data, archaeological sites found during inspections and the excavations that took place after surveys were added to the database. With the help of GIS, most of the added archaeological remains were cist tombs dating from the Late Roman through the Early Islamic periods. Most of these tombs were not excavated, and only the GPS locations of each were recorded. Therefore, exact dating is not possible, although most tombs are connected to the Late Roman-Byzantine city of Be'er Sheva. The data were collected in May, July, and August 2019 with a handheld GPS during surveys in the city of Be'er Sheva and its surroundings. The antiquities were identified with the help of Sonntag (former Be'er Sheva and northern Negev District Archaeologist, IAA).

To ensure data comparability for the comparative analysis of site datasets from the different regions, the dataset from the central study area was used, counting the city of Be'er Sheva as one site (Table 4.4). The archaeological sites recorded from inspections and excavations are useful for another purpose: to establish the size of the Late Roman-Byzantine city of Be'er Sheva. That is, for comparing the Classical period site density of the three study areas. In the case of Be'er Sheva (maps 127 and 128), the density without the added archaeological sites from inspections should be considered.

These systematic archaeological surveys formed the basis of this research with the addition of development surveys, test trenches, and inspections, which were added to the survey data. Excavations also constituted a data baseline for comparing the survey data. Most of the excavations were salvage projects conducted by the IAA, although some of the larger sites were excavated by members of academic institutions. A large number of salvage excavations carried out by the IAA, mainly since the early 1990s, were a significant source of information. First of all, they are located throughout the study areas, and their distribution is random. This means that salvage excavations took place where a construction project was developed and that the results present an unbiased picture of the settlement patterns of the northern Negev (Avni, 2014: 20). Within and surrounding the city of Be'er Sheva, a large number of salvage excavations took place, allowing us to understand better the history of the ancient settlement and the northern Negev.

Most of what is known about the ancient settlement of Be'er Sheva is derived from salvage excavations. All results (at least preliminary) from salvage excava-

Table 4.4 Overview of the study areas.

For an overview of the single survey maps see Appendix 3—Survey maps: Summary of classical sites.

Survey Area	Maps	Area	Classical Period Sites	Density of Classical Sites
Western Study Area	112, 114 121, 125	394.87 sq km[1]	415	1.05
Central Study Area	127*, 128* 131, 132	400 sq km	951 (497)[2]	2.38 (1.24)
Eastern Study Area	139, 140 143, 144	400 sq km	438	1.10

1 Parts of maps 112 and 114 (Gat, 2012; Gal, 2017) are located within the Gaza strip. It is unclear if these areas were surveyed. However, the surveys took place at least partially before the disengagement of Israel in 2005, so theoretically it would have been possible. Area within the Gaza strip in map 112: 3.46 sq km; Area in map 114: 1.67 sq km. No archaeological sites were mapped in these areas.
2 Counting Be'er Sheva only as one site, including all burial sites.

tions conducted by the IAA are published online in bilingual format (Hebrew/English).[6] The discoveries of the IAA are all available in the data bank and archives. Given the large amount of available archaeological data and based on a quantitative analysis of the accumulated archaeological material, a comprehensive picture of the settlement patterns in the northern Negev during different archaeological periods can be reconstructed.

6 Hadashot Arkheologiyot—Excavations and Surveys in Israel. [Online]. Available at: https://www.hadashot-esi.org.il/default_eng.aspx.

5 WESTERN STUDY AREA: NAHAL BESOR

5.1 Introduction

The western study area centers around Nahal Besor (Wadi Gaza) and is located close to the modern-day border with Gaza, with small parts on the western side of the study area are located within the Gaza strip (Figure 5.1). The map shows the main modern settlements and the survey map division according to the ASI.

The area is mainly flat, with an altitude between 20 and 175 m. above sea level. The landscape of the study area has changed significantly since the early 20th century, primarily due to the development of agricultural fields, settlements, and modern roads (Zohar and Erickson-Gini, 2019). Such changes make it difficult to identify and define ancient remains. The visibility is reduced, for example, in the eastern study area, based on the level of vegetation: in particular, the banks of the wadis are partially dissected by deep gullies. Nahal Besor is the largest wadi within the study area, running from the south to north. About nine km to the northwest of the study area, Nahal Besor runs into the Mediterranean Sea. Nahal Grar and Nahal Assaf flow into Nahal Besor. The deep gullies of the wadis characterize the surrounding landscape along the wadis. Furthermore, erosion endangers and ultimately destroys archaeological sites located alongside the wadis. Furthermore, in certain areas, the vegetation, which consists mainly of scrub and brush vegetation, can be very dense.

Approximately 25 square km of the study area are developed, consisting of small settlements, kibbutzim, and moshavim, as well as some military bases. In addition to the developed areas, some square km consist of paved roads. Furthermore, ca. 55 square km of the area consist of loess badlands and a few planted forests. The loess badlands comprise mainly the areas near the riverbeds of Nahal

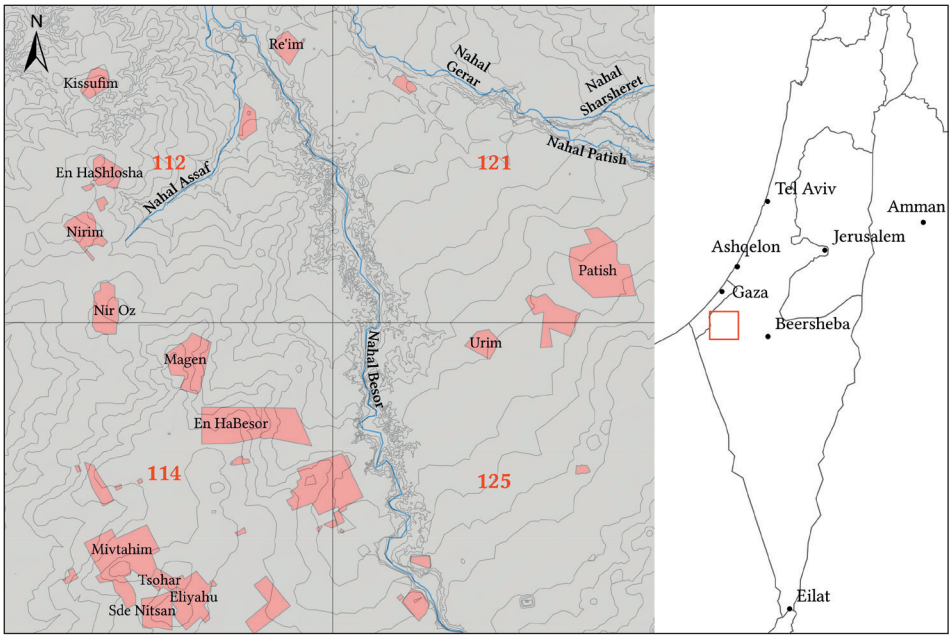

Figure 5.1 Western study area.

Main modern settlements and survey map division (maps 112, 114, 121, and 125) according to the Archaeological Survey of Israel, including Nahal Besor, Nahal Gerar, Nahal Patish, Nahal Sharsheret, and Nahal Assaf.

Besor, Nahal Gerar, Nahal Asaf, Nahal Sharsheret, and Nahal Patish, all of which show extensive erosion. The badlands are covered by sand dunes and the vegetation consists of a semi-shrub vegetation typical of the Irano-Turanian dry-steppe (Goder-Goldberger et al., 2019) Nearly five square km are located within the Gaza strip. Roughly 70 to 75% of the available land is used for agriculture. Based on these calculations, ca. 300 square km of the area are agricultural fields worked by the kibbutzim and moshavim in the area (Figure 5.2). As is visible in Figure 5.2, almost the whole area is under intensive use, either by development or agriculture. Therefore, many archaeological sites have been destroyed.

The study area was divided into four survey maps, which had been systematically surveyed by the ASI. In this study area, 364 Classical period sites had been recorded (Table 5.1). Most sites were discovered in the survey conducted by Gazit (1996) between the years 1978 and 1985 (226 sites). The surveys for maps 112 and 121 were partially conducted by vehicle. Fieldwalking was only utilized in the parts that had limited vehicle access (Gat, 2012; 2014). Map 114 was surveyed by differ-

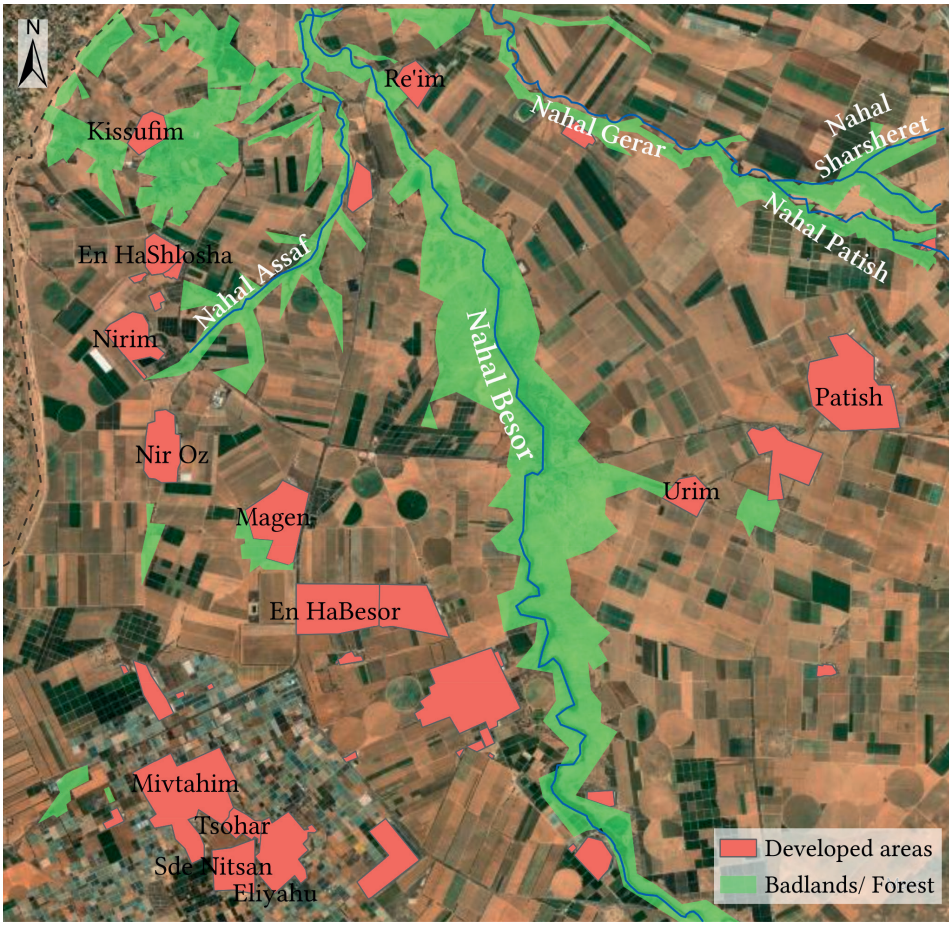

Figure 5.2 Land use western study area.

Modern land use of the study area around Nahal Besor. The majority of the land is used for agriculture (ca. 300 square km). Background: Satellite Imagery (DigitalGlobe—ESRI).

ent teams: Gophna from TAU in 1959, Gazit between the years 1989 to 1991, and Lehmann from BGU between the years 2000 and 2008 (Gal, 2017). The survey of Urim (map 125) shows that approximately four times as many Classical sites were discovered in this area compared to the other three 100 square km survey areas (maps 112, 114, and 121). Within such a relatively small area, it is unlikely that the differences in the average density of Classical sites (from 0.41 to 2.26 per square km) can be explained as real variations in the intensity of human occupation. Several factors might explain the higher site numbers in map 125:

1) Survey method (vehicular vs. fieldwalking), as well as the resolution and extent of coverage, could have contributed to a higher number of small sites.
2) Different definitions of what qualifies as a site might have resulted in fewer (or more) sites registered.
3) Differential proximity to the water source, Nahal Besor, in the area of map 125; approximately 10 km of the wadi Nahal Besor is included (maps 112 and 121: 5 km; map 114: 0 km). As the only perennial water source, naturally, many sites are located nearby. This is especially true for the earlier periods: Hellenistic to Late Roman.
4) The survey for map 125 was conducted in 1978–1986, when fewer sites (especially small sites, findspots, and campsites) were destroyed by agriculture, construction, and general development. Map surveys (112 and 121) were conducted roughly 15 to 20 years later (see Table 4).
5) Many of the sites dated as Late Roman were actually Byzantine and have been counted twice instead of only as Byzantine (see Chapter 5.6.2—Late Roman period).
6) The plowing of the fields destroys the archaeological remains close to the surface, but it also spreads the remains (e.g., pottery, building stones, plaster) over a large area, which may result in additional and larger "sites."

Table 5.1 Survey maps, sites, density, and survey method in the western study area.
Number of (Classical) sites and average density and method of the survey area. This number includes only the Classical sites registered during systematic surveys, not the sites added based on development surveys, inspections and trial trenching, or excavations.

Map No.	Dates Surveyed	Area (sq. km)	Total Number of Sites	Density of Sites	Number of Classical Sites	Density of Classical Sites	Survey Method	Reference
112	1999–2000	96.54	71	0.74	53	0.55	Vehicle/Fieldwalking	Gat, 2012
114	1959/1989–91/2000–08	98.33	56	0.57	41	0.42	Fieldwalking	Gal, 2017
121	2001	100	57	0.57	44	0.44	Vehicle/Fieldwalking	Gat, 2014a
125	1978–1985	100	255	2.55	226	2.26	Fieldwalking	Gazit, 1996

In maps 112 and 114, small parts of the area are located within the Gaza strip; there is no indication of whether these areas have been surveyed in the survey description. However, as no archaeological sites have been mapped in these areas, one can assume they were not surveyed. Furthermore, in the survey map of Nahal Besor (map 110), north of map 112, a part of the area is located within the Gaza strip, and in the description of the survey, Gat (2014b) points out that the area located within the Gaza strip was not surveyed, therefore it can be assumed the same is correct for maps 112 and 114.

5.2 Methodology and site size

In the western study area, a total of 415 sites have been identified and added to the database, the sites have been discovered during surveys, excavations, inspections, and trial trenching. This number differs from Table 5.1 as additional sites (n = 51) were added to the sites already discovered during the ASI map surveys. Settlement numbers have been counted for each period. Differentiation between the subperiods (e.g., Early or Late Roman) has been attempted as much as possible; however, this was not possible in all cases. There was no significant change in settlement site numbers during the Hellenistic (n = 18) and Early Roman periods (n = 29). In the Late Roman period, the number climbed to 60 sites. There was a significant change in the Byzantine period in the settlement pattern (n = 274 sites), as the region was much more densely populated.

During the Early Islamic period, the number of settlements decreased significantly to 34 sites (Figure 5.3). It is unclear when this exactly happened, but it may be assumed that the settlements decreased gradually from the Late Byzantine to the Early Islamic period. No destruction layers connected to the Arab conquest could be found at any of the excavations conducted in the eastern study area. All sites were categorized based on the data from the archaeological surveys, excavations, and inspections or test trenches, and according to the classifications mentioned above (see Chapter 4.5—Settlement types).

Ten sites were dated to the Roman period but cannot be assigned to one of the subperiods, Early or Late Roman. Nine of these sites were temporary (findspots or camps), and according to the surveyor, one site, Abu Bakra 4, was settled from the Early Roman period until the Byzantine period, therefore, this site was counted twice. Cult sites (churches, monasteries, and synagogues) have also been counted twice, as they are often located within a village or a town. Towns existed in this region only during the Byzantine and Early Islamic periods. Large villages existed from the Late Roman period onwards.

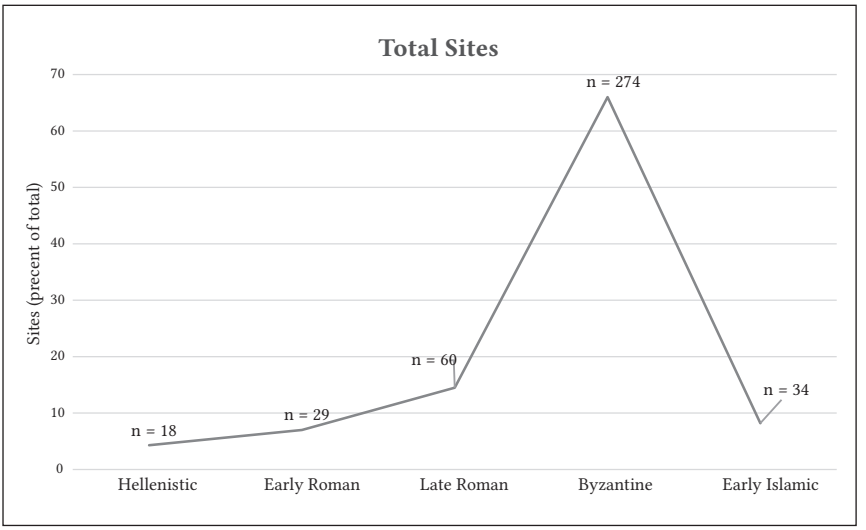

Figure 5.3 Total sites within the western study area.
Percentage of sites according to archaeological period (survey maps 112, 114, 121, 125; excavations; and inspections). Site percentage according to period: Hellenistic 4.3%; Early Roman 7%; Late Roman 14.5%; Byzantine 66%; and Early Islamic 8.2%; absolute numbers on the graph.

All the large town settlements were already established by the Roman period, and there is evidence that they also continued to exist during the Early Islamic period, although some probably in a smaller form or with different functions (see Appendix 4—Summary of large sites, selected features and date of abandonment. The largest settlements in the study area during the Classical period were most likely Ma'on, Khirbat Jemmeh, Tel Irq, and Be'er Shema. All settlement types saw a substantial rise during the Byzantine period, though these sites were naturally not built during the same time, but sometime between the fourth and seventh century CE, a long-time span. Most impressive, the number of farmhouses rose strongly from the Late Roman to Byzantine period (Figure 5.4).

Wherever possible, the size of the settlement was calculated (Table 5.2). However, this was not possible in all cases, and there are a few sites for which the size remained unknown, which is true especially for certain periods, e.g., Roman, Byzantine, as only the maximal extent is visible. If no size was indicated, this was estimated (if possible) based on the described findings or attached site plans and photos (see Chapter 4.6—Calculation of site size). The majority of the sites belong to the group of 0.0–1.0 ha of size, which includes all small structures as sin-

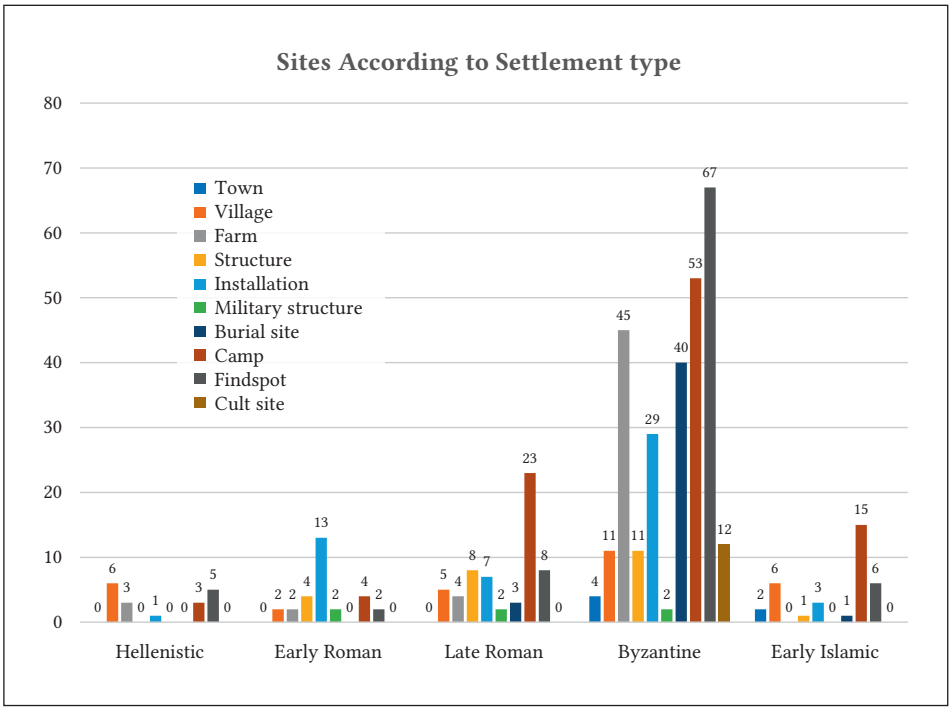

Figure 5.4 Sites according to settlement type in the western study area.
Cult sites have been counted where they have been discovered (excavations) and where there are indications of a possible cult site from survey data. There were seven churches and one synagogue found; additionally, there are four settlements with a possible church.

gle structures, farmhouses, and also small villages (hamlets). The majority of the larger settlements are mainly campsites, except for the Byzantine and Early Islamic periods when towns and large villages existed in the study area.

In the case of Ma'on and Be'er Shema, the radius of field scatters was used to calculate the actual size (see Chapter 4.6 above), as the survey publications (Gazit, 1996; Gat, 2012) indicate that the settlement of Ma'on had a size of 200 ha and Be'er Shema was 50 ha, which is clearly unrealistic. According to Gazit (1996: 59*), Be'er Shema is described as "[…] extensive ruins (500 dunams) […] Scattered architectural elements, pottery, fragments of basalt vessels, tesserae, glass fragments and coins." Parts of the site were excavated in 1989 and 1990 (Gazit and Lender, 1992; 1993) and again in 2006 (Erickson-Gini et al., 2015). According to Erickson-Gini et al. (2015), the site is actually much smaller than proposed by Gazit (1996: 59*).

Table 5.2 Settlement size according to archaeological period.

	Settlement size (ha)					
	Unknown	**0.0–1.0**	**1.1–3.0**	**3.1–10**	**< 10**	**Tot.**
Hellenistic settlements (332–37 BCE)	4	13	0	1	0	18
Early Hellenistic	0	4	0	0	0	4
Late Hellenistic	0	3	0	0	0	3
Roman settlements (37 BCE–324 CE)	7	59	7	10	6	89
Early Roman (37 BCE–132 CE)	1	26	1	1	0	29
Late Roman (132–324 CE)	0	39	6	9	6	60
Byzantine settlements (324–640 CE)	37	197	11	18	11	274
Early Islamic settlements (640–750 CE)	14	11	5	2	2	34

Taking the field scatters calculation into account, one can see that the actual size was probably between 2 and 9 ha,[7] which is consistent with Erickson-Gini's et al. (2015) observations: "The 2006 excavations indicate that the site of ancient Be'er Shema' extended over some 30 dunams (3 ha) during the Byzantine period, and was probably much smaller in size than previously reported" (244–45). Another example is the site of Ma'on in the northwestern part of the study area, which is estimated to be about 200 ha (Gat, 2012). This would mean that the site would be one of the largest sites in Roman-Byzantine Palestine. Taking the size of 200 ha (2 square km) as field scatter surrounding the ancient site it may be categorized as a medium to large town, around 30 to 40 ha in area (Wilkinson, 1989). This calculation has been confirmed by calculating the site size according to an aerial picture (see Chapter 4.6.1 Different methods of calculating site size). It is still one of the largest towns of the study area, and the largest town in the western study

7 500 dunam is equivalent to 0.5 sq km, which fits the villages 2–9 ha category in Wilkinson (1989) (see Chapter 4).

area. Finds include a synagogue and a parochial church or monastery. Ma'on was identified on the Madaba map as *Manois,* which was the center of the city territory *Saltus Constantiniiaces* (Avi-Yonah, 2002: 148).

5.3 Previous field work

Over time, several excavations (research and salvage) have been conducted in the study area (Figure 5.5): most have been salvage excavations, which have been conducted by IAA and, subsequently, its predecessor IDAM. Research teams from universities have excavated some larger sites. The excavated sites include Abu Bakra (Schaefer, 1979), Be'er Shema (Gazit, and Lender, 1992; 1993; Gazit, 2002; Dolinka, 2007; Erickson-Gini et al., 2015), Kissufim (Cohen, 1980), Magen (Tsaferis, 1985), Ohat (unpublished), Khirbat el-Malta'a (Talis, 2011), Ma'on (Levy, 1960a; 1960b; Magness, 1987; Yogev, 1987; Nahshoni and Seriy, 2004; 2014), and Mivthim-Magen (Fraiberg, A-7337; unpublished).

Tell el-Far'ah (south) has been excavated by different teams over the last 100 years: Petrie excavated the site in 1928–1929 on behalf of the British School of Archaeology in Egypt. Renewed surveys and excavations have been conducted between 1998 and 2002, directed by Lehmann of BGU and Schneider of Claremont Graduate University in California (1998–2001). During the final season of the latter, the study was conducted in cooperation with Niemann of Rostock University in Germany (Petrie, 1930; Lehmann et al., 2018; Lehmann, 2019; Lehmann and Schneider, 2000).

Tell Jemmeh was excavated by an archaeological excavation conducted by the Smithsonian Institute, directed by Van Beek, between 1970 and 1990 (Ben-Shlomo and Van Beek, 2014). Khirbat Jemmeh has been partially excavated by Schaeffer, who surveyed the area and conducted an excavation. The results of the project have been published as a PhD thesis (Schaefer, 1979). The project was related to the archaeological excavation conducted by Van Beek.

A curiosity represents a church discovered on a hill overlooking Nahal Besor (Shellal Church). During World War I, Australian soldiers dug trenches on the hill, discovering an ancient mosaic. The mosaic was then excavated and shipped to Australia (Trendall, 1957), where it is located until today at the Australian War Memorial in Canberra. Many of these excavations have been published, and some will constitute a data baseline for chronologically adjusting the surveys.

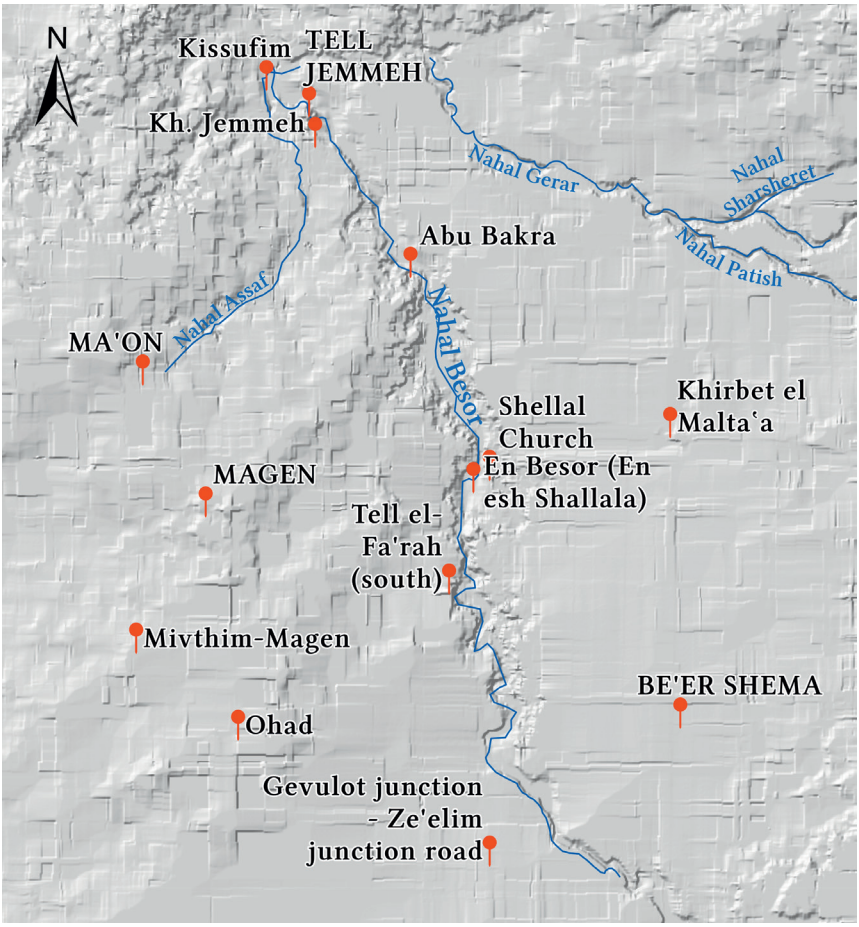

Figure 5.5 Overview of the excavated sites in the western study area.
Important excavations include the sites of Ma'on, Magen, Be'er Shema, Tell Jemmeh, and Tell el-Farah (south).

5.4 Hellenistic period

During the Hellenistic period, the settlement density in this area was relatively low (n = 0.05 sites per square km). In total, 18 Hellenistic sites were recorded. The sites are all relatively small, between 0.01 and 1.0 ha. Located within the study area are three tells (Tell Jemmeh, Tell el-Far'ah (south), and En Besor (En esh Shallala)), which are all located at the riverbank of Nahal Besor. The three tells were also occupied during previous periods (cf. Gophna, 1995; Ben-Schlomo and

Van Beek, 2014; Lehmann et al., 2018). Furthermore, three small settlements (Nahal Besor 68, Nahal Besot 68, and Urim-Hatzerim road) were discovered, all located in the southeastern part of the study area. There is also a possibility that Hellenistic settlements were located at Ma'on, although only a few pottery sherds were found (Gat, 2012), and Khirbat el-Malta'a (Talis, 2011). Three farmhouses, an installation, campsites, and findspots were discovered in addition to these six settlements. Furthermore, three roads are attested passing in the study area and dating to the Hellenistic period: (1) Tell Jemmeh–Ma'on, (2) Tell Jemmeh–Tell el-Far'ah (south), and the Incense Road (Petra–Gaza). In addition, it can be assumed that the settlements were inter-connected by roads.

The research on the Tell Jemmeh–Ma'on road (Tsoar and Yekutieli, 1992), which is based on geomorphological studies and aerial photography, point to the conclusion that a Hellenistic settlement existed in Ma'on.[8] However, the size of the Hellenistic settlement at Tell Jemmeh was probably smaller than previously thought (see below), and at Ma'on, only a few pottery sherds dating to the Hellenistic period were discovered—there were no architectural remains. It is possible that this road was actually in use only during the Persian period and went unused in the Early Hellenistic period. The road runs along Nahal Assaf, where two sites—a farmhouse and a findspot—are located close to each other and are probably connected.

A second road, connecting Tell Jemmeh with Tell el-Far'ah (south), runs on the west side of Nahal Besor, crossing it near the settlement of En Besor (En esh Shallala), where several springs are located (Gazit, 1986: 126). Many Hellenistic sites are located along this road, as it runs along Nahal Besor. This section was part of a road connecting the Negev with Gaza (Gazit, 1986: 126), which, according to Meshel (2009: 299), already existed during the Persian period.

The third road in use during the Hellenistic period was the Incense Road. The Nabateans had taken control of the aromatics trade by the Persian period. The Incense Road, which passed from Petra to Gaza and crossed through the western study area, was partially blocked off by the Hasmoneans during the late Hellenistic period, as the port of Gaza came under the control of Alexander Jannaeus in 99 BCE (Erickson-Gini and Israel, 2013). Around 65 BCE, the Nabateans regained control over the road through a political agreement with the Hasmoneans (Erickson-Gini and Israel, 2013). The road passes from the southeastern side of the study area to the northeastern side, remaining on the eastern side of Nahal Besor.

Five sites date to the Early Hellenistic period: Nahal Besor 67, Urim-Hatzerim road, and Tell Jemmeh, as well as Tell el-Far'ah (south) and En Besor, which are

8 Only a few remains of ancient Ma'on were excavated, the majority of the settlement remains unexcavated.

the only sites where an occupation during the Early and Late Hellenistic period are attested (see Gophna and Gazit, 1995; Lehmann, 2018). The other sites were abandoned at some point during the Early Hellenistic period. Additionally, at Khirbat el-Malta'a, a coin dating to the mid-second century BCE was found during excavations (Talis, 2011). Three sites were settled in the Late Hellenistic period: Nahal Besor 68, Nahal Besor 70, and Nahal Besor 71. Ten sites dated to the Hellenistic period could not be attributed to one subperiod (early or Late Hellenistic).

En Besor, a tell located at the eastern bank of the Nahal Besor, was excavated in the 1970s by Gopfna, although the British military had partially destroyed the tell during World War I (Gazit, 1996: 29*). At the tell, a Hellenistic complex was found. The pottery was dated by Fischer and Tal (1995: 99) from the third century BCE to the first century CE, and about 90% of the finds date to the second and first century BCE (Late Hellenistic). The site was probably abandoned during the Roman occupation of Palestine (Fischer and Tal, 1995: 99).

Tell Jemmeh is located in the northern part of the study area, on the western bank of Nahal Besor. According to van Beek (1993), during the Ptolemaic occupation, the large town of Tell Jemmeh was converted to a grain storage depot. 11 large silos were excavated at the top of the tell, as well as a granary in the fields below it. It can be assumed that during the Hellenistic period, most of the population lived in the areas below the tell (Van Beck, 1993: 667–73). However, in a more recent publication, the grain silos were dated to the Persian period (Ben-Shlomo, 2014: 559). Some Hellenistic period pottery has been found at the site, attesting to settlement activities at Tell Jemmeh in this period (Ben-Schlomo, 2014: 608–9). The flat fields near Nahal Besor were ideal for agricultural activities. However, no settlement remains dating to the Hellenistic period were discovered. At the foot of Tell Jemmeh, Schaefer (1979) conducted an excavation limited to the southwestern part near the tell, which indicated little Hellenistic presence. Furthermore, based on the latest publication, it is possible that the majority of the population left the area at the end of the Persian period, and only a small settlement remained in the Hellenistic period. Four coins have been found that date either to the late Persian or Early Hellenistic period—all coins are related to Alexander the Great, dating between 336 and 315 BCE (Ariel, 2014: 1024–25). No later Hellenistic coins have been discovered.

Tell el-Far'ah (south) is located on a loess cliff on the western bank of Nahal Besor. Petrie excavated the site from 1928 to 1929. The excavation proved the existence of an almost continuous settlement from the Middle Bronze Age until the Early Roman period (Lehmann, 2019: 8*). The site was excavated in 1976 by Cohen (1977). In the years 1999 to 2001, the site was excavated by a team from BGU under the direction of Lehmann (Lehmann et al., 2018; Lehmann, 2019; Lehmann and Schneider, 2000). The published pottery provides evidence of occupation during

the third and second centuries BCE and, according to Lehmann (2019: 11*), the settlement may have continued uninterrupted until the Early Roman period. The exact type of Hellenistic settlement at Tell el-Far'ah (south) is unknown, but possibly the settlement was a fortified site that served as a waystation (Lehmann et al., 2018).

The settlements of Nahal Besor 67 and Urim-Hatzerim road are dated to the Early Hellenistic period (mid-third century BCE) based on small finds, such as coins and imported pottery ware (Gazit, 1996: 15*). As mentioned above, a few smaller sites date to the Late Hellenistic period. Nahal Besor 68, a site of about 0.2 ha located ca. 0.5 km south of En Besor (En esh Shallala) and about 2 km north of Tell el-Far'ah (south) contains several structures built from fieldstones and pottery dating to the Late Hellenistic period. Additionally, two sites date to the Late Hellenistic period: an installation and a campsite (Figure 5.6).

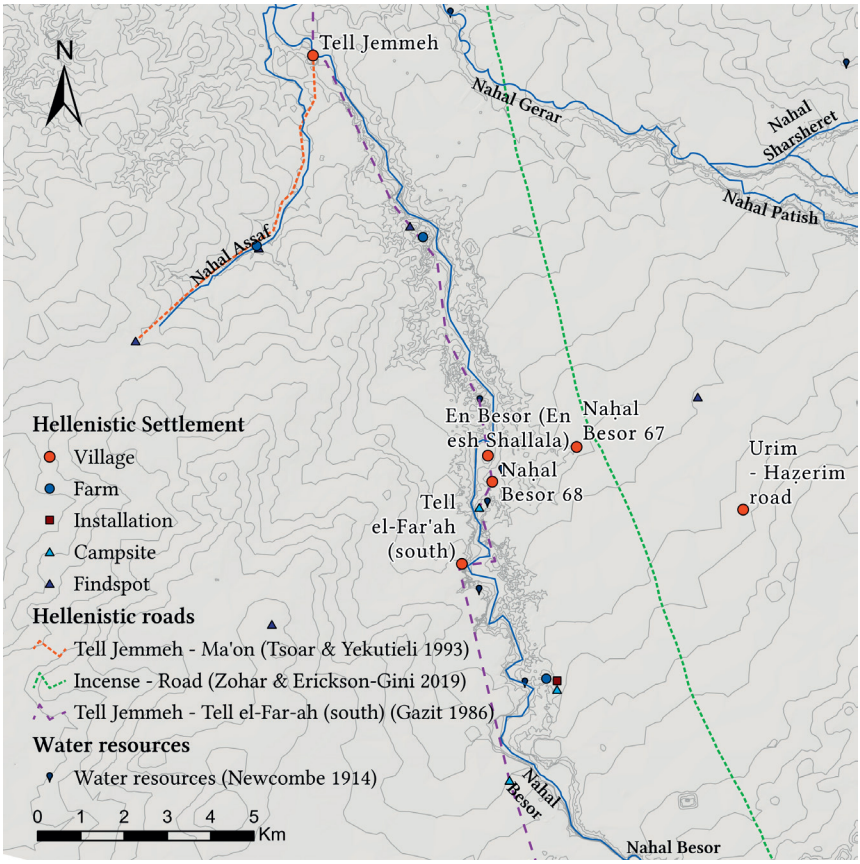

Figure 5.6 Western study area: Hellenistic settlement patterns.

Coins were found at four sites, all dating to the Early Hellenistic period: Khirbat el-Malta'a (n = 1), Tell Jemmeh (n = 4), and two coins found during surveys (Gazit, 1996: 15*; Talis, 2011; Ariel, 2014: 1025).

The springs of Nahal Besor are the only perennial water sources in the area. To analyze the settlement patterns and changes, the distance from the water source was examined as part of this study. The majority of permanent sites were located close to the water source, and 70% of all permanent sites were located a maximum of 500 meters from Nahal Besor (Table 5.3). Interestingly, most sites located in the vicinity of the water source are between 200 and 400 m away from it (36.4%), whereas only 18.2% of the sites are closer than 200 m (mainly the tel's that are located on an elevated hill). All sites that are located close to Nahal Besor are 500 meters or less away. Sites that are not located close to the wadi beds of Nahal Besor are located near one of the roads, either on the Negev–Gaza road or the road from Tel Jemmeh to Ma'on. There are also five findspots: two are located just next to a farmstead and most likely belong together. Two sites are not located close to Nahal Besor nor to one of the larger roads. One findspot was discovered in the eastern part of the study area, Khirbat el-Malta'a, where a Hellenistic settlement might have existed (Talis, 2011), and a small settlement was found at the Urim–Hazerim road about 2.5 km to the southeast of Khirbat el-Malta'a.

During the Hellenistic period, there were no large settlements in the area. The villages consisted mainly of a few structures, and farmsteads were usually a single structure, possibly with installations. Most sites were measured by the surveyors and are relatively small: few are larger than 1.0 hectare; only Tell el-Far'ah (south)

Table 5.3 Distance of Hellenistic sites from Nahal Besor.

Site Type	Total Sites	Distance 500 m	%	Distance 1,000 m	%
Permanent Sites:					
Village	6	4	66.67%	4	66.67%
Farmstead	3	2	66.67%	2	66.67%
Installation	1	1	100.0%	1	100.0%
Total	10	7	70.00%	7	70.00%
Non-Permanent Sites:					
Camp	3	2	66.67%	3	100%
Findspot	5	1	25%	1	25%
Total	8	3	37.5%	4	50%

and possibly Tell Jemmeh may have been slightly larger. However, Tell Jemmeh may have been occupied only during the Early Hellenistic period, as no Late Hellenistic, Roman, or Byzantine pottery has been found on the tell (Ben-Schlomo, 2014: 608–9). A large Roman-Byzantine settlement was found nearby at the foot of the tell (Khirbat Jemmeh). Only non-permanent sites were more in evidence, where pottery and other remains were distributed over a large area. However, the campsites were not exclusively attributed to the Hellenistic period but were also occupied in earlier and later periods. Therefore, it is unclear what their actual size was during the Hellenistic period.

5.5 Roman period

Most sites that date to the Roman period were found in the southeastern part of the study area (map 125; Gazit, 1996). In total, 29 sites were found dating to the Early Roman period and 60 dating to the Late Roman period. An additional 12 non-permanent sites (either findspots or campsites), which did not have a more exact date, were discovered during the survey.

5.5.1 Early Roman period

During the Early Roman period, the settlement density in the study area was relatively low (n = 0.0725 sites per square km), although it was higher than during the Hellenistic period. In total, 29 sites were recorded that date to the Early Roman period. For the most part, the sites are relatively small, between 0.01 and 1.0 ha, except Tell el-Far'ah (south), which is about 2 ha. Two tells, Tell el-Far'ah (south) and En Besor, were settled during the Early Roman period. These were also settled in previous periods (see above), although En Besor probably was abandoned at the beginning of the Early Roman period (Fischer and Tal, 1995: 99).

Most sites are concentrated around the settlement at Tell el-Far'ah (south), where a large fortress, barracks, and densely built structures were found (Petrie, 1930: 20). The fortress located at the northern site of the tell might have been built during Herod's time and was abandoned probably around 58/59 CE (Schatzman, 1991: 244). Three coin-hoards have been found at the fort, containing coins dating no later than 58/59 CE, which points to an abandoning of the tell around that period—the coins have never been published (Schatzman, 1991: 244). The Roman fortress was probably a waystation in the limes route system of southern Palestine rather than frontier protection on a border (Fischer and Tal, 2007: 337).

Tell el-Far'ah (south) is located close to several springs in the area. Furthermore, a possible military camp, a farmhouse, several structures, embankments, large kilns, and quarries were found within a maximum distance of two km around Tell el-Far'ah (south). The majority of installations around Tell el-Far'ah (south) are large pottery kilns. In total, 12 kilns have been found during surveys. Some of the kilns were grouped in clusters of two to three at the same location, only meters apart from each other. Water was needed for pottery production, therefore, pottery kilns are often found along the wadis, as in this case.

The possible military camp located close to Tell el-Far'ah (south), on the opposite bank of Nahal Besor, consists of a large, leveled surface where field stones, wall remains, a large amount of pottery scatters, and—to the north—a road segment were found (Gazit, 1996: 39*). Several structures have also been found near

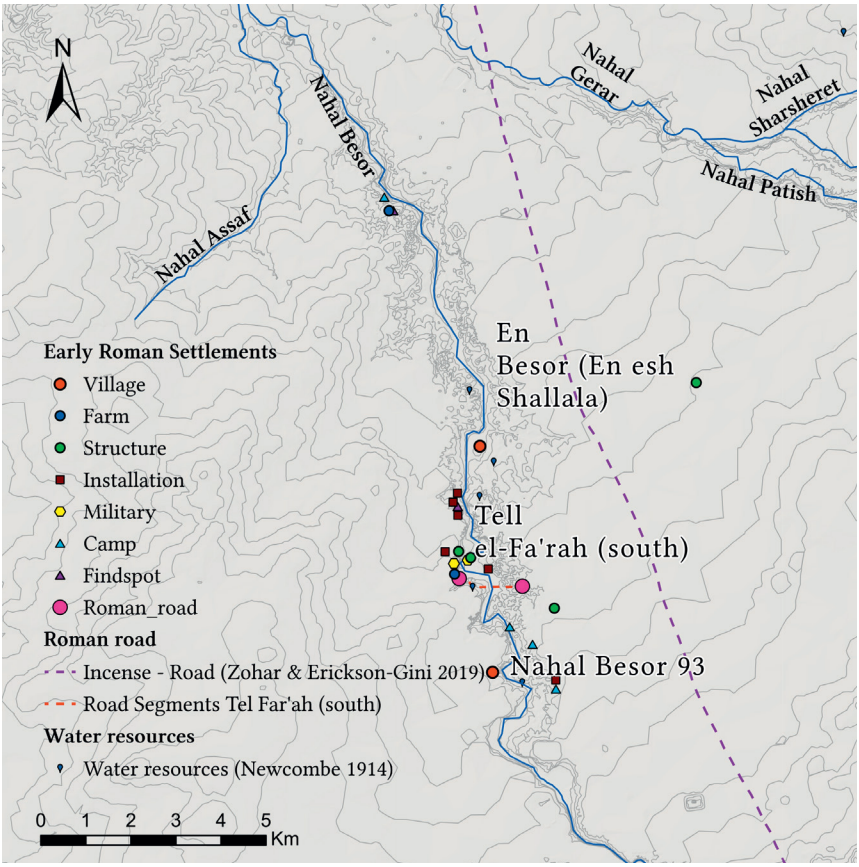

Figure 5.7 Early Roman sites

The sites are mainly centered around Tell el Far'ah (south).

Tell el-Far'ah (south), which might have been farmhouses or installations. Furthermore, two road segments have been found. The roads pass from Tell el-Far'ah (south) to a spring and a second segment from the eastern bank of Nahal Besor toward the tell.

The small settlement Nahal Besor 93 is located about 2.5 km south of Tell el-Far'ah (south). The settlement consists of six structures, which are located on the west bank of Nahal Besor. To the north of Tel el-Far'ah (south), a farmhouse is located at the bank of Nahal Besor. The site was settled from the beginning of the second century to the Byzantine period (Gat, 2012). At Khirbat el-Malta'a, several remains (structures and walls) were found, dating to the Early Roman period. During the excavation of the architectural remains, a *ṯabun,* stone collapse, ash levels, and floors (tamped earth) were discovered. One Early Roman coin, dating to 54 CE, was found during the excavation. The remains have been dated to the first to second centuries CE (Talis, 2011).

There is a possibility that a settlement also existed at Be'er Shema (*Birsama*) along the Incense Road, as it appears in Claudius Ptolemy's *The Geography,* dating to the mid-second century CE (Ptol. *Geog.* 5.16.10, cited in Erickson-Gini et al., 2015). Unfortunately, no actual settlement remains dating to the Early Roman period have been excavated thus far at Be'er Shema.

During the Early Roman period, a settlement pattern similar to that of the Hellenistic period can be observed. Almost all permanent sites are in close vicinity to Nahal Besor, with the exception of Khirbat el-Malta'a. As visible during the Early Roman period, settlements are concentrated around Tell el-Far'ah (south) and the springs of Nahal Besor. It seems that Tell el-Far'ah (south) was the most important settlement in this area during the Early Roman period.

Almost 87% of all sites are located 500 meters or closer to Nahal Besor, and 95% of all sites are located within a maximal distance of 1,000 meters from the Nahal (Table 5.4). A similar picture applies to the non-permanent sites, where 66.7% are located within 500 m from Nahal Besor; all sites are located within 1,000 meters.

Table 5.4 Distance of Early Roman sites from Nahal Besor.

Site Type	Total Sites	Distance 500 m	%	Distance 1,000 m	%
Permanent Sites:					
Village	2	2	100.0%	2	100.0%
Farmstead	2	2	100.0%	2	100.0%
Military structure	2	2	100.0%	2	100.0%
Structure	4	2	50.0%	3	75.0%
Installation	11	11	100.0%	11	100.0%
Road segment	2	1	50.0%	2	100.0%
Total	23	20	86.9%	22	95.6%
Non-Permanent Sites:					
Camp	4	3	75.0%	4	100.0%
Findspot	2	1	50.0%	2	100.0%
Total	6	4	66.7%	5	100.0%

5.5.2 Late Roman period

Sixty sites were found that date to the Late Roman period, when the settlement density in the study area was two times higher than during the Early Roman period (n = 0.15 sites per square km). The large majority of Late Roman sites continued into the Byzantine period. Interestingly, most sites were found in the southeastern part of the study area (Map 125; Gazit 1996). In the other three parts of the study area (Maps 112, 114, and 121), only 12 sites have been found that date to the Late Roman period. This fact points to a different approach by the survey teams in defining a site or different dating approaches (see chapter 4.2 Survey archaeology: northern Negev). Relatedly, Gazit (1996: 16*) states that "ceramic finds related to this timespan [Late Roman-Byzantine] are chronologically difficult to define […]". Furthermore, at about one-third of all sites, no diagnostic pottery finds were made (Gazit, 1996: 16*). Therefore, the differentiation between the Late Roman and Early Byzantine periods is difficult to establish.

In the Early Roman period, over 90% of the sites were located in the southeastern part of the study area (map 125). However, one explanation for this might

be that the sites were connected to the only large Early Roman settlement in the area, Tell el-Far'ah (south), with a Roman fortress, as well as the nearby springs of Nahal Besor. It seems that many settlements, though it is unclear if they were Late Roman or Byzantine, were dated as Late Roman and Byzantine by the survey team from map 125. In the other survey areas, teams have mostly dated the sites only to the Byzantine period. Therefore, the published pottery (map 125) from the sites has been analyzed and re-dated (see below). However, only eight sites have been published with pottery finds.

Be'er Shema is located in the southeastern part of the study area, about four kilometers from Nahal Besor and about 20 km from Be'er Sheva. Be'er Shema is located on the Incense Road leading from Petra to Gaza. The settlement seems to have been a moderately-sized village housing a Roman castellum and bathhouse during the Late Roman period (Erickson-Gini et al., 2015).

During excavations at Horbat Ma'on, located 20 km south of Gaza between the modern-day kibbutzim Nir 'Oz and Nirim, several Classical period remains were discovered. Among others a synagogue, monastery and a church, buildings, industrial installations, and a Roman villa. Nahshoni and Seriy (2014) conducted in 1998 and 1999 an excavation about 400 meters west of the synagogue and discovered Late Roman period building remains. Furthermore, nine coins dating from the early third century CE to the first quarter of the fourth century CE were found (Ariel and Berman, 2014). A Roman villa had been excavated in the past by Eldar-Nir (Permit number A-1161; not published) located between the synagogue and the excavation conducted by Nahshoni and Seriy (2014: *13).

The site of Bir Wakili Shuteili (Gazit, 1996: 82; Site 221), located at the southern end of the study area on the western bank of Nahal Besor, covers a total of 10 ha.[9] The site includes structures, dams, a quarry, wells, installations, an oil press, a kiln, and small finds such as tesserae, kiln slag, fragments of ashlars, and marble (Gazit, 1996: 71*). According to Gazit (1996), the site dates between the Late Roman and the Early Byzantine periods. From the published "Roman" pottery, Magness (2003: 173) re-dates the first bowl to the late fourth to fifth century (Late Roman C ware, Form 1); the other three pieces are not diagnostic. One not diagnostic sherd, decorated with lions, seems to belong to the early group of Late Roman C ware, dating to 440 to 490 CE (Hayes, 1972: 349, Fig.75: 38; Gazit, 1996: 82, Fig.3; Israel et al., 2013). However, this identification is only based on the decoration and similar pottery sherds from other excavations that were diagnostic. Therefore, it is

9 It can be assumed that the ten hectares correspond with the significant field scatter radius. According to Wilkinson (1989: 44; see Chapter 4 Methodology), this corresponds to a hamlet or large farmstead of up to 1.5 ha.

unclear whether this site actually dates to the Late Roman period or the Early Byzantine period.

Based on the limited amount of published pottery, a final conclusion is impossible. However, based on the few sherds, the site more likely dates to the fourth to fifth century, rather than the Late Roman period. According to Gazit (1996: 80), the farmhouse at Gevulot junction–Ze'elim junction road 1 has five sherds published, from which three date to the Roman period. In this find, (1) is possibly Nabatean/Roman, and (2 and 3) are Nabatean pottery sherds, dating to the mid-first to mid-second centuries CE (50–150 CE). The farmhouse Nahal Besor 83 (Gazit, 1996: 39; Site 58), located on the east bank of Nahal Besor, has three sherds labeled "Roman", and the first two are probably Cypriot Red Slipware, although based on the drawing, a definite identification is impossible. They could also be African Red Slip bowls. The third sherd is from a jar, probably a Gaza amphorae/LRA 4 type. All published pottery sherds date to the Byzantine period.

Several pottery sherds from campsites have been published. From the small site Nahal Besor 13 (Gazit, 1996: 37, Site 54), three sherds have been published, and one has been labeled "Roman", as the bowl dates to the Byzantine period. From the large campsite Shemurat Ha-Besor–HaZerim road [1] (Gazit, 1996: 60, Site 138), four pottery sherds have been published, and although the first is labeled as "Roman", it is actually a Late Roman C ware, Form 3, dating to the second half of the fifth and first half of the sixth centuries CE (Hayes, 1972: 329–38; Magness, 2003: 172). At another campsite (Gazit, 1996: 66, Site 163), five sherds have been dated as "Roman", but according to Magness (1993: 160; 2003: 173), they are Byzantine: (1) possible African Red Slip bowl; (2) Late Roman C bowl, Form 10 A–B; (3) Arched-Rim Basin; (4) Fine Byzantine ware. All published sherds date to the sixth and seventh century CE.

At the campsite Urim junction–Ze'elim junction road (Gazit, 1996: 78, Site 210), two sherds have been published and labeled Roman or Byzantine pottery. The first is Late Roman C ware, Form 3, and the second is a Gaza amphorae/LRA 4, Form 3 or 4. The LRC bowl dates to the second half of the fifth and first half of the sixth centuries, and the Gaza amphorae/LRA 4 dates between the mid-fifth and the seventh centuries CE (Hayes, 1972: 329–38; Majcherek, 1995: 176; Magness, 2003: 173). At the campsite Nahal Besor 66 (Gazit, 1996: 88, Site 245), two sherds have been published and labeled as "Roman." One is a Gaza amphorae/LRA 4, probably Form 3 or 4, dating from the mid-fifth to seventh centuries CE (Majcherek, 1995: 175–76; Magness, 2003: 173).

As none of the published pottery labeled by the surveyors as "Roman" actually dated to the Late Roman period (all Byzantine or Early Islamic), there is at least reasonable doubt that most of the sites that have no pottery published and were dated by the surveyor to the Late Roman period are actually Late Roman and not

Byzantine or Early Islamic. As in the other three parts of the study area (maps 112, 114, and 121), only 12 sites that date to the Late Roman period have been found, and one can assume that in the southeastern area (map 125), the picture must have been similar. As many sites have no diagnostic pottery published, it is difficult to establish which site dates to the Late Roman period and which does not. The other three survey maps (maps 112, 114, and 121) of the study area show average-sized settlements dating to the Late Roman period, or 9% of all Classical period sites. Applying this coefficient to survey map 125 would mean that about 20 sites (instead of 48) date to the Late Roman period. Thus, the total sites dating to the Late Roman period in this study area should rather be around 32 sites instead of 60.

The coin finds from excavations in the study area show that a sharp rise in coins only took place in the mid-fourth century (after 324 CE) and not in the Late Roman period, which would correlate with the analyzed ceramic finds. Clearly,

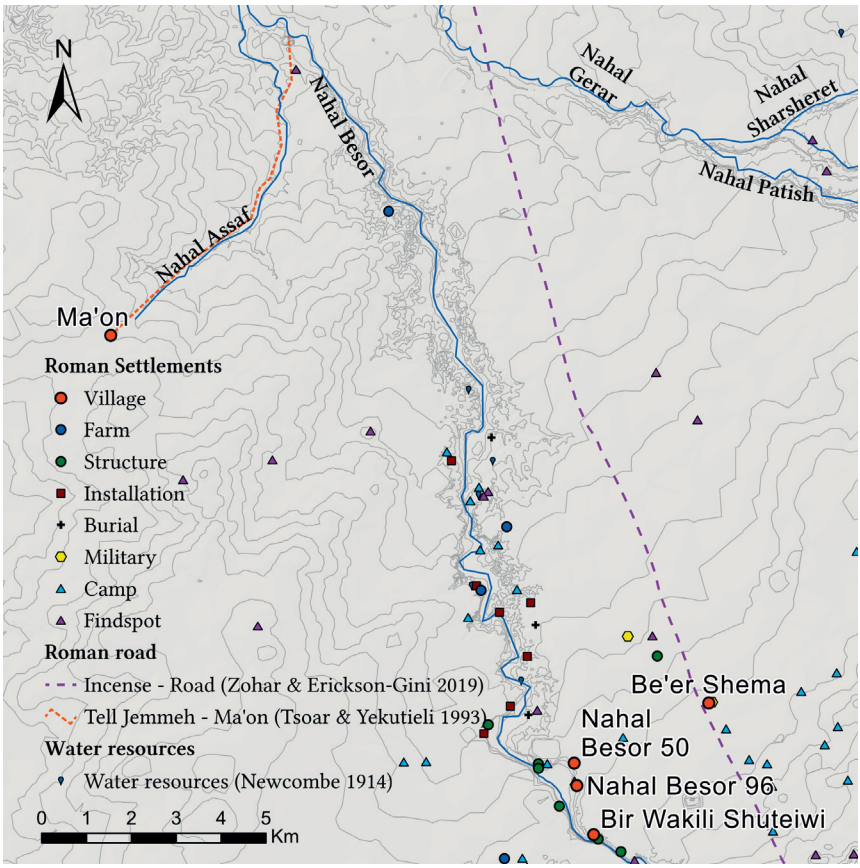

Figure 5.8 Late Roman period site distribution.

some of the sites were settled in the Late Roman period, however, the rise in settlement activity took place in the early to mid-fourth century CE and not in the Late Roman period. Unfortunately, it is not possible to decide, based on the small amount of published pottery, whether a site actually dates to the Late Roman period or not. The map shows all sites dated by the survey teams as Late Roman, however, the resulting map should be looked at carefully with the above discussion in mind. All of the published "Roman" pottery actually dates to the Byzantine period or even later. Furthermore, the same pottery dating was applied by the survey teams to date all sites they discovered, so the conclusion that pottery dated by the surveyors as Roman is most likely Byzantine pottery; this is probably also correct for sites where no pottery has been published.

During the Late Roman period, most of the permanent sites were concentrated around Nahal Besor: 62% were within 500 m of the Nahal, and 79% of the sites were within 1,000 m (Table 5.5). Although less sits concentrated around Nahal Besor than during the Early Roman period, there is still no significant change in the settlement patterns, and it remains similar to the Hellenistic period (see above). Furthermore, most sites are concentrated in the southeastern part of the study area. The springs of Nahal Besor are the only perennial water source in the

Table 5.5 Distance between Late Roman sites and Nahal Besor.

Site Type	Total Sites	Distance 500 m	%	Distance 1000 m	%
Permanent Sites:					
Village	5	2	40.00%	3	60.0%
Farmstead	4	2	50.00%	4	100.0%
Military structure	2	0	0.00%	0	0.00%
Structure	8	6	75.0%	6	75.0%
Installation	7	6	85.7%	7	100.0%
Burial site	3	2	66.7%	3	100.0%
Total	29	18	62.07%	23	79.31%
Non-Permanent Sites:					
Camp	26	8	30.76%	10	38.46%
Findspot	17	7	41.17%	8	47.06%
Total	43	15	34.88%	18	41.86%

area, and during the Roman period, no towns existed in the study area. The main activity was agriculture, and therefore it makes sense that the permanent sites were located close to the water source.

Gazit (1996: 16*) argues that a change took place in the settlement pattern during the Roman period, claiming that 44% of the sites are located in the flatlands and not in the immediate vicinity of Nahal Besor. This is apparently true,[10] but that figure includes all sites, including non-permanent ones. When only analyzing the permanent sites, one can see that the distribution of permanent settlements did not change from the Hellenistic to the Late Roman period, but rather, more sites are located close to the Nahal, both proportionally and in absolute numbers. Furthermore, one has to consider the above discussion, which shows that many sites did not date to the Late Roman period if the dating system was based upon the published pottery.

According to Gazit, the change in settlement patterns was due to the development of new water catchment technologies (Gazit, 1996: 16*) such as channeling surface runoff and storing it in hewn cisterns lined with stone or plaster (Gat, 2012). This trend is not evident during the Roman period in the Besor region and is only visible from the Early Byzantine period onwards (Gat, 2012). One change is clearly visible: many non-permanent sites (camps, findspots) appeared during the Roman period. These camps were mainly located close to the military outposts, Qa'et Abu Susein and Khirbat Be'er Shema, near the Incense Road leading from Gaza to Elusa and Petra. This accounts for about 55% of the camps, with the other camps located along Nahal Besor (45%). Several of the campsites in fact date to the Byzantine period and not to the Roman period (see above).

An analysis of site sizes in the Roman period shows that several larger sites existed, including the village/town of Be'er Shema, the military camp Qa'et Abu Susein, and the extensive farmstead complex at Bir Walkili Shuteiwi. Of the 16 large sites (< 10 ha), 12 are non-permanent (encampment sites) and were in use over several archaeological periods. The exact size of these campsites during the Roman period is unknown.

Based on the above discussion, one can conclude the following points: (1) Most sites dated by the surveyors as Late Roman most likely date to the Byzantine period. (2) Settlement patterns did not change until the end of the Late Roman period. Most sites are still located in the vicinity of Nahal Besor, with the exception of Be'er Shema, which was located on the Incense Road and was a large village, including a bathhouse and a castellum. (3) The tells were abandoned at the

10 Considering the whole survey area (maps 112, 114, 121, and 125) and not only map 125, 39.5% of sites are not in the vicinity of Nahal Besor.

beginning of the Early Roman period, in the first century CE at Tell el-Far'ah (south) and En Besor, respectively. Be'er Shema most likely became the most important and largest site in the study area during the Late Roman period. Finally, (4) the Incense Road and international trade through the Negev collapsed at the beginning of the third century CE but was later on revived, and continued to function partially until the Early Byzantine period (Erickson-Gini and Israel, 2013). The level of trade most certainly influenced the settlement patterns in the study area, as proven by the campsites along the route and surrounding Be'er Shema.

5.6 Byzantine period

A sharp rise in settlements is visible during the Byzantine period, to which 274 sites have been dated. The site density for the Byzantine period is 0.69 sites per square km, which is about four times higher than during the Late Roman period. Considering that several sites did not date to the Late Roman period (see above), the rise in settlements is even more impressive. Towns, including Ma'on, Khirbat Jemmeh, and Khirbat Irq, appear for the first time during the Classical era in this subperiod (some sites were already settled, but they expanded to towns only during the Byzantine period). A significant change in settlement patterns is discernible: there are many more sites settled, the settlements are distributed over the whole study area and no longer only around Nahal Besor, and the sites are more extensive than in the previous period (see Table 5.2).

The settlements were connected by a network of roads and paths (Gat, 2012). According to Gat (2012), the road from Khirbat Jemmeh to Ma'on was used from the Persian period to the Byzantine period. Furthermore, the Incense Road from Petra to Gaza was used until the Early Byzantine period, when trade along the road declined and went out of use later in the Byzantine period (Erickson-Gini, 2002; Erickson-Gini and Israel, 2013: 29). In the western part of the study area, a road connected Gaza/Ashkelon to Ma'on and, from there, to the larger cities and towns in the central Negev, e.g., Elusa, Nessana, Oboda (Tsaferis, 1985; McCormick et al., 2018).

In previous periods, most sites were located close to water sources. However, during the Byzantine period, all types of settlements extended across the region. Furthermore, many more villages and farms were present, clustering around the four large towns. Only 25.5% and 31.5% of the permanent sites in this period were within 500 m and 1,000 m of Nahal Besor, respectively, compared to 62% and 79% in the Late Roman period. Similar to the permanent sites, for the non-permanent

Table 5.6 Distance between Byzantine sites and Nahal Besor.

Site Type	Total Sites	Distance 500 m	%	Distance 1,000 m	%
Permanent Sites:					
Town	4	1	25.00%	1	25.00%
Village	20	5	25.00%	7	35.00%
Farmstead	45	4	8.89%	6	13.34%
Military structure	2	0	0.00%	0	0.00%
Structure	25	7	28.00%	9	36.00%
Installation	29	17	58.62%	18	62.07%
Burial site	40	8	20.00%	11	27.50%
Total	165	42	25.45%	52	31.52%
Non-Permanent Sites:					
Camp	42	11	26.19%	17	40.48%
Findspot	67	14	20.90%	22	31.88%
Total	109	25	22.94%	39	35.78%

sites, encampment sites, and findspots, around 35% were located close to Nahal Besor, while the remainder were divided along the roads and clustered around the larger settlements.

Throughout the Byzantine era, the settlement patterns show a significant change. Several researchers attribute these changes to new technologies related to water catchment (Gazit, 1996: 16*), such as channeling surface runoff and storing it in hewn cisterns lined with stone or plaster (Gat, 2012). Gazit (1996) attributes these changes to the Late Roman period but based on the results of this study it seems that they only took place in the Early Byzantine period in the region of Nahal Besor (Wadi Gaza).

Taking only towns, villages, and farmsteads into account, the proportion of the sites located up to 1,000 m from Nahal Besor shrinks to under 20%. This clearly indicates that proximity to the yearlong water source was no longer the most critical determinant of settlement location. The majority of sites in the vicinity of Nahal Besor were installations (57.57%) such as pottery kilns, which need water for the production of pottery.

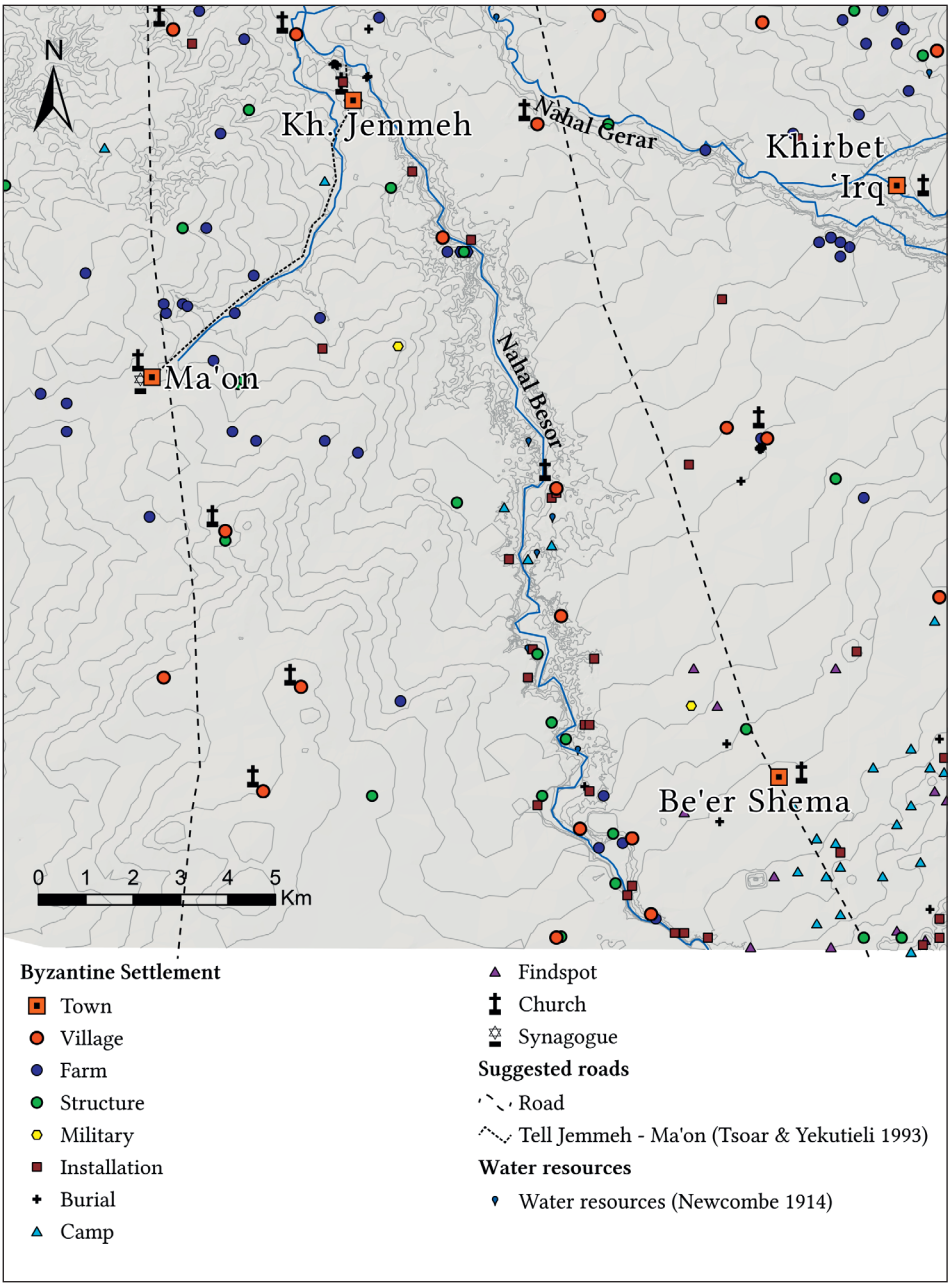

Figure 5.9 Byzantine site distribution in the western study area.

Research showed that in the northern Negev all large urban centers, cities and towns as well as many larger villages, had at least one church. Several settlements probably had more than one church. In the study area, 12 settlements have been discovered with at least one church, and in Ma'on, a synagogue was also found (Figure 5.10).

Horbat Ma'on was probably the largest Byzantine period settlement in the study area, with a size calculated to about 30 to 40 ha (see above). The site was settled in previous periods, and remains from the Persian, Early Roman, and Late Roman periods have been found. The Byzantine settlement is identified as *Manois* on the Madaba map, which was the center of the city territory *Saltus Constantiniiaces* (Avi-Yonah, 2002: 148; Nahshoni and Seriy, 2014: 162). Excavation results show that the site was settled throughout the Byzantine period. Several public buildings, houses, streets, and other structures have been excavated. At the end of the Byzantine period, some buildings were renovated or rebuilt, and a church was built (Nashoni and Seriy, 2014). A marble inscription dedicated to St. Stephen was found in the 1990s (Figueras, 1996). A synagogue dating to the sixth to the seventh centuries CE was excavated in 1958/1959 after a large part of the building was destroyed during the construction of a new road (Barag, 1993: 944–46). The synagogue was probably two stories high with a women's gallery, and had in its center a mosaic pavement, which was decorated with a seven-branched menorah, lions, medallions with animals, and an inscription. The style of the mosaic (medallions with animals) is similar to that of the synagogue in Gaza (Ovadiah, 1969), which dates to the early sixth century CE (508–509 CE), and the mosaic floor from Shellal church (Trendall, 1957), which dates to the mid-sixth century CE (561–562 CE), as well as the mosaic floor from a church excavated in 1968 by Cohen in Be'er Sheva (Cohen, 1968: 130). Under the mosaic, an older mosaic was discovered (Barag, 1993: 944–46). Coins found during the excavation date from the early fourth century CE to the late sixth century CE (Rahmani, 1960: 14–16). Based on these findings, one can assume that Ma'on was a civic center during the Byzantine period, and Christians and Jews lived in the town. During the Early Islamic period, the site continued to function, possibly as a waystation on the road to Gaza (Nahshoni and Seriy, 2014).

About 500 meters southeast of Kibbutz Magen, a large settlement was discovered (Magen 5), including mosaic pavements of a church. The mosaics were first discovered in 1958, and in the 1970s they were rediscovered by members of the Kibbutz Magen, and subsequently excavated by IDAM. The excavation was directed by Tsaferis (1985). The village was located on the Gaza–Central Negev road about 3.5 km south of Ma'on. A large complex of churches was excavated in 1976 consisting of a large central basilica and two smaller churches, as well as a *baptisterium*. The first phase of church construction dates from the late fourth to

early fifth centuries CE. In the sixth century, additions were made to the church complex. The complex is associated with a large village with domestic and agricultural structures. A winepress was also found in surveys. According to the surveyed remains, Magen was a large village that was abandoned in the seventh century, and no evidence of an Early Islamic occupation could be found (Tsaferis, 1985). According to the excavator, signs of violent destruction dating to the first half of the seventh century CE were visible. Tsaferis (1985: 14) attributes the destruction to the Persian raids in 614 CE, although no other destruction layers have been recorded in the study area, neither in connection to the Persian war, nor the Arab conquest. Therefore, the recorded destruction might be the result of another (local) violent event. Coins date from the early fourth century to the late sixth century CE (Feig, 1985).

Be'er Shema (Birsama), was a large village/town[11] located in the bishopric of Gerar (*Saltus Gerariticus*), on the Elusa–Gaza road. At least from the early fifth century CE, Be'er Shema served as the headquarters of the region, but in the sixth century, the civic center of the territory moved to the town of Orda (Di Segni, 2004: 50–52). At Be'er Shema several remains have been discovered during surveys and excavations: a fortress, the remains of two churches, a monastery, large structures, the remains of raised square surface, a theater (?), cisterns, cist graves, a large winepress, and other architectural remains (Gazit, and Lender, 1992; 1993; Gazit, 1996: 59*; 2008: 78; Erickson-Gini et al., 2015). In the vicinity of the settlement, the remains of farms and watchtowers were found (Gazit, 1996: 59*). The site was excavated in 1989 and 1990, including a Byzantine church with a basilica dated by the archaeologists to between the late-sixth to mid-seventh centuries CE (Gazit and Lender, 1992; 1993). According to other researchers, this late dating is not based on findings. But based on the paleography of the inscriptions, the style of the mosaic, and the ancient literacy, the church should be dated to the mid-fifth to mid-sixth centuries CE (Tzaferis, 1996; Dolinka, 2007: 115). According to the excavators, the church was abandoned in the second half of the seventh century CE (Gazit, and Lender, 1992; Gazit, 1996: 18*). During a more recent excavation at Horbat Be'er Shema, industrial installations were excavated, uncovering a large winepress and storage facilities, possibly a pottery kiln, dating from the

11 Based on its size and population (see Chapter 8), the settlement could be considered a large village rather than a town. In the published settlement map (Figure 5.9), Be'er Shema is classified as a town because of its importance as a settlement along the road from Elusa to Gaza. In historical sources, the settlement was also described as a town: in the *Descripto Orbis Romani*, which is a list of all Byzantine towns compiled by Geor Kyprios in ca. 600 CE, Be'er Shema is mentioned as a regional administrative center for the territory of Gerar (Gelzer, 1890: 52 cited by Dolinka, 2007: 112).

fifth to early seventh century CE. According to the excavators, Be'er Shema was abandoned in the late seventh century CE and resettled in the eighth–ninth centuries, before it was again abandoned. It seems that the Byzantine structures were not reused (Erickson-Gini et al., 2015: 221). However, the excavation was limited and did not include the whole site, therefore, it is possible that parts of the settlement continued to be settled without interruption from the Byzantine period to the eighth and ninth centuries CE.

At Khirbat el-Malta'a, a large village in the eastern part of the survey area, the remains of a church, buildings, an area designed for public gathering, a complex of waterholes, wells, an aqueduct, a winepress, and several remains of mosaic floors were found. The site was excavated in 2008, and strata from the Early Roman, Byzantine, and Early Islamic periods could be discerned (Talis, 2011). According to Talis, the remains from the Byzantine period were extensive and date mainly to the sixth to seventh century CE. Refuse dumps and wall foundations point to undisturbed settlement continuity on the site until the eleventh century CE (Talis, 2011). To the south, a cemetery was discovered during construction work (Gazit, 2008: 78). A large villa or public building was excavated to the west of the village. The salvage excavation of the villa took place in 2015 (unpublished; A-7405/2015) and was directed by Aladjem. The building was damaged during construction work. Therefore, only a partial excavation was possible: 12 rooms have been excavated, and parts of the rooms had stone slab pavement, plastered floors, and one room had a mosaic floor. Pottery sherds found in the building consisted mainly of Gaza jars, bag-shaped jars, and cooking ware. These findings point to an agricultural estate rather than a public building—the pottery dates to the sixth and seventh century CE (Aladjem, pers. comm.). About 200 meters south of the villa, a cemetery was discovered. The cemetery may be the continuation of the cemetery mentioned above found during construction work. It seems that the cemetery belonged to the village of Khirbat el-Malta'a. The tombs were not excavated and remained *in situ.* They were constructed from limestone slabs sunk into the loess soil. The tombs had a general east–west orientation, which points to a Christian population. Aaccording to Rahmani (1999: 13–14), the orientation of Late Roman pagan burials did not matter, in such cemeteries the burials show no general orientation. However, it is challenging to discern Byzantine burials from Early Islamic burials without their being excavated. The Byzantine Negev burial tradition continued into the Early Islamic period, and the tomb architecture and direction remained unchanged (Nagar and Sonntag, 2008). After the location of each of the tombs was recorded, they were covered with several meters of soil, and a water reservoir was built on top.

Khirbat Jemmeh, a sizeable Byzantine site located at the southern foot of Tell Jemmeh, is about 15 km south of Gaza. Schaefer estimated the size of the settle-

ment to be at least 25 ha. The site is extensively disturbed by modern agriculture, and no surface architectural remains can be found *in-situ*. During excavations, scattered remains of mosaic floors, a church, a bathhouse were found, as well as a public building with a marble statue of a figure seated on a throne (Schaefer, 1979: 87–88). The small excavation conducted in the 1970s dates the site from the fourth to the seventh century CE (Schaefer, 1979: 126).

Khirbat Irq, a large site in the northeastern part of the study area, appears along Nahal Gerar and Nahal Sharsheret. The site is located in the bishopric of Gerar.[12] Several archaeological finds were made during the survey: winepress, church, bathhouse, pottery workshop, and architectural remains (Gat, 2012). Pottery finds date to the Chalcolithic, Persian, Roman, Byzantine, and Early Islamic periods. The majority of the pottery finds clearly date to the Byzantine period (Gat, 2012).

Another church with an impressive mosaic floor was found at Kissufim (in the northwest section of the study area) and dated to the mid-sixth century CE. An inscription on the mosaic floor dates the floor to the 4th of August 578 CE (Cohen, 1980). With its depiction of hunting scenes, animals, a man leading a camel with goods, and several inscriptions, the high quality of the mosaic shows excellent workmanship, and the church must have belonged to a prosperous settlement. The church, built in the mid-sixth century CE, was probably located within a large village. Meisler [Mazar] (1952: 48–51) suggests identifying the village as *Orda* on the Madaba mosaic map. However, according to Di Segni (2004: 48), the streambed of Nahal Besor formed the border of the territory of *Saltus Gerariticus*. She suggests that Kissufim belonged to the district of Gaza, and therefore the site cannot be identified as *Orda,* as it lies within the district of *Saltus Gerariticus*.

Based on these findings, one can conclude that most cult sites were built between the late fourth century CE and the late sixth century CE. It seems that in the early to mid-sixth century, many of the cult sites mosaics were renovated or the sites were built new. Several of the mosaic floors are associated with the so-called Gaza mosaic school, to which the mosaic of Be'er Shema, the Shellal church, and the synagogue at Ma'on and Gaza belonged (Cohen, 1993: 282). All these mosaics date to the early to mid-sixth century CE (Figure 5.10).

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12 The site Gerar did not exist in the Roman-Byzantine period. In historical sources, it is assumed that when Gerar is mentioned, the district of Gerar and not the city of Gerar is meant. It seems that Be'er Shema and later on Orda were the administrative and ecclesiastical capital of Saltus Gerariticus during the Byzantine period. According to Alt, Khirbat Irq might be identified as Orda (Alt, 1931; Avi-Yonah, 1954; Aharoni, 1956; Di Segni, 2004: 50).

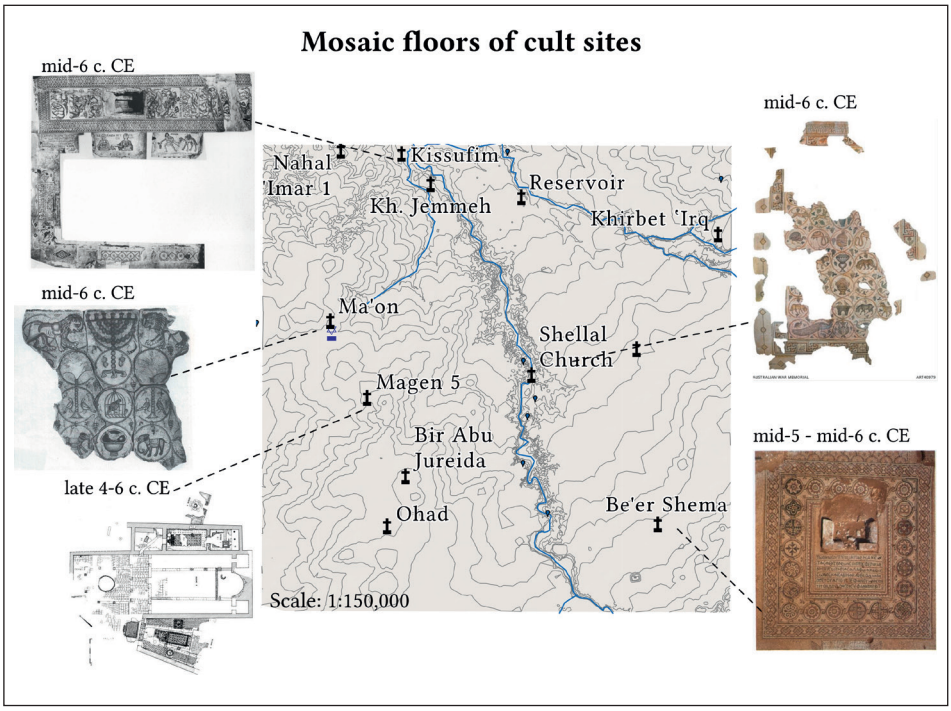

Figure 5.10 Mosaic floors of cult sites in the western study area.
Mosaic floors of Christian and Jewish cult sites: Kissufim (Cohen, 1980), Ma'on (Barag, 1993), Magen (Tsaferis, 1985), Be'er Shema (Gazit and Lender, 1992; 1993), and Shellal Church (Trendall, 1957).

After Christianization in the fourth/fifth century CE, the majority of the population accepted Christianity, as is evident from the many churches found in the area (see Appendix 5—Cult sites in the study areas). However, there was also a Jewish minority. All towns in the study area have cult sites, and there was most likely at least one cult site in each of the larger villages. So far three bathhouses have been discovered in the study area that date to the Byzantine period: Khirbat Irq, Abu Bakra 5, and Khirbat Jemmeh. Bathhouses are one of the few building remains of which the function is without question. All urban settlements most likely had public baths during the Late Roman and Byzantine periods, depending on population size and resource.

During the Byzantine period, the economic life of the settlements was based on cash-crop agriculture, and grapes were an especially common cash crop in the northern Negev (Gat, 2012). Over 40 farmsteads were discovered during surveys of the area. In the villages and towns, the economy was also based mainly

on agriculture and the trade of its products. Several large (industrial) winepresses (Magen, Khirbat Irq, Khirbat Be'er Shema) have been discovered. Furthermore, wine was stored and transported in Gaza jars (LRA4) (Mayerson 1992; 1996), and such jar sherds can be found, in a high concentration, at all Byzantine sites in the Northern Negev (Tepper et al., 2018; Bar-Oz et al., 2019; Lantos et al., 2020). This is also an indication of the importance of wine production in this region. Furthermore, at the large farming complex Bir Wakili Shuteiwi, an olive press was found during a survey.

5.7 Early Islamic period

In terms of the Early Islamic period, 34 sites have been found, though the settlement density is relatively low (n = 0.09 sites per square km). Due to the seemingly continuous occupation of sites between the Byzantine and Early Islamic periods, distinguishing between the site distributions is difficult:

> "The dilemma of the surveyors stems from the attempt to make a clear distinction between two political periods, Byzantine and Arab, as if the Islamic conquest resulted in an immediate change of population and material ware [...] which ceramic forms and fabrics are Byzantine and which are early post-Conquest Arab, the answer is clearly that they are primarily Byzantine in character, regardless of the vessels' users (Mayerson, 1996: 103)."

Late Byzantine pottery continues into the Early Islamic period, and therefore many sites may be missing on this map, as they may have been dated only to the Byzantine period. The coin finds (see Chapter 5.8 Coin finds from the western study area), which show a substantial drop in coins after the Arab conquest, might indicate a drop in economic activities in the settlements. However, researchers (cf. Walmsley, 1999) point out that Byzantine coins were used until the coin reform under ʿAbd al-Malikin 696–697 CE. Furthermore, the introduction of the Arab-Byzantine copper coinage did not pre-date the caliphate of ʿAbd al-Malik (Walmsley, 1999). Therefore, it is not possible based on pottery or coin finds to conclude whether a settlement was abandoned after the Arab conquest or continued into the Early Islamic period. These facts aside, it is clear from the data that settlement density decreased significantly somewhere in the seventh (or possibly the beginning of the eighth) century CE, even if several sites continued to be occupied after the Arab conquest. The excavation data are crucial, presenting the Early Islamic period more accurately than survey data alone.

Gazit concludes that there was a general decline in settlement density after the Arab conquest in the second half of the seventh century—almost 90%—and that this drop was caused by the conquest (1996: 40*). Magness (2003: 171–72) argues that Gazit misdated much of the pottery, and therefore, his conclusions are suspect. Having reanalyzed the published pottery (Sites: 57, 60, 107, 163, 164, 210, 221, 245; map 125), Magness re-dates most of the pottery to the late sixth to seventh centuries CE. At only one site (site 60) does she identify pottery dating to the ninth to tenth century CE (Magness, 2003: 171–74). However, re-dating the pottery does not necessarily contradict Gazit's conclusion, as the Arab conquest took place around 640 CE, and the pottery is re-dated to the sixth and seventh centuries CE. It is also problematic that, according to Gazit (1996: 16*), approximately one-third of the sites show no diagnostic finds.

Nevertheless, based on the available data, an apparent change in settlement patterns is evident. Also, even if the decrease in settlement density did not occur immediately after the Arab conquest, it did occur sometime during the Early Islamic period between the seventh and eighth centuries CE. These maps represent the sites identified by the surveyors as Early Islamic, including three sites where excavations were conducted and Early Islamic remains were documented: Ma'on, Khirbat el Malta'a, and Be'er Shema (Figure 5.11).

According to the surveyors none of the Byzantine farms seem to have continued from the Byzantine to the Early Islamic period, but this is highly unlikely, as probably most farms functioned at least until the seventh century, and there is no known destruction layer from excavations that dates to the Arab conquest of the area.

At Khirbat Ma'on, some of the Byzantine structures were reused, and Byzantine ashlars were used to line one pit. Nahshoni and Seriy (2014: 162) suggest that the site served as a waystation on the road to Gaza during the Early Islamic period. Ariel and Berman (2014), who have analyzed coins from Ma'on, argue that there may have been a resurgence at the site during the late seventh through the ninth centuries CE. At Khirbat Be'er Shema, a small reoccupation of the site occurred in the eighth–ninth centuries CE, and it seems they did not make use of the Byzantine facilities at the site (Erickson-Gini et al., 2015). At Khirbat el Malta'a, only scarce remains of a few walls and refuse pits that date to the Early Islamic period were found.

The scant remains of the Early Islamic period are mainly due to modern activity (construction, agriculture, military activity), but the refuse dumps and wall foundations point to undisturbed settlement continuity from the Byzantine period until the eleventh century CE (Talis, 2011).

Horvat Pattish (*Futais*), a town located in the bishopric of Gerar, was located on the northern bank of Nahal Patish. The site is located just outside the study

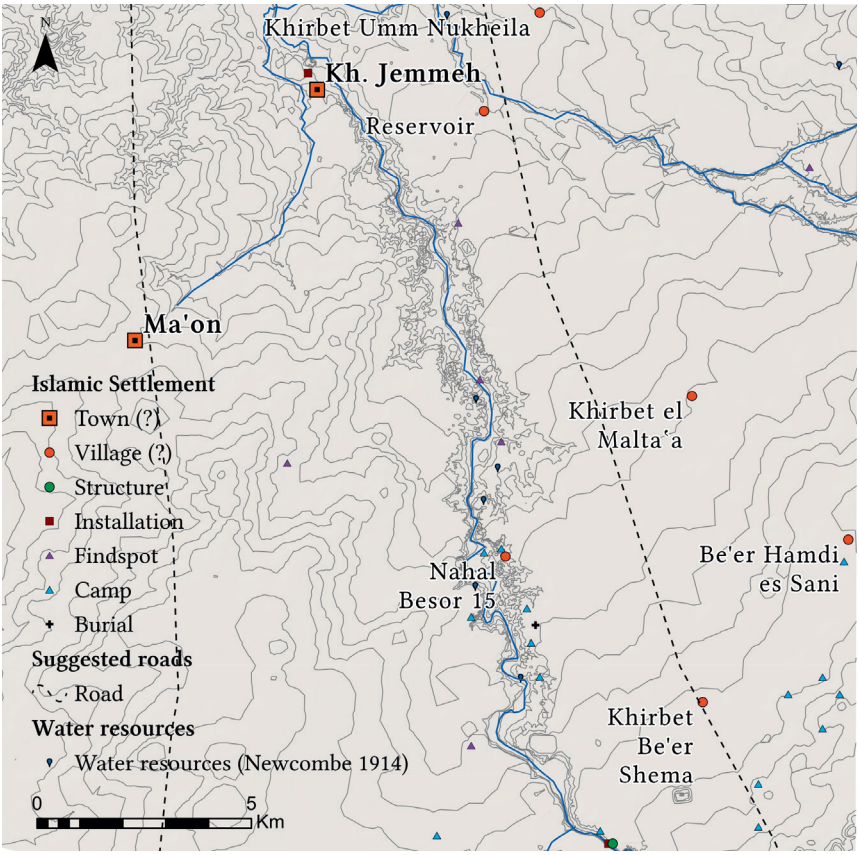

Figure 5.11 Early Islamic period site distribution in the western study area.

area. The ca.10 ha large settlement was excavated in 1987 and showed an occupation from the Byzantine to the late Fatimid period (11th century CE). Interestingly, no violent destruction layer was found in the transition from the Byzantine to the Early Islamic period, and the site reached its maximum extension in the tenth century CE (Nahlieli and Israel, 1988; Magness, 2003: 174; Avni, 2014: 259). This is an interesting fact, as the general trend shows a gradual decline of site numbers and site sizes during the Early Islamic period.

There are several large sites in the study area, e.g., Tel Irq, Ma'on, and Be'er Shema, which were occupied during the Early Islamic period. To compare these towns to the town of Horvat Pattish, additional excavations would be necessary as, to this day, these sites were not excavated (i.e., Tel Irq), or only punctual salvage excavations have been conducted (i.e., Ma'on and Be'er Shema).

Establishing site sizes during the Early Islamic period is problematic because, as previously mentioned, many sites seem to show continuity from the Byzantine period, and there are no clear indications of the extent of the Islamic settlements. The size of the site during its greatest extent is given, which is generally during the Byzantine period.

Of the Early Islamic period sites, 22 are non-permanent (camps and findspots). For eight sites, the exact size is unknown—these sites are camps and findspots. Most sites are in the smallest category, mainly single structures, installations, small encampments, and a few findspots. Three villages and two camps are in the category of sites of up to three ha in area.

5.8 Coin finds from the western study area

The coins from the western study area were found at the following sites: Ma'on, Magen, Khirbat Jemmeh, Tel Jemmeh and Khirbat el-Malta'a. In total 144 coins were taken into account for this study. Hellenistic coins were mainly found at Tel Jemmeh, the majority dating to the late fourth century BCE. Between the Hellenistic and Early Roman period (300 BCE and 200 CE) only two coins were found that date in between these approximately 500 years. However, this data does not include the three early Roman coin-hoards that were found at Tell el-Far'ah (south) that date to the first century CE (see Chapter 5.5.1 Early Roman period). In the third century a rise in coin numbers is visible. The coin numbers from this area also indicate a visible peak in the fourth and beginning of the fifth century CE and a second peak in the sixth to seventh century CE. No coins date to the period between 430 and 490 CE. This trend of a substantial decline in coin distribution during the fifth century CE has been discussed widely. Safari (1998) argues that during the fifth century, a decline in demographic and economic activity in the southern Levant took place, which he concludes mainly from quantitative numismatic evidence. This quantitative trend is also evident in the analysis by Gitler and Weisburd (2005) and is reflected in the coin finds and data analysis for the western study area (see Figure 5.12). As the trends of low quantitative numismatic data during the fifth century CE have gone unopposed, there are several alternative hypotheses for the numismatic evidence (cf. Gitler and Weisburd, 2005; Bijovsky, 2012; Fuks et al., 2017).

Based on the settlement data, it is difficult to date the settlements to a specific subperiod during the Byzantine period (as most of the pottery dates over long stretches of time). However, a sharp increase in settlement activity is visible in the fourth century CE (see above, Figure 5.9) and includes the cult sites: churches

(which date from the fifth century CE onwards) and the synagogue. These facts point to the hypothesis Safari (1998) suggests: there was a decline in demographic and economic activity during the fifth century CE. The quantitative numismatic data show that about 16% of the coins date to the late fourth century CE, and between 22 to 24% of the coins date to the sixth and seventh century, which is also because sixth-century coins were in use until the reform of ʿAbd al-Malik (696/697 CE) and the termination of the use of Byzantine coinage (Walmsley, 1999). Figure 5.12 shows a substantial decline by 638 CE, however Byzantine coins were used until the end of the seventh century (possibly even longer). The sharp decrease of coins after 638 CE might therefore be misleading, and one should consider that the circulation gradually declined until the end of the seventh century

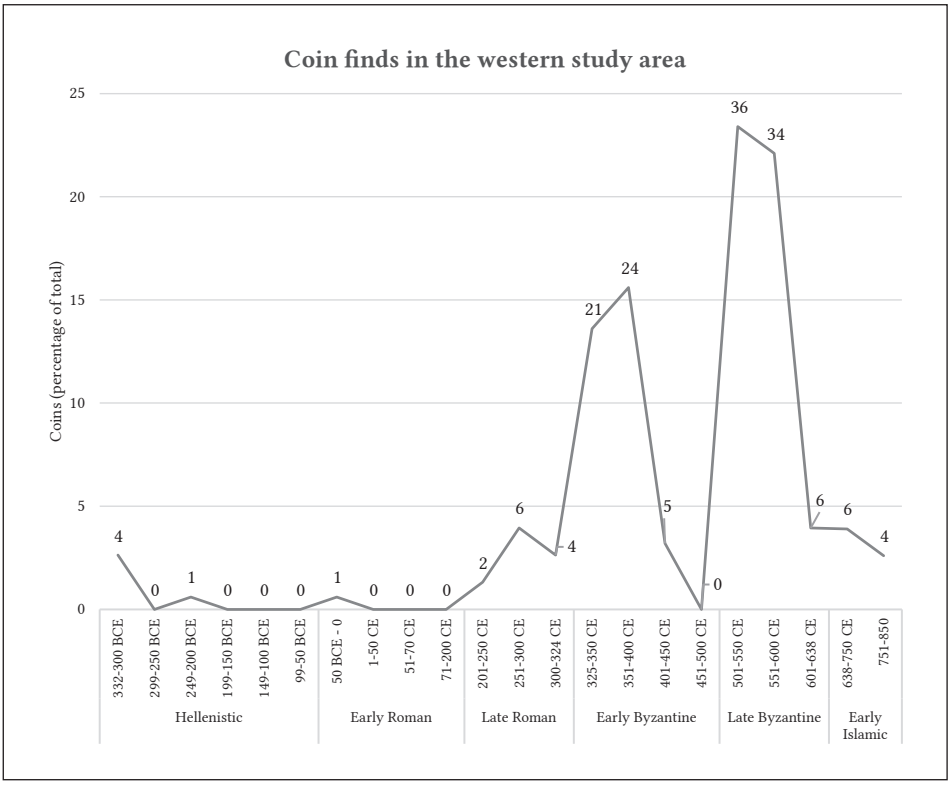

Figure 5.12 Coin finds from the Western study area.

Coins according to percentage: Hellenistic 3.5%, Early Roman 0.7%, Late Roman 8.3%, Early Byzantine 34.7%, Late Byzantine 52.8% and Early Islamic 6.9%. Roughly 90% of the coins date between 300 and 638. Absolute coin numbers on the graph. Coin data from the IAA internal database (*Menorah*) see Appendix 2.

and the introduction of Umayyad coins. About 90% of the coins date to the Byzantine period, however this number is also based on the fact that the majority of the coins were found in large urban centers of the Byzantine period. Other coin finds, such as the coin-hoards from Tell el-Far'ah (south) were not included, and these facts falsify to a certain point the results of the coin analysis. However, the general trends remain clear and correlate with the settlement analysis.

6 CENTRAL STUDY AREA: BE'ER SHEVA AND ITS SURROUNDINGS

6.1 Introduction

The central study area centers around the modern city of Be'er Sheva. In the center of the study area runs the Be'er Sheva–Arad Valley, which is mostly flat; to the north and south of it are low hills that reach up to 450 m above sea level (Figure 6.1).

The altitude of the study area ranges between 145 and 450 m above sea level. The wadis in the study area—Nahals Beersheva, Hebron, Beqa, and Secher—are dry riverbeds that only carry water after heavy winter rains. Nahals Hebron, Beqa, and Secher run into Nahal Beersheva which flows into Nahal Besor. The area of the modern city of Be'er Sheva is mostly flat, and only toward the northeast and south are there small hills. The landscape of the study area has changed dramatically since the early 20th century, mostly due to development.

The Turkish Administration built the modern city of Be'er Sheva at the beginning of the 20th century on the remains of the Roman-Byzantine city (Gophna and Yisraeli, 1973: 115). Musil (1908: 66) visited the site in 1903, reporting the systematic destruction of the ancient remains in order to gain building material for the houses of the new city. Archaeological research on the ancient city of Be'er Sheva, the core site of the entire region, began in the 1950s. As a result, salvage excavations were carried out by the IDAM and later by the IAA and universities. Next to the modern city of Be'er Sheva, there are mostly smaller towns and villages in the study area, mainly Bedouin settlements, with some army bases and agricultural areas (Figure 6.2). About 100 square km of the study area consists of

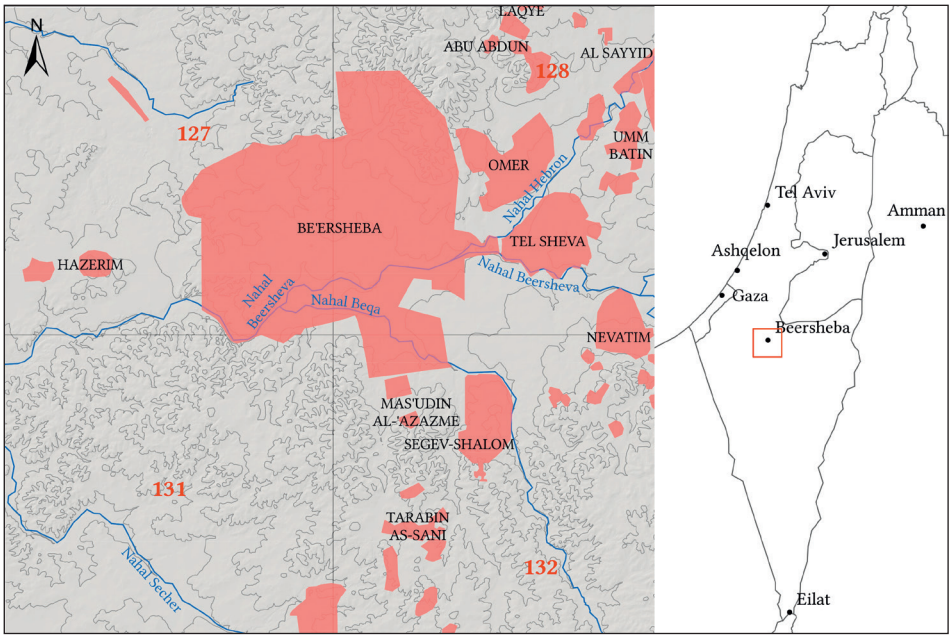

Figure 6.1 Central study area, showing the main modern settlements.
Survey map divisions (maps 127, 128, 131, and 132) appear according to the Archaeological Survey of Israel, including Nahal Beersheva, Nahal Hebron, Nahal Secher, Nahal Tson, and Nahal Beqa.

developed areas, including paved roads. The other 300 square km are partially used for agriculture, with a few forest areas, and in many parts of the study area—especially to the east and south of Be'er Sheva—there are several unrecognized Bedouin settlements (Shmueli and Khamaisi, 2011).

The central study area, with the ancient city of Be'er Sheva in the center, is divided into four survey maps. The northern two maps, Be'er Sheva West (127) and Be'er Sheva East (128), have not been systematically surveyed. Most of the area is covered by the modern city of Be'er Sheva. The two maps comprise a collection of development surveys, excavations, and inspections conducted, by IDAM and IAA, with the majority of the data having been acquired since the 1990s. Because of the development of the city of Be'er Sheva in recent decades, many sites were surveyed and excavated, and the published survey maps are a collection of these surveys and excavations. For all intents and purposes, the area can be considered as having been fully surveyed. The two southern maps were surveyed in the 1980s and published in 2014 online. In total, 670 classical sites were registered by the ASI (Table 6.1).

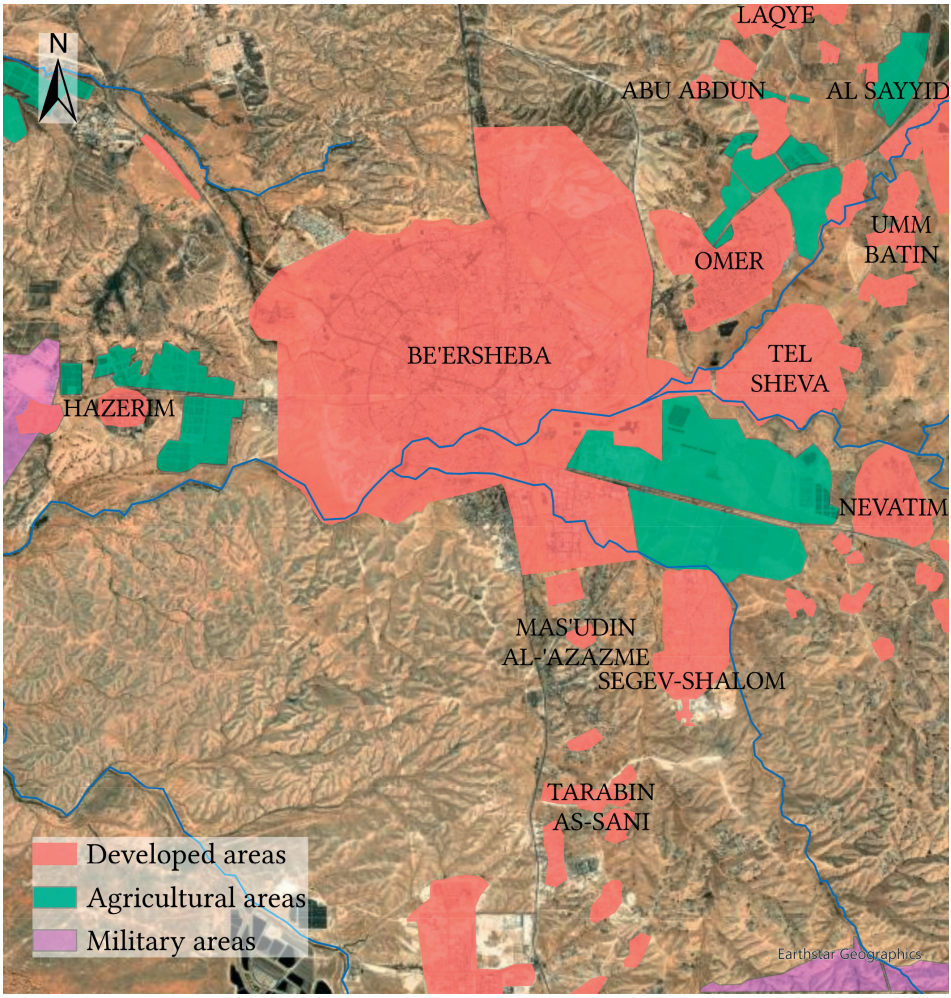

Figure 6.2 Modern land use of the central study area.

Be'er Sheva comprises the most extensive section of the study area. Smaller towns and villages surround the city, and there are some military areas. Background: Satellite Imagery (DigitalGlobe—ESRI).

Table 6.1 Survey maps, sites, density, and survey method in the central study area. This number includes only the Classical sites registered during systematic surveys, not the sites added based on development surveys, inspections and trial trenching, or excavations.

Map No.	Dates surveyed	Area (sq km)	Number of Total Sites	Density of Sites	Number of Classical Sites	Density of Sites	Survey Method	Reference
127	–/–	100	344	3.44	243	2.43	Collection of surveys and excavations	Shemesh, 2018a
128	–/–	100	306	3.06	229	2.29	Collection of surveys and excavations	Shemesh, 2018b
131	1982 and parts in 2009	100	109	1.09	79	0.79	Field-walking	Baumgarten, 2014a
132	1980	100	105	1.05	89	0.89	Field-walking	Baumgarten, 2014b

As is evident, the archaeological density of sites (0.79–2.43) is similar to that of the Besor region. In maps 127 and 128, the density is higher because the modern city of Be'er Sheva is located at the center, built on the remains of the ancient city. Therefore, many archaeological sites have been discovered there. In addition to these data, many sites (over 400, mostly tombs and structures) uncovered through inspections (mainly in the Old City of Be'er Sheva) have been added to the database. Furthermore, where there was little information available in survey map publications, the publications in *'Atiqot* and *Hadashot Arkheologiyot: Excavations and Surveys in Israel (HA-ESI)* or additional scientific literature were consulted for this study.

In many cases, when burials were excavated, the exact location of each tomb was not given, only a general location. When possible, the exact location was determined with the help of published maps, georeferenced, and added to the database (see chapter: 4.3 GIS data). An additional challenge with tombs is that the majority have not been excavated or no finds were present, therefore, exact dating is often impossible. However, the ranges of dates for tomb types are known, such that, for example, cist tombs built from whitish/yellowish limestone slabs appear in Late Roman to Early Islamic period contexts throughout the Negev.

6.2 Methodology and site size

Most sites were found in the central study area. In the central study area, 951 Classical sites were recorded and added to the database┐ those sites have been discovered during past surveys, excavations, inspections, and trial trenching. (Figure 6.3). This number differs from the site numbers from surveys (Table 6.1), as over 300 sites found during inspections and excavations were added to the database. During the Hellenistic period (n = 16) and Early Roman period (n = 12), no apparent change in the number of settlement sites is observed. In the Late Roman period, the number of sites climbs to 47 (20 sites date to the general Roman period and, based on the available data, it is not possible to date them to one of the subperiods—these 20 sites have not been included in Figure 6.3). An increase in sites is clearly evident from the Late Roman period, which continues into the Byzantine period but decreases in the Early Islamic period.

Most sites date to the Byzantine period (n = 755). Of course, one must take into consideration that (1) many tombs have been discovered that date to the Byzantine period (n = 227) and (2) not all sites were built and inhabited during the same period. However, these numbers provide a general idea of the settlement

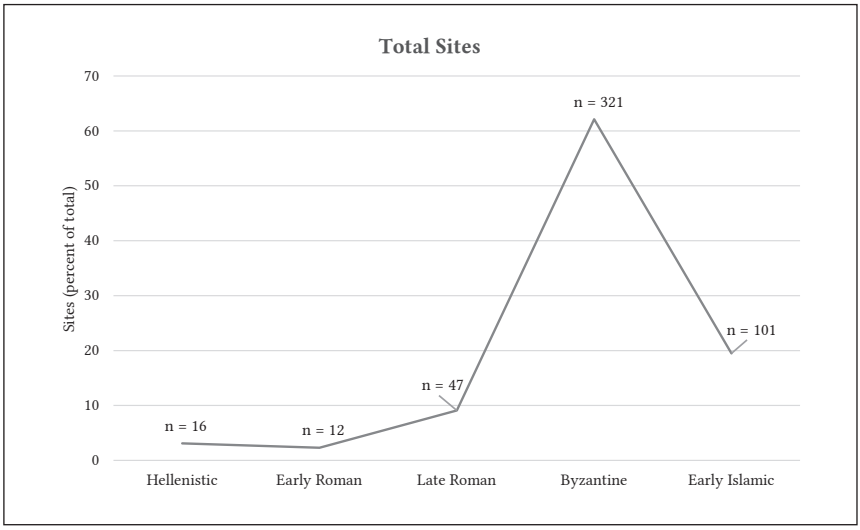

Figure 6.3 Central study area, total sites according to archaeological period. Twenty sites that date to the general Roman period were not included in this figure. Site percentage according to period (Be'er Sheva counted as one site): Hellenistic 3.1%, Early Roman 2.3%, Late Roman 9.1%, Byzantine 62.1% and Early Islamic 19.5%; absolute numbers on the graph.

patterns in the study area. Furthermore, over 200 sites discovered during excavations, test trenches, or inspections belong to the Roman-Byzantine city of Be'er Sheva. To be able to compare the different survey areas, the many sites (> 400) located within the area of the Roman-Byzantine city of Be'er Sheva, are counted as one settlement, like in other towns and villages, and not every structure has been accounted for. In the Early Islamic period the site numbers drop by two-thirds to 101 sites, although the percentage of Early Islamic sites is much higher than in the other two study areas (n = 19.5%). Of all sites in the western study area, 8.2% date to the Early Islamic period, and, in the eastern study area, 11.2% of all sites date to that period. The difference in site percentage numbers is explainable by the fact that in the central study area, the northern two "survey" maps include many excavations. Through excavations a much more exact interpretation and a more precise dating of the site is possible, this resulting that more Early Islamic sites could be identified.

In the Late Roman period (third–early fourth century CE), settlement activity in the area increased. Be'er Sheva grew from a large village/town in the Late Roman period to a city in the Byzantine period and served as the capital of the northern Negev. The number of villages and farms increased considerably from

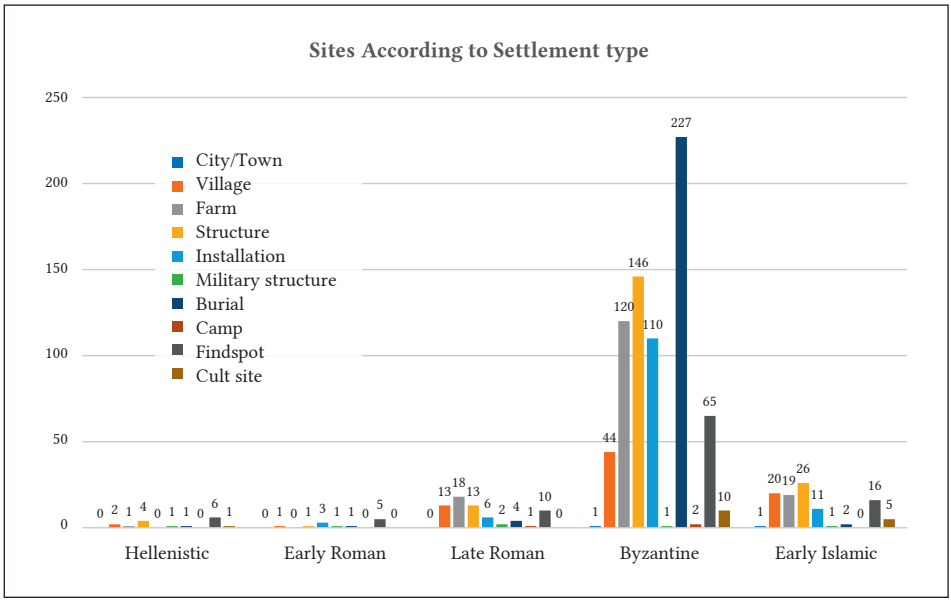

Figure 6.4 Sites according to settlement type in the central study area.
Cult sites have been counted twice. In the study area one Hellenistic temple, several churches and monasteries and one possible synagogue were found.

the Late Roman period to the Byzantine period (villages by 358% and farms by over 733%), as shown in Figure 6.4. For the Byzantine period, a large number of burials are shown. However, this number includes burial sites—in some places, only one tomb has been found, while there may be a whole cemetery in others. Based on the different publications of excavations and internal reports of inspections, it was not always possible to map the exact location of each tomb. Sometimes only a general area was given without spatial reference to each tomb. In other cases, the exact number of tombs was unknown—the number 227 represents, therefore, at least over 400 individual tombs.

Wherever possible, the size of the settlements was calculated in order to classify the site. In some cases, the size was given by the surveyor or excavator, however, this was not the case for many of the sites. If no size was given, it was estimated based on the described finds. The majority of the sites fall within the category of up to 1.0 hectares. These include installations, cisterns, farms, single buildings, and also small villages with few structures (hamlets).

Byzantine Be'er Sheva (90 to 140 ha) was the largest urban settlement in this study area during the Classical period, and there were a few other large settlements (e.g., Tel Sheva and Khirbat Amra). There are a small number of other sites larger than 3 ha, mainly dating back to the Byzantine and Early Islamic periods (Table 6.2).

Table 6.2 Settlement size according to archaeological period.

	Settlement size (ha)					
	Unknown	**0.0–1.0**	**1.1–3.0**	**3.1–10**	**< 10**	**Tot.**
Hellenistic settlements (332–37 BCE)	0	15	1	0	0	16
Roman settlements (37 BCE–324 CE)	0	65	13	0	1	87
Early Roman (37 BCE–132 CE)	0	11	1	0	0	12
Late Roman (132–324 CE)	0	34	12	0	1	47
Byzantine settlements (324–640 CE)	43	667	36	6	3	755
Early Islamic settlements (640–750 CE)	15	81	1	3	1	101

6.3 Previous field work

In the central study area, many sites have been excavated, and the majority are located in and surrounding the modern city of Be'er Sheva. Most excavations were salvage excavations, but a few excavations were a few larger excavations were conducted by universities. In addition to the excavations conducted in modern Be'er Sheva, other prominent ancient sites were Tel Sheva and Khirbat Amra. Several excavations conducted in and around Be'er Sheva were joint projects of BGU and the IAA, as for example excavations at Compound C (Gilead and Fabian, 2008: 315; Fabian and Gilead, 2010a; 2010b), Abu Matar (Gilead et al., 1993) and Rakafot 54 (Peters et al., 2020). Tel Sheva was excavated between 1969 and 1976, by TAU, directed at first by Aharoni and after his death by Herzog (Aharoni, 1973).

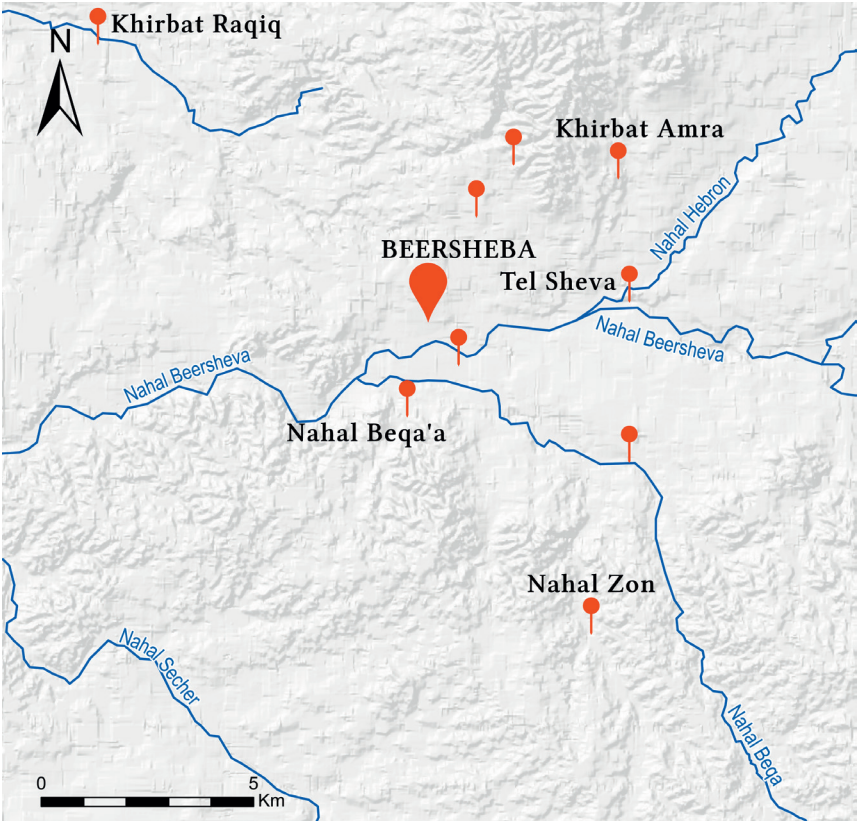

Figure 6.5 Previous field work in the central study area.
In and around the city of Be'er Sheva, several extensive and important excavations have been conducted. The sites and excavations are discussed according to the dating of the site (see below).

Khirbat Amra, which was excavated in 1993–1994 (Tahal, 1996; 2000), represents the most extensive excavation of a rural site, dating from the Classical periods in the Beersheba Valley until the present day. Many of these excavations will constitute a data baseline for chronologically comparing the survey.

6.4 Hellenistic period

Sixteen sites recorded in the study are dated to the Hellenistic period. The site density is comparable to that of the other two study areas (n = 0.04). In the eastern study area, it is equal (n = 0.04), and in the western study area, it is a bit higher (n = 0.05). All sites are relatively small, between 0.01 and 1 ha, mostly one to two single structures, some with underground spaces, with the exception of Tel Sheva, which was probably around 2 ha (Figure 6.6).

The largest and most important site in this area during the Hellenistic Period was Tel Sheva.[13] The site is located between Nahal Beersheva and Nahal Hebron, which merges to its west. About ten meters higher than its surroundings, the tell is one of the summits that dominate the Be'er Sheva valley (Aharoni, 1973: 1). The Hellenistic site included a citadel, a temple with a courtyard, silos, and refuse pits (Aharoni, 1973: 34; Figueras, 1980; Derfler, 1981). The temple was in use from the third to the first centuries BCE. An underground disposal area (*favissa*) contained clay and bronze figurines and a Babylonian cylinder seal (Lehmann, 2013). The citadel was probably established after John Hyrcanus I conquered the area (Figueras, 1980). Tel Sheva was located at the southern edge of Judea, near the border with the Nabatean kingdom. During excavations, 60 Hellenistic coins were discovered at Tel Sheva, the majority dating to the second and first centuries BCE (Kindler, 1973: 90–96). Interestingly, one-third of the coins (n = 25) are of Nabatean origin, indicating trade relations with the Nabateans during the Hellenistic period. All 25 Nabatean coins are dated between 110 BCE and 62 BCE and were made from bronze (Kindler, 1973: 90–96). The Hellenistic period finds (other than coins) have not been published at the time of writing. To the east of the tell, a lower, mainly flat area is located. Mainly Byzantine structures were discernable during surveys,

13 Bedouins called the site Tell es-Seba. Y. Aharoni used the modern Hebrew name found on the maps during time of excavation, which was Tel Beer Sheva. However, he used the biblical transliteration Tel Beersheba instead of the modern form (Aharoni, 1973: 1). In the course of this research, the site will be called Tel Sheva, as researchers agree that the site was not ancient Be'er Sheva, which was located where modern Be'er Sheva is located. Tel Sheva served to safeguard the road between Be'er Sheva and Tel Malhata (Fritz, 1973: 87–88).

such as a church (Woolley and Lawrence, 1914–1915: 45). However, many Hellenistic and Roman period sherds have been found (Aharoni, 1973: 1). Therefore, it is assumable that, during the Hellenistic period, the main population lived on the food of the tell, forming a lower settlement. However, to date, no Hellenistic period structures have been excavated in this area, which is covered today by the modern Bedouin town of Tel Sheva.

At Khirbat Amra, located about 2.5 km northeast of modern Be'er Sheva, the remains of a Hellenistic period structure, probably a small farmstead, were discovered during the 1994 excavation (Tahal, 1996; 2000). The farmstead was at least partially overbuilt with a larger farmhouse dating to the Early Islamic (Area E, see Figure 6.14, below; Tahal, 2000). Several walls could confidently be attributed to the Hellenistic period structure, forming two rooms with a slightly different orientation than the Early Islamic farmstead. The rooms most likely had a beaten earth floor, on which four complete vessels (three juglets and an oil lamp) were found, which date to the second to early first century BCE (Taxel and Michael, forthcoming). One can assume that the structure, which has been excavated only in part, probably dates to the second to early first century BCE. This assumption is based on the pottery finds from Area E. Furthermore, Hellenistic-period pottery sherds (fourth–second/first century BCE) were found in several other excavation areas. However, only Area E contained a large quantity of Hellenistic-period pottery related to the architectural remains. Based on the ceramic evidence, the Hellenistic period occupation ended probably during the early first century BCE (Taxel and Michael, *forthcoming*). There were no imported ceramics found at Khirbat Amra, which might be an indication that indeed only a small farmhouse was located there, and that the settlement was short-lived. The majority of other studied sites in the northern Negev show a certain amount of imported ware. In the Be'er Sheva valley imported wares were found in the settlement east of Be'er Sheva (Baumgarten, 2003; 2020, Israel and Feder, 2011), Tel Ira (Fischer and Tal, 1999), Tel Malhata (Tal, 2015) and Tel Aroer (Taxel and Hershkovitz, 2011), and for the Besor study area (see Chapter 5.4 Hellenistic period). These sites were all larger sites, several of the smaller sites did not have any imported pottery, especially in the Late Hellenistic period.

To the east of Be'er Sheva, halfway to Tel Sheva, the remains of a Hellenistic village were found during a salvage excavation in 1998/1999. According to Baumgarten (2003; 2020), this settlement might have been a satellite settlement of the large settlement at Tel Sheva. Several large underground cavities were excavated, and pottery, part of an ostracon, and a Rhodian amphora handle were found. The finds date from the second to first centuries BCE (Baumgarten, 2020). Nearby, a second excavation took place where Hellenistic period remains were also found. It is possible that these remains belonged to the same settlement (Israel et al.,

2011; Haimi, 2013). Several structures had been excavated, and two of the structures had underground rooms. The exact function of these structures in the respective villages is unclear. However, they were most likely used for agricultural purposes, as they were located close to Nahal Beersheva, and built terraces were also found in the area. In addition to the Hellenistic pottery, loom weights, a jar stopper, and fragments of millstones and pounding stones were found (Israel et al., 2011; Haimi, 2013).

At a smaller site at Bir Abu Jekheidim, located at the northern bank of Nahal Ashan in the northwestern part of the study area, remains from the Chalcolithic, Iron Age, and Hellenistic periods were discovered during a survey conducted in 1958 (Cohen, 1977). In 1976, Cohen excavated the Chalcolithic underground dwelling places. Near one dwelling place, he excavated a skeleton and at its side found a cooking pot from the second century BCE (Cohen, 1977). It seems that the Hellenistic burial was dug into the Chalcolithic remains. Nearby, two structures from the Hellenistic period were found during additional surveys.

At Nahal Ashan 2, which is located in the northwestern corner of the study area on a moderate slope of a loess-covered hill, building remains dating to the Hellenistic period were discovered during excavations in 1999, and according to the excavator, these remains belonged to a ruined settlement (Israel, 2003). The structure was built from mud bricks with a beaten earth floor, and a coin dating to the mid-second century BCE was found. Furthermore, 25 loom weights were found on the floor, as well as pottery vessels (krater and base of a jug). The site continued to be occupied in the Early Roman, Byzantine, and Early Islamic periods.

Five coins were found in the course of three salvage excavations in the modern city of Be'er Sheva date to the Hellenistic period and might serve as an indication that some kind of settlement was already established in the area. Three coins were found in the Old City of modern Be'er Sheva or nearby (Old Bedouin market;[14] Qenion[15]), dating from the late fourth to the third centuries BCE. Two other coins found in the Ramot neighborhood[16] of Be'er Sheva date to the late second century BCE. Nevertheless, at the time of writing, no structural remains dating to the Hellenistic period have been found.

Further, no Hellenistic settlements were found during surveys or excavations in the study area south of Nahal Beersheva (Figure 6.6) (Baumgarten, 2014a; 2014b). This is most likely related to the fact that the border between the Judean and Nabatean kingdoms was somewhere south of Nahal Beersheva.

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14 Excavation permit no. A-1862/1992
15 Excavation permit no. A-1644/1989
16 Excavation permit no. A-2748/1997

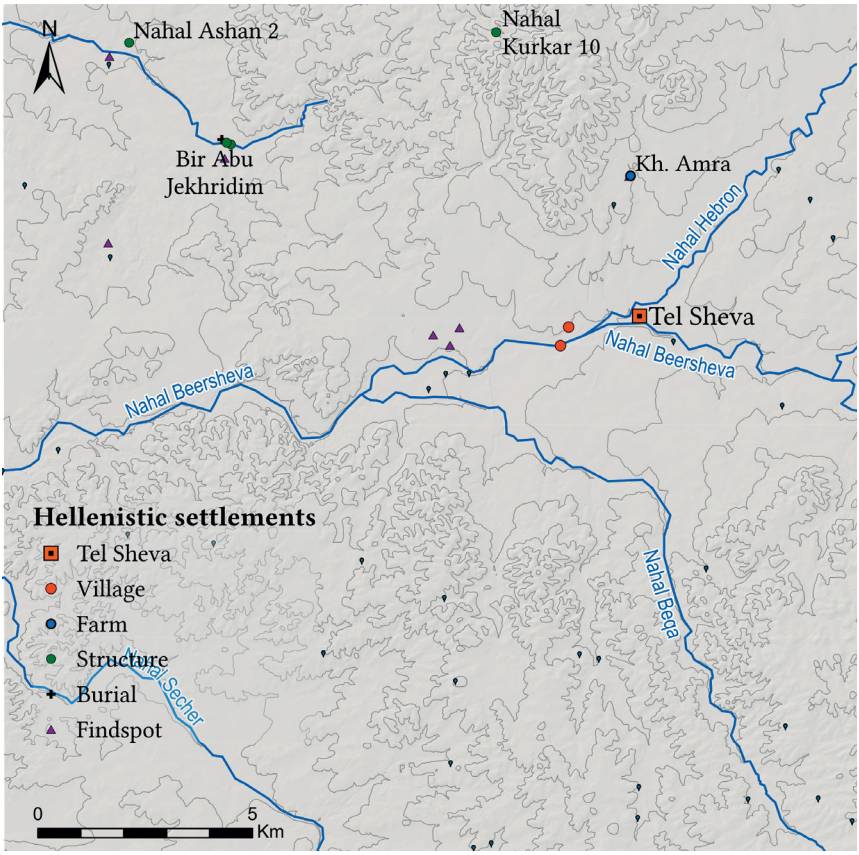

Figure 6.6 Hellenistic settlements of the central study area.

6.5 Roman period

Twelve sites date to the Early Roman period, 47 sites date to the Late Roman period, and dates for 20 sites could not be established, as no pottery was published. The site numbers expand sharply from the Early Roman to the Late Roman period. Four times more sites have been identified as belonging to the Late Roman period than the Early Roman period. A similar expansion of settlement numbers is visible in the western and eastern study area.

6.5.1 Early Roman period

During the Early Roman period, the settlement density in the central study area was low, and only 12 sites have been dated to this period. The settlement density is 0.03, which is slightly lower than in the western and eastern study areas. Only a few settlements appear in the study area (Tel Sheva, Rakafot 54, and Nahal Ashan 2), and a further three installations and six findspots have been found during surveys or excavations (Figure 6.7).

The largest site in the area, Rakafot 54, was a Jewish rural village that was discovered and excavated in 2018 and 2019. The site, which is located north of modern Be'er Sheva, is located within the area of a former army base, and its remains were partially damaged by it. The ancient village was established in the first cen-

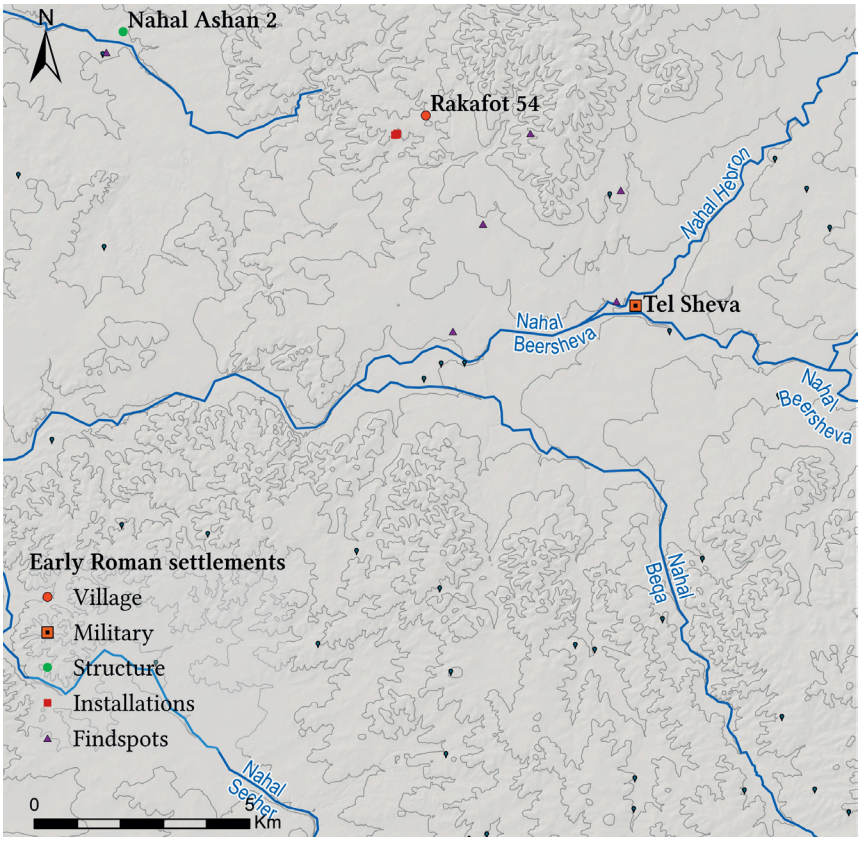

Figure 6.7 Early Roman settlements in the central study area.
Tel Sheva and Rakafot 54 were the largest settlements during the Early Roman period, settlements have only been discovered in the northern part of the study area.

tury CE and abandoned in the second century CE, probably after the Bar Kokhba revolt in 135 CE. The site was probably located along a road leading from Tel Sheva to the southern coastal plain. Features of the village were a large square watchtower, a possible Jewish ritual bath, ancient trash pits, and an underground system. Many bronze coins, dating from the time of Herod Agrippa I (41–44 CE) until the Second Jewish Revolt (Peters et al., 2020) were discovered during the excavation. Nearby, several sites have been excavated, although most date to later periods.

About 800 meters to the west of Rakafot 54, two cisterns and a water reservoir were excavated.[17] The cisterns had a supply channel for runoff water. The nearby water reservoir, which was ca. 6.3 × 6.4 meters, had a staircase leading to the bottom of the reservoir—the walls were covered with plaster with engravings of ships and animals. According to the excavator, the cisterns and water reservoir date to the Early Roman period, first to second centuries CE, and might be connected to the Jewish village (Eisenberg-Degen and Lev-Hevroni, 2020).

Several remains dating to the Early Roman period were found at Tel Sheva during the TAU excavation directed by Aharoni and Herzog. During the first century BCE, a structure with a bathhouse stood at Tel Sheva. The structure and bathhouse were overbuilt by the Roman fortress (Lehmann, 2013). The excavation results are unpublished; however, a photo of the bathhouse has been published (Aharoni, 1973: Plate 21: 3). The trapezoid fortress measured some 30 × 32 meters and was located at its highest point in the center of the tell (Aharoni, 1973: 1; Fritz, 1973: 83). The remains of the fortress were visible on topsoil (Aharoni, 1973: 1), but the exact date of the construction of the fortress is unknown. However, based on a coin find that was located in its inner wall and dates to 112 CE, the construction of the fortress could not have taken place before the early second century CE (Fritz, 1973: 87). Almost no finds were uncovered within the fortress during excavation, and it seems that the structure was abandoned, and all movable objects were removed (Fritz, 1973: 87). According to Fritz (1973: 87), the fortress was probably abandoned in the fourth century CE. These conclusions are based on the few finds within the fortress, which was reused with some changes in the Early Islamic period. The pottery and other small finds of the structure, bathhouse and fortress have so far not been published. On the eastern foot of the tell, many pottery sherds dating to the Early Roman period were found. There may have been a settlement, dating to the Early Roman period, at the foot of Tel Sheva.

17 Excavation permit no. A-8306/2018; directed by Eisenberg-Degen, IAA.

At Nahal Ashan 2 (Horbat Raqiq), located in the northwestern corner of the study area, building remains dating to the Early Roman period have been discovered in course of a salvage excavation conducted in 1999 (Israel, 2003). According to the excavator, these remains belonged to a ruined settlement (Israel, 2003: 63*). It seems that during the Early Roman period, the same structure from the Hellenistic period was inhabited: the floors were raised, and other changes were made to the rooms. In one of the rooms, a burial site was found below the floor. The tomb had been covered with stone slabs and contained the remains of a pregnant woman in a flexed position (Israel, 2003: 85).

The site of Khirbat Amra, was resettled in the Early Roman period, and between the abandonment and resettlement probably several decades to a century passed. Almost no architectural remains (only one wall) and a small number of Early Roman pottery sherds have been discovered (Taxel and Michael, *forthcoming*). Among the pottery and almost complete amphora and a lamp have been found. These findings were uncovered as a result of inspections; therefore, the exact location is unknown. The Early Roman pottery sherds date throughout the Early Roman period (Taxel and Michael, *forthcoming*). Further, even if almost no architectural remains dating to the Early Roman period were found during excavations, it is quite likely that a small rural settlement or structure existed during this period at Khirbat Amra (Taxel and Michael, *forthcoming*).

It can be assumed that Tel Sheva and Rakafot 54 were connected by a road, which most likely led to the southern coastal plain. Rakafot 54 was probably the largest settlement of the study area, together with Tel Sheva. Interestingly, the water reservoir with the engraved ships, which is relatively far from the Mediterranean coast located (over 40 kilometers), suggests that the population living there was engaged in maritime trade. Apart from the finds mentioned above, little can be attributed to the Early Roman period in the central study area.

Baumgarten (2014a; 2014b) surveyed the area south of Nahal Beersheva and did not find any remains dating to the Early Roman period. In both survey maps (maps 131 and 132) Classical period pottery was published at only ten sites. In many cases, it was difficult from the published drawings to identify the pottery sherd. However, at two surveyed sites, a few pottery sherds could be identified as possibly Early Roman. At Nahal Beka'a 4, a Late Roman-Byzantine hamlet was discovered during the survey conducted by Baumgarten (2014), five sherds have been published and described either as Late Roman or Byzantine. By analyzing the published sherds, it likely that (1) is probably an Eastern Terra sigillata (ETS A) bowl, dating between 75 to 120/150 CE, and (2) is possibly a Nabatean pottery sherd (Baumgarten, 2014a: site 9). Also, at Nahal Zon 18, a farmhouse dating to the Late Roman to Byzantine period, four pottery sherds have been published: no. (3), classified as Byzantine by the surveyor, seems to be an ETS A bowl (Baumgarten,

2014a: site 49). However, these are only a few sherds and do not prove any settlements south of Nahal Beersheva (within the study area) although it is likely that a few, at least temporal, settlements existed. The area south of Nahal Beersheva was a border area between the Nabatean kingdom and the Roman empire. By 106 CE, Trajan added the province of Arabia to the Roman empire to control the incense trade route (Magness, 2012: 256–57). It is possible that during the Early Roman period, before 106 CE, no settlements were established within the study area south of Nahal Beersheva[18] to maintain an empty territory that would serve as a buffer between "borders." Furthermore, it must be considered that the Nabateans built settlements and waystations mainly along their trade routes. The nearest Nabatean settlement from the central study area was Elusa, approximately five kilometers to the southwest of the border of the study area.

Numismatic evidence suggests that during the second century CE almost no Early Roman sites existed in the central study area. Rakafot 54 was abandoned after the Second Jewish revolt, and only at Tel Sheva remains dating to the second century CE were found (Aharoni, 1973).

6.5.2 Late Roman period

In the Late Roman period, the number of sites grew substantially; in total, 51 sites have been dated to the Late Roman period. The site density is 0.13. During the Late Roman period, Be'er Sheva became the largest settlement in the study area.

In the center, at the highest point of Tel Sheva, stood the fortress (Aharoni, 1973: Plate 81), which was probably built in the Early Roman period (second century CE; see above). The almost square fortress consisted of 17 rooms along its walls and an inner courtyard; the fortress had its entrance to the southeast (Aharoni, 1973: Plate 95; Fritz, 1973: 83). According to Fritz (1973: 87–88), the fortress at Tel Sheva stood along the route from Be'er Sheva to Tel Malhata, and its function was to protect the road between the two settlements and to control the area east of Be'er Sheva. No pottery dates to the Late Roman period—the majority dates from the Late Hellenistic to the Early Roman periods but comes from an unclear context and might also have belonged to the Hellenistic-Herodian fortress (Aharoni, 1973: Plate 76; Fritz, 1973: 87). It seems that the fortress was abandoned no later than the fourth century CE (Fritz, 1973: 86–87). As in previous periods, Tel Sheva most likely had a lower city where the majority of the population lived.

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18 Several (Nabatean) settlements dating to the Early Roman period are known south of Nahal Beersheva (outside the study area). For an overview see Erickson-Gini (2007) and Erickson-Gini and Israel (2013).

In an excavation conducted in 1993 at Tel Sheva by Y. Baumgarten, nine Middle to Late Roman coins were found—one dating to 200 CE and eight to 324 CE (A-2062/1993; unpublished excavation).

At Khirbat Amra, after the site was abandoned in the Early Roman period and probably for a longtime not settled, occupation at the site was renewed during the Late Roman period. A farmhouse and three tombs were discovered during excavation dating to the Late Roman period. The area of the farmhouse has been called Area M by the excavator, and it is located in the southern area of the industrial park in Omer, close to the road to Be'er Sheva (see below Figure 6.14; Tahal, 1996; 2000). The farmhouse consisted of a large building of ca. 18 × 19.5 m and a courtyard surrounded by seven rooms. Many pottery sherds dating to the Late Roman period (third to fourth centuries CE) were found within the building. Three coins, one dating to the second–third century CE and two dating to the late third century, were found within the structure. During inspections, three tombs were found and excavated. Although the exact location of the tombs is unknown, they were located somewhere near the farmhouse. Two tombs were found empty, and a third tomb had a north–south direction and was built from dressed limestone slabs. Within the tomb, six intact candlestick bottles were found (Taxel and Michael, *forthcoming*). The glass bottles were dated to the second to early third centuries (Winter, pers. comm.). It seems that the tombs belonged to the farmhouse, which is the only building that has been excavated in the study area that dates to the Late Roman period. About 300 meters north of the farmhouse, Late Roman-period pottery was found, which might indicate the existence of another small structure, possible an installation. North of the farmhouse, a Byzantine village has only partially been excavated, specifically the northeastern part with the church and farmhouses. It is possible that during the Late Roman period, a small settlement existed at the location of the Byzantine village. The unexcavated remains of the village are preserved *in situ,* as an archaeological park.

Near the settlement Horbat Raqiq, in the northwestern corner of the study area, three tombs were excavated in a salvage excavation in the early 1990s by Negev (1996). The tombs were part of a large burial site surrounding the ancient settlement of Horbat Raqiq. A built tomb as well as two cist tombs have been excavated, and in the built tomb, a sarcophagus was found. These finds date to the Late Roman and the beginning of the Byzantine period (fourth century CE) (Negev, 1996). Based on the finds, it seems that the site probably dates to the Early Byzantine period, as there was a sizeable Byzantine settlement nearby, and other excavated tombs also date to the Byzantine period.

For the first time during the Classical Era, the area south of Nahal Beersheva was settled during the Late Roman period (within the study area). Several sites dating to the Late Roman period were found during the ASI surveys. According to

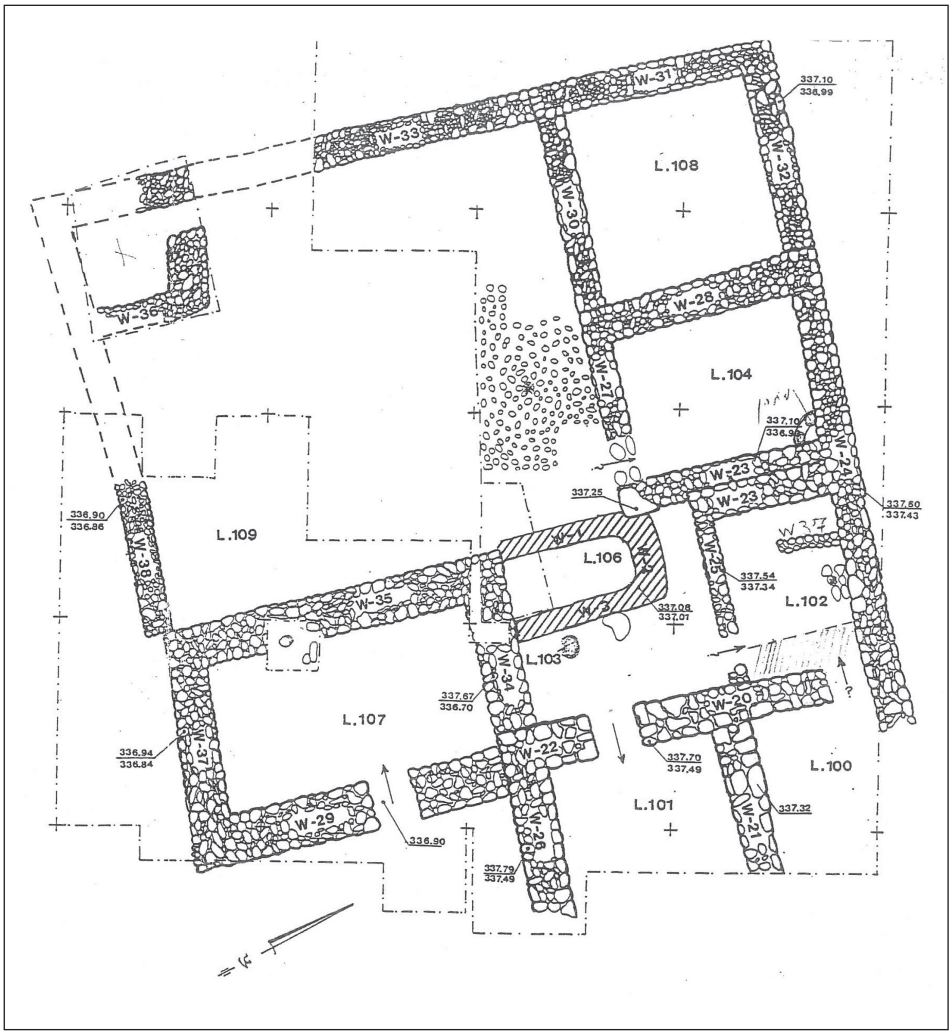

Figure 6.8 Plan of the Late Roman period Farmhouse at Khirbat Amra.
This is the only structure found in the study area, outside Be'er Sheva, dating to the third–fourth century CE. Plan: IAA archives; Courtesy of the Israel Antiquities Authority

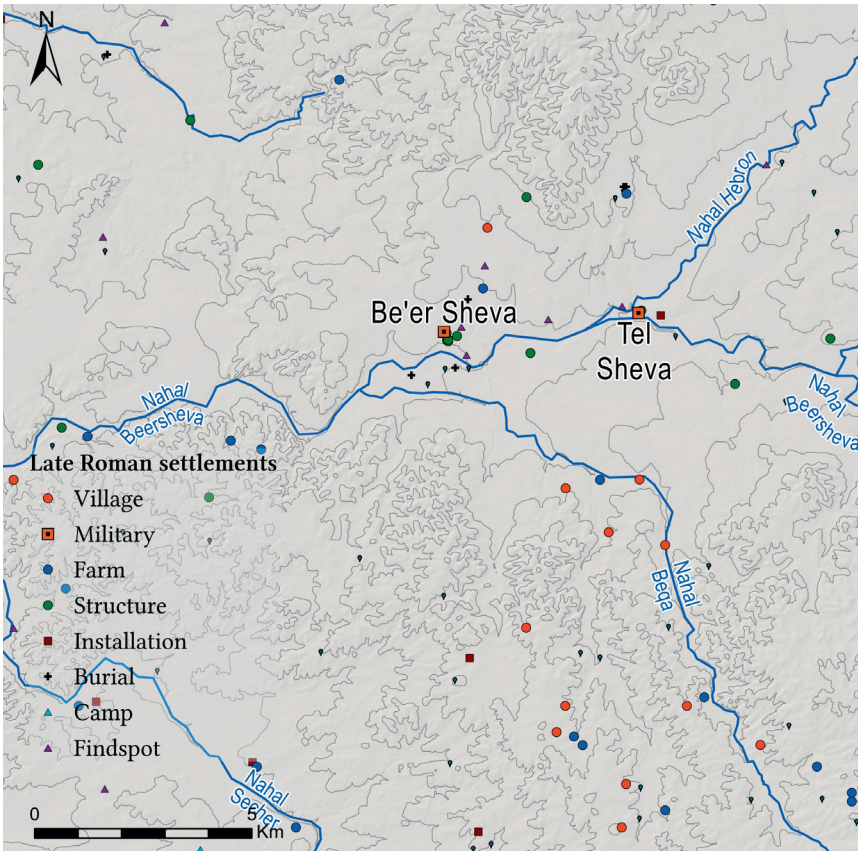

Figure 6.9 Late Roman settlements in the central study area.

the surveyor, all sites that can be dated to the Late Roman period continued to be settled in the Byzantine period. Unfortunately, only a few excavations have been conducted in this area (Nikolsky, 2007; Haimi, 2008; Kobrin, 2016; Lifshits, 2017; Rasiuk, and Shmueli, 2017; Rasiuk, 2020; Michael and Tepper, 2021; Sapir pers. comm.[19]). None of the excavated sites date to the Late Roman period. Instead, they date to the Byzantine and Early Islamic periods.

For seven of the surveyed sites, pottery finds have been published: Nahal Sekher 27, Nahal Sekher 24, Nahal Beka'a 4, Nahal Beka'a 8, Nahal Zon 18, Nahal Beka'a 16, and Giv'at Shemen 7. However, the pottery sherds have been difficult

19 Excavation permit A-8641/2020.

to date. At Nahal Beka'a 4, a hamlet consisting of several farmhouses and installations (Baumgarten, 2014b; site 9), five pottery sherds have been published—numbers (1) and (2) are probably Early Roman or Nabatean, (3) is not identifiable from the drawing, and (4) is an FBW bowl, possibly Form 1D or 1E, which date between the late seventh to mid-eighth centuries CE and, respectively, to the eighth century CE (Magness, 1993: 196). Number (5) is a casserole lid; according to Magness (1993: 215), this dates from the Late Roman period to the end of the Early Islamic period (ninth–tenth centuries CE).

At Nahal Beka'a 8, also a hamlet with several structures that dates, according to the surveyor, from the Late Roman to Early Islamic periods, only two sherds have been published, labeled (1) Late Roman and (2) Byzantine. Number (1) could be Nabatean, and it seems that number (2) is an Early Islamic lamp (Baumgarten, 2014a: site 30). At Nahal Zon 18, a small farmhouse dated by the surveyor to the Late Roman-Byzantine period, four sherds have been published. The pottery sherds have been labeled Late Roman (1–2) and Byzantine (3–4) (Baumgarten, 2014a: site 49). It seems that number (1) is Cypriot Red Slipware, possibly Form 9, which dates from the late sixth century to the end of seventh century CE (Hayes, 1972: 379–82), number (2) is not identifiable from the drawing, and number (3) is possibly an ETS A bowl. Number (4) is a Gaza amphorae/LRA 4, Form 4, dating to the sixth–seventh centuries CE (Majcherek, 1995: 169). None of the published pottery dates to the Late Roman period.

Nahal Sekher 24, a small village with several structures, dates to the Chalcolithic, Iron Age I and II, Late Roman, and Byzantine periods (Baumgarten, 2014a: Site 60). Five pottery sherds are published: number (1) labeled as Late Roman, is an LRC, Form 3, dating to the fifth century CE (Hayes, 1972: 331); number (2) is CRS ware, Form 9, which dates between the late sixth century and the end of seventh century CE (Hayes 1972: 379–82); number (3) is probably ARS ware; (4) is non-identifiable; and number (5) is a lid, which is not helpful in the dating process as they date from the Late Roman period to the end of the Early Islamic period, ninth–tenth centuries CE (Magness, 1993: 215).

Most of the pottery labeled (late) Roman belongs actually to the Byzantine period. In a few cases, the pottery dates to the Late Roman period, but in most cases, it belongs to the *Late Roman pottery* group (Hayes, 1972), which dates to the Byzantine period. However, pottery has not been published for enough settlements to establish a final conclusion as to whether the majority of the surveyed sites labeled Late Roman existed during the Late Roman period or rather date to the Byzantine period. The small number of published sherds at least provides reasonable doubt as to the dating of the sites. As written above, from the few excavations conducted in the area, none had Late Roman remains. The result of the analysis of the published pottery discovered during surveys presents a similar

picture to the results in the western study area. It seems that the published pottery at most sites, which is classified as Late Roman, is actually Byzantine.

6.5.3 Be'er Sheva in the Late Roman period

Be'er Sheva has been mentioned in several ancient sources, including the *Onomasticon* by Eusebius of Caesarea, dating to the end of third to beginning of the fourth century CE, and the *Notitia Dignitatum Orientis,* dating to the late fourth–early fifth century CE. It has been described as a "large village" with a garrison (Fritz, 1973: 87; Figueras, 1980; Di Segni, 2004: 132; Gilead and Fabian, 2008: 315; Fabian and Ustinova, 2020).

Several excavations have been conducted in Be'er Sheva. The majority of the excavated remains that date to the Late Roman period have been found at Compound C and its surroundings[20]. It seems that the center of the settlement was located around this area. Compound C is located close to the modern market area, located in the eastern corner of the Old City (Figure 6.10). Different construction activities have heavily damaged the area since the 1950s. Several extensive excavations have been conducted in the area. However, many excavations are not well documented: to date, only unpublished, short general publications or preliminary publications exist. In most cases, no pottery and or small finds have been published.

The 2004–2006 excavation directed by Fabian and Gilead from BGU revealed several remains dating to the Late Roman period (Gilead and Fabian, 2008: 315; Fabian and Gilead, 2010a; 2010b). The remains of the Late Roman period included a massive structure—probably a public building built on remains from an Iron Age structure. Several architectural remains of structures and installations dating to the Late Roman period were also exposed in this excavation. The remains of a hypocaust that most likely belonged to a small bathhouse were discovered.

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20 Several excavations have been conducted at Compound C since the 1950s: Gophna (1962; 1963: 18), Yisraeli (1965; 1966; 1967a; 1967b), Cohen (1968a; 1968b), Gophna and Yisraeli (1973: 116–18), Govrin (1988/1989; 1989/1990), Negev (1995); Sonntag (2001a), Fabian (Permit no. A-1862; A-4012), Talis and Seriy (2007), Fabian and Gilead (License Nos. G-58/2004; G-64/2005; G-66/2006; preliminary report: Fabian and Gilead 2010a; Fabian and Gilead 2010b), and an excavation directed by Eisenberg-Degen (Eisenberg-Degen and Talis, 2020). The largest excavation conducted in this compound was conducted by Fabian and Gilead (2010a; 2010b) from 2004–2006. The excavations conducted in Compound C have yielded remains from five main periods: Chalcolithic, Iron Age II, Late Roman, Byzantine, and Early Islamic. There are no Hellenistic or Early Roman remains found in this area so far.

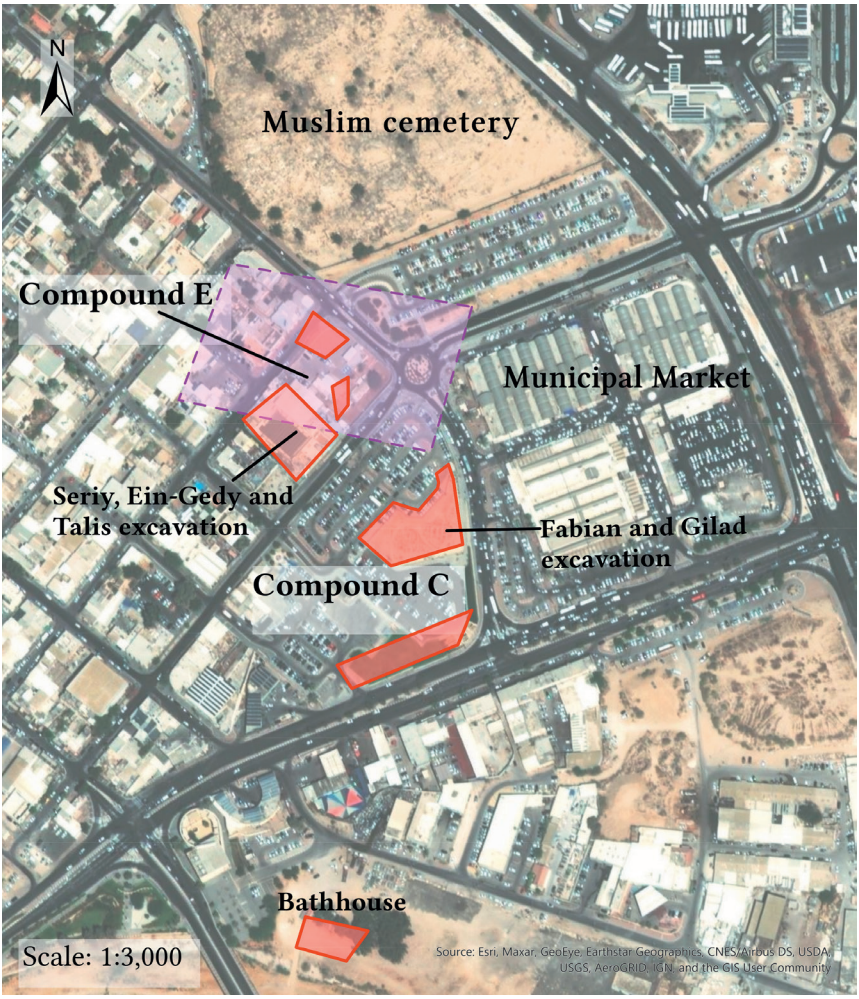

Figure 6.10 Late Roman Be'er Sheva.

Main location of sites discussed in the text that date to the Late Roman period. The purple line represents the proposed outline of the army camp. Background: Satellite Imagery (DigitalGlobe—ESRI).

During the excavation, many coins dating to the third and fourth centuries CE were also found (Fabian and Gilead, 2010a; 2010b). Brief remains dating to the Late Roman period have also been exposed in the following excavations: building foundations (Yisraeli, 1965; Gophna and Yisraeli, 1973), pottery, glass, and small finds (Eisenberg-Degen and Talis, 2020).

Consulting aerial photographs from 1918, Fabian (1995) discovered a large rectangular structure, ca. 185 × 120 meters, which he argues used to be an army camp during the Late Roman period. He suggests that the camp might have been built in the early third century CE and served the tenth legion after its transfer from *Aelia Capitolina* (mod. Jerusalem) to *Aila* (mod. Aqaba, Jordan).[21] Two excavations have been conducted in this area, which has been called Compound E (see Figure 6.10: Late Roman Be'er Sheva.. In 1996, Ein-Gedy (Ein-Gedy and Masarwah, 1999: 135) excavated two structures, revealing finds from the Late Roman and Byzantine periods. He concludes that the excavated structures form part of the interior (barracks) of the army camp. During the excavation, 35 coins were found, and 16 were identified and dated to the fourth–fifth century CE, however, no earlier coins were found.

From 2001 to 2002, Seriy, Ein-Gedi, and Talis conducted an additional excavation in the area. The excavation revealed remains from the Late Roman, Byzantine, and Early Islamic periods and a settlement from the Chalcolithic period (Seriy, pers. comm.). According to Seriy (pers. comm.), the finding of the remains of a large building within the area supports the hypothesis by Fabian (1995) that this was the location of the army camp. However, no finds, including coins and

21 The Roman emperor Diocletian (284–305 CE) introduced far-ranging reforms, including the administrative transfer of the Negev, Sinai, and southern Transjordan from the *Provincia Arabia* to *Provincia Palastina* (Tsafrir 1986: 82–83; Erickson-Gini, 2002: 118; Di Segni, 2018: 248). This step included building a line of border fortresses and army camps to protect the border of the empire (Magness, 2012: 271). One can assume that the army camp in Be'er Sheva was built during his time. Furthermore, a large amount of coins dating to Diocletian have been found in excavations nearby Compound C (see above and also Chapter 6.8—Coin finds from the central study), which serves as further proof of the establishment of the army camp and public buildings as well as a bathhouse around the late third–early fourth centuries CE. Similar, the army camp found in *Oboda* was dated to the Late Roman period: late third to early fourth centuries CE (Erickson-Gini, 2002: 118). Diocletian transferred the tenth legion from *Aelia Capitolina* to *Aila* around the year 300 CE (Magness, 2012: 271); therefore, I would suggest dating the army camp in Be'er Sheva to the late third–early fourth century CE rather than the early third century. However, taking the excavation results into account, it seems the army camp could not be dated earlier than the mid-fourth century CE (Ein-Gedy and Masarwah, 1999; Seriy pers. comm.). It is possible an earlier army camp was destroyed in order to build a more massive one in the mid-fourth century CE.

pottery, date to the Late Roman period—all date to the Byzantine and later. The excavators suggest dating the structure based on the finds to the middle of the fourth century CE (Seriy pers. comm.). This dating seems consistent with the finds from the earlier excavation by Ein-Gedy (Ein-Gedy and Masarwah, 1999). Varga and Talis (2021) suggest that the large structure, identified by others as an army camp (see above), did not, in fact, serve as an army camp because no small finds of a military nature (e.g., weapons, military workshop, clothing, defense details) have been found during the excavations conducted in the area. The military camp mentioned in ancient sources has so far not been exposed (Varga and Talis, 2021).

Nearby, to the south of Compound C and close to Nahal Beersheva, a bathhouse was excavated in 2004 by Fabian (unpublished; Gilead and Fabian, 2008: 317). The bathhouse structure was heavily damaged by construction in the early 20th century when the Turkish city was built. In the 1950s, the upper part was removed, and in 1992, a drainage channel was built without the permission of the IAA, further damaging the building (Negev, 1995). The building, which is on Abel's (1903) map of Byzantine Be'er Sheva, served probably as a public bath. Two caldarium rooms, a tepidarium, and pools were excavated. The floors of the caldarium were lined with white marble slabs. According to Negev (1995), the structure dates to the Byzantine and Early Islamic periods. However, Gilead and Fabian (2008: 317) attribute the structure to the Late Roman-Byzantine period (third to sixth centuries CE), though it is unclear how this dating was developed. No pottery or other finds have been published at the time of writing; therefore, a final dating is impossible. As bathhouses were usually built in connection with the establishment of military camps and fortresses for the Roman army (Scheidel, 2007a: 430), the bathhouse in Be'er Sheva was most likely built at the same time as the army camp, or slightly later. Therefore, it can be argued that the construction of the bathhouse dates to the late third or beginning of the fourth century CE.

As can be seen from the excavated remains, the Late Roman settlement of Be'er Sheva surrounds Compound C, and most public buildings were located in its vicinity.

6.6 Byzantine period

This study showed that during the Byzantine period, the northern Negev grew to be densely populated. In total, 755 sites have been recorded in the study area that date to the Byzantine period. Almost 90% of all Byzantine sites are small rural sites; the rest are larger (rural) villages and the city of Be'er Sheva. As men-

tioned above, building activities increased significantly during the Late Roman period, mainly during the late third and the first half of the fourth century CE. Many new settlements were formed, and new areas were settled that in previous periods were only minimally settled or uninhabited. The increase of settlements might be connected to the reforms by Diocletian and the more stable political circumstances. In the Byzantine period, the population of the northern Negev grew substantially and was at its highest point from the Classical period to modern times.

Based on the analysis of the settlement patterns the site density is relatively high (n = 1.9) compared to the eastern and western study areas. The high site density is connected to two factors: (1) over 200 sites belong to the city of Be'er Sheva, and (2) Be'er Sheva was the center of the northern Negev in the Byzantine period. Therefore, many settlements were built on the outskirts surrounding the large settlement. Based on kernel density calculations, Be'er Sheva was also the largest city in the region (see Chapter 6.6.1—Be'er Sheva in the Byzantine period). During the Byzantine period, a large expansion in settlement patterns is evident in the central region. There are many more archaeological sites, and these sites are, on average, larger than in the previous periods. Besides the city of Be'er Sheva, several large rural settlements were found in the study area. All the settlements surrounding Be'er Sheva are connected to agriculture, whether villages, farmhouses, or installations (Figure 6.11).

As the findings from this research show in most cases, the settlements were small farming villages with three or more structures, sometimes with a church, such as Khirbat Amra, Tel Sheva, or Nahal Liqit. No distinction was made between the different kinds of small settlements (hamlets, large groups of farms); all were defined as villages. Using a more specific definition would have added bias and confusion to the data, as there are over 700 sites distributed over an area of 400 square km, and the goal was to know which areas are the most densely populated. To test the density of settlement data, the Point Density tool from ESRI's ArcGIS Pro was used:

> "The Point Density tool calculates the density of point features around each output raster cell. Conceptually, a neighborhood is defined around each raster cell center, and the number of points that fall within the neighborhood is totaled and divided by the area of the neighborhood" (ESRI, 2020b).

To establish high-density populated areas, only villages, farmhouses, and structures were selected, as installations like tombs usually belong to settlements and are not relevant to establish settlement density. Some settlements consist of more than one structure, e.g., a village with 14 farmhouses. To calculate the point den-

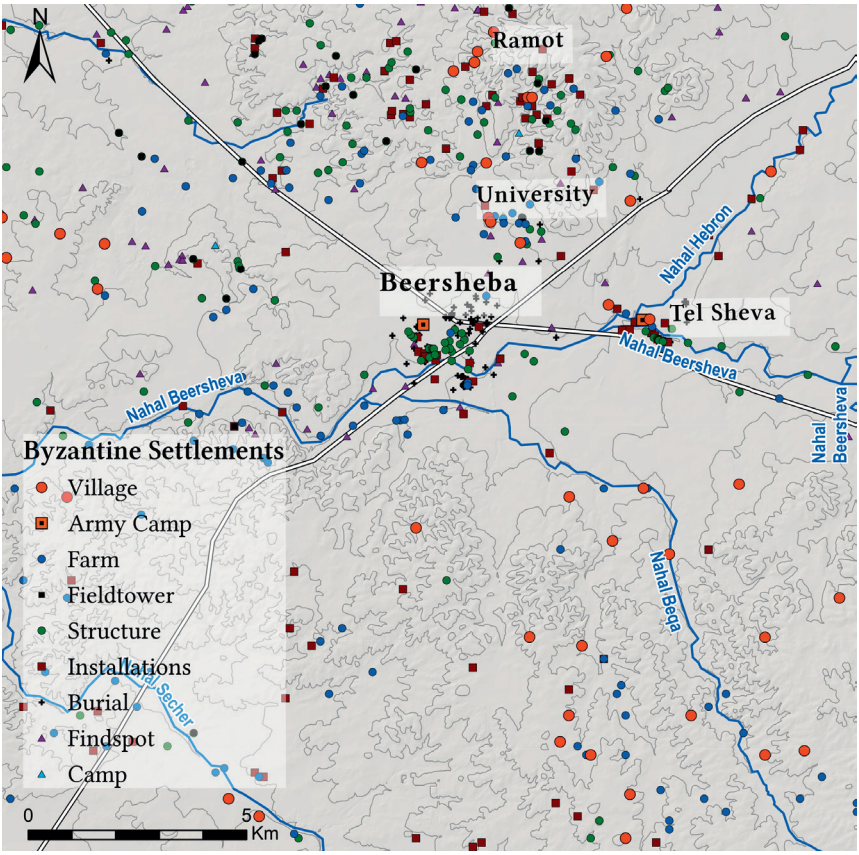

Figure 6.11 Byzantine period site distribution in the central study area.
The northern part of the study area is more densely populated than the southern part.

sity correctly, the number of structures was taken into account (ArcGIS, Point Density tool: *Population field* = number of structures). In most cases, the number of structures was given by the surveyor or excavation reports. However, in a few cases (ca. one-third of the villages), this was not the case. To calculate the point density, the average number of structures was taken for all villages where there were no numbers available (n = 7). The point density was calculated for a circle of one square km. Areas with a density higher than 15, 30, 45, 60, and 75 structures per square km were isolated to illuminate high-density areas (Figure 6.12).

As the results of the calculation show, the highest density appears at the center of modern Be'er Sheva, where the Byzantine city of Be'er Sheva was located (see Chapter 6.6.1 Be'er Sheva in the Byzantine period). Tel Sheva, which was

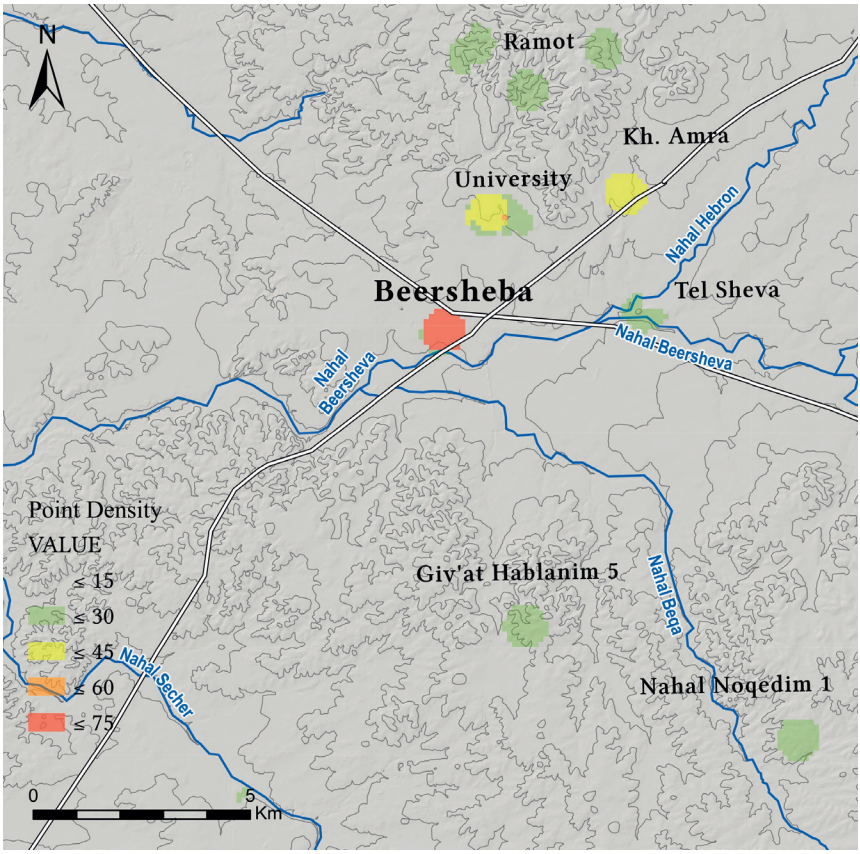

Figure 6.12 Point density analysis of the Byzantine settlements.
Map was created with the Point Density tool from ArcGIS Pro. Only villages, farmhouses, and structures were considered (black dots). The number of structures in each village was also taken into account. The legend indicates site density in a circle of one square km from each location.

a large village during the Byzantine period, also shows a higher density (d = 15–30 s/sq km). However, this density should be higher—not many excavations were conducted, and those that have were only partially published or remain unpublished; therefore, many structures are "missing." Khirbat Amra is located to the east, where an extensive excavation was conducted during the years 1993–1994, probably the most extensive excavation of a rural site in the Be'er Sheva valley. Near the campus of BGU, a larger number of archaeological sites have been registered.

A high density of archaeological sites was also calculated for the area of today's Ramot neighborhood of Be'er Sheva, located to the north of the city center. In this neighborhood area, which is located on low hills, discoveries primarily included agricultural sites such as farmhouses, watchtowers, installations, and cisterns. South of Nahal Beersheva, only two areas show a higher density. These are two villages with several structures: Giv'at Hablanim 5 and Nahal Noqedim 1. Giv'at Hablanim 5 is a village, with a size ca. 0.5 ha, consisting of at least 14 farmhouses (Baumgarten, 2014b: Site 17). Similarly, the site of Nahal Nogedim 1 is a large settlement consisting of at least 15 farmhouses (Baumgarten, 2014b: Site 40).

During the Byzantine period, Tel Sheva was a large village located along the road between Be'er Sheva and Tel Malhata. The ancient remains of Tel Sheva are partly covered by the modern Bedouin town, also called Tel Sheva. Several salvage excavations have been conducted in Tel Sheva since the early 1990s, revealing Classical period remains (A-2062/1993 Baumgarten (unpublished); Baumgarten, 2007; Abadi-Reiss, 2008; Haimi, 2008; Israel, 2008; Paz et al., 2014; A-8072/2017 and A-8491/2019 Pasternak (unpublished)). However, most excavations have so far not been published, or only preliminary reports have been published. The Byzantine village of Tel Sheva was located at the foot of the tell toward the eastern side. The fortress on the tell was probably abandoned in the mid-fourth century CE (Fritz, 1974: 86). Because a large Roman army camp was built in Be'er Sheva during the fourth century CE (see above, Chapter 6.5.3—Be'er Sheva in the Late Roman period), it is possible the troops were moved there. Further, the security situation during the Byzantine period made it probable that there was no additional need for a fortress.

On a small hill to the east of the tell, one or possibly two churches have been discovered (Woolley and Lawrence, 1914–1915: 45). The foundations of the church's long walls are still visible, tesserae and fragments of marble can be found on topsoil (Figueras, 2013: 173) and a deep depression, probably a collapsed cistern, is located in the atrium of the church.

An excavation conducted by Haimi in 2003 revealed a few walls forming several rooms, as well as a *ṭabun*. The published pottery includes, among others, LRS ware, FBW and Gaza amphoras, all dating to the Byzantine and Early Islamic periods (Haimi, 2008). In another excavation conducted by Abadi-Reiss also in 2003, artifacts from the Byzantine period were discovered. A wall, nine tombs, and pottery sherds were found (Abadi-Reiss, 2008), but no pottery was illustrated. At the excavation at Tel Sheva, Shekhuna 36 (A-2062/1993 Baumgarten (unpublished)), 47 Classical period coins have been found that date from the Late Roman to the Abbasid period. During the Byzantine period, most coins date either to the early fourth century CE or sixth–seventh century CE. Nearby, several cist tombs have been exposed during later excavations; the tombs themselves have

not been excavated, but their location was registered[22] (Paz et al. 2014; Pasternak pers. comm.). Test trenches alongside Nahal Beersheva, to the south of the tell, uncovered a large number of cist tombs as well as a few structures an installations (Fraiberg, 2017a). Based on the large cemeteries to the north and south, the church, Classical period coins, and the large number of Byzantine pottery sherds in the topsoil, one can assume that Tel Sheva was, during the Byzantine period, a large village.

Tel Sheva had probably a size between eight and 12 ha (Tsoar and Yekutieli, 1992). In its vicinity, several smaller sites, mainly hamlets, farmhouses, and installations, were found and partially excavated (Negev, 1995; 2000; Israel, 2008). A separate small rural village consisting of six farmhouses has been found to the northwest of Tel Sheva. The site has been surveyed, and one farmhouse has partially been excavated. Pottery found in the course of the excavation dated to the Byzantine period (Israel, 2008).

Khirbat Amra, located about 2.5 kilometers to the northeast of Be'er Sheva, was a rural village settled with interruptions from the Hellenistic to the Early Islamic periods. During the years 1993–1994, a large-scale excavation was conducted in order to build the Omer industrial park. The main remains of the village were not completely excavated (see Figure 6.14; in the red-painted area, some remains are visible in the topsoil), but in the course of the excavation, 19 areas were excavated, and the architectural remains found included a church, dwellings, farmhouses, dovecote towers, and tombs. Most of the finds date to the Byzantine and Early Islamic periods. It remains unclear whether the Late Roman occupation continued to the Byzantine period or if there was a break between these periods. However, the main site of the Byzantine village was occupied from the fifth century onwards. The size of the large village was probably between 7 and 10 ha. A large church, located in the center of the settlement, has been excavated in Area A, measuring ca. 17 × 25 meters. Underneath the floor of the church, nine cist tombs have been found, one with a Greek inscription and crosses on it. Most of the pottery found in the church dates to the Byzantine and Early Islamic period, mainly starting in the fifth century CE (Tahal, 1996; 2000; Taxel and Michael, *forthcoming*). Based on findings from the excavation, it appears that the inhab-

22 Excavations were conducted between 2013, 2017–2018, and 2019. Excavation permits nos. A-6779/2013; A-8072/2017 and A-8491/2019. The cist tombs were located, and the location was taken with a handheld GPS, but the tomb itself was not excavated. Such cist tombs were common in the Northern Negev, dating from the Late Roman to the Early Islamic period. For the 2013 excavation a preliminary publication has been published (Paz et al., 2014), the two later excavations have not been published so far. The tombs were probably located on the northern outskirts of the settlement. Cemeteries of Tel Sheva are known to the north and south of the Byzantine settlement.

itants of the village were engaged mainly in agriculture. To the northwest of the church two large dwellings, a large dovecote tower, and several tombs were discovered. Approximately 100 meters north of the church two additional square dovecote towers were located. The dovecote towers indicate the border of the village and were located adjunct to land suitable for agriculture outside the village (Figure 6.13). The dovecote towers from Khirbat Amra date to the Late Byzantine

Figure 6.13 Khirbat Amra, square dovecote towers.
Two square dovecote towers appear in the background landscape of the area. Photo taken during the excavation, in 1994/1995. Photo IAA archives: B-823489; Courtesy of the Israel Antiquities Authority.

period (fifth/sixth to early seventh century CE). Such towers were built to produce dung as fertilizer, which was used to enrich the poor-quality loess soil, which was needed for cultivating plants, mainly fruit trees and vines, rather than wheat and grains. Several dovecote towers have been found in the northern Negev in connection with a winepress, e.g., Be'er Sheva, southern entrance (Haimi, 2008; Michael and Tepper, 2021) or Nahal Zon (Lifshits, 2017), where dovecote towers were found, together with farming estates and a large industrial winepress.

Therefore, it can be concluded that the inhabitants of Khirbat Amra were either engaged in the growing of fruit trees, vines, or both. However, in contrast to the western study area, where the Gaza amphorae has a high frequency at most sites (see Chapter 5—Western study area: Nahal Besor), at Khirbat Amra, relatively few Gaza amphorae have been found. The majority of amphoras and storage jars were produced locally, similar to other sites in the eastern Be'er Sheva valley (Taxel and Michael, *forthcoming*). This might indicate that the eastern side of the Be'er Sheva valley was somewhat off the main supply routes of the coastal and central Negev wines (Fuks et al., 2020; Lantos et al., 2020; Seligman, 2020). Possibly the population of the eastern Be'er Sheva valley used mainly the wine products from the Judean hill country, as well as local products. Be'er Sheva, and with it Khirbat Amra, were directly connected by road to *Eleutheropolis* (Beit Guvrin) and Jerusalem. The majority of the pottery found that belongs to the Byzantine period dates from the fifth to seventh century CE, which was probably when the village reached its most extensive point, as well as when the church was built (Taxel and Michael, *forthcoming*).

At Horvat Raqiq, a site located in the northwestern part of the study area, on a loess hill close to Nahal Ashan and Patish, several remains dating to the Byzantine period have been found, including a Byzantine period cemetery, several structures, installations, cisterns, and a farmhouse (Dagan, 1995a; Negev, 1996; Israel, 2003). In 1992–1993, Dagan conducted a survey and an excavation at Horvat Raqiq, the site at the northwestern corner of the study. The excavations revealed the remains of a structure with several rooms and a central courtyard, most likely a farmstead. Among the finds, six complete storage jars were found, two with Greek inscriptions (Dagan, 1995a).

In the area of Ramot, several excavations revealed Classical period finds. The excavations were conducted in the 1990s prior to the construction of the new neighborhood of modern Be'er Sheva (Ustinova and Nahshoni, 1994; Katz and May, 1996; Paran, 1999; Sonntag, 2000; 2001c; 2003; 2012; Fabian and Masarwa, 2003; Fabian and Seriy, 2003a; 2003b; Fabian and Goldfus, 2004). Nashoni, Ustinova, and Bar-Zvi conducted an excavation in 1991 near Nahal Kovashim in the Ramot neighborhood, finding two large farmhouses, a public structure or villa, structures of unknown function, and cisterns. Pottery sherds date from the Byzantine to the Early Islamic period. The finds suggest an agricultural village that provided food for Byzantine Be'er Sheva (Ustinova and Nahshoni, 2004).

In 1994, Sonntag excavated a large Byzantine period farmhouse dating from the fifth to the seventh centuries CE. In the course of the excavation, a watchman's hut and a part of an additional structure were excavated. Interestingly, the Byzantine pottery shows an "extremely high quantity" of Gaza amphoras/LRA 4 type (Sonntag, 2003; 2012) compared to more eastern located sites in the Be'er

Sheva–Arad valley, e.g., Khirbat Amra (see above). In 1998, a farmhouse and several installations were excavated in the Ramot neighborhood. The farmhouse consisted of a tower or fortified room, ca. 4 × 4 meters, and courtyard. This building probably served as a watchtower and as a small seasonal farmhouse that was only occupied during parts of the year. Additionally, a watchman's hut, an oval and square fence, and agricultural terraces were found in the course of the excavation. The pottery finds date to the sixth and seventh centuries CE (Fabian and Masarwa, 2003; Fabian and Seriy, 2003a; 2003b; Fabian and Goldfus, 2004).

A watchman's hut was excavated by Paran (1999) in 1997, with pottery dating to the fifth and sixth centuries CE. Sonntag (2000) later excavated in 1997–1998 a watchman's hut, cisterns, and agricultural terraces. The excavated sites in the Ramot neighborhood represent part of the rural hinterland in which food for Byzantine Be'er Sheva was produced. The sites are located on low hills, and the agricultural terraces prove that the area was mainly used to grow crops. The use of agricultural terraces is interesting as they are usually found in a high concentration more to the south in the central Negev. Animal husbandry played a secondary role.

North of the university campus as well as in the area of the University train station (Be'er Sheva North), several sites have been excavated since the 1950s (Cohen, 1969b; 1972 Negev, 1994; Israel et. al., 2013; Eisenberg-Degen, 2018a; Varga, 2018; Aladjem, A-6289, unpublished; Levi and Ori, Permit No. &-5/1955, unpublished). The area is located at the foot of the Goral hills where today the Ramot neighborhood stands and is therefore connected to the finds described above, forming the agricultural hinterland of Byzantine Be'er Sheva. In the late 1960s, inspections in the area where the university campus was supposed to be built revealed an ancient settlement of ca. 2.2 ha dating to the Byzantine period. The finds included pottery sherds, walls, and cist tombs (Cohen, 1969b).

In 1971, Cohen conducted an excavation in the area and uncovered a farm consisting of two rooms and a courtyard (Cohen, 1972; Figueras, 1980). North of today's campus, an excavation conducted in 1990/1991, directed by Negev, revealed a Byzantine–Early Islamic village. The remains consisted of eight buildings. The buildings were similar, consisting of several rooms and a courtyard. The buildings had one main room with thicker walls, stone columns and pavement remains, partially from marble. The farmhouses had a room with thicker walls, in other excavations also classified as a fortified room or a tower, which were common in this area (Negev, 1991). Furthermore, several installations were discovered: a silo, a basalt donkey-drawn millstone, and cisterns, as well as 12 cist tombs. The tombs, which were found near the buildings, have an east–west orientation. Pottery and small finds date to the Late Byzantine–Early Islamic period, including "numerous" ostraca with Greek writing, including one with a cross (Negev, 1991).

The findings indicate that the population of this small rural village was mainly Christian.

In the same area, in 2016 and 2017, two excavations were conducted: the 2016 excavation was directed by Varga (2018) and the 2017 excavation by Eisenberg-Degen (2018). During the excavation conducted by Varga, four structures were excavated, revealing small farmhouses and six cist tombs. A subterranean site belonging to one of the buildings completely collapsed, and neither its plan nor its function could be reconstructed. The pottery sherds date to the sixth–seventh centuries CE (Varga, 2018). In the 2017 excavation, a subterranean complex with several chambers was found. The chambers were accessed by a staircase that led from a building (not preserved) to the subterranean complex. Some of the rooms contained installations. The pottery sherds date to the Late Byzantine period, sixth and seventh century CE, but no pottery was illustrated (Eisenberg-Degen, 2018a). Such subterranean complexes dating to the Byzantine period are known in the Be'er Sheva area; they served most likely as storerooms in farmhouses or other buildings.

About 600 meters to the east, several Byzantine-period remains were excavated by Israel et al. (2013) in 2004. Part of an excavated farmhouse was already excavated in 1955 by Levi and Ori, but the excavation is yet unpublished. The remains belong to a rural settlement and include a watchtower, farmhouse, and subterranean chambers. The pottery dates to the Late Byzantine–Early Islamic period (Israel et al., 2013). Nearby, Aladjem excavated a subterranean complex most likely belonging to the same remains excavated during previous excavations (A-6289, unpublished). The pottery dates to the sixth to seventh centuries CE (Aladjem, pers. comm.).

In recent years, several excavations were conducted north and northwest of the Nahal Ashan (Newe Menahem) neighborhood, which is located to the north of the center of Be'er Sheva. Several ancient remains were found, among others two farmhouses from the Late Byzantine period. One farmhouse, located at the eastern bank of Nahal Ashan, had an underground complex—the finds there included cooking vessels, flour-grinding stones, and a simple olive press. According to the excavator, this area might have served as a self-sustaining production center (Eisenberg-Degen, 2018b). A second farmhouse, consisting of an open courtyard and a structure, was found nearby. Next to the farmhouse, a cistern was discovered (Eisenberg-Degen, 2018b).

About one kilometer to the west of the Byzantine city of Be'er Sheva, the site of Abu Matar was located. The site has remains from the Chalcolithic, Byzantine, and Early Islamic periods. Abu Matar was first excavated in 1950 by Perrot (1955) and later on during a salvage excavation by Gilead, Rosen, and Fabian (Gilead et al., 1993). The excavation was conducted by BGU together with the IAA. A By-

zantine building of about 400 square m was excavated and classified either as a church, monastery, or villa. The building had plastered walls with painted decorations and partially mosaic floors (Holmqvist, 2019: 24). A tombstone with a Greek inscription, in secondary use, was found within the building (Ustinova and Figueras, 1996: 167; see Figure 6.14A). Furthermore, a cross engraved in dressed stone, was reused as a flagstone (see Figure 6.14B). The structure had two phases: an earlier building from the late fifth to the early sixth century, possibly a church, and an earlier building that was incorporated into the later building, dating to the late sixth–early seventh centuries CE (Gilead et al., 1993; Magness, 2003: 174; Holmqvist, 2019: 24). After the building went out of use at the end of the seventh century CE, a large farmhouse was built, partially covering the Byzantine period building.

South of Nahal Beersheva, not many Byzantine-period sites have been excavated. In 2015, Lifshits excavated a rural estate about seven kilometers to the south of Byzantine Be'er Sheva, consisting of a large winepress, dovecote tower, and large farmhouse. The site dates to the sixth–seventh centuries CE (Lifshits, 2017). In 2016, an excavation conducted at Nahal Beqa, located south of Byzantine Be'er Sheva, revealed the remains of two square buildings, probably field towers consisting of one single room and an agricultural terrace (Rasiuk and Shmueli, 2017). The square structures likely did not serve as family residential buildings but as watchtowers in agricultural fields belonging to residents of the town (Haiman and Fabian, 2009: 45), and they were probably used only seasonally. The pottery dates to the Late Byzantine–Early Islamic period (Rasiuk and Shmueli, 2017). Nearby, a farmhouse and a dovecote tower were excavated, and it is possible that the field towers belonged to the same farming estate. The pottery dates to the sixth–seventh centuries CE (Eisenberg-Degen, 2017). In 1991, a small structure was excavated 100 meters south of Nahal Beqa. The small one-room structure possibly belonged to a farmstead. Pottery finds date the structure to the fifth to seventh century CE (Katz, 1993).

Cult sites have been found in the study area in Khirbat Amra, Tel Sheva, Nahal Liqit, and Be'er Sheva. No religious structures were found within the study area south of Nahal Beersheva. To the north, approximately 7 km from the modern city of Be'er Sheva and just outside the study area, a large basilica church and cemetery were discovered (Figueras, 2004). About 20 km southwest of Be'er Sheva, the city of Elusa was located, which served as the lone seat of a bishop in the Negev. It seems that the churches in the study area went out of use by the eight century CE, at the latest (see Appendix 5—Cult sites in the study areas).

Figure 6.14 Pictures from the excavation at Abu Matar

The pictures showing the Byzantine–Early Islamic remains, (A) Greek inscription in secondary use (B) cross engraved in pavement stone, and (C) room with columns. The site was excavated by Gilead, Rosen and Fabian, pictures taken during excavations by Rosen (published with his permission).

6.6.1 Be'er Sheva in the Byzantine period

In the Late Roman period (late third to early fourth century CE), settlement activity in the area increased. Be'er Sheva grew from a large village in the Late Roman period to a large urban center in the Byzantine period and served as the capital of the northern Negev. As the Classical period city of Be'er Sheva had been destroyed by the building activities in the early 20th century during the establishment of the Ottoman city, its exact size is unknown. To calculate its size, a kernel density estimation (KDE) was performed in ArcGIS Pro (see Chapter 4.6—Calculation of site size). It was possible to use the KDE because many sites had been excavated, surveyed, or discovered during inspections and test trenches. Using KDE, the approximate size of the ancient site can be calculated. This method includes a certain level of error and does not calculate the exact area where the ancient settlement was located. Therefore, the results are influenced by gaps in the data caused by the absence of undiscovered sites. It should be noted that the more sites discovered and recorded, the higher the accuracy of the results. In the case of the ancient city of Be'er Sheva, with over 400 sites belonging to the ancient city, the results can be considered relatively accurate.

Based on these calculations, the minimum extent of the city during the Byzantine period was 40 ha, the medium extent was 90 ha, and the maximum extent was 140 ha (Figure 6.15). Comparing the results with estimates and calculations from other researchers, it can be seen that the suggested calculations as well as the location for Byzantine Be'er Sheva correlate with previous estimates, of 100 to 150 ha (cf. Figueras, 1980; Fabian, 1995b; Peterson, 2005: 57; Gilead and Fabian, 2008: 318; Avni, 2014: 257).

As shown in Figure 6.16, the kernel density was calculated based on the point patterns representing sites (e.g., structures, installations, burials, findspots). The green layer (maximum extent of the city) includes mostly installations and burial sites, as well as a few farms, and can therefore be counted as the outskirts of the city. The red area (minimum extent) can be considered the center of ancient Be'er Sheva, where the highest numbers of structures were located. The area around Compounds C and E was the center of Byzantine Be'er Sheva, as in the Late Roman period (located near modern day municipality market). Therefore, one can conclude that the size of Byzantine Be'er Sheva must have been somewhere between 90 and 140 ha.

During the Byzantine period, Be'er Sheva was one of the largest cities in the region, and certainly the largest of the Negev (only on the southern Mediterranean coast were settlements similar in size or larger found, including Gaza and Ashkelon). This is clearly evident when comparing the size of this city with other large settlements in the Negev (Table 6.3). Elusa, one of the important urban

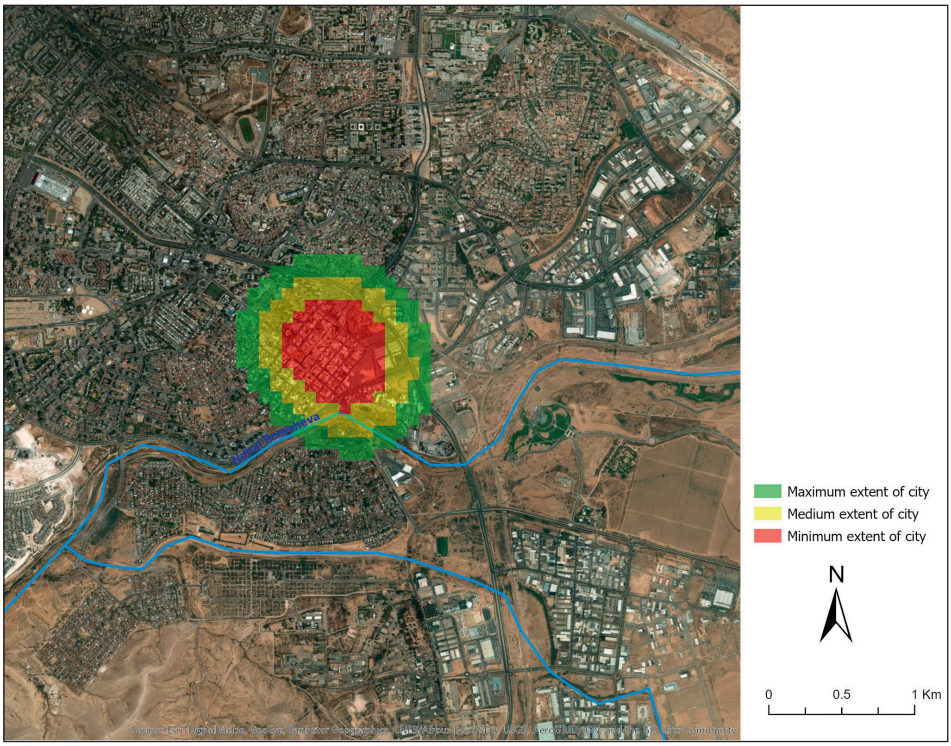

Figure 6.15 Kernel density estimation of the Byzantine city of Be'er Sheva.
Minimum extent of the city: 40 ha; medium extent of the city: 90 ha; maximum extent of the city: 140 ha. Background: Satellite Imagery ESRI—DigitalGlobe.

centers of the northern Negev, was at most 60 ha,[23] meaning it would be about two-thirds as large as Byzantine Be'er Sheva (Table 6.3). Other large settlements in the study areas like Ma'on or Moleatha[24] were only about one-fifth of the size of Byzantine Be'er Sheva.

23 According to Schöne et al. (2019), the city covered about 48 hectares. Between 2015 and 2018, a geophysical prospection was conducted, and the preliminary results of this prospection showed that the city measured approximately 800 × 600 meters.

24 Similar to Khirbat Jemmeh or Tel Sheva, the Byzantine settlement of Tel Malhata was not built on top of the Iron Age tell. It was located at its foot, to the south and east. When discussing the Byzantine town, it will be referred as Moleatha; when discussing the Classical remains on top of the tell, it will be referred to as Tel Malhata.

Table 6.3 Large Byzantine settlements of the Negev.

Site names in italics are settlements located outside the study area, therefore, the size of these settlements is given based on published scientific literature.

City/Town	Size (ha)	Settlement type	Source
Be'er Sheva	90–140	City	See KDE calculations (above)
Elusa	35–60	City	Broshi, 1980; Shereshevski, 1991; Hirschfeld, 1997; Heinzelmann and Erickson-Gini, 2016; Schoene et al., 2019.
Ma'on	30–40	Large town	See Besor study area (calculation based on radius of field scatters).
Tel Malhata/ Moleatha	20–25	Town	See Chapter 7 below.
Khirbat Jemmeh	25	Town	See Chapter 5; Schaefer, 1979: 87.
Khirbat Qasif	20–25	Town	See Chapter 7 below. Govrin, 2015.
Khirbat Irq	15–25	(Small) town	See Chapter 5.
Rehovot-in-the-Negev	10–12	Large village	Broshi, 1979; Shereshevski, 1991; Hirschfeld, 1997.
Tel Sheva	8–12	Large village	See Chapter 6.6
Shivta	8–11.5	Large village	Broshi, 1980; Shereshevski, 1991; Hirschfeld, 1997.
Khirbat Amra	7–10	Large village	See Chapter 6.6
Oboda	7–8.5	Large village	Shereshevski, 1991; Hirschfeld, 1997.
Horvat Hur	4	Village	See Chapter 7 below; Govrin, 1991.
Mamshit	3.7–4.2	Village	Broshi, 1980; Shereshevski, 1991; Hirschfeld, 1997.
Be'er Shema	3	Village	See Chapter 5; Erickson-Gini et al., 2015.

Be'er Sheva was known during the Byzantine period as an important military (Di Segni, 2004) and urban center (Fabian and Ustinova, 2020: 221). Several researchers believe that the headquarters of the *dux Palestinae* (military commander of Palestine) was located in Be'er Sheva, in connection with the Be'er Sheva tax edict (the names of provincial cities and amount of tax they must pay). The marble pieces with the inscription were sold at the beginning of the 20th century CE in Be'er Sheva. Their provenance was for many years unknown. However, in 1996, during an excavation conducted by Katz and Sonntag at the compound of the Israel Electric Company, an additional piece was found in secondary use in an Early Islamic building (Katz and Sonntag, 1996). No similar edict has been found in Israel, leading to the hypothesis that the headquarters of the *dux* was located in Be'er Sheva (cf. Fabian, 1995; Di Segni, 1997; 2004; Gilead and Fabian, 2008: 319; Varga and Talis, 2021). Be'er Sheva was also depicted on the mosaic map of Madaba, which dates to the sixth century CE and has a square form of a camp surrounded by walls (Fritz, 1973: 87; Gilead and Fabian, 2008: 319). Its depiction is different from other cities, for example, Elusa or Mamshit, which were depicted as fortresses. This different depiction might point to the special status of Be'er Sheva (Gilead and Fabian, 2008: 319). Similar to the Late Roman period, the center of Byzantine Be'er Sheva appears to have been near Compound C, and the area was surrounded by at least six churches and the army camp.

At least six churches were found within Byzantine Be'er Sheva. However, despite the high number of churches, Be'er Sheva was not an independent Episcopal (see Figueras, 1980; Fabian and Ustinova, 2020). Be'er Sheva was most likely dependent on *Eleutheropolis* (Beit Guvrin) (Figueras, 2013: 29). From the six churches known in Be'er Sheva, five have been excavated (Govrin, 2015: 116–22; Fabian and Ustinova, 2020). Some of the churches were still visible at the beginning of the 20th century, and Abel (1903) visited the area of Be'er Sheva and drew a sketch of the ruins of ancient Be'er Sheva in which he indicates two churches, one in the northwest and one in the southwest of the existing Old City, as well as a monastery south of Compound C. The monastery remains unexcavated. It is located southeast of Compound C, covered by an approximately three- to four-meter-high earth hill.

In 1967, a large church was excavated by Israeli (1967) to the northwest of the existing Old City (the intersection of Eilat and Eli Cohen Street). The church had three apses, was 15 × 24 meters in size, and its floor was paved with large stones and marble slabs. Several rooms were also annexed to the southern side of the church: one room had its walls decorated with glass mosaics (Israeli, 1967). It is possible that the attached structure served as a monastery (Figueras, 2013: 134). That same year, two mosaic floors were excavated in the area of the Bedouin mar-

ket. One of the mosaics has an inscription with the names Peter and Anastasios and dates to the sixth century CE (Israeli, 1967: 5).

In the area of the municipal market, a large church was excavated in 1994 by Fabian. The church had a cross shape and a single apse. With a length of 41 meters and a width of 28 meters, it is the largest church found in Be'er Sheva (Fabian and Ustinova, 2020). Such a transept form of a church is very rare in Palestine (Figueras, 2013: 133). The floors of the church were paved with mosaics, *opus sectile,* limestone slabs, and marble tiles. Nine inscriptions were found during excavations, one incorporated in a mosaic and the others incised on marble. The inscription from the mosaic floor, which commemorates the completion, has a date in it, "the year 345", which, according to the excavator, is based on the chronological system from *Eleutheropolis,* which begins in 199 CE.[25] Therefore, the mosaic floor can be dated to 552/553 CE (Gilead and Fabian, 2008: 320; Fabian and Ustinova, 2020). According to the excavator, the church was built in the first half of the sixth century and went out of use in the seventh century CE. Several of the rooms were used as living spaces, and in the mid-eighth century CE, the structure was abandoned (Gilead and Fabian, 2008: 320; Fabian and Ustinova, 2020). According to Fabian and Ustinova (2020) it is the largest church discovered in the Negev, and most likely, it served as the main church of Be'er Sheva.

In 1932, a mosaic floor was excavated by Avi Yonah (1933) within the Old City (Mordei Hagetaot Street). The mosaic features in its center a pair of sandals (Avi Yonah, 1933). Such sandal decorations during the Byzantine period have been attributed to public places of prayer (Govrin, 2015: 121). Another indication of a church has been found on Bene Harod Street in the Old City, with several mosaic floors, inscriptions, and marble pieces that indicate the existence of a church (Govrin, 2015: 119).

In 1968, Cohen excavated a mosaic floor near the market, in an area where an army gas station was built southwest of the intersection of Hebron and Eilat Streets (Cohen, 1968). During the construction of the gas station, large parts of the ruins were destroyed. The mosaic floor is 4.5 × 7 meters in size. Eleven medallions depicting animals were found; south of the mosaic, a second room paved with flagstones was discovered. Based on the mosaic style, the floors can be dated to the mid-sixth century, similar to the mosaic in Ma'on. Additionally, the remains of five more rooms were found (Cohen, 1968). It is unclear if this mosaic floor belonged to a church, monastery, a synagogue, or another public building (Govrin,

25 In Be'er Sheva, three chronological systems were used in inscriptions: one from Gaza, which starts at 60 BCE; one from Provincia Arabia, which starts at 106 CE; and one from Eleutheropolis which starts at 199 CE. The last one is the most common chronological system used in in the settlement (Figueras, 1985: 46)

2015: 122). However, several churches and synagogues in the northern Negev have a mosaic carpet with medallions and the depiction of animals (e.g., Ma'on synagogue or Shellal church).

As we can see, there are several archaeological remains that indicate the existence of churches in Be'er Sheva. Most impressive is the large, monumental church excavated in 1994 by Fabian, which is the largest church found so far in the Negev. This also indicates the importance Be'er Sheva had in the area during the Byzantine period.

There are also indications that a Jewish community existed in Be'er Sheva, as a small column of a synagogue chancel was discovered sometime before World War I. The column had an Aramaic inscription (Figueras, 2013: 9). The exact location of the synagogue is unknown (Figueras, 2013: 9), but Figueras (1980) suggests the location of the synagogue as somewhere in the area just south of the Muslim cemetery located at the eastern end of Be'er Sheva's Old City. One tombstone with an inscription in Hebrew was also found, dating to the early seventh century CE (Figueras, 1980).

Excavations at Compound E revealed the remains of a possible army camp. In 1995, Ein-Gedy excavated two barracks from the army camp, dating the structure to the fourth–fifth century CE (Ein-Gedy and Masarwah, 1999: 135). A large building with an "entrance plaza" was found during later excavations in the same area. In the course of the excavation, 55 coins were found, dating to the mid-fourth to fifth centuries CE (see Appendix 2—Coin finds from excavations). According to the excavators, the army camp was built during the mid-fourth century and was probably abandoned at the end of the sixth century or early seventh century CE (Seriy, pers. comm.). However, the interpretation that the site served as an army camp is disputed (cf. Varga and Talis, 2021).

Several excavations revealing Byzantine period remains have been conducted at Compound C. From 2004 to 2006, a large-scale excavation directed by Fabian and Gilead from BGU revealed several remains dating to the Byzantine period (Gilead and Fabian, 2008: 315; Fabian and Gilead, 2010a; 2010b). The remains of the Late Roman period, a massive structure—probably a public building—continued to be used during the Byzantine period. Several walls were repaired, and new ones were added to the Late Roman period structure. Findings included fragments of tesserae, roof tiles, bronze objects (possibly medical tools), ceramic stoppers—one with a Greek inscription, and coins (Fabian and Gilead, 2010a; 2010b).

In two excavations conducted by Eisenberg-Degen in 2017 and 2018 (Eisenberg-Degen and Talis, 2020) in Compound C, to the south of the BGU excavation, only scant remains from the Byzantine period were found. The finds include tesserae, coins, a bone handle, glass fragments, and pottery sherds. Most of the pottery sherds included Gaza amphorae/LRA 4 type and bag-shaped jars; further-

more, some imported ware, LRC, and local ware, were found (Eisenberg-Degen and Talis, 2020).

Residential neighborhoods have been discovered to the north, east, and west of the city center. The buildings were built from a combination of stones and mudbricks. In 2011, a large excavation was conducted at the central bus station in Be'er Sheva, and two buildings with underground rooms were found. The large dwellings show the remains of household works, agricultural activities, cooking, and storage. Grain silos were found in two underground rooms (Varga and Nikolsky, 2013). The majority of the ceramic finds, as well as the coins, date between the fourth and sixth centuries. The buildings were probably in use until the Arab conquest (Appendix 2—Coin finds from excavations; Varga, pers. comm.). South of the central bus station, two large villas or public buildings were excavated. Pottery finds from the excavation date to the sixth to seventh century CE (Talis, 2015).

In the area of today's Electric Company, an excavation was conducted in 1995 (Katz and Sonntag, 1996; and Katz and Sonntag, n.d.).[26] The excavation revealed remains from the Chalcolithic, Iron Age, Byzantine, and Early Islamic periods. Several buildings that date to the Late Byzantine period might have continued, according to the excavators, into the Early Islamic period. Furthermore, eighteen cist tombs were discovered in the course of the excavations. They were dated by the excavators as Byzantine. However, the faces of the deceased were oriented in a southern direction (Katz and Sonntag, 1996) and this might serve as an indication that the deceased were Muslim, and the burials should be dated to the Early Islamic period.

Next to the central bus station, remains of a pottery workshop have been found that indicate that the workshop was in use during the fifth and sixth century CE. The site has not been excavated to date (Gilead and Fabian, 2008: 322; Varga and Talis, 2021). Next to it, a winepress was excavated by Sonntag in 1998. Pottery finds have been dated from the fourth to the eighth centuries CE, whereas the majority date to the Byzantine period (Sonntag, 2001b). Most likely, the pottery workshop and the winepress were connected.

South of the Byzantine city, a large agricultural estate was excavated in 2004, 2017, and 2020 (Haimi, 2008; Michael and Tepper, 2021; Sapir, pers. comm.). The site is located next to Nahal Beersheva, ca. 300 meters south of the Byzantine city, just on its outskirts. Several inspections and trial trenching have been conducted in the area. During test trenches, over 50 cist tombs were discovered; the tombs have not been excavated, but their location was recorded. Based on type,

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26 The excavation (A-2225/1995) was directed by Katz and Sonntag. The excavation remained unpublished, two preliminary internal reports exist of the excavation (Katz and Sonntag, 1996; and Katz and Sonntag, n.d.)

orientation, and building style, they date to the Byzantine or Early Islamic period. The estate consists of a large building, probably a farmhouse (Sapir, pers. comm.), as well as two large dovecote towers, an industrial winepress, a pool with channels, and an enclosure wall (Haimi, 2008; Michael and Tepper, 2021). The dovecotes date to the Late Byzantine period. With an external diameter of 8.4 meters, these two dovecotes are among the largest found in the Negev to date. Most of the pottery dates to the Middle to Late Byzantine period. Based on the pottery found in the dovecot towers, they were built in the late fifth/early sixth centuries and went out of use in the seventh century CE (Michael and Tepper, 2021). The dovecot towers are similar in size to the two from Shivta (Hirschfeld and Tepper, 2006). The two large dovecotes produced pigeon droppings, which were used as a fertilizer for grapevines and other fruit trees near the site. Based on the industrial winepress found nearby, one can conclude that the fertilizer was used for grapevines. As both winepresses were in near proximity to the Byzantine city of Be'er Sheva, likely the production of wine produced in these winepresses was for the local population.

Surrounding the Byzantine city, hundreds of tombs, the majority being rectangular cist tombs built from whitish limestone slabs, were discovered (Cohen, 1968a; 1968b; 1969a; 1972; Nagar, 1995; 1996; Varga, 1997; 1999; Sonntag, 1999a; 1999b; 1999c; 2001d; 2001e; Schuster, 1999; Daniel and Bar'el, 2001; Govrin, 2003; Baumgarten, 2004; Nikolsky, 2004; Israel, 2009; Abadi-Reiss and Eisenberg-Degen, 2013; Peretz, 2014; Shmueli and Rasiuk, 2017; Michael, 2018; Rasiuk, 2018). Most of the tombs are located to the north and east of the Byzantine city. Some expansion between the Late Roman-Early Byzantine and Late Byzantine-Early Islamic periods is visible as there were structures built over cemeteries (Petersen, 2005: 57). The majority of the tombs were rectangular cist graves, with a general east–west direction, and some of them had a built floor. The outline was lined with large, dressed limestone stones and covered with one row of stone slabs.

Especially during the last 20 years, most tombs discovered were not opened due to political and religious beliefs (see also Balter, 2000). Therefore, when tombs were found, either changes in construction plans were made, tombs had been moved, raised, and buried at a lower point (e.g. Israel, 2009), or covered with a concrete plate (e.g. Michael, 2018), to protect the burials. On a few occasions, the tombs were excavated. This practice makes it more difficult to date the tombs. In general, built cist tombs from whitish limestone date in the northern Negev from the Late Roman to the Early Islamic periods. Based on the general direction of tombs, one can indicative date them to a specific period. Byzantine tombs many times showed an east-west direction. Nager and Sonntag (2008) suggest that in the Early Islamic period, the Negev burial tradition continued, but the burial posture was changed. The faces of the dead were turned to the south, or the body was

placed to the right side. Many tombs have been discovered in the last couple of decades and continue to be discovered. However, it may not be possible to establish the full extent of the cemeteries as, according to Musil (1908), many tombs were destroyed when the Ottomans built modern Be'er Sheva at the beginning of the 20th century:

> "Bei dieser Gelegenheit werden zahlreiche Gräber aufgedeckt, aber beraubt und sofort verschüttet, weshalb ich kein einziges gut erhaltenes zu sehen bekam. Man versicherte mir, daß sehr viele Inschriften gefunden werden; um sie aber nicht der Regierung herausgeben zu müssen, werden sie einfach abgemeißelt" (Musil, 1908: 66).[27]

6.7 Early Islamic period

During the Early Islamic period, 101 sites were recorded. The settlement density is 0.25, which is significantly lower than during the Byzantine period, but much higher than the Hellenistic and Roman periods. It is possible that the decline was connected to the Byzantine empire's long wars with the Sassanids or the transition from the Byzantine Christian rule to Arab Muslim rule in the mid-seventh century CE. Although the Negev was not involved in the war with the Persians, its impact remains unclear (Haldon, 1995: 406; Schick, 1995: 20–48; Walmsley, 2007: 45–47; Holmquist, 2019: 10).

This study shows that in the course of the Early Islamic period, the number of sites drops from 321 to about 101. However, it may be assumed that many sites built during the Byzantine period were also in use during the Early Umayyad period. Thus, the true site numbers for the Early Islamic period were probably (much) higher than registered, but nevertheless, a clear decline is evident from the general numbers. It is worth noting that many of the villages and large farmsteads continued to exist, especially around the city of Be'er Sheva (Figure 6.16). Additional, large rural estates were built surrounding Be'er Sheva and in the whole northern Negev during the Early Islamic period. Specifically, during the Umayyad and early Abbasid periods, there is evidence of the establishment of large farmhouses, for example, those surrounding Be'er Sheva (Gilead et al., 1993; Eisenberg-Degen and Kobrin, 2016; Aladjem, A-5416/2008), at Hura (Peretz, 2012), Nahal

27 "On this occasion numerous graves were uncovered, but robbed and immediately buried, which is why I did not see a single well-preserved one. I was assured that many inscriptions were found; but in order not to have to give them to the government, they are simply chiseled off" (Musil, 1908; 66).

Gerar (Peretz, 2015), Nahal Anim (Fraiberg, 2017b), Lehavim (Kobrin, 2016), and at Khirbat Amra (Tahal, 1996; 2000).

At Ramot Nof, several structural remains were found, among others two large farmhouses and a public building or village, suggesting a small rural village in the hinterland of Be'er Sheva. There are no drastic changes or catastrophes visible at the end of the Byzantine period, and the site continued to be occupied in the Early Islamic period. Ustinova and Nashoni (1994) suggest an abandonment of the settlement somewhere in the mid-eighth century.

During a salvage excavation directed by Gilead et al. (1993), a large Early Islamic farmhouse was discovered at Abu Matar. At the end of the seventh century CE, a large farmhouse was built, partially covering the Byzantine period building. The finds include ovens, stone objects, and bones (Gilead et al. 1993). In several rooms, Buff ware with floral imprints (*Khirbet al-Mafjar ware*) was found (Gilead et al. 1993). Gilead and Fabian (2008: 327) date the Buff ware to the Umayyad period (second half of the seventh and first half of the eighth century) and, accordingly, date the abandonment of the building to the eighth century CE. The dating of Buff ware is debated; plain ware appears after 750 CE, and molded Buff ware was probably not used before the early ninth century CE (Cytryn-Silverman, 2010: 106). Therefore, it is likely that the large farmhouse at Abu Matar was settled longer, possibly until the late ninth–early tenth centuries CE.

To the north of Be'er Sheva, at Nahal Ashan, Eisenberg-Degen and Kobrin (2016) excavated a large farmhouse from the Early Islamic period was found. The farmhouse consisted of a large courtyard surrounded by several rooms. The structure had two phases, as, at a later point, several rooms were added. An Umayyad post-reform coin dating to the early eighth century CE was found where an early wall was connected to a later wall. The walls of the added rooms were constructed of fieldstones and dressed stones (Eisenberg-Degen and Kobrin, 2016). Pottery finds include, among others, Buff ware and marble ware. Only one piece of Late Byzantine pottery was found, which was probably from the nearby Late Byzantine farm (Eisenberg-Degen, 2018). It seems that the farmhouse was built in the eighth century, and toward the end of the eighth–early ninth century, additional rooms were added.

Another large farmstead was excavated in 2016 by Eisenberg-Degen (2017) at Nahal Be'er Sheva, and three main construction phases were visible. The first phase consisted of a rectangular building with three rooms adjacent to an extensive courtyard and several other walls. During the second phase, several rooms were added, and the walls consisted partially of dressed stones in secondary use. Three silos, as well as *tabun*s and hearths, were excavated. In the final phase, minor changes took place: architectural elements and dressed stones in secondary use (e.g., column drum) were added, some walls were dismantled, and new walls

were added. The pottery finds included Buff ware, among others, and the pottery dated to the eighth–ninth centuries CE (Eisenberg-Degen, 2017).

Nearby, about 400 meters to the east, another Early Islamic farmhouse was excavated in 2008 by Aladjem, this excavation was unpublished by the time of writing.[28] The farmhouse, which evolved from a single-room structure into a large farmhouse, was occupied from the seventh to the eight, possible ninth century CE. According to the excavator, the pottery assemblage included mainly cooking pots and jars, additionally FBW and Buff ware was found (Aladjem, pers. comm.).

The Byzantine settlement at Tel Sheva probably continued during the Early Islamic period. On top of the tell, the Roman fortress was reused as a waystation in the Early Islamic period. Some alterations were made to the fortress walls and entrance (Fritz, 1978: 87). Not many finds have been discovered, however, one gold coin dating to the mid-eighth century CE was found within the fortress, that was probably occupied during the seventh and eighth centuries CE, before being abandoned in the early ninth century CE (Fritz, 1973: 87; Herzog, 1993: 173). As mentioned above (see Chapter 6.6), several excavations have been conducted in Tel Sheva, revealing remains from the Byzantine and Early Islamic periods. However, most have so far not been published. The village was located at the foot of the tell, toward the eastern side. An excavation conducted by Haimi in 2003 revealed a few walls, forming several rooms, as well as a *tabun*. The published pottery includes LRS ware, FBW, and Gaza amphoras, all dating to the Byzantine and Early Islamic periods (Haimi, 2008). At the excavation at Tel Sheva, Shekhuna 36 (A-2062/1993; Baumgarten, unpublished), 47 Classical period coins have been found, dating from the Late Roman to the Abbasid period, and 16 date to the Early Islamic period. Two coins date to the seventh century CE (Arab-Byzantine coins), 13 are Umayyad post-reform coins, dating from the early to the mid-eighth century CE, and one Abbasid coin dates to the late ninth century CE (see Appendix 2—Coin finds from excavations). These amount to 23.8% fewer coins than during the Byzantine period but significantly more than during the Late Roman period. Based on the coin and excavation data, the settlement in Tel Sheva continued to exist during the Umayyad period and probably was of similar size as during the Byzantine period. After 750 CE, only one Abbasid coin was found. Thus, it seems that the majority of the village was abandoned toward the end of the eighth century and early ninth century CE, similar to the fortress on top of the tell. By the late ninth–early tenth centuries CE, the site was completely abandoned.

In Khirbat Amra, most remains date to the Byzantine and Early Islamic periods (Tahal, 1996; 2000). The church in Area A dates, based on the findings, from the

28 Excavator: Aladjem (IAA), Excavation permit no. A-5416/2008.

fifth to the eighth or ninth centuries CE. Within the church, two post-reform Umayyad coins were also found. It is unclear if it was used for liturgical or secular purposes. It only went out of use in the late eighth–early ninth century CE, when the building materials from the church were used for other buildings. In Area E, an Early Islamic period farmhouse was excavated. The structure shows two phases of construction. It is located about 50 meters east of the Byzantine period basilica church. The farm was not built on any previous period remains. In the ninth century, changes were made on the farm, and many architectural remains from the nearby church were used, including building stones, capitals, column drums, and decorated stones with crosses. This serves as an indication that when the farmhouse was first built in the late Umayyad period, the church was still in use. Within the large farmhouse, Arabic ostraca were found that date from

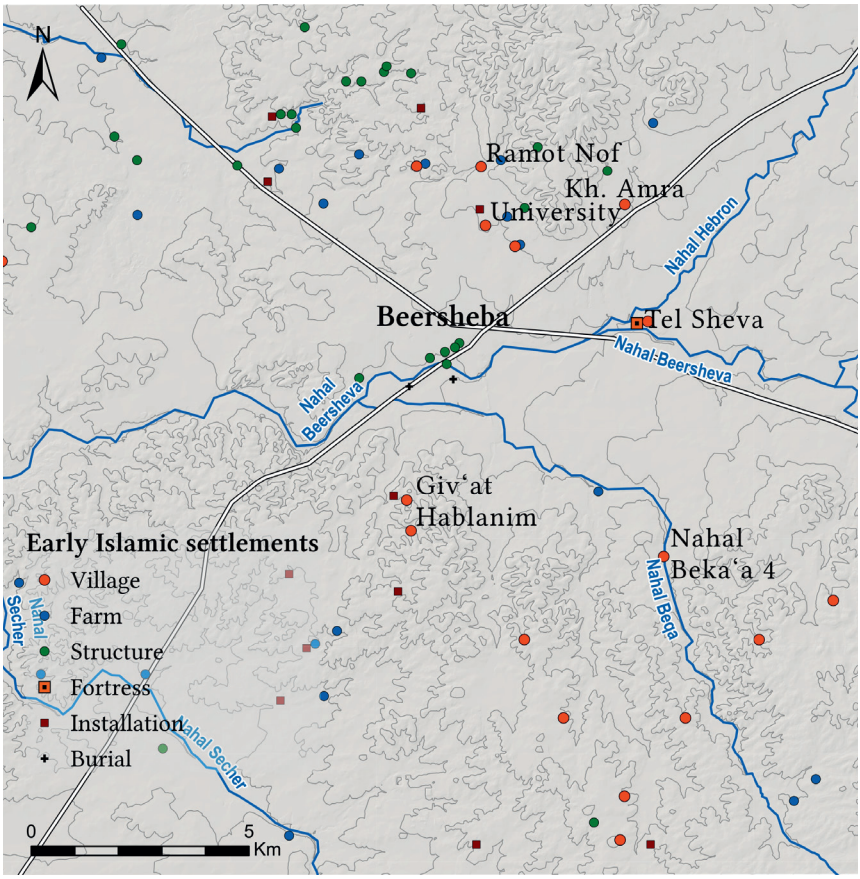


Figure 6.16 Early Islamic period site distribution in the central study area.

the seventh/eight to the ninth–tenth centuries CE. The ostraca deal with debts and tax matters.

In Area F, another large Early Islamic period farmhouse was excavated (Tahal, 1996; 2000). This building also had architectural remains in secondary use, probably taken from the church. The building dated to the eighth–ninth centuries CE. Several more dwellings date to the Early Islamic periods, most to the eighth–ninth centuries CE (Taxel and Michael, *forthcoming*). It seems that during the Umayyad period, several large farmsteads were built at Khirbat Amra, and those were in use at least until the late eighth possible ninth centuries. Several structures had a second phase, where building material from the church (and probably from other abandoned buildings) was incorporated into the walls and floors of the farmsteads, meaning the church went out of use in the late eighth–beginning of the ninth century. Some farmhouses continued to be used in the late ninth and possibly the early tenth centuries CE. Only a few Early Islamic coins were found at Khirbat Amra: two date to the Umayyad period (post-reform coins) and one Abbasid coin dates to the eighth–ninth centuries CE.

Religious buildings during the Early Islamic period included churches in Be'er Sheva, Khirbat Amra, and probably also Tel Sheva, and they continued to be used in the Early Islamic period. At Khirbat Amra, the church was in use until the eighth or early ninth centuries CE. On the northern border of the study area (just outside the study area), the church of Horvat Karkur Illit was excavated. The church continued to be used at least until the second half of the seventh century CE. After the abandonment of the church, the building was probably used for secular purposes (similar to the monumental church in Be'er Sheva, see Chapter 6.7.1), as proven by the *tabun*s built in several places (on mosaic floors and on graves) and other construction-based modifications. The coin finds date to the early eighth century CE (Figueras, 2004: 8–9).

Within the central study area, no Early Islamic Mosque has yet been found. However, about six kilometers to the north of the study area, south of the Bedouin town of Rahat, an Early Islamic open-air mosque was found next to a large farmhouse. The open mosque dates to the Abbasid period, most likely to the eight century CE (Seligman and Zur, 2021: 37*). In a recent excavation, directed by Shmueli, Kogen-Zehavi and Michael (A-9312), a second open-air mosque was discovered nearby. The mosque dates to the Late Umayyad–Early Abbasid period.

The majority of the sites dating to the Early Islamic period belong to the category of small sites between 0.0 and 1.0 ha in size. Only a few larger sites dating to the Early Islamic period could be found, for example, Tel Sheva, Khirbat Amra, and at the university campus. During the Byzantine period, most sites were small, rural settlements. The city of Be'er Sheva was likely settled at least until the mid-eighth century CE without major changes.

Figure 6.17 Open-air Mosque excavated near Rahat.
The open-air mosque with mihrab (prayer niche) towards Mecca (south) dates to the eight century CE. Site excavated by Seligman and Zur (2021: 31*, Fig. 7), photo by Peretz (IAA). Courtesy of the Israel Antiquities Authority.

6.7.1 Be'er Sheva in the Early Islamic period

During the Early Islamic period, the city of Be'er Sheva continued to be a large urban center, and many pottery sherds and coins from the Umayyad period were found during excavations of different buildings and in churches. New buildings were constructed with stones from abandoned buildings from the Byzantine period. These facts demonstrate that Be'er Sheva continued to serve as a large urban center during the Umayyad period.

After the abandonment of the army camp near Compound E, new buildings were constructed that were less massive, and they probably were not public buildings. The excavator relates these changes to the decline in the status of cities as administrative, economic, and religious centers, which occurred in southern Israel after the Arab occupation (Seriy, pers. comm.).

The excavation in the area of today's Electric Company compound revealed several structures dating to the Early Islamic period (Katz and Sonntag, 1996; and Katz and Sonntag, n.d.). Among others, a large, probably public building was built

in area E1 (20.7 × 23 m) with thick walls of 1 to 1.5 m, and a second large building (25 × 32 m) which was possibly, according to the excavators, used for the production of grape honey. A second room served as a *latrine* (Katz and Sonntag, 1996). In one of the buildings, pieces of the Be'er Sheva tax edict were found in secondary use (Gilead and Fabian, 2008: 319). As mentioned earlier, 18 tombs were discovered in Area A, and most tombs had an east–west direction, with the head of the deceased facing south (Katz and Sonntag, n.d.). This might serve as an indication that the deceased were Muslims and the cemetery dates to the Early Islamic period.

The large church near the market, excavated in 1994, was in use by the Christian congregation until the seventh century CE (Fabian and Ustinova, 2020). In the seventh century CE the roof of the church collapsed and the rooms adjacent to the apse, as well as the chapels, were converted and used as secular spaces (Fabian and Ustinova, 2020). According to Schick (1995: 128–31) many churches show evidence of later domestic occupation and it is important to determine whether there was a gap in occupation or if the later domestic occupation was connected to the abandonment of the church, e.g., expulsion of the congregation. In the case of the monumental Be'er Sheva church, which was damaged, it can be assumed that the church was abandoned peacefully by the Christian population of Be'er Sheva. The reoccupation of the intact rooms occurred after the abandonment of the church building and was most likely not connected to it. It seems that the structure was finally abandoned around the mid-eighth century CE (Fabian and Ustinova, 2020). Similarly, in the northern church/monastery of Be'er Sheva (Israeli, 1967), Umayyad coins were found on the floor, which seems to indicate that the church was also in use during the Umayyad period (Figueras, 1980). However, it is unclear if the structure was used as a church during the Early Islamic period or whether it served domestic purposes instead. The exact size of Early Islamic Be'er Sheva is unknown, but based on the findings, it seems clear that the settlement continued to be a large urban center in the northern Negev at the beginning of the Early Islamic period and then decreased gradually until the late ninth–early tenth centuries CE when the city was finally abandoned. The coin finds during the Early Islamic period from Be'er Sheva support this hypothesis, showing a decline of some 60% of coin finds until the mid-eighth century. By the ninth century, the decline was 90%, and by the late ninth and early tenth centuries, it had reached 95%. Furthermore, a study of glass finds from different excavations within the city of Be'er Sheva shows that no break is evident in the glass products throughout the major events of the seventh century (Persian wars and transition from Byzantine to Arab rule). The glass finds of the seventh and eight centuries CE show glass types that were used in Christian and Muslim context. However, new glass types were gradually introduced by

the Muslim population (Winter, 2020: 191–194). Furthermore, the study suggests a transformation or change of part of the population in the eight century CE. The glass finds decreased significantly in the late eight–early ninth century CE (Winter, 2020), these findings correlate with the settlement and coin finds of Be'er Sheva.

6.8 Coin finds from the central study area

In total, 66 coins date to the Hellenistic period: the majority were discovered at Tel Sheva (n = 60), and other coins are from Be'er Sheva (n = 5) and Nahal Ashan 2 (Horbat Raqiq) (n = 1) (see Appendix 2). Coins date from the late fourth century BCE to the first century BCE, spanning the complete Hellenistic period. Most coins date to the second and first centuries BCE. This number is heavily influenced by the large number of Nabatean coins (n = 25) found at Tel Sheva, all dating to the late second to early first century BCE. Without the Nabatean coins from Tel Sheva, there are two peaks visible: one during the third century and a second during the second part of the second century BCE. The majority of the coins dating to the late fourth and early third century BCE were Ptolemaic coins, with the exception of one Seleucid coin (Tel Sheva) and one Proto-Nabatean coin (Old Bedouin market). Palestine was under Ptolemaic rule until 198 BCE (Avi-Yonah, 2002: 42) and then for almost one century under Seleucid rule. The majority of the second century BCE coins are therefore also Seleucid coins, except for one Nabatean coin (Ramot) and two Ptolemaic coins (Horbat Raqiq and Tel Sheva). Only two Hasmonean coins were found in the study area (Figure 6.18).

Few coins date to the Early Roman period (n = 9). They date from the first century BCE to the first century CE (50 BCE and 100 CE). Between 50 CE and 70 CE (First Jewish Revolt), only two coins were recorded. The same is true between 70 and 100 CE, where two additional coins have been found. Between the years 100 and 200 CE, only one coin was recorded, found at Tel Sheva (Fritz, 1973: 87) within the walls of the fortress.

These findings do not include the coin finds from the village Rakafot 54, where several dozen coins were found that date to the first to early second centuries CE. These include coins minted by Herod Agrippa I (41–44 CE), Roman procurators of Judea (6–66 CE), provincial Roman coins (37–117 CE), Nabatean coins (until 106 CE), and coins of the First Jewish Revolt of 66–73 CE (Peters et al., 2020). The coin numbers increase significantly during the Late Roman period (n = 120). Between 2004 and 2005, an excavation at Compound C in Be'er Sheva took place (see above). The excavation was conducted by BGU, and over 90 coins dating to

the Late Roman period were found. The majority date to the time of Diocletian in 284–305 CE (Gilead and Fabian, 2008: 317–18; Fabian and Gilead, 2010a; 2010b).

Taking the coins from Rakafot 54 as well as the coin finds from the excavations in Compound C into account provides the following picture. The majority of sites were abandoned prior to the First Jewish Revolt. It's probable that only the village at Rakafot 54 and the settlement at Tel Sheva were populated in the central study area, possibly with some small sites. No coins were found for the period from after the Second Jewish Revolt (ca. 135 CE) until the year 200 CE, meaning that probably most sites were abandoned, with the exception of Tel Sheva, where a Roman fortress was built during the second century CE. Only four coins dating between 200 and 250 CE were found in the study area. Toward the last quarter of the third century, the coin numbers rise strongly. Between 250 (especially after 284 CE) and 300 CE (n = > 100),[29] and between 300 and 324 (n = 107). This means that the main settlement activities in Be'er Sheva as well as in the whole study area started probably after 250 CE and reached their peak around the years 300 to 324 CE during the Late Roman beginning of the Byzantine period.

Most likely, the sharp increase in building activities in the region was due to the wide-ranging reforms of Diocletian (284 to 305 CE), the administrative transfer of the Negev (from *Provincia Arabia* to *Provincia Palaestina*), the establishing of a line of border forts and military camps (probably not including the one in Be'er Sheva, see above), changing the monetary system and system of government (Tsafrir, 1986: 82–83; Magness, 2012: 320). This is also evidenced by the large number of coins found in Be'er Sheva that date to the time of Diocletian, compared to the low number of coin-finds from earlier time periods, including none in the area of the army camp. Therefore, based on the findings and dating, one can conclude that Late Roman Be'er Sheva was probably founded after the reforms by Diocletian. There might have been a small settlement established in the area in the early third century CE, but the strong growth of the settlements took place in the last quarter of the third and the beginning of the fourth centuries CE.

According to Figueras (1980), most inscriptions and coins found in Be'er Sheva date to the reign of Justinian I (521–565 CE). The majority of the coins in the IAA database date to the early fourth century, with fewer dating to the fifth (n = 32) and sixth centuries (n = 43). However, these coin finds include only those found on excavations conducted by the IAA after its establishment in 1990. Therefore, it could be that most of the coins date to the sixth century CE. Figueras (1980), however, does not provide exact numbers or reference. Considering that the sixth century and early seventh century coins (until 638 CE) were in use until 'Abd al-

29 This number includes the coin finds from the unpublished excavation from Compound C (Fabian and Gilead, 2010a; 2010b).

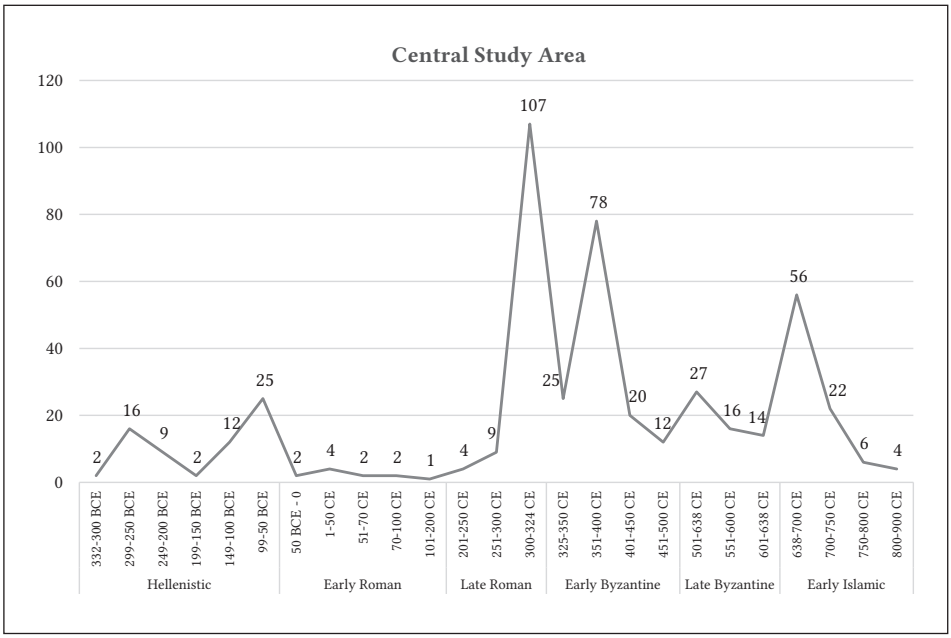


Figure 6.18 Coin finds from the central study area according to dating.
Coins according to percentage: Hellenistic 13.8%, Early Roman 2.3%, Late Roman 25.2%, Early Byzantine 28.3%, Late Byzantine 11.9% and Early Islamic 18.4%. The coins from Rakafot 54 (several dozen) dating until the second century CE and from Compound C, Be'er Sheva (G-58/2004; G-64/2005) are not included in Figure 6.18 (ca. 90 coins, dating to the late third beginning of the fourth centuries CE) due to the preliminary status of analysis and unpublished excavations. Roughly 65% of the coins date between 300 and 638. Coin data from the IAA internal database (*Menorah*) see Appendix 2.

Malik's reform in 696–97, then in total, 57 coins have been found in the study area, dating to this time period.

From the Early Islamic period, 56 coins were found to be from the Early Umayyad period (696 CE), with the third-largest number of coins found in the area after the Late Roman and Early Byzantine periods. As stated above, the sixth century and pre-reform Arab coins circulated together until 'Abd al-Malik's reform in 696–697 (Walmsley, 1999), meaning that those coins were still in use until the late seventh century. Thus, one can see that the numbers between the Byzantine and post-reform Umayyad coins did not change drastically, and a drop in coins is only visible in the mid-eighth century CE (Figure 6.18). Taking Figueras's statement (1980) into account (see above), that most inscriptions and coins found in

Be'er Sheva date to the time of Justinian I, there must have been a drop in coins to the late seventh century and early eighth century CE, at least for the city of Be'er Sheva. However, besides the drop, it would still be the third-highest number of coins registered in the study area: (1) late third–fourth century CE, (2) sixth–early seventh century CE, (3) late seventh–early eighth century CE.

The figure from the coin finds from the central study area show higher activity during the Hellenistic period, which is clearly connected to the activities in Tel Sheva, as the majority of all Hellenistic coins were found there. During the Early Roman until ca. 250 CE, a relatively low frequency is shown. Between 250 and 300 CE, we have probably a similar number as between 300 and 324 CE, taking the coin finds from the Compound C excavation of BGU into account. This indicates that the main settlement activities in Be'er Sheva, as well as in the whole study area, started at some point after 250 CE and reached their peak around the years 300 to 324 CE during the Roman period. Most likely, the substantial increase in building activities in the region was due to the wide-ranging reforms of Diocletian (284 to 305 CE).

There was a decline in coins during the fifth and sixth centuries. Figure 6.18 shows a decline by 638 CE and a sharp rise at the beginning of the Early Islamic period. Byzantine coins were used at least until the end of the seventh century. The 56 coins in the figure only relate to Umayyad coins introduced after the reform of 'Abd al-Malik in 696/697 CE (Walmsley, 1999: 346–47). The coin-finds decline in frequency during the eighth century CE, which continues until the early tenth century CE. Based on the coin-finds, and considering the coins that are not represented in Figure 6.18, the following conclusions can be drawn: (1) there was a drop in coins from the sixth–early seventh century CE, (2) the Umayyad post-reform coins are still at a high level, and (3) the Early Islamic decline in coin numbers is visible from the mid-eighth to the early tenth century CE. For the city of Be'er Sheva, the rise in coin numbers is visible between the Late Roman–Early Byzantine period (284–324 CE), peaking in the fourth century and declining during the fifth, with the highest numbers during the mid-sixth century CE (taking Figueras statement (1980) into account). In the seventh century, there is a decline that might be connected to the Sassanid invasion in the early seventh century and the transition from Byzantine to Muslim rule shortly afterward. It also may relate to the phase of ruralization that took place during the late sixth and early seventh century CE.

7 EASTERN STUDY AREA

7.1 Introduction

The eastern study area is located in the Be'er Sheva–Arad basin. The basin is in the center of the area and is mainly flat (Figure 7.1). The slopes of the southern

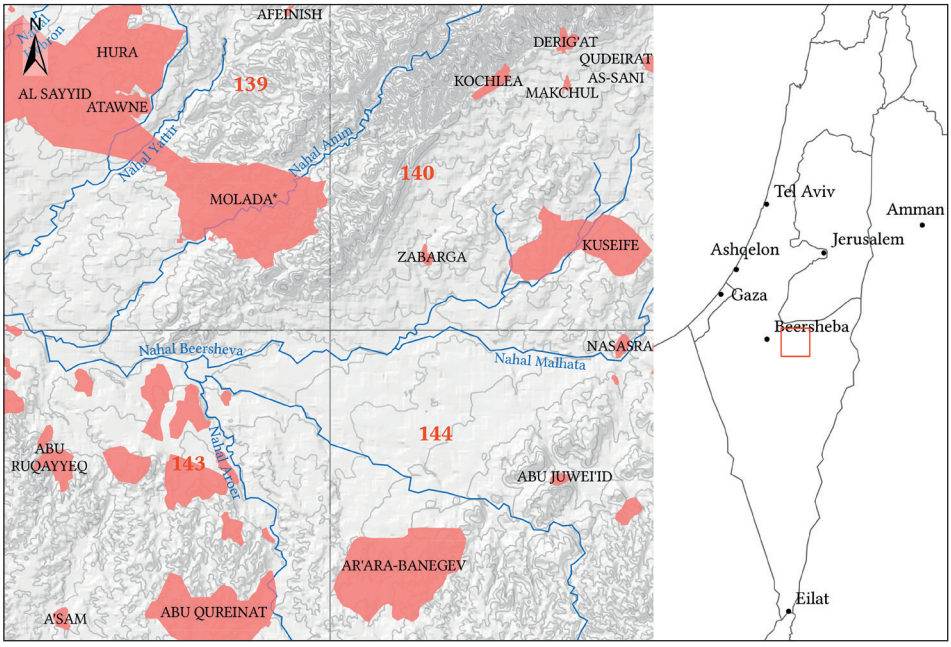


Figure 7.1 Eastern study area depicting modern settlements.
Survey map division (maps 139, 140, 143, and 144) according to the Archaeological Survey of Israel. This includes the main wadis in the area.

Hebron hills are located to the north, and the Northern ridges of the Negev Highlands are located to the south of the area. The altitude of the area is between 300 and 720 m above sea level.

Approximately 75 square km of the study area is developed. The developed area consists of Bedouin towns, a large army base, and paved roads. In addition to these towns and military installations, there are many unrecognized Bedouin villages in the area. Much of the free land is used by Bedouins during the winter months for agriculture and grazing, mainly along the wadis and in the northern region, where runoff agriculture is possible. The wadis in this area are dry riverbeds that only carry water after heavy winter rains. In the center of the study area, a large military base (Nevatim Air Force Base) covers a plot of land approximately 50 square km in size. However, large parts of the land on the base is not developed (Figure 7.2). Within the area of the military base the large settlement of Tel Malhata as well as the Roman-Byzantine town southeast of the tell are located. Access to the site is limited. However, the site was excavated in the 1960s and 1970s, 1990s, 2000s, and—in two recent excavations in 2016 and 2017—a large part of the Roman-Byzantine cemetery was excavated, located to the south of the Tel.

The eastern study area consists of four survey maps. In total, 371 Classical sites have been recorded in this study area (Table 7.1). All surveys were conducted by the ASI within the framework of the Negev Emergency Survey, starting in the late 1970s and continuing until the 2000s, although the main activities were conducted in the early 1980s. Many modern towns and settlements have built in the area since then, and the large military base, which covers a large area close to Tel

Table 7.1 Survey maps, sites, density, and survey methods for the eastern study area. The numbers include only the Classical sites registered during systematic surveys, and not the sites added, based on development surveys, inspections and trial trenching, or excavations.

Map No.	Dates Surveyed	Area (sq km)	Number of Total Sites	Density of Sites	Number of Classical Sites	Density of Sites	Survey Method	Reference
139	1983–1984	100	359	3.59	138	1.38	Field-walking	Govrin, 1991
140	1984–1985	100	273	2.73	121	1.21	Field-walking	Govrin, 2016
143	1981	100	48	0.48	32	0.32	Field-walking	Eldar-Nir, 2015
144	1979–2000	100	159	1.59	80	0.80	Field-walking	Beit-Arieh, 2003

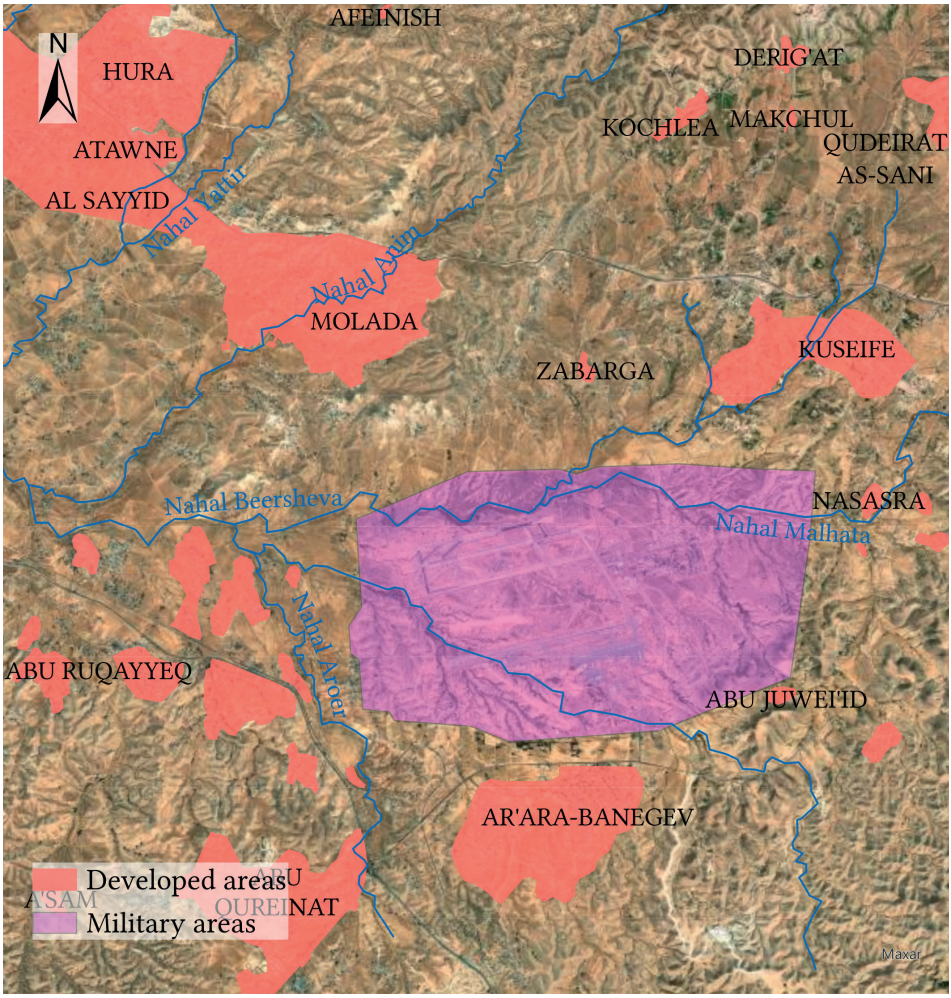


Figure 7.2 Modern land use of the eastern study area.

The Nevatim Air Force Base comprises the largest section of the study area, surrounded by mainly Bedouin towns and villages. Background: Satellite Imagery: ESRI—DigitalGlobe).

Malhata, opened in 1983. The majority of archaeological sites were discovered in the northern part of the study area, with a total of 259 sites. The surveys for the northern maps were conducted by Govrin during the years 1983–1985 (Govrin, 1991; 2016). The surveys in the southern part of the study area were conducted by Eldar-Nir (2015) and Beit-Arieh (2003), and in total, 112 Classical period sites were discovered. The surveys were conducted in 1981 (map 143) and in the course of several seasons during the years 1979–2000 (map 144).

The density of sites in the eastern study area ranges between 0.32 and 1.38, averaging 0.93 sites per square km (see Database-Appendix). The average site densities of the Besor study area and the eastern study area are identical (n = 0.93), while the average for the central study area is higher (n = 1.60). The higher density of Classical sites in the central study area can be explained by the location of the large ancient city of Be'er Sheva in the center of that area. As stated in the previous chapter, the average density of archaeological sites is higher in the northern maps of the eastern study area (maps 139 and 140). This is also visible in the eastern study area, where the area south of Nahal Beersheba-Nahal Malhata is less densely settled. The reason for this may be due to the fact that the slopes of the southern Hebron hills, which allow dry farming in the winter months, are better suited for agricultural purposes. Furthermore, it might be connected to a network of fortresses, which could have been installed for the defense of the northern settlements from desert tribes. A line of fortresses runs from the Dead Sea to the Mediterranean, beginning during the Hellenistic period, with fortresses in Tel Sheva, Tel Malhata, Tel Arad, and Horvat Uza. These fortresses also existed in the time of Diocletian (third century CE; limes fortification), with fortresses in Be'er Shema (Besor study area), Tel Sheva in the central study area, Tel Malhata in the eastern study area, and Horvat Uza, located outside the survey area (Avi-Yonah, 1959; Tsafir, 1982; Gichon, 1979; 2002; Kochavi, 1993: 936; Beit-Arieh, 1998; 1999). The line of fortresses runs through the middle of the study area and might be one of the reasons why there are fewer archaeological sites south of this line.

7.2 Methodology and site size

The eastern study area contains 438 Classical period sites, as shown in Figure 7.3. This number differs from the site numbers collected during the survey conducted by the ASI (Table 7.1), as several additional sites were added to the database that had been discovered during development surveys, excavations, inspections, and trial trenching. During the Hellenistic period, the number of sites was relatively low (n = 15), but similar to the other two study areas (n = 18 and n = 16). During the

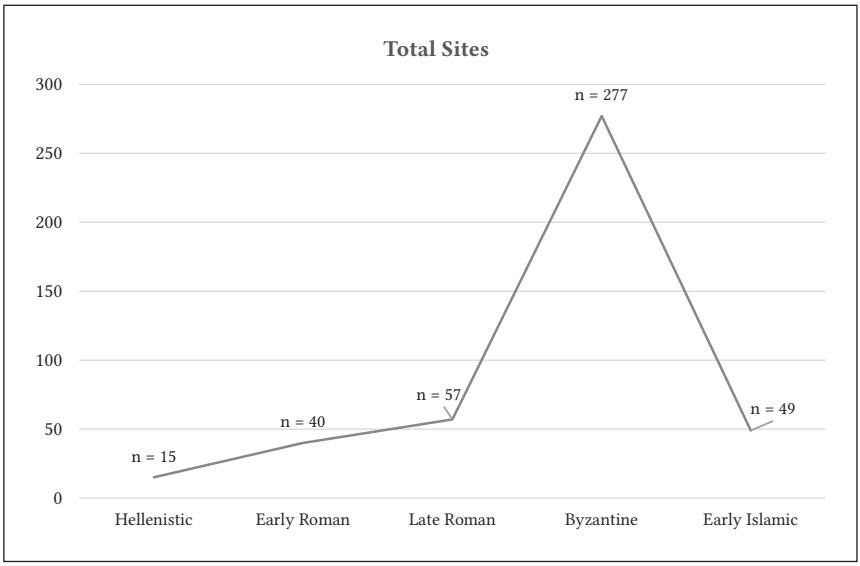


Figure 7.3 Eastern study area, total sites according to archaeological period. Site percentage according to period: Hellenistic 3.4%, Early Roman 9.1%, Late Roman 13.1%, Byzantine 63.2% and Early Islamic 11.2%.

Hellenistic period, the sites consisted mainly of a large settlement at Tel Ira and several small fortresses. In the Early Roman period, 40 sites could be attributed, which is higher than in the western (n = 29) and in the central (n = 12) study areas. However, 17 of the Early Roman sites are findspots or other non-permanent settlements consisting of a few pottery sherds or coins. Therefore, by considering only permanent sites, the number is similar to the western study area (n = 23).

In this region, 57 sites have been dated to the Late Roman period, which is similar to the other two study areas (western n = 60 and central n = 47). As in the western and central study area, during the Byzantine period the number rises substantially. In the western study area, the number is almost identical (n = 274) and in the central study area is slightly higher (n = 321 without the sites within the Byzantine city of Be'er Sheva). During the Islamic period, the number of sites drops to 49. Magness has analyzed the survey of Nahal Yattir (map 139) to redate the published and unpublished pottery. To the 13 sites Govrin (1991) dates to the Early Islamic period, Magness (2003: 9–74) dates an additional 15 sites to the Early Islamic period. Taking this number into account for the other maps, the total number of Early Islamic sites in the eastern study area should be about 53% higher. This means the number of Early Islamic sites would hypothetically

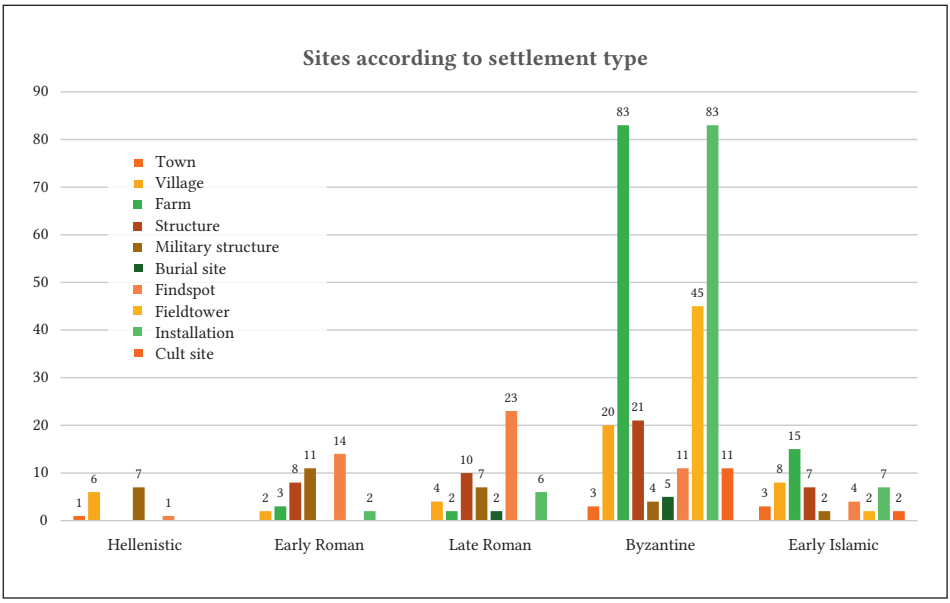


Figure 7.4 Sites according to settlement type in the eastern study area.

number around 109. As in the other study maps (140, 143, and 144), not much pottery has been published. Therefore, it is not possible to check this number, though clearly many Byzantine sites continued without interruption into the Umayyad period. Furthermore, the number 109 is similar to the central study area (n = 101), where many more excavations have been conducted, and therefore the dating of sites is more precise in that study area.

The numbers of all of the different settlement types rise sharply during the Byzantine period. Of course, these sites were not built during the same time period, but somewhere between the fourth and seventh century CE. According to excavations and the re-dating of pottery finds, the majority of Byzantine sites date to the fifth/sixth, and seventh century CE. During the Hellenistic and Early Roman periods, a relatively high number of military sites (fortresses, towers, strongholds) is visible.

Wherever possible, the size of the settlements was calculated. In some cases, the size was given by the surveyor or excavator, however, this information was not available in all cases. If no size was available, it was estimated based on the described finds or, for larger sites left undisturbed by modern development, the size was calculated by the approximate radius of significant field scatters surrounding it (see 4.6—Calculation of site size). The majority of the sites belong to the

Table 7.2 Settlement size according to archaeological period in the eastern study area.

	Settlement size (ha)				
	0.0–1.0	**1.1–3.0**	**3.1–10**	**< 10**	**Tot.**
Hellenistic settlements (332–37 BCE)	13	2	0	0	**15**
Early Hellenistic	5	1	0	0	6
Late Hellenistic	8	(1)	0	0	9
Roman settlements (37 BCE–324 CE)	90	7	0	0	**97**
Early Roman (37 BCE–132 CE)	37	3	0	0	40
Late Roman (132–324 CE)	53	4	0	0	57
Byzantine settlements (324–640 CE)	259	11	4	3	**277**
Early Islamic settlements (640–750 CE)	35	7	4	3	**49**

size category 0.01 to 1.0 ha (n = 90.6%), which includes small sites such as farms, installations, and cisterns. The category of 1.1–3.0 ha includes larger sites, such as hamlets or large farmsteads (n = 6.2%). The category of 3.1–10 ha includes larger villages (n = 1.8%), and the category of > 10 ha includes small to large towns (n = 1.4%) as shown in Table 7.2.

There are several large settlements in the study area, all dating to the Byzantine and Early Islamic periods. Large villages include Horbat Hur, Tel Ira, and Horbat So'a; towns include Tel Malhata and Khirbat Qasif, which were larger than 10 ha.

7.3 Previous field work

Several excavations have been conducted in the study area, and most are clustered around specific areas (Figure 7.5). Many salvage excavations were surrounding the modern Bedouin towns of Hura (Horvat Hur) and Kuseifa (Khirbat Qasif) in re-

cent years: Hura and Nahal Yattir (Ein-Gedy, 2001; Zelin, 2001; Varga, 2003; 2014; 2015; Paran, 2007; Haiman, 2008; Peretz, 2012; 2017), Khirbat Qasif (Govrin, 1986; Figueras, 1995; Israel and Shuster, 2000; Shmueli, 2012; Lifshits and Fraiberg, 2013; Abadi-Reiss and Fraiberg, 2014; Fraiberg and Tepper, 2017), Abu Qrinat (Kobrin, 2020), Nevatim (Kobrin, 2016b), and Nahal Nevatim (Nikolsky, 2011a; 2011b). The large number of salvage excavations is due to modern construction as these towns which have grown rapidly since the early 1990s. All salvage excavations in these areas were conducted by the IAA. Four larger sites have been excavated by universities, including Tel Aroer, excavated by Biran and Cohen, Hebrew Union College, and IDAM (Thareani 2011). Tel Malhata has been excavated by Kochavi from

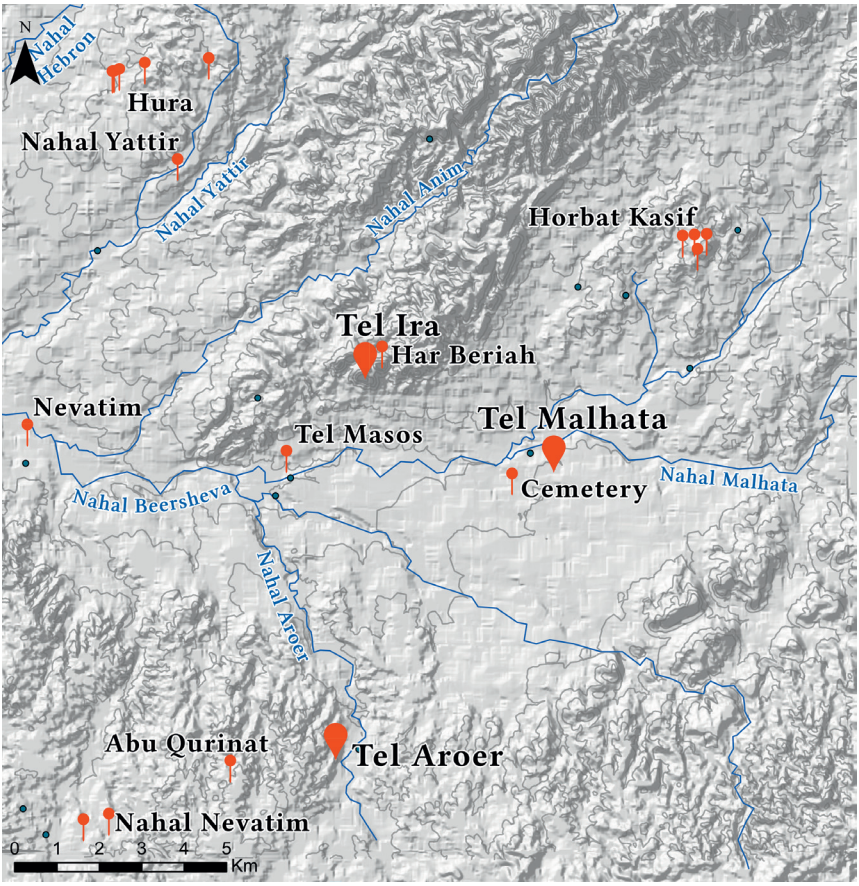


Figure 7.5 Previous field work in the eastern study area.
Excavated sites are mainly clustered around the two modern towns: Hura and Kuseifa (Khirbat Qasif).

the Institute of Archaeology of the Hebrew University of Jerusalem and later TAU. In the 1990s, the site was again excavated by a team from TAU and Baylor University by Beit-Arieh and Cresson (Beit-Arieh, 1998, Kochavi, 1993; Beit-Arieh and Freud, 2015). Tel Ira and Har Beriah was excavated in the 1970s and 1980s, mainly by Beit-Arieh from TAU (Beit-Arieh, 1999). Tel Masos was excavated in the 1970s by Aharoni, Fritz, and Kempinski (Kempinski, 1972; Fritz and Kempinski, 1983; Kempinski, 1993; Givon et al., 1996). These sites have been published in extensive volumes, which are important resources for the analysis of this study area. In these excavations remains from all periods, Hellenistic through Early Islamic, were excavated, whereas the majority of excavated Classical period remains date to the Byzantine and Early Islamic periods. The excavated remains from the IAA excavations were mostly smaller sites, such as: farmsteads, field towers, burials, and agricultural installations. Some of these excavations were used to compare the survey results for this study.

7.4 Hellenistic period

During the Hellenistic period, 15 sites were recorded in the study area (Figure 7.6). The site density is relatively low (n = 0.04 sites per square km), but comparable to the other two study areas. Several tells are located within the study area, including Tel Ira, Tel Malhata, Tel Aroer, Tel Shoqet, Horvat Hur, and Horvat Yittan. Three tells are located in the plain of the Be'er Sheva–Arad basin (Tel Ira, Tel Malhata, and Tel Aroer), and these are close to the important roads crossing the area. In contrast, the smaller tells of Tel Shoqet, Horvat Hur, and Horvat Yittan are located on the southern fringes of the southern Hebron hills, usually along the banks of the dry riverbeds that mainly carry water during the winter months. Settlements were connected through a system of roads. Two main roads crossed the area during the Hellenistic period: a lateral road connecting Gaza with En Boqeq (the Dead Sea) connected the sites of Tel Sheva and Tel Malhata, which are located in the study areas. Near Tel Malhata, a north–south road intersected the lateral road, going north toward Jerusalem and south to Mampsis (Taxel, 2011: 400), the north–south road passed close to Tel Aroer, which overlooked it.

During Ptolemaic and Seleucid rule, the Be'er Sheva–Arad basin represented the southern border of Idumeae with the Nabateans (Avi-Yonah, 2002: 50; Taxel, 2011: 399). A few sites in the study area date to this Early Hellenistic period: Tel Ira (Beit-Arieh, 1999: 173), Tel Malhata (Tal, 2015: 17), and possibly Tel Aroer (Taxel, 2011: 399), Tel Shoqet, Horvat Hur, and Horvat Yittan. Several sites date to the Hasmonean period (late second to first century BCE), including the four fortresses

and strongholds Giv'at Metar, Horvat Bikhra, Dawasiya (Spot Height 500), and the Mar'it fortress. It is possible that the settlements at Tel Ira and Tel Malhata also existed during the Late Hellenistic period.

The largest site during the Hellenistic period was Tel Ira, which is located on the southernmost spur of the Hebron hills, on a table-top hill (514 m above sea level). The summit of the hill is about 70 to 100 meters above the valley, which overlooks the valley and the roads. The site is about two to three ha large (Beit-Arieh, 1999: 9–15). According to Beit-Arieh, Tel Ira was a large, fortified city during the Hellenistic period (Beit-Arieh, 1999: 178). The exact size of the Hellenistic settlement is unknown but, based on the published plan of the excavations at Tel Ira (Beit-Arieh, 1999: 10), it can be estimated that the settlement was around two to three hectares. However, the settlement at Tel Ira might have been bigger or smaller, as the site has only been partly excavated. Tel Ira was occupied during the Ptolemaic and Seleucid periods and possibly during Hasmonean rule, from the fourth to second centuries BCE.

Another important site was Tel Malhata, which is located in the Be'er Sheva–Arad basin, on the eastern bank of Nahal Malhata, close to where Nahal Beersheva comes together with Nahal Malhata. The tell is located on a flat natural terrace. It is elliptical in shape and extends over several hectares (Beit-Arieh, 2015: 11). The site was settled during the Bronze Age and Iron Age. After its destruction in the sixth century BCE, it was only resettled in the Persian and Early Hellenistic periods. According to Tal (2015: 17), it is possible that there was an Early Hellenistic period settlement that existed during the late fourth–early third centuries BCE. The main Hellenistic settlement, probably a fortress, existed at Tel Malhata during the second to early first centuries BCE under Seleucid rule. Tal (2015: 17) records that two Seleucid coins were found at the site, one of Antiochus IV (175–164 BCE) and a second one of Antiochus VII (138–139 BCE). Furthermore, there is a possibility that the site was settled during the Hasmonaean period based on pottery finds (ESA) and two coins of John Hyrcanus (129–104 BCE). However, the site lacks Jewish characteristics (Tal, 2015: 17). It may be that the settlement was abandoned in the late first century BCE. There is no evidence of destruction, and the abandonment might have been related to the new political reality, as the Seleucid left the region (Tal, 2015: 18).

Four fortresses were discovered during the survey in the study area: Giv'at Metar, Horvat Bikhra, Dawasiya (Spot Height 500), and the Mar'it fortress. All fortresses are located in the southern Hebron hills, north of the Be'er Sheva–Arad basin. According to Govrin, most of these military structures are related to the Hasmonean defense system that was set up against the Nabatean kingdom when Judah's southern border passed through the Be'er Sheva–Arad valley (Govrin, 1991; 2016).

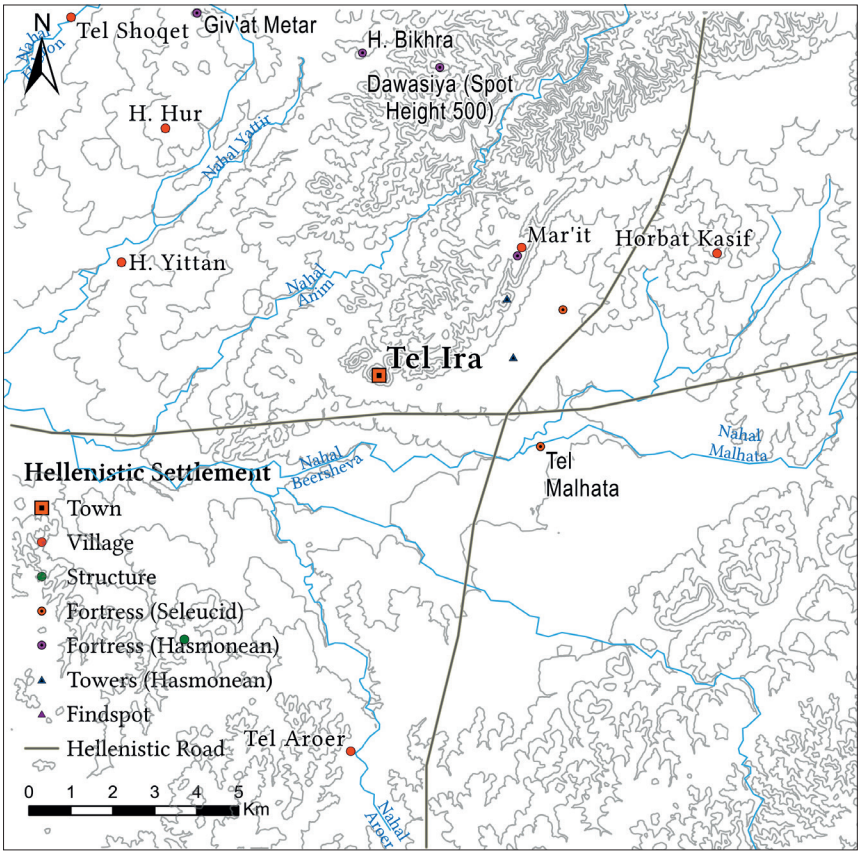


Figure 7.6 Hellenistic settlements of the eastern study area.

At Giv'at Metar, located on a hilltop, the remains of a rectangular structure (11 × 13 meters) with thick walls were found. To the east of the fort, an animal pen was found, possibly connected to the fort (Govrin, 1991: 30). Horvat Bikhra, like Giv'at Metar, was located on a hill, built as a square fort (9.5 × 10 meters) with thick walls. To the east and west, animal pens (Govrin, 1991: 37) were built. Several pottery sherds have been published: no. 1 to 5 are titled Hellenistic-Roman. Magness has reanalyzed the pottery, and none dates, according to her, to the Hellenistic period, but to the Early Roman to the Late Roman period, first to fourth centuries CE, including the unillustrated pottery (Magness, 2003: 14). Therefore, it is possible that this fortress rather dates to the Roman period. At Dawasiya (Spot Height 500), a large square structure (30 × 30 meters) was found with a structure consisting of several rooms and a courtyard with a cave located within. Outside

the structure, an animal pen was found (Govrin, 2016). The Mar'it Fortress, a Hellenistic period fortress (27 × 34 meters), is located on top of a narrow spur. The site was excavated in the past by D. Alon. A large amount of Hellenistic pottery was found scattered in the area (Govrin, 2016).

In addition to the four fortresses, strongholds were discovered, which are towers of 3 × 3 meters. Small settlements were found at Tel Shoqet, Horvat Hur, Horvat Yittan, and Mar'it (Govrin, 1991; 2016). At Tel Aroer, it is unclear what kind of settlement existed as there are only scant remains. Taxel (2011: 316) suggests a very small settlement. Four coins dating to the Hellenistic period have been found: three Seleucid coins dating between 222–187 BCE and one Hasmonean coin (Alexander Jannaeus). Pottery finds date from the late fourth or early third to the second century BCE and from the Late Hellenistic (Hasmonean) period to the Early Roman period, the late second and first century BCE to the first century CE (Taxel and Hershkovitz, 2011: 343–63).

During the Hellenistic period, almost no settlements were located in the southern part of the study area, as in the central study area. The exact reason for this is unknown (Beit-Arieh, 2003, Eldar-Nir, 2015), but most likely the Idumeae border, forced against the Nabatean Kingdom by the Hasmonean defense network of fortresses, was responsible for the lack of Hellenistic settlements south of the Nahal Beersheva-Nahal Malhata line. Most of the Hellenistic sites are rather small, with the exception of Tel Ira, which was a fortified city. Based on excavation and survey results, it seems that during the Ptolemaic and Seleucid rule, the tells were settled, mainly Tel Ira and Tel Malhata, possibly also Tel Aroer, Tel Shoqet, Horvat Hur, and Horvat Yittan. It is unclear if all these sites were also settled by the Hasmoneans, especially Tel Ira and Tel Malhata. However, there are some indications that they were, such as pottery and coin finds that date to the Late Hellenistic period. To the Late Hellenistic period, several fortress and strongholds can also be attributed, mainly located in the southern Heron hills. It is unclear if all of them date to the Late Hellenistic period or if a few only date to the Early Roman period, as is the case for the published pottery from Horvat Bikhra.

7.5 Roman period

During the Roman period, 40 sites date to the Early Roman period and 56 to the Late Roman period. In total, 96 sites date to the Roman period. Most sites that date to the Roman period were found in the northern part of the study area, similar to the Hellenistic period. Most sites could be dated to one of the two subperiods (Early Roman or Late Roman) based on the survey and excavation de-

scription. Furthermore, a few sites have been dated to both the Early and Late Roman periods (these sites were counted twice). In map 140 (Govrin, 2016), some sites were classified as Roman-Byzantine. Based on the fact that Govrin delineates between Roman, Late Roman, Roman-Byzantine, and Byzantine, one can assume that it was unclear whether the Roman-Byzantine sites dated either to the Late Roman, Byzantine, or both periods. Based on the fact that Early Roman pottery is easily differentiated from Late Roman pottery, it is assumed that if these sites actually date to the Roman period, they belong to the Late Roman period and not to the Early Roman period. Therefore, the sites were counted twice as Late Roman and Byzantine period sites, and as there are no published pottery sherds or other means to redate the sites, it is not possible to conclusively attribute them to one or both periods.

7.5.1 Early Roman period

There are 40 sites that date to the Early Roman period. This is the highest number of Early Roman sites in the three study areas; however, 17 sites are non-permanent sites (findspots and parts of roads). In many cases, only pottery sherds, coins, or other small finds dating to the Early Roman period were found, meaning there are 23 Early Roman settlements in the study area, which is similar to the other two study areas.

At Tel Malhata, a Roman fortress (70 × 50 meters) was discovered during surveys and excavations. The open courtyard-type fortress had casemate walls, and it seems that the structure had two phases of occupation: Early to Middle Roman (first to early third centuries CE) and Late Roman to Early Byzantine (fourth and fifth centuries CE). The fortress was abandoned in the early third century and later on reoccupied (Tal, 2015: 18). According to Applebaum (1967: 285), the fortress at Tel Malhata served as an agricultural mansion defended by a tower rather than a military fortification. Based on the material found in the 2016/2017 excavations, a settlement existed below the tell, probably at least from the late Early/Middle Roman period onwards. It is possible that after the fortress was abandoned in the early third century CE, around the mid-third century a settlement at the base of the tell was established. It is unclear if there was a break between the abandonment of the fortress and the establishment of the settlement at the base of the tell. The Early Roman pottery from the Tel included Eastern Terra Sigillata (ETS) A bowls, which date no later than 180 CE, although the majority of the material found dates to the third (after 250 CE) and fourth century CE (Tal, 2015: 671–82).

The settlement at Tel Aroer consisted of a massive tower and a courtyard, as well as a civilian residential area located outside the fortified structure. The for-

tified complex overlooked the major north–south road and probably served as a road station or trading post (Taxel, 2011: 401). The settlement and the tower existed probably from the mid to late first century BCE (possibly later) to the first century CE (until ca. 70 CE). The fortified tower was probably destroyed during the First Jewish Revolt (Taxel, 2011: 316–35). Most likely, the site was inhabited by Jews. After the destruction of the tower and living quarters at Tel Arorer, the site was probably deserted, and only toward the end of the first century CE and the beginning of the second century CE was it resettled. The fortified structure was not rebuilt, and it is likely that only some living quarters were present at Tel Arorer. The settlement existed until the end of the Second Jewish Revolt in 135 CE (Taxel, 2011: 335). Eleven coins were found at Tel Aroer, dating to the Early Roman period, which is between the mid-first century BCE until the First Jewish Revolt, including three coins from the second year of the First Jewish Revolt (67/68 CE). The majority of the coins clearly date to the first century CE, and there were no coins found dating after 67/68 CE (Barkay, 2011: 390–94). Barkay (2011: 394) attributes that fact, as well as the small number of coins in general, to the excavation methods.

Tel Ira was abandoned during the Hellenistic period. It seems that a small Early Roman period settlement was established at the site. According to Hershkovitz (1999: 297) small Jewish settlement was established at the end of the Second Temple period, between the destruction of the Temple (70 CE) and the Bar Kokhba revolt (Hershkovitz, 1999: 299). Among the pottery finds, was a multi-nozzled ring lamp and local y produced vessels, the comes from Areas M and L, however no structural remains were identified dating to this period (Biran, 1999: 115–29).

The site of Nahal Yattir, located on a hilltop on the eastern bank of Nahal, consists of a well-preserved fortified structure from the Early Roman period. It comprises a fortified structure surrounding a central courtyard and an underground tunnel system, as well as living quarters on the hillside. The site was excavated by Alon in the early 1980s and is dated from the late Herodian period (first century CE) to the Bar Kokhba revolt (135 CE). To the northeast of the structure, a Persian period fortress was found. It seems that the building material for the later fortress was taken from the Persian structure (Vainstub and Fabian, 2015). Several of the Late Hellenistic (Hasmonean) fortresses were reused, for example, Givat Metar, Horvat Bikhra (which seemed to only date to the Roman and not to the Hellenistic period, see above), Mar'it Fortress, and Dawasiya (Spot Height 500), which were resettled probably in the Herodian period. According to Applebaum (1962) and Gichon (1967; 2002: 192), in 31/32 BCE Herod constructed a fortification system against the Nabateans along the Be'er Sheva–Arad basin, where the southern border passed. These fortresses might have been part of such a fortification system.

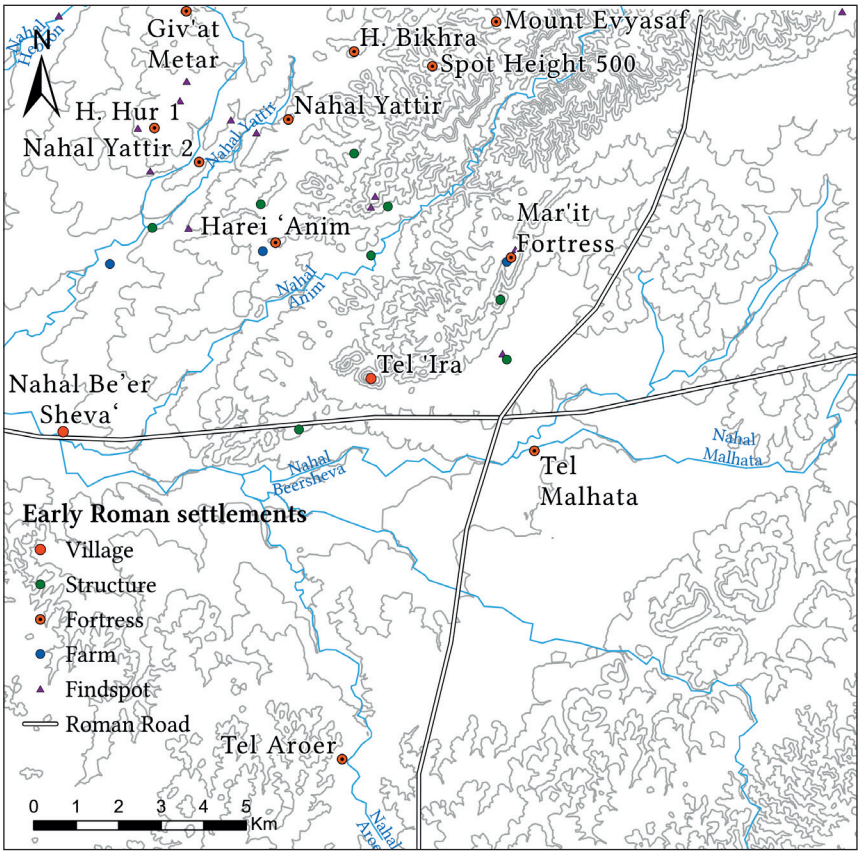


Figure 7.7 Early Roman sites in the eastern study area.

During the Roman period, two major roads crossed the study area: a longitudinal road, running east to west from En Boqeq (Dead Sea) via Tel Malhata-Be'er Sheva to Gaza, and a north–south road that connected Mampsis with Tel Malhata and continued northwards to Jerusalem (Ma'aleh Deragot). The intersection of these two roads was near Tel Malhata (Roll, 1994; Taxel, 2011: 400). According to Govrin (2016), following the Bar Kokhba revolt, the Roman army adopted these roads for the use of their military forces and equipment.

The majority of sites are located in the northwestern part of the study area, near the southern Hebron hills. The majority of the sites were rather small. Most can be grouped in the category of 0.01–1.0 ha, as there were many single structures or small fortresses and villages throughout this time. South of the Nahal Beersheva-Nahal Malhata line, only Tel Aroer was located, which served as a

lookout and later a waystation. Several of the fortresses also had a civil part, mostly a small rural settlement, as for example, at Tel Aroer or Nahal Yattir. Based on the dating and nature of the settlements, it seems that most of the Early Roman sites were small Jewish settlements and fortresses, or strongholds that existed during the first to early second centuries CE until the Bar Kokhba revolt (135 CE), and were then abandoned. An exception is Tel Malhata, which was occupied until the early third century CE. It seems that after the Bar Kokhba revolt until the late third century CE, almost no settlements existed in the eastern study area.

7.5.2 Late Roman period

During the Late Roman period, 57 sites were settled, though it is unclear if they actually date to the Late Roman or rather to the Byzantine period. In some instances, published pottery or coin finds could help to determine the dating. It seems that most Early Roman period sites were abandoned at some point in the mid-second century CE. In the Late Roman period, during the late third–early fourth centuries CE, a rise in settlement activity in the area is evident. According to Govrin (1991: 19*; 2016), this should be attributed to the reorganization by Emperor Diocletian. Several "fortresses" were discovered in the northern part of the study area, mainly in the southern Hebron hills. These courtyard and tower structures do not necessarily indicate military presence, or the use of the structure as a fort (Magness, 2003: 128). It is possible that these were fortified farmhouses, because of their remote location. In the overview map they are indicated as forts, but should be understood as fortified structures, and it is unclear whether they had a military or civil purpose.

During the Late Roman period, Tel Malhata was, according to Eusebius's *Onomasticon,* "a central settlement and an administrative capital" (Tal, 2015: 18). The fortress on the tell was reoccupied in the late third–early fourth centuries CE (Tal, 2015: 19). This suggestion is also supported by the coin finds from Tel Malhata: 12 coins date to the late third century and 28 to the fourth century CE (Kindler, 2015: 685). It is unclear when the civil settlement (Moleatha) south and east of the tell started, but excavations revealed domestic and public buildings and a large necropolis, with close to 300 tombs. The site had been excavated in the past by archaeologists of IDAM, and subsequently the IAA. Only preliminary reports or summaries of the excavations were partially published (Gichon, 1979; Eldar and Baumgarten, 1993; Talis et al., 2017; Nahliely and Fabian, 1992, unpublished). Eldar and Baumgarten (1993: 937) date the remains to the Late Roman-Byzantine period. A large graveyard with close to some 160 tombs, approximately 750 meters south of Tel Malhata, was excavated during July 2016 and April–May and August 2017.

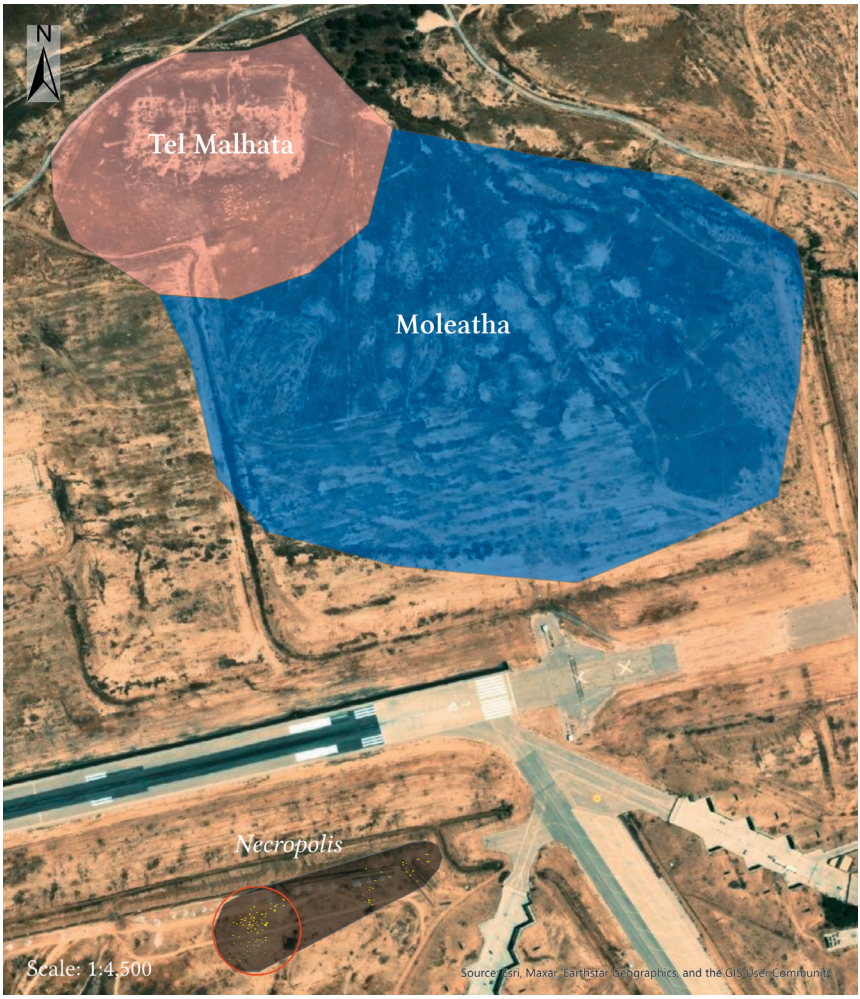


Figure 7.8 Tel Malhata, the lower settlement and the Necropolis.
The area of the necropolis was excavated in 2016 and 2017. The red circle indicates the tombs from the first season in 2016, where most of the pottery finds date to the third and fourth century CE. Background: Satellite imagery: ESRI—DigitalGlobe.

The excavated burials date, according to the excavator, from the Late Roman to Early Islamic period (Talis et al., 2017).

Most of the discovered pottery was found in the northwestern part of the cemetery in incineration pits. The pits were dug next to each other, separated by earthen partitions. Next to human bones, pottery and other small finds were also

discovered. The pits were burned and then covered with soil (Talis et al., 2017). Several Nabatean carinated bowls were found, which date most likely to the third century, probably after 250 CE as the bowls are not decorated. Besides the carinated bowls, cooking ware, juglets, beakers and strainer jars were found. All pottery dates to the third and fourth century CE, with the exception of the ETS bowls, which date to the late second century CE (see above), although these might be heirlooms.

Next to the pottery finds several alabaster vessels (n = 5) were discovered in different tombs in the necropolis. These alabaster vessels probably originated from present-day Yemen. Several similar vessels were found in burials along Arabian trade routes (Hassell, 1997), which might point to the importance of the location of Malhata along the trade routes. Additionally, two figurines made from ebony hardwood were found; they probably originate in North-Africa, possibly Egypt. All these imported vessels and small finds show the importance of the settlement by Tel Malhata during the Early/Middle Roman and later periods. The richness of the burial finds, shows also that the settlement at Tel Malhata must have been of considerable size already during the Middle Roman period.

During the first century CE a small Jewish settlement was established at Tel Ira. This settlement was abandoned towards the end of the first century CE, and it seems that during the second to third centuries CE, the site was unoccupied. Only toward the end of the Late Roman period was the site reoccupied (Beit-Arieh, 1999: 174).

During the Roman period, two major roads crossed the study area: a longitudinal road, running east to west from En Boqeq (Dead Sea) via Tel Malhata-Be'er Sheva to Gaza, and a north–south road that connected Mampsis with Tel Malhata

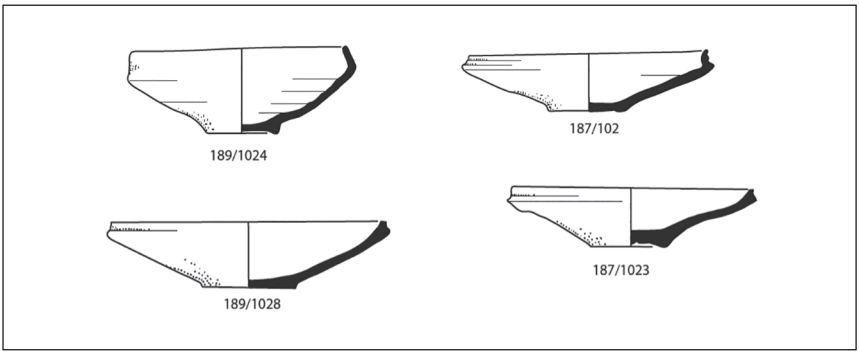


Figure 7.9 Nabatean carinated bowls from burials 187 and 189.
Excavation Tel Malhata (South), Permit No. A-7768/2016. Drawing: Hersch, Courtesy of the Israel Antiquities Authority.

Figure 7.10 Roman period figurine made from black hardwood (ebony).
Excavation Tel Malhata (South), Permit No. A-7768/2016. IAA archive: B-948111;
Photo: Amid, Courtesy of the Israel Antiquities Authority.

and continued northwards to Jerusalem (Ma'aleh Deragot). The intersection of these two roads occurred near Tel Malhata. According to Govrin, following the Bar Kokhba revolt, the Roman army adopted these roads for the use of their military forces and equipment (Govrin, 2016).

It seems that after the abandonment of most sites in the early second century, there was a phase of some 100 to 150 years with little activity in the area. Toward the end of the Late Roman period, the settlement activity started to rise again, which might be connected to the reforms by Diocletian and more stable political circumstances. Many sites were reoccupied, including Tel Ira and Tel Malhata. However, it seems that many settlements were only settled later in the Byzantine period, as was the case of the small village of Nahal Malhata (Beit-Arieh, 2003: 29–30), where the published pottery all seems Byzantine. As in previous periods, south of the Nahal Beersheva–Nahal Malhata line, few sites were dated to the Late Roman period.

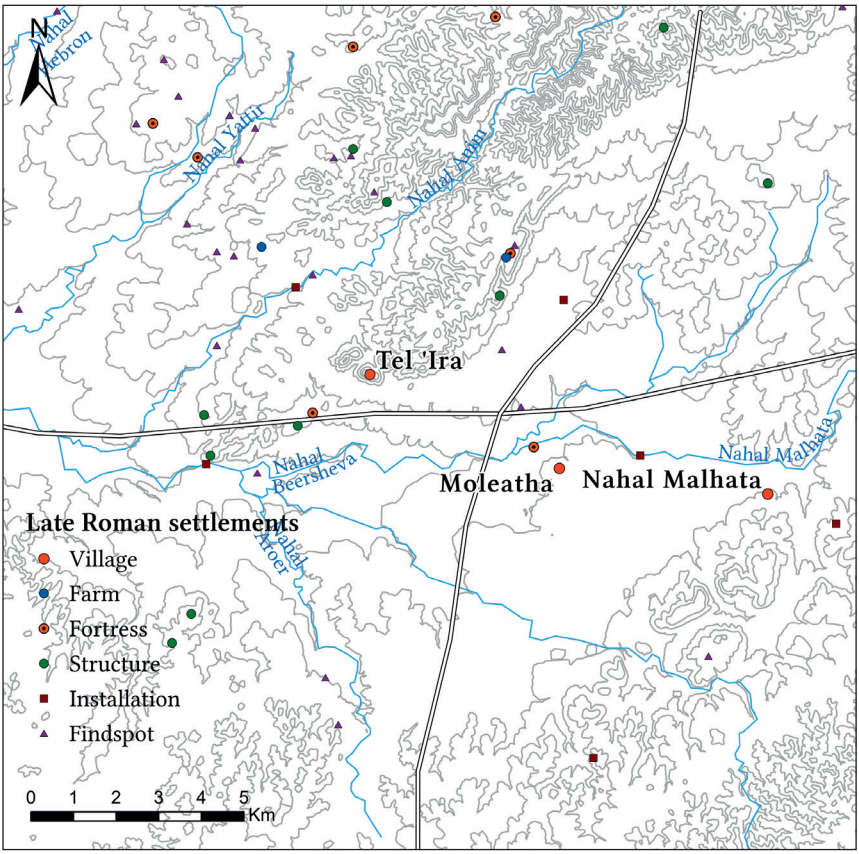


Figure 7.11 Late Roman sites of the eastern study area.

7.6 Byzantine period

During the Byzantine period, a large expansion in settlement patterns is evident in the eastern region, similar to the patterns observed in the western and central study areas. Specifically, there was a substantial increase in archaeological sites, which were larger in comparison to previous periods. The northern part of the study area is still more densely populated compared to the southern part; however, the southern part also saw a large increase in settlements during this period. It was found that 277 sites date to the Byzantine period, and the site density was 0.7 sites per square km. Additionally, the number of towns and villages is significantly higher than in previous periods. Large settlements existed at Moleatha, Tel Ira, Horvat Hur, Horvat So'a, and Horvat Qasif.

Tel Ira was resettled in the Byzantine period, and a large and dense settlement existed on the tell. According to Beit-Arieh (1999: 178), Tel Ira was an impressive city, which might have been the administrative center of the region. During the Early Byzantine period, Tel Ira served as a kind of fortress and later as a civil settlement and a monastic station (Ovadiah, 1999: 436). Several public buildings were located in the eastern part, including a large monastery with a church. Pottery finds show that the settlement flourished during the fourth to seventh centuries CE, especially during the sixth and seventh centuries CE (Fischer and Tal, 1999: 319). The monastery covered an area of about 800 square m and was located in the eastern side of the settlement. The rectangular structure consisted of 12 rooms, and a chapel was located at the east of the complex. Floors were paved with mosaics (Cresson, 1999: 88–96).

Despite the large settlement and monastic building, there were only two coins found dating to the Byzantine period, one fifth century CE coin and one early sixth century CE coin (Kindler, 1999: 440). About 300 meters north of Tel Ira, Har Bariya is located, and is slightly higher than Tel Ira. Har Bariya provided a good view of the surrounding area: Tel Ira, Tel Malhata, and Tel Masos were easily visible. The structure excavated on top of the mountain revealed the remains of a manor house from the Byzantine period. The farmhouse was probably occupied during the sixth to seventh century CE, and the structure was abandoned in the mid-seventh century CE (Cresson, 1999: 102). The large manor farmhouse was clearly somehow connected with the main site at Tel Ira.

Moleatha, the Byzantine settlement located at the foot of the Iron Age tell of Tel Malhata, was a large settlement. The area of Tel Malhata was occupied during the Chalcolithic, Bronze, Iron, Hellenistic, Roman, and Byzantine periods. Based on excavation and survey data, the size of the Roman-Byzantine period settlement of Tel Malhata was approximately 20 to 25 ha. On top of the tell, a fortress stood, overlooking the surroundings and the roads. The fortress was probably settled during the late third and fourth century, mainly during the Early Byzantine period. The large settlement southeast of the tell most likely also had a church, however, only indirect proof of this has been found (Di Segni 2015: 702–703). Several large domestic and public buildings, some with mosaic floors, as well as a necropolis with some 300 tombs, have been discovered in previous excavations (Gichon, 1979; Eldar and Baumgarten, 1993; Taliset et al., 2017; Nahliely and Fabian, unpublished). According to Eldar and Baumgarten (1993: 937), the settlement was a religious and agricultural center.

About 300 meters south of Moleatha, some 160 tombs were excavated in 2016 and 2017 which date from the Middle Roman to Early Islamic period (preliminary publication: Talis et al., 2017). Tombs were found in three locations. It can be assumed that there are also tombs located in-between these locations. However, no

inspections have taken place or trial trenching was necessary in those areas because there was no construction planned, or development had already occurred. In total, the area of the burials covers some 1.2 ha. This is only a small strip that has been excavated. It is assumed that further cemeteries are located surrounding the ancient town. Most of the burials were cist tombs, but several pit graves that date to the Middle/Late Roman period (see above) were also found. The cist tombs were made out of dressed limestone blocks, lined in the loess soil, covered with three to four limestone slabs. Tombs were lined in rows with a general east-west and northwest-southeast direction. Some of the burials had a floor of limestone slabs and others were without, but the burials were well preserved. In several tombs, grave goods (n = 26) were found, including jewelry, glass and pottery, clothing, weapons, and food. Some of the cist tombs had the remains of wooden coffins. Many of the skeletons had their head placed to the west and the feet to the east, which was common in Byzantine burial practices. The Byzantine Negev burial tradition continued into the Early Islamic period (Nagar and Sonntag, 2008). However, the burial posture did change: the faces of the dead were turned to face south toward Mecca (Nagar and Sonntag, 2008). Several of the excavated tombs had skeletons with their heads facing south, which might be an indication that part of the cemetery dates to Early Islamic burials.

Another large settlement from the Byzantine period was Khirbat Qasif, which was probably a town of ca. 20 to 25 ha. Several ancient remains were discovered during surveys and excavations. Musil (1907: 18) and Mader (1918: 225) reported the presence of three churches. They were discovered in the early 20th century during surveys, but at the time of writing, none of the churches have been excavated. Ovadiah (1970: 121) suggests that the northern church served as a monastery. According to Govrin (2016), residential buildings, cave dwellings, and cisterns were found during surveys. During excavations, a large winepress, an alley, residential complexes, cisterns, and a cemetery were excavated (Govrin, 1986; Israel and Shuster, 2000; Shmueli, 2012; Lifshits and Fraiberg, 2013; Fraiberg and Tepper, 2017).

A large village existed at Horvat Hur, which was about four ha in size (Govrin, 1991: 20*). The settlement was located in the southern Hebron hills, overlooking the Be'er Sheva–Arad basin, and included at least two large churches, a monastery, defense towers, buildings, and cisterns (Govrin, 1991: 20*; Figueras, 1995: 415). Several excavations have been conducted in and around Horvat Hur, revealing the remains of a monastery, farmhouses, watchtowers, agricultural installations, and cisterns. In 2014, Varga excavated the remains of the monastery measuring 28 × 20 meters and consisting of several halls, including a dining and prayer hall. The dining and prayer hall were paved with mosaic floors. Four inscriptions were found that date the monastery to the mid-sixth century CE (Varga, 2015). In

Horvat So'a, a village of ca. one to two hectares, a large Byzantine church and an adjoined rectangular structure were found—the building is possibly a monastery (Govrin, 1991: 97–99; Figueras, 1995: 417). The complex includes several rooms and a defense tower (8 × 8 meters). In addition to this complex, several buildings were found to the north of the site (Govrin, 1991: 100).

At Tel Masos, a monastery was built, dating between the Late Byzantine and the Umayyad periods. According to inscriptions, the monastery was built in the seventh and early eighth centuries CE. The building had a rectangular plan and a crypt for burials. The living quarters of the monks were built around a rectangular courtyard. The church had a rectangular apsis, which is typical for Syrian churches (Kempinsky, 1993: 989).

As visible per the distribution map, the Byzantine sites are clustered around a few centers in the eastern northern Negev. These are Tel Shoqet/Hura, Tel Ira, Tel Malhata, Tel Yeshua/Horvat So'a, and Khirbat Qasif. The majority of these settlements are located at important strategic locations close to the major roads, either the lateral road (from the Dead Sea to Gaza) or the north–south road (Mampsis to Jerusalem). Furthermore, clustered around each center are numerous small sites, hamlets, farms, and installations. Magness has analyzed the pottery of the sites located in map 139 and, according to her, most pottery dates from the fifth or sixth to the seventh century CE. Only a small part of all sites, about one-third, dates to the Early Byzantine or the whole Byzantine period. This is most likely also true for the other three survey maps (Figure 7.12).

At least 13 Christian cult sites have been found in several locations that date to the Byzantine period. All larger settlements had churches, and/or some also contained monasteries. There were a couple of isolated monasteries. Cult sites have been discovered at Horvat Hur, Tel Ira, Tel Masos, Horvat So'a, Khirbat Qasif, and Tel Yeshua. The Christian cult sites in the eastern study area were built in the fifth to sixth centuries CE (see Appendix 5—Cult sites in the study areas: Christian Cult sites—Churches). All the cult sites are located in the northern part of the study area. This is similar to findings in the Be'er Sheva area. No synagogues have been found so far in the eastern study area. However, to the north of the study area, several synagogues have been discovered that date to the Byzantine period, particularly on the slopes of the Hebron mountains (cf. Horbat Rimmon (Kobrin, 2019), Horbat 'Anim (Amit, 2003), Khirbet Susiya (Yeivin, 1974), and Eshtamoa (Yeivin, 2004)).

During the Byzantine period, a few large settlements existed in the eastern study area. The largest were clearly the towns of Tel Malhata/Moleatha, Kirbat Qasif, and Tel Ira, and large villages like Horvat Hur. The settlements at Moleatha and Khirbat Qasif started in the Late Roman period, and the site of Tel Ira was reoccupied at the same time. The highest number of Byzantine settlements and the

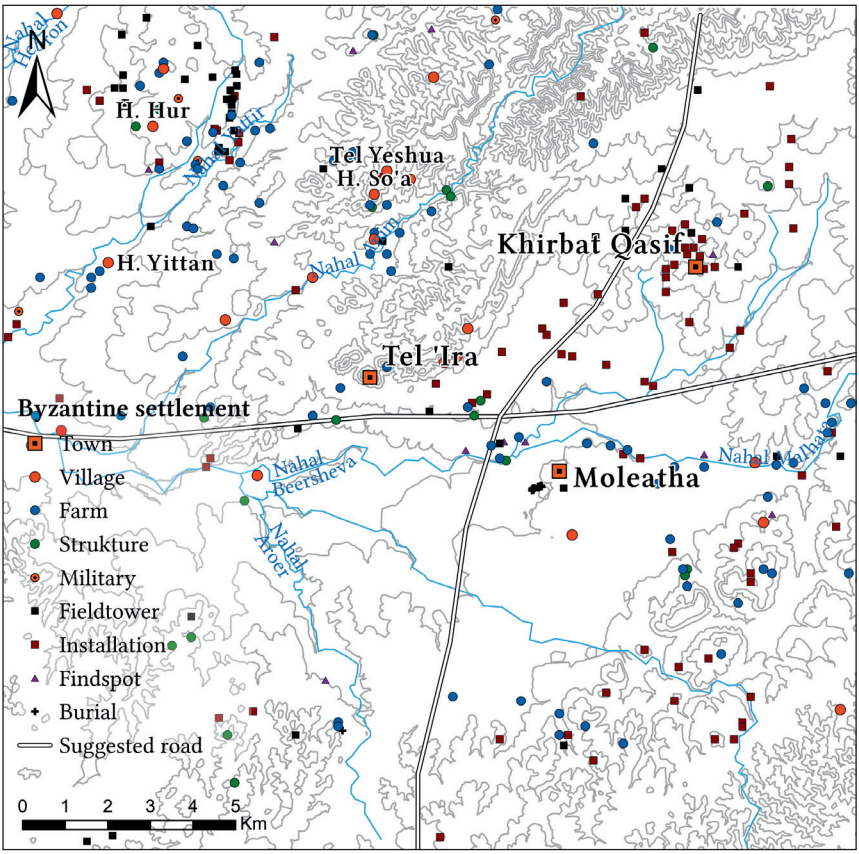


Figure 7.12 Byzantine period site distribution in the eastern study area.

largest extent of these sites was most likely from the late fifth and sixth to the seventh centuries CE. Surrounding the larger settlements, a high number of installations (n = 83) and field towers (n = 45) were found. Furthermore, several large rural monasteries were found in the study area. The large settlements were located close to important roads.

7.7 Early Islamic period

As evidenced from the survey data, the number of settlements dropped from 277 during the Byzantine period to 49 during the Early Islamic period. The settlement density was 0.12, which is comparable to the western study area. Govrin (1991: 20*) argues that most of the tells (Tel Shoqet, Horvat Hur, Horvat Yittan, and Tel Ira) continued to be densely occupied during this period. Furthermore, the Late Byzantine ceramic assemblage continued to be used at the beginning of the Early Islamic period (Govrin, 2016). Therefore, the differentiation between Late Byzantine and Early Islamic period sites is difficult to establish. Beit-Arieh (2003: 14*) states that it is possible that some of the Byzantine settlements continued into the Early Islamic period. During the Early Islamic period, large farms attest to a continued occupancy from the Byzantine period on. The decrease in settlements seems to have occurred only from the early eighth century onwards.

During the Early Islamic period, the settlement on Tel Ira continued, although restricted in size, concentrated at the eastern end of the site. The monastery at Tel Ira had, during the seventh–eighth century, no further ecclesiastical function (Cresson, 1999: 95). The pottery finds of Tel Ira show a continuation from the Byzantine period pottery in the seventh century to typical Early Islamic pottery dating from the eighth to the tenth century CE (Fischer and Tal, 1999: 319). The remains show no destruction layer, meaning the site was abandoned sometime in the Early Islamic period.

Tel Masos is located on the northern bank of Nahal Be'er Sheva, a few kilometers west of Tel Ira. The tell was occupied during the Chalcolithic period and the Iron Age. About 100 meters to the west of the main settlement, a smaller area was settled, including a Syrian Nestorian monastery (Kempinski, 1978). The rectangular monastery covered an area of some 300 square m and included living quarters, a Syrian church, and a burial crypt (Magness, 2003: 57). No coins or other small finds have been published, therefore, the structure has only been dated based on the pottery. The Nestorian monastery was probably established in the sixth to seventh century CE and was then abandoned around the late seventh or early eighth century CE (Magness, 2003: 57), which was the Umayyad period. Magness suggests that, based on the fact that no coins or other valuables were found but whole vessels were left behind, the monastery was abandoned hastily, however, there are no signs of destruction (Magness, 2003: 58).

At Khirbat Qasif, several recent excavations were conducted, have brought to light remains dating to the Early Islamic period. In 2009, Shmueli (2012) conducted an excavation discovering the remains of an industrial winepress that was in use between the fifth and ninth centuries CE. Furthermore, an alley and parts of two residential buildings were exposed on the western side of the winepress, and

ceramic finds from the alley date from the sixth to the tenth centuries CE. A structure with an open courtyard on top of the winepress was excavated, and parts of the winepress continued to be used, as the collection vat of the winepress was filled with ashlars and architectural elements (including a lintel decorated with a cross). Pottery sherds found within the fill of the collection vat indicated that the winepress went out of use somewhere in the eighth or ninth century and was afterward abandoned.

A high concentration of glass finds have been found during the excavation, and similar vessels have been found in Early Islamic urban centers such as Ramla, Bet She'an, Tiberias, and Caesarea (Gorin-Rosen, 2012). These finds point to the importance of Khirbat Qasif during the Early Islamic period. Fraiberg (Fraiberg and Tepper, 2017) excavated a large dovecote cave, which is interesting, as such caves are more commonly found further north in the Judean Foothills. Within the study area, only built dovecote towers, mainly from the Byzantine period, are known. The dovecote at Khirbat Qasif dates to the seventh–eighth centuries CE. Next to the dovecote, a cave with a staircase and two walls was found—the remains date from the ninth to the eleventh centuries CE. Furthermore, a burial cave was discovered, which remains unexcavated (Fraiberg and Tepper, 2017). In the vicinity of Khirbat Qasif, a small square farmhouse (ca. 8 × 8.5 meters) was discovered, which was part of the agricultural hinterland of Khirbat Qasif during the Abbasid period (Lifshits and Fraiberg, 2013). In 1997, Israel and Schuster (2000: 92*) excavated two buildings with large courtyards, dating ceramic finds mainly to the Umayyad and Abbasid periods. The findings show that Khirbat Qasif was also a large settlement during the Early Islamic period, though it seems that settlement activity ceased between the tenth and eleventh centuries CE.

At Tel Malhata, a fortification was discovered on top of the tell, dating to the Early Islamic period, similar to the fortifications at Tel Sheva (Avni, 2014: 259). At Tel Sheva, the fortress on top of the tell was built during the second century CE and abandoned somewhere during the fourth century, then reoccupied during the Early Islamic period. Similarly, at Tel Malhata, the fortress was abandoned in the fourth century and reoccupied in the Early Islamic period. The large settlement at the foot of the tell continued during the Early Islamic period. The pottery found during the excavations dates well into the Early Islamic period (Avni 2014: 259). Furthermore, in the recent salvage excavations (Talis et al., 2017) conducted by the IAA (directed by S. Talis), a cemetery was located some 300 meters south of Tel Malhata/Moleatha. Some 150 tombs were excavated, and several burials were found that adhered to Early Islamic burial traditions. The Byzantine burial traditions continued into the Early Islamic period, but the position of the head was different, as noted earlier—it was turned toward Mecca (south), or the body was placed to the south (Figure 7.13).

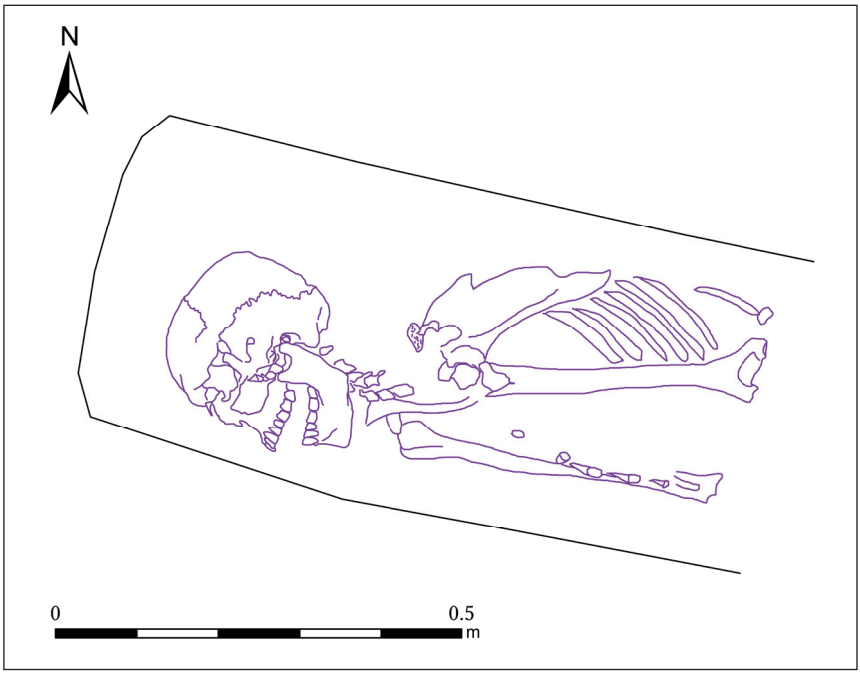


Figure 7.13 Possible Early Islamic (Muslim) burial.
Deceased placed on its side, head facing south. Burial excavated on March 14, 2017, at a cemetery south of Tel Malhata. Drawing: Alajdem, Courtesy of the Israel Antiquities Authority.

As in the central study area, several large farmhouses were built during the Early Islamic period. At Hura, a large farmhouse, located on the southern fringe of the Yattir range, was excavated (1997 and 2009). The farmhouse consisted of a square structure with an inner courtyard surrounded by several rooms. Two construction phases are discernable. According to the excavator, the building dates from the seventh to the late eighth centuries CE (Peretz, 2012). The pottery finds include FBW and molded Buff ware. The FBW cups published (Peretz, 2012: Figs 14–16) seem to belong to Form 1 E, which generally dates to the eighth–ninth century CE (Magness, 1993: 196). The Buff (Mafjar) ware (Peretz, 2012: Figs. 29, 30, and 34) generally date to the late eighth–early ninth century CE (Cytryn-Silverman, 2010: 106–107). The glass finds date from the Umayyad to the Abbasid period (Peretz, 2012; Winter, forthcoming). Based on the findings, it is possible that the farmhouse was settled later than the end of the eighth century CE, possibly in the ninth or even the tenth century CE.

In 2011 at Nahal Anim, Fraiberg (2017b) excavated a large farming estate. The settlement was located on a small hill. Three residential units were excavated, and probably the settlement represents a small farming estate. The site dates from the Late Byzantine to the mid-ninth century CE. As in other similar large farmhouses, the remains indicate two construction phases, the second one, probably dating to the mid-eight century CE (Fraiberg, 2017b). The glass finds date to the Umayyad and Abbasid periods, the majority to the eighth and ninth century CE (Winter, forthcoming).

Two possible mosques were found during surveys and excavations. At Nahal Amin, a large farmstead (30 × 70 meters) was found during the survey. The large structure was built in the Early Islamic period, and no Byzantine period remains were found. The farmhouse was divided into two units: the southern unit comprising 20 rooms arranged around a courtyard; the northern part connected through

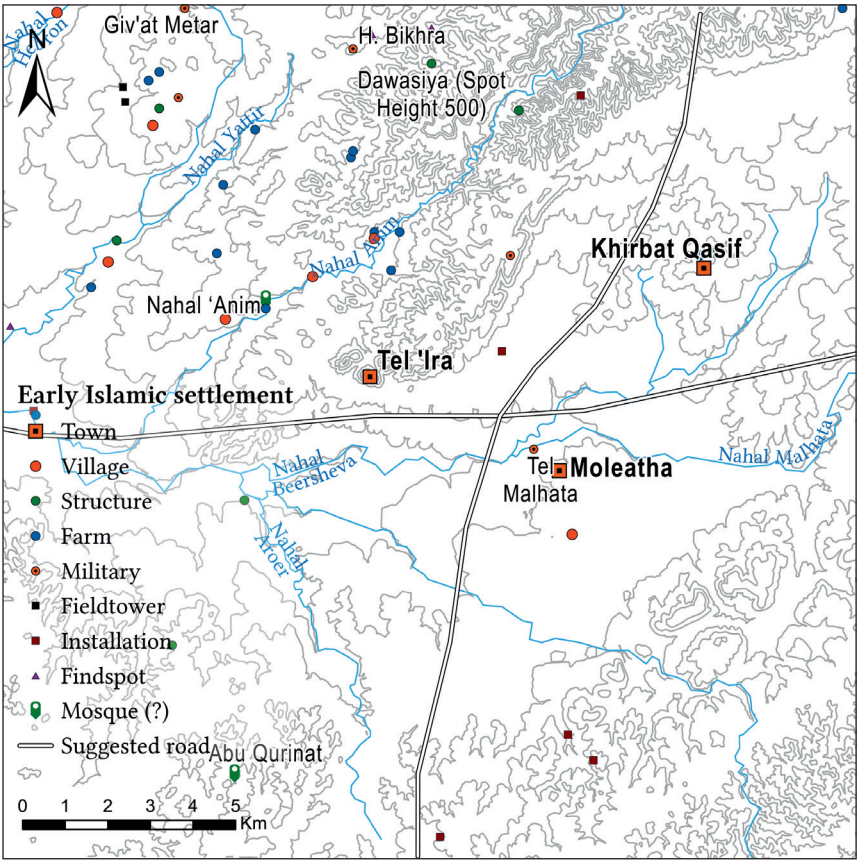


Figure 7.14 Early Islamic period settlements in the eastern study area.

a 15-meter corridor consisting of several adjoining courtyards and rectangular rooms (Govrin, 1991: 135–36). At the southern wall, a rectangular room with a niche toward the south was discovered. Pottery finds include Buff ware, and according to Magness, the illustrated as well as the unillustrated pottery dates to the eighth to ninth centuries CE, though some could date later (Magness, 2003: 52).

During excavations at Abu Qurinat, several remains, including animal pens, installations, buildings, and dwelling caves, as well as a possible open mosque, were excavated. The oval structure with a prayer niche to its south (*mihrab*) was located on a hilltop (Kobrin, 2020). Similar structures have been found in the Negev Highlands (Avni, 1994: 86). Magness (2003: 65) suggests a third possible mosque at the monastery in Horvat Hur, where at the southern wall a possible *mihrab* was added. However, the site was excavated in 2014, and no such transformation of the monastery has been reported (Varga, 2015; Varga and Rasiuk, 2017). The dating of the other two structures is difficult. The structure at the farmhouse at Nahal Amin, where the mosque is incorporated, dates to the eighth to ninth centuries CE, possibly later. The mosque could have been added at any time to the existing structure; only an excavation would reveal a more exact date. The building at Abu Qurinat is even more difficult to date as there were almost no pottery sherds, or other small finds, found during excavations. Therefore, a more exact date of construction is impossible to establish.

Based on the survey and excavation data, many sites continued from the Byzantine into the Early Islamic period. New sites were settled, mainly large farmsteads. Several sites were occupied until the eighth–ninth century CE or later (see Magness, 2003). Furthermore, the larger settlements continued to be occupied, and some underwent changes in the Early Islamic period—for example, Tel Ira, where the settlement concentrated only in the eastern part. It seems that the monasteries went out of use at some point in the late seventh or early eighth centuries CE: Hura (Varga, 2015), Tel Ira (Beit-Arieh, 1999; Magness, 2003), Tel Masos (Fritz and Keminski, 1983; Magness, 2003), and Tel Yeshua (Govrin, 1991; Magness, 2003). However, none of the structures showed destruction layers. Two possible mosques were discovered in the study area, but it is unclear when they were constructed.

7.8 Coin finds from the eastern study area

The coin-finds from the eastern study area comprise 126 coins, and 92% are from only three sites: Tel Aroer, Tel Ira, and Tel Malhata. Tel Aroer was only settled until the Early Roman period and then abandoned; Tel Ira had a dense settlement

during the Byzantine period, but almost no coins date to this period (n = 4); and the main settlement on top of Tel Malhata ended sometime in the fourth century CE. These facts influence the statistical probability of coin-finds from the eastern study area. During Ptolemaic and Seleucid rule, the southern boundary of the toparchy of Idumaea passed through the Be'er Sheva–Arad basin. Many of these coins appeared during the third to the mid-first century BCE, especially during Seleucid rule in the second century CE, when a peak is shown. A relatively high number of coins have been found from the Hasmonean period. Additionally, there are many sites that were only built during the Hasmonean period, including the fortresses and manor houses with towers in the southern Hebron hills.

Many coins date from the third century to the first century BCE. No coins were found dating to the years 50 CE to 250 CE, while many coins have been found from the middle of the third century CE. Although in this study area, the coins are only from a few sites, the strong rise in the late third–early fourth centuries CE is mostly connected to a general trend in the eastern study area. This means that settlement activity grew substantially, which is also visible in the site numbers. The complete lack of sixth- and seventh-century coins is connected to the fact that a too-small sample of data was available and, furthermore, that although at Tel Ira, a large settlement existed during this period, as shown by the pottery finds, not many coins were found. Pottery finds of surveyed sites showed that many of the sites date to the late fifth and sixth to the seventh century CE. Therefore, Figure 7.15 only gives a limited picture of the settlement occupation in the eastern study area.

As evident in Figure 7.15, although only 3.4% of all sites date to the Hellenistic period, almost 40% of the coin finds date to this period. Over 63% of all sites date to the Byzantine period, however only 33% of all coins date to this period. This imbalance in the number of coins and sites dating to a specific area is connected to the fact that the coin finds in this graph are from only a few sites. In the central study area, the coin finds are from several sites (n > 40) so, the number of coins correlates with the number of sites.

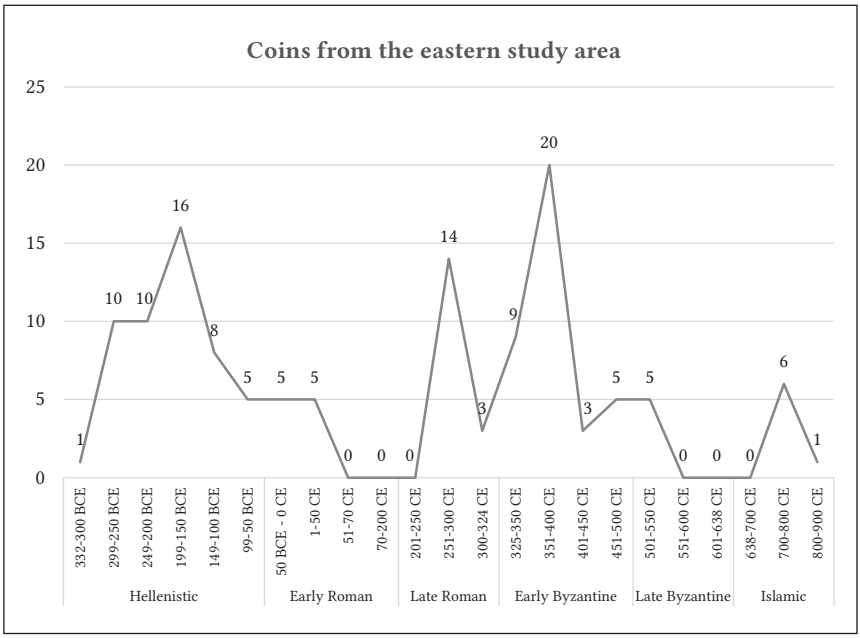


Figure 7.15 Coin finds from the eastern study area.

Coins from Tel Ira, Tel Malhata, Tel Aroer, Horbat Qasif, and Hura (Kindler 1999; 2015; Nikolsky, 2008; Barkay, 2011; Shmueli, 2012). Coins according to percentage: Hellenistic 39.7%, Early Roman 7.9%, Late Roman 13.5%, Early Byzantine 29.4%, Late Byzantine 4% and Early Islamic 5.6%. Roughly 33.3% of the coins date between 300 and 638. Coin data from the IAA internal database (*Menorah*).

8 BYZANTINE POPULATION, LAND USE, AND THE CONNECTION BETWEEN SETTLEMENTS IN THE NORTHERN NEGEV

8.1 Introduction

Roman-Byzantine Palestine was basically an agrarian economy, with rural settlements spread throughout the region (Hirschfeld, 1997: 33). Within the study area, the large majority of sites from the Byzantine period include villages, hamlets, farmhouses, and agricultural installations. However, a percentage of the population of the northern Negev lived in cities and towns, including the large city of Be'er Sheva. An urban center such as Byzantine Be'er Sheva, with its extensive political and economic facilities (churches, monasteries, public buildings, bathhouses, marketplace, and military camp), impacted land-use strategies and settlement density as well as the settlement types in the hinterland. Settlement density and settlement types varied according to their distance from the urban center. During the Classical period, the city was a place in which the public authority (i.e., a city council, the provincial governor, a military commander, or a bishop) resided (Zanini, 2003: 209). Be'er Sheva was an urban and military center located at the crossroads of two important roads connecting the north and south and the Mediterranean coast with the Dead Sea. To understand the implications of urban centers for the surrounding hinterland, it is important to establish the approximate population size.

Several methods exist for calculating the population of an urban settlement, and some of these can be applied to the northern Negev. More specifically, re-

searchers have suggested the following proxies for population size: site size (Frankfort and Delougaz, 1950; Adams, 1965; Byatt, 1973; Wilkinson, 1974; Broshi, 1980, 1993; Shiloh, 1980; Hassan, 1981; Bairoch, 1988), number of households (Kuckelman, 2000), average floor area of a dwelling (Naroll, 1962; Brown, 1987), average number of people per dwelling (Alston, 2002), and average number of rooms per dwelling (Hill, 1970; Adler, 1990). Two methods were used in the present study: the population was calculated based on (1) the size of the site for urban settlements and (2) the average number of people per dwelling for the villages, as determined based on ethnographic analogies.

It must be acknowledged that the exact size or number of dwellings was not known in all cases, as most site data are based on surveys. However, where additional excavation data were available, the respective number of dwellings was calculated based on assumptions regarding possible site size. In cases where no data were available, the average number of dwellings within the three study areas was used. As this study sought to analyze settlement size, hierarchy, land use, settlement patterns, and the connection between the settlements, rather than calculate the total population of northern Negev, these assumptions were considered appropriate for the calculations. The population number was calculated solely to establish the relationship between the spatial size of the archaeological cities, towns, and villages and their minimum populations during the Byzantine period.

8.2 Urban population

Prior urban population density estimates vary widely, ranging from 100 to over 1,000 people per hectare (see Table 8.1). The majority of these estimates are based on ethnographic studies such as modern data collected during the first half of the twentieth century from cities such as Jerusalem, Aleppo, Tripoli, Damascus, and Baghdad (Adams, 1965; Broshi, 1980; Shiloh, 1980), while others are based on archaeological and historical considerations, or a mix of all these considerations. Of course, establishing the population of sites in antiquity is not an exact science and depends on the methods, theories, and parameters available. As the population number is only calculated to establish the relationship between the spatial size of a city, town, and village and their suggested population, these population estimates are considered sufficient.

The formula to estimate the population of a given settlement is fairly simple. First, the spatial area of the city or town must be established, and then its total population can be calculated as follows: site area × density coefficient = city pop-

Table 8.1 Urban population density estimates.

Estimates based on different studies (ranging from 100 to over 1,000 people per ha).

Author	People/ha	Remarks	Methodology
Adams (1965)	200	Population of ancient Mesopotamian cities	Ethnographic study based on modern cities such as Baghdad as well as towns and villages
Bairoch (1988)	150	Cities of antiquity; margin of error: 20–25%	Study based on preindustrial societies
Broshi (1980)	400* (300)	Population of Palestine in Rom.-Byz. period (deducting 25% for public and open spaces)	Archaeological considerations and ethnoarchaeological parallels
Byatt (1973)	1,000	Roman Jerusalem	Historical (Josephus Flavius) and ethnographic studies
Frankfort and Delougaz (1950)	197–494	Near East	Ethnographic study based on size of houses in the Near East
Peterson (2005)	100	Towns in Palestine during the Byzantine to early Ottoman periods	Historical and ethnographic study on medieval and Ottoman sites
Shiloh (1980)	400–500	Urban population of Iron Age Palestine	Ethnographic study based on density of contemporary settlement in various "old cities" (Damascus, Aleppo, Tripoli, Jerusalem)
Wilkinson (1974)	1,080	Jerusalem second cent. CE	Archaeological considerations based on water usage in Jerusalem

ulation, with the density coefficient based on the data in Table 1 (Shiloh, 1980: 25; Chase-Dunn et al., 2005: 97). As previous estimates vary significantly, this study followed the urban population density estimates of Bairoch (1988), as they are among the lowest. The population estimate given by Bairoch is 150 people per ha, with a margin of error of 20–25%, meaning the minimum population estimate is 112.5 people/ha the maximum is 187.5. These numbers were used to establish the population numbers of the city and towns in the northern Negev.

The population of a given village was calculated based on the average number of people per dwelling. This average number varies between six and more than 10.

In an ethnoarchaeological study conducted in Iraq, Kramer (1982: 179) calculates the average number of people per dwelling to be between 6.8 and 11.3. Similarly, Alston (2002: 70), who bases his average number of people per dwelling on research concerning Roman-Byzantine Egypt, finds the average number of occupants per dwelling to be between 7.61 and 7.78. In the present study, we used the estimated average Alston (2002) suggests. Although these numbers were calculated for an urban population, and while the large farmhouses found in the northern Negev likely housed more people per dwelling, there were also many smaller farms and structures that probably had fewer people living in them. To simplify our calculations, the figure of 7.5 people per house was used. However, this calculation was only possible for those settlements for which the number of dwellings has previously been established through surveys, such as Nahal Noqedim (Baumgraten, 2014: site 40) or Horvat So'a (Govrin, 1991: 97–9), and those that have been (partly) excavated, such as Tel Sheva and Khirbat Amra (Tahal, 1996; 2000). For around 60% of the villages, the approximate number of dwellings could be established based on survey or excavation data. In cases in which this was not possible, the average number of dwellings (n = 7) for villages was used instead. This calculation was only important in terms of elucidating the relationship between Byzantine Be'er Sheva, the largest city in the northern Negev, and the villages and farms surrounding it.

8.3 Population size of Be'er Sheva

The area of the Byzantine city of Be'er Sheva was determined using the KDE method (see Chapters 4.6 and 6.6.1). With regard to the KDE method, the minimum (40 ha), medium (90 ha), and maximum (140 ha) extents of the ancient city were calculated. These different site sizes were then used to estimate the population. As previously discussed, the urban population density per hectare was estimated using previous research, particularly the population density estimation by Bairoch (1988) of 150 people per hectare, with a margin of error of 20–25%. Based on this population estimate, the ancient city of Be'er Sheva had a population of approximately 4,500 to 26,250 people.

However, the minimum size of 40 ha included only the center of the city, and, as there are several churches and public buildings located outside this 40-ha parameter, the minimum calculation is hypothetical and, according to archaeological findings, unlikely. The real size of the city was likely around 90 ha or more; therefore, we can consider the population to be between 10,125 and 26,250 people. This means that the minimum population of Byzantine Be'er Sheva was between

10,000 and 15,000, and the maximum numbers would fall between 16,000 and 26,000. The city of Be'er Sheva most likely saw its largest extent as well as a peak in population during the sixth–seventh century CE, based on findings, as well as the dating of churches built in Be'er Sheva (Figure 8.1).

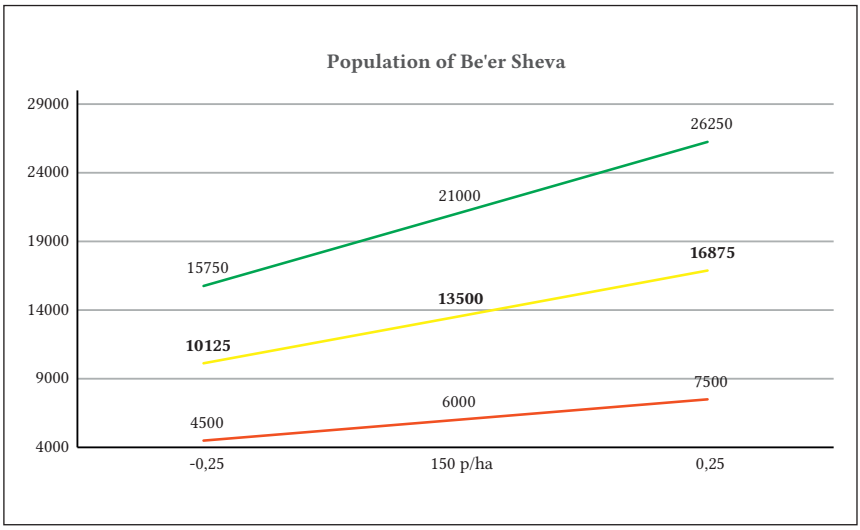


Figure 8.1 Minimum and maximum population of Be'er Sheva.
Population numbers of the Byzantine city of Be'er Sheva based on the population estimate of Bairoch (1988: 22–23) for a city size of 40 ha (red), 90 ha (yellow), and 140 ha (green).

If calculating the population according to Broshi, who has researched and calculated the Byzantine population of the Negev and suggests a population density of 400 persons/ha minus 25% for public spaces (= 300), the total population of Byzantine Be'er Sheva would be between 27,000 and 42,000 persons. However, these numbers seem too high.

In order to establish a site hierarchy of the northern Negev towns and large villages the respective population sizes of these settlements were also calculated. For calculation the population estimates by Bairoch (1988: 22–23) regarding cities in antiquity were used. Based on similar calculations to those for the city of Be'er Sheva, the other larger towns and villages located within the study area—Ma'on, Khirbat Irq, Khirbat Jemmeh, Tel Malhata/Moleatha, Tel Sheva, Khirbat Amra, Khirbat Qasif, Horvat Hur, and Be'er Shema—likely had respective populations of less than 5,000 inhabitants.

Table 8.2 Minimum and maximum population of Byzantine towns and villages.

Towns and large villages within the study area, based on the population estimates by Bairoch (1988: 22–23) regarding cities in antiquity.

Site	–25%	150 p/ha	+25%
Ma'on	3,937	5,250	6,562
Khirbat Jemmeh	3,375	4,500	5,625
Khirbat Irq	2,250	3,000	3,750
Tel Malhata/Moleatha	2,700	3,600	4,500
Khirbat Qasif	2,250	3,000	3,750
Tel Sheva	900	1050	1500
Khirbat Amra	787	1200	1312
Horvat Hur	450	600	750
Be'er Shema	337	450	562

Analyzing the urban population of the cities and towns of the northern Negev as well as the southern coastline (Gaza and Ashkelon), according to settlement area, provides the following picture. The city of Gaza,[30] an important port city in the area, was by far the largest in the region, followed by Ashkelon, which seems to have had a size similar to Be'er Sheva, even without including the outskirts of the city (e.g., Ashkelon Barnea). In addition to Be'er Sheva with its estimated population between 10,125 and 26,250 (see above), the population of Elusa, an important city in the Negev and a bishop's See, was estimated at about 5,000 people (Schöne et al., 2019: 142). The population density estimates by Bairoch (1988), as shown in Table 8.1, confirm this number, with a population range of 5,062 to 8,400. A similar size has also been calculated for Eleutheropolis (Beit Guvrin), with a population of 4,500 to 7,000 people. The towns and large villages of the northern Negev that are located within the study area provide a population range spanning from some 450 in Be'er Shema to some 5,000 in Ma'on (Figure 8.2). All cities and

30 The calculated size of the city of Gaza includes Anthedon, Maiumas-Gaza, and Gaza. According to Broshi (1980: 4), Anthedon and Gaza each had a spatial size of 90–120 hectares and Maiumas-Gaza was 40–60 hectares.

Figure 8.2 northern Negev with main cities and towns according to population size. Population size was calculated according to the population density estimation used by Bairoch (1988: 23) for cities of antiquity. The spatial size of settlements outside the study areas (Gaza, Ashkelon, *Eleutheropolis* [Beit Guvrin], and Mamshit) were taken from Broshi (1980) and, in the case of Elusa, from Schöne et al., (2019). The suggested roads were taken from McCormick et al., (2013). Background: Hillshade from 12.5 m-resolution ALOS-PALSAR DEM.

towns are located along one of the major ancient roads, except for Khirbat Irq and Khirbat Jemmeh. Many were located at crossroads, including Be'er Sheva, Tel Malhata/Moleatha, Elusa, Mashit, and Gaza.

8.4 The hinterland of Be'er Sheva

In his book *Isolated State* (1966 [1826]), the German agronomist Von Thünen proposed a land use model with a central market located in the middle of a flat isotropic landscape, and its hinterland organized in concentric land-use bands. His model is based on the assumption that what farmers produce varies by distance

from the town and maintains that the cost of transportation governs the use of land. Von Thünen's system of land use from the urban center outwards is comprised as follows:

1) Horticulture and dairy farming. This occurs in the ring closest to the city as vegetables, fruits, milk, and other dairy products must get quickly to the market.
2) Silviculture, timber, and firewood would be produced for fuel and building materials.
3) Extensive field crops.
4) Livestock ranges (Chisholm, 1968: 20–32; Hagget et al., 1977: 205–7; Goodchild, 2007: 31–35).

Of course, this is an idealized model, and landscape morphology, secondary marketplaces, and roads influence this model in the real world. The hinterland of Byzantine Be'er Sheva is also organized in land-use bands. Three are discernible based on the findings of surveys and excavations:

Land-use belt 1: A large number of tombs can be found in the area immediately surrounding Byzantine Be'er Sheva. This high number of burials formed the necropolis of Late Roman to Early Islamic Be'er Sheva.

Land-use belt 2: An area of ca. 3,000 ha, which contains almost no archaeological sites except for a few installations, tombs, and cisterns. The main part of this area is covered today by the modern city of Be'er Sheva. This part of the city has been built from the 1950s onwards, but most of the area encompasses newer neighborhoods. As a result, archaeological remains would have been discovered during the construction of these areas. In other parts of the city developed during the same period, including the area of the university and the northern train station, a large number of archaeological sites have been discovered. Therefore, this area can be considered "empty" of archaeological sites dating to the Byzantine period.

Most likely, this area would not have been used for grain production,[31] because it would probably only have produced enough for 1,500 to 3,000 people—

31 According to Broshi (1983: 422), the minimum amount of land needed in Roman-Byzantine Palestine to feed one person in terms of grain production was one hectare. Other studies suggest that, in dry farming areas, 1.5 ha were required (Chisholm, 1968; Zaccagnini, 1975). Notably, production varies widely between "good" and "bad" years; based on a study conducted in modern Jordan, "production in a good year may be seven times that of a bad one" (Antoun, 1972: 8).

a fraction of the city's population. Furthermore, the remains of farmhouses and agricultural installations would have been found during surveys and excavations if they had existed. The archaeological findings in the outskirts of the city point to a different usage of the area surrounding Be'er Sheva. To the west of Byzantine Be'er Sheva, a large winepress was excavated (Sonntag, 2001: 115*–116). To the south of the city, a large complex was excavated, including buildings, dovecote towers (Michael and Tepper, 2021), and a winepress (Haimi, 2008). The winepresses were built in close proximity to the city.

Other dovecotes have been found surrounding the city of Be'er Sheva, in Nahal Beqa (Eisenberg-Degen, 2017), and to the west of the city (Korbrin and Tepper, 2017). The pigeon fertilizer of the dovecotes was most likely used for orchards rather than for grain, especially as the amount of fertilizer available was much too small to satisfy the needs of dry farming. As the winepresses were located close to the city, we can assume that the grapevines were probably located close to the city as well. That is, the "empty" area around Be'er Sheva was probably used by the city's inhabitants for orchards and vegetable gardens. This argument is supported by the winepresses and dovecote towers. A more distant area, where the villages and farmhouses are found, was used for grain production. Most of the city's population likely worked in the surrounding fields. This proposal is also supported by Scheidel (2007b: 79–80), who claims that most (more than 80%) of the urban population would have farmed land in the surrounding areas.[32]

Land-use belt 3: The area of orchards and vegetable gardens was followed by an area of villages, farmhouses, and field towers. This area is located between three and six km from the city of Be'er Sheva. Villages surrounding Be'er Sheva were engaged mainly in agriculture, as many installations and farming terraces (especially in the northern Goral hills) have been found. It seems that animal husbandry played a marginal role (cf. Figueras, 1980: 152; Ilan, 1980: 29; Ustinova and Nahdhoni, 1994: 170). In the study area, only a handful of animal pens have been recorded during surveys and excavations. The larger villages are all relatively close to the city. This allows the population of the villages and farms access to the marketplace in Be'er Sheva.

Three types of farmhouses can be found surrounding the city of Be'er Sheva: (1) simple farmhouses (50–100 square m); (2) large complex farmhouses (150–500 square m); and (3) small square farmhouses and field towers (9–25 square m). The

32 "There is no good reason to believe that more than one person in eight would have been permanently or predominantly engaged in non-agrarian labor" (Scheidel, 2007: 80).

large and more complex farmhouses are comprised of several rooms and served most likely as a residence in the peripheral area (Haiman and Fabian, 2009: 45). Simple farmhouses included two to three rooms and probably also served as a residence. Haiman and Fabian (2009: 45) argue that the small square field towers served as watchtowers over agricultural fields belonging to residents of the town. However, it seems that most field towers are located in the north of Be'er Sheva, close to villages. It is therefore possible that most of the field towers belonged to villages and large farming estates rather than to the population of the city (Figure 8.3).

We can conclude, therefore, that the city or Be'er Sheva was not supported exclusively by its agricultural hinterland but also needed a village hinterland to support its population. A distance analysis, based on the location of the archae-

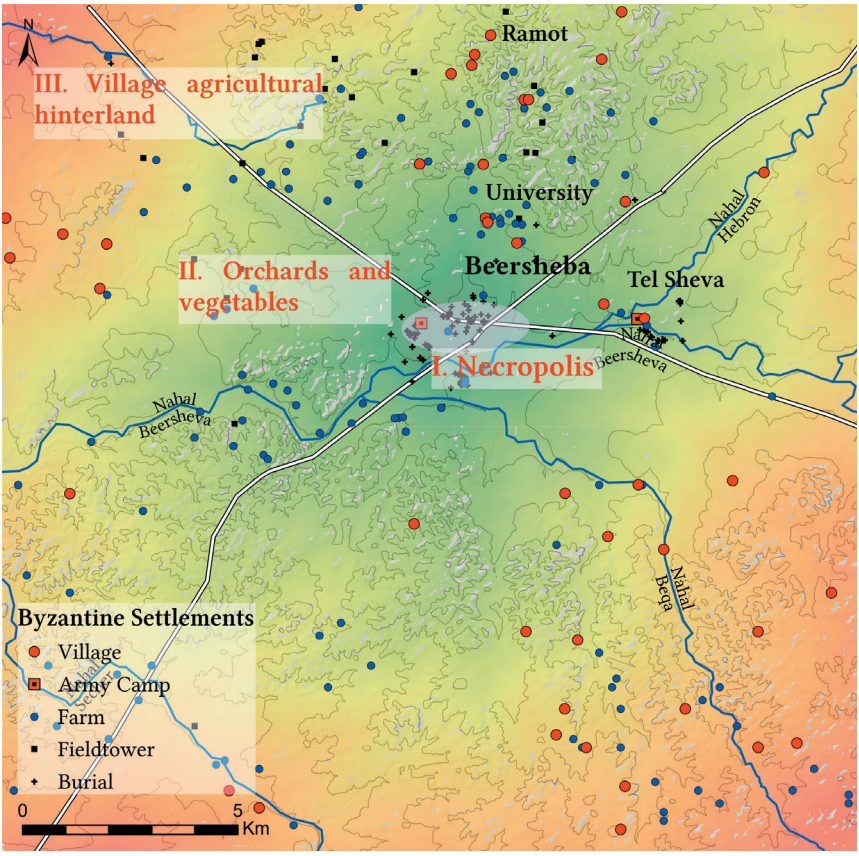


Figure 8.3 Distance analysis of the Byzantine city of Be'er Sheva.
A distance analysis (ESRI—ArcGIS pro, Distance analysis toolset) of the city of Be'er Sheva and its hinterland, as well as the land-use belts according to above descriptions.

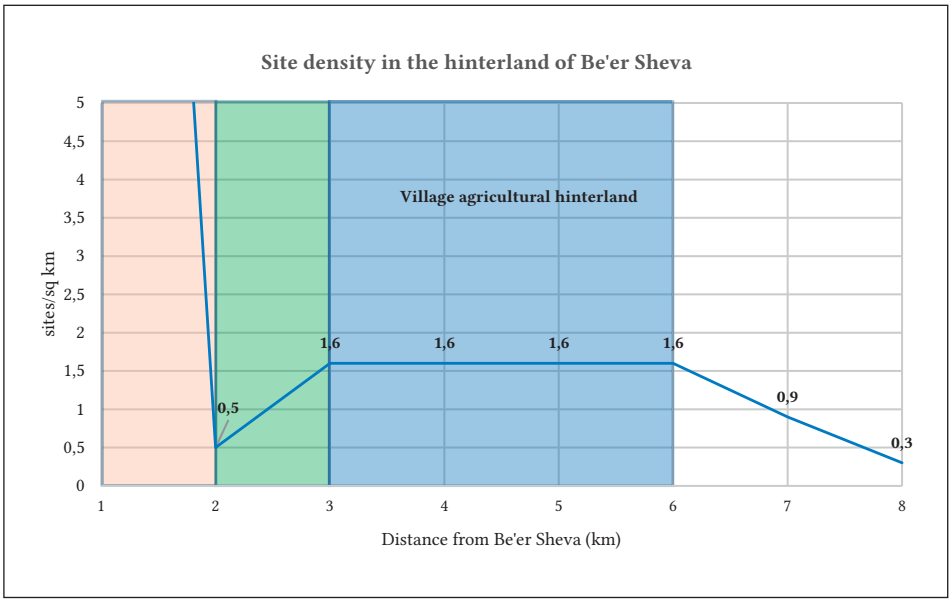


Figure 8.4 Site density in the hinterland of Be'er Sheva.
Analysis of the land-use belts according to site density of the area.

ological remains, shows that there are at least three land-use bands discernable: (1) necropolis, (2) orchards and vegetable gardens, and (3) village agricultural hinterland. These land-use belts are also visible by analyzing site density (villages, farms, structures, field towers) surrounding Be'er Sheva. Less than one kilometer from the city of Be'er Sheva, site concentration is very high—between two to three square km. The number drops significantly (from almost 24 sites per sq km to 0.5). Between three and six kilometers from the city, the concentration of sites per sq km is constant at 1.6, because this is the village agricultural hinterland. Further than six kilometers from the city of Be'er Sheva, the number drops to 0.9 and, by seven kilometers, to 0.3 (Figure 8.3). The density of 1.6 sites per square kilometer is quite high, meaning 1.6 buildings per sq km, which includes single buildings of villages, farmhouses, structures, and field towers. However, because every farmhouse, or small village has additional buildings such as watchtowers, this explains the high number. An area of three to six km surrounding Be'er Sheva was almost completely used for agriculture. If only the settlements to the north of the city are analyzed, then the settlement density is even higher.

Be'er Sheva, as a large urban center with extensive political and economic facilities, impacts the land-use strategies of the settlements surrounding it. This fact

is also visible in the site density numbers of the surrounding hinterland. In the central study area, Be'er Sheva is the sole urban center, and no other town is located within ca 20 km.

8.5 Settlement distribution in the northern Negev

By analyzing the distribution of cities and towns, villages, farmhouses, and field towers, the following are visible: in total, there are in the three study areas one city, six towns, and a few very large villages (Be'er Shema, Horvat Hur, Tel Sheva). In the western study area, the number of sites surrounding a large settlement is the lowest, followed by the eastern study area. In the central study area, Be'er Sheva is the only large urban center. The highest concentration of villages and farmhouses surround Be'er Sheva. In general, all large settlements are located along the major roads, with only two exceptions in the western study area.

By analyzing the villages, one can see that the highest concentration is located in the central study area, mainly surrounding the city of Be'er Sheva. Interestingly, the majority of villages are located on the northeast and southeast side

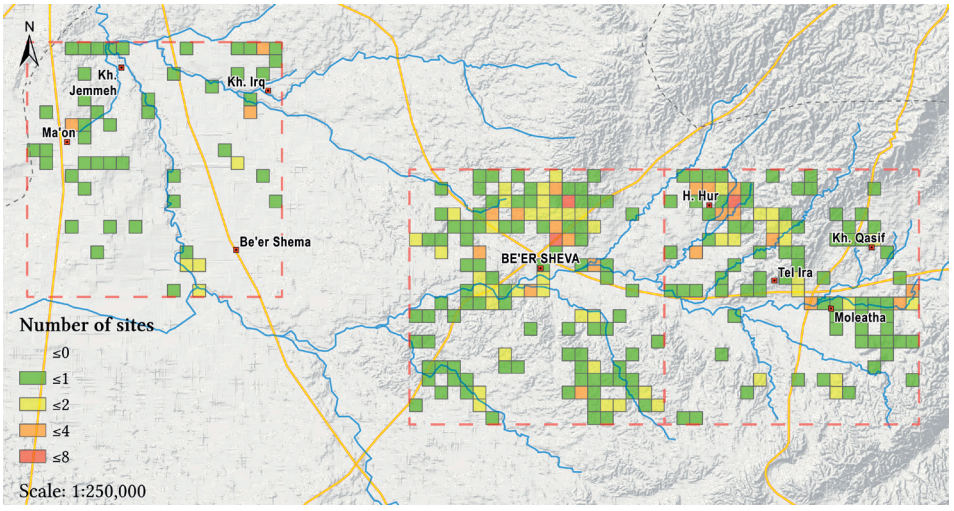


Figure 8.5 Settlement patterns of the northern Negev.
Study area overlaid with FISHNET module in ArcGIS Pro: each square represents an area of 1,000 × 1,000 meters. The number of settlements has been counted for each square according to settlement type (0 = no square). The size of settlements was not taken into consideration—settlements considered: villages, farmhouses, and field towers.

of Be'er Sheva, with a high concentration near the two main roads that connect the north to the south. The towns in the other study areas have at least one village within a radius of four kilometers, and many have two to three. In the eastern study area, the three towns of Tel Ira, Khirbat Qasif, and Moleatha are located close together, therefore, the concentration there is slightly higher.

By analyzing the settlement patterns, one can see that there is a concentration of farmhouses and villages around Be'er Sheva. Farmhouses surround the city, and the density lessens the further away they are located from the urban center. In contrast to the villages, the concentration of farmhouses is higher to the north, west, and south of the city of Be'er Sheva. The farms located in the southwestern corner belonged most likely to the hinterland of Elusa, as they are located closer to Elusa than Be'er Sheva. A comparison of Be'er Sheva to other towns in the study areas shows that the settlement hierarchy was different from the smaller towns. Similar to Be'er Sheva, they have an "empty area" surrounding the city, although it is much smaller (a maximum of 1.2 km from the town), followed by an area of farmhouses and installations. The villages are further away from the towns and were probably not part of a village hinterland (Figure 8.6). The farmhouses are grouped in a ring around the towns and are most likely part of the agricultural hinterland (Figure 8.7).

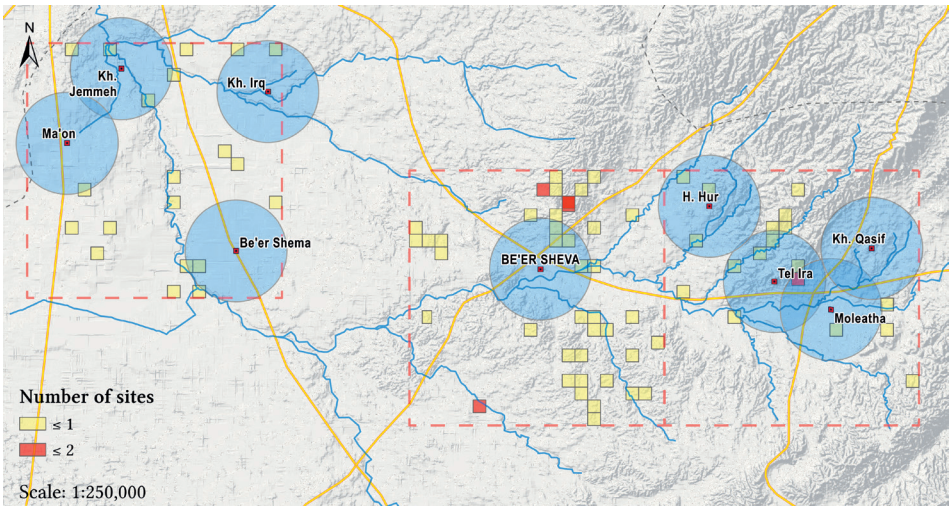


Figure 8.6 Raster analysis of villages surrounding cities and towns.
In the study areas, 83 villages in total were found during surveys and excavations. Most villages are located in the central study area. A 4 km buffer (blue) surrounds each larger settlement.

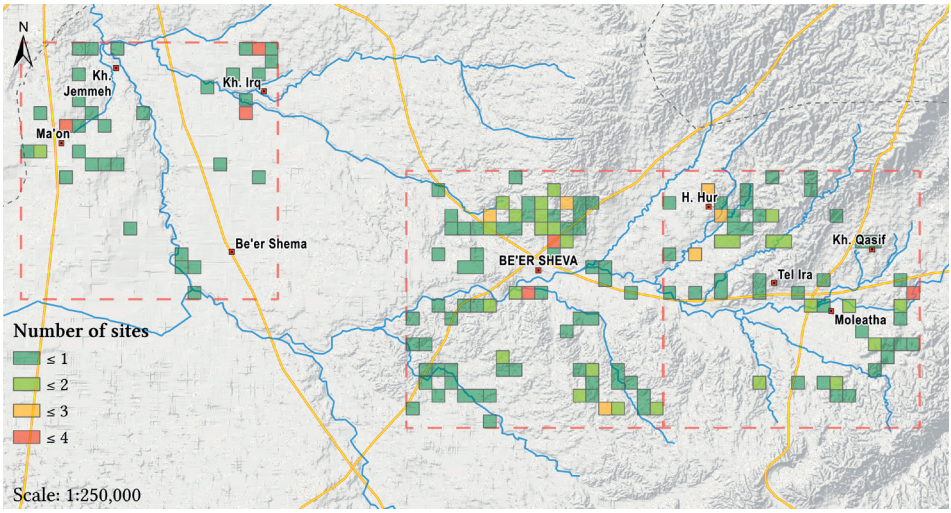


Figure 8.7 Raster analysis of farmhouses surrounding cities and towns.

The small square field towers, which did not serve as family residential buildings but as watchtowers, belonged to residents of the village and possibly also towns, and can almost exclusively be found to the north and to the northwest of Be'er Sheva (with a few exceptions to the south of the city). Most field towers were found in the eastern study area, especially surrounding the settlement of Horvat Hur. It seems they are mainly located in higher elevated areas. According to Haiman and Fabian, these field towers served as seasonal farmhouses for the population of the urban centers, and they went out of use in the sixth century CE (2009: 45). However, Magness has re-dated pottery from seven field towers found in the northeastern study area, and one dates between the Byzantine and Early Islamic periods (eighth to ninth centuries CE). The others date between the fifth, sixth, and seventh centuries CE (Magness, 2003: 12–63). Similarly, field towers have been discovered during excavations, including the field tower excavated south of Be'er Sheva (Rasiuk and Shmueli, 2017). Almost no field towers have been found in the western study area, which might be because this kind of structure was not necessary there as most of the area is flat, and the settlements could easily oversee their fields.

Based on this analysis of the population, settlement size, and land-use, it is clear that urban centers like Be'er Sheva adopted specific land-use strategies that, in turn, impacted settlement density and settlement types in its hinterland. Smaller towns, for example, Ma'on or Moleatha, also influenced their hinterlands, and villages and farmhouses are hierarchically grouped around urban centers.

An exception is Be'er Shema: based on its size and population of 300 to 500 persons, the settlement could be considered a large village rather than a town. However, because of its importance as a settlement along the road from Elusa to Gaza and also in historical sources, the settlement has been described as a town. In the *Descripto Orbis Romani,* Be'er Shema is mentioned as a regional administrative center for the territory of Gerar (Gelzer, 1890: 52 cited in Dolinka, 2007: 112).

By analyzing settlement distribution in the Byzantine period, the map is quite empty surrounding the settlement, in contrast to all the other local centers. No farmhouses surround the settlement, instead, many encampment sites and findspots appear in close vicinity to Be'er Shema (see Chapter 5—Western study area: Nahal Besor). Similar to the other towns, at least two villages are in a four-kilometer vicinity of the settlement (see above). Therefore, it is possible that some of these "campsites" and "findspots" actually used to be farmhouses or other agricultural structures and installations, and their remains have been dispersed over a wide area due to modern agriculture. Furthermore, there are several burial sites in the 4-kilometer radius around Be'er Shema (mainly cist tombs). Built tombs are an indication of residential structures rather than non-permanent settlements, such as campsites or findspots (Figure 8.8).

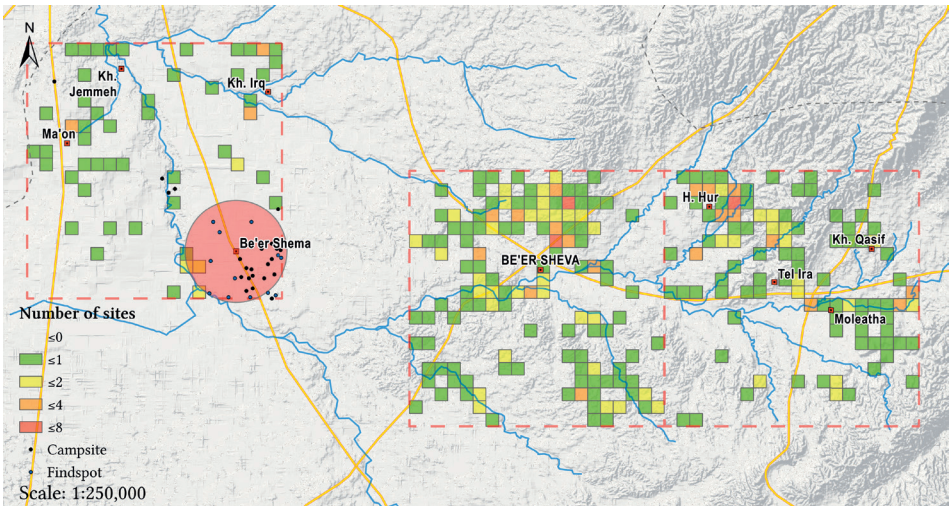


Figure 8.8 Settlement distribution surrounding Be'er Shema.
The red circle surrounds Be'er Shema. Points represent encampment and findspots sites according to Gazit (1996).

8.6 Discussion

During the Byzantine period, farmhouses and villages surrounded Be'er Sheva, forming a village hinterland that was vital for the city. A large proportion of the city's inhabitants likely worked in the surrounding fields. The status, size, and influence of Be'er Sheva is also visible as it is the only major urban center in the central study area, whereas in the western and eastern study areas, there are at least three towns. Based on size and population, Be'er Sheva was the largest settlement in the northern Negev, and after the Arab conquest, a change in settlement patterns is visible. While it is difficult to understand how Be'er Sheva developed in the Early Islamic period because modern development has destroyed many of the remains, there are indications that, at least during the beginning of the Early Islamic period, Be'er Sheva had a similar size and population. There is also evidence of churches in use in the Early Islamic period (see Chapter 6.7.1—Be'er Sheva in the Early Islamic period). Survey and excavation data suggest three trends:

1) A phase of ruralization and urban decline in the seventh century CE;
2) Large farmhouse estates are built outside the city;
3) Settlement density declined at the end of the Byzantine period or during the Early Islamic period, though it is unknown whether this occurred in the seventh century or later.

This phase of ruralization and urban decline is also visible in Elusa (Schöne et al., 2019: 142). An indication that a phase of ruralization also took place in Be'er Sheva is visible with the establishment of large farmhouse estates outside the city. It is interesting that several of these large farming estates were built close to the city, much closer than the village hinterland in the Byzantine period: Be'er Sheva (Gilead et al. 1993: 97–99; Eisenberg-Degen and Kobrin, 2016), Nahal Be'er Sheva (Eisenberg-Degen, 2017; Aladjem (unpublished), A-5416/2008), Nahal Anim (Fraiberg, 2017), Hura (Peretz, 2012), Nahal Gerar (Peretz, 2015), Lehavim (Kobrin, 2016), and at Khirbat Amra (Tahal, 1996; 2000). As the winepresses went out of use toward the end of the Byzantine period, it is possible that the land surrounding the city was used for grain or other agriculture.

For many excavated farmhouses and villages in the hinterland, the archaeological record shows no discernable changes during the Umayyad period in the seventh and early eighth centuries due to the phase of ruralization that occurred simultaneously with the Islamic immigration to the surrounding area. Many of the farms continued to exist during the Early Islamic period, and new, large farmhouses were built. The urban population moved to the surrounding land, and,

therefore, the small farmhouses that served as watchtowers went out of use, as there was no need for them after the ruralization of the area. If it were possible to excavate larger parts of Be'er Sheva, we might see a pattern similar to that of Elusa, where a phase of ruralization and urban decline followed the Arab conquest (Schöne et al., 2019: 142).

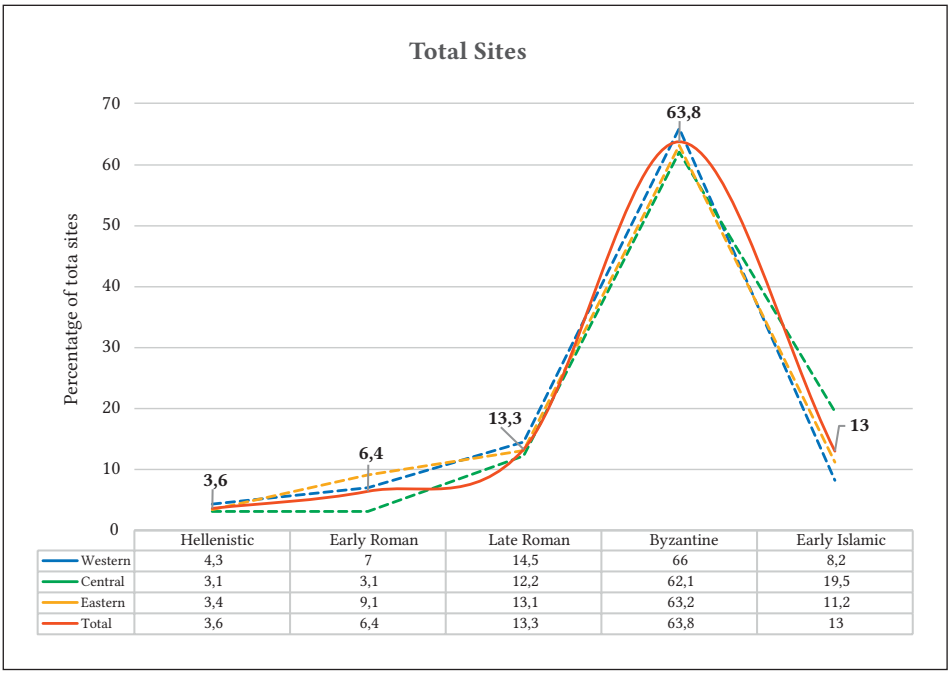
During the Byzantine period, the farmhouses and villages were vital for the city of Be'er Sheva; however, urban decline had no influence on the farmhouses and villages, with new farms built instead. That is, while the villages and farms could continue without Be'er Sheva, these villages and farms were vital to the city and its population. Many of the farmhouses show a change in the mid-eighth century, at the beginning of the Abbasid period (see Chapter 6.6—Byzantine period), when dressed building stones and architectural remains were put to secondary use from collapsed Byzantine buildings such as churches. This might serve as an indication that a part of the population left the area, and churches and other public buildings were no longer rebuilt. The coin finds show a similar picture, with a gradual decline from the seventh century CE onwards.

9 THE DYNAMICS OF SETTLEMENT PATTERNS IN THE NORTHERN NEGEV

9.1 Analysis of the survey samples

The settlement system of the northern Negev was dynamic and was undergoing change throughout the time periods reviewed here. In the Chapters Chapter 5–7, a settlement analysis for each study area was presented from the Hellenistic the Early Islamic period. Additionally, the connection between Byzantine population, land use, settlements in the northern Negev was examined (Chapter 8). The data consisted of synthesized survey data compiled by the ASI, excavations, as well as development surveys, test trenches and inspections. Selected excavations and numismatic data have been used to compare chronologically the survey data. The results show that the northern Negev was settled throughout the Classical period, from the Hellenistic to the Early Islamic period (Figure 9.1).

During the Hellenistic and Early Roman periods, only a few settlements existed in the area. The Great Jewish Revolt (66 to 73 CE) and the Bar Kokhba revolt (132 to 135 CE) had a strong impact on the northern Negev. All Jewish sites were abandoned the latest by the end of the Bar Kokhba revolt, such as the settlement at Rakafot 54 (Peters et al., 2020), Tel Ira (Hershkovitz, 1999: 299), Tel Aroer (Taxel, 2011: 335), or Nahal Yattir (Vainstub and Fabian, 2015). As the settlement patterns analysis showed the northern Negev was basically deserted, almost no settlements were located in the study areas (see Chapters 5 to 7). This fact is also supported by the coin finds from the study areas, as almost no coins date to this period (see 5.8, 6.8, and 7.8). In the mid-late third century a period of prosperity followed (Bar, 2004: 316), the population grew, and with it the number of set-



	Hellenistic	Early Roman	Late Roman	Byzantine	Early Islamic
Western	4,3	7	14,5	66	8,2
Central	3,1	3,1	12,2	62,1	19,5
Eastern	3,4	9,1	13,1	63,2	11,2
Total	3,6	6,4	13,3	63,8	13

Figure 9.1 Overview of the percentage of sites according to period.
The figure shows the percentage of sites according to period, however, in between these periods the number could be higher or lower, for example between the Early and Late Roman period, there was a phase of over 100 years, between the second Jewish revolt and 250 CE with almost no settlements in the study area.

tlements. From the changes in site density, the rise of settlements from the Early Roman period to the Late Roman period is clearly evident. The growth of population and of settlements during the Late Roman and Byzantine period is impressive. Research suggests that the population of Palestine was between one and several million, reaching its peak in the mid-sixth century CE (Bar, 2004: 308). Based on the analyzed data, the population of the northern Negev in the mid-sixth century probably grew to over 100,000 people.

During the Hellenistic period (Ptolemaic and Seleucid rule), the southern boundary of *Idumaea* and the *Nabataean* kingdom crossed the Be'er Sheva–Arad valley (Avi-Yonah, 2002: 50). This is also reflected in the settlement patterns, as in the central and eastern no settlements were located south of the Nahal Beersheba–Nahal Malhata line, with the exception of a small settlement at Tel Aroer. In the western study area, which is located 10 km further to the north, no such

separation is visible. Settlements were mainly located around Nahal Besor and roads. It seems that in the western study area, the settlements were located at the strategically best locations, whereas in the central and eastern study area, the southern parts were deliberately left unsettled. During Hasmonean rule, *Idumaea* was annexed by Hyracanus in 125 BCE, and Alexander Jannaeus annexed parts of the Nabataean kingdom around 100 BCE, which stretched Judaea's southern boundary to the Be'er Sheva–Arad valley (Avi-Yonah, 2002: 75). During the Early Roman period, the northern Negev was inhabited by, among others, a small Jewish population. Jewish settlements were found at different places, such as Rakafot 54, Tel Ira, Tel Aroer, or Nahal Yattir. It seems that the few Jewish settlements were relatively short-lived and were abandoned either by the First or the latest by the Second Jewish Revolt. By 106 CE the Nabataean kingdom was incorporated into the Roman empire, and the border between the provinces of *Judea Palaestina* and *Arabia* crossed through the Be'er Sheva–Arad valley (Di Segni, 2018), dividing the areas of the central and eastern study area between these two provinces. Based on the results from the settlement analysis, the settlement activity was the lowest after the First Jewish Revolt (70 CE) and 250 CE, with only few settlements existing in the northern Negev.

During the middle/late third century CE a rise in new settlements is evident as well as a rise in population. It remains unclear from where the population came, whether they moved from areas further north to the northern Negev, or if they came with the Roman military, which built several fortresses and camps in the northern Negev. The population at this point was probably practicing polytheism, although no cult sites have been discovered in the northern Negev. The Roman emperor Diocletian (284–305 CE) introduced far-ranging reforms, including the administrative transfer of the Negev, Sinai, and southern Transjordan from the *Provincia Arabia* to the *Provincia Palastina* (Tsafrir, 1986: 82–83; Erickson-Gini, 2002: 118; Di Segni, 2018: 248). That the rise in settlements occurred during the time of Diocletian's reforms is further supported by the large number of Roman coins dating to the time period between 280 and 305 CE. Most were found in Be'er Sheva. The foundations of Classical Be'er Sheva were laid in the mid- to late third century CE, and building activities strongly increased in the early fourth century CE. Also, the foundations of many other large towns are dated to the same time period. However, the settlement patterns show that although the northern Negev saw a rise in new settlements and population, it was mainly limited to some central settlements, such as Be'er Sheva, Moleatha (Tel Malhata), and Ma'on. One of the few farmhouses/structures dating to the third century to be discovered outside a larger settlement was excavated in Khirbat Amra, where a large farmhouse, and tombs from the period were found. The late Roman period saw a Roman military presence in the northern Negev, and some researchers sug-

gest that a line of border fortresses and army camps was established to protect the border of the empire (cf. Avi-Jonah, 1966: 160; Gichon, 1979; 2002; Parker, 1986: 141; Hirschfeld, 1987: 132–41; Isaac, 1992), reaching from the Dead Sea to the Mediterranean. However, there is no evidence of such a complete line, covering the whole area, as some of the fortresses that were suggested to belong to such a *limes* system date to the mid-sixth century (Ein Boqeq and Upper Zohar), or date from the first century BCE to first to second centuries CE (Magness, 2003: 128). There are, within the study areas, several fortresses along important roads, as for example at Be'er Shema, Be'er Sheva, Tel Sheva and Tel Malhata. Fortresses at Be'er Shema, Tel Sheva, and Tel Malhata were in use in the third and (early) fourth centuries CE. The excavation of the proposed army camp in Be'er Sheva dates it to the middle of the fourth century CE. However, it remains unclear if these fortresses and camps really were part of a *limes* system or rather outpost for the protection of the important roads. A further point was the population of these third/fourth century CE fortresses. It has been suggested that these fortresses were populated by farmer-soldiers (*limitanei*), and farmhouses for their families were also established nearby (Figueras, 1980: 139–40). However, based on the analysis of the settlement patterns, in none of the study areas were farmhouses found near to fortresses dating to the late third, or early fourth centuries CE. It is possible that this was the case in a later stage; however the fortresses at Tel Sheva, Be'er Shema, and Tel Malhata, were abandoned in the early fourth century and no structures were discovered during survey or excavation dating to this time period. Furthermore, the analysis of pottery finds from many surveyed sites, which were classified as Late Roman, actually dated to the Byzantine period (see Chapter 5–7).

During the Byzantine period, the northern Negev was divided between *Palaestina Prima* and *Palaestina Tertia.* The border of these provinces followed, more-or-less, the ancient border between *Judea* and *Nabataea.* During the Byzantine and Early Islamic periods, the area south of Nahal Beersheba/Nahal Malhata as settled for the first time, although more sparsely than the northern areas. Large villages and towns were all located in the northern parts of the study areas. During the Byzantine period, a large number of Christian cult sites were built, but none below the Nahal Beersheba-Nahal Malhata line. This is only correct for the study areas because farther south, large towns existed, such as Elusa and Mamshit, with several Christian cult sites. The highest concentration of settlements existed around the fifth-sixth century CE during the Byzantine period, with the largest extension in the mid-sixth century CE. Large urban centers only existed during the Byzantine and Early Islamic period in the northern Negev. All larger urban centers in the northern Negev had their foundation in the Late Roman–Early Byzantine period, most in the mid-/late Roman period. As discussed above, settlements continued from the Byzantine to the Early Islamic

period, and only gradually declined. The date of abandonment of urban settlements varies. Within the three study areas, no difference according to area is visible. The analysis of the archaeological sites in the study areas showed that sites were abandoned between the seventh and 10th/11th centuries CE (see Chapters 5 to 7; Appendix 4—Summary of large sites, selected features and date of abandonment.). In the northern Negev, the majority of sites were abandoned during the eight to ninth centuries CE (n = 46%), but about 30% of the sites continued beyond the ninth/tenth century. Only 16% (n = 2) of sites were abandoned in the late seventh century CE. In general, it can be said that over 75% of all large sites continued at least until the eight-ninth centuries CE (see Chapters 5 to 7). The largest site in the study area, the city of Be'er Sheva, was probably abandoned in the ninth/tenth century CE. Similar results have been observed in the western Negev Highlands where settlements continued up to the ninth and tenth centuries. In the eastern Negev Highlands, the large settlements declined in the eight century CE (Avni, 2014: 287). In the Arava Valley sites were abandoned only at a later point, and settlements show a continuity up to the second half of the eleventh century CE (Avni, 2014: 287).

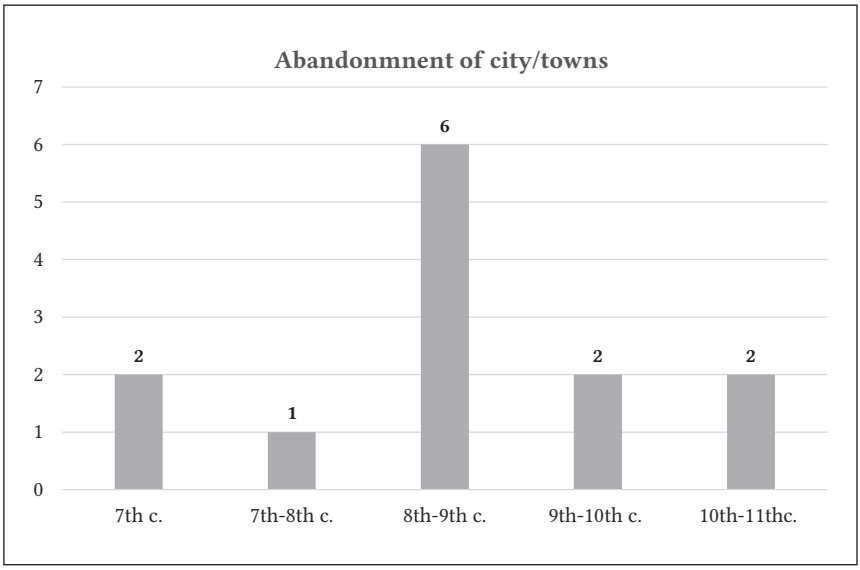


Figure 9.2 Abandonment of cities and towns in the study area.
Seventh century: 15.4%, seventh/eight centuries: 7.7%, eight/ninth century: 46.2%; ninth/tenth and tenth/eleventh centuries: each 15.4%. See Appendix 4—Summary of large sites, selected features and date of abandonment.

9.2 Emergence and abandonment of cult sites in the northern Negev

Cult sites are an important indication of change in settlement patterns. During the Hellenistic period, the only known cult site in the study area was a temple located at Tel Sheva, in use from the third to the first centuries BCE. No Roman temple has been found in the northern Negev, and this is probably connected to the fact that during the Early Roman period, only a few, mostly Jewish settlements existed, and those were abandoned by either the First or Second Jewish Revolt. After the Second Jewish Revolt (135 CE), the northern Negev was barely settled—only a few sites are known. By the late third century the area saw an increase in settlements, which was probably based on reforms by Diocletian (see above).

During the Byzantine period, Christianity became the main religion in the northern Negev, churches were built from the fifth century CE onwards. The number of churches and their building dates provide indications of the Christianization of the northern Negev. In other parts of Palestine, churches were built in earlier phases. However, the number of churches built before the fifth century CE is below 10% (cf. Patrich et al., 2020). Within the study areas, 30 churches were found within 20 settlements. Be'er Sheva had the largest number with six churches. Other sites with more than one church were found at Magen (n = 3) Horvat Hur (n = 2) and Khirbat Qasif (n = 3). The churches are quite evenly distributed between villages and towns/cities with over 53% of all churches located in villages, and 47% in towns/cities.

The western study area has the highest number of churches with almost 47% (n = 14), followed by the central study area with 30% (n = 9) and the eastern study area with 23% (n = 7). In a recent study, the regional distribution of churches was analyzed, and, in total, 672 churches were registered in all of Israel. For the northern Negev,[33] a total of 81 churches have been identified, 12% of all churches found in Palestine (see Patrich et al., 2020). The research shows that further south into the Negev desert, the number of churches declined slowly. The Central Negev accounts for 3.3% of all churches and the Eilat region for 0.3% (Patrich et al., 2020). Further north of the northern Negev, the number of churches increases considerably, and Jerusalem, Judea, and the Shephela account for almost 30% of all churches. All churches in the study areas which could be dated were built in the fifth or sixth centuries, with the lowest number in the fifth century and the highest in the sixth century CE (Figure 9.3). For 50% of the churches, the exact date of establishment is unknown.

33 The area includes the Southern Coastal Plain, Gaza strip, North-Western Negev and the Be'er Sheva-Arad Valley.

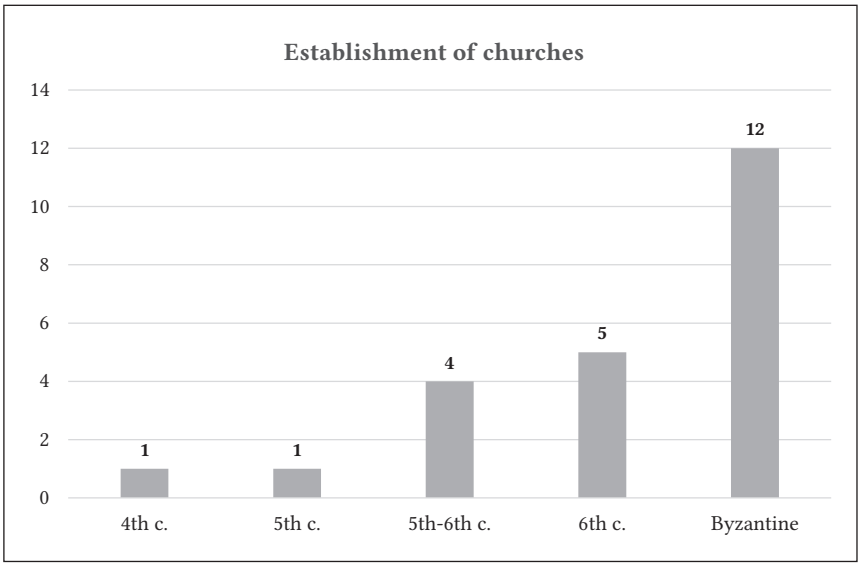


Figure 9.3 Establishment of churches in the study areas.
The date of establishment of churches are in most cases based on excavation data, for 50% of all churches the exact date is unknown. By 10% of the churches the date of establishment was in the fifth century, for 16.7% in the fifth/sixth century and for 23.3% in the sixth century CE.

In the above-mentioned study, from all churches found in Palestine,[34] 45% date to the fifth-sixth centuries CE. Only a few date to the fourth century or earlier, and for 40% the date of establishment is unknown (Patrich et al., 2020).

Dates of abandonment are available for only 40% of all churches found within the study areas. All datable churches were abandoned between the late seventh and eight centuries CE, whereas 66.7% (n = 8) of the datable churches were abandoned in the seventh century, 16.7% (n = 2) in the seventh/eight centuries, and 16.7% (n = 2) in the eight century CE. For 60% of all churches the date of abandonment is unknown. Also, these numbers are comparable to the data collected by Patrich et al. (2020), which concluded that most churches were abandoned in the seventh to eight centuries CE (40.1%). This means that a considerable number of churches were abandoned during the few decades after the Arab conquest and almost all by the eighth century. This fact shows that the transition from Byzan-

34 Including the West Bank and Gaza strip.

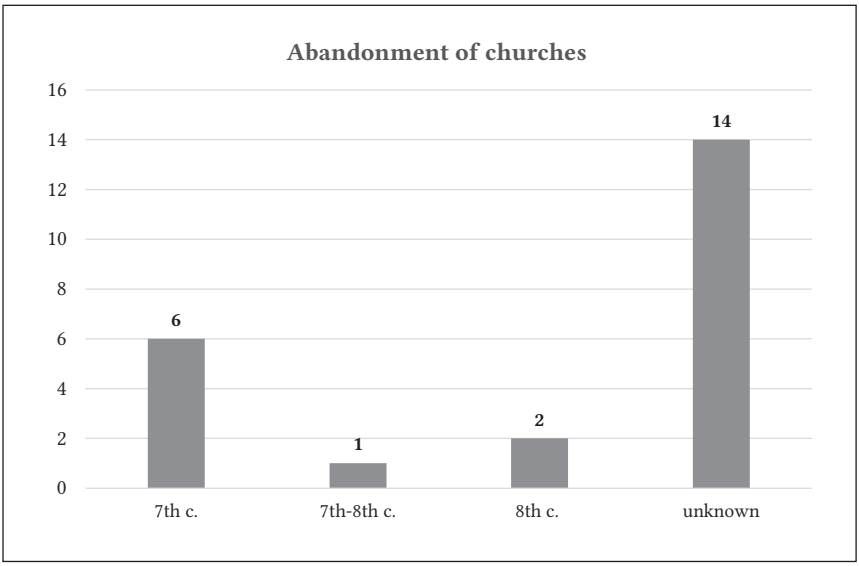


Figure 9.4 Abandonment of churches in the study areas.
The dates of abandonment of churches are in most cases based on excavation data, and for 60% of all churches the exact date is unknown. 26.7% of the churches were abandoned in the seventh century, 6.7% in in the fifth/sixth century and 6.7% in the eight century CE.

tine Christian rule to Arab Muslim rule had a strong influence, especially on the religious life of the Christian communities of the northern Negev. It does not mean that by the eight century the majority of population was already of Muslim origin, but that the church as a religious institution disappeared widely from the northern Negev. It seems that all the churches in the study areas were abandoned peacefully. According to Schick (1995: 128–29) this also seems to be true for most of churches found in Palestine, as earthquake damage and violent destruction were less common factors.

As mentioned above, most churches were discovered in the western study area and the fewest in the eastern study area. A map with all known churches, as well as urban territory/Bishoprics of the late sixth century shows that churches were evenly distributed in the western study area but, in the central and eastern study area, they were only in the northern parts. The northern parts were located within *Palaestina Prima,* and the southern parts of the study areas were located in *Palestina Tertia,* where no churches were found.

In total, 12 monasteries were found in the study areas. From these, 58.3% (n = 7) were found in the eastern study area, 25% in the central study area, and 16.7%

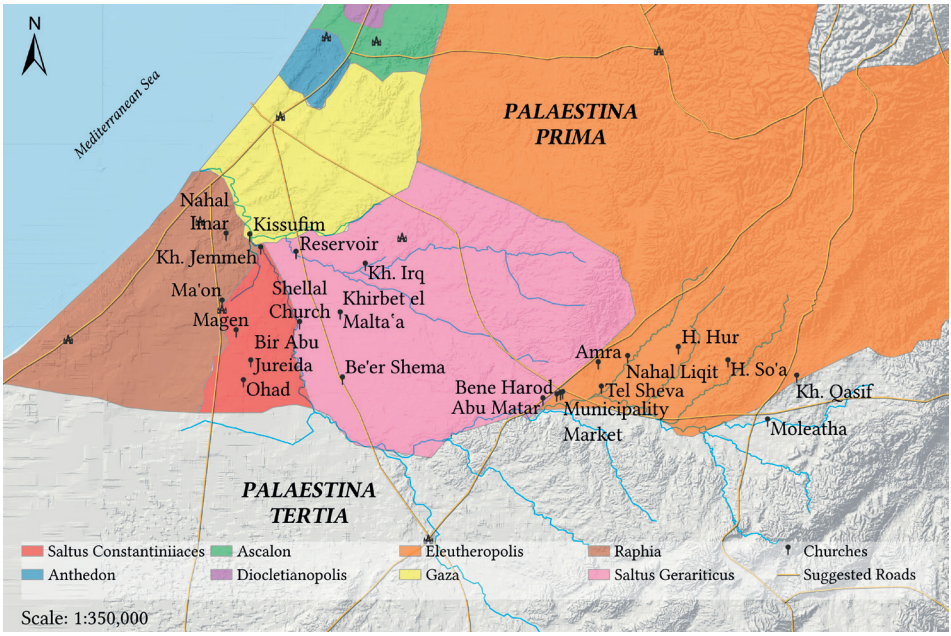


Figure 9.5 Churches in the northern Negev, map of the sixth century

The map includes all known churches as well as urban territory/Bishoprics during the Byzantine period. The central and eastern study area are divided between *Palaestina Prima* and *Palestina Tertia*. Background: Hillshade created from the 12.5 m-resolution ALOS-PALSAR DEM.

in the western study area. In the western study area, most churches have been found but fewer monasteries. The eastern study area is exactly the opposite with the most monasteries but the fewest churches. One explanation might be that the eastern study area was much more isolated than the western study area, with larger mountain ranges and desert areas. Most monasteries (66.7%) were located in large urban centers (or in the close vicinity), but 33.3% of all monasteries were discovered in rural locations, either within villages or isolated locations. The date of establishment of the monasteries in the northern Negev shows a picture similar to the establishment of the churches. All monasteries were established between the fifth and the sixth centuries CE. With the fewest monasteries in the fifth and the most in the sixth century CE. There is no difference in the date of establishment between monasteries and churches (see above, Figure 9.3).

The same is true for the abandonment of monasteries in that 58.3% (n = 7) of all monasteries in the study areas were abandoned in the (late) seventh century, 16.7% (n = 2) were abandoned in the seventh-eight century CE, and 8.3% in the

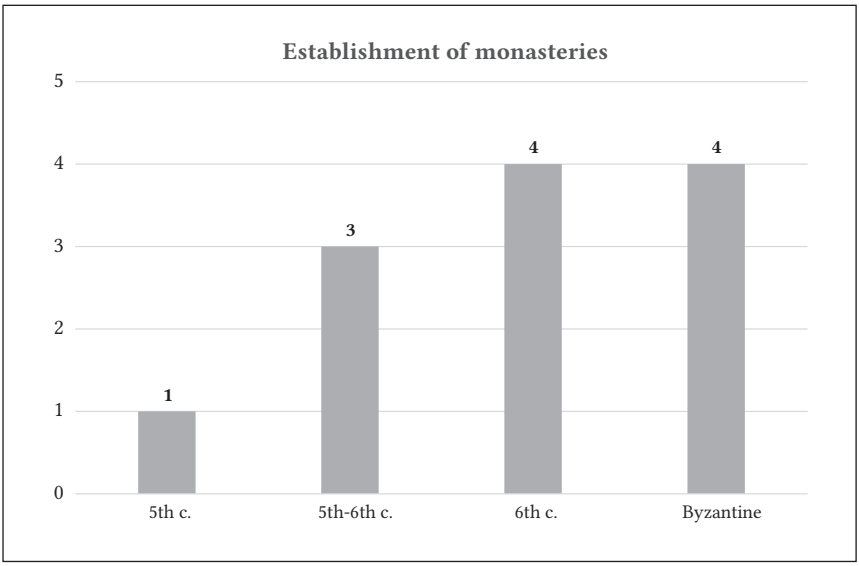


Figure 9.6 Establishment of monasteries in the study areas.
The establishment of monasteries are in most cases based on excavation data. See Appendix 5—Cult sites in the study areas: Christian Cult sites—Monasteries.

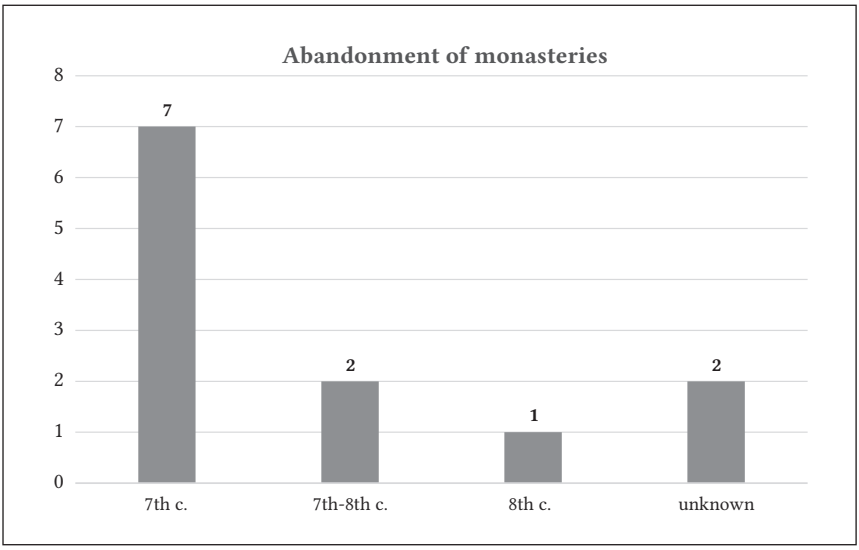


Figure 9.7 Abandonment of monasteries in the study area.
The date of abandonment of monasteries are in most cases based on excavation data, for 16.7% of all monasteries the exact date is unknown. 58.3% of the churches were abandoned in the seventh century, 16.7% in in the fifth/sixth century and 8.3% in the eight century CE. See Appendix 5—Cult sites in the study areas: Christian Cult sites—Monasteries.

eight century CE. For two monasteries, the date of abandonment is unknown (Figure 9.7). Just like the abandonment of the churches, the abandonment of the monasteries took place within decades after the Arab conquest. The abandonment of churches and monasteries is clearly also connected to change in political policy, in the early eight century CE anti-Christian legislation was introduced by Umar ibn Abd al-Aziz (Umar II) and anti-Christian persecution intensified around the mid-eight century CE under Abbasid rule (cf. Patrich, 2011: 207–08).

The analysis of the establishment and abandonment of churches and monasteries shows that all of the Christian cult sites in the study area were built between the fifth and sixth century. Meaning that, by this point, Christianity was the main religion in the northern Negev. By the eight century CE all Christian cult sites, which have been found in the study areas, were abandoned. A map with all known monasteries, as well as urban territory/Bishoprics of the late sixth century, shows that in the southern area of the study areas no monasteries have been found. It seems that the Nahal Beersheba-Nahal Malhata line formed a "border" further south, only churches and monasteries in towns and cities have been found but not in villages.

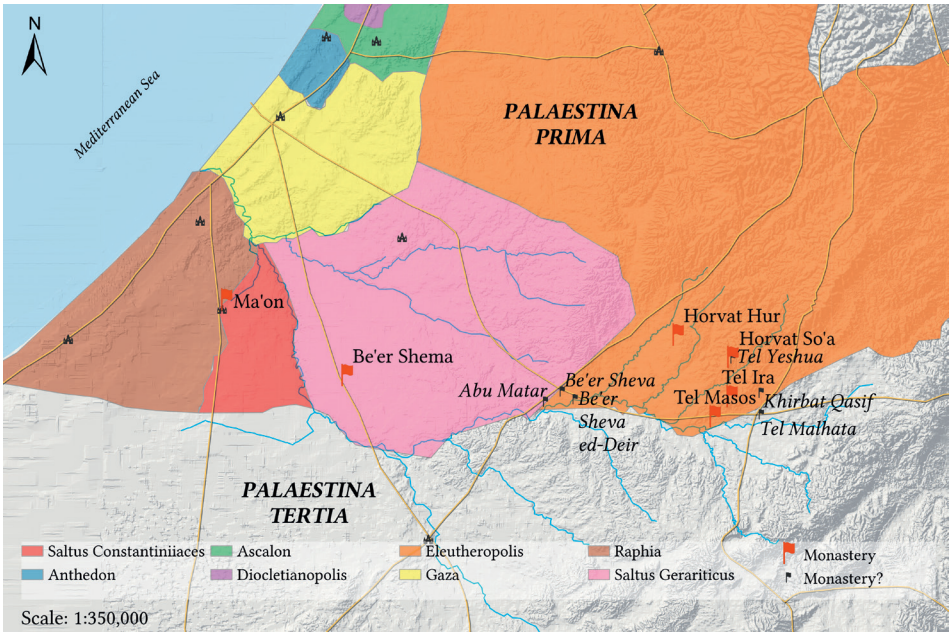


Figure 9.8 Monasteries in the northern Negev.

The map includes all known monasteries and possible monasteries as well as urban territory/Bishoprics. Background: Hillshade created from the 12.5 m-resolution ALOS-PALSAR DEM.

In the two largest urban centers located within the study area, Ma'on and Be'er Sheva, indications of a synagogue were found. The Ma'on synagogue, was probably built in the fourth century CE and renovated, with a new mosaic, in the sixth century CE. The synagogue was abandoned in the late seventh century CE. It seems that large urban centers in the northern Negev had minor Jewish population, as synagogues were found only in the large rural settlement of Gaza (Ovadiah, 1969), Ma'on, and Be'er Sheva. This is also true for other large settlements in Palestine, such as *Eleutheropolis* (Beit Guvrin) and Ashkelon (Avni, 2014: 332). On the other hand, villages were mainly populated by people of one religion, since as the settlement analysis showed, no villages with a church and a synagogue were found. According to Avni (2014: 334), members of the same religion tended to live nearby, as can be seen in the southern Hebron hills, where a cluster of several Jewish villages was found, such as Horbat Rimmon (Kobrin, 2019), Horbat ʿAnim (Amit, 2003), Khirbet Susiya (Yeivin, 1974), and Eshtamoa (Yeivin, 2004), whereas the villages in the study area seemed to be mainly Christian.

Not many mosques were found in the northern Negev—within the study areas only two had been found, and one was just outside the central study area. The mosques within the study area were both located in the eastern study area. One was an indoor mosque and a second an open-air mosque. The indoor mosque at Nahal Anim probably dates to the eighth century CE (Govrin, 1991; Magness, 2003); the date of the open-air mosque at Abu Quirnat is unknown (Kobrin, 2020). The open-air mosque found south of the modern Bedouin town of Rahat, dates probably to the eight century CE. First mosques were introduced in the northern Negev, at the earliest point, in the eighth century CE. According to Avni (2014: 336–37) the establishment of mosques points to the arrival of newcomers and not to the conversion of Christians and Jews. No Early Islamic mosques have been found in any of the large urban settlements in the northern Negev. This is in major contrast to the areas farther south where many open-air mosques have been found mainly in rural settlements in the area of Shivta, Sde Boqer and the Central Negev highlands (cf. Avni, 1994; 2007). Most open-air mosques were found in agricultural and nomadic sites, which show no archaeological evidence for the introduction of Christianity (Avni, 1996: 78–82; 2007). Many standing stone steles were discovered, and it is believed that those represent the nomadic tradition of desert nomads who used standing stones to represent their gods and deities (Avni, 1994; 2007). There is evidence of the transition from the use of standing stones to open-air mosques in agricultural villages and nomadic campsites (Avni, 1994; 2007). In the Negev Highlands, in contrast to the northern Negev, only the towns were Christianized, whereas the agricultural and nomadic settlements developed from cultic installation (standing stones) to open-air mosques. In the northern Negev, small agricultural sites also show signs of Christianization, such as en-

graved crosses, churches, or monasteries. Furthermore, the number of churches is in the northern Negev about four times higher than in the Negev Highlands (cf. Patrich et al., 2020).

The process of religious change, compared to other factors, is more clearly traceable through the appearance and disappearance of cult sites, but also based on other findings. For example, the presence of a Jewish population in the northern Negev during the Early Roman period can be demonstrated through finds, such as a *mikve,* underground hiding complexes (Bar-Khoba revolt), and also specific small finds. The rise and fall of Christianity and the appearance of Islam in the northern Negev is traceable through the high number of cult sites. Figures 9.9 to 9.11 show the decline of Christian and Jewish cult sites and the establishment of Muslim cult sites by century.

Based on analyzing the changes in urban and rural settlements, it is evident that the processes of change from the Byzantine–Early Islamic interface were gradual. Analyzing the Christian and Jewish cult sites show that the Arab conquest must have had a strong impact on the cult sides. Some 150 years after the Arab conquest, the last few Christian cult sites were abandoned in the western study area, probably earlier than in the central and eastern study area (Appendix 5—Cult sites in the study areas). However, Muslim cult sides only appear sparsely, from the eight/ninth century CE, in the study area. The abandonment of Christian cult sites during the seventh and eighth century is in the northern

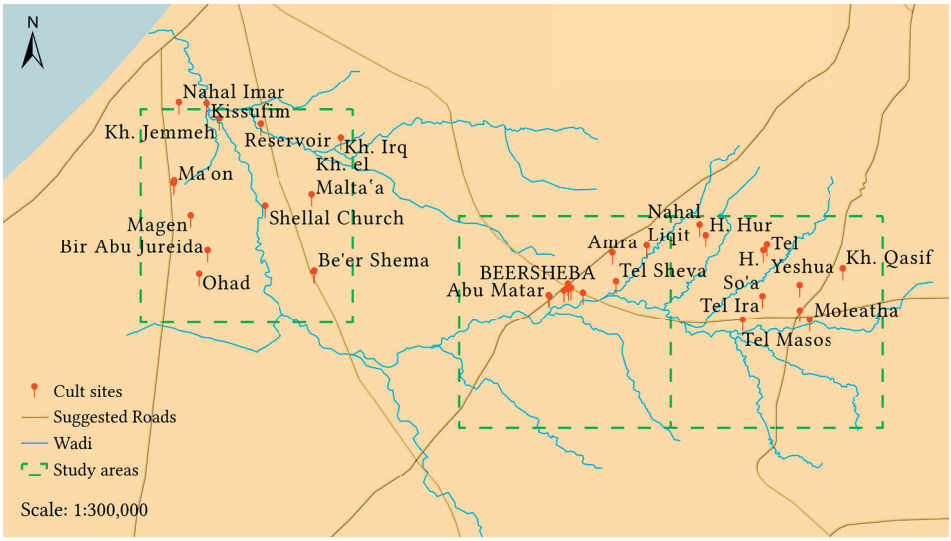


Figure 9.9 Seventh century CE cult sites in the study area.

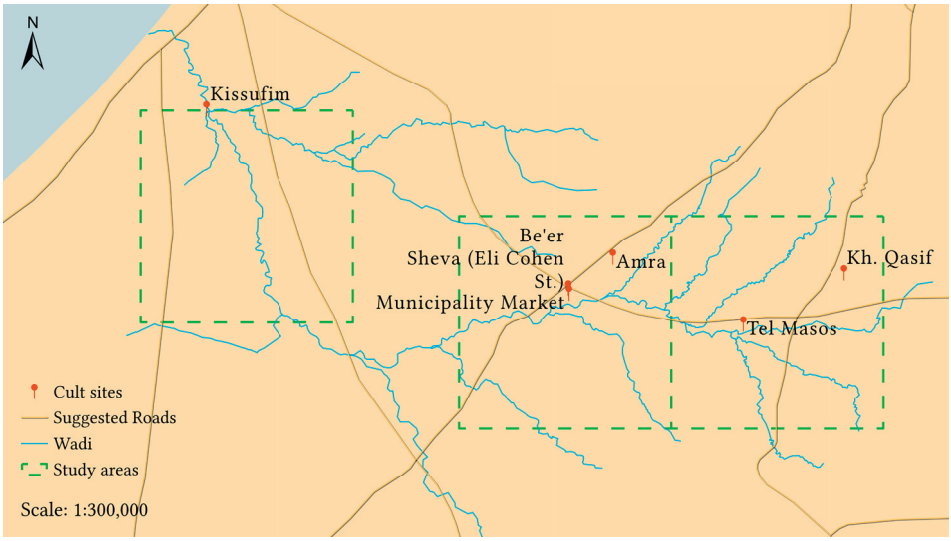


Figure 9.10 Seventh-eight centuries CE cult sites in the study area.

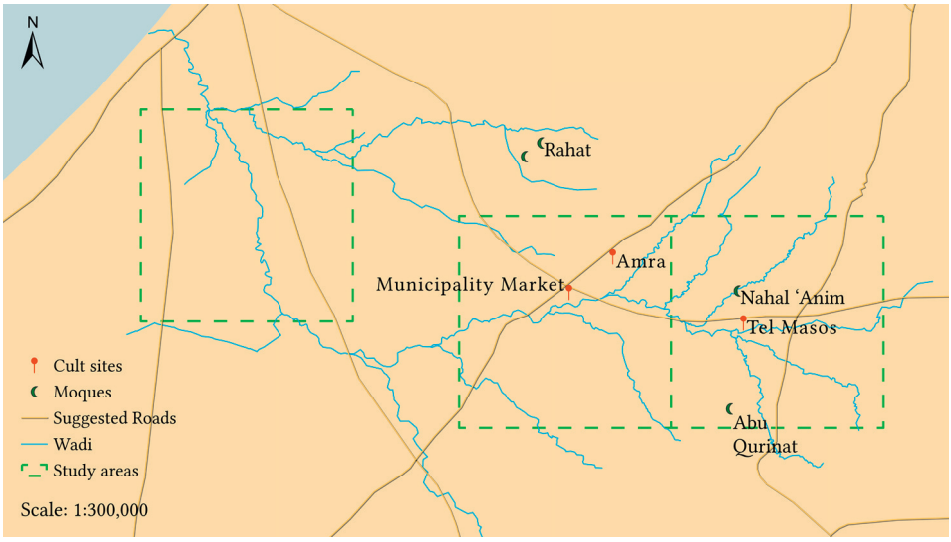


Figure 9.11 Eight century CE cult sites in the study area.

Negev is not different from the other parts of Palestine, where in total 83.5% of all datable churches were abandoned during the same time period (see Patrich et al., 2020). There were no Christian and Jewish cult sites in the northern Negev by the end of the eight century CE, but only a few Islamic cult sites had been built. The religion of the majority of the population remains unclear, but it can be assumed that part of the population had already converted to Islam by the late eight- beginning of the ninth centuries CE. However, as almost no mosques have been discovered, and with the assumption that new mosques were built mainly by newcomers rather than by converted population, it is also a possibility that a part of the Christian and Jewish population slowly left the area and an additional part converted to Islam, which would also explain the gradual decline in settlements in the northern Negev.

9.3 The *longue durée* process of change

As discussed above, several general changes in settlement patterns during the Classical period were observed and analyzed. In this section, the possible forces of change are discussed along with how these factors influenced the *longue durée* process of change from the Hellenistic to the Early Islamic period.

9.3.1 Political change

Hellenistic to Late Roman period border area

The northern Negev was, during the Classical period, a border region which was located most of the time between the Dead Sea, south of Masada, and the Mediterranean coast, crossing through the Be'er Sheva-Arad valley. In terms of the study areas for this research, this meant that the border passed through the central and eastern study area, dividing each into two, almost equally sized (northern and southern) parts. The western area was less affected as only the most southern part of the western study area was at certain times divided by the border. Although an ancient border cannot be understood as borders are today, it is one of the historical factors that had a clear influence on the settlement patterns of the northern Negev. As discussed above (see Chapter 9.1 Analysis of the survey samples), the border was one of the strong factors in the change of settlement patterns from the Hellenistic to the Late Roman period, and the area south of the Nahal Beersheba-Nahal Malhata line was practically unsettled. In the northern part, several fortified structures and fortresses were found dating to Hellenistic/

Early Roman period. Only during the Byzantine and Early Islamic period were the southern parts of the study area settled.

First and Second Jewish Revolt

During the early first century CE, several Jewish settlements existed, mainly in the Be'er Sheva–Arad valley. The destruction of Jerusalem, as well as reforms and changes in imperial and local administration had a strong influence on the settlements in the northern Negev. Most settlements were abandoned or destroyed after the First Jewish Revolt, such as the settlement at Tel Ira and Tel Arorer. Others continued to be settled until the Second Jewish Revolt, such as Rakafot 54 and Nahal Yattir, or had been resettled, as Tel Arorer. The Tenth Legion was stationed in Jerusalem and the province of Judea was made independent (Magness, 2012: 257). After the First Jewish Revolt, Jews had to pay an annual temple tax to the *Capitolium* in Rome (Magness, 2012: 257). By 106 CE, the Nabatean Kingdom was incorporated into the Roman Empire, and with this, the trade of incense and spices was under Roman control. Within the study area, it seems the incorporation of the Nabatean kingdom into the province of Arabia, and the shifting of the trade routes to the north out of Nabatean territory, had no significant influence on the settlement patterns of the northern Negev, which was sparsely populated with only a few settlements. It seems that the settlements that existed during the Bar-Kokhba Revolt (132–135 CE) engaged in fighting the Romans, as underground tunnel system and fortified structures have been found (cf. Zissu and Kloner, 2010). Based on the settlement analysis the Bar-Kokhba Revolt had a strong influence on the settlement patterns in the northern Negev. By the end of the revolt, all Jewish settlements in the study areas were abandoned. The northern Negev was mainly unsettled, with only a few settlements, such as fortresses at Tel Sheva and Tel Malhata still existing. Based on the settlement analysis the northern Negev remained largely unsettled until ca. 250 CE.

Reforms at the end of the third beginning of the fourth century CE

The increase of settlements at the end of the third and beginning of the fourth century CE in the northern Negev, is a major phase of change in the settlement history of the region. As coin finds show, most these changes fall into the period of Diocletian (284–305 CE). The Roman emperor Diocletian introduced far-ranging reforms, including the administrative transfer of the Negev, Sinai, and southern Transjordan from *Provincia Arabia* to *Provincia Palastina* (Tsafrir, 1986: 82–83; Erickson-Gini, 2002: 118; Di Segni, 2018: 248). Around the year 300 Diocletian transferred the tenth legion from *Aelia Capitolina* (Jerusalem) to *Aila* (Aqaba) (cf. Isaac, 1992; Magness, 2012: 271; Erickson-Gini, 2010). During the same time, fortresses on Tel Sheva and Tel Malhata were renewed. It seems that Be'er Sheva's

military camp also falls chronologically into this time period, although the excavation revealed only remains dating from the mid-fourth century onwards. Some of the public buildings excavated at compound C, are dating to the late third, fourth century CE (Fabian and Gilead, 2010a; 2010b). This is further proven by a large number of coins dating to Diocletian. It seems that with the reforms of Diocletian, the area of the northern Negev saw a stronger military presence, new roads were built, and the whole area saw a rise in settlement. In particular, the settlements of Be'er Sheva and Tel Malhata developed into large settlements. However, these changes in settlement density at the end of the third century is only visible in the large settlements, not in the countryside. There are only a few farmhouses that date to the late third to fourth centuries CE throughout the study areas (see Chapters 5 to 7).

The fifth century CE: Decline in demographic and economic vitality of the northern Negev?

Only a few coins were found in the study areas which date to the fifth century CE. This phenomenon was also observed in other areas of the region. For the period at the end of the third/beginning of the fourth centuries, the coin numbers were very high in the study areas, but for the mid-fifth century CE, they almost drop to zero. According to Safrai (1998) the drop in coins from the fifth century CE (408–491 CE) is due to a decline in demographic and economic vitality in the region. Gitler and Weisburd (2005: 552) analyzed the coin finds from villages and towns of Palestine and argued that the decline in the fifth century appears to be because an unusually high level of coinage production took place during the fourth century, but during the fifth to seventh century, coinage production returned to standard levels. However, during the sixth and seventh century CE, coin numbers are higher than during the fifth century CE. Furthermore, settlement analysis showed that most sites date either from the late fifth or from the sixth century CE. Therefore a decline in demographic and economic vitality might be a possibility, especially in the early to mid-fifth century CE.

Crisis in the seventh century CE

The seventh century saw many changes to the populations in the northern Negev. At the beginning of the seventh century CE, the Persians ruled the area, and twenty years later the Arab conquest took place. At the end of the seventh century, 'Abd al-Malik established far reaching reforms that profoundly changed settlement patterns and population in the northern Negev. However, neither the Persian nor the Arab conquests left destruction in the settlements of the northern Negev. The settlements seemed to continue uninterrupted throughout the whole seventh century CE, and new settlements were even formed.

During the years 614 to 628, CE Palestine was under Persian rule. The Negev was not involved in the war with the Persians, and its impact remains unclear (Mayerson, 1964: 191–192; Haldon, 1995: 406; Schick, 1995: 20–48; Walmsley, 2007: 45–47; Holmquist, 2019: 10). Only one site, Magen, in the western study area, reports violent destruction dating to the first half of the seventh century CE. Tsaferis (1985: 14) attributes these destructions to the Persian raids in 614 CE, although no other destruction layers have been recorded in the study area in connection to the Persian war. Therefore, the recorded destruction might be the result of another (local) violent event.

The Arab conquest took place in the years 634 to 640 CE. In some areas of Palestine, the conquest was conducted peacefully, in others violently through siege and battle, such as the fall of Gaza in 637 CE, or Caesarea Maritima (see further Kaegi, 1992: 88–111). According to Avni (2014: 311) the Arab conquest marked the end of nearly a thousand years of Western influence during Hellenistic, Roman and Byzantine rule. It was also the trigger for profound changes in settlement and society (Avni, 2014: 311).

The analysis of the settlement patterns (see Chapter 5–7) showed that no settlements, within the study areas were affected by the Arab conquest through battle. No destruction layers were noted during surveys or excavations at any of the sites. Avni (2014: 314) notes that in the whole Negev, no site was involved in a violent battle during the Arab conquest. On the contrary, during the seventh century new settlements were constructed, mainly large farming estates outside the urban centers (see Chapter 8). In fact, in some locations public buildings were built. In conclusion, it seems that the Arab conquest was for the northern Negev a rather peaceful event, with a change from Byzantine to Arab rule, but no major destruction of settlements and no direct influences on settlement patterns. Also, most churches and monasteries continued to be in use, at least for several decades until after the Arab conquest.

9.3.2 Environmental change

The impact of climate change on the settlement patterns in Palestine during the Classical period has been extensively discussed. In the early twentieth century, Huntington proposed that the rise and fall of civilizations in the Near East was based on climatic change. According to Huntington (1911), the rise of settlements in arid areas during the Roman-Byzantine period was a result of more favorable climatic conditions, and the decline during the Late Byzantine and Early Islamic period was due to worsening climatic conditions which led to the desertification of the area. The discussion on the impact of climate change was again revived in

the early 1990s and 2000s with several researchers in favor of the theory that climate change was responsible for the rise and abandonment of the settlements during the Roman-Byzantine to Early Islamic period (see Issar and Govrin, 1991; Issar, 1995; 1998; Hirschfeld, 2004a; 2006; 2007) others argue that political and social factors were responsible for these fluctuations in settlements (see Rubin, 1989; 1991; Rosen, 2000; Avni, 2014).

Several geomorphological studies have been conducted since the 1990s, some showing favorable conditions between 200 BCE and 200 CE, and at the beginning of the fourth century CE (for a summary see A. Rosen, 2007: 165–166). However, most studies are based on research not conducted in the northern Negev, such as in the Soreq cave in central Israel or the Dead Sea area. Two main questions have to be answered: (1) Can that data from central Israel or Dead Sea be extended, even partially, to the northern Negev? (2) If there were fluctuations, were they enough to impact settlement, especially in an environmentally marginal or transitional area? Only one study was conducted in the northern Negev, showing that the climate was consistent in the northern Negev during the last 13,000 years (Vaks et al., 2006). Furthermore Bar-Matthews et al. (1998) argue that the period from ca. 1050 BCE to 950 CE was the most stable period in terms of rainfall amount, and according to A. Rosen (2007: 168) the stability of rainfall is far more important than the rainfall quantities in marginal farming areas such as the Negev (see Chapter 3.2 Paleoclimate).

The analysis of settlement patterns shows that, during the time period between 200 BCE and 200 CE, some settlements were founded in the northern Negev, but no strong increase in settlement is visible. Furthermore, during this time period, where the climate was supposed to be favorable, the northern Negev was almost completely abandoned, with only a few settlements (70 to 250 CE). During the early fourth century CE in the northern Negev, mainly the (Byzantine) urban centers, such as Be'er Sheva, Ma'on, Be'er Shema and Tel Malhata/Moleatha were settled, whereas not many farmhouses and small farming villages date to the early fourth century CE. Most farmhouses and small villages in the northern Negev date to the fifth to seventh century CE, when according to some geomorphological studies, the climate was supposed to be less favorable. Especially in the late sixth- beginning of seventh centuries. This period saw a phase of ruralization of urban centers and the establishment of large farmhouse estates outside the cities/towns in the northern Negev (see Chapter 8). The results of the settlement pattern evaluation also show that if there were favorable climatic fluctuations in the northern Negev during the Classical period, these were not the main factors responsible for the foundation and abandonment of settlements and therefore played no significant role in the shifting demographics of the region.

It seems that earthquakes did not play a major influence on the settlement patterns of the northern Negev during the Classical period, as no wide range destruction layers have been found which are associated with any specific earthquake within the study areas. Although several researchers argue for earthquake impacts in several Negev towns, outside the study areas, such as in Elusa, Shivta, Rehovot-in-the-Negev, and Oboda. These destruction layers are either dated to the early seventh century CE or to the mid-eight century CE (cf. Negev, 1974; 1976; 1993; Amiran et al., 1994; Fabian, 1998; Korjenkov and Mazor, 1999a; 1999b; 2003; 2005; 2013; 2014; Erickson-Gini, 2006; 2010).

9.3.3 Social and economic change

Several social and economic factors influenced the settlement patterns and the population of the northern Negev. However, many of these social and economic factors are a direct result of political events. The influences of these factors are the most difficult to trace within the changes in settlement patterns and population. The exception is the most traceable social factor: the change in religion and culture of the population of the northern Negev. This factor is associated with cult sites, symbols and in some parts a specific material culture, however, change in religion can also be direct result of political change.

Collapse of the Incense Road

After the Romans annexed the Nabatean kingdom and incorporated it into the province of Arabia in 106 CE, the international trade along the Incense Road continued, although it declined. Further south, along the trade road in central Negev, the Romans built forts with courtyards. In terms of the northern Negev and the study areas, only the last part of the Incense Road (part of the road from Elusa to Gaza) is relevant, as it passed through the western study area. During the third century CE, the trade road collapsed completely. After attempts to revive the international trade road failed at the end of the third century CE, the road continued to be used as a link between Petra and the Negev until the Early Byzantine period (cf. Erickson-Gini, 2010).

In the western study area, through which the Incense Road passed during the Hellenistic through Early Roman period, no settlements were located along the Incense Road. All settlements were located along Nahal Besor, or other roads in the area. Only in the Late Roman period, when the road had already collapsed, several settlements were located along the road. The road continued to be used as link between the settlements in the central Negev, such as Elusa, Oboda, and Mampsis, and the coastal cities, Gaza, and Ashkelon.

Justinian Plague

The Justinian plague hit the area in 541–543 CE, spreading from Alexandria to Constantinople (cf. Newfield, 2016; Harper, 2017; Mordechai and Eisenberg, 2019). Spreading first in the coastal cities such as Gaza and Ashkelon, the precise effect of this event is unknown, as no mass burials have been discovered in the northern Negev. Furthermore, it seems that, in general, the time period of the sixth century CE was the high point of Byzantine settlement construction in the study areas. Many religious buildings such as churches, synagogues and monasteries are date to the mid-sixth century or have at least been renovated extensively. Therefore, it is unclear whether the Justinian plague had any strong effect at the settlements, population, and economy of the northern Negev.

Changes in population/culture/religion

The northern Negev saw constant change from the Hellenistic to the Early Islamic period, not only in the dynamics of settlements, but also in the religion and culture of the population. Based on the settlement patterns, cult sites, and material culture of the study areas, the population of the northern Negev followed numerous religions (see Table 9.1). Change in religion does not mean that the population of the northern Negev changed as well. However, after the Second Jewish Revolt, most of the northern Negev was unsettled and only resettled towards the

Table 9.1 Change in religion of the population of northern Negev over time.
Table of the main religion of the northern Negev (based on the settlement patterns in the three study areas) from the Hellenistic to the Early Islamic period. Main religion(s) in bolt.

Period	Time span	Religion(s)
Early Hellenistic	332–167 BCE	**Classical paganism**
Late Hellenistic	167–37 BCE	**Classical paganism**/Jewish (?)
Early Roman	37 BCE–132 CE	Jewish/Classical paganism
Late Roman	132–324 CE	**Classical paganism**
Early Byzantine	324–491 CE	**Classical paganism**/Christian/Jewish
Late Byzantine	491–640 CE	**Christian**/Jewish/Classical paganism (?)
Early Islamic (Umayyad)	640–750 CE	**Christian**/Muslim/Jewish (?)
Early Islamic (Abbasid)	750–969 CE	Christian/Muslim
Early Islamic (Fatimid)	969 CE–1099 CE	**Muslim**/Christian (?)

Late third century CE. The population that resettled the northern Negev was most likely of Judean or Arab/Nabataean (Negbite) origin. During the Early Byzantine, no Christian cult sites were built in the northern Negev, and only in the late fifth/early sixth century do the first churches appear. Therefore, it is likely that a large part of the population was polytheist. Only in the late fifth, beginning of sixth century CE, did the Christianization of the area take place, and it is assumed that a large part of the population converted to Christianity. In contrast, it seems that the southern coastal plain with the cities of Gaza and Ashkelon, were Christianized in the early fifth century CE and first monasteries and churches appear in the region of Gaza in the fourth century CE (Ashkenazi, 2004: 207; Hirschfeld, 2004b). Several churches with a *baptisterium* were found within the study areas. Most baptismal fonts found in the study areas were designed for adults, such as the one discovered in Be'er Sheva (Figueras, 2013: 131), Magen (Tsaferis, 1985), or Be'er Shema (Patrich et al., 2020). An interesting baptistery was discovered at Horvat Karkur Illit, located just outside the central study area, where a baptismal font which was originally built for adults has been replaced at a certain point with a stone basin, clearly designed for the baptism of infants and small children (Figueras, 2004: 37–38). The early baptismal font for adults was built during the first phase of the church, dating to the early fifth century CE, the baptistery for infants and small children dates to the mid-sixth century CE (Figueras, 2004: 7–9). This might serve as an indication that by the mid-sixth century CE, adult baptism was no longer necessary (Figueras, 2004: 38). However, new populations also arrived in the northern Negev, from all parts of the eastern Mediterranean. It is assumed that most of the population practiced Christianity until at least the eight century CE, when the Muslim population slowly settled down in the northern Negev, and most Christian cult sites were abandoned.

It has to be kept in mind that changes in religion are based on political change, and these always had at least partial impacts on any new populations arriving in the region.

Wine trade collapse end of seventh century

The wine trade was an important economic factor in the northern Negev. Different research shows that wine production and trade were the highest during the fifth to sixth centuries CE, with the most in the mid-sixth century CE (Fuks et al., 2020; Lantos et al., 2020). Several industrial-scale wine presses were discovered in the study areas. It seems that the majority of those wine presses went out of use in the seventh century CE. In the northern Negev, it is obvious that the wine production declined from the Late Byzantine to the Early Islamic period (cf. Tepper et al., 2018; Bar-Oz et al., 2019: 4–5, 9; Lantos et al., 2020). However, evidence suggests that wine production continued also during the Early Islamic period and

wine consumption was not prohibited (Lantos et al., 2020). The decline of most of the wine presses in the study areas is probably a result of the collapse of the international wine trade, as the main focus of Palestine trade shifted eastwards to Arab territories and transportation from sea to land (cf. Schick, 1995: 78–79; Avni, 2014: 267–71; Decker, 2013: 112–13; Lantos et al., 2020) The decline of viticulture in the seventh century CE corresponds with evidence of the termination of dovecotes in the northern Negev. Dovecotes were built to produce dung as fertilizer, which was used to enrich the poor-quality loess soil. This dung fertilizer was needed for cultivating plants, mainly fruit trees and vines. Several large dovecote towers have been found in the northern Negev in connection with large industrial winepresses, e.g., Be'er Sheva, southern entrance (Haimi, 2008; Michael and Tepper, 2021) or Nahal Zon (Lifshits, 2017). It seems that the decline of both occurred during the same time and were most likely connected.

Ruralization, urban decline, and architectural change in the seventh to eight century CE

During the seventh century CE a phase of ruralization and urban decline is evident in the study areas, especially in Be'er Sheva, but also in other large settlements. The main indicator is the establishment of large farmhouse estates outside urban centers. Interestingly, several of these large farming estates were built close to the city, much closer than the village hinterland during the Byzantine period. The establishment of large farmhouses near urban centers might be a sign that the supply to the cities was reduced or partly collapsed during the seventh century CE. Therefore, farming estates were needed close to the cities. Another explanation is that with the abandonment of the winepresses in the seventh century, land near the city could be used for grain, or other agriculture products that were earlier produced farther away from the urban center.

However, the majority of excavated farmhouses and villages in the hinterland or urban centers show no discernable changes during the early Umayyad period in the seventh and early eighth centuries. This means that the large farming estates were in addition to the already existing farmhouses and villages in the hinterland.

A new phase is visible in the mid-eight century CE, at the beginning of the Abbasid period. In large buildings, such as farmhouses, the rooms were divided into smaller rooms. In the majority of the buildings, new walls were built from dressed building stones and architectural remains in secondary use from collapsed Byzantine buildings such as public buildings or churches. This might serve as an indication that a part of the population left the area, and churches and other public buildings were no longer rebuilt. Most buildings continued to be used until the ninth/tenth century CE. This phase of architectural change is visible in almost

all Early Islamic buildings in the northern Negev. The phase of ruralization and urban decline result from economic reasons or change in culture. It seems that the architectural changes were based on changes in culture, away from the Roman building style to a more functional architecture.

10 CONCLUSIONS

10.1 Summary of the study

The focus of this study has been on gathering and synthesizing a considerable amount of survey and excavation data from the northern Negev in order to explicate long term settlement trends in the region during the Classical Era (Hellenistic through Early Islamic). The intent was to explore the relationships between changing settlement systems, environmental fluctuations, and various social and political factors, including shifting borders and political systems, demographic trends, and social factors such as religious transformations. In particular, the northern Negev, on the edge of dry-farming practicability, is especially sensitive to environmental and climatic fluctuations with significant impacts on farming potentials. The area also bridges different regions—the desert and the Mediterranean zone, and interior regions with the coastal plain—and thus it is a major locus of trans-shipment and trade. Social and political trends over the long millennium of the Classical Era also played a role in settlement systems, and these were central to the study.

Considering the archaeological evidence, the northern Negev was settled throughout the Classical Era. However, it shows that at certain points of the history only a handful of sites were settled, and at other times the settlement density was extremely high with hundreds of settlements. Furthermore, analysis of the three study areas show that the settlement density was almost identical in all three areas. Although the three areas can be differentiated in several aspects, such as altitude, access to water, rainfall per year, and flora and fauna, they all show the same settlement dynamics: a low settlement density during the Hellenistic and Early Roman period. After the early second century CE, only a handful of settlements existed in the northern Negev, with a strong rise towards the end of the third century CE, which is most likely connected to the reforms by Diocletian.

Interestingly, the rapid increase in settlement in the third century is mainly visible in the larger settlements, such as Be'er Sheva, Ma'on or Tel Malhata, which became cities and towns during the Byzantine period. Not many small, isolated settlements, such as farmhouses, have been found dating to the third century CE. Over 60% of all sites date to the Byzantine period. Most of these sites date from the fifth century onwards, which correlates also with the Christianization of the northern Negev, as the majority of churches and monasteries in the northern Negev were built during the fifth/sixth centuries CE. The growth of population and settlements during the Byzantine period is impressive. Based on the analyzed data, the population of the northern Negev probably reached over 100,000 people in the mid-sixth century. The majority of settlements continued into the Early Islamic period without interruption. With the decline of Christianity, the settlement and population of the northern Negev also slowly decreased. The northern Negev has not seen such a population increase as during the Byzantine period until recent times.

During the entire Classical Era, there is no evidence of any destruction or violent conquest of a settlement that can be connected to an historical event. The different political, economic, social, and environmental factors have been analyzed and correlate to the settlement history of the Classical Era in the northern Negev. Many political factors had a strong influence on the settlement patterns, such as ancient borders, the First and Second Jewish Revolts, political reforms, Christianization, the Arab conquest, etc. However, the economic and social factors are more difficult to interpret, and many times those changes came into being based on changed political factors.

It is unclear to what extent environmental factors played a role in the changing settlement patterns. First of all, there are different opinions about whether the climate, particularly the amount of rainfall, changed at all during the Classical Era in the northern Negev (see Chapter 3). Secondly, for most significant changes in settlement patterns it could be shown that political factors were the major catalysts of change, not climate. Therefore, it can be concluded that changing environmental factors, such as an increase or decrease of rainfall, might have supported the changes in settlement patterns, but they were not the main catalyst for those changes.

10.2 Contribution of the research

This research was conducted with the intent of providing the most comprehensive analysis to date of the dynamics and changes in settlement patterns of the northern Negev during the Classical Era (Hellenistic through Early Islamic periods). A large database for each study area was established, containing all Classical period archaeological sites discovered during surveys, excavations, inspections, and trial trenching. The data were interpreted according to specific attributes and standards. Furthermore, key excavations were used to consider the collected data, and numismatic evidence from the study areas was used to construct a database line which allowed for the analysis of the peaks and troughs of each period. Detailed analyses of the three study areas were presented from the Hellenistic to the Early Islamic periods. Different GIS technologies were used for the construction of the maps, as well as for analyzing the data. The data were examined using three different scales: the whole region as the northern Negev, the three study areas—west (Nahal Besor region), central (Be'er Sheva and surroundings) and east (eastern Be'er Sheva–Arad Basin). Finally, individual survey squares (10 × 10 km) were also examined. GIS technologies were used to calculate the size of specific sites and to analyze the site hierarchy, as well as the spatial relation between specific sites and surrounding sites. By examining the population of urban centers and answering the question of how urban centers adopt specific land use strategies, which in turn impact settlement density on types, the research showed how the hinterland of a large settlement was organized and how urban centers interact and influence it.

This thesis has presented the dynamics of settlement patterns and presented possible catalysts for change for the northern Negev. Furthermore, it has shown ways of using legacy survey data for archaeological research.

10.3 Significance of the research

The study of the settlement patterns of the three study areas over a long time period allowed for the analysis of the changes of settlement patterns, as well as different catalysts for change. It also enabled the reconstruction of the settlement history of the northern Negev.

The importance of the research lies in the synthesis of a large dataset, using new tools that have not previously been applied, thus offering both a more detailed perspective on settlement change and a way of testing these methods in an environmentally sensitive zone. This has general implications for understanding

how peripheral zones operate historically. Beyond examining historically specific trends, broad conceptualizations of how arid peripheries work on the edge of empires may be developed in the future.

The thesis reports on the dynamics of settlement patterns and changes as well as the different catalysts for change. Furthermore, it shows changes in population and culture of the inhabitants of the northern Negev over a long-time span. The thesis has also documented ways to incorporate legacy survey data for archaeological research as well as noting limitations of the use of such data for further archaeological research. Legacy survey data have become more and more important, as many archaeological sites are being destroyed, through construction, agriculture, erosion etc. In many cases, only legacy survey data of sites exist, therefore working with such data is essential for future archaeological research.

10.4 Limitations of the study and recommendations for further research

This study had several limitations. First of all, the research area of the study was limited to the three survey samples, as the whole of northern Negev would have been a far too large area. Furthermore, the survey samples could not be chosen freely as the whole of northern Negev has not been systematically surveyed (see Figure 4.1). The research was also limited by certain parameters, for example the survey data provided by the ASI, IAA, and research institutions. In several cases, only a general description and no accompanied finds were published. Therefore, many sites could not be redated. Furthermore, not all descriptions of sites were detailed, and in many cases the site had to been interpreted based on the limited survey descriptions. To minimize the possibility of bias and mistakes in interpretation and classification, a list of attributes was established, and each site was classified according to the attributes, this allowed for standardization of the sites. Another limitation was related to the excavations conducted in the northern Negev. Several important excavations were unpublished, or only preliminary publications were available. Therefore, it was not possible to draw final conclusions from certain studies. To counter this problem, access to unpublished material was facilitated through colleagues from the IAA Southern district. However, this was not in all cases possible. Furthermore, one of the largest excavations conducted in the northern Negev was at Khirbat Amra. The excavation was conducted some 25 years ago, but in order to learn more about the settlement history of the northern Negev, I took over the publication of this important site, together

with I. Taxel. As the site was settled from the Hellenistic through the Early Islamic period, it turned out to be a perfect case study to accompany this research.

This study presented the changing political and demographic patterns of the semi-arid south, at the edge of the empire. It might be interesting to see if these changing political and demographic patterns are paralleled by other areas of Palestine. Therefore, the next step in research, to fully understand the political and demographic patterns of the regions, is to make a detailed comparison using these different perspectives.

APPENDIX 1—DATABASE FORMAT AND ATTRIBUTES

	Value	Definitions (where necessary)
Site number (ID)	numeric	Short integer
Site name	text	text
Coordinates (ITM; EPSG 2039)	numeric	Long integer
Site Type	Definition	City/Town Village Farm Structure Installation Military structure Cult site Burial site Campsite Findspot
Size	Definition	Permanent Settlements Small buildings: Isolated: Cave dwellings/ Installations/small Farmhouses/watchtowers Large building: Isolated large Farmhouse/building Small Settlement: a cluster of two or more buildings; hamlet Medium Settlement: an extensive settlement comprising many buildings, such as a village, a suburb, or a small town Large Settlement: City, large town Non-permanent Settlement (Campsites, tombs, concentration of sherds, etc.) Small >1 hectare Medium 1–3 hectars Large < 3 ha

	Value	Definitions (where necessary)
Number of Structures	numeric	Short integer
Size Area (ha)	numeric	Short integer
Dating	numeric	Short integer
Periods of occupation	Definition	Hellenistic Early Roman Late Roman Byzantine Early Byzantine Late Byzantine Early Islamic
Permanent/Non-Permanent Site	numeric	[P=1]/[NP=2]
Site Description	text	text
Excavation	numeric	[Yes=1]/[No=2]
Additional Information	text	text
References	text	text

APPENDIX 2—COIN FINDS FROM EXCAVATIONS

Origin	Permit/License No	Number of coins	Reference
Be'er-Sheva	A-2187/1994	2	Katz, 1998; IAA internal database (*Menorah*)
Be'er-Sheva	A-2398/1995	1	Varga, 1997; IAA internal database (*Menorah*)
Be'er-Sheva, Compound E	A-2484/1996	20	Ein-Gedi and Masarwah, 1999; IAA internal database (*Menorah*)
Be'er-Sheva	A-2872/1998	2	Sonntag, 2001b; IAA internal database (*Menorah*)
Be'er-Sheva, Compound E	A-3414/2001	32	IAA internal database (*Menorah*); Excavators: Seriy and Ein-Gedy (unpublished)
Be'er-Sheva, Compound E	A-3626/2002	8	IAA internal database (*Menorah*); Excavators: Seriy and Talis (unpublished)
Be'er-Sheva	A-3773/2002	17	IAA internal database (*Menorah*); Excavators: Nikolsky and Talis (unpublished)
Be'er-Sheva	A-4012/2003	4	IAA internal database (*Menorah*); Excavator: Fabian (unpublished)
Be'er-Sheva	A-5914/2010	5	Talis, 2012; IAA internal database (*Menorah*)
Be'er-Sheva	A-6264/2011	28	Varga and Nikolsky, 2013; IAA internal database (*Menorah*)
Be'er-Sheva	A-6350/2011 A-6351/2012	31	Talis, 2015; IAA internal database (*Menorah*)
Be'er-Sheva	A-7456/2015	1	IAA internal database (*Menorah*)
Be'er-Sheva	A-8136/2017	1	Eisenberg-Degen and Talis, 2020; IAA internal database (*Menorah*)
Be'er-Sheva	B-120/1998	1	Fantalkin, 2000a; 2000b; IAA internal database (*Menorah*)
Be'er-Sheva	unknown	33	IAA internal database (*Menorah*)
Be'er-Sheva, Central Bus Station	A-95/1966	2	IAA internal database (*Menorah*)

Origin	Permit/License No	Number of coins	Reference
Be'er-Sheva, Central Bus Station	unknown	7	IAA internal database (*Menorah*)
Be'er-Sheva, Emeq Sara	unknown	1	IAA internal database (*Menorah*)
Be'er-Sheva, Hevrat Hashmal	A-2225/1995	29	IAA internal database (*Menorah*); Katz and Sonntag, 1996; Excavators: Katz and Sonntag (unpublished)
Be'er-Sheva, Nahal Beqa	A-7567/2015	1	Kobrin, 2019; IAA internal database (*Menorah*)
Be'er-Sheva, Old Beduin Market	A-1862/1992	11	IAA internal database (*Menorah*); Excavator: Fabian (unpublished)
Be'er-Sheva, Old Beduin Market	A-2108/1994	13	Sonntag, 2001a; IAA internal database (*Menorah*)
Be'er-Sheva, Old Beduin Market	A-2145/1994	65	IAA internal database (*Menorah*); Excavator: Fabian (unpublished)
Be'er-Sheva, Old Beduin Market	A-94/1966	1	IAA internal database (*Menorah*)
Be'er-Sheva, Shopping mall	A-1644/1989	2	Govrin, 2003; IAA internal database (*Menorah*)
Be'er-Sheva, Ramot	A-2452/1996	5	IAA internal database (*Menorah*); Excavators: Feder and Barel (unpublished)
Be'er-Sheva, Ramot	A-2793/1997	1	IAA internal database (*Menorah*); Excavator: Fabian (unpublished)
Be'er-Sheva, Ramot	A-2748/1997	11	IAA internal database (*Menorah*); Excavator: Fabian (unpublished)
Be'er-Sheva, Ramot	A-2481/1996	1	IAA internal database (*Menorah*); Excavators: Feder and Barel (unpublished)
Be'er-Sheva, North train station	A-4287/2004	2	Israel et al., 2013; IAA internal database (*Menorah*)
Be'er-Sheva, University Campus (east)	A-1747/1990	3	Negev, 1993; IAA internal database (*Menorah*)
Horbat Raqiq	A-1920/1992	6	Dagan, 1995a; IAA internal database (*Menorah*)
Horbat Qasif	A-5669/2009	3	Shmueli, 2012
Khirbat Amra	A-1977/1993	11	Tahal, 1996; 2000; IAA internal database (*Menorah*)
Khirbat Jemmeh	unknown	7	Schaefer, 1979

Origin	Permit/License No	Number of coins	Reference
Khirbat el-Malta'a	A-5444/2008	10	Talis, 2011; IAA internal database (*Menorah*)
Magen	unknown	67	Feig, 1985
Ma'on (Monastery)	A-2953/1998; A2993/1999	48	Ariel and Berman, 2014
Ma'on (Synagogue)	unknown	15	Rahmani, 1960
Nahal Ashan	A-7508/2015	1	Eisenberg-Degen and Kobrin, 2016; IAA internal database (*Menorah*)
Nahal Beqa	A-7657/2016	1	Rasiuk and Shmueli, 2017; IAA internal database (*Menorah*)
Nahal Yattir	A-3885/2003	7	Nikolsky, 2009
Tel Aroer	unknown	15	Barkay, 2011
Tel Ira	unknown	53	Beit-Arieh, 1999
Tel Jemmeh	unknown	4	Ariel, 2014
Tel Malhata	unknown	47	Kindler, 2015
Tel Sheva	unknown	1	IAA internal database (*Menorah*)
Tel Sheva	C-128/1969; G-14/1970; G-18/1971;	71	Kindler, 1973
Tel Sheva, Khirbat Abu Mahfudh	A-4214/2004	2	Israel, 2008; IAA internal database (*Menorah*)
Tel Sheva, Shekhuna 36	A-2062/1993	47	IAA internal database (*Menorah*); Excavator: Baumgarten (unpublished)
TOTAL		**757**	

Coin finds according to percentage—study areas

Western study area

Early Hellenistic	332–37 BCE	3.5%
Early Roman	37 BCE–132 CE	0.7%
Late Roman	132–324 CE	8.3%
Early Byzantine	324–491 CE	34.7%
Late Byzantine	491–640 CE	52.8%
Early Islamic	640–1099 CE	6.9%

Central study area

Early Hellenistic	332–37 BCE	13.8%
Early Roman	37 BCE–132 CE	2.3%
Late Roman	132–324 CE	25.2%
Early Byzantine	324–491 CE	28.3%
Late Byzantine	491–640 CE	11.9%
Early Islamic	640–1099 CE	18.4%

Eastern study area

Early Hellenistic	332–37 BCE	39.7%
Early Roman	37 BCE–132 CE	7.9%
Late Roman	132–324 CE	13.5%
Early Byzantine	324–491 CE	29.4%
Late Byzantine	491–640 CE	4%
Early Islamic	640–1099 CE	5.6%

APPENDIX 3—SURVEY MAPS: SUMMARY OF CLASSICAL SITES

This list represents the survey maps total registered sites, classical sites, density of sites and percentage of sites.

Survey Map	Area (sq. km)	Total Sites	Density of Sites	Classical Sites	Density of Classical Sites	% of Classical sites
Nirim (112)	96.5	71	0.74	53	0.55	74.6%
Mivtahim (114)	98.3	56	0.57	41	0.42	73.2%
Patish (121)	100	57	0.57	44	0.44	77.2%
Urim (125)	100	255	2.55	226	2.26	88.6%
Be'er Sheva West (127)	100	344	3.44	243	2.43	70.6%
Be'er Sheva East (128)	100	306	3.06	229	2.29	74.8%
Nachal Secher (131)	100	109	1.09	79	0.79	72.5%
Nachal Be'qa (132)	100	105	1.05	89	0.89	84.8%
Nahal Yattir (139)	100	359	3.59	138	1.38	38.4%
Qasif (140)	100	273	2.73	121	1.21	44.3%
Khirbat Aroer (143)	100	48	0.48	32	0.32	66.7%
Tel Malhata (144)	100	159	1.59	80	0.80	50.3%
Total	**1194.8**	**2142**	**1.79**	**1375**	**1.15**	**64.2%**

The list represents the number of Hellenistic, Roman, Byzantine and Early Islamic sites discovered during systematical map surveys according to survey map. The data is based on the findings from the ASI.

Survey Map	Hellenistic	Roman	Byzantine	Early Islamic
Nirim (112)	6	5	42	9
Mivtahim (114)	1	5	34	1
Patish (121)	1	4	32	6
Urim (125)	6	30	89	13
Be'er Sheva West (127)	7	10	164	37
Be'er Sheva East (128)	6	23	171	26
Nachal Secher (131)	0	15	47	16
Nachal Be'qa (132)	0	21	53	15
Nahal Yattir (139)	6	30	88	13
Qasif (140)	5	15	46	6
Khirbat Aroer (143)	1	6	16	2
Tel Malhata (144)	1	8	67	4
Total	**40**	**172**	**849**	**148**

APPENDIX 4—SUMMARY OF LARGE SITES, SELECTED FEATURES AND DATE OF ABANDONMENT

Large settlements located in the study area, size, type, periods of occupation and date of abandonment of settlement. Data based on survey, excavations, published pottery etc. (see chapter 5, 6 and 7).

City/Town	Size (ha)	Settlement type	Periods of occupations	Abandonment	Ch.
Be'er Sheva	90–140	City with synagogue (?), church, monastery	Rom., Byz., EI	9th–10th cent. CE	6
Ma'on	30–40	Town with synagogue, church, monastery	Hel., Rom., Byz., EI	8th–9th cent. CE	5
Tel Malhata/ Moleatha	20–25	Town and fortress, church (?)	Hel., Rom., Byz., EI	8th–9th cent. CE	7
Kh. Jemmeh	20–25	Town and church	Rom., Byz., EI	7th cent. CE (?)	5
Kh. Qasif	20–25	Town and church, monastery (?)	Hel., Rom., Byz., EI	10th–11th cent. CE	7
Kh. Irq	15–25	(Small) town and church	Rom. (?), Byz., EI (?)	7th–8th cent. CE	5
Tel Ira	?	Town (?) and monastery	Hel., Rom., Byz., EI	8th–9th cent. CE	7
Tel Sheva	8–12	Large village and churches, fortress	Hel., Rom., Byz., EI	8th–9th cent. CE	6
Amra	7–10	Large village and church	Hel., Rom., Byz., EI	9th–10th cent. CE	6
Horvat Hur	4	Village and church, monastery	Hel., Rom., Byz., EI	8th–9th/10th cent. CE	7
Be'er Shema	3	Village and churches, fortress	Hel.(?), Rom., Byz., EI	8th–9th cent. CE	5
Magen	?	Village and churches	Byz.	7th cent. CE	5
Kh. El-Malta'a	?	Village and church	Hel., Rom., Byz., EI	10th–11th cent. CE	5

APPENDIX 5—CULT SITES IN THE STUDY AREAS

Pagan cult sites

Settlement	Type	Date 1	Date 2	Reference
Tel Sheva	Temple (*excavated*)	3rd cent. BCE	1st cent. BCE	Aharoni, 1973: 34 Derfler, 1981: 97 Figueras, 1980: 136

Jewish Cult sites—Synagogues

Settlement	Type	Date 1	Date 2	Reference
Ma'on	Synagogue (*excavated*)	4th cent./ 6th cent. CE[1]	7th cent. CE	Levy, 1960: 265; Grabar, 1962: 117; Barag, 1993: 944–46
Be'er Sheva[2]	Synagogue (?)	Byz.	unknown	Figueras, 1980: 154; 2013: 9

1 Coin finds start in the 4th century CE. Under the mosaic carpet, dating to the 6th century CE an older mosaic was found. Possibly the synagogue was established in the late 4th century CE and abandoned in the 7th century CE.

2 Only a small column of a synagogue chancel was discovered in the early 20th century CE. The exact location of the synagogue is unknown (Figueras, 2013: 9). It is interesting that only in the two largest settlements in the study areas, a synagogue, resp. the indications of a synagogue were found. Outside the study area in the southern Hebron hills synagogues were found and in the large cities as Gaza. It seems, that either there were small Jewish villages or Christian villages, but only in the largest towns in the area, synagogues and churches were established.

Christian Cult sites—Churches

Settlement	Type	Date 1	Date 2	Reference
Nahal Imar	Fragments of channel screen (*surveyed*)	Byz.	unknown	Gat, 2012
Kissufim	Mosaic floor (*excavated*)	mid-6th cent.	7th–8th cent.	Cohen, 1980: 16–23; 1993: 277–82; Tsafrir et al., 1994: 168; Di Segni, 1997: 677–79
Kh. Jemmeh	Church (*excavated*)	Byz.	7th cent.	Schaefer, 1979: 126
'Reservoir'	Fragments of channel screen (*surveyed*)	Byz.	unknown	Gat, 2014
Shellal church	Mosaic floor (*excavated*)	mid-6th cent.	unknown	Avi-Yonah, 1933: no.306; Trendall, 1957; Hachlili, 2009: 117–20
Be'er Shema (St. Stephanos)	Church (*excavated*)	5/6th cent.	7th cent.	Alt, 1931; Bellinger, 1966; Gichon, 1975; Gazit and Lender, 1992; 1993; Gazit, 1996: 59*; 2008: 78; Di Segni, 2004: 50–52; Hachlili, 2009; Erickson-Gini et al., 2015; Patrich et. al., 2020: 27
Ohad	Church (*surveyed*)	Byz	unknown	HA., 197; Gal, 2017
Bir Abu Jureida	Church (*surveyed*)	Byz	unknown	Gal, 2017
Kh. El Malta'a	Church	Byz	unknown	Talis, 2012
Magen (St. Kyrikos)	3 churches (*excavated*)	5th cent.	7th cent.	Tsaferies, 1985: 2–15; Feig, 1985: 38–39; Patrich et. al., 2020: 27
Ma'on (St. Stephen)	Parochial church (*excavated*)	6th cent.	late 7th cent.	Figueras, 1996: 271–273; Di Segni, 1997; Nahshoni and Seriy, 2004: *65–*67; Nahshoni and Seriy 2014: *13–*62; Di Segni, 2014: 31–36
Kh. Irq	Fragments of channel screen and inscription (*surveyed*)	Byz.	unknown	Gat, 2012
Amra	Church (*excavated*)	5th cent.	8th cent.	Segal, 1988; Tahal, 1996; 2000; Figueras, 2013

Settlement	Type	Date 1	Date 2	Reference
Tel Sheva	Church (*surveyed*)	Byz.	unknown	Woolley & Lawrence, 1914–1915: 45; Aharoni, 1973: 1; Figueras, 2013: 173
Abu Matar, Be'er Sheva[1]	Villa, church or monastery (*excavated*)	5/6th cent.	7th cent.	Gilead et al. 1993: 97–99
Municipality Market, Be'er Sheva	Church (*excavated*)	6th cent.	8th cent.	Patrich, 2006: 373; Gilead and Fabian, 2008: 320; Figueras, 2013: 133; Fabian and Ustinova, 2020
Eli Cohen street, Be'er Sheva	Church, possible Monastery (*excavated*)	6th cent.	7th to 8th cent.	Israeli; 1967: 5; 1967: 29; 1968: 415; Biran, 1968: 44–45; Ovadiah & De Silva, 1981: 207–08; Tsafir et al., 1994; Figueras, 1995: 401–50; Schick 1995: 259
Army Gas Station, Be'er Sheva	Mosaic floor (*excavated*) Church or possible synagogue (?); no Christian symbols.	mid-6th cent.	unknown	Cohen, 1968: 130
Mordei Hageta'ot St., Be'er Sheva	Church *(surveyed)*	Byz.	unknown	Govrin, 2015: 119
Bene Harod St., Be'er Sheva	Mosaic floor (*excavated*)	Byz.	unknown	Avi-Yonah, 1932: 170–78; Govrin, 2015: 121
Nahal Liqit	Church (*surveyed*)	Byz.	unknown	Shemesh, 2018
Horvat Hur	2 churches (*surveyed*)	5th/6th cent.	unknown	Govrin, 1991; Figueras, 1995; Magness, 2003: 22–23
Horvat So'a	Church (*surveyed*)	5th/6th cent.	7th cent.	Govrin, 1991; Figueras, 1995; Hirschfeld, 1997; Magness, 2003
Kh. Qasif	3 churches[2] (*surveyed*)	Byz.	unknown	Govrin, 1991; Figueras, 1995
Moleatha	Inscription	Byz.	unknown	Tal, 2015; Di Segni, 2015

1 Appears also in the monastery list (see below), as it is unclear if church or monastery.
2 One of the churches might be a monastery, see below.

Christian Cult sites—Monasteries

Settlement	Type	Date 1	Date 2	Reference
Be'er Sheva (ed-Deir)	Monastery	Byz.	unknown	Abel, 1903: 425; Figueras, 1995: 401–50
Abu Matar (Be'er Sheva)	Monastery (?) (*excavated*)	5/6th cent.	7th cent.	Gilead et al., 1993: 97–99
Horvat Hur	Monastery (*excavated*)	5th cent.	7th cent.	Tristram, 1882: 373; Conder and Kitchener, 1883: 396–97; Woolley and Lawrence 1914–1915: 48; Govrin, 1991: 56–60; Tsafrir et al., 1994: 148; Figueras, 1995; Zelin, 2001: 179; Magness, 2003; Magen and Kagan, 2012: 306–07; Varga, 2015; Varga and Rasiuk, 2017: 109–18
Tel Yeshua	Monastery (?), possible a complex farmhouse (*surveyed*)	5th/6th cent.	7th cent.	Woolley & Lawrence 1914–1915: 47; Ovadiah 1970: 179; Meshel et al., 1987: 102; Govrin, 1991: 97–99; Tsafrir et al., 1994: 148; Figueras, 1995: 417; Hirschfeld, 1997; Bagatti, 2002: 112; Magness, 2003: 33–34; Magen and Kagan, 2012: 308
Horvat So'a	Monastery (*surveyed*)	5th/6th cent.	7th cent.	Conder and Kitchener, 1883: 409–10; Woolley and Lawrence; 1914–1915: 31; Ovadiah, 1970: 179; Meshel et al., 1987: 102; Govrin, 1991: 97–99; Figueras; 1995: 417; Bagatti, 2002; Magness, 2003: 36–37; Hirschfeld, 1997; 2004: 84; Magen and Kagan, 2012: 309
Kirbat Qasif	Monastery (?) (*surveyed*)	Byz.	7th to 8th cent.	Guérin, 1869: 188 Palmer, 1871: 3–80 Conder and Kitchener, 1883: 411 Musil 1908: 18 Mader 1918: 225–228 Ovadiah 1970: 121 Avi-Yonah 1976; 1984 Tsafrir, Di Segni and Green 1994 Figueras, 1995 Israel and Schuster 2000: 125–127 Bagatti 2002 Magen and Kagan 2012

Settlement	Type	Date 1	Date 2	Reference
Tel Ira (St. Peter)	Monastery (*excavated*)	6th cent.	late 7th cent.	Govrin, 1991 Figueras, 1995: 401–450 Schick 1995 Beit-Arieh, 1999 Cresson 1999: 88–96 Ovadiah 1999: 428–437 Bagatti 2002 Hirschfeld 2004b: 61–68
Tel Masos	Monastery (*excavated*)	late 6th cent.	early 8th cent.	Aharoni, Fritz and Kempinski 1975: 110 Fritz and Keminski 1983 Kempinski 1993 Figueras, 1995 Goldfus 1997: 51–57 Magness, 2003
Ma'on (St.	Monastery or parochial church (?) (*excavated*)	6th cent.	late 7th cent.	Di Segni 1997 Nahshoni and Seriy 2004:*65–*67 Nahshoni and Seriy 2014:*13–*62 Di Segni 2014: 31–36
Be'er Shema	Monastery (*surveyed*)	Byz.	unknown	Gazit 1996
Tel Malhats/ Moleatha	Monastery (?) (*excavated*)	Byz.	7th cent.	Eldar and Nahlieli 1982: 39–41 Baumgarten 1982: 41–42 Eldar-Nir and Nahlieli 1982 Eldar and Baumgarten 1993 Tal 2015 Di Segni 2015

Muslim cult sites

Settlement	Type	Date 1	Date 2	Reference
Nahal Amin	Mosque (*surveyed*)	8th/9th cent. (?)	9th/10th cent. (?)	Govrin, 1991: 135–36 Magness, 2003: 52
Abu Qurinat	Open Mosque (*excavated*)	E.I. (?)	E.I. (?)	Kobrin, 2020
Rahat[1]	Open Mosque (*excavated*)	8th/9th cent. (?)	9th/10th cent. (?)	Seligman and Zur, 2021
Rahat, South	Open Mosque (*excavated*)	8th/9th cent. (?)	9th/10th cent. (?)	Shmueli, Kogan-Zehavi and Michael (A-9213)

1 Both mosques discovered in Rahat are located outside the study samples.

APPENDIX 6—SITE CATALOG

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Abu Bakra 3	149290	585092			×		Gat, 2012; Schaefer 1979: 268–269	1
Abu Bakra 4	149390	584792			×		Gat, 2012	1
Abu Bakra 4b	149490	584792	×	×			Gat, 2012	1
Abu Bakra 5	149740	584792			×		Gat, 2012; Schaefer, 1979: 270–271	1
Abu Qurinat, El-Ghanami Neighborhood	195460	561776			×	×	Kobrin, 2020; (A-7780/2016)	3
Abu Ruqiyiq 3	158240	589192			×		Gat, 2014	1
Abu Ruqiyiq 4	157740	589692			×		Gat, 2014	1
Abu Susein (M)	155191	574742		×			Gazit, 1996	1
Abu Susein [1]	155091	575192		×	×		Gazit, 1996	1
Abu Susein 1	155700	574700			×		Gazit, 1996	1
Abu Susein 2	155291	574392			×		Gazit, 1996	1
Assaf 2	145090	589291			×		Gat, 2012	1
Baikat Abu Marifa	149390	586492			×		Gat, 2012	1
Baikat Ta'abin	148640	586491			×		Gat, 2012; Israel, 1992	1
Be'er el Haj Musa Abu Ghalyun	153091	572292			×		Gazit, 1996	1
Be'er Sheba', Nahal 'Ashan, Newe Menahem B	176559	576202				×	Eisenberg-Degen and Kobrin, 2016; (A-7508/2015)	2
Be'er Sheva', Ben-Gurion University 1	181589	574976			×		Varga, 2018; (A-7756/2016)	2
Be'er Sheva', Ben-Gurion University 2	181399	575031			×		Eisenberg-Degen, 2018; (A-8090/2017)	2
Be'er Sheva', Compound C	180413	571934			×		Eisenberg-Degen and Talis, 2020; (A-8273/2017; A-8273/2018)	2

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Be'er Sheva, Nahal Ashan (Newe Menahem B) 1	176266	575776			×		Eisenberg-Degen, 2018; (7026/2014)	2
Be'er Sheva, Nahal Ashan (Newe Menahem B) 2	176616	576079			×		Eisenberg-Degen, 2018; (7026/2014)	2
Be'er Sheva', Noy Neighborhood	179228	570355			×		Kobrin, 2019; (A7567/2015)	2
Be'er Sheva, the Municipal Garage 1	181197	572570			×		Shmueli and Rasiuk, 2017 (A-7636/2016)	2
Be'er Sheva, the Municipal Garage 10	181208	572582			×		Shmueli and Rasiuk, 2017 (A-7636/2016)	2
Be'er Sheva, the Municipal Garage 11	181209	572584			×		Shmueli and Rasiuk, 2017 (A-7636/2016)	2
Be'er Sheva, the Municipal Garage 12	181211	572586			×		Shmueli and Rasiuk, 2017 (A-7636/2016)	2
Be'er Sheva, the Municipal Garage 13	181212	572587			×		Shmueli and Rasiuk, 2017 (A-7636/2016)	2
Be'er Sheva, the Municipal Garage 14	181213	572588			×		Shmueli and Rasiuk, 2017 (A-7636/2016)	2
Be'er Sheva, the Municipal Garage 15	181214	572590			×		Shmueli and Rasiuk, 2017 (A-7636/2016)	2
Be'er Sheva, the Municipal Garage 16	181215	572591			×		Shmueli and Rasiuk, 2017 (A-7636/2016)	2
Be'er Sheva, the Municipal Garage 17	181216	572591			×		Shmueli and Rasiuk, 2017 (A-7636/2016)	2
Be'er Sheva, the Municipal Garage 18	181217	572593			×		Shmueli and Rasiuk, 2017 (A-7636/2016)	2
Be'er Sheva, the Municipal Garage 19	181218	572594			×		Shmueli and Rasiuk, 2017 (A-7636/2016)	2

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Be'er Sheva, the Municipal Garage 2	181199	572572			×		Shmueli and Rasiuk, 2017 (A-7636/2016)	2
Be'er Sheva, the Municipal Garage 20	181219	572595			×		Shmueli and Rasiuk, 2017 (A-7636/2016)	2
Be'er Sheva, the Municipal Garage 21	181220	572596			×		Shmueli and Rasiuk, 2017 (A-7636/2016)	2
Be'er Sheva, the Municipal Garage 22	181221	572597			×		Shmueli and Rasiuk, 2017 (A-7636/2016)	2
Be'er Sheva, the Municipal Garage 23	181222	572598			×		Shmueli and Rasiuk, 2017 (A-7636/2016)	2
Be'er Sheva, the Municipal Garage 24	181222	572595			×		Shmueli and Rasiuk, 2017 (A-7636/2016)	2
Be'er Sheva, the Municipal Garage 25	181221	572595			×		Shmueli and Rasiuk, 2017 (A-7636/2016)	2
Be'er Sheva, the Municipal Garage 26	181220	572593			×		Shmueli and Rasiuk, 2017 (A-7636/2016)	2
Be'er Sheva, the Municipal Garage 27	181211	572582			×		Shmueli and Rasiuk, 2017 (A-7636/2016)	2
Be'er Sheva, the Municipal Garage 28	181210	572581			×		Shmueli and Rasiuk, 2017 (A-7636/2016)	2
Be'er Sheva, the Municipal Garage 29	181209	572579			×		Shmueli and Rasiuk, 2017 (A-7636/2016)	2
Be'er Sheva, the Municipal Garage 3	181198	572571			×		Shmueli and Rasiuk, 2017 (A-7636/2016)	2
Be'er Sheva, the Municipal Garage 30	181208	572578			×		Shmueli and Rasiuk, 2017 (A-7636/2016)	2
Be'er Sheva, the Municipal Garage 31	181208	572576			×		Shmueli and Rasiuk, 2017 (A-7636/2016)	2

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Be'er Sheva, the Municipal Garage 4	181200	572573			×		Shmueli and Rasiuk, 2017 (A-7636/2016)	2
Be'er Sheva, the Municipal Garage 5	181201	572575			×		Shmueli and Rasiuk, 2017 (A-7636/2016)	2
Be'er Sheva, the Municipal Garage 6	181202	572576			×		Shmueli and Rasiuk, 2017 (A-7636/2016)	2
Be'er Sheva, the Municipal Garage 7	181203	572577			×		Shmueli and Rasiuk, 2017 (A-7636/2016)	2
Be'er Sheva, the Municipal Garage 8	181205	572579			×		Shmueli and Rasiuk, 2017 (A-7636/2016)	2
Be'er Sheva, the Municipal Garage 9	181206	572581			×		Shmueli and Rasiuk, 2017 (A-7636/2016)	2
Be'er Sheva', Makhteshim	183190	572434	×				Israel et al., 2011; Haimi, 2013; Shemesh, 2018b	2
Be'er Sheva', the Bedouin Market	180786	571529			×		Peretz, 2018; (A-7959/2017)	2
Be'er Tarshan	197292	573645		×	×	×	Govrin, 1991; Magness, 2003	3
Bedouin market	180600	572100		×	×	×	Govrin, 1988; Shemesh, 2018b	2
Be'er 'Ali Abu Sa'alik	159691	576992		×	×	×	Gazit, 1996; Magness, 2003	1
Be'er Hamdi es Sani	159791	577492			×	×	Gazit, 1996	1
Be'er Sheva 1	179910.083	573254.373			×		Inspection/Trial trenching	2
Be'er Sheva 10	181117.946	572385.045			×		Inspection/Trial trenching	2
Be'er Sheva 11	180954.046	572107.741			×		Inspection/Trial trenching	2
Be'er Sheva 12	180445.805	571047.325			×		Inspection/Trial trenching	2
Be'er Sheva 13	180548.059	571381.958			×		Inspection/Trial trenching	2

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Be'er Sheva 14	184722.722	575419.681			×		Inspection/Trial trenching	2
Be'er Sheva 2	180458.772	572939.713			×		Inspection/Trial trenching	2
Be'er Sheva 3	180766.156	573000.521			×		Inspection/Trial trenching	2
Be'er Sheva 4	180959.987	573200.016			×		Inspection/Trial trenching	2
Be'er Sheva 5	181199.208	573058.694			×		Inspection/Trial trenching	2
Be'er Sheva 6	181447.003	572981.012			×		Inspection/Trial trenching	2
Be'er Sheva 7	181314.255	572726.334			×		Inspection/Trial trenching	2
Be'er Sheva 8	180853.081	572673.235			×		Inspection/Trial trenching	2
Be'er Sheva 9	180829.717	572447.977			×		Inspection/Trial trenching	2
Beer Sheva East 1	182470	574520			×		Shemesh, 2018b	2
Beer Sheva East 2	182460	574680			×		Shemesh, 2018b	2
Beer Sheva East 3	182030	574010			×		Shemesh, 2018b	2
Beer Sheva East 4	182130	574390			×		Shemesh, 2018b	2
Beer Sheva East 5	182200	574730			×		Shemesh, 2018b	2
Beer Sheva East 6	182430	574840			×		Shemesh, 2018b	2
Beer Sheva East 7	183920	573520			×		Shemesh, 2018b	2
Beer Sheva Park 1	174987	574381			×		Sonntag and Paran, 2009; Shemesh, 2018a; (A-5172/ 2007—Survey)	2
Beer Sheva Park 10	175542	573833			×		Sonntag and Paran, 2009; Shemesh, 2018a; (A-5172/ 2007—Survey)	2
Beer Sheva Park 11	175526	573897			×		Sonntag and Paran, 2009; Shemesh, 2018a; (A-5172/ 2007—Survey)	2
Beer Sheva Park 15	175239	572883			×		Aladjem, 2009; Shemesh, 2018a; (A4868/ 2006—Survey)	2

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Beer Sheva Park 2	174227	574143			×		Paran, 2012a; Shemesh, 2018a; (S-108/2009)	2
Beer Sheva Park 3	174165	574053			×		Paran, 2012a; Shemesh, 2018a; (S-108/2009)	2
Beer Sheva Park 4	174236	574041			×		Paran, 2012a; Shemesh, 2018a; (S-108/2009)	2
Beer Sheva Park 5	173915	573945			×		Paran, 2012a; Shemesh, 2018a; (S-108/2009)	2
Beer Sheva Park 7	175239	573142			×		Sonntag and Paran, 2009; Shemesh, 2018a; (A-5172/2007—Survey)	2
Beer Sheva Park 8	175859	573361			×		Sonntag and Paran, 2009; Shemesh, 2018a; (A-5172/2007—Survey)	2
Beer Sheva Park 9	175567	573821			×		Sonntag and Paran, 2009; Shemesh, 2018a; (A-5172/2007—Survey)	2
Beer Sheva, 1 Ha'al Street	180770	571150			×	×	Haimi, 2008; Shemesh, 2018b; (A-4230/2004)	2
Beer Sheva, Balfour Street 1	180265	572718			×		Abadi-Reiss and Eisenberg-Degen, 2013; Shemesh, 2018b	2
Beer Sheva, Balfour Street 2	180270	572725			×		Abadi-Reiss and Eisenberg-Degen, 2013; Shemesh, 2018b	2
Beer Sheva, Balfour Street 3	180280	572723			×		Abadi-Reiss and Eisenberg-Degen, 2013; Shemesh, 2018b	2
Beer Sheva, Balfour Street 4	180271	572720			×		Abadi-Reiss and Eisenberg-Degen, 2013; Shemesh, 2018b	2

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Beer Sheva, Balfour Street 5	180360	572697			×		Abadi-Reiss and Eisenberg-Degen, 2013; Shemesh, 2018b	2
Beer Sheva, Balfour Street 6	180276	572702			×		Abadi-Reiss and Eisenberg-Degen, 2013; Shemesh, 2018b	2
Beer Sheva, Balfour Street 7	180425	572811			×		Abadi-Reiss and Eisenberg-Degen, 2013; Shemesh, 2018b	2
Beer Sheva, Balfour Street 8	180422	572801			×		Abadi-Reiss and Eisenberg-Degen, 2013; Shemesh, 2018b	2
Beer Sheva, Balfour Street 9	180419	572791			×		Abadi-Reiss and Eisenberg-Degen, 2013; Shemesh, 2018b	2
Beer Sheva, Balfour Street 10	180417	572782			×		Abadi-Reiss and Eisenberg-Degen, 2013; Shemesh, 2018b	2
Beer Sheva, Balfour Street 11	180411	572775			×		Abadi-Reiss and Eisenberg-Degen, 2013; Shemesh, 2018b	2
Beer Sheva, Balfour Street 12	180416	572770			×		Abadi-Reiss and Eisenberg-Degen, 2013; Shemesh, 2018b	2
Beer Sheva, Balfour Street 13	180423	572768			×		Abadi-Reiss and Eisenberg-Degen, 2013; Shemesh, 2018b	2
Beer Sheva, Balfour Street 14	180415	572769			×		Abadi-Reiss and Eisenberg-Degen, 2013; Shemesh, 2018b	2
Beer Sheva, Balfour Street 15	180413	572762			×		Abadi-Reiss and Eisenberg-Degen, 2013; Shemesh, 2018b	2

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Beer Sheva, Balfour Street 16	180410	572756			×		Abadi-Reiss and Eisenberg-Degen, 2013; Shemesh, 2018b	2
Beer Sheva, Balfour Street 17	180398	572742			×		Abadi-Reiss and Eisenberg-Degen, 2013; Shemesh, 2018b	2
Beer Sheva, Balfour Street 18	180389	572723			×		Abadi-Reiss and Eisenberg-Degen, 2013; Shemesh, 2018b	2
Beer Sheva, Balfour Street 19	180395	572735			×		Abadi-Reiss and Eisenberg-Degen, 2013; Shemesh, 2018b	2
Beer Sheva, Balfour Street 20	180403	572766			×		Abadi-Reiss and Eisenberg-Degen, 2013; Shemesh, 2018b	2
Beer Sheva, Balfour Street 21	180398	572761			×		Abadi-Reiss and Eisenberg-Degen, 2013; Shemesh, 2018b	2
Beer Sheva, Balfour Street 22	180394	572752			×		Abadi-Reiss and Eisenberg-Degen, 2013; Shemesh, 2018b	2
Beer Sheva, Balfour Street 23	180385	572731			×		Abadi-Reiss and Eisenberg-Degen, 2013; Shemesh, 2018b	2
Beer Sheva, Balfour Street 24	180367	572708			×		Abadi-Reiss and Eisenberg-Degen, 2013; Shemesh, 2018b	2
Beer Sheva, Balfour Street 25	180368	572699			×		Abadi-Reiss and Eisenberg-Degen, 2013; Shemesh, 2018b	2
Beer Sheva, Beit Eshel Street 2	180270	571970			×		Talis, 2012; Shemesh, 2018b; (A-5914/2010)	2
Beer Sheva, Beit Eshel Street 5	182100	571815				×	Shemesh, 2018b	2

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Beer Sheva, Derech Hebron 2	181180	571570			×		Daniel and Barel 2001; Shemesh, 2018b	2
Beer Sheva, Eilat Road 2	180800	571900			×		Govrin, 2015; Shemesh, 2018b	2
Beer Sheva, Gimmel 2	182700	572500		×	×		Shemesh, 2018b	2
Beer Sheva, Gimmel 3	182803	572253			×		Shemesh, 2018b	2
Beer Sheva, Hebron Road 1	180820	571950			×		Talis and Seriy 2001; Shemesh, 2018b; (A-3445/2001)	2
Be'er Sheva, Live Yaffe Street	181002	572703			×		Shemesh, 2018b	2
Beer Sheva, Neve Menachem 1	173310	575140			×	×	Bar-Ziv and Katz 1993; Shemesh, 2018a; (G-92/1991)	2
Beer Sheva, Neve Menachem 2	177580	575400			×	×	Bar-Ziv and Katz 1993; Shemesh, 2018a; (G-92/1991)	2
Beer Sheva, Neve Menachem 4	178170	575670			×		Shemesh, 2018a	2
Beer Sheva, Neve Menachem 5	176350	573100			×		Shemesh, 2018a	2
Beer Sheva, Neve Noy	178600	571100			×		Nikolsky, 2003; Shemesh, 2018b; (A-3990/2003)	2
Be'er Sheva, North Railway Station	182095	574460				×	Shemesh, 2018b	2
Be'er Sheva, North Railway Station	182095	574460			×		Nikolsky, 2014b; Shemesh, 2018b; (A-6006/2010)	2
Be'er Sheva, Noy 7	179559	569938			×	×	Rasiuk and Shmueli 2017 (A-7657/2016)	2
Be'er Sheva, Palmach Street	180025	571860			×	×	Fantalkin 2000a; 2000b; Shemesh, 2018b	2
Be'er Sheva, Ramot 16	182200	575300			×		Katz and May 1996; Shemesh, 2018b; (A-2171/1996)	2

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Beer Sheva, Ramot 4	182410	576520			×		Sonntag, 2000; Shemesh, 2018b; (A-2705/1997)	2
Be'er Sheva, Ramot 8	183250	576350			×		Paran 1999; Shemesh, 2018b; (A-2607/1997)	2
Beer Sheva, Recha Freier Street	181148	572760			×		Shmueli and Rasiuk 2017; Shemesh, 2018b; (A-7636/2016)	2
Beer Sheva, Shmaryahu Levin Street	180479	572434			×		Nikolsky, 2014a; Shemesh, 2018b; (A-6459/2012)	2
Be'er Sheva, The Civic Center	179550	571200		×	×	×	Varga 1997; Shemesh, 2018a; (A-2470/1996; A-2398/1995)	2
Be'er Sheva, the Civil Center	180888	572578			×		Peretz, 2014; Sonntag 1999; Varga 1999; Shemesh, 2018b; (A-6524/2012)	2
Beer Sheva, the new Bedouin market	180850	571750			×	×	Shimron 1999; Shemesh, 2018a; (B-11/1997)	2
Be'er Sheva, Trumpeldor Street 2	180254	572135			×		Govrin, 2015; Shemesh, 2018b	2
Be'er Sheva', Ha-Gedudim Street	179376	571653			×		Michael 2018; (A-7877/2016)	2
Beit Eshel Street 3	182080	571880			×		Shemesh, 2018b	2
Beit Eshel Street 4	182290	571710		×	×		Shemesh, 2018b	2
Ben-Zvi Street	180600	572600			×		Sonntag 1999c; Shemesh, 2018b	2
Besor Bridge Northwest 3	151191	581242			×	×	Gat, 2014	1
Besor Bridge Northwest 3	151191	581242			×		Gat, 2014	1
Biqa'at el-Jahimri	158890	589192			×		Gat, 2014	1
Bir Abu Jureida	146291	575591		×	×		Gal, 2017	1

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Bir Abu Yihiya	173263	571442			×	×	Paran, 2010; Shemesh, 2018a; (A-5550/2008)	2
Bir en Nakhrur	145190	587791			×		Gat, 2012	1
Bir Wakili Shuteiwi	153691	570792		×	×		Gazit, 1996; Magness, 2003	1
Bustan 2	147940	589741			×		Gat, 2011	1
Camp Urim 1	156014	580842			×		Unpublished excavation (A-7405/2015)	1
Camp Urim 2	156000	580647			×		Inspection/Trial trenching	1
Camp Urim 3	156005	580646			×		Inspection/Trial trenching	1
Camp Urim 4	156015	580647			×		Inspection/Trial trenching	1
Camp Urim 5	156023	580638			×		Inspection/Trial trenching	1
Camp Urim 6	156033	580638			×		Inspection/Trial trenching	1
Camp Urim 7	156040	580633			×		Inspection/Trial trenching	1
Camp Urim 8	155983	580638			×		Inspection/Trial trenching	1
Camp Urim 9	155990	580635			×		Inspection/Trial trenching	1
Camp Urim 10	155997	580634			×		Inspection/Trial trenching	1
Camp Urim 11	156007	580631			×		Inspection/Trial trenching	1
Camp Urim 12	156010	580636			×		Inspection/Trial trenching	1
Camp Urim 13	155973	580632			×		Inspection/Trial trenching	1
Camp Urim 14	155982	580630			×		Inspection/Trial trenching	1
Camp Urim 15	155989	580626			×		Inspection/Trial trenching	1
Camp Urim 16	155986	580614			×		Inspection/Trial trenching	1

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Camp Urim 17	156001	580611			×		Inspection/Trial trenching	1
Camp Urim 18	156007	580672			×		Inspection/Trial trenching	1
Camp Urim 19	156013	580668			×		Inspection/Trial trenching	1
Camp Urim 20	156023	580664			×		Inspection/Trial trenching	1
Camp Urim 21	156028	580662			×		Inspection/Trial trenching	1
Camp Urim 22	156002	580659			×		Inspection/Trial trenching	1
Camp Urim 23	156012	580656			×		Inspection/Trial trenching	1
Camp Urim 24	156027	580652			×		Inspection/Trial trenching	1
Cemetery	150690	584892			×	×	Gat, 2014	1
Cemetery Malhata 1	202453.784	568630.655			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 2	202468.223	568648.97			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 3	202604.108	568716.87			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 4	202607.53	568714.442			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 5	202612.743	568711.364			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 6	202609.304	568709.125			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 7	202604.898	568708.13			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 8	202603.053	568706.585			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Cemetery Malhata 9	202600.296	568704.223			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 10	202600.274	568701.661			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 11	202595.872	568702.209			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 12	202604.162	568699.199			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 13	202471.719	568649.284			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 14	202610.323	568704.284			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 15	202622.421	568733.14			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 16	202623.281	568725.341			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 17	202626.705	568734.781			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 18	202631.418	568732.008			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 19	202635.217	568728.29			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 20	202631.418	568735.004			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 21	202641.066	568734.821			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 22	202645.051	568731.414			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Cemetery Malhata 23	202643.316	568728.381			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 24	202464.225	568651.254			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 25	202652.526	568724.757			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 26	202661.564	568728.995			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 27	202638.401	568737.458			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 28	202637.418	568742.84			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 29	202640.56	568744.232			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 30	202637.123	568745.266			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 31	202648.312	568748.221			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 32	202652.845	568739.439			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 33	202656.787	568747.093			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 34	202662.504	568742.713			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 35	202468.283	568654.707			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 36	202667.095	568741.203			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Cemetery Malhata 37	202664.78	568749.465			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 38	202668.901	568749.987			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 39	202659.189	568749.521			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 40	202658.197	568752.516			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 41	202661.411	568758.673			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 42	202680.279	568728.497			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 43	202656.883	568743.646			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 44	202475.757	568655.64			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 45	202480.312	568655.431			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 46	202487.934	568652.633			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 47	202486.839	568647.611			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 48	202461.298	568656.975			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 49	202453.343	568658.079			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 50	202460.448	568631.505			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Cemetery Malhata 51	202459.085	568664.544			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 52	202452.699	568666.179			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 53	202468.994	568669.37			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 54	202472.23	568670.665			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 55	202468.912	568673.966			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 56	202476.683	568673.23			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 57	202479.548	568669.675			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 58	202478.607	568668.198			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 59	202475.318	568662.377			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 60	202477.48	568659.127			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 61	202460.012	568638.761			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 62	202480.104	568660.84			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 63	202478.068	568662.059			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 64	202482.343	568661.66			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Cemetery Malhata 65	202488.386	568660.532			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 66	202484.653	568658.863			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 67	202487.921	568663.775			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 68	202484.291	568672.161			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 69	202479.917	568677.199			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 70	202473.964	568677.232			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 71	202470.636	568677.688			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 72	202456.876	568640.335			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 73	202472.908	568675.073			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 74	202470.241	568675.845			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 75	202465.815	568682.308			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 76	202462.213	568683.511			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 77	202466.338	568684.892			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 78	202460.25	568686.948			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Cemetery Malhata 79	202472.658	568686.454			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 80	202470.776	568689.247			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 81	202472.028	568694.391			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 82	202475.373	568696.838			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 83	202448.848	568640.121			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 84	202478.45	568690.869			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 85	202475.508	568685.212			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 86	202474.724	568682.168			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 87	202478.59	568681.027			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 88	202477.3	568678.787			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 89	202484.254	568679.654			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 90	202483.542	568682.999			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 91	202488.133	568686.562			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 92	202484.267	568689.205			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Cemetery Malhata 93	202488.247	568689.862			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 94	202468.699	568643.637			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 95	202453.394	568679.884			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 96	202457.134	568678.813			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 97	202460.739	568679.978			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 98	202463.474	568677.547			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 99	202470.912	568681.146			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 100	202472.125	568683.99			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 101	202497.725	568692.895			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 102	202493.278	568694.93			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 103	202498.565	568697.669			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 104	202493.372	568700.179			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 105	202469.056	568644.69			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 106	202500.148	568699.558			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Cemetery Malhata 107	202507.1	568698.816			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 108	202507.331	568704.95			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 109	202589.94	568718.464			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 110	202592.789	568717.443			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 111	202591.231	568714.88			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 112	202596.782	568710.804			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 113	202599.926	568709.708			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 114	202600.669	568712.405			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 115	202597.577	568717.436			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 116	202465.799	568646.744			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 117	202598.663	568721.591			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 118	202595.053	568723.584			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 119	202592.07	568724.94			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 120	202590.369	568721.385			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Cemetery Malhata 121	202596.751	568723.92			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 122	202599.49	568724.507			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 123	202602.977	568725.142			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 124	202600.608	568729.448			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 125	202597.137	568738.641			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 126	202607.422	568730.955			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 127	202462.991	568648.405			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 128	202607.165	568727.605			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 129	202606.967	568725.349			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 130	202609.211	568723.479			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 131	202606.232	568719.706			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 132	202603.099	568722.012			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 133	202610.8	568728.511			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 134	202614.194	568728.766			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Cemetery Malhata 135	202614.689	568726.72			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 136	202615.296	568724.221			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Cemetery Malhata 137	202601.06	568717.677			×		Talis, 2017; (A-7768/2016; A-7962/2017) (unpublished)	3
Central Bus station	180700	572200			×	×	Govrin, 1990; Katz 1996; Schemesh 2018b; (A-1820/?)	2
Central Bus Station 2	180640	572350			×		Varga and Nikolsky, 2013; Shemesh, 2018b; (A-6294/2011)	2
Central Bus Station 3	181030	572500			×		Gilead and Fabian, 2008; Shemesh, 2018b	2
Centre	180550	572300			×		Govrin, 2003; Shemesh, 2018b; (A-1644/1989)	2
College of Technology	179800	573100			×		Daniel 2001; Shemesh, 2018a	2
Compound C	180370	572000		×	×	×	Fabian and Gilead 2010a; 2010b; Shemesh, 2018b; (G-58/2004; G-64/2005)	2
Court Hall	180730	572770			×		Sonntag 1999a; 1999b; Shemesh, 2018b; (A-2298/1995; A-2460/1996)	2
Dalet 1	180500	575000			×		Cohen, 1968; Shemesh, 2018b	2
Dalet 2	180970	575650			×		Shemesh, 2018b	2
David Tuviyahu Ave	180200	572600			×	×	Cohen1966; Shemesh, 2018b	2
David Wolffsohn St 1	181200	573200		×	×		Shemesh, 2018b	2
Derech Eilat 1	180600	572200			×	×	Israeli 1967; Shemesh, 2018b (A-62/1967?)	2

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Duda'im Forest 10	182100	577270			×		Shemesh, 2018b	2
Duda'im Forest 11	182530	577920			×		Shemesh, 2018b	2
Duda'im Forest 12	182250	577550			×		Shemesh, 2018b	2
Duda'im Forest 14	182570	577220			×		Shemesh, 2018b	2
Duda'im Forest 15	182150	577750			×		Shemesh, 2018b	2
Duda'im Forest 16	182250	577750			×		Shemesh, 2018b	2
Duda'im Forest 19	182250	577250			×		Shemesh, 2018b	2
Duda'im Forest 2	182260	578330			×		Shemesh, 2018b	2
Duda'im Forest 20	182650	577150			×		Shemesh, 2018b	2
Duda'im Forest 21	182150	577550			×		Shemesh, 2018b	2
Duda'im Forest 22	182830	577450			×		Shemesh, 2018b	2
Duda'im Forest 23	182670	577570			×		Shemesh, 2018b	2
Duda'im Forest 24	182910	577800			×		Shemesh, 2018b	2
Duda'im Forest 27	182030	577750			×		Shemesh, 2018b	2
Duda'im Forest 3	182490	578860			×		Shemesh, 2018b	2
Duda'im Forest 4	182700	578050			×		Shemesh, 2018b	2
Duda'im Forest 5	182410	578170			×		Shemesh, 2018b	2
Duda'im Forest 6	182380	578070			×		Shemesh, 2018b	2
Duda'im Forest 7	181340	577800			×		Ilan 1979; Shemesh, 2018b	2
Duda'im Forest 8	182355	577355			×		Shemesh, 2018b	2
Duda'im Forest 9	182600	577265			×		Shemesh, 2018b	2
Ein HaBesor 1	146691	579291		×	×	×	Gal, 2017	1
Ein HaBesor 15	148691	578191			×		Gal, 2017	1
Ein HaBesor 2	147191	579891		×	×		Gal, 2017	1

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Ein HaBesor 20	148891	579891		×			Gal, 2017	1
Ein HaBesor 3	147091	579391			×		Gal, 2017	1
Ein HaBesor 4	147361	579331			×		Gal, 2017	1
Ein HaBesor 6	149091	579591			×		Gal, 2017	1
Ein HaBesor 9	149591	579491			×		Gal, 2017	1
Ein Hashlosha 1	144290	585291			×		Gat, 2012	1
Ein Hashlosha 2	143790	585291			×		Gat, 2012	1
El Juleib [1]	157591	579992			×		Gazit, 1996	1
El Juleib [2]	158191	579592			×		Gazit, 1996	1
Emek Sarah 1	181800	570900			×		Shemesh, 2018b	2
Emek Sarah 2	183000	570100			×		Shemesh, 2018b	2
En Besor (En esh Shallala)	151291	579492	×				Gophna 1976; 1990; 1995; Gazit, 1996; Fischer and Tal 1995	1
Es Suweiwin (M)	151591	575392			×		Gazit, 1996	1
Gerar 1	152490	587592			×		Gat, 2014	1
Gerar 2	154840	586942			×		Gat, 2014	1
Gerar 3	152790	587492			×		Gat, 2014	1
Gerar 4	156690	587292			×		Gat, 2014	1
Gerar 5	156790	587192			×		Gat, 2014	1
Gevulot junction	150191	570591			×	×	Gazit, 1996	1
Gevulot junction–Ze'elim junction road 1	151692	570292		×	×		Gevulot, HA 69–71 (1979): 83. Vogel 1975; Gazit 1978 (unpublished excavation)	1
Gevulot junction–Ze'elim junction road 2	152092	570292		×	×		Gazit, 1996	1
Gevulot junction–Ze'elim junction road 3	152192	570092		×	×		Gazit, 1996	1
Gevuvlot-Magen Road	149491	572491		×	×		Gal, 2017	1
Gimmel 1	181980	574423			×	×	Levi and Ori (Permit No. and-5/1955); Israel, Seriy and Feder 2013; Shemesh, 2018b; (A-6006/2010)	2

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Giv'at Hablanim	179592	567893			×	×	Baumgarten, 2014b	2
Giv'at Hablanim 2	180292	566693			×		Baumgarten, 2014a	2
Giv'at Hablanim 5	182192	565394		×	×	×	Baumgarten, 2014a	2
Giv'at Shemen 1	182792	561594			×		Baumgarten, 2014a	2
Giv'at Shemen 2	183292	561294			×		Baumgarten, 2014a	2
Giv'at Shemen 4	183792	561194			×	×	Baumgarten, 2014a	2
Giv'at Shemen 6	183592	560794			×		Baumgarten, 2014a	2
Giv'at Shemen 7	184392	560794		×	×	×	Baumgarten, 2014a	2
Giv'at Zon 1	182900	567400			×		Baumgarten, 2014a	2
Giv'ot Yitnan 1	195292	562894			×		Eldar-Nir 2015	3
Giv'at Mahat	193241	578144			×		Govrin, 1991; Magness, 2003	3
Giv'at Mahat	193441	578244				×	Peretz, 2012; Govrin, 1991; Magness, 2003; (A-5645/2009)	3
Giv'at Mahat	193691	578445			×	×	Govrin, 1991; Magness, 2003	3
Giv'at Mahat	193791	578545			×		Govrin, 1991; Hirschfeld, 1997; Magness, 2003	3
Giv'at Mahat	193791	578695			×		Varga, 2003; Govrin, 1991; Hirschfeld, 1997; Magness, 2003; (A-2400/1995)	3
Giv'at Mahat	194291	578295			×		Govrin, 1991; Magness, 2003	3
Giv'at Metar	193391	579744			×		Govrin, 1991; Magness, 2003	3
Giv'at Metar	194291	579945	×				Govrin, 1991	3
Giv'at Metar	194591	579095			×		Govrin, 1991; Magness, 2003	3
Giv'ot Mezillot [1]	158041	576342			×		Gazit, 1996	1
Giv'ot Mezillot [2]	157591	575992			×		Gazit, 1996	1
H. Amra	184500	575380	×	×	×	×	Tahal 1996; 2000; Shemesh, 2018b; (A-1977/1993)	2

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
H. Ashan	175100	576800	×				HA 1976; Shemesh, 2018a	2
H. Bikhra	198241	578995	×		×	×	Govrin, 1991; Magness, 2003	3
H. Hur	193141	577194			×		Govrin, 1991; Magness, 2003	3
H. Hur	193291	577044			×		Govrin, 1991; Magness, 2003	3
H. Hur	193541	577194	×	×	×	×	Govrin, 1991; Magness, 2003; Conder and Kitcher 1881–1883	3
H. Raqiq	172550	578590		×	×		Negev 1996; Shemesh, 2018a;	2
H. Raqiq 2	172480	578750	×		×	×	Dagan 1996; Magness, 2003: 174; Shemesh, 2018a	2
H. So'a	198892	575995			×		Govrin, 1991; Magness, 2003; Conder and Kitcher 1881–1883	3
H. So'a	198742	575595		×	×		Govrin, 1991; Magness, 2003; Conder and Kitcher 1881–1883	3
H. Yittan	192492	573994	×		×	×	Govrin, 1991; Hirschfeld, 1997; Magness, 2003; Conder and Kitcher 1881–1883	3
Ha'al Street 1	180836.578	571103.991			×	×	Inspection/Trial trenching; Shemesh, 2018b	2
Ha'al Street 1	180693.695	571113.651			×	×	Inspection/Trial trenching; Shemesh, 2018b	2
Ha'al Street 1	180745.847	571127.045			×	×	Inspection/Trial trenching; Shemesh, 2018b	2
Ha'al Street 1	180775.289	571283.821			×	×	Inspection/Trial trenching; Shemesh, 2018b	2

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Ha'al Street 1	180778.397	571275.867			×	×	Inspection/Trial trenching; Shemesh, 2018b	2
Ha'al Street 1	180767.337	571265.75			×	×	Inspection/Trial trenching; Shemesh, 2018b	2
Ha'al Street 1	180766.186	571258.088			×	×	Inspection/Trial trenching; Shemesh, 2018b	2
Ha'al Street 1	180778.624	571260.341			×	×	Inspection/Trial trenching; Shemesh, 2018b	2
Ha'al Street 1	180786.279	571263.279			×	×	Inspection/Trial trenching; Shemesh, 2018b	2
Ha'al Street 1	180790.191	571257.134			×	×	Inspection/Trial trenching; Shemesh, 2018b	2
Ha'al Street 1	180790.819	571255.293			×	×	Inspection/Trial trenching; Shemesh, 2018b	2
Ha'al Street 1	180696.845	571200.341			×	×	Inspection/Trial trenching; Shemesh, 2018b	2
Ha'al Street 1	180692.734	571188.288			×	×	Inspection/Trial trenching; Shemesh, 2018b	2
Ha'al Street 1	180684.579	571179.232			×	×	Inspection/Trial trenching; Shemesh, 2018b	2
Ha'al Street 1	180690.116	571181.248			×	×	Inspection/Trial trenching; Shemesh, 2018b	2
Ha'al Street 1	180673.145	571142.868			×	×	Inspection/Trial trenching; Shemesh, 2018b	2
Ha'al Street 1	180688.625	571147.968			×	×	Inspection/Trial trenching; Shemesh, 2018b	2
Ha'al Street 1	180687.673	571120.419			×	×	Inspection/Trial trenching; Shemesh, 2018b	2

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Ha'al Street 1	180693.352	571123.653			×	×	Inspection/Trial trenching; Shemesh, 2018b	2
Ha'al Street 1	180699.045	571126.837			×	×	Inspection/Trial trenching; Shemesh, 2018b	2
Ha'al Street 1	180704.524	571130.142			×	×	Inspection/Trial trenching; Shemesh, 2018b	2
Ha'al Street 1	180682.972	571167.215			×	×	Inspection/Trial trenching; Shemesh, 2018b	2
Ha'al Street 1	180681.776	571159.464			×	×	Inspection/Trial trenching; Shemesh, 2018b	2
Ha'al Street 1	180663.782	571153.219			×	×	Inspection/Trial trenching; Shemesh, 2018b	2
Ha'al Street 1	180688.806	571162.342			×	×	Inspection/Trial trenching; Shemesh, 2018b	2
Ha'al Street 1	180689.901	571170.073			×	×	Inspection/Trial trenching; Shemesh, 2018b	2
Ha'al Street 1	180783.328	571205.19			×	×	Inspection/Trial trenching; Shemesh, 2018b	2
Hadassah Street 1	179550	572000			×		Sonntag 1999; Shemesh, 2018a	2
Hamelacha Street 1	180410	571720			×	×	Negev 1995; Gilead and Fabian, 2008; Shemesh, 2018b;	2
Hamelacha Street 2	180820	571670		×	×		Katz 1998; Shemesh, 2018b; (A-2187/1994)	2
Har Beriah, spot height 523	199042	571545			×		Beit-Arieh, 1999; Govrin, 1991; Hirschfeld, 1997; Magness, 2003	3
Harei 'Anim	198642	575345			×		Govrin, 1991; Magness, 2003	3
Harei 'Anim	199042	575345		×	×		Govrin, 1991; Hirschfeld, 1997; Magness, 2003	3

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Harei ʿAnim	196392	574495			×		Govrin, 1991; Magness 2008	3
Harei ʿIra	197942	571045			×		Govrin, 1991; Magness, 2003	3
Harei ʿAnim	200141	578345			×		Govrin, 2016	3
Harei ʿAnim 1	201441	578645			×		Govrin, 2016	3
Harei Ira	202141	577545				×	Govrin, 2016	3
Harei Yattir	196391	579295			×		Govrin, 1991; Magness, 2003	3
Harei Yattir	196041	578695			×		Varga, 2015; Govrin, 1991: Magness, 2003; (A-7058/2014)	3
Harei Yattir	195041	577095			×		Govrin, 1991; Magness, 2003	3
Harei Yattir	195341	577395		×	×		Govrin, 1991; Magness, 2003	3
Harei Yattir	195391	577695			×		Paran and Sonntag, 2012; Govrin, 1991; Magness, 2003; (S-283/2011)	3
Harei Yattir	195391	577495			×		Paran and Sonntag, 2012; Govrin, 1991; Magness, 2003; (S-283/2011)	3
Hashem el-'Ira	194892	569395		×	×		Eldar-Nir 2015	3
HaTikva, Beersheba	180850	572950		×	×		Nikolsky, 2004; Shemesh, 2018b; (A-3205/2000)	2
Ḥaẓar Betarim	184600	575950	×		×		Dagan 1995b; Gophna 1963; Shemesh, 2018b	2
High-Tech Park Bayside Negev	182100	574850			×		Sonntag, 2012; Shemesh, 2018b; (A-2181/1994)	2
Hod Haberiah	200492	573895			×		Govrin, 2016	3
Hod Haberiah 2	201692	573145	×	×			Govrin, 2016	3
Khirbat Qasif	206700	574200			×	×	Abadi-Reiss and Fraiberg, 2014; (A-6523/2012)	3
Khirbat Qasif	206484	573847			×	×	Shmueli 2012; (A-5669/2009)	3

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Khirbat Qasif	206134	574160				×	Fraiberg and Tepper 2017; (A-6316/2012; A-6645/2012)	3
Khirbat Kasif (Northwest)	206700	574200	×	×	×	×	Abadi-Reiss and Fraiberg, 2014; (A-6523/2012)	3
Horbat Mezbah 1	194442	565674		×	×		Eldar-Nir 2015	3
Horbat Mezbah 2	193992	564994		×	×	×	Glueck 1956; 1957; Eldar-Nir 2015	3
Horbat Yitne	187000	571000		×	×		Shemesh, 2018b	2
Horvat Sufa	172450	574400	×	×	×		Shemesh, 2018a	2
Hura	192840	578090			×		Paran, 2007; (A-3440/2001)	3
Hura, East 1	194956	577058			×		Paran and Sonntag, 2012; (S-283/2011)	3
Hura, East 10	195274	577829			×		Paran and Sonntag, 2012; (S-283/2011)	3
Hura, East 12	195386	577452			×		Paran and Sonntag, 2012; (S-283/2011)	3
Hura, East 14	195447	577093			×		Paran and Sonntag, 2012; (S-283/2011)	3
Hura, East 15	195567	577037			×		Paran and Sonntag, 2012; (S-283/2011)	3
Hura, East 16	195547	576822			×		Paran and Sonntag, 2012; (S-283/2011)	3
Hura, East 17	195339	576401			×		Paran and Sonntag, 2012; (S-283/2011)	3
Hura, East 18	195238	576600			×		Paran and Sonntag, 2012; (S-283/2011)	3
Hura, East 2	194988	577139			×		Paran and Sonntag, 2012; (S-283/2011)	3
Hura, East 20	195072	576608			×		Paran and Sonntag, 2012; (S-283/2011)	3
Hura, East 3	195471	578507			×		Paran and Sonntag, 2012; (S-283/2011)	3
Hura, East 4	195505	578417			×		Paran and Sonntag, 2012; (S-283/2011)	3
Hura, East 5	195511	578144			×		Paran and Sonntag, 2012; (S-283/2011)	3

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Hura, East 6	195458	577903			×		Paran and Sonntag, 2012; (S-283/2011)	3
Hura, East 7	195412	577840			×		Paran and Sonntag, 2012; (S-283/2011)	3
Hura, East 8	195359	578037			×		Paran and Sonntag, 2012; (S-283/2011)	3
Industrial Park Beersheva	182400	574000			×		Cohen, 1968; Shemesh, 2018b	2
Industrial park Omer 1	184500	576000			×		Aladjem, 2012; Shemesh, 2018b; (A-5238/2007—Survey)	2
Industrial park Omer 2	184100	576150			×	×	Shemesh, 2018b	2
Industrial park Omer 6	183785	575813			×		Aladjem, 2012; Shemesh, 2018b; (A-5238/2007—Survey)	2
Industrial park Omer 8	184000	575000			×		Shemesh, 2018b	2
Institut Eleanor Roosevelt 1	181500	574000			×		Cohen, 1969a; 1972; Shemesh, 2018b	2
Institut Eleanor Roosevelt 2	181460	574100			×		Shemesh, 2018b	2
Katef Abraham	186992	568894			×		Baumgarten, 2014a	2
Kfar Rafael	175500	574000			×		Shemesh, 2018a	2
Kh. Be'er Shema	156391	573692		×	×	×	Alt 1931; Bellinger 1966; Gichon 1975; Gazit and Lender 1992; Gazit and Lender 1993; Tzaferis 1996; Gazit, 1996; Gazit 2002; Gazit and Lender 1992; Dolinka 2007; Erickson-Gini 2013; Erickson-Gini et al. 2015.	1
Kh. Be'er Shema (south)	156691	573092		×	×		Gazit, 1996; Bellinger 1966	1
Kh. Jemmeh	147390	587991			×	×	Schaeffer 1979; Nahshoni 2000; Nikolsky, 2013; Eisenberg-Degen and Talis, 2018	1

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Kh. Jemmeh (east)	147177	588375			×	×	Nikolsky, 2013	1
Kh. Jemmeh pipeline 1	147720	589502			×		Inspection/Trial trenching	1
Kh. Jemmeh pipeline 10	146982	855758			×		Inspection/Trial trenching	1
Kh. Jemmeh pipeline 11	146961	588749			×		Inspection/Trial trenching	1
Kh. Jemmeh pipeline 2	147705	588495			×		Inspection/Trial trenching	1
Kh. Jemmeh pipeline 3	147676	588471			×		Inspection/Trial trenching	1
Kh. Jemmeh pipeline 4	147056	588722			×		Inspection/Trial trenching	1
Kh. Jemmeh pipeline 5	147048	588739			×		Inspection/Trial trenching	1
Kh. Jemmeh pipeline 6	147033	588752			×		Inspection/Trial trenching	1
Kh. Jemmeh pipeline 7	147033	588752			×		Inspection/Trial trenching	1
Kh. Jemmeh pipeline 8	147001	588768			×		Inspection/Trial trenching	1
Kh. Jemmeh pipeline 9	146988	588762			×		Inspection/Trial trenching	1
Khirbat Mashash	195992	568995		×	×		Eldar-Nir 2015	3
Khirbat Qasif	206292	573895			×		Govrin, 2016	3
Khirbat Qasif	206392	574145			×	×	Lifshits and Fraiberg, 2013; Govrin, 2016; (A-6628/2012)	3
Khirbat Qasif 1	206742	573895			×		Govrin, 2016	3
Khirbat Qasif 3	207292	573895			×		Govrin, 2016	3
Khirbet ʿIrq	158590	589892			×		Gat, 2014	1
Khirbet ʿIrq	158890	586192		×	×	×	Gat, 2014; Schaefer, 1979; Alon 1979	1
Khirbet ʿIrq 2	157990	589892			×		Gat, 2014	1
Khirbet ʿIrq 3	158990	589542			×		Gat, 2014	1
Khirbet ʿIrq 4	159040	589492			×		Gat, 2014	1
Khirbet ʿIrq 5	159140	588192			×		Gat, 2014	1

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Khirbet ʿIrq South	159191	585492		×	×		Gat, 2014	1
Khirbet ʿUd	156040	589642			×		Gat, 2014	1
Khirbet el Maltaʿa	156141	580842	×	×	×	×	Gat, 2014; Talis, 2011	1
Khirbet el Maltaʿa North	155191	583792			×		Gat, 2014	1
Khirbet el Maltaʿa West	155291	581072		×	×		Gat, 2014	1
Khirbet Umm ʿAdra 1	159440	588942			×		Gat, 2014	1
Khirbet Umm ʿAdra 2	159740	589042			×		Gat, 2014	1
Khirbet Umm Nukheila	152590	589792			×	×	Gat, 2014	1
Kissufim	146190	589391			×		Gat, 2012; Cohen, 1978	1
Kissufim, Survey 1	142943	586547			×		Seriy 2013	1
Kissufim, Survey 2	143062	586632			×		Seriy 2013	1
Kissufim, Survey 3	143039	586691			×		Seriy 2013	1
Kissufim, Survey 4	143114	586932			×		Seriy 2013	1
Kissufim, Survey 5	142838	586824			×		Seriy 2013	1
Ma'agurat Mar'it	201742	571895		×	×	×	Govrin, 2016	3
Ma'aleh Deragot	208041	579796		×			Govrin, 2016	3
Ma'aleh Deragot 2	208241	579946		×			Govrin, 2016	3
Maʿaleh Deragot West	206841	579695		×			Govrin, 2016	3
Magen 1	144841	580991			×		Gat, 2012	1
Magen 1	143091	579191			×		Gal, 2017	1
Magen 2	145341	580791			×		Gat, 2012	1
Magen 2	144291	579491			×		Gal, 2017	1
Magen 4	144691	578691			×		Gal, 2017	1

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Magen 5	144691	578891			×		Gal, 2017; Feig 1985; Tzaferis 1985a; 1985b; Shippee 1989; Tsafrir, di Segni and Green 1994.	1
Magen 6	145391	578491			×		Gal, 2017	1
Magen, Sheikh Nour	145091	578991			×		Gal, 2017	1
Magen-Mivtahim 8	144691	575691			×		Gal, 2017	1
Ma'on	143141	582141	×	×	×	×	Levy 1960: 6–13; Yogev 1987; Nikolsky, 2010; Gat, 2012; Nahshoni and Seriy 2004; 2013	1
map ref. 10130 07150	151291	571492			×		Gazit, 1996	1
map ref. 10440 07295	154391	572942		×	×		Gazit, 1996	1
map ref. 10515 07275	155141	572742			×		Gazit, 1996	1
map ref. 10760 07320	155191	574742		×			Gazit, 1996	1
map ref. 10840 07390	158391	573892		×	×	×	Gazit, 1996; Magness, 2003	1
map ref. 10890 07270	158891	572692		×	×		Gazit, 1996	1
Map ref. 10920 07000	159192	569992			×		Gazit, 1996	1
map ref. 10920 07310	159191	573092		×	×	×	Gazit, 1996; Magness, 2003	1
Map ref. 10945 07015	159442	570142			×		Gazit, 1996	1
Map ref. 10950 07025	159492	570242		×	×		Gazit, 1996	1
Map ref. 10960 07090	159592	570892			×		Gazit, 1996	1
map ref. 10960 07390	159591	573892			×	×	Gazit, 1996	1
map ref. 10970 07340	159691	573392			×		Gazit, 1996	1

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Map ref. 10980 07030	159792	570292			×		Gazit, 1996	1
Map ref. 10980 07070	159792	570692			×		Gazit, 1996	1
map ref. 10990 07380	159891	573792		×	×		Gazit, 1996	1
map ref. 10995 07320	159941	573192			×		Gazit, 1996	1
Mar'it	202042	574345	×	×			Govrin, 2016	3
Mar'it Fortress	201942	574145	×	×			Govrin, 2016	3
Mar'it Spur	201842	574045		×			Govrin, 2016	3
Mar'it Spur 1	201842	571745	×				Govrin, 2016	3
Mivtahim-Magen	143391	575791			×		Gal, 2017; Fraiberg A. 2015. Mivtahim-Magen (A-7337). Unpublished preliminary report. (Hebrew)	1
Mivtahim-Magen 1	143591	576291			×		Gal, 2017	1
Mivtahim-Magen 2	147591	574991			×		Gal, 2017	1
Mivtahim-Magen 3	148391	575291			×		Gal, 2017	1
Mivtahim-Magen 4	147991	574791			×		Gal, 2017	1
Mivtahim-Magen 5	148291	574591			×		Gal, 2017	1
Mivtahim-Magen 14, El-Khudri	148591	574491			×		Gal, 2017	1
Mivtahim-Magen 6	144191	576091			×		Gal, 2017	1
Mivtahim-Magen 7	144691	576291			×		Gal, 2017	1
Mivtahim-Magen 8	149491	576391			×		Gal, 2017	1
Mivtahim-Magen 9	141691	575191			×		Gal, 2017	1
Mivtahim-Magen 10	142791	575391			×		Gal, 2017	1

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Mivtahim-Magen 11	146291	575591			×		Gal, 2017	1
Moladah	188570	571400			×		Shemesh, 2018b	2
Mount Beriah 5	200942	572445			×		Govrin, 2016	3
Mount Beriah 12	200392	571645			×		Govrin, 2016	3
Mount Beriah 14	200692	571795			×		Govrin, 2016	3
Mount Evyasaf	201591	579695		×	×		Govrin, 2016	3
Mount Evyasaf 1	201641	579945			×		Govrin, 2016	3
Mount Mehillot	205091	579395			×		Govrin, 2016	3
Mount Mehillot 1	205291	579045			×		Govrin, 2016	3
Muslim Cemetery 1	180382	572359			×		Israeli 1965; Shemesh, 2018b	2
Muslim Cemetery 2	180480	572480			×		Govrin, 2003; Shemesh, 2018b	2
Nahal ʻAnim	198692	575295			×		Govrin, 1991; Magness, 2003	3
Nahal ʻAnim	199592	575945			×		Govrin, 1991; Magness, 2003	3
Nahal ʻAnim	198642	574195			×		Govrin, 1991; Hirschfeld, 1997; Magness, 2003	3
Nahal ʻAnim	198742	574545			×	×	Govrin, 1991; Magness, 2003	3
Nahal ʻAnim	195242	572645			×	×	Govrin, 1991; Magness, 2003	3
Nahal ʻAnim	196192	572895				×	Govrin, 1991; Magness, 2003	3
Nahal ʻAnim	194242	571794			×		Govrin, 1991; Magness, 2003	3
Nahal ʻAnim	194742	570345		×	×		Govrin, 1991; Hirschfeld, 1997; Magness, 2003	3
Nahal ʻAnim	194892	570595			×		Govrin, 1991; Magness, 2003	3
Nahal ʻAnim 3	195042	571995		×			Govrin, 1991	3
Nahal ʻAroer 1	194792	569194		×	×		Eldar-Nir 2015	3
Nahal ʻAroer 2	197892	563195			×		Eldar-Nir 2015	3
Nahal ʻAroer 3	197892	563095		×	×		Eldar-Nir 2015	3

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Nahal ʻAroer 5	196892	562895			×		Eldar-Nir 2015	3
Nahal ʻAroer Railroad Bridge	197992	562995			×		Eldar-Nir 2015	3
Nahal ʻAttudim	194442	565194			×		Eldar-Nir 2015	3
Nahal ʻAdarim	201492	567195		×	×		Beit-Arieh, 2003	3
Nahal ʻAdarim	205092	564895			×		Beit-Arieh, 2003	3
Nahal ʻAdarim	204192	563895			×		Beit-Arieh, 2003	3
Nahal ʻAdarim	205792	563695			×		Beit-Arieh, 2003	3
Nahal ʻAdarim	204593	562695			×		Beit-Arieh, 2003	3
Nahal Adi	140040	586191			×		Gat, 2012	1
Nahal ʻAnim	198742	574695			×	×	Govrin, 1991; Magness, 2003	3
Nahal ʻAnim	198942	574495			×		Govrin, 1991; Magness, 2003	3
Nahal ʻAnim	199042	574195			×		Govrin, 1991; Magness, 2003	3
Nahal ʻAnim	199342	574695			×	×	Govrin, 1991; Hirschfeld, 1997; Magness, 2003	3
Nahal ʻAnim	196892	573345		×	×		Govrin, 1991; Magness, 2003	3
Nahal ʻAnim 4	200092	575195			×		Govrin, 2016	3
Nahal ʻAnim 5	200442	575695			×		Govrin, 2016	3
Nahal ʻAnim 6	200542	575545			×		Govrin, 2016	3
Nahal ʻAro'er	200293	560495			×	×	Beit-Arieh, 2003	3
Nahal Asaf, Survey 1	144969	581997			×		Seriy 2012	1
Nahal Asaf, Survey 2	145075	582081			×		Seriy 2012	1
Nahal Asaf, Survey 3	144396	582042			×		Seriy 2012	1
Nahal Asaf, Survey 4	144266	582070			×		Seriy 2012	1
Nahal Ashan 004	180990	579760			×		Shemesh, 2018b	2
Nahal Ashan 006	180720	578450			×		Shemesh, 2018b	2
Nahal Ashan 007	180450	578350			×		Shemesh, 2018b	2
Nahal Ashan 008	180930	578550			×		Shemesh, 2018b	2

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Nahal Ashan 010	181900	578400			×		Shemesh, 2018b	2
Nahal Ashan 011	181700	578300			×		Shemesh, 2018b	2
Nahal Ashan 012	181000	578800			×		Shemesh, 2018b	2
Nahal Ashan 101	176680	575680			×		Shemesh, 2018a	2
Nahal Ashan 103	176360	575660			×	×	Shemesh, 2018a	2
Nahal Ashan 104	176300	575900			×	×	Shemesh, 2018a	2
Nahal Ashan 1	173001	578743			×		Varga et al. 2013; Shemesh, 2018a: (S-342/2012)	2
Nahal Ashan 2	174750	578110			×		Varga et al. 2013; Shemesh, 2018a: (S-342/2012)	2
Nahal Ashan 3	177515	578002			×		Varga et al. 2013; Shemesh, 2018a: (S-342/2012)	2
Nahal Ashan 4	177750	578700			×		Aladjem, 2013b; Shemesh, 2018a; (A-5295/2007—Survey)	2
Nahal Ashan 5	177890	578000		×	×		Baumgarten, 2005: Shemesh, 2018a; (A-3352-/2000)	2
Nahal Ashan 6	172940	579060	×	×	×	×	Israel 2003; Shemesh, 2018a; (A-3134/1999)	2
Nahal Ashan 7	177400	578200			×		Shemesh, 2018a	2
Nahal Ashan 8	177850	578200			×	×	Shemesh, 2018a	2
Nahal Ashan 9	177600	578290			×	×	Shemesh, 2018a	2
Nahal Ashan 10	177700	578200			×		Shemesh, 2018a	2
Nahal Ashan 11	177000	578520			×	×	Shemesh, 2018a	2
Nahal Ashan 12	178870	578350			×		Shemesh, 2018a	2
Nahal Ashan 13	178450	578350			×		Shemesh, 2018a	2
Nahal Ashan 14	178450	578200			×	×	Shemesh, 2018a	2
Nahal Ashan 15	178100	578200			×	×	Shemesh, 2018a	2
Nahal Ashan 16	178970	578420			×	×	Shemesh, 2018a	2
Nahal Ashan 17	179400	578800			×		Shemesh, 2018a	2
Nahal Ashan 18	179000	579000			×		Shemesh, 2018a	2
Nahal Ashan 19	179450	578150			×		Shemesh, 2018a	2

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Nahal Ashan 20	179030	578550			×	×	Shemesh, 2018a	2
Nahal Ashan 21	179592	578388			×	×	Shemesh, 2018a	2
Nahal Ashan 22	174460	577070		×			Shemesh, 2018a	2
Nahal Ashan 23	174370	577220			×		Shemesh, 2018a	2
Nahal Ashan 24	175500	577180			×		Shemesh, 2018a	2
Nahal Ashan 25	176600	577450			×	×	Shemesh, 2018a	2
Nahal Ashan 26	176850	577450			×	×	Shemesh, 2018a	2
Nahal Ashan 27	176950	577140			×	×	Shemesh, 2018a	2
Nahal Ashan 28	176400	577400			×	×	Shemesh, 2018a	2
Nahal Ashan 29	177146	577146			×		Varga et al. 2013; Shemesh, 2018a: (S-342/2012)	2
Nahal Ashan 30	177393	577781			×		Varga et al. 2013; Shemesh, 2018a: (S-342/2012)	2
Nahal Ashan 31	179140	579040			×		Shemesh, 2018a	2
Nahal Ashan 32	177450	577950			×		Negev 2003; Shemesh, 2018a; (A-3342/2000)	2
Nahal Ashan 33	177660	577400			×		Shemesh, 2018a	2
Nahal Ashan 34	178147	577805			×		Shemesh, 2018a	2
Nahal Ashan 35	179350	577750			×		Shemesh, 2018a	2
Nahal Ashan 36	179110	577800			×	×	Shemesh, 2018a	2
Nahal Ashan 37	179290	577325			×		Shemesh, 2018a	2
Nahal Ashan 38	179300	577370			×		Shemesh, 2018a	2
Nahal Ashan 39	179870	577000			×		Shemesh, 2018a	2
Nahal Ashan 40	179450	577300			×		Shemesh, 2018a	2
Nahal Ashan 41	179020	577350			×		Shemesh, 2018a	2
Nahal Ashan 42	179040	577440			×		Shemesh, 2018a	2
Nahal Ashan 43	179820	577590			×	×	Shemesh, 2018a	2
Nahal Ashan 44	179461	577412			×		Shemesh, 2018a	2
Nahal Ashan 45	179450	577500			×		Shemesh, 2018a	2
Nahal Ashan 46	175310	576690	×				Shemesh, 2018a	2
Nahal Ashan 47	175210	576730	×				Shemesh, 2018a	2
Nahal Ashan 49	176030	576074			×		Shemesh, 2018a	2

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Nahal Ashan 50	179250	579500			×		Shemesh, 2018a	2
Nahal Ashan 51	176034	576332			×		Shemesh, 2018a	2
Nahal Ashan 52	176708	576714			×		Shemesh, 2018a	2
Nahal Ashan 53	176469	576382			×		Shemesh, 2018a	2
Nahal Ashan 54	176511	576071			×		Shemesh, 2018a	2
Nahal Ashan 55	176640	576970			×		Shemesh, 2018a	2
Nahal Assaf 1	144891	583491			×		Gat, 2012	1
Nahal Assaf 2	144991	583941			×		Gat, 2012	1
Nahal Assaf 3	143791	583691			×		Gat, 2012	1
Nahal Assaf 4	143441	583491			×		Gat, 2012	1
Nahal Assaf 5	143891	583641			×		Gat, 2012	1
Nahal Assaf 6	143391	583691			×		Gat, 2012	1
Nahal Assaf Tichon 1	145940	584341	×				Gat, 2011	1
Nahal Assaf Tichon 2	145291	584291	×		×		Gat, 2012	1
Nahal Batarim 29	185289	577899			×		Aladjem, 2012; Shemesh, 2018b; (A-5238/2007—Survey)	2
Nahal Batarim 35	185360	577970			×		Aladjem and Gendler 2009; Shemesh, 2018b; (A-4866/2006—Survey)	2
Nahal Be'er Sheva' 1	207092	571995			×		Govrin, 2016	3
Nahal Be'er Sheva 10	170392	568793		×	×		Baumgarten, 2014b	2
Nahal Be'er Sheva' 12	200042	570495			×		Govrin, 2016	3
Nahal Be'er Sheva 13	173292	568193			×		Baumgarten, 2014b	2
Nahal Be'er Sheva' 13	201042	570695			×		Govrin, 2016	3
Nahal Be'er Sheva 14	171592	568593			×		Baumgarten, 2014b	2
Nahal Be'er Sheva' 14	201092	570395			×		Govrin, 2016	3

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Nahal Be'er Sheva' 15	201242	570745			×		Govrin, 2016	3
Nahal Be'er Sheva' 16	201392	570895			×		Govrin, 2016	3
Nahal Be'er Sheva 2	172092	569793		×	×		Baumgarten, 2014b	2
Nahal Be'er Sheva 2	195692	568395			×	×	Eldar-Nir 2015	3
Nahal Be'er Sheva' 2	207342	572395			×		Govrin, 2016	3
Nahal Be'er Sheva 4	174492	569893			×		Baumgarten, 2014b	2
Nahal Be'er Sheva 4	195092	563294			×		Eldar-Nir 2015	3
Nahal Be'er Sheva' 4	200192	571145			×		Govrin, 2016	3
Nahal Be'er Sheva 5	175392	569693		×	×		Baumgarten, 2014b	2
Nahal Be'er Sheva 5	195892	563445			×		Eldar-Nir 2015	3
Nahal Be'er Sheva' 5	204192	571595			×		Govrin, 2016	3
Nahal Be'er Sheva 6	176092	569493		×	×		Baumgarten, 2014b	2
Nahal Be'er Sheva' 6	205092	571195			×		Govrin, 2016	3
Nahal Be'er Sheva' 7	205292	571095			×		Govrin, 2016	3
Nahal Be'er Sheva 8	176192	569393			×		Baumgarten, 2014b	2
Nahal Be'er Sheva'	190792	570394			×		Govrin, 1991; Magness, 2003	3
Nahal Be'er Sheva'	191350	570800			×		Govrin, 1991; Magness, 2003	3
Nahal Be'er Sheva'	191392	570044			×		Govrin, 1991; Magness, 2003	3
Nahal Be'er Sheva'	196942	570095		×	×		Govrin, 1991; Magness, 2003	3
Nahal Be'er Sheva'	197292	570395		×	×		Govrin, 1991; Magness, 2003	3

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Nahal Be'er Sheva'	197842	570295			×		Govrin, 1991; Magness, 2003	3
Nahal Beer Sheva	180560	571370		×	×	×	Schuster 1999; Shemesh, 2018b; Varga 1997	2
Nahal Be'er Sheva'	201492	569695			×		Beit-Arieh, 2003	3
Nahal Be'er Sheva'	201692	569745			×		Beit-Arieh, 2003	3
Nahal Be'er Sheva'	200892	569595			×		Beit-Arieh, 2003	3
Nahal Be'er Sheva'	201792	569795			×		Beit-Arieh, 2003	3
Nahal Be'er Sheva'	201842	569345			×		Beit-Arieh, 2003	3
Nahal Be'er Sheva'	201692	569395			×		Beit-Arieh, 2003	3
Nahal Be'er Sheva'	203192	568695			×		Beit-Arieh, 2003	3
Nahal Beer Sheva 10	173350	571010			×		Shemesh, 2018a	2
Nahal Beer Sheva 11	175135	571141			×		Shemesh, 2018a	2
Nahal Beer Sheva 12	175730	571010			×		Rasiuk 2020; Shemesh, 2018a; (A-8310/2020)	2
Nahal Beer Sheva 13	175600	571350			×		Shemesh, 2018a	2
Nahal Beer Sheva 14	176380	571680			×		Shemesh, 2018a	2
Nahal Beer Sheva 15	176120	571150			×		Shemesh, 2018a	2
Nahal Be'er Sheva 15	179192	568693				×	Baumgarten, 2014b	2
Nahal Be'er Sheva 15	179192	568693				×	Baumgarten, 2014a	2
Nahal Beer Sheva 16	176320	571150			×		Shemesh, 2018a	2
Nahal Be'er Sheva 16	179492	568593				×	Baumgarten, 2014b	2

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Nahal Beer Sheva 17	170900	570770			×		Shemesh, 2018a	2
Nahal Beer Sheva 19	171500	570000		×	×		Shemesh, 2018a	2
Nahal Beer Sheva 25	171210	570580			×		Shemesh, 2018a	2
Nahal Beer Sheva 30	174242	570678			×		Talis, 2015; Shemesh, 2018b; (A-7111/2014)	2
Nahal Beer Sheva 31	174620	570500			×		Shemesh, 2018a	2
Nahal Beer Sheva 36	174364	570309			×		Shemesh, 2018a	2
Nahal Beer Sheva 38	175421	570216			×		Varga and Krokhmalnik 2009; Shemesh, 2018a; (A-5139/2007)	2
Nahal Beer Sheva 40	175760	570200			×		Shemesh, 2018a	2
Nahal Beer Sheva 41	175900	570060			×		Shemesh, 2018a	2
Nahal Beer Sheva 42	175600	570300			×		Shemesh, 2018a	2
Nahal Beer Sheva 43	176650	570990			×		Shemesh, 2018a	2
Nahal Beer Sheva 44	176520	570540			×		Shemesh, 2018a	2
Nahal Beer Sheva 45	176850	570650			×		Shemesh, 2018a	2
Nahal Beer Sheva 46	177400	570000			×		Shemesh, 2018a	2
Nahal Beer Sheva 47	177350	570650			×		Shemesh, 2018a	2
Nahal Beer Sheva 48	177090	570170			×		Shemesh, 2018a	2
Nahal Beer Sheva 49	178400	570690			×		Shemesh, 2018a	2
Nahal Beer Sheva 5	181470	571690			×		Fraiberg, 2010; Shemesh, 2018b	2
Nahal Beer Sheva 6	181370	571400			×		Shemesh, 2018b	2

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Nahal Beer Sheva 7	181520	571770			×		Shemesh, 2018b	2
Nahal Beersheva	190742	570494				×	Govrin, 1991; Magness, 2003	3
Nahal Beersheva 1	184000	573000			×		Shemesh, 2018b	2
Nahal Beersheva 3	183000	572000	×				Baumgarten, 2003; Baumgarten, 2020; Shemesh, 2018b; (A-2985/1998)	2
Nahal Beka'a 1	183892	568794		×	×	×	Baumgarten, 2014a	2
Nahal Beka'a 10	187092	563194			×		Baumgarten, 2014a	2
Nahal Beka'a 12	187592	562694		×	×	×	Baumgarten, 2014a	2
Nahal Beka'a 13	186192	561694			×		Baumgarten, 2014a	2
Nahal Beka'a 14	186692	561394			×		Baumgarten, 2014a	2
Nahal Beka'a 15	189692	561594		×	×		Baumgarten, 2014a	2
Nahal Beka'a 16	189692	561394		×	×		Baumgarten, 2014a	2
Nahal Beka'a 2	184800	568800			×		Baumgarten, 2014a	2
Nahal Beka'a 3	184892	568794			×		Baumgarten, 2014a	2
Nahal Beka'a 4	185392	567294		×	×	×	Baumgarten, 2014a	2
Nahal Beka'a 5	186292	567394			×		Baumgarten, 2014a	2
Nahal Beka'a 6	187592	565394			×	×	Baumgarten, 2014a	2
Nahal Beka'a 7	186692	564094			×		Baumgarten, 2014a	2
Nahal Beka'a 8	185892	563594		×	×	×	Baumgarten, 2014a	2
Nahal Beka'a 9	186292	563794		×	×		Baumgarten, 2014a	2
Nahal Beka'a/ Zon	183100	568600		×	×		Baumgarten, 2014a	2
Nahal Besor	154000	570700				×	Gazit, 1996	1
Nahal Besor 1	148190	586141			×		Gat, 2012	1
Nahal Besor 1	150591	579392		×	×		Gazit, 1996	1
Nahal Besor 10	151091	578292	×	×	×		Gazit, 1996	1
Nahal Besor 11	151591	578592			×		Gazit, 1996	1
Nahal Besor 12	151191	577592			×		Gazit, 1996	1
Nahal Besor 13	151291	577192		×	×	×	Gazit, 1996	1
Nahal Besor 14	151691	577292		×	×	×	Gazit, 1996	1

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Nahal Besor 15	151791	577092			×	×	Gazit, 1996; Magness, 2003	1
Nahal Besor 16	151191	576392		×	×		Gazit, 1996	1
Nahal Besor 17	151291	576292		×	×		Gazit, 1996	1
Nahal Besor 18	151591	576092			×		Gazit, 1996	1
Nahal Besor 19	152091	576292		×	×		Gazit1996	1
Nahal Besor 2	151591	579692		×	×		Gazit, 1996	1
Nahal Besor 20	152491	576192			×		Gazit, 1996	1
Nahal Besor 21	152691	576192			×		Gazit, 1996	1
Nahal Besor 22	150991	575692		×	×	×	Gazit1996	1
Nahal Besor 23	151091	575792			×		Gazit, 1996	1
Nahal Besor 24	151991	575792			×		Gazit, 1996	1
Nahal Besor 25	152291	575892			×	×	Gazit, 1996; Magness, 2003	1
Nahal Besor 26	152491	575892			×		Gazit, 1996	1
Nahal Besor 27	152491	575492		×	×	×	Gazit, 1996	1
Nahal Besor 28	151591	574842			×		Gazit, 1996	1
Nahal Besor 29	151891	574492			×		Gazit, 1996	1
Nahal Besor 3	149890	585042			×		Gat, 2012	1
Nahal Besor 3	151591	579592			×		Gazit, 1996	1
Nahal Besor 30	152291	574792		×	×		Gazit, 1996	1
Nahal Besor 31	152391	574792			×		Gazit, 1996	1
Nahal Besor 31	151391	573292		×	×		Gazit, 1996	1
Nahal Besor 32	151291	573092		×	×		Gazit, 1996	1
Nahal Besor 33	151792	570312			×		Gazit, 1996	1
Nahal Besor 34	152291	573492		×	×		Gazit, 1996	1
Nahal Besor 35	152391	573392			×		Gazit, 1996	1
Nahal Besor 36	152491	573592		×	×		Gazit, 1996	1
Nahal Besor 37	152691	573292			×		Gazit, 1996	1
Nahal Besor 38	149991	572891			×		Gazit, 1996	1
Nahal Besor 39	149991	572491		×	×		Gazit, 1996	1
Nahal Besor 4	151691	579692			×		Gazit, 1996	1
Nahal Besor 40	150991	572692			×	×	Gazit, 1996	1
Nahal Besor 41	151191	572792			×		Gazit, 1996	1

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Nahal Besor 42	152192	572192			×		Gazit, 1996	1
Nahal Besor 43	152191	572592			×		Gazit, 1996	1
Nahal Besor 44	152491	572292		×	×		Gazit, 1996	1
Nahal Besor 45	152591	572192			×		Gazit, 1996	1
Nahal Besor 46	152691	572392		×	×		Gazit, 1996	1
Nahal Besor 47	152891	572592			×		Gazit, 1996	1
Nahal Besor 48	152891	572492			×		Gazit, 1996	1
Nahal Besor 49	153291	572392			×		Gazit, 1996	1
Nahal Besor 5	152591	579592			×		Gazit, 1996	1
Nahal Besor 50	153291	572392		×	×		Gazit, 1996	1
Nahal Besor 51	153291	571992		×	×		Gazit, 1996	1
Nahal Besor 52	152191	571792			×		Gazit, 1996	1
Nahal Besor 53	152941	571442		×	×		Gazit, 1996	1
Nahal Besor 54	153191	571192			×		Gazit, 1996	1
Nahal Besor 55	153291	571392			×		Gazit, 1996	1
Nahal Besor 56	153391	571292			×		Gazit, 1996	1
Nahal Besor 57	154192	570392		×	×	×	Gazit, 1996	1
Nahal Besor 58	154292	570392			×	×	Gazit, 1996	1
Nahal Besor 59	154392	570392			×		Gazit, 1996	1
Nahal Besor 6	152091	579692			×		Gazit, 1996	1
Nahal Besor 60	154592	575992		×	×	×	Gazit, 1996	1
Nahal Besor 61	154792	570492			×		Gazit, 1996	1
Nahal Besor 62	154892	570292			×		Gazit, 1996	1
Nahal Besor 63	155792	570092			×		Gazit, 1996	1
Nahal Besor 64	157192	570592			×		Gazit, 1996	1
Nahal Besor 65	157492	570092			×		Gazit, 1996	1
Nahal Besor 66	157692	570792		×	×	×	Gazit, 1996; Magness, 2003	1
Naḥal Besor 67	153341	579692	×				Gazit, 1996	1
Naḥal Besor 68	151391	578892	×				Gazit, 1996	1
Nahal Besor 69	152641	574342	×				Gazit, 1996	1
Nahal Besor 7	152991	579392			×		Gazit, 1996	1
Nahal Besor 70	152891	574292	×	×			Gazit, 1996	1

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Nahal Besor 71	152891	574092		×			Gazit, 1996	1
Nahal Besor 72	151791	571992	×				Gazit, 1996	1
Nahal Besor 73	153791	570692		×	×		Gazit, 1996	1
Nahal Besor 74	150691	579192		×			Gazit, 1996	1
Nahal Besor 75	150791	578492		×			Gazit, 1996	1
Nahal Besor 76	150791	578192		×			Gazit, 1996	1
Nahal Besor 77	150791	577992		×			Gazit, 1996	1
Nahal Besor 78	151291	578592		×			Gazit, 1996	1
Nahal Besor 79	151492	578492		×			Gazit, 1996	1
Nahal Besor 8	154491	580292			×		Gazit, 1996	1
Nahal Besor 80	151391	578392		×			Gazit, 1996	1
Nahal Besor 81	150791	577192		×			Gazit, 1996	1
Nahal Besor 82	150991	576992		×			Gazit, 1996	1
Nahal Besor 83	151891	577692		×			Gazit, 1996	1
Nahal Besor 84	150691	576692		×			Gazit, 1996	1
Nahal Besor 85	150791	576592		×			Gazit, 1996	1
Nahal Besor 86	151441	576792		×			Gazit, 1996	1
Nahal Besor 87	152191	576392		×			Gazit, 1996	1
Nahal Besor 88	152391	575992		×			Gazit, 1996	1
Nahal Besor 89	151691	575792		×			Gazit, 1996	1
Nahal Besor 9	150691	578292		×	×		Gazit, 1996	1
Nahal Besor 91	152391	575092		×		×	Gazit, 1996	1
Nahal Besor 92	152891	575892		×			Gazit, 1996	1
Nahal Besor 93	151491	574492		×			Gazit, 1996	1
Nahal Besor 94	151891	573692					Gazit, 1996	1
Nahal Besor 95	152491	572392		×			Gazit, 1996	1
Nahal Besor 96	153341	571892		×			Gazit, 1996	1
Nahal Besor 97	152591	574292				×	Gazit, 1996	1
Nahal Betarim	184415	579793			×		Shemesh, 2018b	2
Nahal Betarim 10	184678	578352			×		Yegorov and Shmueli 2014; Shemesh, 2018b; (S-407/2013)	2
Nahal Betarim 21	183140	577150			×		Shemesh, 2018b	2
Nahal Betarim 22	183200	577950			×		Shemesh, 2018b	2

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Nahal Betarim 23	183245	577015			×		Shemesh, 2018b	2
Nahal Betarim 24	183350	577810			×		Shemesh, 2018b	2
Nahal Betarim 28	184160	577450			×		Shemesh, 2018b	2
Nahal Betarim 31	185150	577250			×	×	Aladjem, 2012; Shemesh, 2018b; (A-5238/2007—Survey)	2
Nahal Betarim 33	185449	577318			×		Yegorov and Shmueli 2014; Shemesh, 2018b; (S-407/2013)	2
Nahal Betarim 5	183100	578180			×		Shemesh, 2018b	2
Nahal Betarim 7	183950	578690			×		Shemesh, 2018b	2
Nahal Betarim 8	184028	578724			×		Yegorov and Shmueli 2014; Shemesh, 2018b; (S-407/2013)	2
Nahal Bikhra	198691	579345			×	×	Aladjem, 2013a; Govrin, 1991; Magness, 2003; (A-5239/2007)	3
Nahal Bikhra	198730	579340			×		Aladjem, 2013a; (A-5239/2007)	3
Nahal Dayya	209692	563495			×		Beit-Arieh, 2003	3
Nahal Eshtamo'a	189200	572050		×	×		Shemesh, 2018b	2
Nahal Goded 1	142140	586991			×		Gat, 2012	1
Nahal Goded 2	141490	587341			×		Gat, 2012	1
Nahal Halmut	170200	576150			×		Shemesh, 2018a	2
Nahal Hatserim 12	171950	575700			×		Shemesh, 2018a	2
Nahal Hatserim 14	174310	575710			×		Shemesh, 2018a	2
Nahal Hatserim 5	170958	576051		×	×		Shemesh, 2018a	2
Nahal Hatserim 6	172780	576940			×	×	Shemesh, 2018a	2
Nahal Hatserim 7	173820	576130			×		Shemesh, 2018a	2
Nahal Hatserim 8	173600	576350			×		Shemesh, 2018a	2
Nahal Hatserim 9	173300	576400			×	×	Shemesh, 2018a	2
Nahal Hatzerim 15	171430	574630			×		Shemesh, 2018a	2
Nahal Hatzerim 17	173390	574370			×		Shemesh, 2018a	2

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Nahal Hatzerim 18	173080	574470			×		Shemesh, 2018a	2
Nahal Hatzerim 19	174480	574050			×		Shemesh, 2018a	2
Nahal Hatzerim 20	170800	573350			×		Shemesh, 2018a	2
Nahal Hatzerim 23	172230	573550			×		Shemesh, 2018a	2
Nahal Hatzerim 24	172290	573360			×		Shemesh, 2018a	2
Nahal Hatzerim 25	172460	573210			×		Shemesh, 2018a	2
Nahal Hatzerim 27	173610	573890			×		Shemesh, 2018a	2
Nahal Hatzerim 28	174680	573150			×		Shemesh, 2018a	2
Nahal Hatzerim 29	174580	573950			×		Shemesh, 2018a	2
Nahal Hatzerim 30	174940	572720			×		Shemesh, 2018a	2
Nahal Hebron 2	186300	574600			×		Negev 1995; Shemesh, 2018b	2
Nahal Hebron 3	187280	574707			×		Shemesh, 2018b	2
Nahal Hebron 5	184600	572600			×		Negev and Katz 1993; Negev 1995; Shemesh, 2018b	2
Nahal Hebron 6	184200	572910			×		Negev 1995; Shemesh, 2018b	2
Nahal Hebron 7	184400	572800		×	×		Israel 2008; Shemesh, 2018b; (A-4214/2004)	2
Nahal Hed 1	174692	560293		×	×		Baumgarten, 2014b	2
Nahal Hed 2	175392	560293			×		Baumgarten, 2014b	2
Nahal Hovav 1	180892	560593			×		Baumgarten, 2014a	2
Nahal Hovav 2	181092	560693		×	×	×	Baumgarten, 2014a	2
Nahal Hovev	179592	560793			×		Baumgarten, 2014b	2
Nahal Hur	193691	577594			×	×	Govrin, 1991; Magness, 2003	3
Nahal Hur	193441	576194			×		Govrin, 1991; Magness, 2003	3

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Nahal Hur	193691	576194			×		Govrin, 1991; Magness, 2003	3
Nahal Hur	193691	576344			×		Govrin, 1991; Magness, 2003	3
Nahal Hur	194341	576845			×		Govrin, 1991; Hirschfeld, 1997; Magness, 2003	3
Nahal Hur	194541	576295			×		Varga, 2014; Govrin, 1991: Magness, 2003; (A-6865/2013)	3
Nahal ʻImar 1	143590	589491			×		Gat, 2012; Schaefer 1978	1
Nahal ʻImar 2	144140	589881			×		Gat, 2012	1
Nahal ʻImar 3	143990	589191			×		Gat, 2012	1
Nahal ʻIzzim	207592	563795			×		Beit-Arieh, 2003	3
Nahal ʻIzzim	207392	563195			×		Beit-Arieh, 2003	3
Nahal ʻIzzim	206743	562795			×		Beit-Arieh, 2003	3
Nahal Jabra	200091	579495			×	×	Govrin, 2016	3
Nahal Katef 2	183660	575630			×		Shemesh, 2018b	2
Nahal Katef 3	182910	574120			×		Shemesh, 2018b	2
Nahal Kohal 5	203892	576795			×		Govrin, 2016	3
Nahal Kohal 9	203942	574595			×		Govrin, 2016	3
Nahal Kovshim 1	177340	576020			×		Shemesh, 2018a	2
Nahal Kovshim 12	178910	576750			×		Shemesh, 2018a	2
Nahal Kovshim 13	178130	576690			×		Shemesh, 2018a	2
Nahal Kovshim 16	179920	576320			×	×	Shemesh, 2018a	2
Nahal Kovshim 28	179720	576260			×	×	Shemesh, 2018a	2
Nahal Kovshim 32	178300	575780			×		Shemesh, 2018a	2
Nahal Kovshim 6	178340	576465			×		Shemesh, 2018a	2
Nahal Kurkar 006	181802	579664			×		Paran, 2012b; Shemesh, 2018b; (S-103/2009)	2

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Nahal Kurkar 007	181720	579798			×		Paran, 2012b; Shemesh, 2018b; (S-103/2009)	2
Nahal Kurkar 008	181012	579780			×		Yegorov and Shmueli 2014; Shemesh, 2018b; (S-407/2013)	2
Nahal Kurkar 009	181149	579713			×		Yegorov and Shmueli 2014; Shemesh, 2018b; (S-407/2013)	2
Nahal Kurkar 016	181400	579000			×		Shemesh, 2018b	2
Nahal Kurkar 018	181400	579250			×		Shemesh, 2018b	2
Nahal Kurkar 019	181370	579250			×		Shemesh, 2018b	2
Nahal Kurkar 10	181500	579300	×				Shemesh, 2018b	2
Nahal Likit 10	188460	577000			×		Negev 1995; Shemesh, 2018b	2
Nahal Likit 11	187730	576060		×	×		Shemesh, 2018b	2
Nahal Likit 12	188390	576550			×		Negev 1995; Shemesh, 2018b	2
Nahal Likit 16	187280	575430			×		Negev 1995; Shemesh, 2018b	2
Nahal Likit 2	186536	579267			×		Yegorov and Shmueli 2014; Shemesh, 2018b; (S-407/2013)	2
Nahal Likit 3	186500	579830		×	×		Shemesh, 2018b	2
Nahal Likit 8	187148	577756			×		Shemesh, 2018b	2
Nahal Malhata	209392	571446			×		Govrin, 2016	3
Nahal Malhata	203742	569745			×		Beit-Arieh, 2003	3
Nahal Malhata	204292	569695			×		Beit-Arieh, 2003	3
Nahal Malhata	206492	569195			×		Beit-Arieh, 2003	3
Nahal Malhata	208792	568995			×		Beit-Arieh, 2003	3
Nahal Malhata	207992	568495		×	×		Beit-Arieh, 2003	3
Nahal Malhata	204592	569495			×		Beit-Arieh, 2003	3
Nahal Malhata	204692	569595			×		Beit-Arieh, 2003	3
Nahal Malhata	204992	569395		×	×		Beit-Arieh, 2003	3
Nahal Malhata	205792	569195			×		Beit-Arieh, 2003	3
Nahal Malhata	206492	569495			×		Beit-Arieh, 2003	3
Nahal Malhata	207692	569295			×		Beit-Arieh, 2003	3

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Nahal Malhata	208202	569445			×		Beit-Arieh, 2003	3
Nahal Malhata	208192	569245			×		Beit-Arieh, 2003	3
Nahal Malhata	208592	569295			×		Beit-Arieh, 2003	3
Nahal Malhata	209692	569446			×		Beit-Arieh, 2003	3
Nahal Malhata	208092	568095			×		Beit-Arieh, 2003	3
Nahal Malhata	207292	567395			×		Beit-Arieh, 2003	3
Nahal Malhata	207192	567295			×		Beit-Arieh, 2003	3
Nahal Malhata	207892	567895			×		Beit-Arieh, 2003	3
Nahal Malhata 3	209342	570696			×		Govrin, 2016	3
Nahal Malhata 4	209392	569995			×		Govrin, 2016	3
Nahal Malhata 5	209492	569996			×		Govrin, 2016	3
Nahal Malhata 6	209492	570246			×		Govrin, 2016	3
Nahal Mar'it	205492	576195			×		Govrin, 2016	3
Nahal Mar'it 10	206142	575745			×		Govrin, 2016	3
Nahal Mar'it 13	207442	575145			×		Govrin, 2016	3
Nahal Mar'it 16	204642	574745			×		Govrin, 2016	3
Nahal Mar'it 17	203192	573045		×	×		Govrin, 2016	3
Nahal Mar'it 18	203992	573245			×		Govrin, 2016	3
Nahal Mar'it 2 (Giv'at Mar'it)	204642	575495			×		Govrin, 2016	3
Nahal Mar'it 20	202692	572445			×		Govrin, 2016	3
Nahal Mar'it 21	202792	572295			×		Govrin, 2016	3
Nahal Mar'it 24	202792	571195			×		Govrin, 2016	3
Nahal Mar'it 25	192792	570394			×		Govrin, 2016	3
Nahal Mar'it 4	204892	575295			×		Govrin, 2016	3
Nahal Mar'it 5	205092	575495			×		Govrin, 2016	3
Nahal Masakh	208092	566695			×		Beit-Arieh, 2003	3
Nahal Masakh	209592	567795		×	×		Beit-Arieh, 2003	3
Nahal Masakh	207892	566795			×		Beit-Arieh, 2003	3
Nahal Masakh	209892	566696			×		Beit-Arieh, 2003	3
Nahal Min'am 1	180892	564693		×	×		Baumgarten, 2014a	2
Nahal Mivsam	174892	568393		×			Baumgarten, 2014b	2
Nahal Molada	195042	574195		×	×	×	Govrin, 1991; Magness 2006	3

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Nahal Molada	195442	574095		×	×		Govrin, 1991; Magness 2007	3
Nahal Molada	192092	573394			×	×	Govrin, 1991; Magness, 2003	3
Nahal Molada	192092	573644			×		Govrin, 1991; Magness, 2003	3
Nahal Molada	192292	573794			×		Govrin, 1991; Magness, 2003	3
Nahal Molada 3	196092	574295		×			Govrin, 1991	3
Nahal Nevatim	192594	560529			×		Nikolsky, 2011; (A5102/2007)	3
Nahal Nevatim	191994	560396			×		Nikolsky, 2011; (A5103/2007)	3
Nahal Nokdim 1	180680	570500			×		Shemesh, 2018b	2
Nahal Nokdim 2	178000	570000			×		Shemesh, 2018a	2
Nahal Nokdim 2	180600	570670			×		Shemesh, 2018b	2
Nahal Nokdim 3	178140	570230			×		Shemesh, 2018a	2
Nahal Nokdim 4	179330	570370			×		Shemesh, 2018a	2
Nahal Nokdim 5	179400	570031			×		Shemesh, 2018a	2
Nahal Nokdim 6	179140	570350			×		Shemesh, 2018a	2
Nahal Noqedim 1	188492	562794			×		Baumgarten, 2014a	2
Nahal Noqedim 2	188892	562194		×	×	×	Baumgarten, 2014a	2
Nahal Noqedim 3	188392	561694			×	×	Baumgarten, 2014a	2
Nahal Ofakim 1	170100	575000			×	×	Shemesh, 2018a	2
Nahal Ofakim 2	170060	575090			×	×	Shemesh, 2018a	2
Nahal Ofakim 3	170600	575050			×		Shemesh, 2018a	2
Nahal Ofakim 4	170870	574860			×	×	Shemesh, 2018a	2
Nahal Ofakim 5	170200	574080			×	×	Shemesh, 2018a	2
Nahal Ofakim 6	170850	574970			×	×	Shemesh, 2018a	2
Nahal Olim 1	175165	576375	×				Shemesh, 2018a	2
Nahal Patish 001	180479	579815			×		Yegorov and Shmueli 2014; Shemesh, 2018b; (S-407/2013)	2
Nahal Patish 1	157241	584992			×		Gat, 2014	1
Nahal Patish 1	170953	579402			×		Shemesh, 2018a	2
Nahal Patish 10	172601	579241			×		Shemesh, 2018a	2

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Nahal Patish 17	173870	579330		×	×		Shemesh, 2018a	2
Nahal Patish 2	157491	585092			×		Gat, 2014	1
Nahal Patish 3	157691	584992			×		Gat, 2014	1
Nahal Patish 32	174253	579764			×		Shemesh, 2018a	2
Nahal Patish 34	174451	579951			×		Shemesh, 2018a	2
Nahal Patish 37	174350	579850			×		Shemesh, 2018a	2
Nahal Patish 38	175900	579100			×		Aladjem, 2013b; Shemesh, 2018a; (A-5295/ 2007—Survey)	2
Nahal Patish 39	175980	579050			×		Shemesh, 2018a	2
Nahal Patish 4	157691	584692			×		Gat, 2014	1
Nahal Patish 40	176050	579100			×		Aladjem, 2013b; Shemesh, 2018a; (A-5295/ 2007—Survey)	2
Nahal Patish 48	177150	579450			×	×	Shemesh, 2018a	2
Nahal Patish 5	157891	584892			×		Gat, 2014	1
Nahal Patish 5	170300	579300			×		Shemesh, 2018a	2
Nahal Patish 52	178300	579900			×		Shemesh, 2018a	2
Nahal Patish 55	178240	579980			×		Shemesh, 2018a	2
Nahal Patish 57	179700	579950			×		Shemesh, 2018a	2
Nahal Patish 6	170100	579400		×	×		Shemesh, 2018a	2
Nahal Patish 60	175892	578737			×		Varga et al. 2013; Shemesh, 2018a: (S-342/2012)	2
Nahal Patish 61	175892	578880			×		Varga et al. 2013; Shemesh, 2018a: (S-342/2012)	2
Nahal Patish 62	175850	578770			×	×	Shemesh, 2018a	2
Nahal Patish 64	177400	578950			×		Shemesh, 2018a	2
Nahal Patish 8	172363	579001			×		Shemesh, 2018a	2
Nahal Patish 9	172268	579215			×		Shemesh, 2018a	2
Nahal Pukh 3	206341	578045			×		Govrin, 2016	3
Nahal Qasif 11	206792	574945			×		Govrin, 2016	3
Nahal Qasif 12	205592	573295			×		Govrin, 2016	3
Nahal Qasif 13	205592	573845			×		Govrin, 2016	3

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Nahal Qasif 14	205592	573645			×		Govrin, 2016	3
Nahal Qasif 15	205792	573945			×		Govrin, 2016	3
Nahal Qasif 2	205692	574295			×		Govrin, 2016	3
Nahal Qasif 3	205742	574745			×		Govrin, 2016	3
Nahal Qasif 4	206042	574345			×		Govrin, 2016	3
Nahal Qasif 5	206042	574895			×		Govrin, 2016	3
Nahal Qasif 6	206092	574195			×		Govrin, 2016	3
Nahal Qasif 7	206192	574695			×		Govrin, 2016	3
Nahal Qasif 8	206242	574345			×		Govrin, 2016	3
Nahal Qasif 9	206442	574545			×		Govrin, 2016	3
Nahal Qeriyyot	209741	579946		×		×	Govrin, 2016	3
Nahal Qeriyyot 1	208492	576245			×		Govrin, 2016	3
Nahal Qeriyyot 2	208542	576896			×		Govrin, 2016	3
Nahal Qeriyyot 3	208492	575845			×		Govrin, 2016	3
Nahal Qeriyyot 3	208592	574795			×		Govrin, 2016	3
Nahal Qitmit	205742	567195			×		Beit-Arieh, 2003	3
Nahal Qitmit	206042	566645			×		Beit-Arieh, 2003	3
Nahal Qitmit	206092	566395			×		Beit-Arieh, 2003	3
Nahal Qitmit	205392	568795			×		Beit-Arieh, 2003	3
Nahal Qitmit	205692	567495			×		Beit-Arieh, 2003	3
Nahal Qitmit	205992	566795			×		Beit-Arieh, 2003	3
Nahal Qitmit	206092	566795			×		Beit-Arieh, 2003	3
Nahal Qitmit	207592	566495			×		Beit-Arieh, 2003	3
Nahal Qitmit	207592	566695			×		Beit-Arieh, 2003	3
Nahal Qitmit	207292	565995			×		Beit-Arieh, 2003	3
Nahal Qitmit	206892	564795			×		Beit-Arieh, 2003	3
Nahal Qubba	203392	567595			×	×	Beit-Arieh, 2003	3
Nahal Rewaha 1	176792	566893			×	×	Baumgarten, 2014b	2
Nahal Rewaha 2	179292	566493			×	×	Baumgarten, 2014b	2
Nahal Rewaha 3	170392	565393		×		×	Baumgarten, 2014b	2
Nahal Rewaha 5	176592	563993			×	×	Baumgarten, 2014b	2
Nahal Rewaha 6	177592	564093			×	×	Baumgarten, 2014b	2
Nahal Rewaha 7	178592	564593			×		Baumgarten, 2014b	2

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Nahal Rewaha 8	170592	563793			×		Baumgarten, 2014b	2
Nahal Rewaha 9	171292	563193			×		Baumgarten, 2014b	2
Nahal Rosh 1	188050	579150			×		Aladjem, 2012; Shemesh, 2018b; (A-5238/ 2007—Survey)	2
Nahal Rosh 2	187940	577900			×		Shemesh, 2018b	2
Nahal Salim-Assaf 2	146790	586291			×		Gat, 2012	1
Nahal Se	189292	566294			×	×	Baumgarten, 2014a	2
Nahal Se'irim 3	176692	565593			×		Baumgarten, 2014b	2
Nahal Se'irim 4	177192	565193			×	×	Baumgarten, 2014b	2
Nahal Se'irim 5	177392	565293			×	×	Baumgarten, 2014b	2
Nahal Segor	199142	573795			×	×	Govrin, 1991; Magness, 2003	3
Nahal Sekher 1	170592	566693			×	×	Baumgarten, 2014b	2
Nahal Sekher 10	172292	563693		×	×		Baumgarten, 2014b	2
Nahal Sekher 100	183092	564194			×		Baumgarten, 2014a	2
Nahal Sekher 11	173092	562993			×		Baumgarten, 2014b	2
Nahal Sekher 12	173192	563793			×		Baumgarten, 2014b	2
Nahal Sekher 13	174492	563193			×		Baumgarten, 2014b	2
Nahal Sekher 14	172192	562793			×		Baumgarten, 2014b	2
Nahal Sekher 15	172492	562893			×		Baumgarten, 2014b	2
Nahal Sekher 16	173892	562893			×	×	Baumgarten, 2014b	2
Nahal Sekher 17	174992	562293			×		Baumgarten, 2014b	2
Nahal Sekher 18	175192	562393			×		Baumgarten, 2014b	2
Nahal Sekher 19	175892	562293		×	×		Baumgarten, 2014b	2
Nahal Sekher 2	171692	566693			×		Baumgarten, 2014b	2
Nahal Sekher 20	175992	562193		×	×		Baumgarten, 2014b	2
Nahal Sekher 21	176092	562193			×		Baumgarten, 2014b	2
Nahal Sekher 23	170292	561693			×		Baumgarten, 2014b	2
Nahal Sekher 24	175292	561693			×		Baumgarten, 2014b	2
Nahal Sekher 25	175992	561293			×		Baumgarten, 2014b	2
Nahal Sekher 26	176792	560893			×	×	Baumgarten, 2014b	2
Nahal Sekher 27	176892	560793		×	×		Baumgarten, 2014b	2

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Nahal Sekher 3	171592	566293		×	×		Baumgarten, 2014b	2
Nahal Sekher 5	171092	564593			×	×	Baumgarten, 2014b	2
Nahal Sekher 7	172692	564393			×	×	Baumgarten, 2014b	2
Nahal Sekher 8	173492	564593			×	×	Baumgarten, 2014b	2
Nahal Sekher 9	171892	563593		×	×		Baumgarten, 2014b	2
Nahal Shoqet	191991	578044			×		Govrin, 1991; Magness, 2003	3
Nahal Shoqet	192641	578094			×		Peretz, 2017; Govrin, 1991; Magness, 2003; (A-7682/2016)	3
Nahal Shoqet	192841	578394			×		Govrin, 1991; Magness, 2003	3
Nahal Shoqet	190241	577794			×		Govrin, 1991; Magness, 2003	3
Nahal Shoqet	192291	577794			×		Govrin, 1991; Magness, 2003	3
Nahal Shoqet	192891	577744			×	×	Govrin, 1991; Magness, 2003	3
Nahal Shoqet	192810	579350			×		Nikolsky, 2008 (A3885/2003)	3
Nahal So'a	196042	575395			×		Govrin, 1991; Magness, 2003	3
Nahal So'a	194342	574845			×		Govrin, 1991; Magness 2004	3
Nahal So'a	194492	574795			×		Govrin, 1991; Magness 2005	3
Nahal Solelim	175390	575900			×		Shemesh, 2018a	2
Nahal Solelim	176597	574211			×		Pasternak 2017; Shemesh, 2018a; (A-7621/2016)	2
Nahal Tale	203292	562895			×	×	Sonntag, 2012; Beit-Arieh, 2003; (S-268/2011)	3
Nahal Tale	200592	563795			×		Beit-Arieh, 2003	3
Nahal Tale	202192	563695			×		Beit-Arieh, 2003	3
Nahal Tale	203092	563395			×		Beit-Arieh, 2003	3
Nahal Tale	203700	563100			×		Beit-Arieh, 2003	3
Nahal Tale	201692	562795			×		Beit-Arieh, 2003	3

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Nahal Tale	203092	562895			×		Sonntag, 2012; Beit-Arieh, 2003; (S-268/2011)	3
Nahal Tale	203893	562295		×	×	×	Beit-Arieh, 2003	3
Nahal Tale 3	203195	562650			×		Sonntag, 2012; (S-268/2011)	3
Nahal Tzalif 1	146741	582741			×		Gat, 2012	1
Nahal Tzalif 2	146691	583391			×		Gat, 2012	1
Nahal Tzzim	205892	564495			×		Beit-Arieh, 2003	3
Nahal Tzzim	206592	564695		×	×		Beit-Arieh, 2003	3
Nahal Yattir	194941	578345			×		Haiman, 2008; Govrin, 1991; Magness, 2003	3
Nahal Yattir	195941	577095			×		Govrin, 1991; Magness, 2003	3
Nahal Yattir	196291	577145			×		Govrin, 1991; Magness, 2003	3
Nahal Yattir	194591	576395		×	×		Govrin, 1991; Magness, 2003	3
Nahal Yattir	194591	576195			×		Govrin, 1991; Magness, 2003	3
Nahal Yattir	195091	576695			×		Paran and Sonntag, 2012; Govrin, 1991; Hirschfeld, 1997; Magness, 2003; (S-283/2011)	3
Nahal Yattir	195591	576345		×	×		Govrin, 1991; Hirschfeld, 1997; Magness, 2003	3
Nahal Yattir	195192	575795			×	×	Govrin, 1991; Magness, 2003	3
Nahal Yattir	192692	574494				×	Govrin, 1991; Magness, 2003	3
Nahal Yattir	193492	574844			×		Govrin, 1991; Magness, 2003	3
Nahal Yattir	190892	573644			×		Govrin, 1991; Magness, 2003	3
Nahal Yattir	190142	572244			×		Govrin, 1991; Magness, 2003	3

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Nahal Yattir	190192	572494				×	Govrin and Derfler 1987; Govrin, 1991; Magness, 2003	3
Nahal Yattir	190342	572544			×		Govrin, 1991; Magness, 2003	3
Nahal Yattir	190392	572844		×	×		Govrin, 1991; Magness, 2003	3
Nahal Yattir	196691	577395		×			Alon, 1983; 1984; Wainstub and Fabian, 2015; Govrin, 1991	3
Nahal Yeshua'	197542	576195			×		Govrin, 1991; Magness, 2003	3
Nahal Yeshua'	197792	576395		×	×		Govrin, 1991; Hirschfeld, 1997; Magness, 2003	3
Nahal Yeshua'	198192	576445		×	×	×	Govrin, 1991; Hirschfeld, 1997; Magness, 2003	3
Nahal Yeshua'	198241	576595		×	×	×	Govrin, 1991; Hirschfeld, 1997; Magness, 2003	3
Nahal Zemer	207393	563095			×		Beit-Arieh, 2003	3
Nahal Zemer	207193	562795			×		Beit-Arieh, 2003	3
Nahal Zon 1	184800	568800		×	×		Baumgarten, 2014a	2
Nahal Zon 10	184392	563594			×		Baumgarten, 2014a	2
Nahal Zon 11	183292	562894		×	×		Baumgarten, 2014a	2
Nahal Zon 12	183492	562694		×	×		Baumgarten, 2014a	2
Nahal Zon 13	183592	562694			×		Baumgarten, 2014a	2
Nahal Zon 14	184392	562694			×		Baumgarten, 2014a	2
Nahal Zon 15	184492	561794		×	×	×	Baumgarten, 2014a	2
Nahal Zon 16	185192	561894			×		Baumgarten, 2014a	2
Nahal Zon 17	185392	560994			×		Baumgarten, 2014a	2
Nahal Zon 18	185392	561194		×	×		Baumgarten, 2014a	2
Nahal Zon 19	184392	560794			×		Baumgarten, 2014a	2
Nahal Zon 2	184092	567594		×	×		Baumgarten, 2014a	2
Nahal Zon 21	185092	560694			×	×	Baumgarten, 2014a	2
Nahal Zon 4	183392	565194			×		Baumgarten, 2014a	2

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Nahal Zon 5	183892	564894			×		Lifshits, 2017; Baumgarten, 2014a; (A-7417/2015)	2
Nahal Zon 6	184192	564094			×		Baumgarten, 2014a	2
Nahal Zon 7	184292	564294			×		Baumgarten, 2014a	2
Nahal Zon 8	182892	562994		×	×		Baumgarten, 2014a	2
Nahal Zon 9	183092	563594		×	×	×	Baumgarten, 2014a	2
Neighborhood 7	186520	574120			×		Shemesh, 2018b	2
Ne'ot Ilan (Abu-Matar)	178400	571400			×	×	Gilead et al., 1991; 1993; Ustinova and Figueras, 1996; Magness, 2003; Peterson, 2005; Holmqvist, 2019; Shemesh, 2018a	2
Neta'im School	181240	573740		×	×		Shemesh, 2018b	2
Nevatim	190671	569703			×		Kobrin, 2016; (A-7523/2015)	3
Nevatim 1	187920	570860			×		Shemesh, 2018b	2
Nevatim 2	189500	570000			×		Gilead and Fabian, 2000; Shemesh, 2018b	2
Nirim 1	141740	584341			×		Gat, 2012	1
Nirim 2	141341	580991			×		Gat, 2012	1
Nirim 3	141341	581591			×		Gat, 2012	1
Nirim 4	140791	581791			×		Gat, 2012	1
Nirim 5	144441	582491			×		Gat, 2012	1
Ohad	145491	573391			×		HA, 1979	1
Ohad 1, Abu Sarrar	147791	573291			×		Gal, 2017	1
Ohad 8	147691	572891			×		Gal, 2017	1
Olamim	172492	561693		×		×	Baumgarten, 2014b	2
Old City 1	179550	572120			×	×	Shimron, 1999; Shemesh, 2018a; (B-11/1997)	2
Old city, Be'er Sheva 1	179645	571929			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 2	179471	572313			×		Inspection/Trial trenching	2

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Old city, Be'er Sheva 3	179480	572275			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 4	179615	572270			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 5	179620	572265			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 6	179900	571800			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 7	179790	571890			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 8	179750	571750			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 9	180040	571730			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 10	180070	571850			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 11	179936	571843			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 12	180022	571294			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 13	179600	572200			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 14	179890	572000			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 15	179900	572030			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 16	179850	572050			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 17	179930	572020			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 18	179920	572010			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 19	179960	571995			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 20	179950	571990			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 21	179810	571820			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 22	179600	572300			×		Inspection/Trial trenching	2

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Old city, Be'er Sheva 23	179477	572323			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 24	179670	572315			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 25	179521	572308			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 26	179528	572305			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 27	179050	572295			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 28	179463	572343			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 29	179431	572373			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 30	179418	572387			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 31	179990	571990			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 32	180050	571850			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 33	180000	571995			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 34	179427	572374			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 35	179800	571700			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 36	179798	571698			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 37	179802	571702			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 38	179796	571696			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 39	179804	571694			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 40	179794	571704			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 41	179710	571730			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 42	179740	571740			×		Inspection/Trial trenching	2

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Old city, Be'er Sheva 43	179737	571744			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 44	179730	571750			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 45	179431	572364			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 46	179975	571945			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 47	179895	571975			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 48	179477	572323			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 49	179427	572374			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 50	179431	572364			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 51	179482	572309			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 52	179506	572283			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 53	179512	572279			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 54	179480	572275			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 55	179615	572270			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 56	179482	572309			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 57	179600	572200			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 58	179900	572030			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 59	179850	572050			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 60	179930	572020			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 61	179920	572010			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 62	179950	571990			×		Inspection/Trial trenching	2

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Old city, Be'er Sheva 63	179600	572300			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 64	179670	572315			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 65	179521	572308			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 66	179528	572305			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 67	179506	572283			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 68	179050	572295			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 69	179463	572343			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 70	179431	572373			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 71	179800	571700			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 72	179798	571698			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 73	179802	571702			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 74	179796	571696			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 75	179804	571694			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 76	179794	571704			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 77	179740	571740			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 78	179512	572279			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 79	179737	571744			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 80	179730	571750			×		Inspection/Trial trenching	2
Old city, Be'er Sheva 81	179537	572259			×		Inspection/Trial trenching	2
Omer 1	187480	575450			×		Negev 1995; Shemesh, 2018b	2

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Omer Industrial Park	184430	575310				×	Shemesh, 2018b	2
Qa'et Abu Susein (M)	154541	575192		×	×		Gazit, 1996; Gichon, 1975	1
Qasifa 1	208842	571045			×		Govrin, 2016	3
Qubur el-Walaida South	151041	582042			×		Gat, 2014	1
Rakafot (Area E1)	179306	576690		×			Eisenberg-Degen and Lev-Hevroni, 2020; (A-8306/2020)	2
Rakafot (Area E2)	179296	576665		×			Eisenberg-Degen and Lev-Hevroni, 2020; (A-8306/2020)	2
Rakafot (Area E3)	1792532	576658		×			Eisenberg-Degen and Lev-Hevroni, 2020; (A-8306/2020)	2
Rakafot (Area I)	177991	577106			×		Eisenberg-Degen and Lev-Hevroni, 2020; (A-8306/2020)	2
Rakafot (Area J)	177905	576265			×		Eisenberg-Degen and Lev-Hevroni, 2020; (A-8306/2020)	2
Rakafot (Area K)	177575	576084			×		Eisenberg-Degen and Lev-Hevroni, 2020; (A-8306/2020)	2
Rakafot (Area L)	178398	576533			×	×	Eisenberg-Degen and Lev-Hevroni, 2020; (A-8306/2020)	2
Rakafot 54	179986	576934		×			unpublished excavation (A-8444/2019)	2
Rambam	179300	572700			×		Baumgarten, 2004; Shemesh, 2018a; (A-3178/1999)	2
Rambam 1	179605.587	572501.243			×		Inspection/Trial trenching; Unpublished report Abadi-Reiss, 2012	2
Rambam 2	179612.032	572496.007			×		Inspection/Trial trenching; Unpublished report Abadi-Reiss, 2012	2

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Rambam 3	179664.794	572505.27			×		Inspection/Trial trenching; Unpublished report Abadi-Reiss, 2012	2
Rambam 4	179663.586	572516.145			×		Inspection/Trial trenching; Unpublished report Abadi-Reiss, 2012	2
Rambam 5	179672.044	572510.909			×		Inspection/Trial trenching; Unpublished report Abadi-Reiss, 2012	2
Rambam 6	179678.085	572515.742			×		Inspection/Trial trenching; Unpublished report Abadi-Reiss, 2012	2
Rambam 7	179639.42	572469.022			×		Inspection/Trial trenching; Unpublished report Abadi-Reiss, 2012	2
Rambam Street	180360	572170		×	×		Ein-Gedy and Masarwah, 1999; Shemesh, 2018b	2
Ramot 1	182400	576700			×		Fabian and Seriy, 2003a; Shemesh, 2018b; (A-2789/1997)	2
Ramot 11	181250	575000			×		Shemesh, 2018b	2
Ramot 12	181170	575270			×	×	Shemesh, 2018b	2
Ramot 15	182900	575800			×		Fabian and Hermon, 2004:	2
Ramot 16	182200	575300		×	×	×	Katz and May, 1996; Shemesh, 2018b; (A-2171/1996)	2
Ramot 18	182020	575000			×		Shemesh, 2018b	2
Ramot 3	182500	576700				×	Shemesh, 2018b	2
Ramot 5	182200	576530			×		Fabian and Masarwa, 2003; Shemesh, 2018b; (A-2788/1997)	2
Ramot 9	183150	576050			×		Paran, 1999; Shemesh, 2018b; (A-2607/1997)	2
Ramot B 1	180800	577200			×		Shemesh, 2018b	2
Ramot B 10	181100	577460			×		Shemesh, 2018b	2

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Ramot B 11	181150	577180			×		Shemesh, 2018b	2
Ramot B 12	181400	577750			×		Shemesh, 2018b	2
Ramot B 13	181470	577650			×		Shemesh, 2018b	2
Ramot B 14	181980	577660			×		Shemesh, 2018b	2
Ramot B 16	180900	576200			×		Shemesh, 2018b	2
Ramot B 17	180600	576400			×		Shemesh, 2018b	2
Ramot B 18	180850	576080			×		Shemesh, 2018b	2
Ramot B 19	180280	576580			×		Shemesh, 2018b	2
Ramot B 2	180630	577700			×		Shemesh, 2018b	2
Ramot B 24	181650	576400			×	×	Fabian and Goldfuss, 2004; Shemesh, 2018b; (A-2792/1997)	2
Ramot B 26	181450	576750			×		Milevski and Bankirer, 2002; Shemesh, 2018b; (A-2490/1996)	2
Ramot B 28	181000	576900			×		Shemesh, 2018b	2
Ramot B 29	181950	576950			×		Shemesh, 2018b	2
Ramot B 3	180270	577920			×		Shemesh, 2018b	2
Ramot B 4	180900	577650			×		Shemesh, 2018b	2
Ramot B 9	181200	577550			×		Negev, 2001; Shemesh, 2018b; (A-3031/1999)	2
Ramot D 1	181950	574870			×		Sonntag, 2012; Shemesh, 2018b; (A-2181/1994)	2
Ramot D 2	182030	574990			×		Sonntag, 2012; Shemesh, 2018b; (A-2181/1994)	2
Ramot Nof	181200	576250			×	×	Ustinova and Nahshon, 1994; Shemesh, 2018b; (A-1781/1991)	2
Reservoir	151290	587492			×	×	Gat, 2014	1
Sderot HaNohatim	180220	570590			×		Katz, 1993; Shemesh, 2018b; (A-1784/1991)	2
Sderot Shazar	180970	573140			×		Israel, 2009; Shemesh, 2018b; (A3631/2002)	2

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Sharsheret 1	158090	587692			×		Gat, 2014	1
Sheikh Sulaiyib	148341	582791			×		Gihon, 1975; Gat, 2011	1
Shellal Church	151691	579792			×	×	Trendall 1957; Gazit, 1996	1
Shemurat Ha-Besor–HaZerim road 1	159191	574292		×	×	×	Gazit, 1996; Magness, 2003	1
Shemurat Ha-Besor–HaZerim road 2	159791	574492			×		Gazit, 1996	1
Shemurat Ha-Besor–HaZerim road 3	159891	574092			×		Gazit, 1996	1
Small Tel Malhata	202292	569795			×		Amiran and Ilan, 1993; Beit-Arieh, 2003	3
Sold Street	180860	572860			×		Sonntag, 2001d; Shemesh, 2018b	2
Southern Entrance 1	180624.141	571347.467			×		Inspection/Trial trenching	2
Southern Entrance 2	180663.166	571367.208			×		Inspection/Trial trenching	2
Southern Entrance 3	180664.354	571369.127			×		Inspection/Trial trenching	2
Southern Entrance 4	180665.451	571367.117			×		Inspection/Trial trenching	2
Southern Entrance 5	180665.633	571364.375			×		Inspection/Trial trenching	2
Southern Entrance 6	180671.208	571366.203			×		Inspection/Trial trenching	2
Southern Entrance 7	180672.945	571362.638			×		Inspection/Trial trenching	2
Southern Entrance 8	180676.601	571354.322			×		Inspection/Trial trenching	2
Southern Entrance 9	180774.665	571307.346			×		Inspection/Trial trenching	2
Southern Entrance 10	180774.848	571287.148			×		Inspection/Trial trenching	2
Southern Entrance 11	180770.918	571285.503			×		Inspection/Trial trenching	2

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Southern Entrance 12	180625.878	571349.386			×		Inspection/Trial trenching	2
Southern Entrance 13	180774.025	571280.568			×		Inspection/Trial trenching	2
Southern Entrance 14	180777.132	571279.563			×		Inspection/Trial trenching	2
Southern Entrance 15	180774.208	571277.643			×		Inspection/Trial trenching	2
Southern Entrance 16	180782.89	571283.584			×		Inspection/Trial trenching	2
Southern Entrance 17	180786.637	571285.686			×		Inspection/Trial trenching	2
Southern Entrance 18	180783.256	571271.886			×		Inspection/Trial trenching	2
Southern Entrance 19	180671.766	571185.66			×		Inspection/Trial trenching	2
Southern Entrance 20	180779	571213			×		Excavation (unpublished)	2
Southern Entrance 21	180823	571247			×		Excavation (unpublished); (A-8125/2017)	2
Southern Entrance 22	180899	571246			×		Excavation (unpublished); (A-8125/2017)	2
Southern Entrance 23	180627.066	571350.757			×		Inspection/Trial trenching	2
Southern Entrance 24	180628.162	571351.854			×		Inspection/Trial trenching	2
Southern Entrance 25	180633.92	571360.993			×		Inspection/Trial trenching	2
Southern Entrance 26	180652.656	571372.783			×		Inspection/Trial trenching	2
Southern Entrance 27	180658.87	571366.842			×		Inspection/Trial trenching	2
Southern Entrance 28	180661.064	571368.031			×		Inspection/Trial trenching	2
Southern Entrance 29	180661.064	571365.837			×		Inspection/Trial trenching	2
Spot Height 416	200942	570595			×		Govrin, 2016	3
Spot Height 438	203142	571845			×		Govrin, 2016	3

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Spot Height 438a	203392	571795			×		Govrin, 2016	3
Spot Height 472	209942	570696			×		Govrin, 2016	3
Spot Height 475	206142	572595			×		Govrin, 2016	3
Spot Height 500	200091	578645	×			×	Govrin, 2016	3
Spot Height 540	208041	578145			×		Govrin, 2016	3
Tel Aroer	197959	562326	×	×			Taxel 2011	3
Tel Esdar	197592	564195		×	×		Eldar-Nir 2015	3
Tel ʻIra	198642	571295	×	×	×	×	Beit-Arieh, 1985; 1986;1991; 1999; Beck, 1990; Biran, 1985; Govrin, 1991; Magness, 2003	3
Tel Malhata	202492	569595	×				Beit-Arieh and Freud, 2015; Tal, 2015; Beit-Arieh, 2012; 1998; Conder and Kitchener, 1881–1883; Kokhavi, 1993;	3
Tel Malhata (north-west)	202142	569895			×		Beit-Arieh, 2003	3
Tel Malhata (south-east)	203092	569095		×	×		Beit-Arieh, 2003; Eldar and Baumgarten, 1993; Talis, 2017; Gichon, 1979, Fabian (unpublished)	3
Tel Masos	196785	569086			×		Magness, 2003; Eldar-Nir, 2015	3
Tel Masos	196292	569895		×	×		Eldar-Nir, 2015	3
Tel Sheva	184843	572694	×	×	×	×	Aharoni, 1973; Figueras, 1982; Fritz, 1973; Giveon 1973; Kindler 1973; Shemesh, 2018b (C-128/1969; G-13/1976; G-14/1971; G-18/1970; G-19/1974; G-20/1973; G-21/1975; G-103/1990; G-2/1991; G-33/1994; G-50/2001)	2

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Tel Sheva	184843	572694		×	×	×	Aharoni, 1973; Figueras, 1982; Figueras 2013; Fritz, 1973; Giveon 1973; Kindler, 1973; Shemesh, 2018b	2
Tel Sheva 1	184308.868	572420.589			×		Inspection/Trial trenching; Unpublished report Fraiberg, 2017	2
Tel Sheva 2	185775	573011			×		Paz et.al., 2014; Shemesh, 2018b; (A-6779/2013)	2
Tel Sheva 3	184994.723	572359.597			×		Inspection/Trial trenching; Unpublished report Fraiberg, 2017	2
Tel Sheva 4	184996.95	572360.638			×		Inspection/Trial trenching; Unpublished report Fraiberg, 2017	2
Tel Sheva 5	185001.827	572362.54			×		Inspection/Trial trenching; Unpublished report Fraiberg, 2017	2
Tel Sheva 6	185010.447	572360.044			×		Inspection/Trial trenching; Unpublished report Fraiberg, 2017	2
Tel Sheva 7	185017.531	572340.107			×		Inspection/Trial trenching; Unpublished report Fraiberg, 2017	2
Tel Sheva 8	185054.068	572297.42			×		Inspection/Trial trenching; Unpublished report Fraiberg, 2017	2
Tel Sheva 9	185056.315	572284.97			×		Inspection/Trial trenching; Unpublished report Fraiberg, 2017	2
Tel Sheva 10	185039.477	572250.88			×		Inspection/Trial trenching; Unpublished report Fraiberg, 2017	2

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Tel Sheva 11	185087.314	572240.193			×		Inspection/Trial trenching; Unpublished report Fraiberg, 2017	2
Tel Sheva 12	185097.573	572233.784			×		Inspection/Trial trenching; Unpublished report Fraiberg, 2017	2
Tel Sheva 13	184373.026	572439.287			×		Inspection/Trial trenching; Unpublished report Fraiberg, 2017	2
Tel Sheva 14	185790	572600			×		Negev 2000a; Shemesh, 2018b	2
Tel Sheva 15	185117.354	572224.017			×		Inspection/Trial trenching; Unpublished report Fraiberg, 2017	2
Tel Sheva 16	185116.725	572223.586			×		Inspection/Trial trenching; Unpublished report Fraiberg, 2017	2
Tel Sheva 17	185125.34	572212.768			×		Inspection/Trial trenching; Unpublished report Fraiberg, 2017	2
Tel Sheva 18	185137.391	572209.917			×		Inspection/Trial trenching; Unpublished report Fraiberg, 2017	2
Tel Sheva 19	185150.16	572198.667			×		Inspection/Trial trenching; Unpublished report Fraiberg, 2017	2
Tel Sheva 20	185155.063	572183.877			×		Inspection/Trial trenching; Unpublished report Fraiberg, 2017	2
Tel Sheva 21	185177.516	572180.786			×		Inspection/Trial trenching; Unpublished report Fraiberg, 2017	2
Tel Sheva 22	185218.675	572170.941			×		Inspection/Trial trenching; Unpublished report Fraiberg, 2017	2

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Tel Sheva 23	185243.772	572157.641			×		Inspection/Trial trenching; Unpublished report Fraiberg, 2017	2
Tel Sheva 24	185257.073	572154.838			×		Inspection/Trial trenching; Unpublished report Fraiberg, 2017	2
Tel Sheva 25	184485.461	572431.886			×		Inspection/Trial trenching; Unpublished report Fraiberg, 2017	2
Tel Sheva 26	185450	572450			×		Negev 2000a; Shemesh, 2018b	2
Tel Sheva 27	185271.036	572151.572			×		Inspection/Trial trenching; Unpublished report Fraiberg, 2017	2
Tel Sheva 28	185253.791	572149.29			×		Inspection/Trial trenching; Unpublished report Fraiberg, 2017	2
Tel Sheva 29	185279.319	572140.017			×		Inspection/Trial trenching; Unpublished report Fraiberg, 2017	2
Tel Sheva 30	185289.362	572146.88			×		Inspection/Trial trenching; Unpublished report Fraiberg, 2017	2
Tel Sheva 31	185340.557	572148.402			×		Inspection/Trial trenching; Unpublished report Fraiberg, 2017	2
Tel Sheva 32	185347.603	572150.602			×		Inspection/Trial trenching; Unpublished report Fraiberg, 2017	2
Tel Sheva 33	185352.761	572146.899			×		Inspection/Trial trenching; Unpublished report Fraiberg, 2017	2
Tel Sheva 34	185363.283	572146.851			×		Inspection/Trial trenching; Unpublished report Fraiberg, 2017	2

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Tel Sheva 35	185377.796	572149.017			×		Inspection/Trial trenching; Unpublished report Fraiberg, 2017	2
Tel Sheva 36	185388.877	572148.361			×		Inspection/Trial trenching; Unpublished report Fraiberg, 2017	2
Tel Sheva 37	184840.229	572398.173			×		Inspection/Trial trenching; Unpublished report Fraiberg, 2017	2
Tel Sheva 38	185401.103	572148.299			×		Inspection/Trial trenching; Unpublished report Fraiberg, 2017	2
Tel Sheva 39	185408.782	572150.589			×		Inspection/Trial trenching; Unpublished report Fraiberg, 2017	2
Tel Sheva 40	185417.148	572147.149			×		Inspection/Trial trenching; Unpublished report Fraiberg, 2017	2
Tel Sheva 41	185405.417	572156.487			×		Inspection/Trial trenching; Unpublished report Fraiberg, 2017	2
Tel Sheva 42	185738.387	573062.763			×		Inspection/Trial trenching	2
Tel Sheva 43	185743.065	573062.895			×		Inspection/Trial trenching	2
Tel Sheva 44	185747.457	573063.006			×		Inspection/Trial trenching	2
Tel Sheva 45	185745.024	573068.912			×		Inspection/Trial trenching	2
Tel Sheva 46	185746.826	573068.787			×		Inspection/Trial trenching	2
Tel Sheva 47	185749.069	573068.501			×		Inspection/Trial trenching	2
Tel Sheva 48	184853.517	572392.815			×		Inspection/Trial trenching; Unpublished report Fraiberg, 2017	2

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Tel Sheva 49	185747.549	573070.827			×		Inspection/Trial trenching	2
Tel Sheva 50	185746.253	573073.117			×		Inspection/Trial trenching	2
Tel Sheva 51	185743.622	573072.45			×		Inspection/Trial trenching	2
Tel Sheva 52	185739.595	573068.201			×		Inspection/Trial trenching	2
Tel Sheva 53	185754.094	573069.826			×		Inspection/Trial trenching	2
Tel Sheva 54	185753.732	573071.442			×		Inspection/Trial trenching	2
Tel Sheva 55	185753.672	573073.886			×		Inspection/Trial trenching	2
Tel Sheva 56	185763.706	573064.29			×		Inspection/Trial trenching	2
Tel Sheva 57	185763.928	573063.01			×		Inspection/Trial trenching	2
Tel Sheva 58	185774.787	573060.847			×		Inspection/Trial trenching	2
Tel Sheva 59	184932.261	572387.508			×		Inspection/Trial trenching; Unpublished report Fraiberg, 2017	2
Tel Sheva 60	185200	572000			×		Negev, 2000a; Shemesh, 2018b	2
Tel Sheva 61	185772.026	573067.756			×		Inspection/Trial trenching	2
Tel Sheva 62	185773.728	573069.098			×		Inspection/Trial trenching	2
Tel Sheva 63	185774.564	573074.758			×		Inspection/Trial trenching	2
Tel Sheva 64	185739.969	573067.74			×		Inspection/Trial trenching	2
Tel Sheva 65	185771.93	573067.598			×		Inspection/Trial trenching	2
Tel Sheva 66	185824.913	572141.291			×		Inspection/Trial trenching	2
Tel Sheva 67	185833.687	572139.885			×		Inspection/Trial trenching	2

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Tel Sheva 68	185819.931	572132.584			×		Inspection/Trial trenching	2
Tel Sheva 69	184937.177	572374.452			×		Inspection/Trial trenching; Unpublished report Fraiberg, 2017	2
Tel Sheva 70	185290	572580		×	×		Baumgarten, 2007; Shemesh, 2018b; (A-3411/2001)	2
Tel Sheva 71	184981.825	572353.96			×		Inspection/Trial trenching; Unpublished report Fraiberg, 2017	2
Tel Sheva 72	185000	572500			×		Haimi, 2008; Shemesh, 2018b; (A-3819/2003)	2
Tel Sheva 73	184988.128	572365.083			×		Inspection/Trial trenching; Unpublished report Fraiberg, 2017	2
Tel Sheva 74	186590	572050			×		Shemesh, 2018b	2
Tel Sheva East 1	188788	573506			×		Shemesh, 2018b	2
Tel Shoqet	191291	579844	×	×	×	×	Govrin, 1991; Hirschfeld, 1997; Magness, 2003; Conder and Kitcher, 1881–1883	3
Tel Yeshua	199042	576145			×		Govrin, 1991; Magness, 2003	3
Tell el-Farah (south)	150691	576992	×	×			Petire, 1930; Yisraeli, 1993; Gazit, 1996; Lehmann, 2018; Lehmann et.al., 2018	1
Tell Jemmeh	147240	588741	×				Gat, 2012; Ben-Schlomo and Van Beek, 2014	1
Tell Malhata 1	202192	570545		×			Govrin, 2016	3
Tell Sharuhen (northwest)	150491	577192		×			Petrie, 1930; Gazit, 1996	1
Train Station	180800	572350			×		Sonntag, 2001e; Shemesh, 2018b	2
Trig 784-Q	146391	579191			×		Gal, 2017	1
Trig. Point 321	177892	565593			×	×	Baumgarten, 2014b	2

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Trig. Point 516	207992	575795		×	×		Govrin, 2016	3
Trig. Point 642a	203591	577895			×	×	Govrin, 2016	3
Trig. Point 680–Mount Mehillot	205541	579445		×			Govrin, 2016	3
Trig. Q-69	148691	570391			×		Gal, 2017	1
Trumpeldor Joseph St 1	180300	572200		×	×		Fabian, 1995; Shemesh, 2018b	2
Tuwaiyil el Mahdhi (M)	194141	577845		×	×	×	Govrin, 1991; Magness, 2003	3
Tzomet Kissufim	144590	587291			×		Gat, 2012	1
Tzomet Ma'on 1	146791	580791			×		Gat, 2012	1
Tzomet Ma'on 1	147491	580541			×		Gat, 2012	1
University 1	181800	575100			×	×	Cohen, 1972; Shemesh, 2018b	2
University 2	181145	574619			×		Cohen, 1969b; 1972; Shemesh, 2018b	2
University 3	181300	574600		×	×		Shemesh, 2018b	2
University 4	181600	574870			×		Shemesh, 2018b	2
University 5	181300	574900			×	×	Shemesh, 2018b	2
Urim–Haẓerim road	157191	578242	×				Gazit, 1996	1
Urim–Ze'elim junction road [1]	157191	572392		×	×		Gazit, 1996	1
Urim–Ze'elim junction road [2]	157591	572292		×	×		Gazit, 1996	1
Urim–Ze'elim junction road [3]	157691	572092			×		Gazit, 1996	1
Urim (northeast)	156191	579992		×			Gazit, 1996	1
Urim (northeast)	155591	579942			×		Gazit, 1996	1
Urim junction–Ze'elim junction road 1	156291	571592			×		Gazit, 1996	1
Urim junction–Ze'elim junction road 2	156791	571692			×		Gazit, 1996	1
Urim junction–Ze'elim junction road 3	157391	571592			×		Gazit, 1996	1

Name	NIG LA	NIG LO	HL	RO	BYZ	EI	Reverence	Study Area
Urim junction–Ze'elim junction road 4	157691	571792		×	×	×	Gazit, 1996; Magness, 2003	1
Yehoshua Hankin Street	180700	572320		×	×	×	Talis, 2015; Shemesh, 2018b; (A-6350/2011; A-6351/2012)	2
Ze'elim–Hazerim road 1	158192	570292			×		Gazit, 1996	1
Ze'elim–Hazerim road 2	158892	570442			×		Gazit, 1996	1
Ze'elim–Hazerim road 3	158992	570292			×		Gazit, 1996	1
Ze'elim–Hazerim road 4	158642	570242		×			Gazit, 1996	1
Ze'elim junction–HaZerim road	158591	571592			×		Gazit, 1996	1
Ze'elim junction–HaZerim road 1	159391	571892		×	×		Gazit, 1996	1

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This research examines the long-term settlement history of the northern Negev, on the edge of the Roman Empire from origins prior to the empire in the Hellenistic period, through times of peak habitation in the Byzantine period, and on to the decline in population at the end of the first millennium CE. The ecological constraints of the semi-desert region are explored, as are issues of geographic variability and climatic change. The book draws on the great potential of Geographic Information Systems to synthesize the numerous large surveys undertaken in the region, calibrated chronologically by reference to excavations with greater chronological resolution.