



McDONALD INSTITUTE MONOGRAPHS

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Ostia, Portus and the port system of Imperial Rome

Edited by Simon Keay, Martin Millett,
Kristian Strutt and Paola Germoni



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With contributions by

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Preface

Carlo Pavolini

The survey that is published in this volume forms part of the Portus Project which is directed by Simon Keay. This initiative followed on from the overall 1998–2004 survey of Portus (Keay *et al.* 2005) and, since 2007, has produced several benchmark publications (eg. Keay and Paroli 2011).¹ It is an initiative conducted in close collaboration with the *Soprintendenza Archeologica di Ostia*, now the *Parco Archeologico di Ostia Antica*. The contribution of the latter to the publication is recognized by the presence of its archaeologist Paola Germoni, who is one of the four editors of the book, and who also co-signed the introduction, oversaw the preparation of other parts of the book, and took part in the drafting of its text (see below), along with Simon Keay, Martin Millett and Kristian Strutt.

In the first years of its activity, the Italian-British research programme was focused upon the imperial harbour basins to the north of the Tiber delta at the site of Portus and in its hinterland. They produced extraordinary results, for an idea of which one only needs to refer to the essential works mentioned in the previous paragraph. But in turning specifically to the Isola Sacra – where the results of the research are no less exceptional, as we shall see – the greater part of the work was undertaken between 2008 and 2012, with the collaboration (apart from the *Soprintendenza*, now the *Parco Archeologico di Ostia Antica* by virtue of its responsibilities to protect its cultural heritage) of such scientific institutions as the British School at Rome, the Universities of Southampton and Cambridge, and many other institutions and scholars of diverse origins and specialisms.

The difference between the survey of 1998–2004 (Keay *et al.* 2005) and that published here is fairly clear. The objective of the former was to study an area that had been built-up in antiquity, in some areas densely, while the latter is a landscape survey that has as its setting an area of c. 98 ha that we could define as ‘free’ of structures. However, this was only ‘free’ in a certain

sense: the authors of the introduction make it clear that while the lands of the Isola Sacra are largely used for agricultural purposes today, there is also a large presence of houses, warehouses and other structures, as well as drainage channels relating to the *Bonifica* (drainage programme) of the early twentieth century and trenches for electric cables etc, all of which have inevitably conditioned a survey based upon geo-detection methodologies. While undertaking the survey, the archaeologists also had to take into account periods of time when fields were fallow or used for pasture.

A separate debate concerns the serious problem of illegal building. Nowadays, this is less prevalent and more controlled across the land area of the ancient Isola Sacra on account of various land protection measures; unfortunately, however, it is still widespread across the land which extends as far as the present-day coast of Fiumicino, and which corresponded to the sea in antiquity. It is also responsible for the current state of the banks of the watercourses which define the Isola to the north-east and to the north-west (in other words the Fiumicino Canal, or ‘*Fossa Traiana*’, and the Tiber itself), which are cluttered with workshops for boat repairs and other often illegal installations. It is a situation that is lamented by the authors and which only leaves free the area of the Capo Due Rami, which corresponds to the north-eastern angle of the Isola.²

I will not detain myself on the numerous details provided in the text. This is the case of the ‘traditional’ sources discussed in Chapter 2, in which are included, for example, maps before and after the flood of 1557,³ and aerial photographs from 1911 (Shepherd 2006) down to the Second World War (R.A.F. and *Aeronautica Militare Italiana*) and subsequently (S.A.R.A.-*Nis-tri*). Amongst these sources, those that derived from archaeological research undertaken before the start of the Portus Project stand out, and the description of them by the authors of this book forms a cohesive whole in the context of a review of the topography of

the Isola as traditionally understood. Some of these are very well-known sites, such as the *Ponte di Matidia*, the *Basilica di S. Ippolito*, and the building identified as the *Isaeum* of Portus, a hypothesis which the authors support, to my mind correctly. Above all, the famous *Necropoli di Porto*, otherwise known as the Isola Sacra necropolis, which has been the object of excavations since the time of Guido Calza,⁴ and which was given this name at a time before other burial areas, often of a similar size, had been uncovered in the vicinity. At this point, it is useful to mention the important Gazetteer of Sites, an appendix to the volume prepared by Paola Germoni, which lists discoveries of every kind from the Isola Sacra, collated not only from earlier publications, but also from official archives, including the old *Giornali di Scavo*, accounts sent to the *Ministero*, unpublished notes produced by members of the *Soprintendenza* etc. It consists of 52 sites that are distinguished with the symbol G (**G1**, **G2**, etc) that are located on the map Fig. 2.11.

I do not wish to reflect upon the methodologies used in the survey (Chapter 3, which like Chapters 6 and 7, was written by Keay, Millett and Strutt), not least because I do not feel sufficiently competent to do so. Correctly, this is a very technical account which will surely be of great value to experts who specialize in the application of non-destructive techniques to the study of ancient landscapes, an area of expertise which is going through a period of continual development. In the case of the Isola Sacra, therefore, the use of aerial photographs was accompanied by the study of satellite images and LiDAR data, the latter being a form of aerial laser scanning. I have already referred to the topographic survey undertaken between 2008 and 2012, and in Chapter 3 it is mentioned again, providing numerous technical details; the same is the case for the approach taken by the main form of geophysical survey undertaken in the Isola Sacra, namely magnetometry.

Up until this point, I have reflected upon the methods used in the survey. The following chapter, however, examines the results, which are presented on a method-by method basis: the results obtained from the gradiometry - effectively the interpretation of the geophysical anomalies, those from Ground-Penetrating Radar (G.P.R.), aerial photographic evidence and LiDAR coverage. The outcome of all of this fieldwork is provided by the splendid set of images, all of a high quality and definition, that are amongst the greatest merits of the book. It is logical that within its broader iconographic repertoire, and over and above the many photographs provided, the drawings should be of overall importance, particularly the plans. To give just one example to illustrate my point, the plan in Fig. 4.2

reproduces the general 'mosaic' of the 33 rectangular areas in which the area covered by the Roman Isola Sacra was divided in order to present the results of the survey. Area by area, the successive figures present the results obtained by means of the different (and integrated) techniques that I briefly describe above. Thus, for instance, Fig. 4.4 (which corresponds to Area 1, which represents the northern sector of the Isola Sacra between the *Basilica di S. Ippolito*, the '*Fossa Traiana*', and the *Ponte* and *Terme di Matidia*) synthesizes the results from the gradiometry and the discoveries made before the survey, which are superimposed upon the layout of the modern landscape, which is represented in a lighter colour.

In any event, the author of the preface to a book does not need to describe the results point by point, as this would be both repetitive and boring. For a book as rich and complex as this one, it was necessary to try and understand its overall structure and to focus upon specific issues. Now that I have done this, I would like to concentrate upon several specific points about which it seems to me possible to put forward some personal reflections, in some cases. There are also the issues relating to the most 'revolutionary' discoveries provided by the Portus Project in relation to the historical and archaeological study of the Isola Sacra in recent years.

Pride of place amongst these goes to the discovery of the canal which crossed the whole of the island from north-west to south-east: this had already been reported in previous years,⁵ but is only described in detail and with the benefit of full documentation in this volume. Thus, the Portus to Ostia Canal not only occupies the whole of Chapter 5 in this book, but also acts as one of the key factors underlying the new interpretation of the topography of the ancient island. In the conclusions, the authors define it as the most ambitious work of infrastructure and engineering documented on the Isola Sacra, with evident implications for the history of the entire port and urban system that had the mouth of the Tiber as its fulcrum. And it is right that the editors refer to it as the Portus to Ostia Canal, and not *vice versa*; this might seem to be purely a question of terminology but for them, however, it confirms the absolute centrality of the creation of the Claudian and Trajanic basins (and the settlement which developed around them) within the context of the transformations of the entire coastline which they brought about during the first and second centuries AD.

The mouth of the northern end of the canal was cut into the southern quay of the '*Fossa Traiana*'. Significantly, this point lay opposite the mouth of the *Canale Romano* on the northern side, a canal which

ran eastwards in an arc in the direction of the Tiber (see the topography of this in Fig. 1.2). The Portus to Ostia Canal was the widest⁶ of all those that have been located so far at Portus and in its vicinity since the publication of the 1998–2004 geophysical survey. It is not worth going into detail here about the geological and geoarchaeological research that has defined its characteristics, and which has been the result of work of experts on the prehistoric and protohistoric phases of the fluvial and coastal phases of the Tiber delta, such as F. Salomon, J.-Ph. Goiran, A. Arnoldus-Huyzendveld† amongst others. The boreholes, already published in part and now interpreted as part of a stratigraphic sequence in their broader context, were drilled in part between 2011 and 2013, and completed in 2017.

Turning attention to the historical aspects, and in particular hypotheses about ship draught and navigability, it is very interesting to learn that the canal could have been used at least in part by commercial ships of considerable tonnage equivalent to, for example, the 150-ton vessel on display in the splendid museum of the *Bourse* at Marseille. While it is true that this water route seems to have been crossed by a road and thus a bridge at a certain point, it is possible that this may have been a mobile installation. Moreover, the question as to whether the Portus to Ostia Canal was used for navigation alone or whether it also served to relieve Tiber flood waters, remains open.⁷ Another major problem to confront us concerns the southern end of the canal. One cannot state with certainty that it flowed into the Tiber opposite Ostia, or directly into the sea; the various possibilities can be seen in Figs 5.1, 5.2 and 5.7. The writers would seem to favour the first possibility, not unreasonably. This issue is so important that it recurs several times, as well as in Chapters 6 and 7, where it is noted that in all the hypotheses noted above, the interplay of currents and the silt transported by the canal would have created difficulties for manoeuvring ships and made it difficult to establish a river port in this sector.

Nevertheless, a first conclusion concerning such a new and unexpected feature of the topography of the Isola is its chronology. In the volume it is argued that the watercourse was created between the end of the first and the beginning of the second century AD, an obvious coincidence with the grandiose Trajanic engineering enterprise at Portus; in the conclusions of the book, the dating is further refined to a date of somewhere between AD 110–120, with a final completion during the reign of Hadrian. Its disuse, however, would have begun between the late second and the beginning of the third century AD: this is an interesting suggestion which could be taken to support those

arguments which have suggested that the first signs of the decline of the port system at the mouth of the Tiber – referring to Ostia, however, and not Portus – were already becoming manifest in the Severan period (see below). This therefore means that the canal would have been in full use for a relatively short period of time, perhaps a century or so; in the conclusions, it is argued that after this, the authorities were clearly not able to manage dredging operations, and the canal silted up, perhaps in the course of the fourth century AD, as the 1998–2004 survey has shown to have been the case with other watercourses around Portus.

There are several indicators that help us to better define this chronology, such as the function of the watercourse as interpreted from another sensational discovery. This concerns two shipwrecks from the Isola Sacra (Figs 5.9–13), whose relationship to the canal is stated as probable rather than certain.⁸ The section of text that discusses these benefitted from an expert in the archaeology of ships, Giulia Boetto, as well as Alexandra Ghelli and Paola Germoni. Wreck no. 1 was discovered in 2011, c. 300m to the north of the north bank of the Tiber, in the course of works for the new *Ponte della Scafa*; Wreck no. 2 (arranged perpendicularly to Wreck 1) was found a little later, but while the remains of the former were completely recovered,⁹ the latter has not yet been completely excavated (the known section is 14m long). Apart from presenting very interesting details about process of excavation, restoration and conservation, and the types of wood used in Wreck no. 1, there is a discussion of its chronology, with a *terminus ante quem* of the third century AD proposed on the basis of stratigraphic evidence.¹⁰ On the other hand, the relatively small size of the boats supports the idea – proposed by the writers in the preceding pages – that this watercourse may have also been used by boats of small and medium capacity, with a draught of 2.5m: in other words, *naves caudicariae* or boats of a similar typology used for local commercial cabotage and, above all else, in connecting Portus with Ostia.

Overall, therefore, the Isola Sacra canal would not have constituted port infrastructure in the strict sense, as was indeed the case of the *Canale Romano* or the '*Fossa Traiana*' itself; nor were warehouses or analogous installations documented along its banks. It must, therefore, have served more for transit (and occasionally for mooring¹¹) than for the unloading and storage of merchandise.

In the final part of the book (Chapters 6 and 7), Keay, Millett and Strutt present a holistic synthesis of everything presented up to this point. For ease of reference, I have alluded to many of their conclusions in my preceding pages. For what remains, I will omit

much information that was known prior to the survey. However, it is important to note that the writers take a stand on the respective roles of Claudius and Trajan in the complex process of the port system as we understand it today. The impact of the interventions undertaken under the first of the two emperors is reinforced: while the Fiumicino Canal was thought to have been excavated in the Trajanic period until recently, the 1998–2005 survey has confirmed that it must have already existed under Claudius.¹² A not unimportant consequence of this was that the Isola Sacra could be considered to have been an island by the middle of the first century AD,¹³ even though it did not have the epithet ‘Sacra’; the chapter also discusses the Late Antique name for this strip of land and its possible explanation, an issue upon which I will not dwell.

The frequent floods which would have affected the Isola, also explain the rarity of ancient rural settlements, a fact confirmed by the survey. The excavation of canals clearly improved the situation, as we have seen, but the impression that the Isola had a limited population is also true of subsequent periods, with one exception. It is at this point that a highly relevant issue, that of the so-called *Trastevere Ostiense*, makes its first appearance in the book. It has only been in the last decades that it has begun to receive the attention that it deserves, owing to discoveries on the ground and numerous publications. One should not forget that the Isola Sacra in the Roman period was very different to what it is today, not only because it was ‘narrower’ on the coastal side, but also because to the east, the ancient course of the Tiber incorporated the extensive meander that was subsequently cut and isolated by the sixteenth century flood mentioned earlier. They are very well-known issues, but not everyone realizes that the part of the Isola which corresponded to the spur of land within the meander was relatively heavily urbanized down to at least the first century AD.¹⁴

In terms of terrestrial communications, the principal ancient road on the Isola was the via Flavia, as is well known; but also of importance here, was its connection with Portus (and thus its crossing of the ‘*Fossa Traiana*’). The authors argue in favour of a Flavian date for the origin of the *Ponte di Matidia*, which would have then been repaired – by Matidia – in the Trajanic period. In short, the Flavian interventions in the Isola would have been considerable, and are also attested (as is discussed in another part of the text) by both the building of the first *mausolea* at the *Necropoli di Porto* at the end of the first century AD, and the fact – noted by P. Pensabene – that 15 percent of the documented marble blocks from the *statio marmorum* on the south side of the ‘*Fossa Traiana*’ are also attributable to the Flavian period.

The line of the via Flavia in the southern part of our territory is uncertain, and its relationship to that of the Portus to Ostia Canal cannot be defined with certainty; neither are we in a position to document in detail and with certainty the route by which, in the opposite sense, it entered Ostia from the south and left it again by the north in order to reach the river, and in the end to cross the Isola itself and arrive at Portus.¹⁵ As for the means by which the road crossed the Tiber, the location and configuration of the bridge whose piers were seen in 1879, are not precisely known (Site G50 of the Gazetteer). Several suggestions, however, are possible. The text provides reasons for thinking that in origin, the via Flavia would have followed a straight line, from its origin in the north-west down to the right bank of the river. This would support an argument in favour of a bridge at the position of site G50 (Fig. 2.10), and thus a road access into Ostia at a point at or near Tor Boacciana. The creation of the canal on the Isola under Trajan would have thus led to a change in the line of the via Flavia and the creation of a bridge on the canal itself (see above), which should not be confused with the archaeologically attested structure crossing the Tiber to the south. All of these topographic details are illustrated on Figs 5.1, 5.7 and various others.

The survey has also documented – and this is another significant novelty – the division of the land on the Isola into lots (Fig. 6.4), by ditches of substantial width that could also have been navigated by small boats, as well as being used for drainage. Leaving details of them aside, there are several important aspects worth noting. In some parts of the Isola one glimpses the existence of rectangular allotments oriented east–west, following a modular length equivalent to 50m or multiples of 50m (100m, 150m) that are difficult to relate to the customary system of Roman land divisions; nor are the productive uses of the allotments easy to identify. As regards their chronology, there are reasons for thinking that the sub-divisions of the land into allotments occurred after the establishment of the via Flavia, which then came to constitute the western, or rather the north-western, margin of the land scheme, and was subsequently cut by the Portus to Ostia Canal. Did this belong to a formal *limitatio*? The authors leave this question open, while recalling that in one passage (222.6) the *Liber Coloniarum* speaks of lands around Portus being assigned to *coloni* by Vespasian, Trajan and Hadrian, and to single individuals by Lucius Verus, Marcus Aurelius and Commodus. Certainly, none of these sources explicitly mention the Isola Sacra, although in theory, the term *strigae* could correspond to these lots.

In terms of the areas of burial, the survey confirms the existence of a burial area along the via

Redipuglia (G17–G19) that largely represented a continuation of the *Necropoli di Porto* par excellence, which is situated along the via Flavia, and its offshoots (viz. the burials of the *Opera Nazionale Combattenti*, site G20). There were also other groups of tombs, and for an overall evaluation of this phenomenon and the observations that follow, the general plans on Figs 6.4–6.5 prove useful.

It is interesting to note that, amongst other things, the tombs located to the north-east of the via Flavia, which are difficult to identify from geophysical evidence alone, do not seem to have included standing *mausolea*, with a few exceptions. Moreover, the strange structures identified along the west bank of the Tiber on the eastern side of the Isola, could also be evidence of *mausolea*, although this would need to be confirmed with excavation.

With good reason, the authors pose the question: since fairly large cemeteries have been documented on the Isola, where did the people reside when they were alive? There was a settlement near the southern bridgehead of the *Ponte di Matidia*, to be sure, but this was not very dense and was for the most part occupied by public buildings.¹⁶ There is a lack of evidence for *domus*, *insulae* and similar buildings on the Isola, and this is also in large measure the situation at Portus. This is at least what is understood from the current state of research.

This is a major issue that is not easily interpreted. As the geophysical survey proceeded and subsequent open area excavations of certain areas were undertaken, it has intrigued members of the Portus Project and caused them to pose questions about the ‘urban’ character of Portus. In his publications and in conference presentations, Simon Keay has put forward the suggestive hypothesis that there existed a substantial degree of commuting between Ostia and Portus: that is that many individuals involved in the loading and unloading of merchandise at the imperial harbour basins, and in storing it in the warehouses etc, would have lived in the old *colonia* and travelled to their ‘place of work’ daily, either by road (along the via Flavia), or by boat – in which case they would have used the Isola Sacra canal, or directly by sea. Boats for local cabotage, such as the *caudicariae* or the *lyntres*, would have also been used for this. This is what is left to be guessed at in another passage of the text, where it is argued that thanks to the transport infrastructure that we now understand better, Portus could be reached from Ostia (and *vice versa*) in as little as an hour on foot or by boat. Another hypothesis that is suggested in addition, or as an alternative, is that some of the port workers could have resided in lodgings situated on the now lost upper storeys of the *horrea* at Portus.

Returning to the funerary landscape of the Isola Sacra, the authors suggest, if I understand them correctly, that the *mausolea* on the north side of the Isola were destined for the inhabitants along the southern bank of the ‘*Fossa Traiana*’ and the *Portuenses*, and that the tombs along the via Flavia (including the so-called *Necropoli di Porto*), as well as those situated along the banks of the Tiber, would have served the needs of the *Ostienses*. This is an interpretation about which I would be cautious, and indeed the conclusions warn against overly simplistic hypotheses about ‘spatial segregation’ and instead suggest the existence of ‘mixed’ funerary situations; in relation to this, they cite inscriptions from the *Necropoli di Porto* recording individuals who were active in both port cities,¹⁷ both of which were characterised by having societies that were both complex and mobile. All of this is true, although in my opinion, the main argument is a topographic one: in fact, if one examines plans like Figs 6.4–5 (and others), one cannot not help but notice the fact that the tombs along the via Flavia only become dense along the northern stretch of the route, suggesting or confirming the idea that this cemetery had mainly comprised just one of the ‘*necropolis di Porto*’.¹⁸ When (and if) the funerary panorama of the north-east bank of the Isola along the Tiber are better known, it will perhaps be possible to know whether this sector really was a burial space shared by the residents of Ostia and Portus.

The settlement which, thanks to the survey, has been identified along the southern bank of the Isola Sacra, and thus the right bank of the Tiber, constitutes a reality that is so new and important, as well as having so many implications, that it is justly assigned ample space in the concluding chapters of the book, and inevitably I will do the same here. The discovery, even if only by means of geophysical survey and without verification by means of excavation, had already caused a major sensation (and not just in the scientific community) at the time when Simon Keay made it the object of a press conference held in Rome in April of 2014, that was broadly taken up by the mass media. Following that public presentation, the coordinators of the survey published a report on the discovery that was synthetic, but also exhaustive (Germoni *et al.* 2019). I also attempted to formulate some personal reflections on the matter that were published in the same collection of papers (Pavolini 2019).

The settlement of which we are speaking covers c. 4 ha, and is comprised – overall or in large part – by a group of warehouses that were aligned along the southern bank of the Isola. This excluded the area lying between the presumed course of the canal and the route of the via Flavia to the west, which is

understandable because between both of these only a narrow tongue of land would have remained available, and it would have been unsuitable for these kinds of construction. On the eastern side, the complex of buildings that have been identified could be seen to represent a continuation of the collection of buildings that had already been identified in the spur of land within the ancient meander of the Tiber (see in particular, Fig. 6.2). However, it is unclear whether or not there was a gap between both groups of buildings at its narrowest point.

In summary, therefore, five buildings have been revealed to date by the geophysics (the essential details are summarized in Table 6.1 of the book), of which four were definitely warehouses,¹⁹ while the interpretation of the fifth remains more uncertain. In terms of the typology, three of the *horrea* belong to the courtyard type,²⁰ for which the authors cite Ostian parallels. The fourth is also a probable warehouse although it may perhaps have had a different function and is without any strict parallels on the other side of the river. The fifth building is decisively different, as it seems to consist of a large enclosed quadrangular area and subdivided by lines of internal pilasters²¹ (a space for unloading cargoes prior to their storage in warehouses?). In terms of the chronology of this quarter, settlement evidence prior to the late first century AD is rare, perhaps on account of the frequent Tiber floods, while the excavations of the last century indicate that the earliest structures were built from *opus reticulatum* (see Note 21), which can be generically dated to the first–second century AD.

An equally relevant structure that has been revealed by the non-destructive survey in this southern sector of the Isola, is the probable defensive wall that shuts off the ‘warehouse quarter’ to the north (Fig. 6.6), whose chronology is far from clear. It is significant that, as its discoverers note, it respects the orientation of the system of landscape division that has been discovered to the north: but does that mean that we ought to necessarily attribute it to the same period, that is the late first century AD, or ought we think instead of a more recent date which is not in itself identifiable? To answer this is challenging: as we will see, the authors incline towards the second hypothesis, but in the meantime discount the idea that this defensive circuit could be considered to have been some kind of continuation, on the other side of the river, of the walls of Ostia that are dated by Fausto Zevi on the basis of epigraphic evidence to 63–58 BC. They do this because it is logical to do so (the Isola defensive circuit was clearly destined to protect a complex of vital importance such as the series of *horrea*, and these are much later than the Ciceronian period,

as we know), as well as for a whole series of issues. In effect, the defensive wall has a width of 3–5m and has square external towers (not on the angles) of c. 6–8m: these are characteristics that – without going into too much detail – differ significantly from those of the late Republican wall circuit of Ostia.

In terms of its circuit, once the Isola Sacra wall reached its western limit, it turned sharply south in the direction of the northern wall of Building 1. The relative chronology of both structures will only be resolved by excavation; however, there are indications from the magnetometry to make one think that the defences were later than the outer wall of the warehouse and that this was incorporated into them in order to consolidate the defensive system. Towards the east, albeit without proof, the authors argue that the wall continued in a straight line as far as the inner (west) bank of the meander (as the above cited plans might be taken to suggest). If this is the case, it would have ensured that the southern and eastern arms of the Tiber would have been provided with an adequate degree of protection against any assailants.

Turning now to the crucial question of its chronology, one point of great importance is the fact that if on the one hand the Isola Sacra wall circuit is significantly different from that of Ostia, on the other it has characteristics that are remarkably similar to those of late antique date that were built at Portus,²² as the authors argue. Fundamental to understanding the chronology of these are the results of the sondage, albeit of limited scope, undertaken at the so-called ‘*Antemurale*’ of Portus. The stratigraphic sequence here has made it possible to push the date of the fortifications of Portus back from both the traditional Constantinian period, and the late fourth to early fifth century AD date that had been attributed to them at one stage. It is now argued that the fortification could have been completed around AD 470–80, and that it could have been undertaken by a *praefectus Urbi* of Odovacar (Keay and Paroli 2011, 7, notes 22, 82 and 141).

It is clear, then, that if the fortification running along the northern side of the *horrea* on the southern side of the Isola Sacra should also be attributed to a late date on the grounds of similarity, and that if a future stratigraphic excavation should confirm this, then it would raise interesting questions about the last stages of the history of Ostia. These are issues that I have raised in the article mentioned above (Pavolini 2019), which is also cited by the authors of this volume who tend to agree with the hypotheses formulated there. They thus espouse the vision of an Ostia in which the underlying rationale for its earlier floruit had already begun to fade from the third century AD onwards, and which in the middle of the fifth century AD was

heading towards its definitive crisis as an urban institution. There is far too much to say about this issue, but it has already been done on numerous occasions and not only by me.

And still, given the context of our discussion, we can do no less than remember a key fact which is that after the end of the Republic, let alone during Late Antiquity by which time they had largely fallen into disuse, the fortifications of Ostia were never reconstructed. At Portus, as we have just seen, matters played out differently, something which makes one think that in the last period of its use, the warehouse quarter of the *Trastevere Ostiense*²³ with its protective wall, and I would say the Isola Sacra as a whole, was by now under the administrative jurisdiction of Portus²⁴ rather than Ostia, and therefore under its economic and political control as well. The historical implications would have been evidently highly significant, and need to be further explored.

The final paragraphs of Chapter 7 are dense with final observations and important questions. For the large scale building projects undertaken at both Ostia and at Portus at different times in their histories, particularly those completed for the *annona*, should one think of them in terms of public or private initiatives, or perhaps as combined operations, and in what proportions? As regards Ostia, Janet Delaine (2002) has suggested that in many cases, the investment would have come from private sources (from members of the urban *ordo* or from *collegia*, freedmen of the *colonia* etc), but it is then worth posing the same question about land ownership, as the authors of the book do, where there are similar problems. In the case of Portus, one can probably attribute it to imperial property, which would have been acquired through inheritance: but what about the lands of the Isola Sacra? Here the question seems to be more complex: the directors of the survey tend to distinguish between the lots, which in the central and northern sectors of the Isola came to be divided up and distributed to *coloni* or those to whom it had been assigned – perhaps as a result of imperial intervention, and those along the southern strip, which at least from the second half of the first century AD when the *horrea* began to appear, could have been in private hands.

The definitive conclusions to the volume do no more than expand upon the contents of Chapters 6 and 7 (which are in themselves conclusive as we have seen), but do so in terms of a broader context. One aspect perhaps prevails above all others: for any future study of Ostia, the change in our perception of its history as a result of the survey results is, and will remain, fundamental. This is because from now on, we need to envisage Ostia as no longer being just

the settlement on the left bank of the river as we have traditionally known it, with the *Trastevere* as a poorly studied appendage, but as a great commercial river port (a ‘commercial corridor’ is the textual definition), or a port cut in two by a river (‘a port bisected by a river’ as described in the book). And here, a comparison with the Urbs itself becomes inevitable, since studies in recent decades (it is not necessary to provide references, but sufficient to think of the contributions by C. Mocchegiani Carpano, E. Rodríguez Almeida and F. De Caprariis, amongst others) have given the impression of a Rome served commercially by quays and landing stages – with their ensemble of storage buildings – not just concentrated around the *Emporium* and the northern river port of *Tor di Nona*, but spread out along the whole length of the urban stretch of the Tiber.

Consequently, our image of Ostia should also change in respect of its demographic profile. Even though calculations concerning this have always been somewhat random, for obvious reasons, and it seems appropriate to retain the same note of caution from now onwards, it is clear that we cannot still think – for this Ostia as broadly understood – of a population equivalent to the figure of 30,000–40,000 that is usually cited; there would have been many more. The text states this, as well as alluding to another element that, in the context of needing to re-examine the size of the population, is particularly relevant: I am alluding to the large urban expansion of Ostia to the south-east of the Republican walls that would have been documented by another programme of non-destructive survey, namely the geophysical survey directed years ago by Michael Heinzelmänn, which remains almost completely unpublished, as our authors lament. In any event, if there is a confirmation of this and add this possible ‘Ostia outside the walls’ to a *Trastevere* that is otherwise somewhat more densely occupied than previously thought, in schematic terms Ostia would pass from the status of a small to medium sized centre to one of a middle to large size. So many aspects of its history (its relations with Rome and Portus itself), will have to be radically reviewed, while in terms of didactic communication to the non-specialist public, someone would need to re-write the popular guides as well.

The conclusions to the volume speak of the beginnings of the first century AD as the possible initial establishment phase of the commercial infrastructure to the north of the Tiber, with everything that this implies. Without prejudice to excavation controls, this dating could be considered to be too high, since in some parts of the text, the second half of the first century AD had been suggested as the period that

marked the first appearance of the *horrea*, which would have developed above all in the course of the second century AD. In any case, even if it is admitted that a true flourishing of the 'Trastevere' had begun between AD 50 and 100, in the analysis of the authors this would suggest that the commercial and urban revitalization of the old colony of Ostia was essentially determined by the establishment of the Claudian basin at Portus, rather than as a result of the Trajanic basin, and we have already seen some possible reasons for this.

This picture is completed by the reflections that appear in the final paragraphs of the chapter, and which encompass the broader geographical context of the port system created by the Romans along the central stretch of the Tyrrhenian coast (with Trajan as the protagonist in some of the decisive interventions), and which ranged from Centumcellae in the north to Terracina to the south, if not beyond, since further south lie Pozzuoli and Naples. At the 'heart' of this system lay the Ostia/Portus conurbation, and the 'heart of the heart' was the Isola Sacra, for the understanding of which this book accomplishes a gigantic breakthrough. Notwithstanding its length and completeness and the fact that the present contribution stands out as an essential point of departure, it is not necessarily one of arrival (and I believe that the authors can agree with this). So, the wish – that can perhaps seem to be customary but which has rarely been so justified – is that the Portus Project and the Italian-British surveys of the Isola Sacra around the imperial harbour basins and in its hinterland continue, using both non-destructive and traditional archaeological methodologies, so that they can provide us with further new and unexpected discoveries for historical reflection.

Notes

- 1 In relation to this Pavolini 2013.
- 2 Many programmes of urban and landscape replanning along the modern Roman coastline have been drawn up in recent years, with few practical outcomes up until now. Nevertheless, interesting ideas relating to these – with projects in which the archaeological context based upon Ostia and Portus (with the Isola Sacra at their heart) assumes crucial importance – are to be found, for example, in two recent volumes produced by the *Dipartimento di Architettura e Progetto dell'Università di Roma La Sapienza*, with a contribution by this writer. (Pavolini 2015); see also Pavolini 2019.
- 3 This is the date which is usually attributed to the moment when the meander formed by the Tiber close to Ostia is cut, remains isolated and silts up, creating the so-called Fiume Morto, although it has been argued that this was a gradual process lasting several years and was not complete until 1562: see amongst others Pannuzi and Rosa 2017.
- 4 The book cites works down to and including the most recent contribution by Olivanti and Spanu 2019, although it omits the matching article in the same *Atti del Terzo Seminario ostiense* (Baldassarre *et al.* 2019) which integrates and replaces earlier publications by Baldassarre and her collaborators.
- 5 It was first presented publicly by Germoni *et al.* 2011: figs 1.3–4, although at this stage it was only possible to provide an illustration of the first stretch of the canal.
- 6 The writers estimate its width at c. 35m.
- 7 In effect, given the general topography, a double function would seem the most probable, and this would not only be the case with the Portus to Ostia Canal, but also those that have been identified, or better interpreted, as a result of recent fieldwork (the *Canale Romano*) mentioned above, the northern canal and the '*Fossa Traiana*' itself: see Keay and Paroli 2011: Figs 1.3–4.
- 8 Further on, the editors of the volume put forward the hypothesis that the vessels were found in what was the final stretch of the canal which, in nearing the bank of the Tiber, would have turned gently to the west, as seems to be suggested by aerial photographs, coinciding with the route taken by the via Flavia.
- 9 Length of c. 12m x width of 4.88m.
- 10 This is the rationale for suggesting that the canal was not abandoned later than the Severan period.
- 11 This may have been the context of the Isola Sacra wrecks.
- 12 This is probably one of the canals referred to in the well-known inscription (CIL XIV, 85) that records the decision of the central power to create canals that aimed to resolve at least in part the problems of the Tiber floods. It dates to AD 46, and such a chronology confirms (something implicit in the analysis of the authors) that the excavation of the first harbour basin and its canal lying to the south of it must have been planned together. However, the fact that the *statio marmorum* along the line of the '*Fossa Traiana*' was active during the final decades of the first century AD (see below), is a fact that speaks for itself.
- 13 Which implies that it is only from this point that we can speak of a Tiber delta.
- 14 All of the relevant bibliography for this, with studies by A. Arnoldus-Huyzendveld, L. Paroli, A. Pellegrino and others, is cited in the volume.
- 15 In respect to the solution adopted in this book, the question is perhaps rather more complex. I simply refer the reader to Pavolini 2018 which discusses hypotheses relating to the final stretch of the coastal *via Severiana*, which ran from southern Lazio, and after entering Ostia from the south probably, at least to my mind, coincided with the southern stretch of the Decumanus Maximus and the *Via della Foce* as far as the Tiber. There must have been, therefore, stretches of coastal roads that existed prior to the Severan re-organization of the road, and hypothetically the via Flavia could thus be considered to represent their continuation on the Isola Sacra.
- 16 I note in passing some hypotheses that appear later in the text (in other words, the conclusions), that suggest

the possibility that both here and in the *statio marmorum* further to the east were situated offices – used by imperial officials – charged with collecting customs on merchandise that being transported from the ports to Rome (and in lesser quantity to Ostia).

- 17 Also, in another passage which refers to epigraphic and juridical documentation, it is noted how many *navicularii* and other members of associations connected with commerce supply and port activities, would have carried out their work both in the old *colonia* and the imperial harbours.
- 18 And to my mind it is significant that the ‘decline’ of the cemetery dateable only by its *mausolea* can only be detected from *c.* the first half of the third century AD, as has always been understood. This is perhaps a confirmation of the fact that the importance of Ostia was gradually decreasing and that, as a consequence, the intensity of fluvial and terrestrial connections between Ostia and Portus was also diminishing. While all of this was occurring, Portus obviously continued to be inhabited and flourished, although its inhabitants came to be buried elsewhere. This is, therefore, a complex issue that clearly cannot be developed here.
- 19 A small part of Building 1 was discovered during an excavation in 1968 (Zevi 1972 and G41).
- 20 I would like to draw attention in this note to many issues relating to such warehouses and related problems that are all very well documented in Chapters 6 and 7 of the book. For example, the probability that the principal product stored in them was grain; the possibility that there were auctions or similar activities in their courtyards, as Janet DeLaine (2005) has suggested in relation to some Ostian buildings; finally, calculation

of storage capacity, not only that of the ‘warehouse quarter’ but also of the urban area of both Portus and Ostia as a whole, a subject about the authors themselves stress prudence.

- 21 This Building 5 had been observed in the sondages dug in the 1960s (the circumstances of the find and the publication by Zevi and others appears in the entry G44 in the Gazetteer), and to it perhaps belonged the mosaics located immediately to the east of the limits of the survey, G45-G46. This was a built-up area, the characteristics of which are for the moment less clear, which extended to the south-west of the sites listed and included structures built from *opus reticulatum* (of the first century AD) that were observed in the same sondages.
- 22 In making all of these observations, I take as read the fact they all derive from magnetometry results. I have pointed this out on various occasions, and the authors themselves also have this in mind; however, this does not prevent us from reasoning and formulating hypotheses from this kind of evidence.
- 23 The date of whose abandonment is unknown; in the conclusion, reference is made only to the existence of an undated tomb ‘a cappuccina’ which was discovered in the old excavations at G43.
- 24 As is well known, the first source that defines Portus as a *civitas* dates to AD 313. The change in its administrative status could have thus occurred earlier, we do not know when, and it could have involved the ‘annexation’ of the Isola Sacra to the new territory administered by the new *civitas*. Rather broader considerations related to the continued flourishing of Portus in Late Antiquity are discussed in Pavolini 2019.

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Note regarding the Gazetteer

Information about previously explored sites on Isola Sacra is summarized in the Gazetteer (see pp. 173–85). Throughout the text and on the illustrations, references to these sites in text uses the abbreviated form (G1), meaning Gazetteer site 1.

Note

- 1 It was directed by Simon Keay; Grant numbers AH/1004483/1 and AHE509517/1.

Chapter 6

Chronological Synthesis¹

Simon Keay, Martin Millett and Kristian Strutt

Abstract

This chapter provides a chronological summary of the development of the Isola Sacra from the pre-Roman period through to late antiquity. It draws together the strands of evidence from previous archaeological work and from our survey and places it in a broader historical context. This allows the development of the island to be understood in relation to the foundation of the harbour complex at Portus and the evolution of Ostia. It also emphasizes how it can only be understood in the context of the functioning of the port system as a whole.

Introduction

The Isola Sacra lies between the Tiber and the Tyrrhenian coast, and constituted the land bridge between Ostia and Portus, the two main ports that controlled maritime access to the city of Rome. Rather than simply being an area of passage, however, it provided a vital linkage between them. In this sense, the archaeology of the Isola Sacra is of crucial importance to Ostia and Portus and can only be understood in relation to both. Whilst our discussion in this chapter and the next is not designed to serve as a complete reappraisal of the roles of both ports, it does reconsider some of the evidence from them in offering new ideas about the development of the archaeology of the Tiber delta as a whole.

It will be evident from the previous chapters and the Gazetteer that there is a considerable amount of archaeological evidence available from the Isola Sacra. Equally, as noted in Chapter 1, this information has not previously been synthesized, largely because of the difficulty in seeing any clear overall patterns within it. This is partly a result of the piecemeal nature of research, which has often been conducted in response to individual discoveries, many of which relate to the *Necropoli di Porto* (G35). But it is also to be explained by the small fields which fragment the modern landscape

and make it difficult to relate stretches of road, areas of habitation and tombs to the broader ancient topography of the island. Our geophysical survey and remote sensing work provide us with a first opportunity to review this evidence holistically, allowing past discoveries to be placed in relation to each other and set within their broader landscape context.

Whilst our survey work has been extensive, its limitations should be recognised. First, although our work has covered a substantial area, it does not include the full extent of the Isola Sacra as it existed during the Roman period. On the one hand, land-use meant that some areas were either inaccessible or unsuitable for survey. On the other, the projecting spit of land at the south-east that formed part of the Isola Sacra until it was separated in the flood in 1557 was excluded from our survey, although the excavated remains previously explored there are briefly discussed below. Second, neither our survey, nor most past excavations have produced high quality dated sequences. Hence, although we have been able to draw broad conclusions about the chronological development of the landscape, these are necessarily rather less precise than we would wish. In this sense, it will be evident that some of our conclusions are tentative and require testing by future excavation.

This chapter provides a detailed topographical and chronological synthesis of the archaeology of the Isola Sacra as understood in the light of our fieldwork. It is followed in Chapter 7 by a broader reconsideration of the place of the Isola Sacra within the historical development of the Tiber delta and the relationship between it, Ostia, Portus and Rome.

Chronological synthesis

The mouth of the Tiber had lain in the south part of what was to become the Isola Sacra since the second to first millennia BC, with a further northward movement from the eighth to sixth century BC, and with the

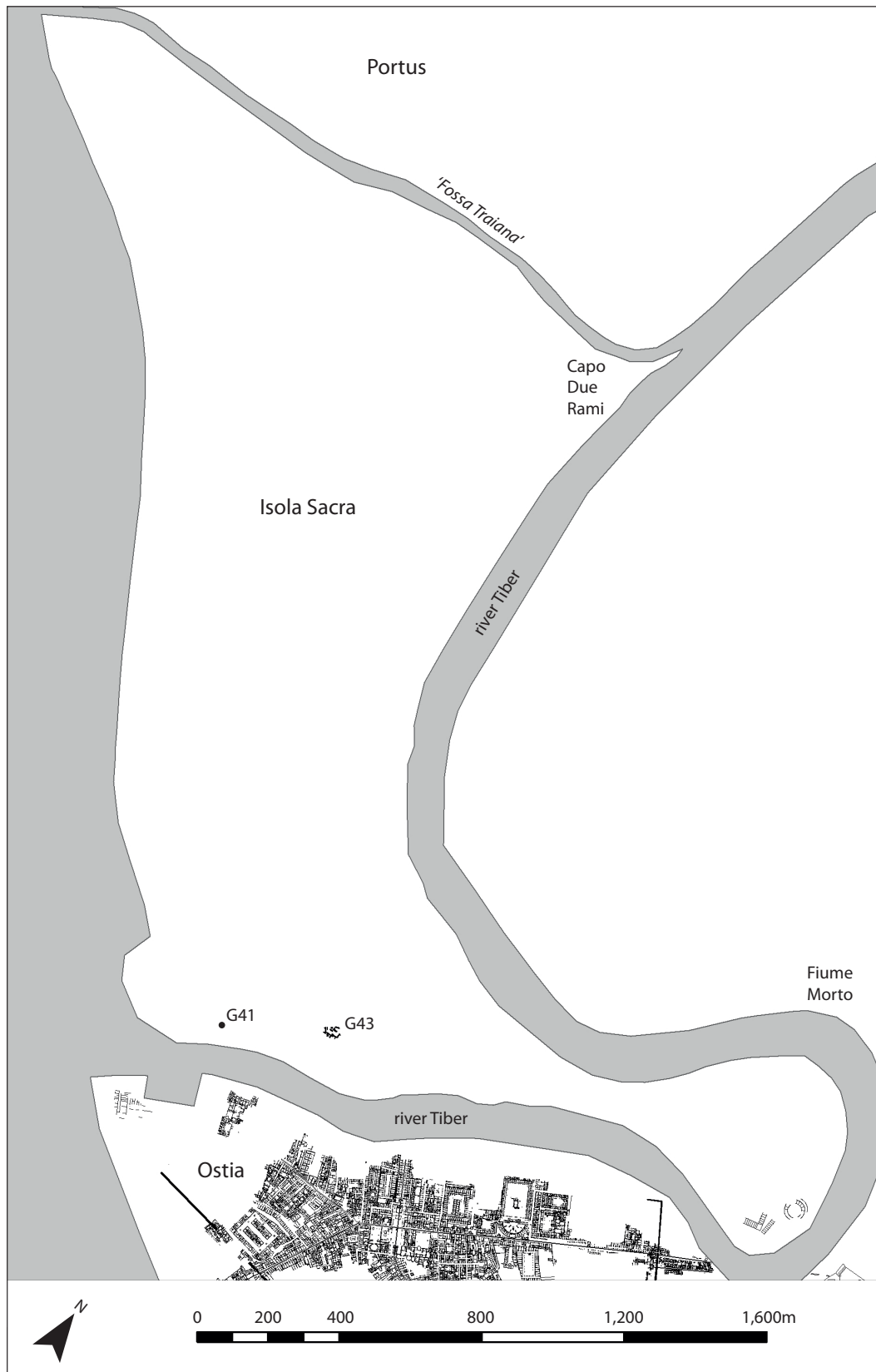


Figure 6.1. *Plan of Isola Sacra in the Claudian period/early first century AD. (Drawing: Kristian Strutt.)*

meander extending eastwards to the area of the Fiume Morto in the early imperial period. In this context, the creation of the Isola Sacra came relatively late, and only with the cutting of a canal (the '*Fossa Traiana*') during the creation of the port of Claudius at Portus. This was preceded by the construction of canals that are recorded in an inscription dated to AD 46, as having 'delivered the city (of Rome) from the dangers of flooding' (CIL XIV, 85 – Keay *et al.* 2005: 315, A1, fig. 9.1). Our survey of Portus identified two canals with the works recorded in this text, the more southerly of which is now followed by the course of the Fiumicino Canal. This is misleadingly referred to in the archaeological literature as the '*Fossa Traiana*' as it was assumed until recently to have been constructed in association with the building of the Trajanic harbour at Portus (Keay *et al.* 2005: 275–76). It was the cutting of this canal during the Principate of Claudius that transformed a spit of land defined by the southward curve of the Tiber as it approached the Tyrrhenian Sea into an island.

The name Isola Sacra is first recorded by Procopius in writing about the events of AD 537 (*History of the Wars of Justinian* V.26. 5–6). Calza (1940: 11) reasonably concluded that the name relates to the cemeteries located on the island. However, we may also note that the island was also compared to 'the garden of Venus' because of its fertility and rich pastoral vegetation. The source of this information is a fragment, probably copied from Julius Honorius' *Cosmographia*, dating to the fourth–fifth century (Meiggs 1973: 265, note 6; Reise 1964: 83, line 24; xxvii–xxviii).² This text highlights the point that the island need not always have been considered as sacred or named as such. Indeed, its rich pasture and agricultural or horticultural value was potentially especially significant given its closeness to the population centres at Ostia and Portus.

Prior to the construction of the Claudian harbour, there is little sign of activity within the confines of the area that was to become the island (Fig. 6.1). This is consistent with the evidence from the area later occupied by Portus, where there is only limited activity known from this period. The Portus survey produced evidence for scattered farming settlements in the floodplain to the east of the site of the later port and a possible building beside the Tiber (Keay *et al.* 2005: 270–71). Such structures are comparable with those noted further to the north-east along the line of the via Campana (Serlorenzi *et al.* 2004: 61), which increased in number from the third century BC onwards. It seems probable, however, that the Tiber floodplain was at regular risk of inundation, with recorded flood events in the third to first centuries BC and during the first century AD (Aldrete 2007: 10–33; Strutt 2019: 39). The frequency of flood events in this period is linked

to increased population, agriculture and consequential deforestation in the Tiber Valley (Aldrete 2007: 740–9), but also the warmer conditions of the Roman Climatic Optimum (Harper 2017: 47–8) in the third to first centuries BC, and the first and second centuries AD. Indeed, if we are correct in concluding that the canals recorded in the Claudian inscription were designed to relieve seasonal flooding preparatory to the construction of the harbour (Keay *et al.* 2005: 272, 298), the land that became the Isola Sacra would have been particularly prone to inundation, and thus unlikely to have been particularly attractive for settlement, notwithstanding its close proximity to the already vibrant port of Ostia.

The later first century AD

The construction of the Claudian harbour took a long time to complete, with a coin issue of AD 64 (RIC 1, 178–83) apparently struck to commemorate its completion (Keay *et al.* 2005: 297–305; Keay forthcoming 2021). Despite the likelihood that its canals improved the usability of the land on what was now the Isola Sacra, there is little archaeological evidence for activity at this period either from the survey or previous excavations in our area. While first-century pottery is recorded in a coastal context (G48), this appears to have been redeposited material. Only two structures have been dated to the first century AD, both on the southern side of the island opposite Ostia. A stretch of *opus reticulatum* wall (G43) is attributed to the early first century, whilst a further fragment of the same style of building indicates a generic first-century date (G41). We may note that excavations in the area of the Fiume Morto, which was once part of the Isola Sacra but now detached from it, suggested that occupation there was established in the first century AD, and may have begun in the late Republic (Pellegrino *et al.* 1995: 396). This limited evidence indicates that early activity on the southern side of the island was related to the port of Ostia rather than to the development of the harbour at Portus.

The one feature that was almost certainly constructed in association with the completion of the harbour at Portus was the road (the via Flavia) that linked the new harbour with Ostia, thus cutting across the Isola Sacra from north to south (Fig. 6.2). It was sited to run adjacent to the coast, and our survey complements previous work, confirming its route except for the last 600m or so at the southern end of the island. The creation of the road has a *terminus post quem* provided by a coin of Galba (AD 68–69) and has later first-century burials flanking it (Baldassare *et al.* 1996: 13–14). Furthermore, its alignment seems integral to the planning of the harbour facilities to the north of the '*Fossa Traiana*', most likely indicating that

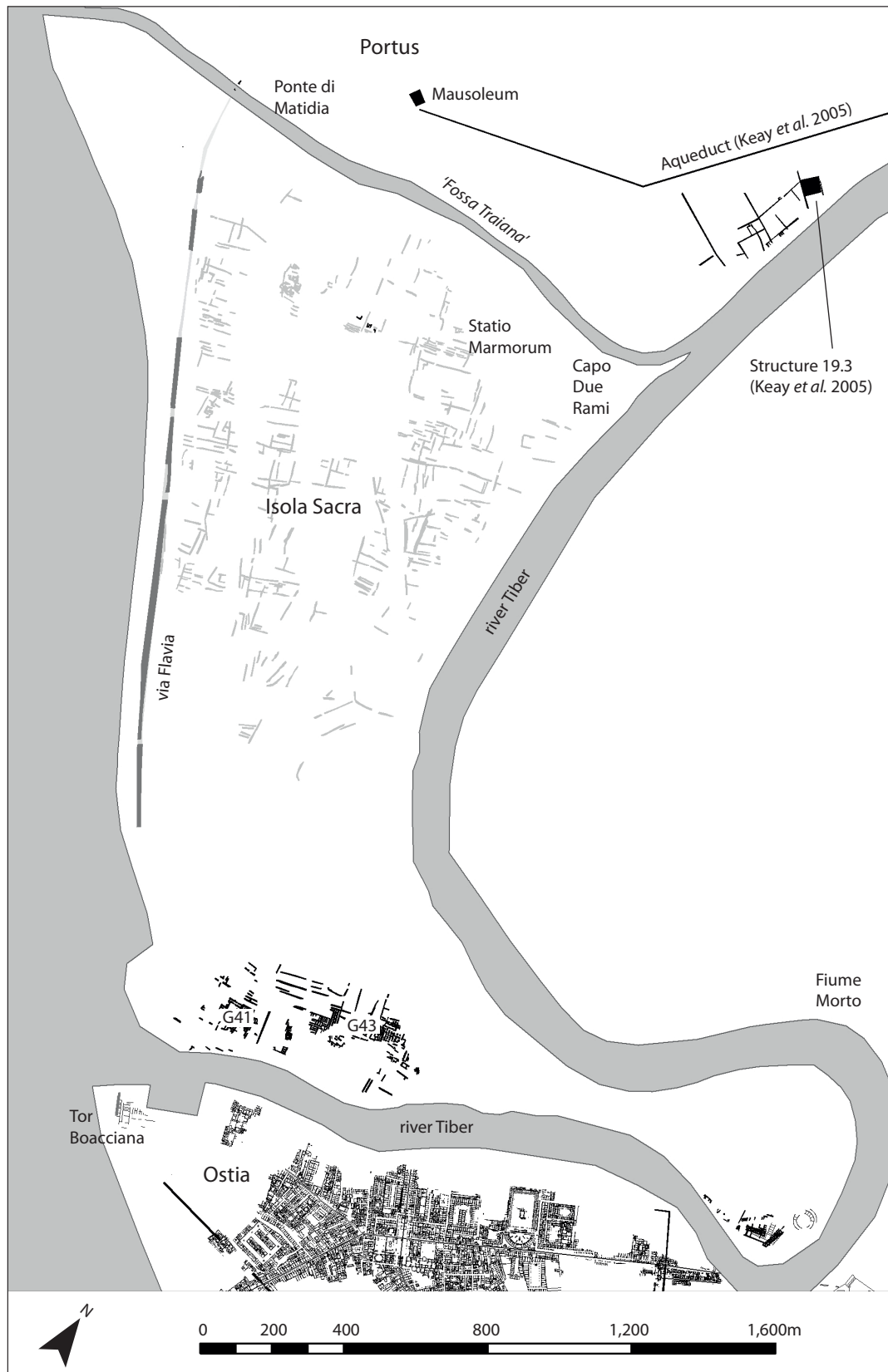


Figure 6.2. Plan of Isola Sacra in the late first century AD. (Drawing: Kristian Strutt.)

it was conceived as part of the same scheme (Keay *et al.* 2005: 279). It is not clear whether the bridge connecting Portus to the Isola Sacra (the *Ponte di Matidia* – G2) is contemporaneous with the construction of the road, or whether it represents a later addition or a rebuild. The report on its excavation suggests that it was Trajanic in date, but this was predicated on the assumption that the canal itself was dug at that time and no stratigraphic evidence or associated finds were published to support its dating (Veloccia Rinaldi 1975). Given the scale and character of the initial development at Portus, it seems most likely that this bridge was first constructed in the Flavian period.

The exact course of the via Flavia in the southern part of the Isola Sacra remains uncertain. This problem is made more complex, first by the question of its relationship to the Portus to Ostia Canal that later traversed the Isola Sacra, and second by the issue of where the road entered Ostia. In the context of the latter, it should be noted that the location of the possible bridge across the Tiber recorded in 1879 (G50) is not precisely known. It will be argued below that the canal must relate to the Trajanic development of Portus, so it may be that the route of the via Flavia had to be altered when the canal was cut (p. 156).

We should observe at the outset that the known course of the via Flavia, as far south as its last recorded location (G38), is straight except for a slight deviation within the settlement close to the bridge across the '*Fossa Traiana*'. Furthermore, in the absence of any significant topographic features on the island at the time of its construction, the road would surely have been planned to link the two settlements directly, suggesting that its original route further south would not have deviated significantly from this line. This would imply that it was designed to cross the Tiber a little to the west of the modern Ponte della Scafa, a location that would not seem inconsistent with the available evidence for the Roman bridge (G50). If it did follow this course, it will have entered Ostia close to the Tor Boacciana where there has been limited excavation at the edge of the town closest to the Roman seafront. Here there is a stretch of a broad north–south street which is on the same alignment as the via Flavia, and most likely forms the approach to the southern bridgehead (Fig. 6.2). It may also be observed that access into Ostia any further to the east (in the area of the modern Ponte della Scafa) would have been impossible because of the location of the harbour, temple and so-called *navalia* situated to the west of the '*Palazzo Imperiale*' (Heinzelmann and Martin 2002). Furthermore, Heinzelmann's unpublished geophysical survey of this part of the town seems to have shown a major road running along the south side of the '*Palazzo*

Imperiale' connecting the street running southwards from the suggested site of the southern bridgehead and with the via della Foce further to the east. This street is shown schematically on published images (Heinzelmann *et al.* 2002: 226, Abb. 1; Heinzelmann and Martin 2002: fig 4) and would have provided the necessary connection between the centre of Ostia and the via Flavia. Since the via delle Foce had been a key road since the earliest years of the colony, connecting it to the mouth of the river, its route may have helped to determine that chosen for the via Flavia. Once the via Flavia was established connecting Portus to Ostia, the importance of via delle Foce will have been significantly enhanced, accounting for its significance in the developed town plan. Finally, one might wonder in passing why, given the importance of this route, no settlement like that to the north developed beside the bridge that carried the via Flavia over the Tiber on the southern side of the Isola Sacra.

The dating of the via Flavia to the late first century AD raises the question of the chronology of the system of land allotment identified in our survey. There is considerable evidence across much of the Isola Sacra for a systematic division of the landscape into blocks defined by substantial ditches (Fig. 6.4). Given the lack of evidence for significant activity across most of the island prior to the establishment of the harbour at Portus, it would seem likely that this was established soon afterwards. There are two pieces of information relevant to dating this, namely the archaeological evidence for the layout and phasing of the divisions, and the texts relating to land allotment in the area of Portus and Ostia. Neither source is unproblematic.

The evidence for large scale land divisions is primarily found across the northern and central parts of the island. In the area to the south of Areas 26–27 it is less visible, perhaps because it is masked by increased soil depth or as a result of more difficult ground conditions resulting from the presence of an earlier course of the Tiber. A further constraint is likely to have been the existence of some settlement on the adjacent southern part of the Isola Sacra by the first century AD. In this context, it is worth noting that even though the boundaries associated with the defensive wall in Areas 31–32 are broadly on the same alignment, there is nothing to suggest that they represent a continuation of the land divisions southwards across the whole island.

The northern limit of the land divisions seems to have been defined by a minor east–west road that is later carried over the Portus to Ostia Canal by a bridge (Area 6). Although we lack proof, this presumably connected to the via Flavia at its western end, and most likely ensured communication between this

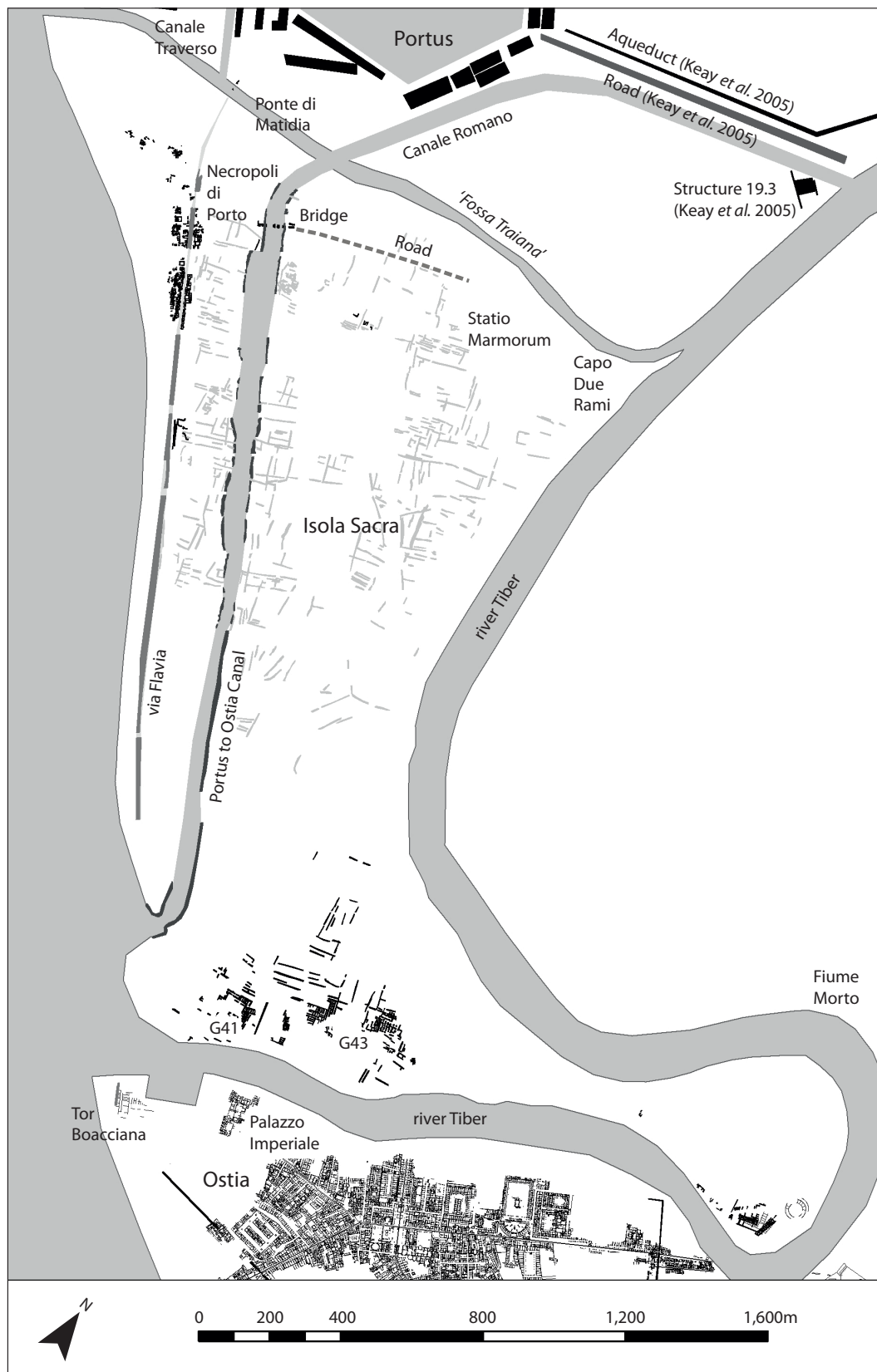


Figure 6.3. Plan of Isola Sacra under Trajan/early second century AD. (Drawing: Kristian Strutt.)

road and the *statio marmorum* to the east (p. 155). The presence of modern structures constrained our survey coverage and the extent of Roman cemeteries makes it difficult to see any major land divisions to the north of this road. However, the overall impression gained from the orientation of the cemetery remains and other features is that the landscape here was not divided up in the same way, but that land divisions were instead orientated perpendicular to the '*Fossa Traiana*'. The one exception is a possible trackway that runs just to the south of the via Redipuglia (Area 2 **m2.22**, **m2.23**; Area 5, **m5.5**, **m5.6**) and which is broadly aligned with the boundaries further south.

To the south, ditches define a series of strips of land that run east–west up to the eastern side of the via Flavia. The original lengths of these plots seem largely to have been determined by the topography of the island, and they were in any case truncated with the later cutting of the Portus to Ostia Canal, so it is difficult to see any regular pattern in these measurements. The strips also vary in width, and there is strong evidence for later amalgamation and sub-division, as well as the creation of enclosures within some of the strips. However, there are some indications that widths cluster around values of 50m (c. 165 Roman feet), or multiples (100m and 150m), even though such measurements are not easily reconciled with any regular system of Roman land division. There is no single north–south boundary crossing the whole system, although a discontinuous north–south division can be observed c. 300–350m to the east of the via Flavia. The closer spacing of the east–west ditches beside the via Flavia (and also in places beside the Tiber) may perhaps indicate an initial layout of long-thin strips of land which gradually evolved as fields were amalgamated, especially to the east after the excavation of the later Portus to Ostia Canal (see below). The impression gained is one of an organized system of land division, albeit not as regular as that recorded to the south-east of Ostia (Heinzelmann 1998b). In terms of the use of these fields, we may note that the text from Julius Honorius' *Cosmographia* discussed above (p. 149), lays emphasis on pastoral land use which may have been more appropriate than arable farming given the likelihood of flooding, although the ditches may have facilitated crop cultivation given the free draining soil.

As noted in Chapter 4 (p. 33), the width of the ditches defining the plots of land is such that they might have been navigated by small boats, whilst also functioning as boundaries and for drainage. The latter will have been particularly significant given that the delta area was prone to periodic flooding (Fig. 6.7). In this context, it may be noted that in the *Liber Coloniarum* (L 256.1), land allotments in three coastal locations

(at Falerio, Fanum Fortunae and Ostra) are described as having boundaries defined by '...banks, canals or drainage channels...' ['...*riparum canabularum sive nouercarum*...'] (Campbell 1990: 184–85). This would seem to support our suggestion that the system of boundaries identified was primarily associated with land-division, whilst its planned regularity implies that it relates to a single chronological phase.

There is no direct evidence for the date of establishment of this boundary system. However, a relative chronology can be deduced from the relationship between different parts of it and other major topographical features in the landscape, such as the via Flavia and the Portus to Ostia Canal. In terms of the former, the boundaries in Areas 8 and 21 seem to respect the features that run beside the road, although the boundary ditches recorded in the survey are not set perpendicular to it. This may suggest that the land apportionment was not contemporaneous with the layout of the via Flavia itself but that it took place at a slightly later date. Elsewhere, there is limited evidence, with mostly later funerary monuments lying in the north of the survey area, obscuring their relationship. However, there is nothing in the layout of the excavated later *mausolea* to suggest that they were planned with respect to existing boundaries. Furthermore, the excavations on the western side of the via Flavia have not uncovered any evidence for the continuation of the land divisions matching those found in the survey (Baldassare *et al.* 1996; Olivanti and Spanu 2019: fig. 5), implying that the via Flavia marked the western edge of the system. Whilst the boundaries gradually change in orientation across the island, they also exhibit a strong pattern of east–west continuity on either side of the Portus to Ostia Canal. This suggests that the canal was cut through them, a conclusion which seems to be supported by the relationship between the boundaries and the canal revetments, as for example in Areas 8 and 18. Given the nature of geophysical features, this evidence is not unambiguous. Nevertheless, it does suggest that the land division took place not long after the establishment of the via Flavia but before the construction of the canal. This would seem to be consistent with the textual evidence, although given the less formal nature of the land divisions on the Isola Sacra, doubt might be expressed over whether they represent a formal system of land allotment, or *limitatio*. However, we may note that there is occasional evidence more generally for the allocation of land in narrow strips (*lacinae*), albeit in larger units (Dilke 1971: 94).³

If we are to treat this as a possible case of *limitatio*, there are two references in the *Liber Coloniarum* that might be relevant to it, although given the nature of



Figure 6.4. Interpretation of the layout of Isola Sacra field-systems in the early second century AD. (Drawing: Kristian Strutt.)

the sources, we need to be very cautious in using them for dating purposes. In addition, both references are geographically unspecific, so neither need necessarily relate to the land on the Isola Sacra. The first refers to Portus, and states that:

‘Part of the land around Portus on the river Tiber was allocated in *iugera* and granted to townspeople, and they received a declaration according to an evaluation of its fertility.’
(L 222.6, lines 4–5; Campbell 1990: 174–75).

This provides no indication of chronology, although it must presumably date to after the establishment on the Claudian harbour. The second, relates to Ostia:

‘The land at Ostia was allocated to their colonists by the emperors Vespasian, Trajan and Hadrian in parcels, in strips and *per strigae*. But later, the emperors Verus, Marcus Aurelius and Commodus granted some land to private individuals.’
(L 234.22, lines 20–23; Campbell 1990: 184–85).

Depending how we are to understand the term *per strigae* in this context, it may perhaps refer to the laying out of strips narrow-end on to the via Flavia. The historical context would fit in with the archaeological evidence both for the re-organization of the landscape following the establishment of the harbour at Portus, and the Flavian date of the via Flavia noted above. It is unclear whether the people who worked these lands resided at Portus, Ostia, the northern bridgehead settlement, or a combination of all three. Whatever the answer, one suspects that at least some of the agricultural work involved may have been undertaken by port workers during the autumn and winter months, when the volume of sea-traffic was reduced.⁴

If we are correct in our reconstruction of the development of the Isola Sacra in this period, it was essentially a foundational phase, with the establishment of a major road and the layout of a system of land divisions for agricultural purposes following on from the reclamation of this part of the delta and the creation of the island in the years after the establishment of the harbour complex at Portus. In this context, we may note that although burial seems to have started in the area of the *Necropoli di Porto* (G35) by the end of the first century AD, this activity was not intensive, and there is no evidence for major funerary monuments by this date (Baldassarre *et al.* 1996: 18). By contrast,

however, it is clear from Pensabene’s analysis of the 318 blocks of marble from the site, 15% of which date to the Flavian period, that the *statio marmorum* came into operation, probably during the reign of Domitian (Pensabene 2002: 27–28). This fits with our evidence for the creation of a road connecting the area by Capo Due Rami to the via Flavia. There is little evidence from our survey for the layout of the *statio marmorum*, partly because of our limited access for survey in this area, but presumably also because the infrastructure of the complex may have been limited to little more than quays and open yards for holding the stocks of marble blocks.

Trajanic development

In broad terms, the development of the island from the late first century AD onwards was a consequence of the decision to construct the new harbour at Portus under Trajan, a complex that is best understood as an imperial project directly administered by imperial officials, even though it will have also served the needs of the urban community at Ostia (Keay 2018: 154–58). This decision altered the trajectory that had been set for the development of the island in the Flavian period.

Whatever the exact character of the occupation during the Flavian period, it is clear that the scale of activity across the Isola Sacra was greatly enhanced from the earlier second century AD onwards. The principal topographic change was brought about with the construction of the Portus to Ostia Canal that ran right across the island from north to south. The chronology of this can be inferred from two strands of evidence. First, as noted above it seems clear that it cut across the fields that had been laid out in the final quarter of the first century AD. Second, its northern access from the ‘*Fossa Traiana*’ lay opposite the opening of the *Canale Romano* that was cut across the land to its north as part of the construction of the Trajanic harbour complex (Keay *et al.* 2005: 288–90), a development which occurred between c. AD 112/114–120 (Keay Forthcoming 2021). It seems most probable that the two canals were constructed as part of the same plan for the operation of the port as discussed below (Fig. 6.3).⁵ There is little evidence, therefore, to support the idea that the Portus to Ostia Canal may have formed part of the Neronian canal that ancient sources record as having run between the Lacus Avernus (Bay of Pozzuoli) and Ostia.⁶

The route taken by the canal across most of the island is clearly visible in our survey results and seems to have been influenced by local topographic factors in two respects. First, its course in relation to the geomorphological evidence suggests that it followed the general direction of the earlier coastal deposits, perhaps because there were undulations in

the ground surface. Second, in the stretch between the '*Fossa Traiana*' and the road connecting the via Flavia with the *statio marmorum*, it appears to have turned slightly to the north-east in order to respect the alignment of existing property boundaries. The survey results show that it then ran south more or less parallel with the via Flavia, slightly converging with it as it approached the southern part of the island. While the evidence for its exact course henceforth is ambiguous, its likely route can be traced on aerial photos (Figs 4.75 and 6.3), which suggest that it may have turned to the west and that the later second-century ships excavated in 2011–15 (G52, pp. 139–45) lay within the confines of the canal. There are no firm indications as to the route or extent of the canal beyond this. One possibility is that it continued southwards to join the river Tiber, while a second is that it turned westward and flowed into the Tiber close to its mouth, and a third is that it emptied directly into the sea to the north of this.

None of these possibilities is unproblematic on current evidence. A route that continued directly southwards to the Tiber would have allowed traffic using the canal to reach Ostia at a point directly opposite the riverine harbour beside the 'Palazzo Imperiale', an existing facility that had been embellished with a temple and so-called *navalia* in the second quarter of the first century AD (Vöt *et al.* 2020). Such a connection could also explain why the warehouses along the river on the southern side of the Isola Sacra do not continue west up to the line of the via Flavia as might be expected. The results of geoarchaeological research suggest that the riverine harbour was only 1.2m deep by the middle of the first century AD (Vöt *et al.* 2020; see also Goiran *et al.* 2014: 395). This would have meant that the water column would have been too shallow to take any but the smallest river boats. This research also suggests that the harbour continued in use until c. AD 355–63, long after the abandonment of the canal. In any event, currents created by the water flowing through the canal into the Tiber may have made it hazardous to use the harbour, and difficult to successfully manoeuvre boats coming up and down the canal, and up and down the Tiber. Furthermore, the additional water and sediment load delivered by the canal into the Tiber at this point could have worsened conditions for boats and ships in the stretch of river between the harbour and the river mouth to the west.

There would also have been challenges if one argues that the canal turned to the west and flowed directly into the sea. It would first have had to cut across the line of the via Flavia, presumably requiring the construction of a substantial bridge since the

road cannot have been diverted significantly from its course, as access to Ostia in the south was constrained (p. 151). While this is certainly not an impossibility, there is no evidence for it as yet. Upon reaching the sea, the canal would also have to have intersected with the coastal beach, and measures would have to have been taken to counter silting through long-shore drift from the mouth of the Tiber to the south. This leaves the third possibility, that the canal flowed into the Tiber a short distance to the east of its mouth, even though this will have made it even harder for ships to enter the river from the open sea than is generally accepted to have been the case (see for example Zevi 2005: 34).

The canal itself is exceptional in scale, varying in width from c. 90m in the broad northern stretch, where in one place there seems to have been an island within its channel (Area 6), narrowing to a more regular width of c. 60m, then c. 40m as we move south. This compares with the c. 35m width of the '*Fossa Traiana*' and *Canale Romano* to the east of Portus, or the c. 20–35m of the Claudian canal to the north of Portus (Keay *et al.* 2005: 272, 275–78). This, and the general lack of any evidence for raised embankments or major features alongside it, has implications for our understanding of how it may have functioned. Only in the very northern part of its course, in Area 5 (m5.1–m5.2 and m5.13/m6.1), are there major structures close to the canal, and while their functions are uncertain, the plans do not give any indication that they were used as warehouses connected to the canal. The geoarchaeological study of the canal presented in Chapter 5 suggests that there were two phases of lateral movement in the life of the canal, and that the lack of embankments allowed the course of the canal to shift. Indeed, this study suggests that the apparently exceptional width of the canal in its northern stretch may result from such a migration soon after it was cut (p. 137).

Whichever route it followed across the southern part of the island, it is clear that the canal was designed to link Portus to Ostia, and that it was conceived of as a continuation of the *Canale Romano*, although without the warehouses that lined the latter's course between the Tiber and the Temple of Portunus. This suggests that its function was primarily for transit rather than for offloading cargoes. Indeed, the geoarchaeological study of the canal in Chapter 5 indicates that its depth in the north varied between 2m in the north and 3.5m in its two main periods of use and was usable by ships of 70 and 150 tons respectively. At its southern end, by contrast, study of the sedimentary cores indicates a depth of 5m. This would have meant that it was usable by ships of all sizes, although the Isola Sacra

1 and 2 shipwrecks suggest that it was used by small boats of the *horeia* type, common in harbour environments (pp. 139–45). Within the context of the broader system of waterways, this arrangement would have allowed harbour traffic a second route, parallel with the Tiber, thus significantly increasing the capacity to move goods between Portus and Ostia, and potentially permitting a one-way system of circulation to have operated. The width of the northern stretch of the canal perhaps implies that it played additional roles, which may have included not only the manoeuvring and turning of river craft, but also for temporary mooring and for holding them when they were not in use. This function will have been important in a busy canal but would have been difficult to achieve for large numbers of vessels on a regular width of canal or in the Tiber without impeding navigation. Additionally, an extensive holding area may have been necessary for the larger incoming sea-going vessels like the *naves lapidariae* that were waiting to unload their marble cargoes at the *statio marmorum* further east along the 'Fossa Traiana'. Last, but not least, the geoarchaeological evidence presented in Chapter 5 makes it very likely that during periods of flood, the canal would have served to help channel water and away from the bridgehead settlement on the Isola Sacra, in the direction of the sea to the south-west.

The position of the new canal conditioned the topography of the Isola Sacra for the remainder of the high imperial period. We have little precise evidence either for the dating of structures on the Isola Sacra or for the continued use of the canal system, although the abandonment of boats within the canal sometime before the early third century might imply that its use was of limited duration (p. 139). The existence of what might have been a 'ship graveyard' at this crucial location is an argument that the canal was either not in use, or that dredging was ceasing to be effective. Whether or not it remained in full operation, it remained as a significant landscape feature in subsequent centuries, and the survey only recorded a couple of later features cutting across it (**m 5.10**, **m8.28** and **m8.29**), neither of which is dated.

Activity in the High–Late Empire

A considerable amount of activity was recorded across the landscape of the Isola Sacra in our survey and in past archaeological interventions (see Gazetteer). While the chronological evidence for this is limited, it shows that most of it took place in the period after the development of the Trajanic harbour, with its floruit likely to have occurred between the mid second and early third century AD, a period that coincides with the main periods of building activity at both Portus and

Ostia. It is worth summarizing the evidence from the different parts of the Isola Sacra separately (Fig. 6.5).

The northern bridgehead settlement

Our survey adds comparatively little to what was already known of the settlement in the area on either side of the via Flavia to the south of the *Ponte di Matidia* (**G2**) on the northern side of the island. There was evidently a significant residential area here as well as warehousing, baths and the so-called *Isaeum* (**G7**). This bridgehead settlement is best understood as a gateway community at a key transport hub between the imperial enclave of Portus and the Isola Sacra. As such, its infrastructure may have facilitated the collection of tolls and storage of some goods, as well as offering a range of services, such as baths and shrines, to travellers and marble workers based at the *statio marmorum*.⁷ The limited dating evidence from past excavations shows that this settlement began occupation in the first half of the second century AD and continued to flourish well into the Late Antique period. For example, the substantial *Basilica di S. Ippolito* (**G14**) was constructed in the fourth century AD and continued in use into the middle ages and beyond, while there was also intensive activity at the so-called *Isaeum* (**G7**) and continued use of the *Terme di Matidia* (**G12**) down to the sixth century. This would be consistent with the epigraphically attested restorations of the bridge (**G2**), and intensive activity in the area around the *Episcopio* at Portus on the north side of the 'Fossa Traiana'.

The survey results provide us with a clear impression of the extent of this settlement, which lined the southern bank of the 'Fossa Traiana' from the coast in the west as far as the newly discovered Portus to Ostia Canal in the east, where we have revealed evidence for the existence of major buildings. To the east of this there are few signs of building, and we infer from this that the whole expanse of ground from here to the Capo Due Rami south of the 'Fossa Traiana' was used for the marble yards of the *statio marmorum*, which had already been established under the Flavians and which continued in use until at least the late second or early third century (Pensabene 1994: 17–18), with the likelihood of prolonged use into the fifth century AD (Pensabene 2007: 389–430).

The cemeteries

The southern limit of this settlement area is now more clearly seen as having been defined by cemeteries that included monumental *mausolea*. These extend in an east–west band along the line of the present via Redipuglia, continuing up to the major excavated burial area beside the via Flavia. The evidence from the cemeteries that define the southern side of the *Ponte*



Figure 6.5. Plan of Isola Sacra in the High Empire. (Drawing: Kristian Strutt.)

di Matidia bridgehead is less good, but there is nothing to indicate activity before the second century AD, and there is Late Antique evidence from only one area (G30). By contrast, the *Necropoli di Porto* (G35) roadside cemetery seems to have its origins in the Flavian period, although its monumental *mausolea* are mostly second–third century in date.

Beyond these cemeteries, in the south of the island there are further burials along the line of the *via Flavia* and to the east of the *Portus to Ostia Canal* (G39–G40), although our survey has not added significantly to our knowledge of them. It is notable that they are largely characterised by areas of flat cemetery, without the structural remains that one might expect to show up in the results of a magnetometer survey. One possible exception is the complex of buildings in Area 30 (m30.5 and adjacent features), the plan of which resembles a *mausoleum*, and which lies only a short distance from G40, whilst a structure in Area 20 is also perhaps a substantial *mausoleum* (m20.1–m20.4). It should also be noted that none of the tombs in this zone lie close to the settlement on the southern side of the island (p. 160).

The survey has also identified a series of structures along the Tiber bank on the eastern side of the *Isola Sacra* (Area 16, m16.29–m16.31; Area 17, m17.5–m17.6; Area 25, m25.15–m25.16; and perhaps Area 27, m27.5 and m27.5) which appear similar to the *mausolea* recorded in the *Portus* survey a little further upstream (Keay *et al.* 2005: 134, 281, 290, fig. 5.5). Unlike these, where ploughing revealed evidence of their funerary function, the identification of those on the *Isola Sacra* as *mausolea* is more speculative. The juxtaposition of some of them to the eastern edge of the *statio marmorum* (Area 16) might be seen to be problematic. All the identified buildings along the river frontage are similar in form, however, suggesting that they shared a common function, which leads us to conclude that those in Area 16 are unlikely to have formed part of the infrastructure of the *statio marmorum*. Whilst it is possible that its function may have inhibited the construction of tombs nearby, this is perhaps unlikely, especially as *mausolea* were commonly interspersed with other activities on the routes approaching major towns. It may also be noted that the possible *mausoleum* noted above (Area 20, m20.1–m20.4) lies in an analogous position on the western bank of the *Portus to Ostia Canal*. If these structures can be identified as funerary monuments, they add a further dimension to the rich funerary landscape of the *Isola Sacra*, namely that major tombs were deliberately placed along the banks of waterways in the same way as they were located along the *via Flavia*, the *via Portuensis* and the *via Ostiensis*, and major roads more generally. A

comparable example, dated to the Republican period, is known from the Tiber bank close to *Ponte Galeria* (Serlorenzi *et al.* 2004: fig. 28). Further afield, a good parallel for this practice would be the *Westenekropole* of early Imperial Ephesus, which is situated along either side of the canal running between the inner harbour and the sea (Steskal 2013).

The large number and high quality of many of the burial structures on the *Isola Sacra* raises the question of where the dead had lived. The most obvious answer would be the bridgehead settlement on the south side of the ‘*Fossa Traiana*’. However, this does not cover a very large area, and while it was able to boast several public buildings, such as the *Terme di Matidia* (G12) and the so-called *Isaeum* (G7), we lack evidence for *domus* or other forms of housing. Indeed, this is also symptomatic of the situation at *Portus*, where the general absence of evidence for residential occupation suggests that many workers must have travelled to the harbour, most likely from *Ostia*, which had a substantial population (Keay forthcoming 2020).

In this context, one might argue that those *mausolea* close to the northern bridgehead settlement served that community, or *Portus* to the north with the burials lying further south along the *via Flavia*, or along the banks of the Tiber, by contrast serving the community at *Ostia*. However, such ideas of spatial segregation seem over simplistic given the social complexity and mixed populations of *Ostia* and *Portus*. The funerary inscriptions from the *Necropoli di Porto* (G35) mostly commemorate freedman and their descendants, but include a few individuals who had carried out public activities at both *Portus* and *Ostia* (Helittula 2007: 5 and 253), and the choice of burial ground is likely to have been a matter determined by a variety of social, economic and religious factors, not simply where a person had lived or worked. As there was a series of elaborate cemeteries with monumental burials surrounding *Ostia* (see for example Heinzelmann 2000), the *Isola Sacra* cemeteries fit well within its landscape.

Important information about the population buried on the *Isola Sacra* is also provided by the pioneering stable isotope studies of a sample of the burials from the 1990s excavations at the *Necropoli di Porto* (G35). This work showed that the diet of those buried included both terrestrial and marine food, although dominated by the former. Interestingly, the marine contribution derived from higher trophic level organisms, seemingly related to the consumption of fish rather than *garum* or shellfish (Prowse *et al.* 2004: 270). This might imply that the population was from a group of comparatively high social status individuals, as may be supported by the evidence that children did not have the same access to this diet (Prowse *et al.*

2005: 11). Although the published data do not make it possible to situate specific burials on the published plans, it is clear that those sampled derive from the simple unmarked graves (the ‘campo di poveri’) between the *mausolea* (cf. Olivanti and Spanu 2019: fig. 5), rather than coming from these monuments themselves. Since the inscriptions upon which our understanding of the social make-up of the population in this cemetery is based come from the *mausolea*, relating the two sets of evidence is very difficult. The dietary evidence itself is difficult to interpret and it is notable that a comparable diet is attested in the analysis of a population of possible labourers from Portus (O’Connell *et al.* 2019: 728, 731–32). Interestingly, a comparatively high proportion of the sampled Isola Sacra population seem to have been engaged in fishing and harbour-related work as shown by the incidence of external auricular exostosis (Crowe *et al.* 2010: 361–63). The evidence overall therefore suggests that the population buried on the Isola Sacra was of a diverse social make-up.

The southern settlement

Towards the southern part of the Isola Sacra (Areas 28–30), the archaeological evidence is partly masked by deposits probably related to post-Roman flooding. This means that the smaller archaeological features are not visible in the results of the survey, and we should not exclude the possibility that there were extensive open cemeteries with unmarked graves here as well

as further north. The evidence that is revealed by the survey shows a series of linear boundaries that run parallel with the defensive wall that defines the northern side of the warehouses that line the southern side of the Isola Sacra. This important complex of buildings is limited to an area lying to the east of the possible line of the canal (pp. 155–57), and significantly does not extend as far as the via Flavia in the west. It must also be understood as a continuation westward of the area of buildings that occupied the spit of land within the Fiume Morto that was separated from the rest of the Isola Sacra when the river changed its course in 1557 (Fig. 2.11; Pellegrino *et al.* 1995). As such, it is reasonable to think of this area as an integral part of the northern townscape of Ostia, or the *Trastevere Ostiense* to use the term previously coined (Pellegrino *et al.* 1995).⁸

Looking first at the area enclosed between the defensive wall and the present course of the Tiber, the survey produced evidence for a series of five principal buildings, some only fragmentary, all but one apparently being warehouses. For the sake of clarity, we refer to these as Buildings 1–5 (Table 6.1). From the west, the first and most completely understood is Building 1, a courtyard warehouse *c.* 100m wide and more than 100m long (Fig. 6.6). It appears to comprise a range of storerooms facing onto a portico that surrounded a courtyard; the plan of its southern range is uncertain (although it was seen in excavations in 1968

Table 6.1. *Buildings within the southern settlement.*

	Gazetteer reference and dating	Geophysical survey anomalies	Figures	Interpretation and size
Building 1	G41 (possibly first century AD)	Area 33: m33.19–m33.24; m33.33–m33.37	4.67–4.68; 6.6	Warehouse (100 m x 100+ m) minimum 10,000m ²
Building 2		Area 33, m33.25–m33.28	4.67–4.68; 6.6	Warehouse (60+ m x 25+ m) minimum 1500m ² . <i>Probably to be reconstructed as rectangular, 100m by 100m = 10,000m²</i>
Building 3	G42 (2nd century AD)	Area 32, m32.8–m32.9; m32.10–m32.12; m32.38–m32.43	4.65–4.66; 6.6	Warehouse (110 m x 100+ m) minimum 11,000m ²
Building 4		Area 32, m32.21–m32.23; m32.37	4.65–4.66; 6.6	Warehouse? (60+ m x 30+ m) minimum 1800m ² . <i>Probably to be reconstructed as rectangular so 60m by 60m = 3600m²</i>
Building 5	G44, G45	Area 32, m32.29–m32.35	4.65–4.66; 6.6	Uncertain (90m by 60+ m) minimum 5400m ²
Total: Minimum area Probable area				29,700m ² 40,000m ²

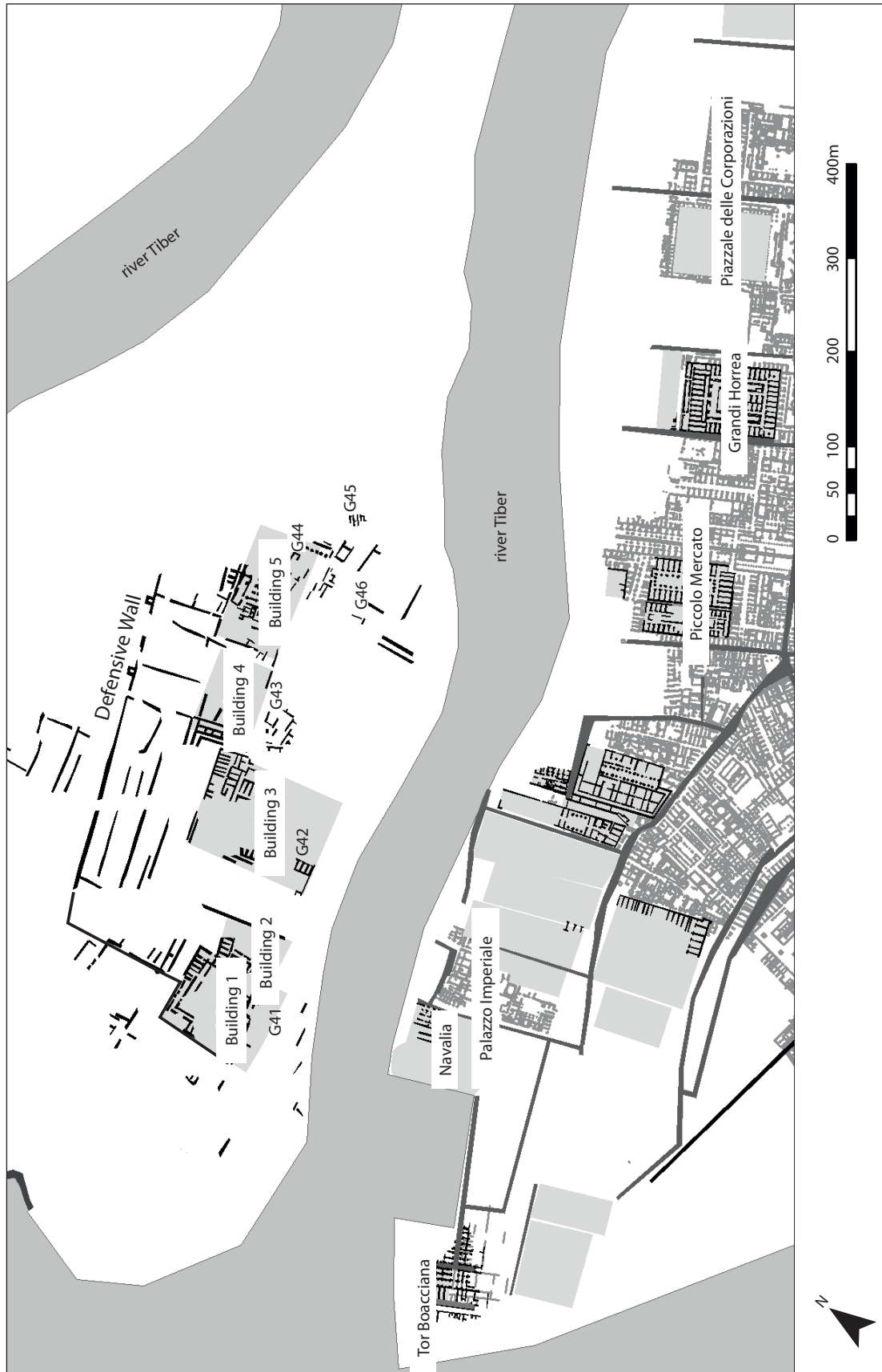


Figure 6.6. Detailed plan of the southern area showing the principal buildings. (Drawing: Kristian Strutt.)

(G41)), but there may have been a second courtyard towards the river frontage. The form of this building bears similarities to the layout of the *Grandi Horrea* (Boetto *et al.* 2016: 189–202) and the *Piccolo Mercato* at Ostia, supporting its identification as an *horreum*, although the latter is smaller in size (Rickman 1971: 24–30). Adjoining this building to the east, and sharing a common boundary with it, is Building 2 a further courtyard building, with storerooms similarly opening onto a portico (Fig. 6.6). The western range extends for at least 60m, whilst the northern range that lies at an obtuse angle can be traced for about 25m. This is almost certainly a further courtyard *horreum*. There is a gap in our survey data to the east of this building, with enough space to contain a further *horreum* of similar size. To its east Building 3 is complex and not so well understood. It apparently represented ranges of storerooms facing on to a central courtyard, but in the north-eastern corner the plan may suggest a more complex layout, or different phases of building (Fig. 6.6). Part of the southern end of its western range was excavated in the 1960s (G42), providing evidence for a second-century construction date and an early third-century refurbishment.

The plan of Building 4 is also uncertain (Fig. 6.6), as only an L-shaped part of its plan was recorded in our survey. It is rather different in layout, with rooms of different proportions only visible in its eastern range which is flanked by corridors on both sides. It is perhaps a warehouse but may have had a different function, as there are no clear parallels amongst those excavated at Ostia. Finally, closest to the Tiber at the south-eastern margin of the island there is a further large structure (Building 5) on the same alignment and again set back from the river to the south (Fig. 6.6). This is different in form, c. 90m wide and at least 60m deep, divided into two by a north–south wall with rooms along its western side. The area to the east contains a grid of massive and regularly spaced piers c. 6m across and c. 8m apart. The function of the building (which was sampled in excavation in the 1960s (G44)) is uncertain, although it seems likely that the piers supported a substantial superstructure. Furthermore, in understanding the nature of this building, we may also note that mosaics are recorded immediately to the south and east of the limit of the survey (G45 and G46) and probably formed part of this building. A possible parallel for this complex lies in what appears to be a large public building lying immediately adjacent to the *Terme di Porta Marina*, close to the seafront in Regio IV; this is visible on a Google Earth image of 29/7/2007 and incorporates a large rectangular enclosure with similar rows of pier bases. There is also a series of less well-understood buildings running along the southern

limit of the survey closer to the Tiber just to the southwest (Area 32, m32.25–m32.26). These walls lie on a different alignment to the other buildings detected in the survey nearby and include the *opus reticulatum* structure dated to the earlier first century AD in the 1968 excavations (G43).

The broader implications of these buildings for our understanding of Ostia and Portus are considered further below (Chapter 7). Here it is worth summarizing the limited chronological evidence available. As noted above, there is little recorded activity in this area dating to before the later first century AD, and the relatively ‘quiet’ background to the geophysical survey results suggest that the structures away from the Tiber frontage were not preceded by earlier buildings. In terms of the buildings themselves, the nature of the survey evidence means that none of them are *per se* dateable, and their chronology can only be gauged in very approximate terms. The plan of Building 1 is comparable to that of the *Grandi Horrea* at Ostia, initially constructed in the first quarter of the first century BC and with a major phase of transformation at the end of the second century AD (Boetto *et al.* 2016: 189–97; see also Coarelli 1994: 40–42; Calza 1921: 360–83) and has similarities with the layout of the *Piccolo Mercato* dated to between AD 119–20. The latter date is supported by the limited excavated evidence, although we may observe that the dated structures all lay to the south of the main area of the survey, and it is possible that development only took place away from the river frontage at a slightly later date. A tentative date in the first century AD was suggested for the structures excavated here in 1968 which probably belong to Building 1 (G41). Furthermore, the construction technique of the walls found to the south of Building 3, was dated to the second century AD (G42). The orientation of the buildings is varied, suggesting that they were laid out in relationship to the natural topography determined by the Tiber rather than any planned grid. As such, this provides little help in dating the development of this area.

Overall, this limited evidence points to a date rather later than the initial development of Ostia between the late fourth and first centuries BC. It suggests that buildings on the river frontage were begun during the first century AD, perhaps only extending further north somewhat later. The construction of these warehouses could perhaps be related to the building of the temple and so-called *navalia* complex adjacent to the west of the ‘*Palazzo Imperiale*’ on the opposite bank of the Tiber (Heinzelmann and Martin 2002; Vöt *et al.* 2020) in the second quarter of the first century AD. This project could be understood in the context of the development of fluvial installations along the Tiber up

to the Fiume Morto more generally (Hadler *et al.* 2019). Excavations in 1957 on the west bank of the Tiber at the northward curve of the meander uncovered parts of two sides of a large (c. 150m by 50m) complex of storerooms belonging to warehouses, known as the *Magazzini Aldobrandini* (Fig. 2.11, b). These seem to have been constructed in the second half of the first century AD, and to have had a complex sequence of development (Arnoldus-Huyzendveld and Paroli 1995; Pannuzi *et al.* 2020 In Press). Other likely warehouses have been found on the east bank of the river at the easternmost point of the meander at Il Casalone (Paroli 2004: 257), dated to the first century AD (Fig. 2.11, e), as well as commercial and residential structures in the area of early to late imperial date near the via Ducati and the via delle Saline (Fig. 2.11, g; Pannuzi *et al.* 2006; Pannuzi *et al.* 2013).⁹

The stretch of the defensive wall that runs along the northern side of the warehouses in this area has profound implications for our understanding of the topography of Ostia as a whole. Its chronology is not obvious, although there are clues in its relationship to the westernmost warehouse and the field-system lying further north (Chapter 4, Area 33). First, it appears that the defensive wall respects the orientation of the latter, suggesting that it was constructed either at the same time as, or subsequent to the establishment of this system, which we have argued was in the later first century AD. This would seem to rule out the idea that the walls represent a northward continuation of the circuit known from east and southern sides of Ostia, which has been dated to 63–58 BC (Zevi 1998). Secondly, at the western end of their course, the walls turn sharply southwards in the direction of the northern wall of Building 1, although the results are not sufficiently clear so as to be sure that the walls directly abutted it. This would suggest one of two possibilities. Either they preceded the construction of the warehouse and were cut by its northern wall when it was constructed in the first or second century AD, or that they were built at some date after the construction of the warehouse and incorporated its standing walls into the defensive circuit. Since the geophysical survey results close to the point of junction are not entirely clear, this relationship is an issue that can only be resolved by excavation. The existence of a very strong magnetic anomaly running down the western side of Building 1, however, might be an argument in support of the latter possibility.

The character of the defensive wall provides us with another clue. It is c. 3–5m wide, with square external towers (c. 6m by 8m) that were located on straight stretches of wall and faced out northwards. This arrangement contrasts with the walls on the eastern

and southern sides of Ostia, even though published evidence is admittedly slim. These had a thickness of c. 2.5m, while its towers were circular, less frequent than on the Isola Sacra wall, and were situated at internal angles rather than on straight stretches (Calza 1953: 79–88). However, a recent aerial photograph shows evidence for a single external square tower, although it is unclear whether or not this was a later addition to the original scheme.¹⁰

The defensive wall was clearly designed to protect the warehouse facilities by hindering approaches to them from the north. It is still unclear, however, how far it extended to the west. It may have stopped close to the Building 1 located in our survey, but in any case, could not have extended further if the line of the southern stretch of the Portus to Ostia Canal joined the Tiber here, an issue that is discussed above. Indeed, in this scenario, the defensive wall may have been sited to run to a point just to the east of the canal. Its path to the east is also unknown, but it perhaps continued beyond the present course of the Tiber, and it may be significant that it was roughly aligned with the northern edge of the spit of land to the east which was cut off when the river changed its course in 1557. If so, it suggests that the defensive wall may have originally joined the river frontage here.

The geophysical results show that there was one series of substantial walls that run parallel with it to the south, enclosed within the defences (Figs 4.63–4.66; Area 31, **m31.5**; Area 32, **m32.5–m32.7**, **m32.13–m32.14**, **m32.36–m32.37**), and another further to the east that run perpendicular to them (Area 32, **m32.17**, **m32.18**, **m32.20**). There are two possible interpretations of these. One is that they pre-dated the construction of the defences and that they represent storage compounds of some sort behind the warehouses, perhaps for timber, which were subsequently demolished. The presence of similar features outside the wall to the north (Area 31, **m31.14**) would support this argument. Another possibility is that there was originally a large open space to the north of the warehouses, and that after the construction of the defences, this could have protected the free movement of people and cargoes between the warehouses and the river frontage, only subsequently being sub-divided into different kinds of enclosures for storage.

In the light of current knowledge, dating these defences is challenging. Our evidence would suggest that they dated to sometime after the first–second century AD. However, there does not seem to be any obvious context for their construction in the early Imperial period, implying that they probably date to the Late Antique period. This conclusion would be supported by their typological similarity to the

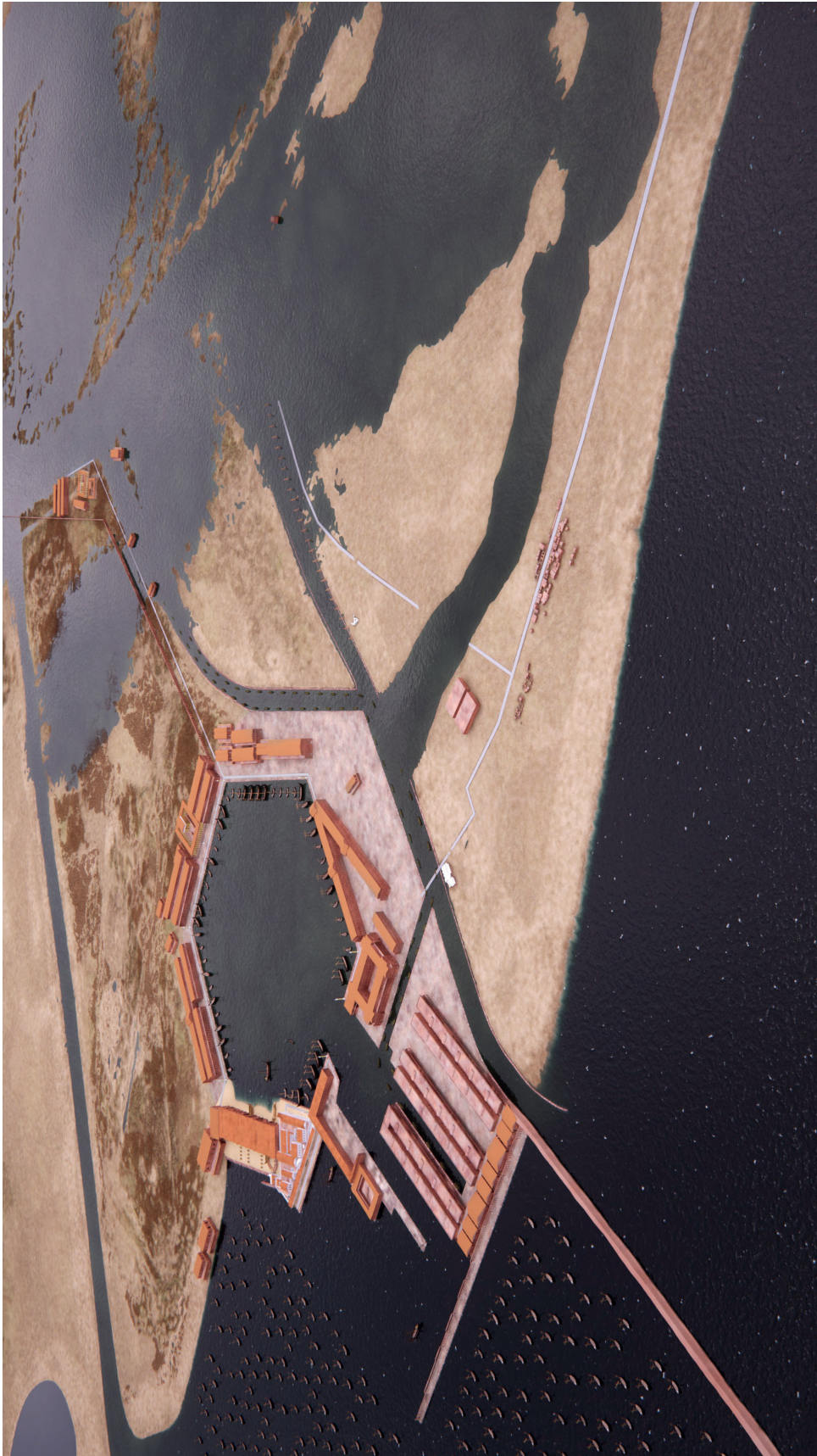


Figure 6.7. Reconstruction image showing the canals on the south side of Portus and the north side of the Isola Sacra with the Tiber in flood. (Image: Grant Cox, *Artas Media/Portus Project*.)

stretch of Late Antique wall at Portus known as the *Contramura Interna* and which included the *Arco di Santa Maria* (Keay *et al.* 2005: 106–12; 284; 291–93). This deployed exterior-facing square towers (c. 7m by 8m) and forms part of the more extensive Late Antique defensive circuit which has been dated to c. AD 480 by excavations at the *Antemurale* (Paroli and Ricci 2011: 140). If the walls do indeed prove to be of this date, they raise interesting new questions about Late Antique Ostia (Pavolini 2019: 67–71). As Pavolini has recently argued, the city had lost much of its vigour as early as the early third century AD, was largely occupied by large private mansions with limited evidence for the maintenance of commercial infrastructure by the early fifth century AD, and was effectively abandoned by the mid fifth century (Pavolini 2016b). It should also be observed that Procopius, writing about events ninety years later in c. AD 570, notes that Ostia was ‘without walls’ (*History of the Wars* V.26.9).

Notes

- 1 This chapter and the next builds on previously published discussions based on our interim interpretations of the geophysical survey results (Germoni *et al.* 2011; 2019; Keay forthcoming 2020). The data and interpretations in this chapter supersede those in these earlier papers.
- 2 Meiggs quotes this text as from Aethicus Ister, following a nineteenth-century misattribution.
- 3 But see now the broader critique of work on *centuriation* by Terrenato (2019: 226–29).
- 4 Rougier (2015) provides some useful reflections on the general theme of seasonal activity at Roman Mediterranean ports.
- 5 It is argued elsewhere (Keay Forthcoming 2021) that the Portus to Ostia Canal can be understood as forming part of an integrated programme of engineering, comprising the *Canale Romano* and the hexagonal basin that was begun under Trajan and completed by Hadrian in the early 130s.
- 6 This possibility was suggested by Felici 2016: 219–23; see also the broader context: 224–45.
- 7 The river port at the junction of the *Canale Romano* and the Tiber (Keay *et al.* 2005: 281 and fig. 5.66) may have fulfilled a similar role.
- 8 It may be noted that an unpublished plan of Heinzelmann’s survey (dated December 2003) shows a series of buildings on the southern side of the Isola Sacra, extending as far as the via Flavia. These are reported to have been plotted from aerial photographs. We have not been able to verify this evidence, some of which seems to be at variance with the results of our geophysical survey.
- 9 The so-called *Molo Repubblicano* of late Republican date on the east side of Tiber at the easternmost point of the meander shows that commercial development began earlier here (Arnoldus-Huyzendveld and Paroli 1995; Pannuzi *et al.* 2020 In Press).
- 10 We would like to thank Dr Carlo Rosa for this information.

The Isola Sacra Survey

The Isola Sacra occupies the land between Ostia and Portus at the mouth of the Tiber, and thus lies at the centre of the massive port complex that served Imperial Rome. This volume focuses on the results of a survey of the island completed as part of the Portus Project, complementing the previously published survey of Portus (2005) and the forthcoming publication of the German Archaeological Institute's survey of Ostia. The survey is framed by an analysis of the geomorphology of the delta, and integrated with information from past excavations. It is complemented by a programme of geoarchaeological coring and a short account of the ships excavated on the Isola Sacra in 2011.

The results make an important contribution to the understanding of the landscape of both Portus and Ostia, offering new information about the development of the delta, and the changing use of the Isola Sacra. They also provide evidence for the buildings along Isola Sacra's northern shore and the cemeteries that flank this settlement and the via Flavia (which runs between Portus and Ostia across the centre of the island). Most significantly, three completely new sets of features were revealed: a major canal that ran north–south across the island; a system of land divisions, which created blocks of fields; and a suburb of Ostia on the island's southern flank. These results are key for understanding the development of the Portus–Ostia complex, and hence the economy of the City of Rome itself.

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