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FESTSCHRIFT FÜR BARBARA PFERDEHIRT

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AN EFFICIENT COMMUNICATION NETWORK: ROMAN LAND, SEA AND RIVER ROUTES IN NORTH-WESTERN ETRURIA

ANCIENT HISTORY MATTERS: THE ROMANISATION PROCESS IN NORTH-WESTERN ETRURIA

The territory under study is the northern Etruscan coastal district extending from the Magra to the Cecina rivers (today eastern Liguria and north-western Tuscany). It includes the Magra, Serchio, Arno, Fine and Cecina rivers lower valleys, plus the Lucca and Bientina plains in the hinterland (**figs 1-3**). Integrated researches provide diachronic evidence of palaeo-environmental changes, water management practices and risk management, evolution in settlement patterns, rural and urban landscapes, manufacturing activities in significant areas of the studied territory[1].

Two cities, Pisa (Pisae) and Volterra (Velathri, Volaterrae) dominated north-western Etruria from the 6th to the early 2nd century BC. Their territories extended along the coast respectively from the Magra to the Fine rivers and from the Fine river to Bolgheri and included large hinterlands (**figs 1. 3**).

In the early decades of the 3rd century BC Rome enlarged its power in this district. The *Volaterrani* were first defeated near Volterra in 298 BC (Liv. 12.3.8) and later with other Etruscan *populi* near Lake Vadimo in 283 BC. Presumably shortly after 283 BC Volterra signed a *foedus* with Rome. Around the same years Pisae became *civitas foederata* and in the second half of the 3rd century BC was a naval base for the Roman expeditions in Sardinia and southern Gaul (Pol. 2.27; 3.4.2; 3.56.5; cf. Liv. 21.39). In 252/241 BC, following the Roman conquest of Etruria, the coastal road *via Aurelia vetus* was constructed from Rome to Pisa[2].

In the early decades of the 2nd century BC the urban pattern of north-western Etruria changed: two new towns were built within the context of the Ligurian wars. In 180 BC Pisa granted part of its northern territory for the foundation of the Latin colony Luca (Lucca). In 177 BC, when the *Ligures* were finally defeated in north-western Tuscany, the Roman colony Luna (Luni) was created. Both territories were centuriated and assigned, as it was customary.

In the 2nd century BC Pisa played a relevant role as Roman military base during the wars against the *Ligures*; moreover, both the Luna (since 195 BC) and the Pisa port systems (see below) were strategic bases for the Roman expansion in the Western Mediterranean[3]. The northern Etruscan ports and efficient road network must have played an important role both in the army movements and in the related supplies[4].

In the same 2nd century BC the Roman road network in this district was implemented in order to provide a more effective connection between Rome and north-western Italy and between northern inner Etruria and Pisa: in the coastal strip the *via Aurelia nova* (2nd century BC) came alongside the *via Aurelia vetus*, while the *via Aemilia* (115-109 BC?) had an inner route to Luna and the Po valley; the *via Quinctia* was built along the

1 Mazzanti 1994; 2003. – Pasquinucci 2008. – Pasquinucci/Menchelli 2012a; 2012b. – Pasquinucci/Pranzini/Silenzi 2004. – Mariotti-Lippi et al. 2007. – Cherubini/Del Rio/Menchelli 2006.

2 Coarelli 1985-1987; 1988. – Ceccarelli Lemut/Pasquinucci 1991, 113.

3 Ducci/Pasquinucci/Genovesi 2011, 31 f. no. 13.

4 Erdkamp 1998, passim.
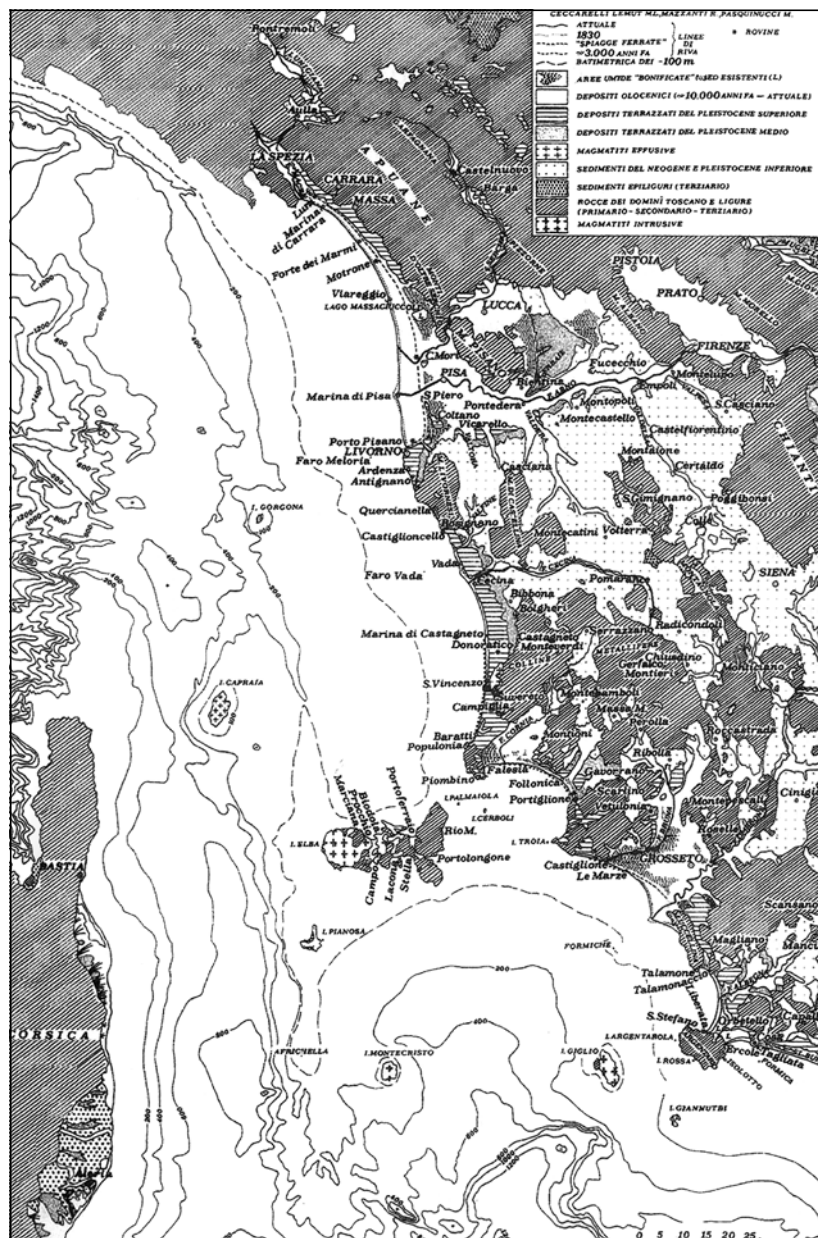
Fig. 1 Geomorphologic schematic map of north-western Tuscany. – (Map R. Mazzanti, Pisa).

left bank of the Arno in the second half of the 2nd century BC to link the *via Arretium-Bononia* with Pisa[5]. These roads were constructed on stable soils with attention to the local morphology and provided an efficient connection between the sea and river waterways and the hinterlands, which were characterised by a flourishing rural and manufacturing economy. The main road system was obviously integrated by a hierarchy of minor routes[6]. In the last decades of the 1st century BC the minor road network was implemented: between 42 (Battle of Philippi) and 31 BC (Battle of Actium), or shortly after Actium several veteran colonies were founded in northern Etruria and large areas were centuriated[7]. The *limites* linked the productive rural territories both with the local and with the sub-regional or extra-regional markets reached by roads and waterways.

[5] Ceccarelli Lemut/Pasquinucci 1991. – Fabiani 2006, with previous bibliography. – Dallai/Ponta/Shepherd 2006.

[6] On the interconnection of road systems, sea and riverine routes in Roman Italy, see in general Laurence 1999.

[7] Ciampoltrini 1981. – Keppie 1983.

In the Imperial and Late Roman periods commercial flows changed, but the north-western Etruria communication network was kept, despite environmental changes and poor road maintenance. Rutilius Namatianus, who sailed to Gaul from the Tiber mouth (Portus) in the early 5th century BC, describes the coastal roads as hazardous and hardly practicable, but these land routes are documented up to around AD 700 and beyond by *itineraria* (*Tabula Peutingeriana*, *Itinerarium Antonini*, *Ravennatis Anonymi Cosmographia*) and other written sources, milestones (2nd and 4th centuries) and in part by archaeological evidence including *stationes/mansiones*[8]. Restorations of the *via Aemilia* are proved by a milestone dated to AD 142[9]. In the early 5th century BC Rutilius Namatianus travelled from Portus Pisanus to Pisa by land route (*vehor Pisas via qua solet ire pedes*: Rut. Nam. 1, 559-561). Still in Late Antiquity both the Arno and the Auser river (an ancient branch of the Serchio) were busy waterways: Theodericus took actions against the fishermen who used to hamper navigation of both rivers by weirs (Cassiod. var. 5, 17, 6; 20, 3: referring to AD 523-526).
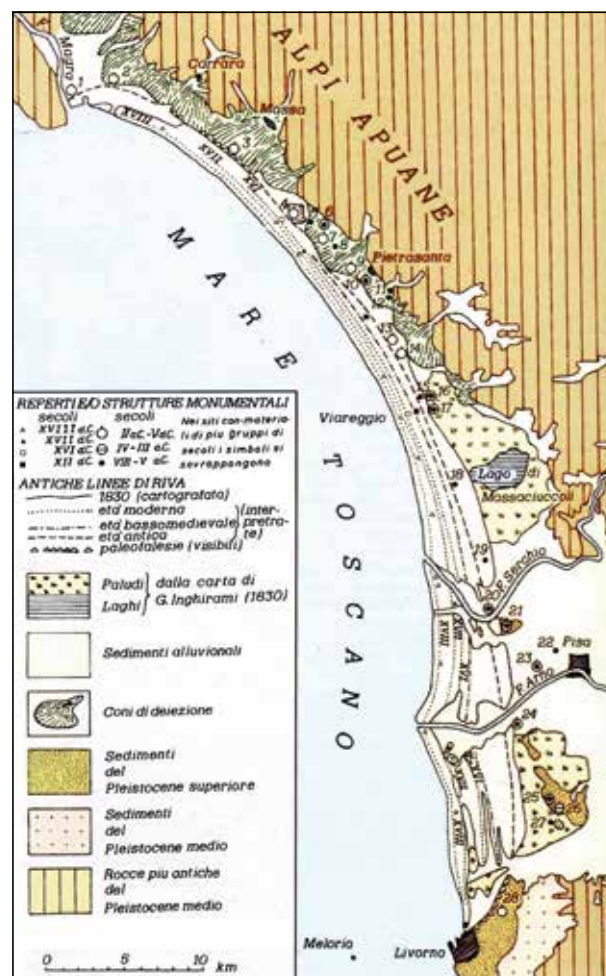
Fig. 2 The Luni-Livorno shoreline. – (After Mazzanti 2003).

PALAEOGEOGRAPHY, PORTS AND LANDING PLACES

The Magra to Cecina river coastal stretch is divided into three sections: the Luni-Livorno shoreline (characterised by a relevant progradation westwards from the 2nd-1st century BC up to about 1830); the Livorno terrace and the Livorno-Castiglioncello coastal strip (rocky and stable); and the Vada-Cecina shoreline (low and stable)[10] (**figs 1-2**).

The first section is about 63 km long, from the Magra river mouth (immediately west of the high and rocky Punta Bianca promontory) to the low and rocky Livorno terrace. The main rivers are the Magra in the North, the Serchio and the Arno in the South (**figs 1-3**). This coastline was almost stable from the 8th to the 2nd century BC, in coincidence with a cool and relatively damp climate phase dated to the 9th-3rd century BC. A warm phase (2rd century BC-4th century AD) followed, accompanied by increased rainfalls[11].

From the 2nd-1st century BC up to about 1830 this coastline prograded 7 km westwards, mostly in correspondence with the Arno mouth (**fig. 2**), as a result of a marked increase in alluvial sedimentation[12].

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8 Ceccarelli Lemut/Pasquinucci 1991. – Fabiani 2006.
9 CIL XI 2, 6664; Ceccarelli Lemut/Pasquinucci 1991, 115 f.
10 Pasquinucci/Menchelli 2012a.

11 Pinna 1996, 121-124. – Pasquinucci/Menchelli 2009. – Leveau 2008.
12 Pasquinucci et al. 2001. – Pasquinucci/Menchelli 2012a.
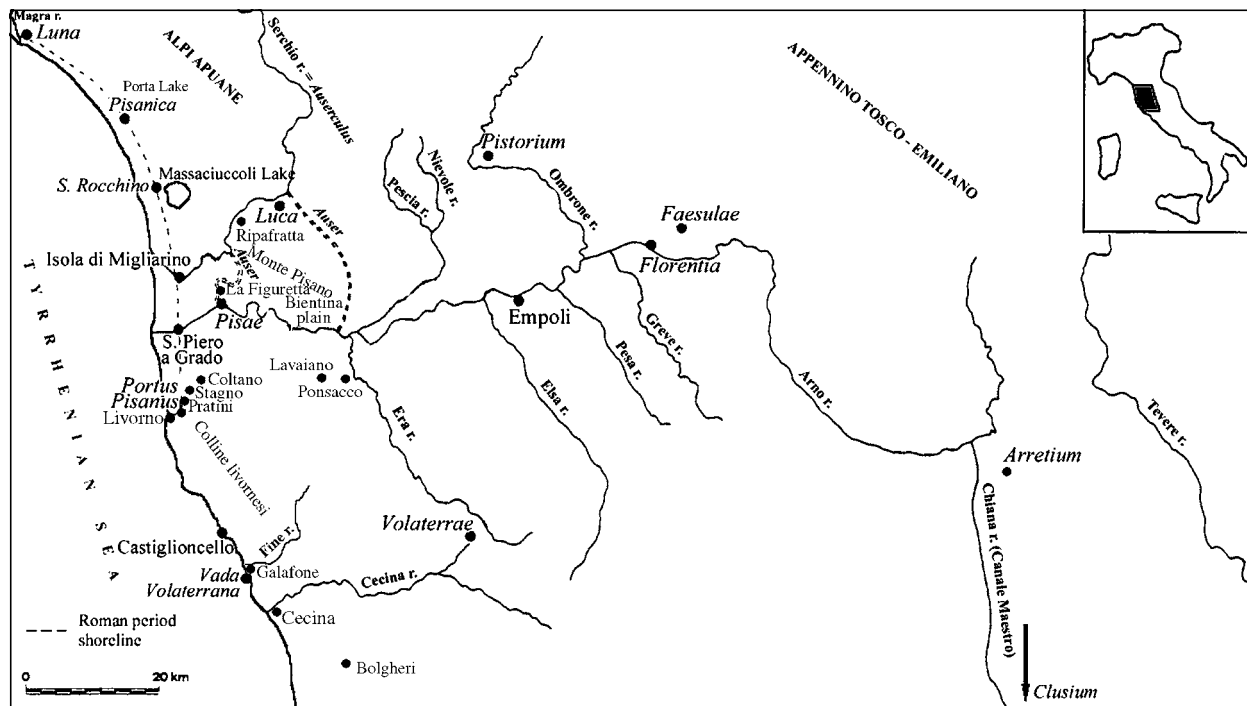
Fig. 3 Northern Etruria: sites and rivers quoted in the text. – (Map G. Picchi, Pisa).

In a period characterised both by sea level rising[13] and by the absence of drastic climatic changes, this relevant coastal progradation was due to anthropogenic factors. They are identified with the construction of new towns and rural settlements, deforestation and increased agricultural and manufacturing activities connected with the foundation of colonies in the early 2nd century BC (Luca/Lucca and Luna/Luni) and in the late 1st century BC (Triumviral/Augustan colonies at Luni, Lucca, Pisa, Volterra, Florence, Arezzo), in particular with the organisation of their territories (*centuriatio* and land allotments)[14].

The coastal progradation continued up to about 1830, when the Arno-Serchio river solid transports started being diverted from their destination to the sea into several swamp filling areas, within the framework of the systematic land reclamations pursued by the Lorena[15]. Around the end of the 19th century the erosion of the Arno delta began (**fig. 2**).

The continuous natural transformation of the littoral had a strong impact both on the ancient ports and landing places scattered along the Magra-Livorno coastline and on the ancient road construction and maintenance[16]. In our district the ancient sea ports were often located in coastal lagoons which underwent environmental changes depending on anthropic and natural factors over time[17]. Minor harbours and landing places were scattered near the river mouths, along the river banks, in the coastal lagoons and inland marshes. A variety of boats and ships (including river and harbour crafts) has to be postulated and is in part documented by Roman wrecks in the north-western periphery of modern Pisa[18]. The Luni plain underwent major landscape changes over the last 3000 years (**figs 4-5**). A geomorphologic and archaeological project is studying the palaeogeography of the area, where the coastline shifted southwards and westwards, and the long debated question of the Luna port(s) location[19]. Based on literary and archaeological evidence harbours and landing

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13 Lambeck et al. 2004. – Pasquinucci/Pranzini/Silenzi 2004.
14 Pasquinucci/Menchelli 2012a, with previous bibliography. – Grove/Rackham 2001, 337.
15 Barsanti/Rombai 1986, 47.
16 Ceccarelli Lemut/Pasquinucci 1991. – Fabiani 2006, passim.

17 Pasquinucci 2004. – Pasquinucci/Pranzini/Silenzi 2004. – Ducci/Pasquinucci/Genovesi 2011.
18 Camilli 2002; 2004; 2005; cf. Campbell 2012, 208 ff. 200 ff. on river navigation.
19 Durante 2001. – Bini et al. 2009a; 2009b. – Pasquinucci/Menchelli 2012a.

Fig. 4 Luni in its changing landscape. – (Photo courtesy of M. Bini, Pisa).
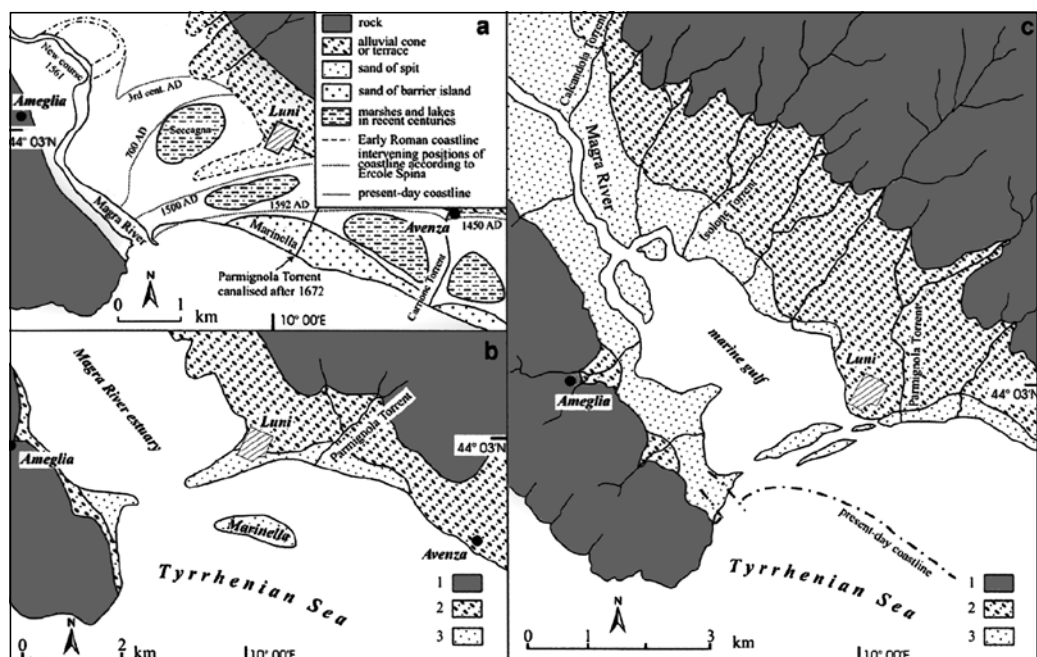
Fig. 5 Palaeogeographic scenarios of the Luni territory. – (After Bini et al. 2009b).

places at the Magra river mouth and in the Luna area were frequented long before the 2nd century BC. The foundation of the Roman colony Luna in 177 BC and the role the city played in the Mediterranean trade most likely involved the reorganisation of the port system, or at least part of it. Specific loading and shipping areas were needed, in particular from the mid/late 1st century BC to the 3rd century AD, when the Apuan

Fig. 6 Ports and landing places in the *agri Pisanus* and *Volaterranus*. – (Illustration S. Genovesi, Pisa).

marble quarries were intensively exploited and enormous quantities of marble were shipped to Rome and large parts of the Roman world[20].

In antiquity marshes and two swamps or at least one large lagoon later named Seccagna were on the left of the Magra estuary, in the north-western outskirts of Luna[21], but the location of the main Luna port is still debated. In the early 6th century AD the *Itinerarium Maritimum* quotes »*Luna, fluvius Macra*«, providing evidence that the Luna port was perceived in connection with the Magra river mouth.

South of Luni the Versilia plain encompassed among its coastal wetlands the Lake Porta (now silted up) and the Lake Massaciuccoli (**figs 1-2**), in Etruscan and Roman times probably still a lagoon. Archaeological research has identified several Etruscan and Roman landing places[22] which were certainly connected by a minor north-southern coastal road and linked through east-western byways to the main coastal road (*via Aurelia* since the mid-3rd century BC).

Farther south are the Serchio and the Arno coastal plains (**figs 1-3**): ancient landing places or ports of call were located near both river ancient mouths, at Isola di Migliarino (finds dated from the 4th century BC up to the 6th century AD[23]) and San Piero a Grado (finds from the 7th century BC up to the Middle Ages[24]) (**fig. 6**).

As for Pisa, in the late 7th-6th century BC the Etruscan town originated from a few settlements separated by major and minor streams, at the confluence of the Auser river into the Arno (Strab. 5.2.5; Plin. nat. 3.50; Rut. Nam. 1.566; Schol. Ptol. 3.1.4.), on the right bank of the latter. Pisa was 20 *stadia* far from the seacoast according to Strabo (5.2.5) and his sources (therefore in the late Republican-early Imperial period). The site was an important crossroad, where the north-southern Tyrrhenian coastal itinerary intersected the viability following the Arno and the Serchio river banks[25].

In Roman times the Pisa harbour network was based both on maritime and on river ports and landing places (**fig. 6**). It included the abovementioned Versilia sites and Isola di Migliarino north of the Arno mouth; San Piero a Grado near the Arno mouth; south of the Arno were the main Pisa port (Portus Pisanus after Late Roman sources), Castiglioncello and several minor landing places[26].

The Arno and the Serchio waterways connected the sea routes with the rural hinterlands depending on seasonal hazards, in particular the floods typical of the Mediterranean district caused by intense rainfalls[27]. The impressive coastal evolution affected the Pisae seaports and landing places, particularly the harbour which is named Portus Pisanus by the *Itinerarium Maritimum* (501) in the early 6th century (**figs 2-3. 6-7**).

Portus Pisanus was located south of the Arno mouth, north-north-east of modern Livorno, in a coastal lagoon communicating with the sea. Thanks to favourable geomorphologic peculiarities, this area was

20 Pensabene 2004. – Paribeni 2004, 488 f.

21 Bini et al. 2009a; 2009b.

22 Pasquinucci 2004, 61. 65. – Fabiani 2006, 25 f.

23 Ibidem 65.

24 Pasquinucci 2004, 69. – Camilli 2004, 72.

25 Pasquinucci/Menchelli 2008.

26 Pasquinucci 2004.

27 Pasquinucci/Menchelli 2003. – Campbell 2012, 202. 300.

Fig. 7 The Portus Pisanus area. – (After Mazzanti 1994).

frequented by ships at least since the late 7th/early 6th century BC up to the 6th century AD, as shown by palaeogeographic and archaeological researches[28]. Rescue excavations provided evidence that in the 4th-3rd century BC it was intensely frequented; moreover, stone blocks and posts were set up either to reinforce the shoreline or to provide a dock (**fig. 8**). Since the mid-2nd century BC the stretch of water was progressively and rapidly silted up by alternate sand and *Posidonia* layers; in the late 1st century BC activities connected with navigation could no longer be performed and were therefore shifted westwards. Ruined Roman buildings and a plenty of artefacts were still visible in the area in the mid-18th century[29]; *horrea* (mid-1st century BC-early 6th century AD) and a necropolis (1st-5th century) were recently excavated west of the Republican harbour[30]. In the early 5th century the port is described by Rutilius Namatianus as well sheltered (Rut. Nam. I, 559: »*puppibus meis fida in statione locatis*«), busy and rich (»*portum quem fama frequentat Pisarum emporio divitiisque maris*«).

Due to favourable location and characteristics, Portus Pisanus most likely was a centre for the movement of import/export goods; in particular, wares brought by seagoing ships could be stored here, then loaded on harbour and river crafts and transported to the Arno mouth and then upstream to Pisa and other sites. Local products (in particular wine) were shipped from the harbour[31]. As for the river landing places, just a few are identified, since the present courses of the Arno and the Serchio result from complex natural transformations and anthropic actions taken over the centuries, ranging from the straightening of river sections to the construction of embankments, dykes and canals[32].

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28 Pasquinucci 2004, 69ff. – Stefaniuk et al. 2007. – Ducci/Pasquinucci/Genovesi 2011.
29 Targioni Tozzetti 1768.
30 Ducci/Pasquinucci/Genovesi 2011, with previous bibliography.
31 Pasquinucci/Menchelli 2010. – Campbell 2012, 202.
32 Pasquinucci 2008; see Campbell 2012 for river navigation.

Fig. 8 The Portus Pisanus late Republican seabed. – (Photo S. Genovesi, Pisa).

A landing or docking place in the north-western outskirts of Pisa is documented by Roman structures (stone blocks and wooden poles) reinforcing the banks of a centuriation canal in an area where several boats and ships were sunken due to unexpected floods[33] (**fig. 6**). West of Pisa a river landing place has been identified on the right bank of the Arno at Campo (**fig. 6**).

South of Portus Pisanus the Pisae port system included several landing places scattered along the rocky coast of the Livorno promontory and Castiglioncello, a small Etruscan and Roman natural port[34] (**figs 1. 10**).

Between Portus Pisanus (Livorno) and the Cecina river mouth the main port was Vada Volaterrana (today Vada), in the low stable coast of the *ager Volaterranus* (**figs 1. 3. 6**). The toponym derives from large shoals (Latin *vadum/vada*) extending west of Vada and protecting a long coastal strip, in particular the area where the Etruscan and Roman settlement developed (**fig. 9**). Vada Volaterrana was the main harbour of Volaterrae in Etruscan and Roman times, located north of the ancient Cecina river mouth along the coastal road (*via Aurelia* since the 3rd century BC), 25 *milia* from Populonia and 18 *milia* from Portus Pisanus (*Itinerarium Maritimum*, 501)[35].

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33 Camilli 2004; 2005. – Benvenuti et al. 2006. – Mariotti-Lippi et al. 2006. – Martinelli/Pignatelli 2008.

34 Pasquinucci 2004, 73.

35 Pasquinucci 2004, 74. – Menchelli/Pasquinucci 2006. – Pasquinucci 2007.

Fig. 9 The shoals west of Vada Volaterrana. – (Map R. Mazzanti, Pisa).
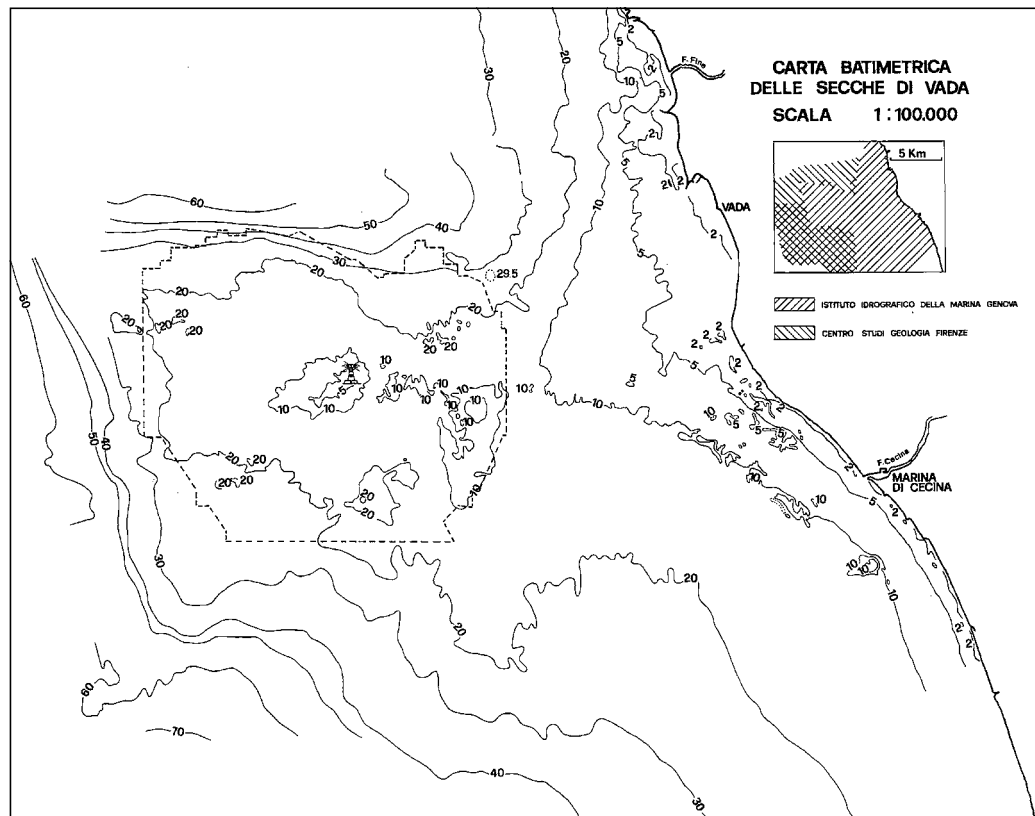
Based on geomorphologic data and the position of shipwrecks and other submarine findings, the harbour was situated in the water sheet in front of the modern town. In the early 5th century Rutilius Namatianus (1, 453 ff.) describes the narrow canal which provided access to the port, most likely across the large shoal system. A Roman quarter evidently located near the harbour includes *horrea*, two *thermae*, a *schola* and other buildings[36].

South of Vada at least one landing place is assumed near the Cecina river mouth, serving a large coastal *villa* dated 50/30 BC to the 5th century AD (and beyond) and the agricultural hinterland[37].

THE ROMAN ROAD NETWORK

The three main roads in the district were the *viae Aurelia*, *Aemilia* and *Quinctia*: evidence is provided by ancient literary and epigraphic sources, archaeological data, medieval documents, toponyms, geomorphologic and palaeogeographical data (**fig. 10**).

Running in the coastal strip, the *via Aurelia*[38] linked up Rome and the main northern Etruscan harbours (Vada Volaterrana, Portus Pisanus and Luna) and landing places either calling on them or by secondary roads. Between Vada Volaterrana and Portus Pisanus the ancient track corresponds in part with the present Strada Statale 1 Aurelia. North of Portus Pisanus the *via Aurelia* had a coastal route to the river port San Piero a Grado and reached Pisae running along the Arno ancient bank.

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36 Menchelli/Pasquinucci 2006. – Pasquinucci 2007.
37 Donati 2012.

38 Coarelli 1985-1987; 1988. – Ceccarelli Lemut/Pasquinucci 1991, 113. – Fabiani 2006.

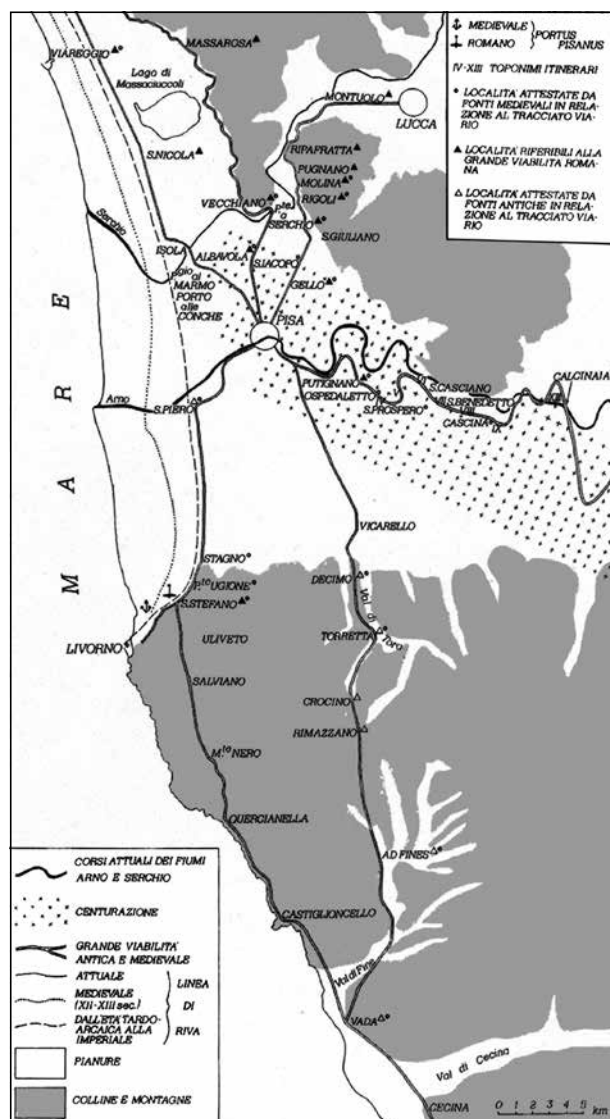**Fig. 10** The Roman roads in north-western Etruria. – (Map R. Mazzanti, Pisa).

Between Vada Volaterrana and Pisae the *via Aemilia*[39] ran along the inner hill foot strip, in the Fine and Tora river valleys; the countryside was settled by *villas* and farmsteads. The route is marked by a large *mansio* (Torretta Vecchia) and by milestones. This section roughly corresponds with the modern Strada Statale 206 Emilia.

A GIS has been implemented with data provided by archaeological surveys of the area and cost surface analyses (based on slope, altimetry and hydrography) have been applied to the Vada Volaterrana-Pisae track. The results confirm that the most convenient route included the sites linked with the road by archaeological, epigraphic, and medieval documentary evidence. Moreover, viewshed analyses prove that a few hillforts built on the Colline Livornesi had a very important strategic role concerning viability. In the 4th-3rd centuries BC these sites (Monte Carvoli, Poggio, Monte Pelato and others) belonged to the Pisa territory defensive system. They had an excellent view over large parts of the ancient route connecting Vada with Pisae through the Fine and the Tora river valleys which was later run by the *via Aemilia.* Most probably the Roman road replaced an itinerary largely used in previous times, as documented also by many small farmsteads dated 3rd-2nd century BC, discovered by archaeological surveys along this track[40].

The *via Aurelia* reached Pisae from south-west, the *via Aemilia* from south-east. No evidence of ancient bridges is known. North of the town both roads headed to Luni[41]. A section of a *via glarea strata* excavated near the Lake Porta provides the most important archaeological evidence of a Roman road in the coastal strip north of Pisae. Its roadbed is 14 *pedes* (4.20 m) wide[42].

The *via Quinctia* ran along the ancient left bank of the Arno, linking inner Etruria with Pisae and its ports and with the north-southern coastal routes. Archive researches provide evidence of the track: a very significant series of six Roman itinerary toponyms Quarto to Nono, plus Tredecim (**figs 10-11**) is documented by medieval deeds, mainly notarial records dated to the 9th-11th century[43]. Only three of these site names survive in the present toponymy (Badia a Sesto, San Benedetto a Settimo, San Frediano a Settimo).

The road did not run in the Pisa plain in strait line, as one would expect given the characteristics of the terrain[44]. Based on the location of the itinerary toponyms mentioned above, deriving from the Roman mile-

39 Ceccarrelli Lemut/Pasquinucci 1991, 116f.
40 Ceccarelli Lemut/Pasquinucci 1991, 116. 120. – Pasquinucci/Menchelli 2012b, 1008. – Iacopini et al. 2012.
41 Fabiani 2006. – Ceccarelli Lemut/Pasquinucci 1991.
42 Fabiani 2006, 90-93.
43 Ceccarelli Lemut/Pasquinucci 1991, 125f. 127-129.
44 Sherk 1974, 556.
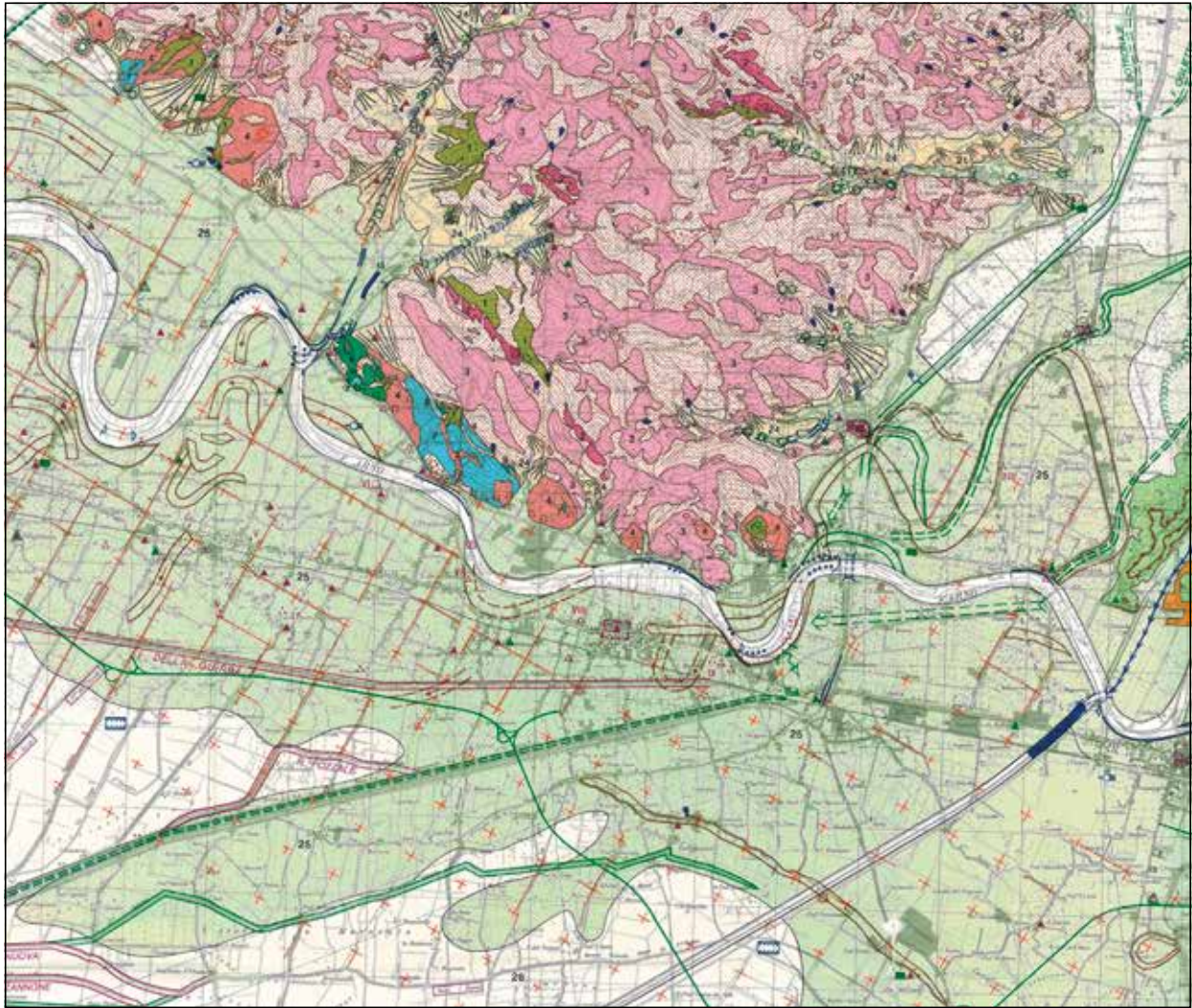
Fig. 11   The ancient toponyms along the *via Quinctia* east of Pisae. – (After Mazzanti 1994).

stones, the *via Quinctia* was constructed on the left bank of the 2nd century BC Arno, on solid river sediments, evidently following the meanders and connecting the river landing places[45]. Satellite images have been studied which provide possible links between a few identified palaeochannels and the ancient viability[46]. As it is known, the *via Aurelia vetus* corresponds in part with previous Etruscan itineraries linking up ports and landing places, but the Roman track provided a quicker and more direct connection between Rome and northern Etruria. As already said, the *viae Aurelia nova*, *Quinctia* and *Aemilia* enhanced the network.

The close relationship between ancient ports, the construction of the Roman coastal roads in northern Etruria and the Romanisation process is evident.

After the Roman conquest, in the late Republican period the pre-Roman ports and at least some landing places were turned into an efficient harbour system. Two facts are particularly significant: the development of a harbour located north-east of Livorno (called Portus Pisanus in Late Antiquity) in the 3rd-2nd century BC[47] and the foundation of Luna in a strategic harbour site in 177 BC. Both ports played a relevant role in the Romanisation process. No doubt the Roman conquest and the Roman infrastructure construction fixed

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45 Ceccarelli Lemut/Pasquinucci 1991, 125f. 127-129; cf. Campbell 2012, 216.

46 Ceccarelli Lemut/Pasquinucci 1991, 125.
47 Ducci/Pasquinucci/Genovesi 2011, 41f.

since the 3rd and the 2nd century BC a well integrated network formed by the road system, ports and landing places that interconnected maritime and river routes, coastal districts and hinterlands[48]. Historical and archaeological researches prove that this network had evident consequences on the local economy since the time it was constructed, and also that the Roman road builders and their *gentes* had a strong impact on the regional landscapes in a long-term perspective.

In fact the *Aemilii, Aurelii, Valerii* (who were related to the *gens Aurelia*) together with the allied local Etruscan elites (*Cilnii*, *Ateii*, *Rasinii*, *Caecinae*, *Venuleii*) result being producers of terra sigillata, bricks and tiles in the district. Evidently they took advantage of the economic development caused by the conquest, most probably by getting hold of large agricultural estates, which were the basis of some following workshop activities. Significantly, the starting of the Pisan sigillata production (since 15 BC) was due to M. Valerius Volusus, member of the *gens Valeria* (related to the *gens Aurelia*) who took part in the Romanisation process of this district[49].

In other words, the *viae Aurelia* (*vetus* and *nova*), *Aemilia* and *Quinctia* were deeply embedded both in the Roman conquest of north-western Etruria and in the local economic and social system[50].

In the last decades of the 1st century BC the Triumviral/Augustan colonisation marked a relevant economic growth in farming, manufacturing and trade and had a strong impact on social urban and rural landscapes. Veterans were settled at Luni, Lucca, Pisa and Volterra, large territories were centuriated and assigned[51]. The grid of centurial *limites* improved the rural road network and integrated the main road system, enhancing the connections between the agricultural hinterlands and the maritime and river trade. The communication system linking towns, minor settlements, harbours and roads kept up to Late Antiquity and beyond, as confirmed by the literary, epigraphic and archaeological evidence.

In the 6th-7th century coastal Tuscia became a border territory, at first between the Goths and the Byzantines and later between the Byzantines and the Lombards. The Roman road and infrastructure system played an important strategic role, even independent of political events. As documented by archaeological research, by the late 6th century Volterra was in evident crisis, while in the late 6th-7th century Pisae, Portus Pisanus and Vada Volaterrana, still under the Lombard power, were abundantly reached by the same Mediterranean wares shipped to Luna which was in Byzantine hands. Evidently these ports kept an important role in the context of the Byzantine sea routes.

SUMMING UP

The northern Etruscan communication network constructed after the Roman conquest was a systematic and lasting phenomenon. Ports and landing places of different dimensions and typology (as already specified by ancient sources, especially Rutilius Namatianus and the *Itinerarium Maritimum*) connected the district with the Mediterranean sea routes; an efficient hierarchy of main and minor roads and inland waterways supported the political, economic and social relationships between Rome and northern Etruria and between the coastal strip and the hinterland. The district was rich in agricultural resources (wheat, wine, oil[52]) and raw materials (marble, ores, clay, wood and timber, salt); since Etruscan times manufacturing and import-export activities are well documented.

48 Laurence 1999. – Campbell 2012, 261.
49 Menchelli 2004. – Cherubini/Del Rio/Menchelli 2006. – Menchelli/Pasquinucci 2006.
50 Dallai/Ponta/Shepherd 2006.
51 Ciampoltrini 1981. – Keppie 1983.
52 Pasquinucci/Menchelli 1999. – Motta 1997.

Based on archaeological evidence, in the 2nd-1st century BC Pisae, Volaterrae, Luca and Luna with the respective territories flourished under favourable conditions of the soil fertility; grain and wine were the main crops. Cattle-breeding, several commercial and manufacturing activities (including ship construction quoted by literary sources in reference to Pisae and Volaterrae), marble and stone quarrying, pottery production are well documented[53]. It is to be noted that in the late Republican-early Imperial times the Luni marble and the Arretine and Pisan terra sigillata were two of the main export phenomena in the Roman economy[54].

The Roman communication network in north-western Etruria was shaped by political events and strategic plans when the district played a key role as a border area between the Ligurians and the Romans in the 3rd-2nd century BC. It served military and administrative needs first, but traders and more generally individuals had relevant benefits from it[55]. It kept up to the 6th-7th century, when the district was disputed by the Lombards and the Byzantines.

The Romanisation process had a strong impact both on the local economy and on the social and cultural texture. Mobility and connectivity contributed to the melting pot of different people in this district, as it is well documented by epigraphic sources. In particular, slaves from the entire Mediterranean basin worked in the Luna marble quarries and in the Pisan and Volaterran amphorae, terra sigillata, brick and tiles workshops. A few slaves were successful in the social rising, as it is proved by pottery stamps and funerary monuments. While Volaterrae reveals a strong degree of continuity in its Etruscan aristocracy, new sociological groups (such as freedmen, army veterans) rose in the Pisan society in the late Republican and Imperial periods[56].

Trade and travels supported by waterways and land routes contributed to the circulation of men and ideas. The communication infrastructure and settlement system fixed by the Romanisation process formed the framework of the present town/settlements and viability texture in north-western Tuscany.

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[53] Pasquinucci/Menchelli 1999. – Terrenato 2001. – Cherubini/Del Rio/Menchelli 2006. – Pasquinucci/Menchelli 2006.
[54] Pasquinucci/Menchelli 1999. – Menchelli 2004. – Pasquinucci/Menchelli 2006. – Pensabene 2004.
[55] Adams 2001.
[56] Ciampoltrini 1982. – Terrenato 1998, 106-109.

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ZUSAMMENFASSUNG / ABSTRACT / RÉSUMÉ

Ein effizientes Kommunikationsnetzwerk: römische Land-, See- und Flussverbindungen im Nordwesten Etruriens

Infolge der römischen Eroberung von Nordwest-Etrurien und des Romanisierungsprozesses wurde in dieser Region ein effizientes Kommunikationsnetzwerk eingerichtet. Straßen wurden nach militärischen Konzepten gebaut, wobei die örtlichen naturräumlichen Gegebenheiten Berücksichtigung fanden. Sie gewährleisteten eine effiziente Verbindung zwischen Rom, dem Inneren Etruriens und den Häfen, die ursprünglich als Flottenstützpunkte und Versorgungsbasen für die Armee dienten. Größere und kleinere Straßen, die *limites* der Zenturiation eingeschlossen, verbanden das Meer und die Binnenwasserstraßen mit dem Hinterland, das charakterisiert ist durch blühende Landwirtschaft und Manufakturen, die ihrerseits von diesem Kommunikationssystem abhängig waren.   Übersetzung: M. Scholz

An efficient communication network: Roman land, sea and river routes in north-western Etruria

Following the Roman conquest of north-western Etruria and the Romanisation process an efficient communication network was constructed in this region. The roads were built according to strategic plans with attention to the local morphology and provided an efficient connection between Rome, inner Etruria and the ports used as bases for the fleet and to supply the army. Major and minor roads (including the centurial *limites*) linked the sea and inland waterways with the hinterlands, which were characterised by a flourishing rural and manufacturing economy, which in turn was enhanced by the communication network.   Proof-reading: C. Bridger

Un réseau de communication efficace: voies terrestres, fluviales et maritimes dans le Nord-Ouest de l'Etrurie

Le Nord-Ouest de l'Etrurie, conquis par les Romains et engagé dans un processus de romanisation, a vu se construire sur son territoire un réseau de communication efficace. Les routes furent construites selon des visées stratégiques avec une attention toute particulière à la morphologie locale et fournirent des liaisons efficaces entre Rome, l'intérieur de l'Etrurie et les ports utilisés comme bases navales et points de ravitaillement de l'armée. Les routes principales et secondaires (*limites* des centuries inclues) reliaient les voies maritimes et fluviales à l'arrière-pays caractérisé par une économie rurale et manufacturière florissante, renforcée, elle, par le réseau de communication.   Traduction: Y. Gautier

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