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Temple places

Excavating cultural sustainability in prehistoric Malta

By Caroline Malone, Reuben Grima, Rowan McLaughlin, Eóin W. Parkinson, Simon Stoddart & Nicholas Vella



Volume 2 of Fragility and Sustainability – Studies on Early Malta, the ERC-funded *FRAGSUS Project*

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With contributions by
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Dedication – in memoriam
John Davies Evans David Hilary Trump

Malta may be small in scale but it has had a rich and important archaeological past which has been explored and enjoyed by many past scholars. A visit to the Archaeology Museums of Malta and Gozo testifies to a long history of collecting, scholarship and passion dating back to the early to mid-nineteenth century. It is a heritage that is beloved by Malta and its visitors alike.

The editors of this volume wish to pay tribute to two remarkable 'visitors' to Malta, each of whom, in their own way, made great contributions to our present appreciation of the islands' ancient past and supported our early researches, teams and ideas. Now we want to record our debt as some of the continuing scholars of Maltese prehistory, since we cannot imagine where we could have begun our current quest to take the story onwards and deeper without their prior work.

On behalf of the whole *FRAGSUS* team, we wish to dedicate this volume to their enduring memory.

Professor John Davies Evans (OBE) (1925–2011) arrived in Malta in 1952 from Cambridge to commence the task of organizing the war-damaged museum collections in preparation for a synthesis of Maltese prehistory. His task was enormous, and involved a new assessment of the pottery and material culture sequence of Maltese prehistory. He prepared his now classic study *The Prehistoric Antiquities of the Maltese Islands*, published in 1971, which has remained the primary compendium of reference to this day. Together with carefully targeted excavations, John Evans set in train the many questions that inspired not only David Trump, his successor, to explore and challenge the complex story of Malta's prehistoric past, but also ourselves over the last 35 years. John noted important aspects of sequence, material connectivity and, of course, the temples. These he recorded and described in such detail that his work remains vitally important today.

David Hilary Trump (OM) (1931–2016) succeeded John Evans, having already experienced Maltese prehistory in the field with him, and became the Curator of the Museum of Archaeology for five years until 1963. In that short time, he too made an enormous impression on the understanding of prehistoric Malta. His work at Skorba (as we discuss in Chapter 7) was inspired and informed, and it too set the direction for the future explorations of prehistory in the islands. David Trump maintained his interest in Malta throughout his career, leading regular study tours to the island and latterly, with ourselves, undertaking the sustained programme of fieldwork at the Xagħra Brochtorff Circle (1987–9). He wrote numerous books and papers on Malta's prehistory, popular and academic; and his contribution has been widely acknowledged through museum displays, the award of the Order of Merit of Malta and an Honorary Degree from the University of Malta for which he felt hugely honoured. But back in the United Kingdom, from whence both these scholars came, there has been less mention of their work on Malta. Evans moved eastwards to Crete in his research interests, and has been identified mainly with that work; whilst Trump, a retiring and extremely modest individual, did not promote his achievements on Malta during his teaching years at Cambridge, which was arguably too theoretical to fully appreciate his remarkable contribution.



Figure 0.1. *David Trump and John Evans together at the Deya Conference, Mallorca* (c. *1983) (reproduced with permission of Judith Conway, niece of John Evans).*

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Firstly, the *FRAGSUS Project* is the result of a very generous research grant from the European Research Council (Advanced Grant no. 323727), without which this and two partner volumes and the research undertaken could not have taken place. We heartily thank the ERC for its award and the many administrators in Brussels who monitored our use of the grant. The research team also wants to record our indebtedness to the administrators of the grant within our own institutions, since this work required detailed and dedicated attention. In particular we thank Rory Jordan in the Research Support Office (Queen's University Belfast – QUB), Laura Cousens (Cambridge University – UoC), Glen Farrugia and Cora Magri (University of Malta – UM), the Curatorial, Finance and Designs & Exhibitions Departments in Heritage Malta (HM) and Stephen Borg at the Superintendence of Cultural Heritage (SCH).

All archaeological excavations described in this volume were carried out using standard methods, in accordance with the policies of the SCH, in particular the guidance given in the document *Operating Procedures and Standards for Archaeology Services – February 2013*. Permits to enable excavation, survey, sampling and study were granted through the SCH and we are especially grateful to Anthony Pace and Nathaniel Cutajar for their unstinting efforts to ensure fieldwork was enabled.

Taċ-Ċawla

The Taċ-Ċawla excavations were directed by Prof. Caroline Malone, and the crew consisted primarily of students and staff from UoC, UM and QUB, supervised by Stephen Armstrong, Jeremy Bennett and Conor McAdams, with additional supervision from Dr Simon Stoddart, Dr Sara Boyle and Dr Emily Murray. We are also very grateful for Dr George Azzopardi who sought out accommodation for the project, assisted on site, and with his colleagues in HM enabled access to space for storage, environmental sampling and finds processing in Rabat. John Cremona and his colleagues in the Ministry for Gozo also played an important role in enabling site clearance and facilities at Taċ-Ċawla, and in securing the site following our work, with the long-promised surrounding wall. We also acknowledge a great number of local Gozitan businesses, hardware stockists, JCB drivers and cafe and restaurant owners, who supported our work in so many ways.

Santa Verna

The Santa Verna excavations were directed by Prof. Caroline Malone, assisted by Dr Simon Stoddart and Dr Rowan McLaughlin. The crew consisted primarily of a number of students and staff from UoC, QUB and UM, supervised by Stephen Armstrong, Jeremy Bennett, Dr Catriona Brogan and Eóin Parkinson. Dr Evan Hill wet-sieved the soil samples using flotation and the site was sampled for soil micromorphology and geochemistry by Prof. Charles French, Dr Sean Taylor and Conor McAdams. During the excavation, our understanding of the extant megalithic structure was improved by the superb plan produced by Stephen Ashley. Tiomoid Foley conducted a condition survey of the megalithic remains, the results of which were incorporated into an MSc project. Rupert Barker made a short film of the excavations – *A Day on a Dig* (https://youtu.be/cGNOGpq746I). Digital laser scanning was undertaken by John Meneely. Individuals whose efforts are warmly acknowledged include Stephen Armstrong, Dr Catriona Brogan, Dr Bela Dimova, Dr Paola Filippucci, Dr Reuben Grima, Laura James, Lottie Stoddart and Dr Sean Taylor, who supervised trenches, organized field assistants and gave logistical support to the running of the project. At Santa Verna, we particularly thank Dr George Azzopardi (HM) for his invaluable logistical

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Ġgantija

The Ġgantija excavations in 2015 were directed by Prof. Charles French, Dr Simon Stoddart, Dr Sean Taylor and David Redhouse, assisted by Stephen Armstrong, Jeremy Bennett, Dr Catriona Brogan, Conor McAdams, Aran McMahon, Eóin Parkinson, Jacob Pockney and Mariele Valci. Flotation of soil samples was undertaken by Dr Evan Hill. Digital laser scanning was undertaken by John Meneely. The field researchers comprised the geophysical survey team in 2014 under the supervision of David Redhouse and Dr Alistair Ruffell with assistance from Jeremy Bennett. Dr Sara Boyle and Jeremy Bennett undertook initial survey of the WC section area in 2014.

We thank especially HM and its staff on Gozo, who enabled access and provided much assistance at this busy World Heritage Site (the most visited ancient site in the islands), namely George Azzopardi, Daphne M Sant Caruana and Nicolene Sagona.

Kordin III

The excavations were directed jointly by Prof. Caroline Malone and Prof. Nicholas Vella, assisted by Dr Reuben Grima, Dr Rowan McLaughlin, Ella Samut-Tagliaferro and Dr Simon Stoddart. The crew consisted mainly of students from UM, who participated as part of their annual training excavation. They were supervised by Jeremy Bennett, Dr Catriona Brogan, Rebecca Farrugia, Dr Reuben Grima, Tore Lumsdalen and Eóin Parkinson. Flotation of soil samples was undertaken by Dr Evan Hill. Digital laser scanning was undertaken by John Meneely and Jeremy Bennett. We also acknowledge the kind assistance of Fondazzjoni Wirt Artna, the Malta Heritage Trust, who granted access to the site.

Skorba

The excavations were directed by Prof. Caroline Malone and Dr Rowan McLaughlin, who were assisted by Stephen Armstrong, Jeremy Bennett, Dr Catriona Brogan, Emma Hannah and Eóin Parkinson. OSL profiling and geoarchaeological sampling was performed by Prof. Charles French, Dr Timothy Kinnaird (University of St Andrews), Dr Simon Stoddart and Dr Sean Taylor. The site was laser scanned by Jeremy Bennett. We thank HM for enabling access to the site and Dr Josef Caruana and Katya Stroud for supporting the work.

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Post-excavation

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Permits and access

The *FRAGSUS* team is very grateful to the heritage bodies of Malta, namely HM and the SCH and their officers, who enabled access to sites and provided the permissions and opportunities to study the buried archaeology. It cannot be over-emphasized just how privileged the *Project* has been in having access to excavate and examine the exceptional sites of prehistoric Malta. Not only is the entire category 'Maltese Temple' protected, but most sites are also inscribed within the UNESCO World Heritage Site listing for Malta. Some readers may wonder why very small trenches and sondages were permitted at all, whilst others may query the value of small investigations. This volume presents a range of scales of study from the small to the large across prehistoric sites and assesses the value of particular data sets that have been collected. Together with Volume 1, which examines the wider landscapes and environments of early Malta, and Volume 3, which examines the bones and lives of the ancient individuals, this volume fills the middle ground – the sites themselves, and we thank all our collaborators and volunteers in this venture. In particular, we thank the willing site assistants, volunteers, surveyors, cooks and illustrators who gave their time and energy to the archaeological work, and we list them below:

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Foreword

Joseph Magro Conti

Consider, 5000 years ago you are on one of the smallest islands in the Mediterranean, which has no water sources, dependent on brief winter rain showers, shallow soil patches, with only stone, clay and salt as natural resources, perhaps a few trees and shrubs. How would you live in such environment? This second volume of the *FRAGSUS Project* (2013–18) provides readers with fresh information achieved through high quality scientific research on palaeoenvironmental analysis, radiocarbon dating, human and faunal bone studies as well as on ceramics, lithics, domestic contexts and monuments, fully addressing five main questions targeted by the project. The support of the European Research Council has been transformative in making this new knowledge about Maltese prehistory more understandable and accessible, as a reader will discover throughout this and the other two volumes.

The coming of *FRAGSUS* was a long journey. Twenty-seven years passed since I first met the main protagonists of this project, Prof. Caroline Malone and Dr Simon Stoddart. They left a long-lasting positive impression on me. I was an archaeology undergraduate at the University of Malta in 1993, under the academic guidance of Prof. Anthony Bonanno, with colleagues Nicholas Vella (now Professor, and former Head of the Archaeology Department at the University of Malta) and Dr Anthony Pace (my predecessor as Superintendent of Cultural Heritage). I was on my first archaeological research excavation by an Anglo-Maltese mission at the unique Neolithic mass burial site of the Xagħra Brochtorff Circle in Malta's sister island of Gozo. A couple of decades later I had the opportunity to participate on other research digs in Malta with Malone-Stoddart, this time as part of *FRAGSUS* at Kordin III Neolithic temples in Malta, a site about which I had long endeavoured to raise awareness for its better understanding and management.

The Temple Period is renowned for the monumental megalithic structures (presumed temples) and the associated underground mass burial places, which offer an aura about the Neolithic mindset, belief system, organisation, ritual and physical capabilities in engineering and art. But what should be further intriguing to the reader is another aspect of human life – how the early people lived? What evidence is there for this aspect from the Temple Period? Previously, such questions were largely without much evidence except sporadic discoveries of typical deposits and material culture, but which were very lacking in data to advance site prediction and environmental data collection. The very few huts so far discovered and interpreted as domestic were ephemeral and thus prone to unrecorded destruction during building construction. I was pleased to contribute my knowledge of domestic sites to the publication of the Gozo study in 2009, and delighted to write this Foreword. This work records the next stages of discovery of the inhabitation record of the Maltese islands, most notably at Taċ-Ċawla, a site preserved from development by the action of the Superintendence.

In the past fifty years, the Maltese Islands have undergone successive building booms, each significantly endangering Malta's historic environment. In my quest as an applied archaeologist/heritage manager for over two decades at the Planning Authority and for the past two years as Superintendent of Cultural Heritage, I have endeavoured to collaborate with disparate stakeholders to save or mitigate impacts on the fragile remains of the past, and to raise awareness. The findings from *FRAGSUS* will be an especially useful source of information for policy makers, heritage managers, regulatory agencies and conservation scientists in their quest to preserve and understand Malta's past. The study enables them to make informed decisions about future human impacts on the archaeological heritage, mainly caused by



Figure 0.2. *Joseph Magro Conti at Kordin.*

building development on the small island environment and its island society and economy.

This volume is a seminal interdisciplinary study, not only for Maltese prehistory but also a milestone in world prehistory more generally. As prehistory pre-dates the invention of writing, the approach of *FRAGSUS*'s research agenda turns archaeo-environmental data into 'words' by digging deep into the embryonic matrix of garden soils on which the temples builders sustained themselves. The project can now explain queries about this sustainability, a theme that is still relevant to modern generations. With the use of multidisciplinary and multinational teams of specialists, the study placed innovative scientific approaches at the fore, and addressed silent aspects that go beyond the traditional art-historical basics of Grand Traditions. The investigations into the core essence of life five millennia ago belong to new scientific approaches.

The *FRAGSUS Project* has addressed lacunae and used unconventional approaches in theory and method to obtain robust scientifically-backed results that have filled in significant gaps in the research agenda of Maltese prehistory and beyond. Equally, the results have surely raised many questions for future research agendas. I look forward to further collaboration, and I am eager to see more collaborative projects between Maltese veterans and upcoming academics and our overseas colleagues.

Joseph Magro Conti
Superintendent of Cultural Heritage, Malta
September 2020

Chapter 5

Ġgantija

Catriona Brogan, Charles French, Sean Taylor,
Jeremy Bennett, Eóin W. Parkinson, Rowan McLaughlin,
Simon Stoddart & Caroline Malone

5.1. Introduction

This chapter presents the results of archaeological investigations at Ġgantija temples in 2014 and 2015 conducted as part of the *FRAGSUS Project*.[1] The site had been a focus of field research in the preceding Cambridge Gozo Project and Survey, and it had demonstrated the potential to contain important data that could address the specific questions of the *FRAGSUS Project*. Ġgantija is inscribed on the World Heritage List and any proposed interventions that could disturb, destroy or damage the site are not permitted. The *Project*, however, was granted permission to explore a number of limited areas that were sufficiently exposed or peripheral to the main site, and which could contribute to knowledge. In this context, the most extensive fieldwork at Ġgantija was conducted unexpectedly as a result of the demolition of the 1950s–60s Custodian's office and WC block. These structures were placed on the eastern edge of the open terrace that forms a forecourt to the temple complex. The removal of the concrete and limestone block structures involved the exposure of substantial concrete foundations, that in turn exposed intact archaeological deposits still *in situ*. The WC trench (as it was called) formed the focus of survey and section recording in 2014, and later, excavation in 2015. Geophysical survey in the olive grove to the northeast of the site also enabled a small trench to be excavated to test anomalies. Excavations in two further locations found evidence for additional megalithic structures surrounding the southern aspect of the site, and provided important insights into the nature of the environs of the main temple structure. The work presented an important opportunity to retrieve samples for absolute dating, geoarchaeological, plant and zooarchaeological studies. Here we present details of the results of the 2014 and 2015 survey and excavations, with descriptions of the stratigraphy, structural features, the main finds, and their interpretation within the context of Temple Period Malta.

5.2. Location and physical setting of the site

The site of Ġgantija lies on the southeastern slope of the Xagħra plateau at an altitude of 127 m (Fig. 5.1), with extensive views of the Ramla Valley and the mesa plateau of In-Nuffara, the location of a fortified Bronze Age settlement (see Chapter 8). The site is dominated by the imposing remains of two adjoining megalithic 'temples' surrounded by an enclosing wall, built almost exclusively of rough Coralline Limestone blocks, some of immense size, that today are partly supported by temporary scaffolding to ensure the rather unstable structure remains in place. The concave-shaped facade of the twin temple structure is fronted by an artificial raised terrace, which appears to post-date the megalithic temples' construction (Evans 1971, 179). Ġgantija forms part of a larger prehistoric landscape that extends across the Xagħra plateau, but is now largely engulfed by the modern village of Xagħra. Ġgantija lies 390 m from the Xagħra Brochtorff Circle burial caves (Malone *et al.* 2009), and approximately 953 m from the megalithic site of Santa Verna (McLaughlin *et al.* 2019, Chapter 4, this volume). Ġgantija is located on Upper Coralline Limestone, directly above an extensive area of Blue Clay that forms the slope to the south of the temple, and in turn, above layers of Globigerina Limestone. A natural, and perpetually flowing spring line emerges from a geological fault that runs beneath the temple complex directly below the terrace of the temple forecourt, and today has a steady water supply (Ruffell *et al.* 2018). It seems likely that this location was always well supplied with water. The site today is situated in a heavily terraced area on L-Inglin soils, which belong to the Mediterranean *terra rossa* (Lang 1960). Below the temple, the soils of the Ramla valley are primarily composed of silty clay vertisols on the Blue Clay substrate, which have very low amounts of humic material (Volume 1, Chapter 5). The site is

located at grid reference UTM 33S 434635E 3988925N (or 36.047° N, 14.269° E on the WGS84 datum).

5.3. History of the site

While the first written account of Ġgantija did not appear until the seventeenth century, a rich local folklore was associated with the site. In the early twentieth century, Fr Emmanuel Magri, a local Jesuit priest and noted antiquarian, collected and collated a comprehensive record of Maltese and Gozitan folklore, detailing stories that had been handed down in oral tradition (see Vella *et al.* 2013 for a comprehensive account of the history; Fig. 1.15). Local mythology held that the colossal stones used in the construction of Ġgantija were brought to the site by a giantess called Sunsuna, who carried the enormous stones from the Ta' Ċenċ plateau, over 3 km away (Bonanno 2010). The first written account of Ġgantija appeared in Giaovanni Francesco Abela's (1647) *Della descrittione di Malta isola nel mare Siciliano: con le sue antichità, ed altre notizie*, where he suggested that the massive megalithic structures on the Maltese islands were the product of a race of giants (Abela 1647, 145). Despite the mythological



Figure 5.1. *Location map of Ġgantija.*

connections, Abela referred to the site as *El Eeyun* (the Springs), an allusion to the spring located at the base of the valley, and it was not until the late eighteenth century that the more familiar *Torre tal Sgigant* (Giants Tower) was recorded in the literature (Ciantar 1772, 341; see Stroud 2013 for a general account).

At the end of the eighteenth century, a local Maltese nobleman, Giovanni Battista Cassar Desain, drew up an innovative piece of legislation designed to protect Ġgantija and its surrounding landscape from alteration or damage (Bugeja 2011). The 1776 document allowed a local man, Paulo Buhagiar from Xagħra, to farm the surrounding lands on the provision that he was not to remove or damage any of the stones from the temple or the surrounding vicinity, thus ensuring the site's preservation. As well as protecting the site, Cassar Desain also inadvertently provided an early account of the temple and the contemporary landscape, detailing a number of features including the caves and the nearby spring. The first detailed account of Ġgantija was written by Jean Hoüel (1787), who provided a description and plan of the site in his *Voyage pittoresque des isles de Sicile, de Lipari et de Malte.* The plan, labelled 'la tour des géants' – the giant's tower – shows an overview of the Xagħra Brochtorff Circle and another monument which likely illustrates the south temple at Ġgantija (Fig. 5.2).

Ġgantija was the first of the Maltese temples to be recorded during clearance of the overlying stone collapse and deposit, when Colonel John Otto Bayer,[2] then the Lieutenant Governor of Gozo, removed stone debris from the site between about 1820 and 1822 at his own expense, before turning his attention to the Xagħra Brochtorff Circle burial close by (see Volume 3). The clearance of the monument was crude by modern archaeological standards – there were no records and only a small number of artefacts were kept, illustrations of which were published by Lacroix (1848) (Fig. 5.3). According to Captain William Smyth (1829), Col. Bayer had intended to submit a detailed description of the site, but he died suddenly in London in 1826 and his notes were never found. Later that year, however, an account of the clearance was produced by Luigi Mazzara (1827), who published a description of the clearance and a number of illustrations of the newly revealed site, under the title *Temple antediluvian des Géants*. The illustrations were widely copied by other artists and Ġgantija soon became a focal point throughout the nineteenth century for artists and Grand Tourists alike (see Vella *et al*. 2013 for examples).

One of the most prolific artists associated with Ġgantija is Charles de Brocktorff, who was commissioned by the Duke of Buckingham during the early

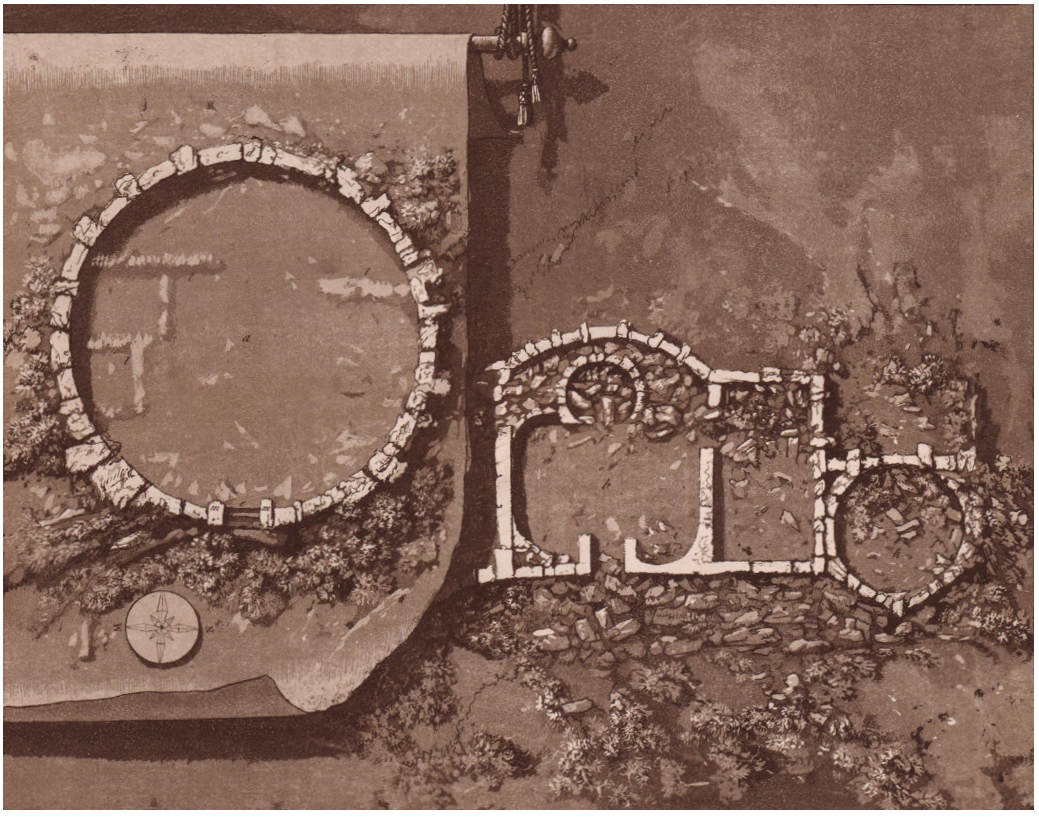


Figure 5.2 *(left). Engraving from Hoüel's (1787) engraving showing plans of the Xaghra Brochtorff Circle (left) and Ġgantija Temples (right). (Private Collection, courtesy of John Cremona).*

nineteenth century to illustrate his travel diaries (Grima 2004a). Brocktorff produced numerous detailed watercolours of Ġgantija and the nearby Circle, constituting a valuable record of Ġgantija shortly after Bayer's clearance (Grima 2004; Trump 2013). Many of the structures and features portrayed by de Brocktorff have been destroyed, eroded or buried over the succeeding years, making his drawings and inked sketches a valuable archive. While the majority of his illustrations show the main temples at Ġgantija, de Brocktorff is one of the few artists to depict the now buried trilithon structure in front of the temple (Fig. 5.4), which is of particular relevance to the 2014 and 2015 excavations. The print shows the remains of a terraced platform and sloping wall leading up to a trilithon structure, which appears to lead into the forecourt area in front of the temples. The same structure was described by Alberto La Marmora (1836, 4–5) and was also depicted in a set of engravings by Captain William Smyth (1829), who published an important



Figure 5.3 *(right). Lacroix's illustrations of the more notable artefacts kept by Bayer after his clearance of Ġgantija. (Private Collection, courtesy of John Cremona).*



Figure 5.4. *The trilithon structure and retaining wall as depicted by de Brocktorff (1820s), with the terrace wall behind the trilithon structure in the foreground (National Library of Malta).*

series of steel engravings in *Archaeologia* XXII. One of the plates shows a wider, landscape view of the Xagħra plateau as viewed from the south. In the foreground of the engraving, Ġgantija can be observed with the forecourt wall extending to the left of the image (Fig. 5.5). The exact nature of this enigmatic structure has never been resolved fully. The trilithon has generally been interpreted as an entrance-way into the temple, although it is unclear from these images if the trilithon led into the forecourt of the temples or, as one account has suggested, into an underground chamber beneath the forecourt (Trump 2013, 130).

5.3.1. Museum Department excavations

After the initial flurry of interest generated by the clearance of the temples, the site lay exposed for almost a century, during which time its condition deteriorated, especially the interior fittings that were carved from the softer Globigerina Limestone. The site was eventually appropriated by the Maltese Government in 1933 and a number of trial excavations were carried out by Museum Department of Malta, under the directorship of Sir Themistocles Zammit (Museum Annual Report, 1934). Excavations took place under the threshold of the South Temple and in the surrounding fields, alongside an investigation of the nearby cave site of Għar ta' Għejżu, located *c.* 183 m to the west of Ġgantija. The 1933 excavations uncovered megaliths that formed part of the boundary of the temple forecourt and traces of *torba* floors, and also uncovered foundation deposits under the threshold stone alongside a cache of marine shells within a ceramic bowl. Additional trenches in the fields surrounding the site yielded quantities of pottery.

Further excavations in 1936 and 1937 exposed the foundations of the outer wall of the temples, so the megaliths could be viewed in their entirety, and extensive restoration work was undertaken in the North Temple (Evans 1971; Museum Annual Report 1937). Following a hiatus during WWII, excavation

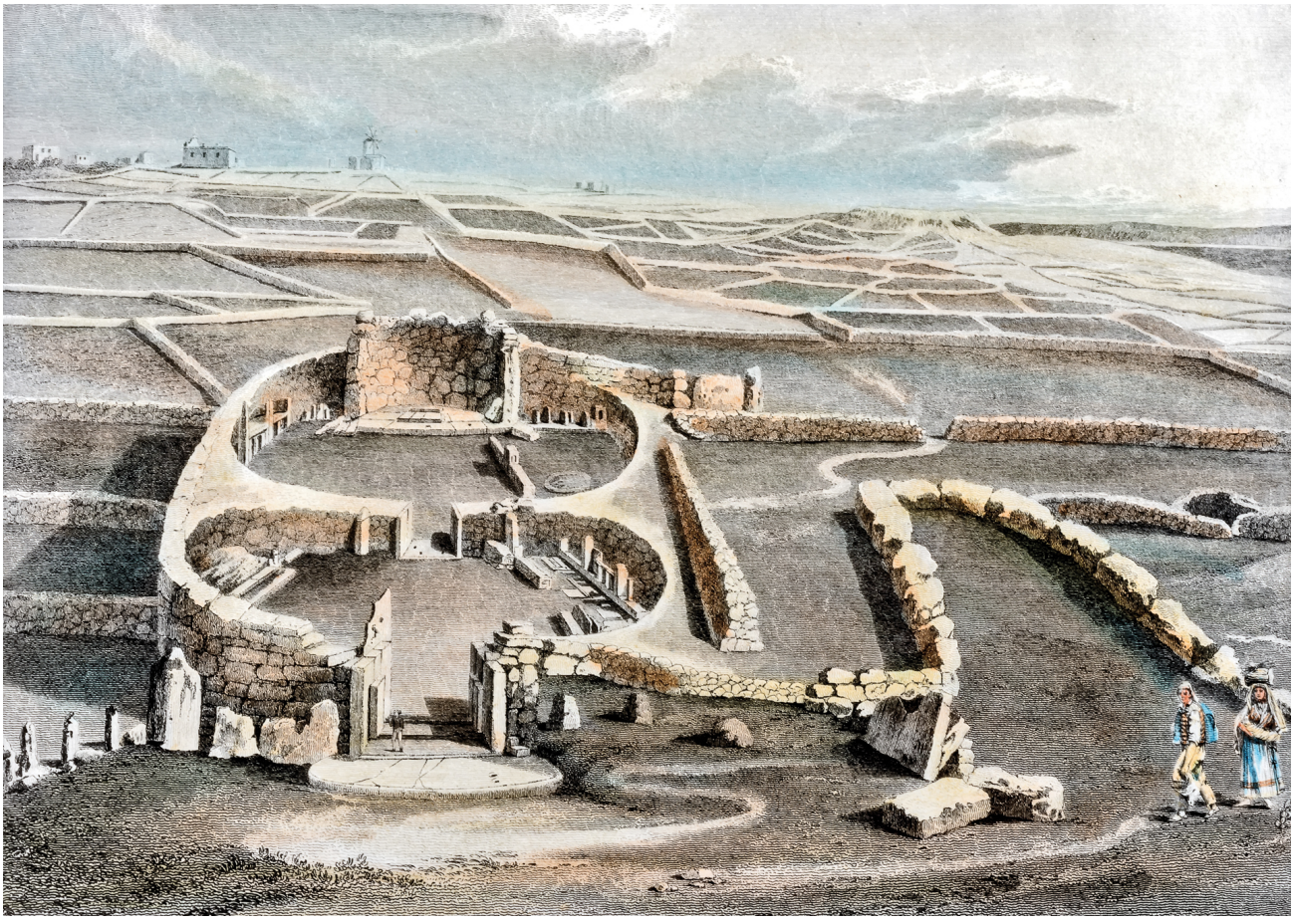


Figure 5.5. *Detail of the engraving by Smyth (1829), showing the Ġgantija temples. Ta' Kola windmill is also illustrated, top left. (John Cremona Collection, originally published by the Society of Antiquaries of London).*

work resumed under Evans in the 1950s. As with the previous campaigns, the majority of the excavations focused on the main temples, but Evans also examined the platform and retaining wall in front of the temples. Evans found that the terrace was constructed of large boulders piled on top of each other, with smaller stones placed on top and between to stabilize the structure (1954, 1971). The retaining wall was comprised of megaliths, some of which were still standing, while others appear to have collapsed or been broken. Material evidence from the earth packing found between the stones indicated that the platform and wall post-dated the original construction of the temples, as large quantities of Tarxien phase, and occasional Tarxien Cemetery phase, pottery was found (Evans 1971, 180–1). Evans (1971) also noted the presence of a thick layer of buried soil beneath the stone structure, which contained much Tarxien pottery, but did not elaborate on the significance of this deposit. Later works undertaken from 1957 to 1959 rebuilt and consolidated the western end of the terrace and added a boundary to the site, but no further excavation of the platform or the retaining wall was conducted.

5.4. 2014 survey and excavations

An extensive campaign of geophysical survey was conducted in the environs around Ġgantija between 3 and 10 April 2014, in order to identify potential areas of archaeological interest. The results identified a number of anomalies with archaeological potential. One area of interest was revealed as a result of recent measures to improve the presentation of the temple and involved the removal of the 1959-60 custodian's office and WC block from the eastern edge of the terrace in front of the temples. The removal of substantial concrete and blockwork foundations revealed a preserved section of archaeological deposits, including a buried land surface. Another area was identified in

the forecourt where one of the decorative palm trees was to be removed, and in the process likely to expose the terrace makeup deposits. An additional investigation was directed to the west side of the forecourt, in an area previously cleared of overburden where the megalithic facade wall extended to the edge of the terrace. This location had the potential to explore the terrace makeup and possible buried land-surface from the side, thus minimizing disturbance of the deposits or structures. Buried land surfaces were of particular significance for the *FRAGSUS Project* questions since they provided an important opportunity to examine any surviving palaeosols buried beneath the forecourt of the monument.

5.4.1. Methodology

The geophysical survey of Ġgantija employed ground-penetrating radar (GPR), resistivity and magnetometry to locate potential areas of archaeological interest in the area around the temple. While the GPR and resistivity results were informative, the magnetometry failed to produce any meaningful results.

Independent of the geophysical results, two small sondages were opened in the vicinity of the temple. Test Pit 1 (Trench 1/2014) was located at the base of an *in situ* megalith within the retaining facade structure to the south of the monument. Test Pit 2 (Trench 2/2014) was facilitated by landscaping work undertaken by Heritage Malta (HM). This work involved the repositioning of palm trees on the platform directly in front of the temple. On the basis of the resistivity survey, a third small trench (Trench 3/2014) was opened in the olive grove to the northeast of the monument (§5.4.2.2 for results), since the anomalies initially looked very interesting. Soil samples of individual deposits were taken and wet sieved and floated to recover environmental and dating samples. A total of 111.5 litres of soil from the 2014 excavations was sampled, floated and processed. The trenches were laid out using a Leica TS02 Total Station, re-sectioned to the national (UTM) grid using three-point section.

5.4.2. Results

5.4.2.1. Geophysical Survey Results

The use of geophysics across the Ġgantija area yielded informative results. Magnetometry survey had not yielded useful data but the GPR and resistivity surveys

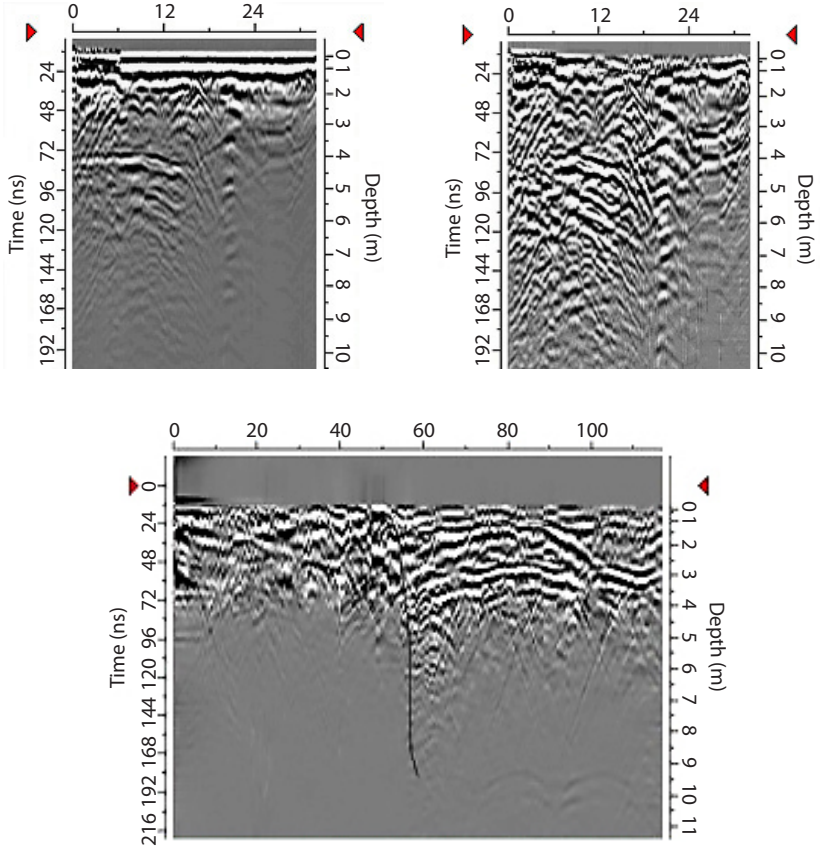


Figure 5.6. *The fault line at Ġgantija, revealed through GPR, and marked by the vertical black lines.*

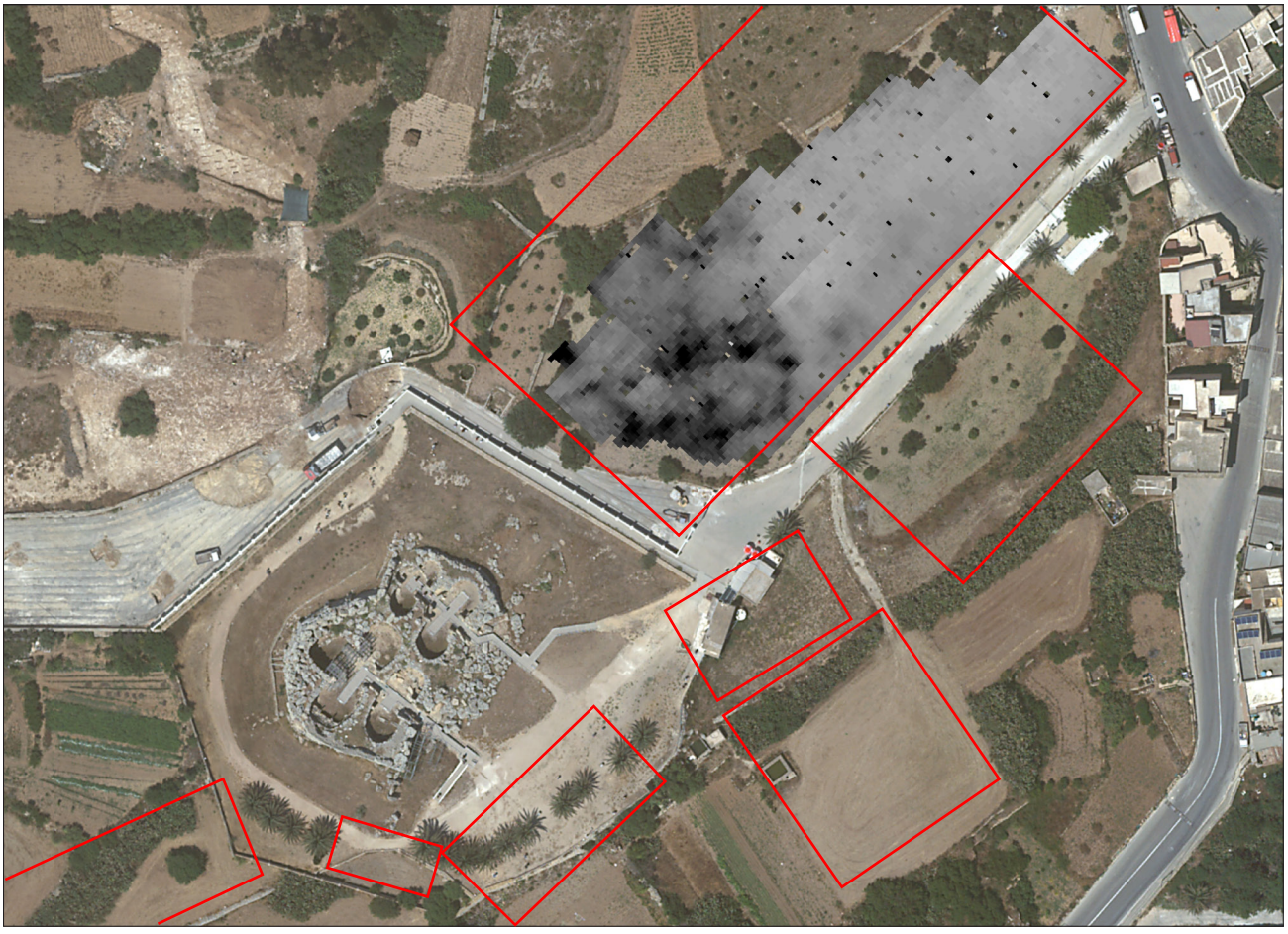


Figure 5.7. *Orthophotograph of the Ġgantija temples showing resistivity results for the 'olive grove' and the locations of other areas surveyed (annotated Google Earth image, captured in 2014).*

were important. The GPR detected an evident geological fault line located beneath Ġgantija, which can be traced across the Ramla Valley (Fig. 5.6; see Ruffell *et al.* 2018). Grima (2004a, 2005) noted the importance of landscape features in determining temple location, with many sites built close to natural springs, identified by names of springs or associated with nearby water cisterns. Toponomastic evidence suggests that the spring at Ġgantija was an integral element of the site since the district around the temple is known locally as *tal-Għejun* ('[the place] of the springs') (Grima 2005).

A total of seven areas were surveyed using resistivity in the area surrounding Ġgantija to identify potential areas for archaeological prospection (Fig. 5.7). In particular, the resistivity survey detected a large number of anomalies in the olive grove to the north of the temple and, as a result, a 2 × 8 m exploratory trench (Trench 3/2014, §5.4.2.2) was opened to incorporate as many of the anomalies as possible.

5.4.2.2. 2014 Excavations

Following hand-auger survey on the southwestern side of the temple platform, a small test-pit (approximately 0.5 × 1.5 m), Trench 1/2014, was opened on the south side of the terrace to examine the soil profile surrounding and beneath *in situ* megaliths located within the terrace wall (Figs. 5.8, 5.17 & 5.18). The sondage demonstrated two things. First, the majority of material in this sondage was related to material used to level the terrace in front of the temple, but this overlay intact palaeosols at the bottom of the trench. Second, that the facade megalithic stone post-dated the early deposits and, as shown in Figures 5.8 and 5.19, was 'suspended' in the terrace makeup deposits, set well above the buried soils. Several micromorph blocks and small bulk samples were taken of the palaeosol for geoarchaeological analysis (Appendix A5.5), and the following year (2015) the test pit was re-opened to allow profiling and sampling for OSL dating (see Volume 1, Chapter 2 & 5). A number of

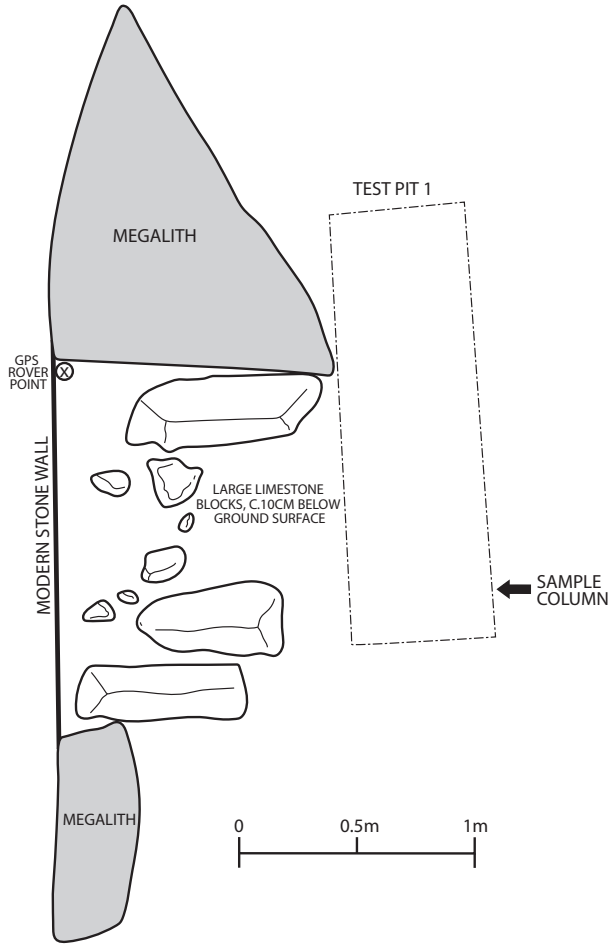


Figure 5.8. *Plan of Trench 1/2014.*

artefacts (pottery, lithics) were retrieved. (see below and Fig. 5.19a & b).

The removal of a palm tree from the terrace in front of the temple provided the *Project* with an opportunity to open a small exploratory sondage in the area previously occupied by the tree (Fig. 5.9). A 1 × 2 m trench (Trench 2/2014) was opened, but upon excavation it was found to contain the remains of a domestic dog in an area formerly laid out as flower beds. An accompanying bag was dated to the 1950-60s, demonstrating that continued excavation was unlikely to yield anything of archaeological significance, so the excavation was terminated. Nothing else of archaeological significance was found in this trench, except dry stone rubble towards the outer face of the terrace.

Trench 3/2014 was opened to investigate a large concentration of anomalies highlighted by the resistivity survey in the olive grove to the north of the temple. The topsoil, Context (2000) was composed of a very friable, brown matrix with small to medium sub-angular stones throughout and sherds of pottery and bone. It seems likely the soil was partly imported to the site to help establish the olive grove. Below the top-soil in the very northern section of the trench was a layer of firm, brown silty sand soil. This was defined as Context (2005), and interpreted as plough soil. Context (2005) was abutted by Context (2002), a very similar firm, brown sandy silt with frequent finds of pottery and bone. Context (2002) covered the rest of trench, coming down to natural bedrock in the southern section of the trench, and was interpreted as modern plough soil. A well-constructed wall composed of a skin of large, roughly shaped blocks with a rubble core, Context



Figure 5.9. *Trench 2/2014 after excavation. Pit on the far right-hand side of the photograph is the location where the remains of a domestic dog were buried.*

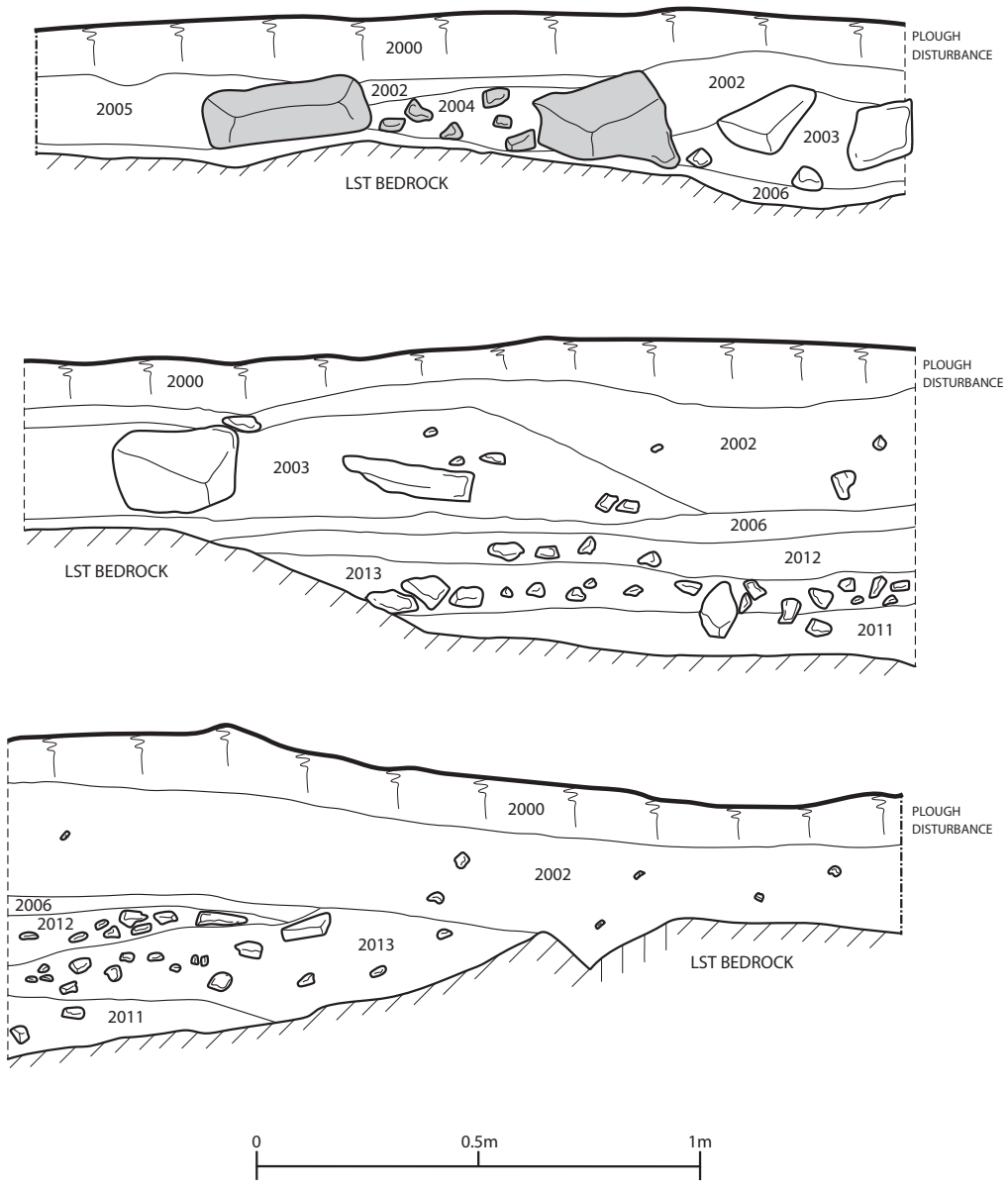


Figure 5.10. *Vertical section of Trench 3/2014 with wall blocks exposed Context (2004).*

(2004), abutted Context (2005) and lay directly below Context (2002) in the northern section of the trench (Fig. 5.10; Fig. 5.11). The wall, aligned roughly east-west, is probably a field or terrace wall of relatively recent date. A spread of stones, Context (2003), running to the south of the main wall most likely represents wall collapse. Located below the wall and stone collapse was Context (2006), a bright reddish-brown sandy silt thought to be a horizon of redeposited *terra rossa*-like soil material. Context (2006) covered (2012), which was a mixed deposit of small flat limestone blocks and a plaster-like white powder with a green slip-like surface and appeared to be the remains of a plaster floor, although the date of this feature remains unclear. The plaster floor was supported by Context (2013), which was a layer composed of a mixture of earth and sub-angular stones that was probably intended as a levelling surface for the floor above. Underneath this levelling layer was Context (2011), a firm, dark brown sandy silt that was sterile and lay over the natural bedrock. The date of Context (2011) is unclear but it was interpreted during excavation as a relatively modern deposit.

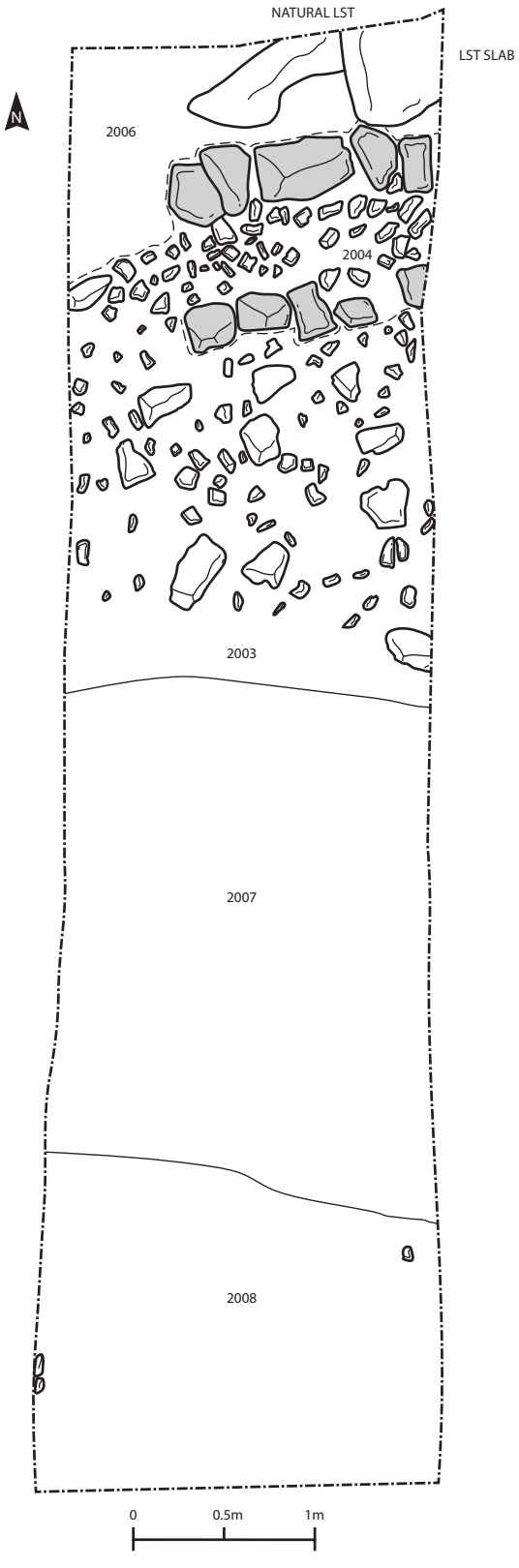


Figure 5.11. *a) Mid-excavation plan of Trench 3/2014 with wall structure, at north end of trench Context (2004).*



Figure 5.12. *Photograph of Trench 3/2014 in the olive grove, looking south. The edge of the wall, Context (2003) can be seen clearly in the bottom of the picture.*

5.4.2.3. Analysis of the southeast-facing vertical section

Between 2008 and 2015, a widespread infrastructural development of archaeological heritage sites across Malta was supported by the European Regional Development Fund and the European Social Fund (Operation Programme I – *Investing in Competitiveness for a Better Quality of Life* ERDF). At Ġgantija, this project included improvements to the visitor facilities and landscaping of the immediate area around the temple. In the immediate vicinity of the megalithic monument the most substantial alteration was the removal of the southern rooms (the former WC and site office block) and a section of the terrace retaining wall. Further away from the temple, the protective concrete pillared wall that surrounded the monument on the west, north and east sides was removed and large areas to the north of the surroundings were cleared, excavated to bedrock and remodelled as part of the Visitor Centre. Figure 5.7 shows the landscape before the recent reorganization of

the monumental space. The quite substantial concrete foundations and drains of the toilet blocks were found to have disturbed underlying deposits. The intervention exposed a southeast-facing vertical section approximately 2 m deep and 8 m wide, containing limestone megaliths, cultural deposits and a significant humic layer (Fig. 5.13).

The *FRAGSUS Project* was granted the opportunity to investigate this intervention through detailed survey and recording (by Jeremy Bennett, University of Cambridge) which ascribed provisional context numbers, recorded on a section drawing (Fig. 5.14). During the section cleaning, a quantity of Temple Period pottery sherds (Fig. 5.15) was collected from one of the culturally rich layers, Context (2012), and several layers appeared to be generally rich in ceramic artefacts. Of particular interest were the stratigraphic units in the lower-middle part of the section. Flanked by significant limestone megaliths, a *terra rossa* soil with cultural inclusions, overlay the bedrock. Each of the successive layers above the *terra rossa*, extending to the height of the buried megaliths, were varied in texture and colour and included notable cultural material. These factors meant that the area was considered sufficient for further investigation, particularly to test the relationship between these strata and the megaliths. Furthermore, given the prevailing semi-arid climatic conditions, dark/humic soils were recognized as a rarity that merited greater scrutiny.



Figure 5.13. *The southeast-facing vertical section following removal of the custodians office and WC. The overburden of topsoil can clearly be seen in the darker soil at the top of the section. The lower layers contained large stones and other cultural material, including substantial amounts of pottery.*

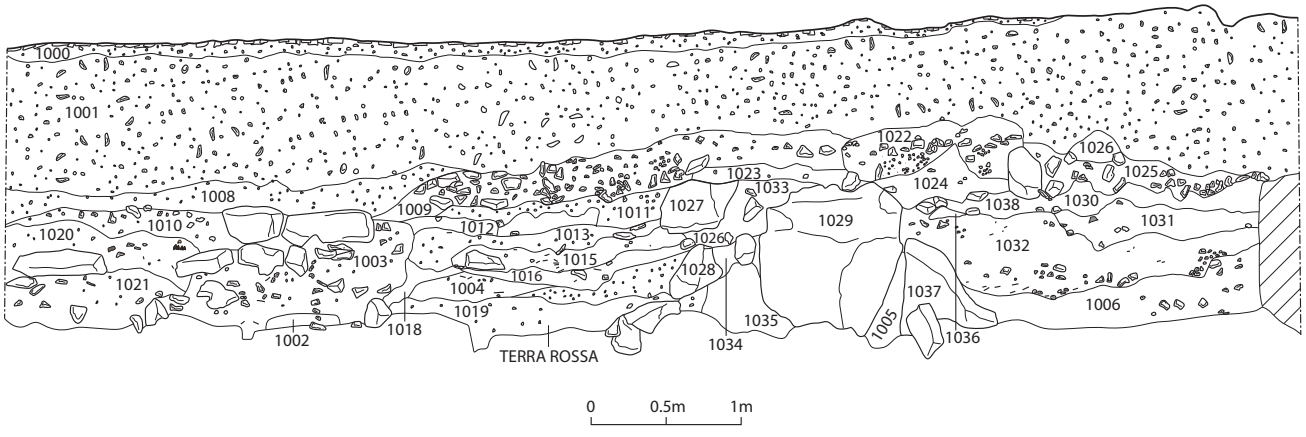


Figure 5.14. *Section drawing of the southeast-facing section showing* in situ *megaliths and stratified deposits.*



Figure 5.15. *Typical Tarxien phase sherds recovered from Context (2012) following cleaning of the southeast-facing vertical section.*

5.5. 2015 excavations

5.5.1. Excavation rationale

The 2015 excavations were designed to resolve several issues raised during the previous year's fieldwork. One of the main issues was to resolve the stratigraphic sequence of the deposits and structures revealed in the southeast-facing vertical section and to interpret and relate them to the main temple structure. The identification of well-preserved humic soils within the southeast-facing vertical section during the 2014 field season provided an important opportunity to examine undisturbed palaeosols, which are rare in Malta's eroded landscape (see Appendix A5.6).

5.5.2. Methodology

The 2015 fieldwork at Ġgantija was carried out in compliance with the policies outlined by the Superintendence of Cultural Heritage (SCH). The site was excavated entirely by hand, by, or under, the direct supervision of *FRAGSUS* personnel supervised by Prof. Charles French and Dr Sean Taylor. Before excavation began the limit of excavation was laid out using a Total Station. During the course of the excavation, bulk samples of individual contexts were taken for flotation in order to retrieve samples for radiocarbon dating. The 2015 excavations produced 175.5 litres of soil that was sampled, sieved and processed. Despite extensive soil sampling and attempts to gather dateable material from all significant contexts, only two of the 11 samples submitted for radiocarbon dating yielded successful results: a wheat grain (*Triticum*) and a piece of charcoal. The other nine faunal specimens did not have sufficiently preserved collagen for dating. Nonetheless, Trench 1 of 2014 was re-opened and the buried soil and overlying 'terrace' deposits were

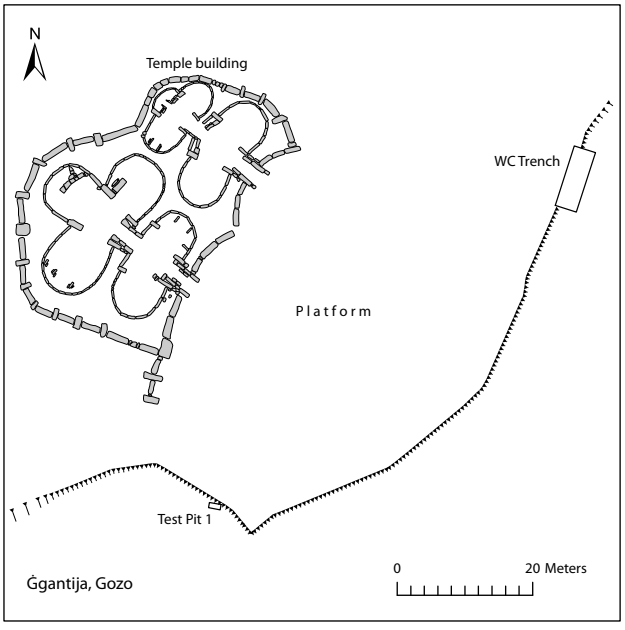


Figure 5.16. *Plan of Ġgantija showing the location of Trench 1/2014 ext. (Test Pit 1) and Trench 1/2015 (WC Trench).*

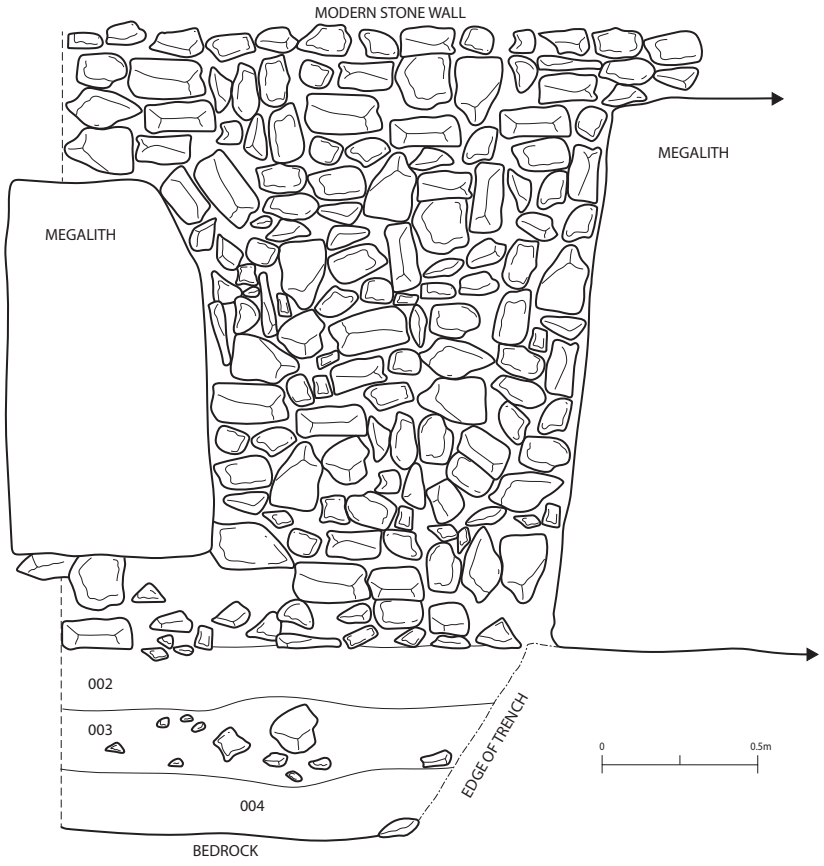


Figure 5.17. *East-facing vertical section drawing of Trench 1/2014 ext.*

successfully sampled for OSL profiling and dating (Volume 1, Chapters 2 & 5).

5.5.3. Excavation results

In 2015, the Trench 1 sondage (henceforth referred to as Trench 1/ 2014 ext.) on the southwest side of the terrace was reopened and extended. The goal was to augment the work of the previous year with a second larger trench to examine the soil and construction sequence in greater detail, and obtain OSL dates of the buried soils. A second much larger trench GGWC/15 (henceforth referred to as WC Trench 1/ 2015), was opened on the opposite, eastern side of the terrace, under the site of the WC/office block adjoining the old ticket office. This trench was opened to examine the southeast-facing vertical section that had been exposed by the removal of the boundary wall and concrete foundations the previous year (§5.4.2.3; Fig. 5.14). Figure 5.16 shows the location of the two trenches in relation to the main temple structure.

5.5.3.1. Trench 1/ 2014 ext. (Trench TR1) (2.5 × 3.5 m)
Trench 1/2014 ext. extended the test pit (Trench 1/2014), around the *in situ* megalith on the southwest edge of the terrace during the 2014 field season (Fig. 5.19). Lying on top of the bedrock was Context (004), a firm brown, silt loam, rich in cultural material. The deposit represented an *in situ* buried soil and comprised three horizons: a lower dark reddish brown fine sandy/silt loam, a middle brown silt and an upper dark brown silt loam. Both the middle and upper layers contained a mixture of Neolithic and Temple Period pottery, including Għar Dalam, Skorba, Żebbuġ, Ġgantija and Mġarr sherds – although there were many more sherds present in the upper horizon (see the detailed geoarchaeological report in Appendix A5.5). Both the middle and upper horizons contained pottery, bone, obsidian and chert, with the vast majority of pottery sherds belonging to the Żebbuġ phase (Chapter 10), but Għar Dalam, Skorba, Ġgantija, and a few sherds of Mġarr pottery were also present, suggesting that this context was deposited during the Temple Period. A pair of earlier Temple Period cups of Ġgantija form, one of which was perfectly preserved, were of special interest within this context (Figs. 5.20 & 10.16, GG10-2).

Above (004), Context (003) formed a compacted yellow/brown silty loam, with frequent limestone inclusions, measuring *c.* 10 cm in diameter. Context (003) included finds of both pottery and bone. Most of the mixed phase pottery belonged to the Żebbuġ phase,

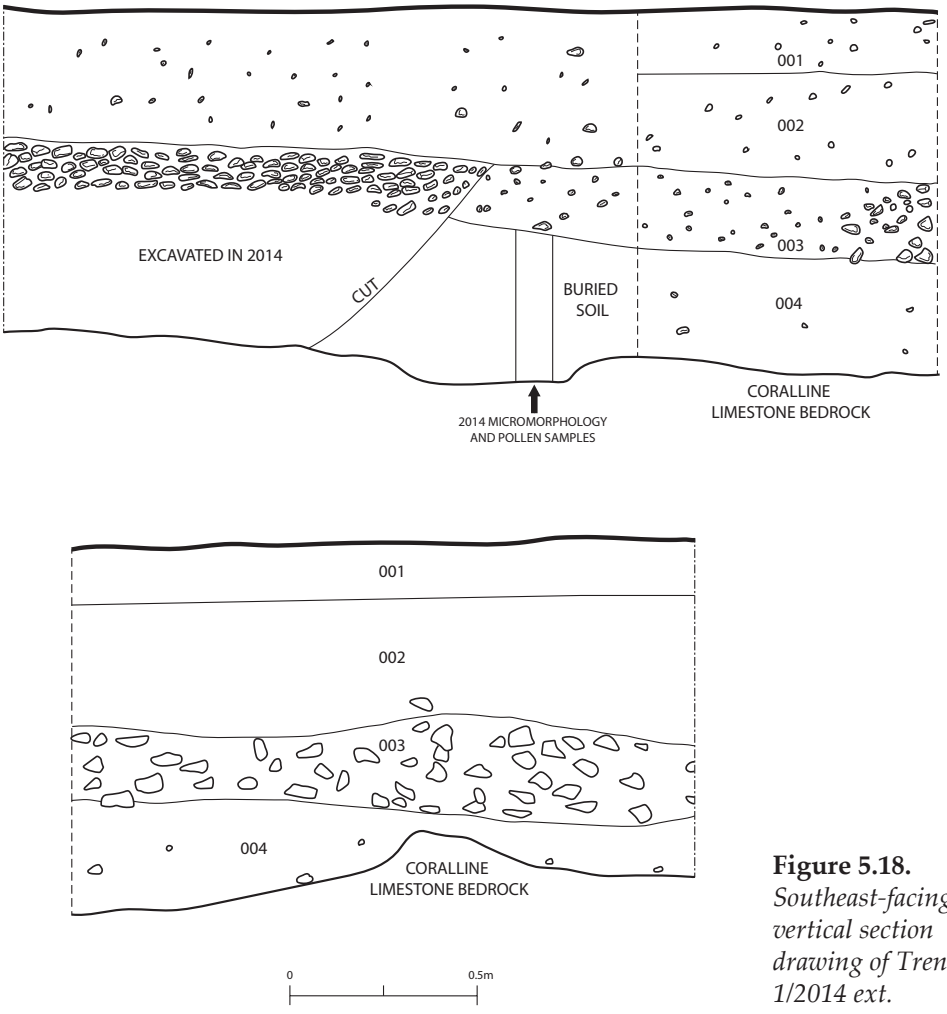


Figure 5.18. *Southeast-facing vertical section drawing of Trench 1/2014 ext.*



Figure 5.19. *Trench 1/2014 ext. post-excavation. The* in situ *megalith can be seen in the top right of the image.*



Figure 5.20. *Two Ġgantija phase cups recovered from Context (004).*

although Ġgantija and Tarxien phase sherds were also common; with Skorba phase pottery present in much smaller quantities than the other types, together with two sherds of undiagnostic burnt coarse ware. Context (003) was interpreted as terrace make-up due to the large quantities of stone found within the deposit, and was covered by Context (002), a compacted brown silty loam that contained frequent sherds of pottery. The ceramic assemblage comprised mainly Żebbuġ phase pottery, but there was also a substantial number of pre-Temple Period Skorba and Għar Dalam phase sherds, as well as a small number of Ġgantija and Mġarr phase sherds (Chapter 10). A number of later Bronze Age and Roman sherds were also recovered from Context (002). The upper-most level of the trench was covered in a layer of topsoil, Context (001), which consisted of a friable grey silt-loam with fine gravel/ stone inclusions and sub-rectangular limestone pieces. Context (001) contained a mixture of Skorba, Żebbuġ and Ġgantija type pottery, and a single sherd of Roman pottery, although no style was dominant.

5.5.3.2. Trench 1/ 2015 (Trench GGWC/2015)

Trench 1/2015 (Trench GGWC/2015) was a 4.5 × 5 m area extended from the 2014 section to examine the deposits and structures identified after the removal of the overlying office and WC block (Fig. 5.14; §5.4.2.3). Following the removal of the disturbed levels, excavations revealed a spread of apparently broken-up megaliths sloping upwards towards the temple forecourt (Fig. 5.21). A sondage was then excavated inward into the base of the stone structure (Fig. 5.22), enabling the analysis of two sections (Figs. 5.23 & 5.24). The lowest deposit from this trench was Context (1019), a dark reddish-brown silt clay loam containing pottery, bone and chert. The pottery from this layer dated predominantly from the Temple Period, but Żebbuġ, Ġgantija and Tarxien phase pottery were also well represented. A single sherd of Early Neolithic Għar Dalam pottery was also found. Above (1019) was Context (1004), a friable, dark greyish-brown silt loam, with abundant occupation material, including Tarxien phase pottery, chert and bone. Context (1004) was covered by a series of fine lenses; Contexts (1042), (1041) and (1040), and the lowest (1042) consisted of 'pea-grit' limestone and silt loam containing undiagnostic prehistoric pottery (Fig. 5.26).

A Lens (1041) of black organic silt loam and very fine charcoal overlay Context (1042) and contained bone and pottery that was broadly assigned to the Temple Period (Chapters 9 & 10). The uppermost lens, Context (1040), was a mix of yellowish clay, 'pea-grit' limestone and silt loam, with pottery fragments that appeared to have been trampled into the surface. As a result of the poor state of preservation of the pottery, this level was broadly assigned to the Temple Period; the only identifiable sherds belonged to the Tarxien phase.

Above (1040), there were two culturally rich layers, Contexts (1015) and (1016). The lower of these, Context (1016), was a dark greyish-brown silt loam, containing copious amounts of pottery. A piece of charcoal from the layer was radiocarbon dated to 2775–2570 cal. BC (4106 ± 35 BP, UBA-35589). The pottery assemblage was dominated by Tarxien phase sherds, but Żebbuġ, Ġgantija and Saflieni

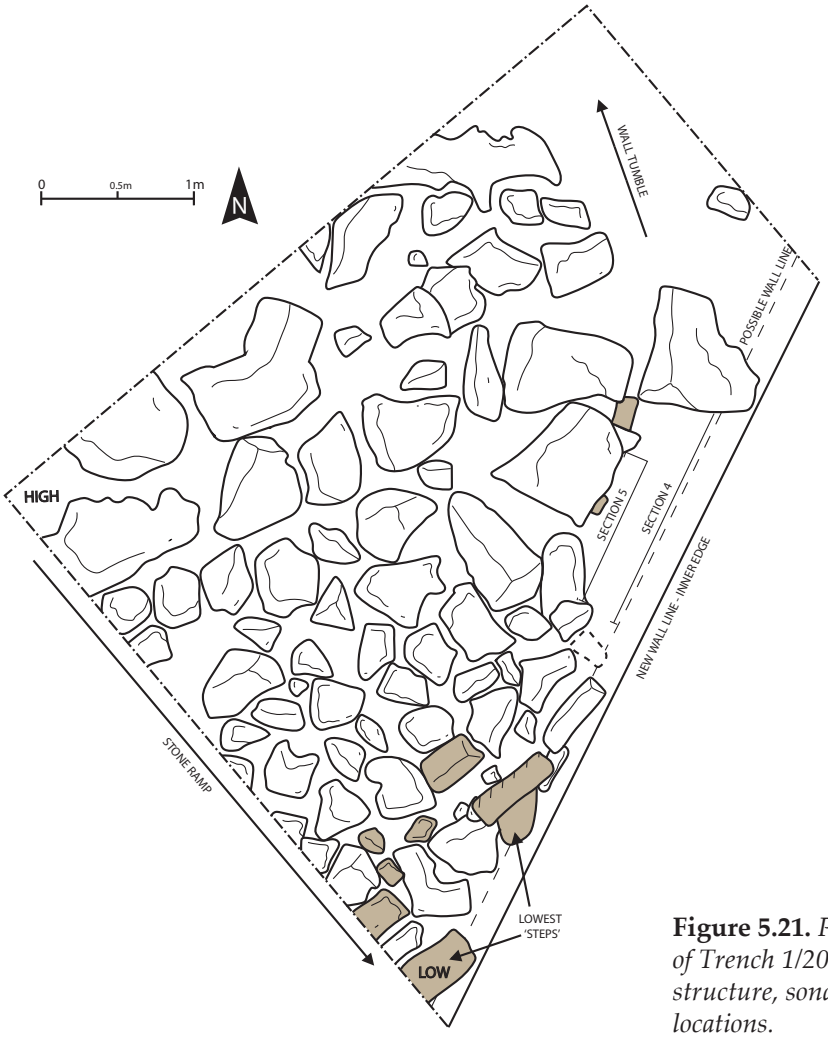


Figure 5.21. *Post-excavation plan of Trench 1/2015 showing the ramp structure, sondage and section locations.*

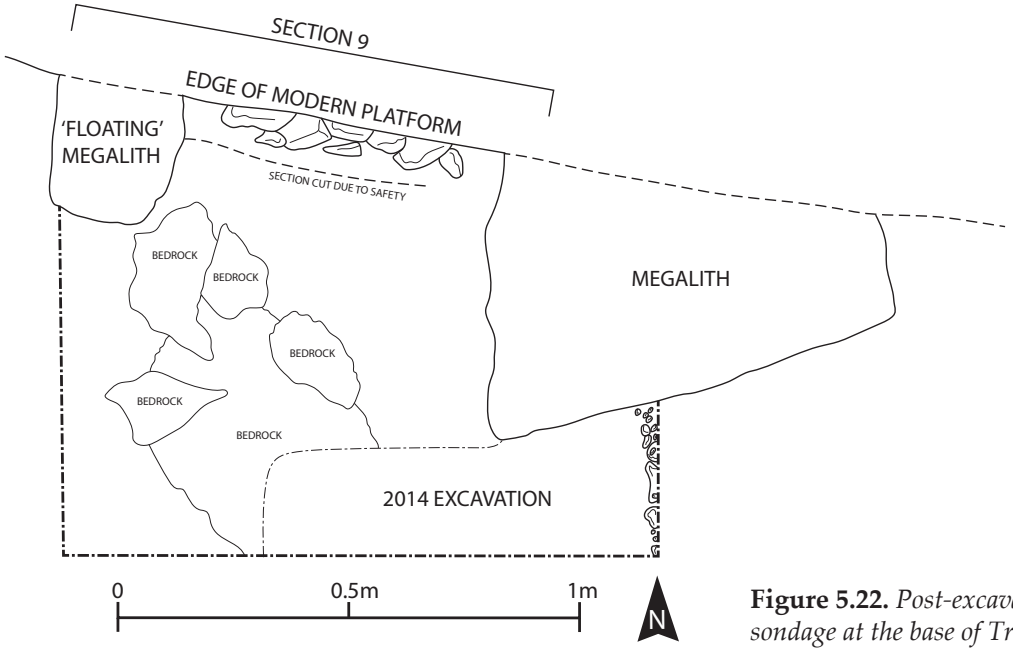


Figure 5.22. *Post-excavation plan of sondage at the base of Trench 1/2015.*

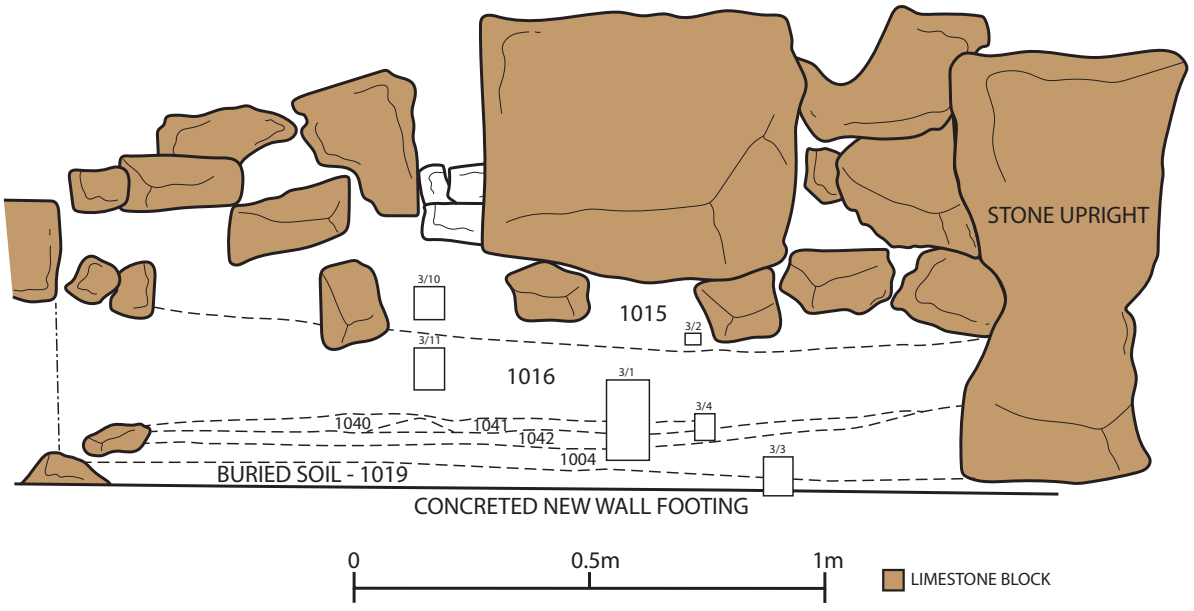


Figure 5.23. *Superficial vertical section (section 4, Fig. 5.21) of the sondage at the base of Trench 1/2015. Micromorphology samples correspond to the detailed geoarchaeological report in Appendix A5.5.*

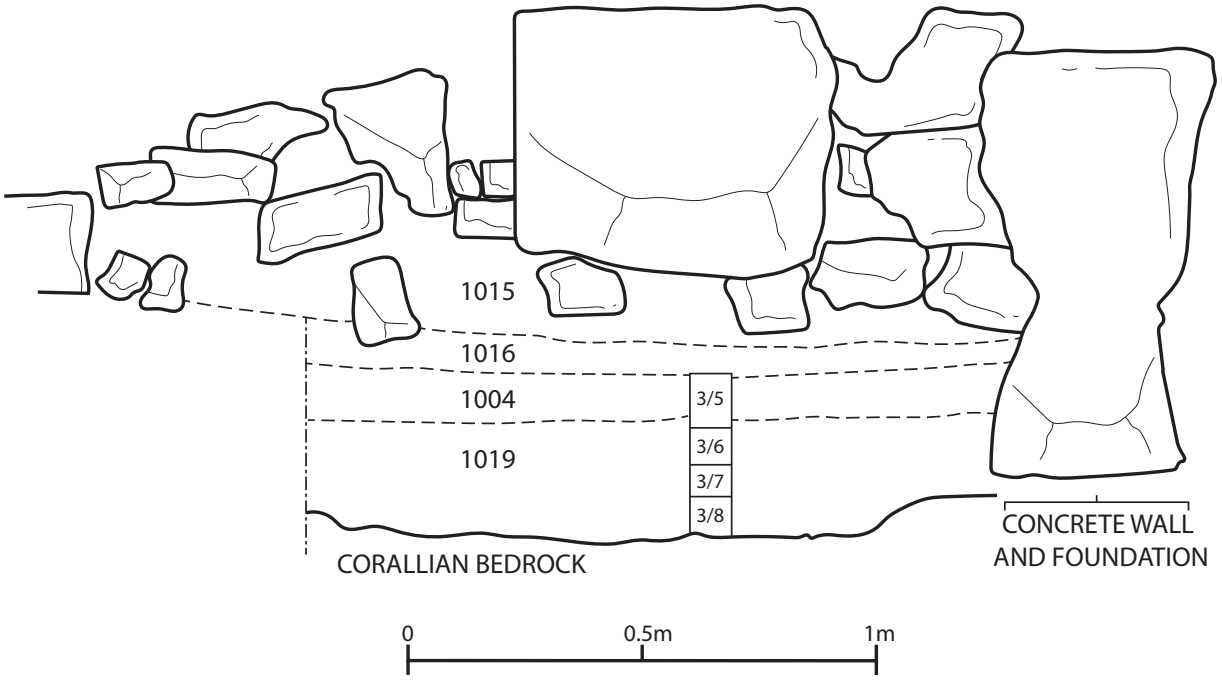


Figure 5.24. *Deep vertical section (section 5, Fig. 5.21) of the sondage at the base of Trench 1/2015. Micromorphology samples correspond to the detailed geoarchaeological report in Appendix A5.5.*

phase sherds were also present. The upper layer, Context (1015), had a large quantity of both Ġgantija and Tarxien phase sherds, as well as a few sherds of Saflieni phase pottery. Above this, a stone structure (1043) was constructed. This was composed of a row of massive vertical Coralline blocks that ran slightly down-slope, at a depth of *c.* 50 cm (Fig. 5.25). The stones were laid roughly southeast–northwest, rising towards the facade of the temple, and perhaps they represented the remains of an entrance ramp to the



Figure 5.25. *Photograph showing the excavated ramp structure. The southeast to northwest alignment of this structure can clearly be seen running through the centre of the photograph.*

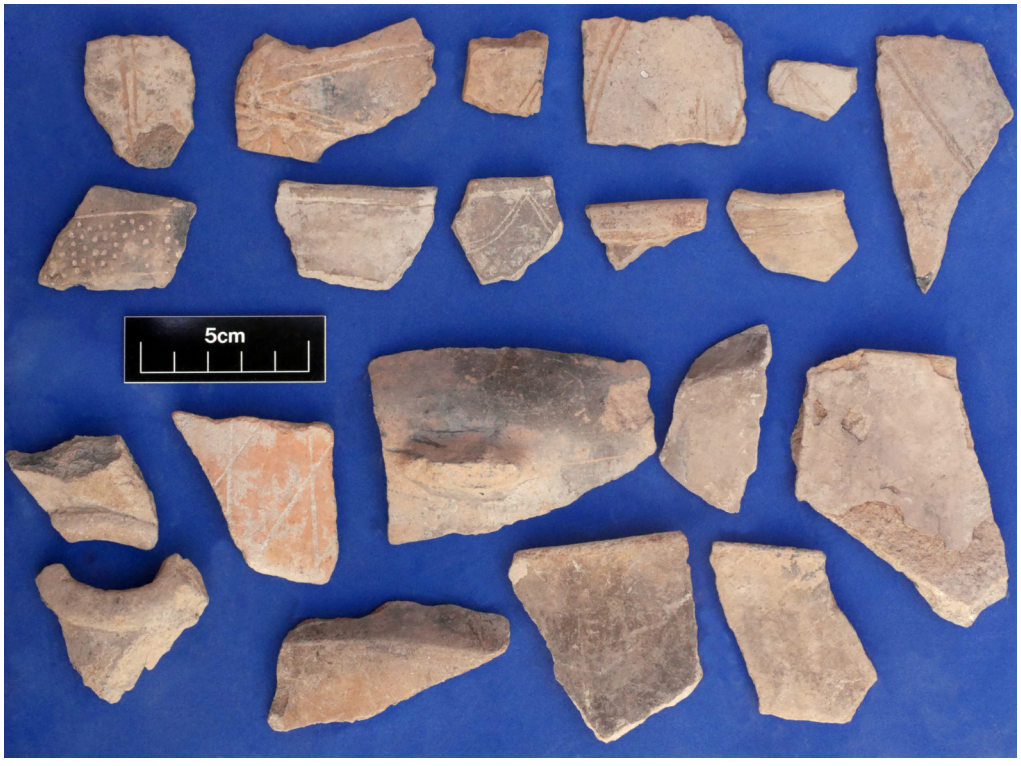


Figure. 5.26. *Pottery from Context (1002)/(1003) showing Żebbuġ, Tarxien and Saflieni phase pottery.*

forecourt area of the site from the lower terrace area below the site. The fill of the structure was made up of smaller, undressed stones. Possible wall tumble is indicated by broken stone blocks. Context (1021) overlay the stone structure on the southern side of the trench and comprised a brown silt-loam containing some pottery and bone fragments. All of the pottery from this layer dated to the Temple Period, with Żebbuġ phase pottery the most frequently occurring, although Ġgantija style pottery and one identifiable sherd of Tarxien phase pottery were also present. A radiocarbon date of 2580–2300 cal. BC (3962 ± 50 BP, UBA-33707) obtained from a grain of wheat (*triticum*) dates this layer to the late Tarxien phase (Table 5.1; Appendices A5.2–A5.4).

Contexts (1013) and (1030) were above (1021) and the stone structure (1043). Context (1021), a firm brown silt loam, covered the majority of the trench, while contexts (1030) and (1025) respectively formed the lower and upper horizons of a deposit confined to the northeast corner of the trench. Both were a dark yellow brown, firm silt-loam, although Context (1025) had more frequent inclusions of small stones than Context (1030). A firm dark greyish brown silt loam (1026), with occasional fine stones throughout, overlay both contexts (1013) and (1025). All of the pottery from this layer appears to date to the Temple Period. The majority of the sherds were either from the Tarxien or Ġgantija phase, although there were also infrequent sherds of Żebbuġ phase pottery and an undiagnostic coarse ware. Contexts (1002) and (1003) were located above Context (1026) and after further excavation they were found to be equivalent. They formed a stony dark yellow-brown layer, containing a mix of fine gravel and a large amount of pottery. The pottery sherds were largely undiagnostic, although the majority of identifiable sherds dated to the Tarxien phase (Fig. 5.26). There was also one recognizable sherd of Żebbuġ pottery and one Bronze Age sherd alongside several pieces of modern pottery. The uppermost layer of this trench was covered by topsoil, Contexts (1000) and (1001), which are now considered to be a single deposit. This deposit was a yellow-brown silt loam with a mix of fine gravels that contained a mixture of both modern and prehistoric ceramics, as well as a 1926 George V penny and a fragment of obsidian.

5.6. Discussion

5.6.1. Introduction

The two seasons of work at Ġgantija Temple have added substantially to our understanding of the environs of the monument, providing intriguing insights into the early Maltese environment and soil management practices. The work has charted aspects of the impact of Neolithic communities on the landscape of Gozo, and these findings have important implications for further studies; especially landscape studies seeking to address the possible factors influencing the siting of the Maltese temples.

5.6.2. Pre-temple features and deposits

The dynamic nature of the Maltese environment means that soil erosion is a major problem, and it is difficult to locate intact palaeosols and their important information on ancient landscapes. They are essential components in determining the impact of human activity and agriculture on the landscape. One of the major benefits of excavating a temple site, such as Ġgantija, is that the large megaliths and *torba* floors protect *in situ* palaeosols and maintain the vital humid environment for good preservation of organic materials. The 2014 and 2015 seasons successfully located intact deposits of palaeosols in two separate trenches which are reported on below (and in Volume 1 and Appendix A5.5).

The buried soil of Trench 1/2014-ext. consisted of three distinct horizons. The lowest of these represented an earlier Holocene soil that had developed on the limestone bedrock in a moister climate capable of supporting scrubby-woodland vegetation (French *et al.* 2018). OSL dating of this soil (see Volume 1, Chapter 2 and Appendix 2) strongly suggests that this was the *in situ* earlier-mid-Holocene soil that had developed in this landscape prior to the construction of the temple with a date of 8770 +/- 680 BC for the beginning of soil formation. The middle and upper horizons of Context (004) were rich in cultural material, including Neolithic and Temple Period pottery and charcoal, and are likely to represent middening activity at the site. It would appear that as the soils degraded, most likely as a result of both natural and human agency, prehistoric people began to add settlement-derived midden material thus creating an amended soil to

Table 5.1. *AMS dates from Ġgantija, 2015.*

ID	Date	±	Calibrated date (95% C.I.) cal. BC	Context	Element dated	Description
UBA-33707	3962	50	2580–2300	1021	*Triticum* grain	Megalithic ramp
UBA-35589	4106	35	2870–2500	1016	Charcoal fragment	Megalithic ramp



Figure 5.27. *Mid-excavation photograph of Trench 1/2015. The rich humic layers of palaeosols covered by a thick layer of habitation style midden material are clearly represented underneath the wall structure.*

improve its fertility (French *et al.* 2018). While the upper horizon of the midden material was replete with pottery sherds, much more diminished quantities were recovered from the middle horizon, suggesting that the soil in this horizon may have been well worked. The upper horizon gave an OSL date of the later Bronze Age at about 1140 +/- 250 BC (see Volume 1, Appendix 2). Above these horizons was a *c.* 80 cm thickness of later agricultural soil accumulation.

A similar scenario was found in Trench 1/2015 beneath the stone structure (Fig. 5.27) (Appendix Fig. A5.6.1), where the palaeosol appears to have been buried by a series of midden deposits containing small fragments of Temple Period pottery, bone and chert debitage (Appendix Tables A5.2.1 & A5.3.1). The buried soil in this trench was very similar to that found in Trench 1/ 2014-ext, although it was loamier, with a slightly higher organic content and less reddened. The buried soils in both trenches are indicative of a moister and more humid environment. It is clear that once the surface soil was opened up, most likely for agricultural purposes, it began to degrade through oxidation and calcification. The addition of the midden material demonstrates that efforts were being made during prehistory to manage the soil and improve its fertility, but the soils continued to degrade nevertheless.

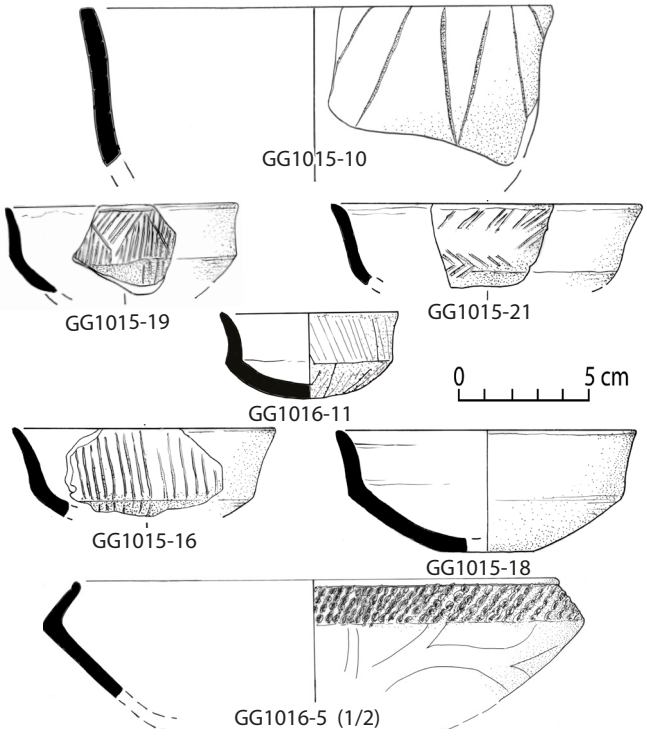


Figure 5.28. *Contexts (1015) and (1016) were ascribed to the Tarxien phase based on the pottery.*

The other contexts within Trench 1/2014 ext. were interpreted as modern terrace make-up material. Context (003), however, yielded pottery evidence that was all Temple Period or earlier, which suggests an intact prehistoric layer within the make-up. In Trench 1/2015, there were three lenses (1040, 1041 and 1042), interpreted as old land surfaces. The lowest Context (1042) had a trampled/weathered surface, whereas the charcoal deposits found in lens (1041) indicated a hearth/dump and the upper lens (1040) also seemed to represent a trampled surface. The degraded pottery remains from these contexts could not be identified definitively but, based on the fabric, they appear to date from the Temple Period. Above the lenses, layers (1015 and 1016) were considered to be midden-type deposits because of the large quantity of Temple Period pottery, animal bone and lithic material they contained. Their composition suggests that they are similar or related to the upper horizons of Context (004) in Trench 1/ 2014 ext. Examination of the ceramics from these layers indicates that they date exclusively from the Temple Period (Fig. 5.28), with Ġgantija and Tarxien phase pottery present. The discovery of midden-type material at Ġgantija confirms that occupational or ritual activities that involved the dumping of rich organic and cultural debris took place here, which is consistent with the findings from many other Maltese temple sites, including Skorba, Kordin III and Ta' Ħaġrat on Malta and Santa Verna on Gozo. The OSL dates obtained from this Trench gave an early Holocene date of 8770 +/- 680 BC for the beginning of soil formation, with final burial of the soil in the later Bronze Age by about 1140 +/- 250 BC (Volume 1, Appendix 2). These data add to the *FRAGSUS Project*'s research on the relationship between sites and natural resources. Ġgantija uniquely demonstrates the direct relationship between a spring (resulting from the geological fault) and good agricultural soil and its maintenance. The importance of the spring in a landscape that seasonally becomes semi-arid cannot be underestimated and it is likely that water also held important cosmological significance (Grima 2004a, 2005; Ruffell *et al.* 2018). The positioning of the temple adjacent to the fertile soils necessary for agriculture (French *et al.* 2018; Volume 1 Chapter 5), confirms the significance of these resources and may provide the basic 'model' for temple location across the Maltese islands, a model that in many cases cannot now be explored so effectively as at Ġgantija.

5.6.3. Stone structure

The substantial stone structure in Trench 1/2015 (WC block) was found to be built above the old land surface and its Neolithic occupation material. The large stones (aligned southeast–northwest) were cut into the archaeological deposits and the buried soils beneath (Figs. 5.25 & 5.29), and their fill comprised of smaller, undressed stones. Although many of the megaliths appear to have either collapsed or have been broken, there are a number of possible intact upright stones within the 'second row' of stones possibly relating to a retaining wall and ramp structure that once connected the lower terrace to the temple

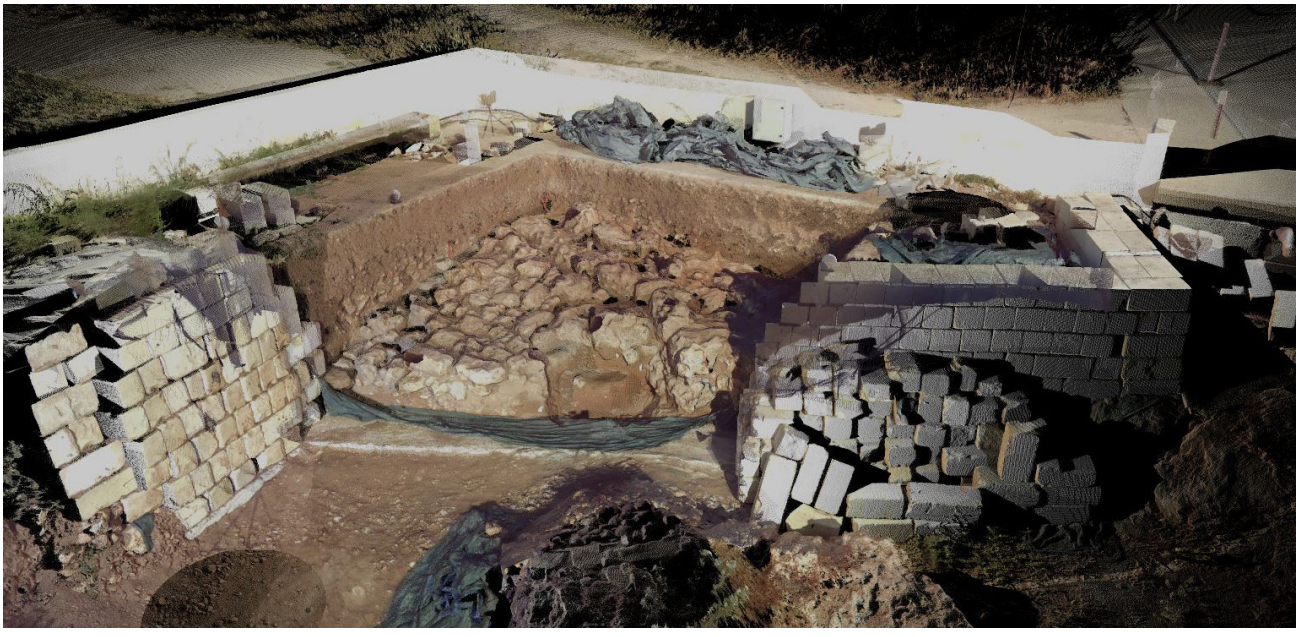


Figure 5.29. *Laser scan of Trench 1/ 2015 post-excavation, clearly showing the wall structure.*

forecourt. The remnants may be elements of the original entrance into the temple forecourt, a trilithon structure depicted by Busuttil, de Brocktorff and Smyth in the first decades of the nineteenth century (Fig. 5.4; Fig. 5.5). Although now extensively buried, the exposed retaining wall and associated structures are of large unworked blocks, and more may exist within the forecourt makeup material. Based on the pottery evidence from the midden layers below the wall, contexts (1015) and (1016), and the radiocarbon

Table 5.2. *Ġgantija and the* FRAGSUS *questions.*

***FRAGSUS* questions**	**Ġgantija**
1a. What was the impact of human settlement on Malta?	Soil manuring evident in Temple Period, and manuring activity. Site location and concentration of resources at water source. Enlargement of the temple complex (terrace) implies large population used the site.
1b. How rapid was the process of deforestation, erosion and degradation?	Buried soil – molluscs, organic data in palaeosols provide indications of clearance and degradation.
1c. When did technical mechanisms to manage the environment develop – such as terracing, water and food storage?	Spring used for water from the Early Neolithic through to the Temple Period. Terrace construction implies wider application of such structures in landscape perhaps for soil retention and cultivation.
1d. Were such mechanisms in place before or after the Temple Culture collapsed?	Likely that local resources were maximized and technologies employed in Temple Period, before 'collapse'.
2a. How did a very small island community in prehistoric times manage to sustain dense, complex life over millennia, and what specific social, economic and ritual controls emerged to enable this?	The community evidently invested in soil improvements to retain fertility around Ggantija, enabling continuous settlement that was further enabled by constant water supply. Ritual elaboration and cult. Social hierarchy.
2b. Were the monumental temples instrumental in the process of sustaining cultural life?	Highly likely that Ġgantija, given its size and centrality to the landscape and agricultural resources, was a focus for cultural and economic activities.
3a. What sort of agriculture was used, and what did people eat, especially as the landscape became increasingly degraded and the environment more unpredictable?	Rather scant evidence through charcoal, but pollen evidence indicates cereals grew locally, and as suggested by soil studies, there was horticultural intensity in the Ramla Valley, where water and rich soil was available. Animal grazing, indicated by manuring/middening data.
3b. Were there failures in the food supply?	Abandonment of temple appears to take place towards end of the third millennium BC, when climate, rainfall and landscape degradation is recorded. Later Tarxien Cemetery activity attested in temple ruins suggesting new inhabitants.
3c. What impact did diet, disease and stress have on the population?	
4a. What was the size and nature of the early Maltese population?	
4b. What role did demographic connectivity (immigration) play in maintaining island sustainability?	Evidence of imported chert and obsidian implies interaction with Sicily, Lipari and elsewhere. Exotic pottery imports are evident throughout later Neolithic, Thermi, Tarxien Cemetery and Bronze Age, demonstrating connectivity. Connectivity implied by animal stock and plants
5a. Was there social-economic or environmental failure at the end of the Temple Culture, and what may have caused society to collapse or change so drastically?	Ġgantija structure appears fossilized in late Temple Period without changes later. However, extensive interventions may have destroyed later levels and thus evidence for continuity is lost.
5b. Was there a hiatus between the Temple Culture and later Bronze Age settlers?	Lack of substantial Bronze Age activity implies a late third millennium BC break at Ġgantija, although sporadic Tarxien Cemetery sherds and figurines have been found dating from the early second millennium BC.
5c. Are other hiatuses apparent in the sequence, such as between the earlier Neolithic and the Temple Period?	Scattered evidence of Għar Dalam and Skorba material in the stratigraphy implies earlier activity in the area but without evidence for any continuity into the Temple Period..

date of 2580–2300 cal. BC (UBA-33707: 3962 ± 50 BP) obtained from a *Triticum* grain from Context (1021), directly above the wall, it would appear that the stone structure was constructed during the Tarxien phase.

In the context of previous excavations at Ġgantija by Evans in 1954, the dating of this structure is important. Evans' (1971, 179–80) excavation at Ġgantija demonstrated that the terraced platform and its retaining wall at the front of the temple was constructed of large boulders infilled with smaller stones and earth. This was associated with Tarxien phase pottery, but also contained occasional sherds of Early Bronze Age Tarxien Cemetery ware. Beneath the boulders there was a dark deposit that contained large quantities of Tarxien phase pottery, leading Evans to conclude that the platform and retaining wall was constructed in the later Tarxien phase. The discovery of the stone ramp structure in Trench 1/2015, and the evidence that it was constructed during the Tarxien phase, further suggests that the area around Ġgantija underwent considerable remodelling and monumental embellishment towards the end of the Temple Period.

5.6.4. Modern activity

The excavations revealed that the upper contexts in both Trench 1/2014-ext and Trench 1/2015 relate to quite modern activity across much of the Ġgantija site. For example, Contexts (002) and (001) in Trench 1/2014-ext both contained Roman sherds, whilst the upper contexts of Trench 1/ 2015, Contexts (1001), (1002) and (1003) all contained modern material. During the 2014 season, Trench 2/2014 and Trench 3/2014 similarly showed relatively modern activity at the site and the modern pet dog burial in Trench 2/2014, is indicative, and likewise the linear buried structures of modern agricultural activity found in Trench 3/2014. The levelling layer and plaster floor, Contexts (2013) and (2012), of a probably recent building structure had later been covered with good agricultural soils for the olive grove. It is likely that these remains were part of the agricultural landscape related to the field boundaries and remnant buildings in use before the enclosure of the World Heritage monument.

5.7. Conclusion

The fieldwork at Ġgantija is especially notable for the retrieval of buried palaeosols during 2014 and 2015. The samples of these deposits provide very important insights into soil development processes on the island of Gozo during the mid-Holocene. The detection of a geological fault and associated spring running near to the temple structure (Ruffell *et al.* 2018) is also a major contribution, since it is the first time that the underlying structural geology of Malta has been demonstrated to influence temple location. The additional recognition of fertile soils (Volume 1, Chapter 5), confirms that temples were generally located in close proximity to the most productive areas that were vital to early agricultural societies. The least successful outcome of the fieldwork was the poor preservation of radiocarbon samples, which is perhaps unexpected, given the samples sourced at other sites in the *FRAGSUS Project.* Had more charcoal or viable bone been preserved, a more precise chronology of Ġgantija might have been forthcoming, with the possibility of linking the structural building phases of the terrace, terrace wall, ramp and entrance with the main temple. The work of retrieving more and better dating samples is a task for future fieldwork. Nonetheless, OSL dating of the soil sequence in Trench 1 and the relative dating provided by the pottery assemblages in both trenches gives an indicative chronology. Overall, the fieldwork has provided important insights into the broader structural context of the central temple buildings at Ġgantija through uncovering the possible entry ramp to the site. This feature, last documented by nineteenth-century antiquarians, and now only visible as wall collapse demonstrates the extensive character of a Neolithic temple complex, which extended far beyond its immediate walled curtilage. Such insight is important as it informs heritage managers and archaeologists on the buried potential of other megalithic complexes across Malta, as well as illuminating our broader interpretation of the megalithic complexes in their landscape.

The fieldwork at Ġgantija also tackled a number of the major *FRAGSUS* questions, as listed in Table 5.2.

Notes

1 *FRAGSUS*: Fragility and sustainability in restricted island environments: Adaptation, cultural change and collapse in prehistory. A collaborative programme of research between Queen's University Belfast, Heritage Malta, Cambridge University, the University of Malta and the Superintendence of Cultural Heritage, Malta. European Research Council seventh framework programme (FP7) 'Ideas' Advanced Grant: 323727. Principal Investigator: Prof. Caroline Malone http://www.qub.ac.uk/sites/FRAGSUS/

2 John Otto Bayer was born on 12 August 1780 at Kingston-upon-Thames and after a military career, arrived in Malta on 9 June 1815. He served as Civil Head of Gozo (Deputy Governor) between 1 May 1816 – March 1818 and again 15 Dec 1819 – to late in 1825. His activities in archaeology on Gozo seem to have taken place during his second tenure, and probably ceased in 1825, when he became ill and returned to England. He died in the Grosvenor Hotel on Bond Street, London, 4 July 1826.

Temple places

The ERC-funded *FRAGSUS Project* (*Fragility and sustainability in small island environments: adaptation, culture change and collapse in prehistory, 2013–18*) led by Caroline Malone (Queen's University Belfast) has focused on the unique Temple Culture of Neolithic Malta, and its antecedents and successors through investigation of archaeological sites and monuments. This, the second volume of three, presents the results of excavations at four temple sites and two settlements, together with analysis of chronology, economy and material culture.

The project focused on the integration of three key strands of Malta's early human history (environmental change, human settlement and population) set against a series of questions that interrogated how human activity impacted on the changing natural environment and resources, which in turn impacted on the Neolithic populations. The evidence from early sites together with the human story preserved in burial remains reveals a dynamic and creative response over millennia. The scenario that emerges implies settlement from at least the mid-sixth millennium BC, with extended breaks in occupation, depopulation and environmental stress coupled with episodes of recolonization in response to changing economic, social and environmental opportunities.

Excavation at the temple site of Santa Verna (Gozo) revealed an occupation earlier than any previously dated site on the islands, whilst geophysical and geoarchaeological study at the nearby temple of Ġgantija revealed a close relationship with a spring, Neolithic soil management, and evidence for domestic and economic activities within the temple area. A targeted excavation at the temple of Skorba (Malta) revisited the chronological questions that were first revealed at the site over 50 years ago, with additional OSL and AMS sampling. The temple site of Kordin III (Malta) was explored to identify the major phases of occupation and to establish the chronology, a century after excavations first revealed the site. Settlement archaeology has long been problematic in Malta, overshadowed by the megalithic temples, but new work at the site of Taċ-Ċawla (Gozo) has gathered significant economic and structural evidence revealing how subsistence strategies supported agricultural communities in early Malta. A study of the second millennium BC Bronze Age site of In-Nuffara (Gozo) likewise has yielded significant economic and chronological information that charts the declining and changing environment of Malta in late prehistory.

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