UNIVERSITY OF SOUTHAMPTON

FACULTY OF ENGINEERING, SCIENCE & MATHEMATICS

School of Geography

The Concept of 'Port' and 'Outport' Re-examined:

the Medina Estuary, Isle of Wight, as a Case Study, 1650 - 2000

Volume 1

of 2 volumes

by

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Thesis for the degree of Doctor of Philosophy

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Dedication

This thesis is dedicated to Frederic P. Hampton,

who inspired my interest in Geography

UNIVERSITY OF SOUTHAMPTON

ABSTRACT

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THE CONCEPT OF PORT AND OUTPORT RE-EXAMINED: THE MEDINA ESTUARY, ISLE OF WIGHT, AS A CASE STUDY, 1650 - 2000

A literature search revealed that no scholarly work had been undertaken on the two ports of the Medina estuary; Cowes and Newport. Primary sources were used extensively to establish the sequence of waterfront development in both ports, enabling their spatial growth to be described and analysed. The methodology of historical geography was applied to port geography by creating reconstructions for five dates, using a synthesis of the horizontal cross-section method and the vertical theme method. This approach allowed development trends to become apparent These were analysed using a process-to-form methodology.

Models found in port geography were considered. By using the ports of the Medina estuary as a case study, the 'Port/Outport' model, devised by Pounds, was found to be applicable to the ports of Cowes and Newport. An investigation of the ports on the Fal, Medway and Orwell estuaries demonstrated that the Medina estuary was not unique, in that tidal-head 'ports', given certain circumstances, might continue to have a role for marine-related activities. The notion of the 'successful' port was postulated as a means of assessing these ports.

The situation pertaining to the ports of the German Bight demonstrated further that the 'port/outport' model was not an outdated academic construct.

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DECLARATION OF AUTHORSHIP

I, PHILLIP GEOFFREY WOOD,

declare that the thesis entitled

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and the work presented in it are my own. I confirm that:

- this work was done wholly or mainly while in candidature for a research degree at this University;
- where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated;
- where I have consulted the published work of others, this is always clearly attributed;
- where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work;
- I have acknowledged all main sources of help;
- where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself;
- none of this work has been published before submission.

Signed: .....

Date: .....28/2/07.....

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ABBREVIATIONS

ABP	Associated British Ports
Acc	Accession
ACP	Admiralty Charts and Publications
Add.	Additional
BA	British Admiralty
BC	Before Christ
BL	British Library
BOT	Board of Trade
BP	Before Present
c	circa
CBA	Council for British Archaeology
CD	Chart Datum
CHC	Cowes Harbour Commission
CSP, Dom.	Calendar of State Papers, Domestic
CWS	Cowes
d	died
EEDA	East of England Development Agency
GIS	Geographical Information System
GKN	Guest, Keen and Nettlefolds
GPS	Global Positioning System
HRO	Hampshire Record Office
IWC	Isle of Wight Council
IWCRO	Isle of Wight County Record Office
JER	Jerome papers
LAT	Lowest Astronomical Tide
Lo-Lo	Lift on - Lift off
MHWS	Mean High Water Springs
MLWS	Mean Low Water Springs
MSS	Manuscripts
MTF	Marine Transfer Facility

NBC	Newport Borough Council
OD	Ordnance Datum
Og	Oglander papers
PC	Personal Computer
pers. comm.	Personal communication
PPG	Planning Policy Guidance
PRO	Public Record Office
Ro-Ro	Roll on - Roll off
RSL	Relative Sea Level
SAC	Special Area of Conservation
SCOPAC	Standing Conference On Problems Associated with the Coast
SEEDA	South East England Development Agency
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
UDP	Unitary Development Plan
US	University of Southampton
WCM	Winchester College Muniments
Wh/P	White-Popham papers
Whip	Whippingham
www	World-wide-web

Part I: Background to the Study

Chapter 1: Introduction

1.1 Aim and objectives

The study contributes to both historical and port geography and its importance derives from the aim and objectives of the research. The overall aim is to demonstrate not only that the historical pattern of development of the two ports on the River Medina estuary in the Isle of Wight conforms to the principle of a well established model found in port geography, but also that certain issues which concern the modern-day ports' industry indicate that the model, despite its longevity, remains a valid and useful means of assessing port development. Given the overall aim, a number of specific objectives can be identified: 1) To fill an apparent gap in knowledge by tracing the development, during four centuries, of the ports of Newport and Cowes, using an appropriate methodology, and analysing how and why one of these ports achieved a dominant hierarchical position. 2) To test models found in port geography against the development of the Medina estuary ports. 3) To compare the Medina ports with similar estuarine ports elsewhere in the UK, seeking to identify those common factors which enable certain tidal-head ports to retain some maritime importance. 4) To use an expanded definition of a port to build on previous work in port geography. 5) To introduce the notion of 'success' as a means of assessing the comparative versatility of estuarine ports.

1.2 The terms *port* and *harbour*

It is important, at the outset, to draw a distinction between a *port* and a *harbour*. The terms are commonly used as though they are interchangeable but, for the purposes of analysis and description, the differences in meaning need to be explained. A harbour (or haven) is a natural geographical feature and an early worker in port geography considered that it was configured in such a way as to offer 'refuge from the stormy sea and safe anchorage' (Sargent 1938, 1). It is, therefore, an area of water, accessible from the sea, where the natural features of the coastline provide shelter from wind, waves, swell and powerful tidal streams. However, Sargent went on to say that 'The pure geographical element was insufficient, and from the earliest times artificial improvements were introduced for protection or for the unloading and loading of goods and men' (1938, 1). Here the essential difference between the two terms becomes apparent, with human activity being the critical factor in the transformation of a harbour into a

port.

Morgan considered that a port normally comprised two main sections: 'the harbour and the port proper' (1952, 26). However, some modern ports have been constructed on an open coastline, for example; Paradip (India), Port Kembla (Australia) and Leixoes (Portugal). Here there are no harbours; ships enter the port directly from the open ocean. In calm conditions ships may anchor off these ports, but there is no shelter from oceanic sea and swell waves. In bad weather it is prudent for ships to find shelter elsewhere. Morgan included Port Kembla and Leixoes as examples of Converging Breakwater or Converging Jetty Harbours (1952, 51), and yet these places offer shelter only to vessels actually berthed at the port installation. This appears to contradict his previously stated requirement for a harbour; namely, that it provides a sheltered area. However, Dover and Portland are cited as examples of Detached Breakwater Harbours (Morgan 1952). In both places the requirement for shelter is satisfied, because ships commonly anchor within the area protected by the breakwaters; these may therefore be described accurately as harbours and not merely as ports.

In essence, a port is 'a transit area, a gateway through which goods and people move from and to the sea' (Sargent 1938, 3), while Morgan defined it as 'a place equipped to facilitate the necessary relations between ships, as agencies of sea transport, and the land' (1952, 13). In order to accomplish this interchange between land and sea, 'A characteristic feature of all developed ports is the provision of quays or wharves alongside which ships can berth, together with ... transit sheds, warehouses, passenger and customs accommodation, offices, road, rail and waterway approaches' (Morgan 1952, 54).

More recent academic work has proposed a broader interpretation of the role of the port: 'Defined as a place where the mode of transportation changes from land to water-borne systems, a seaport is primarily important as a central place of economic and cultural inter-change' (Hoyle and Pinder 1981, 1). In elaborating this the authors considered that 'a modern seaport node within a multimodal transport system frequently develops also as a major urban centre, an industrial focus, an important source of employment and an influential factor in national and regional development' (1981, 1). The contention in this thesis is that such comments are also relevant to port towns such as Newport and Cowes, even if the scale is smaller and the influence more local.

1.3 The waterfront

Taking its cue from Hoyle and Pinder, the research reported here will expand the interpretation of what is meant by the generic term *port* a stage further by including all of the waterfrontage within the port area. Therefore the port will include industrial sites, both marine-related and non marine-related, and residential areas which are located on, or abut, the interface between land and water. The term 'waterfront' is used to denote this interface. Adopting an inclusive approach will enable the various changes of use, and especially trends, which have taken place on different parts of the waterfront during the study period to be traced and analysed. If the analysis were to be restricted solely to those sites which handle cargo and passengers, then an incomplete and perhaps misleading picture of human resourcefulness in adapting the environment may emerge. Nevertheless, the primary function of a port remains that of providing facilities for the interchange of cargo and people, although its presence often acts as a catalyst for other activities to take place: 'In all cases the common denominator is the port function which lies at the root of the physical and socio-economic expansion of the settlement in terms of layout and location' (Hoyle and Pinder 1981, 2).

1.4 Justification for the research

The very fact of being an island has meant that that the Isle of Wight's ports and maritime connections have been of fundamental significance for communication and trade; even today there is no 'fixed-link', either bridge or tunnel. Its airports are of minor value, being used solely for recreational purposes. Short lived commercial air links were established during the 20th century and proposals to revive them continue to the present day. But throughout its past the island has been dependent upon maritime links to the mainland and beyond. Consequently, its ports have been, and remain, of vital importance. Nonetheless, an extensive search in academic literature has produced no evidence of any previous work on the evolution or strategic value of the island's ports, either individually or as part of a port system. This is surprising for three reasons;

1) By virtue of its central position on the south coast of England the Isle of Wight has been prominent since medieval times as a somewhat vulnerable asset to the Crown, yet one which other nations have seen as a convenient springboard for proposed attacks on the adjacent mainland or for a general invasion of the country. For example, prior to the sailing of the

Spanish Armada in 1588, detailed reports concerning the ports of England and Ireland, particularly those of the Solent region, were commissioned for the Council of War (Williams 2000). Another elaborate invasion plan was prepared by the French in 1777-8 in order to take advantage of weakened defences in the Solent. Troops would land on the undefended south coast before capturing the strategic ports on the north coast, enabling the Isle of Wight to become a base for the proposed attack on the naval port of Portsmouth (Patterson 1970; Jones 1987). The preparations which would have preceded such military operations imply an appreciation of the port facilities available on the island and also of the sheltered waters offered by the Solent.

2) Ports and harbours of all sizes on the mainland Solent region have received considerable attention from academics and local historians. Examples include:

Poole
Perry, P. (1967): *The Dorset ports and the coming of the railways;*
Tittler, R. (1985): *The vitality of an Elizabethan port: the economy of Poole, c.1550 - 1600.*

Southampton
Ruddock, A.A. (1951): *Italian merchants and shipping in Southampton, 1270 - 1600;*

Bird, J. (1963): *The major seaports of the United Kingdom;*
Platt, C. (1973): *Medieval Southampton - The port and trading community, A.D. 1000 - 1600;*
Witherick, M.E. (1981): *Port developments, port-city linkages and prospects for maritime industry: a case study of Southampton.*

Portsmouth
Riley, R.C. and Smith, J.L. (1981): *Industrialization in naval ports: the Portsmouth case;*
Thomas, J.H. (1984): *The seaborne trade of Portsmouth;*
Wright, J,C.B. (1994): *The British naval port system;*
Gripaios, P. (1999): *Portsmouth commercial port and its influence on the local economy;*
MacDougall, P. (2001): *Hazardous waters: naval dockyard harbours during the age of fighting sail.*

Langstone Tweed, R. (2000): *A history of Langstone Harbour and its environs in the County of Hampshire*;
Allen, M.J. and Gardiner, J. (2000): *Our changing coast - a survey of the intertidal archaeology of Langstone Harbour, Hampshire.*

Chichester Reger, J. (1996): *Chichester Harbour - a history.*

The Isle of Wight, admittedly small in area, does have port facilities in five urban areas. Arguably, this in itself is sufficient to have attracted research.

3) The socio-economic development of the Isle of Wight has been, necessarily, conditioned by its insular character and defined systemic boundaries, a situation reinforced by the lack of any fixed-link. The island's ports have been critical to its development and, for that reason alone, might be thought worthy of scholarly attention.

1.5 Estuarine ports in the UK and north west Europe

Having determined that the research effort was justified, the ports of Newport and Cowes were selected for study because they are situated on an estuary. The majority of ports in the UK and north-west Europe are similarly positioned, enabling comparisons to be made, although those in the UK are generally smaller than their counterparts in continental Europe. During the medieval period, and sometimes during Roman times, many estuaries saw the foundation of a port settlement at their tidal head, a site frequently associated with the lowest fordable or bridgeable point. Such a location was advantageous because it offered access to the sea, acted as a nodal point for the movement of people and merchandise by inland routes and, by not being situated directly on the coast, provided the port settlement with a measure of protection from seaborne attack. An adjacent castle often reinforced this protection, or the settlement itself may have been fortified, providing the local population with a place of refuge if this became necessary.

Conditions had changed by the post-medieval/early-modern period, which saw an increase in population, the widening of trading opportunities, a trend for larger and deeper ships, and an

improvement in coastal defences. These factors militated against the upstream, tidal head port. Conversely, an estuary mouth location offered greater potential because of its deeper water, unencumbered space for the foundation of new quays with an associated port settlement, and direct access to the sea, obviating the need for lengthy river passages. UK examples of these follow, with their older, tidal head ports shown in parentheses: Glasson Dock (Lancaster), Connah's Quay/Mostyn (Chester), Portishead/Avonmouth (Bristol), Falmouth (Truro), Fowey (Lostwithiel), Dartmouth (Totnes), Exmouth (Exeter), Cowes (Newport, IW), Newhaven (Lewes), Sheerness/Isle of Grain (Rochester), Tilbury (London), and Felixstowe/Harwich (Ipswich). Continental European examples include Le Verdon (Bordeaux), St.Nazaire (Nantes), Le Havre (Rouen), Zeebrugge (Antwerp), Bremerhaven (Bremen), and Cuxhaven (Hamburg).

1.6 'Port' and 'Outport'

The fundamental core of this thesis concerns the relations between a port at the tidal-head of an estuary (the 'port') and a port at the mouth of the same estuary (the 'outport'): 'This relationship - in some cases complementary, in others amounting almost to rivalry - has been established in the course of the last two centuries' (Pounds 1947, 216). Normally, the 'outport' displaces the 'port' in terms of size and maritime importance, but there are significant exceptions to this general rule and these are examined in chapter 13. While many tidal head ports have become redundant for commercial maritime purposes, others continue to operate effectively despite their more dominant 'outports', even if this involves changing from a general to a more specific usage. It is important to note that in this thesis the term 'outport' refers specifically to a port at the mouth of an estuary: it is not used, as it was during Tudor and later periods, as 'the generic term for all ports outside London' (Jackson 1983, 15).

The research reported here treats the Medina estuary as a case study, demonstrating how port facilities expanded at Newport and Cowes, ultimately transforming the estuary into a major industrial area. During this process the port of Cowes would overtake that of Newport, both in terms of spatial extent and maritime usage, to become the dominant port on the Medina estuary. The temporal pattern of development in the estuary, which appears to be typical of the 'port/outport' relationship, effectively defines the study period: until the end of the 16th century there is little evidence to suggest that Cowes was much more than a small fishing

settlement. However, the town of Newport was founded much earlier, during the twelfth century.

1.7 Synopsis of the thesis

Chapter 2 contains a brief appraisal of the local physical conditions, so that the difficulties and opportunities presented by the geology, bathymetry and tidal regime of the Medina estuary may be appreciated. Chapter 3 provides an overview of the historical background to the port settlements of Newport and of East and West Cowes, enabling their later growth, described in the reconstructions, to be put into context. Chapter 4 describes the primary sources consulted as the main research effort. These sources comprise a large quantity of manuscript documents, as well as maps, charts, plans, pictures, photographs and newspaper reports. They are used in two ways; first, to provide evidence of how the ports developed spatially during the study period and, secondly, as a means of examining the issues and conflicts which affected their relationship during that time. **NB** Throughout this thesis, unless cited otherwise, all primary sources are held at the Isle of Wight County Record Office. Chapter 5 reviews the literature of port geography, describing how the sub-discipline has developed since becoming established, reflecting trends within geography as a whole. Port models and models of port systems are considered, as some of these, or elements of them, may be appropriate to the ports of the Medina estuary and the terminology used applies to ports in general. In a similar way, Chapter 6 reviews the development of historical geography as a sub-discipline, so that the justification for adopting the preferred approach to the research can be demonstrated. The choice of context or approach is strongly influenced by the overall aim and objectives of the thesis. Chapter 7 considers the conceptual framework of the thesis and discusses three basic types of research, namely; exploratory, testing-out and problem-solving. Port development within the Medina estuary is approached with a combination of testing-out research and a significant element of exploratory research, because this would seem to offer the best means of achieving the stated objectives of the thesis. This hybrid approach has been acknowledged to be valid, and the justification for it is discussed. In Chapter 8 the notion of the 'successful' port is introduced. This sets out those provisional factors which appear to determine whether a port has the necessary attributes to be able to respond to changing circumstances and demands placed upon it. Further work is necessary to refine this notion. Chapter 9 considers the methodology to be used in order to achieve the relevant objective. Several possibilities are discussed, these

concerning the difficulties in dealing with change through time and the temporal detachment from the period in question. Horizontal time reconstructions are considered, together with the vertical theme or process-to-form method. The justification for the decision to adopt a synthesised or hybrid approach is discussed, as is the reasoning behind the selection of particular reconstruction dates.

Part II presents the actual period reconstructions and process-to-form analyses. The extent of both ports is illustrated with large-scale maps for the chosen dates. The quantity and accuracy of data are greatest for the later dates, allowing for more secure reconstructions to be achieved. The relative paucity of data for the earliest reconstruction has been partly overcome by use of an inferential or regressive approach: where there is mapping evidence of usage of a particular site for two successive dates then, in the absence of evidence to the contrary, it is reasonable to assume that relevant manuscript data of an earlier date relates to the same site. Each reconstruction map is augmented with description, citing primary sources for particular sites.

The reconstruction maps are considered to be 'snapshots' or 'progress reports', indicating the extent and nature of the spatial development of the two ports at the selected dates, but these in themselves do not address the reasons behind such development. The impetus for development or re-development of particular sites on the waterfront may be reduced to causal factors, behind all of which is the driving force of human endeavour and enterprise, finding expression as the on-going exploitation and adaptation of the natural and built environments. During some periods certain factors may be more or less influential, or entirely absent. The problem facing the researcher is to find a satisfactory means of presenting the outcomes of these fluctuating causes or influences, so that the temporal reconstructions can be seen in the context of the prevailing circumstances of their times and not as a sequence of unconnected pictures. The solution adopted in this thesis is to identify the most significant factors which affect change or development during the period under consideration, and to present these diagrammatically on a chronological time scale. In essence this may be considered as an attempt to portray a process-to-form methodology, whereby each significant factor is traced through time using the vertical theme approach and is able to be compared with the relative importance of other factors at any given period. Punctuating this diagram are the selected dates of the reconstructions. By using this synthesised methodology it is hoped that the reasons for selecting particular dates will become apparent, thereby justifying their choice.

Part III represents the conclusion to the thesis. The information gained from the exploratory research of Part II is used as the basis for the application of testing-out research. The pattern of actual port development is compared with models found in port geography, consideration being given first to Bird's 'Anyport' model of 1963. This model consists of several temporal stages, characterised by a general pattern of development through time in a seaward direction. Pounds' 'Port and Outport' model (1947) is then evaluated. The conclusion reached is that the latter model is most appropriate to the circumstances of the Medina estuary ports.

Examples of current 'port/outport' situations in the UK are examined in order to establish whether there are any common factors which may account for the fact that some tidal-head 'ports' continue to operate, and in some cases even to thrive despite their downstream 'outports', while others have become redundant in terms of commercial maritime usage. In addition to these examples, the current situation in Germany concerning the site of a proposed new port is also discussed, as this example provides further strong evidence that the relationship between estuarine ports is a substantive issue.

Chapter 2: Physical Background

2.1 Location

The Isle of Wight is located in the English Channel, off the coast of Hampshire. Between the island and the English mainland lies the Solent, an area of relatively sheltered water (Map 1).

2.2 Geology and geomorphology

The solid geology of the Isle of Wight consists exclusively of sedimentary deposits spanning the Cretaceous, Tertiary and Quaternary periods (Bird 1997). Its rock sequences have suffered considerable distortion and buckling by tectonic movements of the Earth's crust and been folded into anticlines and synclines, with axes running approximately west to east. The Medina estuary lies to the north of a ridge of hard Cretaceous Chalk, passing over the younger and generally softer Tertiary and Quaternary strata. A simplified cross-section of the central part of the island shows the structure of the solid geology (Map 2).

The erosion and subsequent re-deposition of eroded material have resulted in the solid, underlying geology being overlain by drift (superficial) deposits comprising plateau gravel, brickearth, flint gravel, marine gravel, peat and blown sand, while alluvium is found in all of the coastal inlets and their associated river valleys (Geological Survey of Great Britain 1976). During the glacial period of the Pleistocene epoch the Isle of Wight had a periglacial environment, similar to that found recently in the Arctic. The ground was repeatedly covered by extensive snowfall and frozen by prolonged frosts, but during brief summer thaws the resultant meltwater contributed to the rapid solution of the chalky matrix and washed away some of the finer material (Bird 1997). River valleys were excavated to well below present sea-level, exemplified by the palaeochannels lying beneath the existing estuaries of the western Yar, Newtown Creek, River Medina and Wootton Creek (LIFE 2000). The material subsequently deposited on old river valley floors consisted of flints and gravels (Dixon and Moore 1987), these fluvial deposits representing former south-bank tributaries of the Solent River (Allen and Gibbard 1993, 519-20).

2.3 Post-glacial effects

The aftermath of the Ice Age had a significant impact on the evolution of the coastline of the Isle of Wight, as elsewhere in northern Europe. By c8000 BC the post-glacial period had begun, the rise in temperature and consequent recession of the ice-caps setting in motion two processes which affected the land/sea relationship. The first was the isostatic readjustment of the earth's crust, caused by the removal of the weight of ice. Areas such as Scotland and Scandinavia, which lay under the ice-caps, experienced rapid uplift (post-glacial rebound). Conversely, the periglacial region of the southern UK, northern France, Belgium, Holland and north-west Germany experienced subsidence (down-warping). This process, which was not uniform, continues to the present day, although at a smaller rate. The axis across which Britain is tilting, where there is zero movement, runs approximately from Anglesey to the River Tees. In the Solent area the paucity of data means that the estimate of approximately 1mm per annum for the amount of subsidence is inferred from adjoining regions, where more data are available. The second process is the eustatic rise in sea-level, caused by the freeing of water once locked into the ice-caps, resulting in a global increase in ocean volumes. A value of approximately 1mm per annum is thought to represent this component (Bray *et al* 1994). Compared with isostatic readjustment, which was relatively slow and occurred differentially, eustatic readjustment was much more rapid and effected all areas evenly (Cunliffe 2001, 109-111).

Along English Channel coasts isostatic subsidence added to the eustatic rise in sea-level, resulting in a rise in Relative Sea-Level (RSL). A recent model for the Solent region indicates that during the Holocene epoch RSL rose by at least 20 metres. The most rapid rise took place from 10000 to 5000 years Before Present (BP) (LIFE 2001; Long and Tooley 1995), and during the last 5000 years the rate of increase of RSL has progressively slowed. In the last 2000 years it is estimated to be 1.7 to 3.0 mm per annum for the Solent region (Bray *et al* 1994), although the recent effects of global warming, as yet un-quantified, are likely to modify this estimate.

The 'Solent River' flowed eastwards through the present day Solent area and joined the English Channel to the south-east of the Isle of Wight. As a result of the rise in RSL since the last glaciation, the Chalk ridge running eastwards from Purbeck was breached, forming the Isle of Wight and the Solent system (Dixon and Moore 1987). The process and chronology of separation are not fully understood and recent research has questioned some aspects of earlier

theories (Tomalin 2000; Velegrakis 2000).

The effects of the rise in RSL during the period under consideration are likely to have been minimal, although it is possible that medieval waterfront structures may be one to two metres below later structures, perhaps forming their foundations. Possible candidate sites might be the (old) Town Quay at Newport and the quay walls near the ferry terminal at East Cowes.

2.4 Topography of the Medina estuary

The drainage basin of the River Medina is one of the largest on the Isle of Wight (Map 3). The river becomes tidal at Newport, 8 km from the open sea, whence it becomes the Medina estuary (Map 3a). The estuary is flanked by low hills, with maximum elevations of 55m and 67m above Ordnance Datum (OD), on the eastern and western sides respectively (Ordnance Survey 1998). The East and West Cowes promontories are between 45m and 50m (OD) in elevation, the northern slopes having the steepest gradients (Map 4). A simplified plan of the geological structure of the Cowes area illustrates the sequences of strata (Map 5).

Undefended coastal slopes in the Cowes area are subject to recession owing to rotational slipping of strata and wave attack. On the East Cowes side of the estuary mouth, at sea-level, these strata consist of the clays and sands of the Oligocene Osborne Beds. However, these dip slightly from east to west and therefore, on the West Cowes side, the overlying Bembridge Limestone outcrops at sea-level to the west of Cowes Castle. Consequently, the coastline here is more resistant to erosion. On the northern ends of the East and West Cowes promontories 'hard' sea defences, such as sea-walls, have been erected to protect the coastline, but these require maintenance to remain effective. For example, to the east of Old Castle Point the masonry sea-wall, built in the early nineteenth century, has not been maintained (Waters 2004, pers.comm). Within the last fifty years the sea has breached the wall in several places, leaving sections of it totally free-standing. The Osborne Beds have been eroded for up to 30 m behind, a process which is on-going (Figure 1). The vulnerability of this area to recession may well account for a Tudor fortification being abandoned and the ruins subsequently lost to the sea.

The alluvial deposits fringing the shoreline have been reclaimed at both ends of the estuary, primarily to gain access to deeper water for marine-related activities. Such exploitation of the

waterfront was a common feature of port-towns during the medieval period (Schofield 1999).

2.5 Classification of estuaries

Estuaries may be classified in several ways depending on the criteria used. A topographical method was devised by Pritchard, and later discussed by Dyer (1997), whilst other classifications were discussed by Woodroffe (2003). The topographical system comprises three groups: coastal plain estuaries, fjords and bar-built estuaries.

Coastal plain estuaries were formed during an interglacial period, by the flooding of previously incised valleys. Sedimentation did not keep pace with inundation and therefore the topography of the estuary remains similar to that of a river valley. The entire estuary is usually floored by recent sediment of varying thickness. This is often mud in the upper reaches, but becomes increasingly sandy towards the mouth. River flow is generally small compared to the volume of water between high and low water (Dyer 1997). Isle of Wight examples are the Medina estuary, the Yar estuary, Wootton Creek and Bembridge Harbour (Barne *et al* 1996).

Bar-built estuaries differ from coastal plain estuaries as recent sedimentation has kept pace with inundation, resulting in a characteristic bar across their mouths. Tidal range must be restricted and large volumes of sediment be available for this to happen. Consequently, the bar-built estuary is generally associated with a depositional coast and is normally only a few metres deep. The mouth is shallow and may undergo variations in position from year to year (Dyer 1997). Newtown Creek is classified as a bar-built estuary (Barne *et al* 1996).

2.6 Bathymetry of the Medina estuary

Water depths are expressed in metres below Chart Datum (CD). CD equates to the level of lowest astronomical tide (LAT), below which tides rarely fall. Depths which lie above CD are referred to as drying heights. In order to obtain the actual depth of water over a particular part of the seabed it is necessary to add the height of tide, measured above CD, to the charted depth.

Present day depths in the River Medina exhibit a gradual increase from Newport to Cowes, a common feature of coastal plain estuaries (ACP 2000, 2793). At Newport the river has a drying height of 1.5 metres. At Werrar the channel depth is 0.5 metres. Depths continue to

increase, attaining 2.5 metres at Kingston, and 2.7 metres towards the Point ferry crossing. There is a localised shallow area between these two latter places (Old Gasworks Bank), with a depth of 1.5.metres. Northwards of the ferry crossing the main channel continues along the western side of the harbour, with a depth of 3 metres.

On the eastern side of the harbour lies the Shrape or Shrape Mud. This latter name is, in modern times, a misnomer, as the bulk of the Shrape, lying north of the breakwater, consists of a large expanse of almost level sand with a drying height of 1.5 metres. At Mean Low Water Springs (MLWS) this area stretches 1km to Old Castle Point, and extends up to 400 metres offshore. The area south of the breakwater is more muddy. The Shrape Mud has been a feature of the harbour entrance throughout the study period. Between the Shrape Mud and the main fairway channel lies an area of shallow water (Map 6).

2.7 Tidal conditions - Solent and Medina estuary

The tidal regime is of prime importance in terms of access to ports, marine evolutions within them, and sediment transport around the coast. The UK is subject to semi-diurnal tides, comprising two high tides and two low tides in a period of approximately twenty four and a half hours. The tidal curves of the central Solent are distinctive owing to the phenomena of double high water and the 'young flood stand', which are most prominent during Spring tides and best exemplified at Southampton (Diagram 1). They provide windows of opportunity for the launching of vessels or berthing manoeuvres in virtually still water.

This complex situation arises from several factors, the most important being the presence of a degenerate amphidromic point which exists inland and to the north-west of the region, where the tidal range is zero. It is said to be degenerate if occurring over land; if located over the sea then it is considered to be real (Doodson and Warburg 1941). The tidal range, being the difference in height between successive high and low waters, varies from Spring to Neap tides during the 28 day Lunar cycle. Within the Solent, as the distance from the amphidromic point increases in an easterly direction, so the range for any particular day also increases (Diagram 2). The Isle of Wight's position in the English Channel, directly opposite the land-mass of France's Cotentin peninsula, influences the tidal pattern by amplifying the tidal height. However, the principal reason for the double high water is that the semi-diurnal harmonic tidal constituent,

which is relatively weak near the amphidromic point, combines with the strong shallow water effects resulting from the bathymetry of the Solent region. The phase relationship between these two harmonic components produces the double high water at Southampton: at Cowes (Diagram 1), described below, the phase relationship alters slightly, resulting in an extended high water, or 'stand', rather than a double high water (Price and Townend 2000).

Within the Solent area tidal stream rates vary inversely to tidal ranges: in the western part they are greater than those in the east on any particular day. Volumes of water in the eastern Solent are greater, necessarily, because of the larger tidal ranges which exist there, and a larger sea area, but most of this tidally-induced water volume enters and leaves the Solent via the Needles Channel, where the tidal range is less. Consequently, tidal stream rates in the western Solent have to be higher. This is exacerbated by the funnelling effect caused by the narrowness of the western entrance of the Solent.

Near Cowes the east-going flood tidal stream flows for about 5.5 hours. Maximum rates vary from 2 knots at Neap tides to 3.5 knots at Spring tides. The west-going ebb tidal stream flows for about 6.5 hours, with respective rates of 2 knots and 4 knots. An interesting phenomenon occurs at about 2 hours before high water at Cowes, when the east-going flood tidal stream in Osborne Bay, to the east of Old Castle Point, rotates clockwise through 180 degrees and then returns westward, close inshore, as a counter-current. This induces a rotary current or *gyre* in the vicinity of the Prince Consort Shoal. The west-going tidal stream passes across the entrance to Cowes harbour but, since the tide is still rising inside the harbour, some of it flows into the harbour itself. The tidal stream in the deeper water north of Cowes continues to be east-going until one hour before high water at Cowes, when it becomes west-going across the whole width of the Solent. The overall effect is that the west-going tidal stream flows across the harbour entrance for about 7.5 hours out of the 12.5 hours of the tidal cycle (Diagram 3).

During the two hour 'stand' of high tide the water in the outer estuary, north of the ferry crossing area, is bounded by a west-going tidal stream, as previously explained. This induces an anti-clockwise *gyre*, resulting in a weak south-going tidal stream close inshore (Diagram 3). At the ferry crossing area this rotates anticlockwise, becoming a north-going stream along the eastern shore. South of the ferry crossing the high tide 'stand' results in the water being virtually static. After the two hour 'stand' the ebb tidal stream begins to flow strongly past the

ferry crossing area, following the eastern shore. This stream is deflected north-west by the breakwater and finally west by the west-going tidal stream in the Solent.

In the Medina estuary the water/volume distance curves for the Spring tidal cycle indicate that 5 million cubic metres of water pass the ferry crossing area on a flood tide (Webber 1969). The time/velocity curve for Spring tides at Cowes (Diagram 4) indicates that after the tidal level peaks at high water there is slight ebb flow, lasting for about 1 hour. This equates to a fall in tidal height of about 0.1 metres, and is followed by a 'stand' of tide for another hour. Thereafter the tidal height falls at a steadily increasing rate, reaching a maximum velocity of 2.5 knots after a further 1.5 hours. The ebb velocity remains steady for another hour before decreasing steadily for the last hour to low water. There is virtually no 'slack' tide at low water and therefore the tide begins to flood back almost immediately. It is evident that the 5 million cubic metres of seawater have flooded into the harbour during a 6.5 hour period, but have ebbed outwards in approximately 3.5 hours. In consequence, the ebb tidal velocity must be higher than that of the flood tide. This is confirmed by the tidal velocity curves.

2.8 Sediment transport

The tidal regime affects sediment transport within the Solent and the Medina estuary. Sediment transport has a major impact on all estuaries, but is complex and not completely understood. A consideration of its effects is beyond the scope of this study, but human activity such as inshore dredging and coastal stabilisation influence some sediment pathways (Bray, Hooke, Carter and Clifton 2000).

The Solent forms the largest estuarine system on the southern coast of the UK. Parts of the coastline are characterised by coastal accumulation forms, while an erosional environment of coastal cliffs is also present, and offshore areas show complex morphology, associated with several banks and deeply incised channels (Velegrakis 2000). Eroded strata may contribute to beach material, be transported along the coast as coarse gravel and sands, or be removed offshore in suspension as fine sands and clays (Bray, Hooke, Carter and Clifton 2000). Near-shore and off-shore current pathways resulting from wave and tidal effects, together with littoral drift (longshore transport) pathways along the beaches of the coastline, have been established, with medium to high reliability, within the Solent and around most of the Isle of

Wight (Bray, Carter and Hooke 1991). The littoral drift pathway enters the Needles Channel and then continues past Cowes in an easterly direction along the northern coast of the island until, near Ryde, it meets a westward drift originating from the south-east coast of the Isle of Wight. At Old Castle Point, the littoral drift pathway diverges. Part of it continues eastwards, but an element turns to the south-west and follows the island shoreline towards the breakwater. Modern research indicates that wave-induced longshore currents are the chief cause of littoral drift (Hardisty 1994), but off East Cowes the inshore counter-current, referred to earlier, may enhance this process.

Sediment-sinks, the final destinations of seabed material, occur in several places within the Solent and are associated with the meeting of opposing littoral drift pathways. In offshore locations, for example the Bramble Bank, they occur as a result of sediment from a number of directions meeting in a convergence zone. Price and Townend (2000) noted that a sink also occurs at the Prince Consort Shoal, off Cowes, where combined wave and hydrodynamic models indicate the presence of a *gyre* (Diagram 3).

It might be expected that the stronger ebb tidal stream would cause a net flushing effect, but the actual situation in the Medina estuary is complex owing to differing effects during the tidal cycle and also to residual circulation. The Medina is classified as a partially-mixed estuary because the tidal range is meso-tidal, that is, between 2 and 4 metres, and the vertical gravitational circulation produces a residual landward bottom flow, and a seaward surface residual flow. The surface layer transports sediment downstream to the middle estuary where the particles settle into the lower layer, only to be carried upstream on the residual flow, together with particles brought in from lower down the estuary (Dyer 1994).

Deposition of sediments is influenced by the length of the 'slack' water period at high tide. This is relevant in the area upstream of the ferry crossing, where the tide 'stands' for 2 hours at Spring tides, allowing sediment to settle out. Suspended sediments are also transported laterally into the inter-tidal zone by the rising tide (Price and Townend 2000). At Newport the situation is complicated further by the influx of fluvial material brought downstream from the catchment area of the River Medina. The high water 'stand' allows marine and fluvial sediments to settle out, enhancing the problem of silting.

2.9 Wind exposure

Cowes harbour is exposed to winds from the northerly quadrant, a situation exacerbated by its having a funnel-shaped estuary mouth which tends to concentrate wave energy. The vertical faces of man-made frontages amplify this by reflecting energy back into the harbour. Winds from the north-east or the north north-east have a fetch of 7 and 7.5 km respectively, and it is from these directions that the waterfront is most exposed to damage. When the Shrape is uncovered at low water, there is an element of protection to the south-east part of the outer harbour. The breakwater also provides some protection to this area, but the outer part of the harbour remains vulnerable to north-easterly gales. A detached outer breakwater may be the only solution to this problem.

Chapter 3: Historical Background

3.1 Newport

Newport, the port to the capital town of Carisbrooke, was a planned settlement which was laid out in a grid system during the early part of the twelfth century by its founder, Richard de Redvers, the first Earl of Devon and Lord of the Isle of Wight (Jones 1987, 13; Eldridge 1952, 9). The location offered several advantages: 1) the site was virtually flat, although elevated above river levels; 2) fresh water was available from Lukely Brook and the River Medina; 3) the confluence of Lukely Brook and the River Medina almost certainly included a gravel spit or *hard*, offering a firm landing place for vessels and the site of a later quay; 4) Carisbrooke Castle was easily accessible, providing a refuge for the town's inhabitants in the event of Newport being attacked from seaward (Map 7). Carisbrooke Castle was the defensive stronghold of the island and 'almost certainly of Saxon origin, one of the *burhs* or fortified camps thrown up to defend England against the Vikings', the Normans finding that 'the Saxon fortifications provided them with an immediate excellent defence' (Chamberlin 1985, 1-2).

During the Hundred Years War the island was again at risk of invasion. In 1377 a large enemy force landed on the north coast and caused wide-spread destruction, with Newport 'said to have been uninhabited for two years and many house plots were still vacant many years later' (Jones 1987, 35).

In 1567, the two bailiffs of the Borough of Newport had all the charters and documents of importance or interest, then in their possession, copied into a Ledger ('Ligger') Book (Stone 1912, 178). Included were details of the 'lawe day' held on 8 October 1462, when a record was made of 'the constitucions uses and olde customes of this towne in tyme passed ... before the brynnynge [burning] and distruccon of the said towne' (NBC 45/2, 13). The threat of seaborne attack led to the placing of defences at the estuary mouth, for it was also recorded that the inhabitants of the town were to be free from 'all other dewties or chardges ... except onlie pylinge at ther bulworks[1], from the bendinge of their chaine in the est side of the haven mowth

[1] Pelham (1963) showed that, in late 16th century Southampton, the term *bulwarks* ('Bullwarcks') referred to a shingle spit at the mouth of the Itchen estuary: the same usage may be also true of the Medina estuary.

of Newport for the defence of the haven, towne and countrey and withstanding of the invasion of enemies and all forein power, force and hostilitie' (NBC 45/2, 17). At a View of Frankpledge held on 26 April 1581, the Borough Court book refers to 'the whole haven to the bulwoorke wher in olde tyme was a chayne athwart the haven' (NBC 45/21, 286). These defences were located at what later became East Cowes.

An appreciation of the late 16th century port area at Newport can be obtained by analysing the 1592 Terrar Book of the Corporation . This survey of the town lands includes 'a piece of ground called the ooze which sometyme hath been overflowne with the sea and nowe woone and enclosed with a bank by the town'; this was later called the 'Marsh' and finally reclaimed in the 19th century. There are references to several storehouses backing onto Lukely Brook and the River Medina, and also to the 'Key'. In addition, a piece of land near the river is identified, which was, 'in olde tyme a pounde to put in cattle to be shipped at the key to be carried over in to the mayne [land]' (NBC 45/22).

3.2 East and West Cowes

In the medieval parish of Whippingham, on the eastern side of the estuary mouth, was Estshamelorde (Shamlord). This property, comprising approximately 90 acres, had been owned by Beaulieu Abbey, on the neighbouring mainland, as one of its granges since 1272 (Hockey 1982, 79). The Abbey retained ownership until the dissolution of the monasteries in the sixteenth century. By then the area was called Shamblers and had become the site of East Cowes. An early example of shipping activity exists when, in the early fourteenth century, corn was dispatched from Schamelord to Scotland to feed Edward I's army (Hockey 1982, 106). As will be described later, it is not until the seventeenth century that there is direct reference to quays at East Cowes, although the possibility of earlier, unrecorded structures cannot be dismissed.

The dissolution of the monasteries in the 1530s provided the means for an organised system of coastal defences in southern England to be established, covering navigable approach channels and potential landing beaches (Jones 1987,46). The sale of monastic land financed the project, and large quantities of masonry were obtained by the dismantling of religious buildings. Blockhouses were built at East and West Cowes, using stone from the abbeys of Quarr, on the

Isle of Wight, and Beaulieu (Jones 1987, 46). 'John Mylle of Southampton' supervised the work, being paid in July 1541, '2,400 livres towards making fortresses at the East Cowe and West Cowe and the Hurst' (CSP, Dom, XVII, 50). Sir John Oglander, writing in the period 1631-1633, noted that 'you may see in the ruins of the East Cow castle many Normandie hewen stones that had been taken out of a church (Og/AA/29, 24). Other forts or blockhouses were built on the Isle of Wight at Yarmouth, St. Helens and Sandown. On the mainland, fortifications were also constructed at Calshot and Southsea, offering some protection to the seaward approaches of Southampton and Portsmouth respectively.

The fortifications at East and West Cowes would have been a deterrent to hostile ships attempting to sail through the Solent and also gave some protection for ships anchored off Cowes. The blockhouse at East Cowes was situated on the northern extremity of the Whippingham peninsula, where the name of Old Castle Point persists to the present day. As elaborated in Chapter 2, this part of the coast is more prone to slumping and erosion than its counterpart at West Cowes. It was probably for this reason that the fortification was abandoned, and subsequently dismantled, within a few years. The fort at West Cowes also suffered from subsidence within forty years of being constructed, requiring alterations and repairs (Jones 1987, 47).

3.3 Piracy in the Solent

An increase in the number of ships making use of the Solent began at the end of the 16th century, partly as a result of the reduction in piracy. Mead Hole, situated approximately 1.5 km east of the entrance to the River Medina, became a notorious pirate base during the reign of Elizabeth I. Two successive Captains of the Isle of Wight, Horsey and Carey, were implicated in this lucrative business, possibly using their position to gain useful information on shipping activities and to obstruct efforts made to suppress piracy. Shipping in the Solent and adjacent waters became prey to piratical activity, to the extent that trade was disrupted. At the beginning of the 17th century, following peace with Spain, more warships were available to counter piracy and this, together with the death of Carey, made the Solent a safer place for ships once more (Jones 1987, 73-81). Even so, in 1626 it was noted: 'the reasons why ships should be stationed off the Isle of Wight for the protection of trade, as also of the inhabitants. Pirates

make inroads into the island, and the roads [anchorages] are never free of one picaroon[1] or other' (CSP, Dom, XXVII, 337). The Captains of the Isle of Wight evidently made a significant income from shipping for, as also recorded in 'A note of the customes etc', 'Wheat being under 20d the bushell being of the groing of the Ilande is transported out of the Ilande, without entrie with the customers, by a cocket[2] from the Captaine by vertue of his patent' (BL - Lansdowne MS 11, f 72).

3.4 The victualling trade

Traders at Newport, the commercial centre of the Isle of Wight, were able to take advantage of the increase in shipping by supplying provisions to ships anchored off the estuary mouth. The sheltered waters of the Solent were evidently regarded as a valuable and lucrative resource. 'A note of the customes in the Isle of Wight' (1569) records that 'The stayeng [detaining] of shippes as well englyshe as stranngers about the Ile by reason of contrarie winds, at Yarmouth, Cowes, Meadehole, St. Ellins pointe ... will make such a trade in the Ile yf they have a custome howse there, that the customes which shall growe, by reason of [traficking ?], buying and selling with these shippes shall much exceede the customes which shalbe raised of the adventures of the Ilande men'. Furthermore: 'The merchante adventures of the Ilande so farre as is knowen be only of Newport which passe not 5 or 6 and be all shoppe keepers than adventure onelye for [gayne ?]' (BL - Lansdowne MS 11, f72).

The victualling business was encouraged by the officials of Newport Borough, many of whom were prominent tradesmen, as a means of profiting, or even profiteering, from the sale of corn and other produce. The town also benefited from the income raised by the levying of the Petty Customs (local charges) on those vessels trading or anchoring within the area of jurisdiction claimed by Newport Borough, which extended to seaward as far as the Brambles Bank in the centre of the Solent. However, those tradesmen who paid a significant sum of money to Newport Corporation to become burgesses were exempt from Petty Customs. In January 1622 three traders applied to become 'free burgesses' of Newport Borough: Martin Crusen, Vincent Michellson and Henrick Cacopse were evidently not English and may well have been Dutch. It

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[1] A small pirate vessel.
[2] A Customs certificate

was considered that, 'they are men of abilitie and will bring shipping hither, whereby trade is heere likelie to be raised by them both to the towne and country' (NBC/16a, 175).

The importance of the victualling trade is emphasised in a petition to Parliament (28 September 1630), when it was submitted that, 'By reason of the late dearth of corn his Majesty by proclamation forbade all strangers' ships from victualling within his dominions. Petitioners being in an island, have no other trade but by strangers' ships, which come hither with merchandise to sell for victuals and now it has pleased God to send a plentiful harvest, they pray leave to resume their old accustomed trade' (CSP, Dom, CCV, 225).

In 1635 the importance of the victualling trade was re-emphasised in a 'Petition of the inhabitants of the Isle of Wight to the Lords of the Admiralty. Petitioners have not the free concourse to markets as those on the main land, and therefore rely upon foreign shipping frequenting the road [anchorage] at Cowes, both for the country's vending their commodities and the town's traffic' (CSP, Dom, CCXCIV, 292). It seems probable that the tradesmen of Newport, who had the financial resources and influence necessary to become burgesses of the Borough, could see their lucrative trade threatened by the development of Cowes as a place which could rival the vested interests of Newport. This is further exemplified in another petition of 1640 which submitted that, 'Newport is an auntient port and markett towne ... that thereunto runneth a convenient haven leading from it unto the Cowes ... whereunto shipping from most parts of Christendome doe resort whereby many strangers have come to Newport to provide themselves with necessaryes and soe have bought and sold with the inhabitants ... whereuppon the state of Newport (standing in an island out of trade, not in or neere any thoroughfare) hath much relyed'. The petition continued; 'about forty years past, at the East and West Cowes ... there were not want to be above foure or five houses, and noe trading there, but a victualling house or twoe, and nowe there are about 150 houses, many of them fayre inns and taverns, bakehouses, brewehouses, mercers shopps and many other shopps of trades and occupacons to supply strangers with victualls'. The crux of the petition reflected the fundamental economic situation: 'the resort of strangers to Newport is soe forestalled by the east and west Cowes that seldome any come to Newport, and soe as the Cowes have growne in trade Newport hath decayed for this manny years togeather and nowe is growne out of trade and very poore' (NBC 45/16a, 404). It seems possible that jealousy of the success of the merchants at Cowes may have fuelled the concerns of the traders of Newport. The political

situation of the times, leading up to the beginning of the English Civil War (1641/2) with its consequent polarisation of society and even families, cannot be discounted as another factor which contributed to the rivalry between the two port towns.

3.5 Merchants - the Newland family & Stephen March

On 22 August 1632 a note was made of 'illegal exports from the Isle of Wight by Newland and his sons. Corn was by exportation rendered so dear about three weeks since that the people of the island were ready to mutiny' (CSP, Dom, CCV, 406). The Newlands were inextricably linked with the development of East Cowes during the 17th century, having been associated with trade at Newport. A full investigation into the maritime and trading activities of this entrepreneurial family is beyond the scope of the thesis, but certainly deserves a separate study. Robert Newland (d 1636) owned and also leased several properties at Newport, as well as East and West Cowes. At Newport this included the leased 'howses att Shishpool ... with the warehouses, yards, wharfes and gardens', together with 'howses, gardens ... on the north side of the [town] key ... with the Coleyard adioyning', as described in his will, dated 7 April 1636 (PRO - Prob/11/174). The Worsley rent books recorded that, during the period 1620-1632, Robert Newland paid rent for properties at East Cowes, formerly part of Estshamelorde grange (Acc 91/39). It appears that Newland became co-owner of the former grange shortly afterwards, because Sir John Oglander noted in his Commonplace Book for the period 1631-33; 'Worsley ... sold Whippingham to March, Newland and others' (Og/AA/29, 289), and in his will Robert Newland left to one of his sons (Benjamin), 'my yard and the storehouses, the turret house ... and marshe grounds which are nowe in my possession at Easte Cowes', together with the 'maste pondes ... the key and crane and Cole wharf there' (PRO - Prob/11/174). Recent research by Martin (2004) has demonstrated that a shipyard had been established at East Cowes by 1620. The Marsh, which lay eastwards of the shipyard, was a convenient place to store and season timber. Newland also bequeathed a property at West Cowes; namely, 'my tenement, grounds and Marshe which I bought of John Lovinge lyinge and beinge neere the pointe in ... Northwood' (PRO - Prob/11/174). This almost certainly refers to the marshy area which was reclaimed later, as described in Part II, while the comment regarding John Lovinge indicates that 'Loving's Key', noted in the 1696 reconstruction, was near Point.

At a court case (1654) brought by the Attorney General on behalf of the 'Mayor and Burgesses

of Newport' against Benjamin Newland and others, concerning the non-payment of Petty Customs, a witness stated that, 'about 15 yeares since [ago]' a similar case had been heard 'in the Court of Admiralty within the Isle of Wight', between the Mayor etc of Newport and Robert Newland of East Cowes (PRO - E 134/1654 East 1). The earlier case referred to had resulted in an Admiralty Court decree, (11 September 1637), which ordered that, 'all the petit Customs hereafter happening, arising or increasing in any port or creek' within the Isle of Wight, 'shall be paid and delivered to the said Mayor and burgesses [of Newport]' (NBC 1/53). This early evidence indicates that the town officials at Newport had adopted a robust stance with regard to collecting income from users of the port of Cowes, a situation which was to continue for most of the period under consideration.

Stephen March owned and leased many properties in the Isle of Wight, in addition to those in Hampshire and Sussex. As noted above, he was also a co-owner of the former grange at East Cowes, this being referred to in his will (7 January 1651) as 'my landes and tenements ... in Whippingham called Esteshamlandes or belonginge thereunto' (PRO - Prob/11/215).

As Sir John Oglander observed, 'March and Nuland, two tradesmen of Newport, only by well imployinge theyre tallent at the Cowes, they have in my memory owt of littell or nothinge raysed themselves to a great fortune' (Og/AA/29).

3.6 Port settlement growth at East and West Cowes

Sir John clearly recognised the potential of Cowes. In his Commonplace Book (1623-1628) he recorded that;

> 'I knew when there was not above three or four houses at Cowes, and I wase and am persuaded that if ower warres and trobles had not unfortunately hapened itt woold have growen as famous as Nuport, for it was by all the Eastern partes of the woorld mutch aproved as a place fitt for them to victual and to make a randezvous wherr I have seene 300 ships at anchor and if the country had but so much discretion as to make good use of that harbor, as first to have an honest man to be Captayne there, to build storehouses to have by a joynt stocke a magazen of all provisions, and to deale with the Dutch to have that there markett or meanes to make the island hapie and fortunate' (Og/AA/27, 102).

This entry is quoted in full because it encapsulated the situation at Cowes in the first part of the 17th century: the settlement had grown from virtually nothing within about forty years; the anchorage was customarily used by many ships transiting the English Channel; the odour of malpractice by the resident military authority still lingered; the victualling trade, particularly with the Dutch, could be enlarged and made more permanent and profitable by developing the harbour.

There is considerable evidence to show that the settlement at West Cowes grew rapidly during the first half of the 17th century. For example, at an enquiry (30 June 1631) it was submitted that the core area of the settlement at West Cowes was owned by John Stephens, but that ten different householders were challenging the ownership of the land (Wh/P 51). In a subsequent indenture (14 July 1660), Richard Stephens sold 'three score ... newe erected messuages ... in West Cowes' (Wh/P 17), while a visitor to West Cowes in 1635 referred to the settlement as the 'new white built maritime towne of Cowes' (BL - Lansdowne MSS 213, f369-70). Furthermore, in the court case (1654) between the Borough of Newport and Benjamin Newland (and others), a witness submitted that East and West Cowes were, 'of late time exceeding much increased in buildings since 26 years nowe last past from about 40 to about 200 houses' (PRO - E 134/1654 East 1).

3.7 Trade protection at Newport

From the evidence presented above it seems reasonable to conclude that the growth of trade at the port of Cowes was at Newport's expense. As we shall see, the efforts of Newport Corporation to safeguard its trading position was a continuing factor in the relations between the two ports throughout the study period. Indeed, the *Cowes Harbour Act* (1897), which established Cowes as a separate port entity, contained a clause specifically exempting vessels bound solely to or from Newport from the payment of port charges. The same statute also ensured that representatives of Newport Corporation and its successor authorities would retain seats on the board of the Cowes Harbour Commission until that authority was eventually reconstituted at the turn of the 21st century.

Chapter 4: Primary Source Material

4.1 Location of deposits

Most of the archival material is held on the Isle of Wight, notably at the County Record Office, although some 18th century publications are located at the Lord Louis Library. Manuscript documents have also been consulted in London (Public Record Office and British Library), while other documents are held in Winchester (Hampshire Record Office and Winchester College). Further sources are held by the University of Southampton and the Hydrographic Office, Taunton, with others being in private collections. The range of source material is diverse and includes leases, correspondence, court proceedings, wills, minutes of meetings, reports, surveys, plans, maps, charts, pictures, photographs and press reports. With the possible exception of leases and other legal documents relating to property, all of this source material should be subjected to critical analysis because of questions relating to accuracy, bias, context and interpretation. These problems are now discussed.

4.2 Newport Corporation records

This large collection spans from the 15th century to the present day. The Borough of Newport (NBC) became a constituent part of Medina Borough Council during the 1970s, which was itself finally subsumed into a unitary authority, the Isle of Wight Council, during the 1990s. Newport Borough Council not only owned many properties and land on the waterfront but also exercised control of the Medina estuary, claiming ownership of the foreshore and sea-bed of the River Medina as far to seaward as the ferry crossing between East and West Cowes. For electoral purposes it also claimed control of all land over which the sea had at any time flowed, including pieces of reclaimed land in Cowes. The question was considered in the Courts of Revision which resulted from the 1832 Reform Act. Newport Borough retained control over Cowes harbour until the passing into law of the *Cowes Harbour Act* (1897), which split the estuary into two administrative parts. The Borough kept control south of the Folly Inn, while the newly formed Cowes Harbour Commission gained control over the northern part of the estuary. However, the question of ownership was disputed. In 1912 a compromise was reached: Newport Borough's ownership of the foreshore and sea-bed south of the Folly Inn was conceded by the Crown; in return the Borough relinquished its claim to the northern part of the

estuary, which was confirmed as Crown land. Newport Borough became one of the very few harbour or local authorities to actually own foreshore and seabed; in England this is normally a Crown possession and administered by the Crown Estates Commission. The Board of Trade (BOT), a department of central government, considered applications made by waterfontagers wishing to reclaim or develop parts of the foreshore, a function inherited from the Harbour Department of the Admiralty in 1865.

There are several difficulties associated with NBC source materials:

1) During the 19th century Newport Corporation rebutted attempts by business and local authority interests at West and East Cowes to wrest control of the northern part of the estuary. Although the Corporation was prepared to take the income arising from harbour dues and waterfront leases, at times even threatening litigation to enforce its perceived rights, calls to undertake dredging in Cowes harbour were repeatedly ignored. Surviving documents should be viewed in this light and, inevitably, what was said behind closed council meeting doors remains unknown.

2) Gaps are found throughout the entire range of documentary material. Early leases containing plans are especially prone to this problem, suggestive of pilfering. Correspondence files are incomplete, even though letters were present when the collection was catalogued during the 1950s. Minute book series for various committees are also incomplete, although the majority are available. Particularly frustrating is the absence of some reports compiled for or by committees, often relating to port issues. Fortunately, the minutes of the Cowes Harbour Committee, set-up in 1843 to manage the administration of Cowes as a separate entity, are complete. The problem of documents being 'lost' has been eliminated now that the bulk of this archive is held at IWCRO.

3) Minute books frequently mention that particular topics were discussed, but the details are either minimal or simply not recorded. This may be purely a function of the sheer number of issues discussed, or it may represent a deliberate policy of restricting the amount of information available in minute books, allowing different interpretations to be made. A further problem is that verbal proceedings can be written-up with a particular bias or emphasis. In the latter part of the study period some Council meetings were reported by local newspapers, enabling lacunae in minute books to be reduced in number and detail. However, such reporting was not

infallible, as discussed below.

4) The possibility of bias or clash of interests exists because, quite often, only a few Council members were deputed to consider particular issues and report their findings and recommendations to a full committee. Frequently, these Council members were also businessmen who had vested interests in decisions concerning the port, raising questions of motive and partiality.

4.3 Mount Edgcumbe/Ward family estate papers

This large collection, predominantly of leases, covers the period from the 17th to the 19th century, and relates primarily to the manors of Northwood and Wilmingham (Freshwater). The Northwood leases are important because they include West Cowes. The collection also includes an estate map, dated 1771, with an accompanying index. Some leases pertaining to waterfront properties also include the inter-tidal area, although the BOT successfully refuted such inclusions. Details of abutting properties are often provided.

4.4 Oglander papers

This collection concerns mainly the administration of the Oglander estate, primarily at Nunwell, near Brading. Of particular value are the five volumes which comprise the 'Account Book and Common Place Book' of Sir John Oglander (died 1665). These span the period 1623-1649 and contain many historical notes concerning the ports of Brading, Yarmouth, Newtown, Cowes and Newport. Sir John was a prominent Royalist, but as Newport Corporation was dominated by Parliamentarians during the Civil War his comments need to be considered in that context. Sir John was critical of the traders in Newport, perhaps because of their political sympathies. Accordingly, the possibility of bias towards Cowes should be considered when assessing the impartiality of this source.

4.5 Nautical charts

Charts are available for the entire period under consideration; these comprise English and Dutch examples (16th century), and English and French examples (18th century). From the

19th century onwards all charts are English. Charts are subject to many of the problems of accuracy and interpretation associated with other primary sources. These are now discussed:

1) Accuracy - Charts, like maps, attempt to portray a three-dimensional situation in two dimensions. Their accuracy depends on the quality of survey information. Surveying techniques improved throughout the study period. Various factors affect accuracy:
a) establishing the shape of the coastline relies mainly on accurate measurement of directions (bearings) and distances (ranges). Combining angular measurements of prominent features from different locations, and then relating these to a compass, enables the resultant plan to be oriented. The modern convention is that the upper edge of the chart represents North, but other orientations were used in earlier periods. For example, Greenville Collins, who conducted the first comprehensive hydrographic survey of Great Britain in the 1690s, showed south at the top of his chart of the River Dee, although the Isle of Wight chart followed modern convention.

Distances are now generally based on the nautical mile, but earlier charts used leagues or other units of measurement. Establishing distance whilst surveying may be achieved by triangulation at sea, although this introduces the further difficulty of accurately measuring speed, while large-scale port plans may involve physical measurement.

b) tidal streams affect speed over the sea-bed and also the accurate measurement of depth. Until the early 20th century depths were measured by using a sounding lead. However, strong tidal streams may deflect the sounding lead from the vertical, introducing errors. Furthermore, establishing the charted depth requires that the height of tide at any given time is known.

c) numerous depth soundings are necessary in order to achieve maximum accuracy, although not all of them need be shown on the chart. Critical areas, such as shallow water and isolated dangers, must be accurately depicted. During the 20th century the spatial accuracy of charted information steadily improved owing to electronic aids to navigation such as hyperbolic radio navigation systems, radar and, latterly, the satellite based system known as the Global Positioning System (GPS).

2) Scale dictates the area covered by the chart: oceanic charts are of small scale, but port and harbour charts must be large scale in order to depict sufficient detail.

3) Charts are designed to be used by mariners, who need most information concerning areas below the high tide level. With the exception of port charts, the only topographical features required are those which are prominent from seaward.

Charts utilised in this study include those of Van Keulen (c1680), Greenville Collins (1698), and Bellin (1762). The hydrographic department of the British Admiralty was created in 1795 to supply accurate information, in chart form, for the benefit of naval vessels. However, surveys had been undertaken by the Royal Navy prior to this: in the Solent area one of the most comprehensive was that of Lieutenant Murdoch Mackenzie, published in 1783. This large-scale survey chart, held at the Hydrographic Office, Taunton, is of high accuracy, making it particularly useful for the 1776 reconstruction. Distances, alignments and details such as the position of slipways are virtually congruent with modern-day charts of Cowes harbour.

4.6 Maps and plans

A wide range has been utilised during the course of the research for this study, including estate, Ordnance Survey (OS) and Tithe Commutation maps. From the mid-19th century onwards many property leases included large-scale plans, which elucidate the complicated boundaries between adjoining land-holdings. The general comments concerning accuracy and scale apply as much to maps as to marine charts, but there are other difficulties involved in their use and these are now considered.

a) Estate maps give an overall impression of a particular area, but detail is concentrated on the actual estate. Adjoining or intervening land may be treated superficially, as exemplified by the 1771 Mount Edgcumb estate map of West Cowes.

b) Ordnance Survey maps cover the period from the beginning of the 19th century to the present day, and are of several scales. The maps of the Old Series were instituted during the Napoleonic War, in order to have a better idea of the topography in the face of a perceived French invasion threat. Attention was given first to southern England. Surveying in the Solent area began in the late 1790s, but the first map was not published until 1810. Early OS publications were significantly more accurate than previous maps, but suffered from drawbacks

related to the funding and training of surveyors. Although prominent features were accurately surveyed, intervening areas were often sketched-in by eye.

c) Subscriber maps often pre-date the OS and were commissioned by groups of landowners. Surveyors may have concentrated on property owned by subscribers, while providing less detail in other areas. An example is the Andrews map, dated 1769, which covers the entire Isle of Wight. It is of a comparable scale to the 1:25000 present-day OS maps and shows quite a large amount of detail; for example, indications of depths in the River Medina are given, together with some topographical details not recorded elsewhere.

4.7 Pictures

These include drawings, paintings and engravings. Before the photographic process was discovered in the 19th century these were the only means of portraying images of the landscape. This study makes use of engravings as there are several examples illustrating the Medina estuary. However, they are used with caution because of particular difficulties associated with them, as follows:

a) artistic licence allowed the possibility of misrepresenting actual views, including problems of scale, perspective, juxtaposition of features, emphasis and ability:

i) scale may be distorted in both the vertical and horizontal planes in order to make the picture more dramatic or to include more detail. For example, pictures by the Brannon family (active from the 1820s to the 1860s) often show the hills surrounding Cowes almost as mountains, whereas they are only low hills.

ii) perspective may be distorted in an attempt to fill the picture. Distant objects may be depicted larger than in reality, in order to stress their importance or to increase the picture's appeal.

iii) juxtaposition of features is a common problem, often taking the form of depicting certain elements of the landscape in a picture, although they are not observable from the viewing position. For example, Norris Castle was translated westwards by engravers such as G. Cooke (c1815) and G. Brannon (c1860), so that it appears to be a prominent feature at the

mouth of the estuary, when it cannot be seen from this location. Similarly, East Cowes Castle was often depicted in views of Cowes harbour, although not visible from the adopted viewpoints. Examples include engravings by G. Brannon and W. Findon (c1838). This particular problem may be identified by comparing lines of sight (bearings), on maps with the actual picture, or by comparing the engraved view with later photographs taken from the same viewpoint.

iv) certain features may be given undue emphasis or attention to detail, in order to make the location appear more attractive, or to increase the selling potential of the picture. Another problem is 'prettifying' a picture by simplifying the content of the actual scene, perhaps by omitting unattractive or less interesting parts of it.

v) as discussed below, the person who drew the scene was not necessarily the person who later engraved it, but the finished picture is the only evidence available for consideration. Some engravings are more skilfully executed than others, but this does not necessarily imply greater accuracy.

b) inaccuracy and misrepresentation may result from the engraving process. Initially, the scene was drawn by an artist, the image then being transferred to the printing plate, which may have been wood, metal or stone. A mirror was used by the engraver, because 'the original image has to be reversed in order to be transferred to the plate or stone' (Russell 2001, 14). The plate was incised with the engraver's interpretation of the reflected image, creating opportunities for alteration, either accidentally or by design.

Given these potential difficulties, what value should be placed on such pictorial information? The contention here is that engravings may be useful if they depict lost features or structures, or give an impression of how the landscape may have appeared at a previous time, providing that their accuracy can be assessed by comparison with charts, maps or photographs, thereby allowing the degree of reliability to be assessed.

4.8 Photographs

These are available from the mid-19th century up to the present day. The quality and quantity

of this form of representation increased throughout this period, although there are specific issues to be considered:

a) quality - early photographs were produced with relatively primitive equipment, resulting in lack of clarity. Fading of prints occurs, leading to loss of detail. Towards the end of the 19th century the quality of glass-plate cameras improved, allowing detailed photographs to be obtained. Modern-day cameras can produce extremely well focussed images.

b) field of view - this is a function of the focal length of the camera lens. Wide-angle lenses increase the amount of the horizon included in the frame, tending to minimise distant objects; conversely, telephoto/zoom lenses reduce angular coverage and, because of their magnification factor, cause far-distant objects to have an exaggerated size, as a result of fore-shortening the horizon. Such distortions need to be considered when interpreting photographs.

c) modern technology - at the turn of the 21st century the possibility that photographic images have been altered cannot be excluded: modern digital cameras and computer software enable images to be completely changed. It is not a major issue within the context of this study, but may become so in future academic work.

4.9 Newspaper reports

These provide useful additional information, especially as the transactions of Newport Corporation's committees were reported in some detail by the *Isle of Wight County Press* from the late 19th century until the middle decades of the 20th century. Since then the newspaper has reported the meetings of successor Councils and the Cowes Harbour Commission. The entire sequence of this newspaper is available on microfilm. The Isle of Wight was part of Hampshire, for administrative purposes, until the 20th century. Accordingly, significant events and news were reported by the *Hampshire Chronicle* from the late 18th century until the county was finally separated. However, reports by newspaper journalists have to be treated with caution, as they are subject to mistakes, omissions and misrepresentation. Journalistic bias and influence by newspaper owners upon editorial policy is not unknown. Despite these shortcomings, newspaper reports can be helpful in that they draw attention to events and issues which were considered to be significant at the time.

4.10 Trade journals

A particularly useful source is *Lloyd's List* newspaper, founded in 1734. Originally it was concerned only with the arrivals and departures of ships, together with ship casualties, but by the 20th century all aspects of the shipping industry were being covered, including details of port development.

Publications such as the *Maritime Journal* and the *Dock and Harbour Authority* include information concerning port development and legislation affecting the ports industry. Many port and harbour authorities publish handbooks and brochures, giving details of port facilities. Although essentially factual, these publications also have a marketing role and may therefore emphasise the most favourable aspects of the port concerned.

4.11 Pilot books and port directories

Pilot books are published by the UK Hydrographic Office and contain a wealth of navigational information for the mariner. Port details are included, usually obtained from questionnaires sent to ports but with some feedback from port users, and aerial photographs of the ports.

Commercial port directories are available, containing plans and details. Much of this information is sought by questionnaire from the ports involved, or from terminal operators within them, allowing for the possibility of bias.

4.12 The Internet

The Internet (World-Wide-Web) has become an important research tool, enabling Personal Computer (PC) users to gain access to a massive, and growing, quantity of information. Government departments, local authorities, port and harbour authorities, commercial businesses and many other institutions now provide information, all of which can be 'down-loaded' or printed directly by the PC. In addition, the PRO, the British Library, County Record Offices and university libraries, amongst others, now make their lists of holdings available 'on-line', enabling the researcher to search for documents before actually visiting these institutions,

thereby saving a great deal of time. Apart from these dedicated 'official' websites, there are numerous other sources available on the Internet. Herein lies a problem, because much of this 'unofficial' information, unless properly referenced in academic style, may offer unsubstantiated data and should therefore be treated cautiously.

Another difficulty stems from the ephemeral nature of some of the information available on the Internet. As time passes then published information may be updated to take account of changes. The question which then arises is whether the original information will be available for research purposes in years to come, and therefore quotable, or will it be lost in a constantly evolving data set? No doubt university librarians will have considered the possibility of creating their own electronic archives of the more important websites, for the benefit of future researchers.

4.13 Oral history

A further primary source is referred to commonly as 'oral history', or personal recollections within the living memory of individuals. There are particular difficulties associated with such evidence, which may be described more accurately as 'oral testimony'. As Tosh has noted, 'memories, however precise and vivid, are filtered through subsequent experience. They may be contaminated by what has been absorbed from other sources; ... they may be overlaid by nostalgia' (2002, 303-4). For these reasons, oral testimony, cited in this thesis as personal communications (pers. comm.), has been used very sparingly, and only when other primary sources are able to corroborate such testimony.

Chapter 5: Port Geography - Literature Review

5.1 Introduction

This thesis contributes to port geography and therefore has to be situated within the context of previous work. Previous work is reviewed chronologically, allowing influences on later scholars, and their modification of earlier work, to be followed sequentially. The review seeks to demonstrate that the approach adopted in the thesis can be justified as a logical progression from earlier studies.

5.2 Types of port studies

Bird (1980) posited a categorisation of seaport studies into seven types, a further type being added later (1984):

S1 historico-genetic (including studies with hinterland and foreland emphases-centres generated by regions rather than *to* and *for* regions);
S2 economic - ports recognised as the most economical point for industrial location, and investment appraisal of port development;
S3 ports and regional development;
S4 technical orientation (general cargo to containers and growth of bulk carriers);
S5 set comparisons (i.e. insights gained from comparative studies of groups of ports or port forelands, systems approaches);
S6 future-orientation (aids to decision-making or studies thereof);
S7 world system (via world lake);
S8 retreat from waterfront or retreat from growth.

Bird's categorisation rested on the proposition that 'a seaport is defined in terms of a function rather than in terms of form' (1984, 27). The exception was type S1, which examined the sequence of cause and effect through time, described the physical layout of a port, and analysed the reasons for such layout. This review follows the principle of Bird's categorisation, but proposes that type S8 can also be construed in terms of form as well as function. This thesis extends the definition of a port to include all the waterfront within the port area, with the result

that Bird's so-called 'retreat from the waterfront', based purely on function and constrained within his more narrow definition of a port, can instead be seen as one outcome in the process-to-form methodology advanced in this work.

5.3 Historico-genetic studies: including port models

The methodology of historical geography is used as a means of tracing port development in spatial terms; consequently, the thesis has been both informed and strongly influenced by historico-genetic studies. The majority were published during the period 1938-63, after which the influence of the quantitative revolution meant that this earlier approach to port geography was perceived as out-dated, being superseded by statistically-based studies. This thesis contends that historico-genetic studies which examine waterfront development are justified and relevant, because the principal issue raised by current proposals for port development is the impact on the environment caused by a port's evolving footprint. The spatial development of waterfront sites frequently becomes the most contentious issue during public consultation and the main challenge for planning authorities and those organisations responsible for environmental protection. Understanding the historical background to sites within a port informs the decision-making process by providing details of previous usage, including those activities which may impose constraints on future use.

5.3.1 Sargent

Sargent's study, 'Seaports and Hinterlands' (1938) defined the difference between a port and a harbour and also discussed what is meant by hinterland in terms of commodities, suggesting that this 'may consist ... of a series of areas geographically disconnected' (11). He noted the competition of water (canal) and rail, and identified the importance of port location. Original sites, at the upstream heads of navigation, although suitable for smaller, sailing vessels, became inadequate for larger, powered vessels. To overcome this problem there were two alternatives: the more drastic involved moving the port downstream to deeper water; the other was to deepen the channel by artificial means. The latter 'has been the practice of most great modern ports' (22). But this has a limit, 'beyond which the cost of further deepening the [port] approach would be greater than any gain from the anticipated increase in trade'(22). Sargent also commented that a port could be a terminus as well as a junction, attracting population as well as goods. Shipbuilding and repairing facilities were a common feature and heavy industry

often became established because of the availability of raw materials and access to navigable water (25). Many of these functions were found in the Medina estuary, suggesting that the ports of Cowes and Newport are typical examples of port situations.

Sargent continually emphasised the importance of statistics in best representing the relationship between a port and a hinterland. In view of the forthcoming quantitative revolution, this was remarkably prophetic.

5.3.2 Pounds ('Port' & 'Outport')

Sargent's work probably influenced Pounds' study, 'Port and Outport in North-West Europe' (1947), because the latter work was a further investigation into the relationship between ports at opposite ends of an estuary. Pounds' 'port' was located at the upstream, tidal-head of the estuary, while the 'outport' was at the estuary mouth. The problems suffered by the 'port' during the 18th and 19th centuries were elaborated; namely, silting and the increasing size of vessels. Most of his examples of estuarine ports were situated in north-west continental Europe. The only British estuaries considered in detail were the Severn and Thames. Consequently, Pounds' emphasis was on ports larger than those evaluated in this thesis. Significantly, he also included as 'outports' some ports not situated on estuaries, but which had a rail connection with a port-city; these he called *ports de vitesse*. He persisted with this categorisation in a later work concerning the historical geography of Europe (1990).

5.3.3 Owen

Owen's study, 'The Origin and Development of Ports in the UK' (1948), described briefly the origin and nature of ports before considering the major ports on an individual basis, ending with the smaller ports of each region. Four different types of port undertaking were described. Initially published in 1939, a second impression (1948) took into account the effects of the Transport Act, 1947. Although essentially descriptive, Owen's work used port trade statistics to provide a means of ranking, thereby anticipating the new thinking of the quantitative revolution.

5.3.4 Bird

Bird's work, 'The Geography of the Port of London' (1957), differed from the other studies in this group by being restricted to one port. As the UK's largest port, London merited such a

comprehensive study. Bird adopted a themed approach, beginning with the topography and geology of the surrounding area, before moving on to the port's development from the 12th to the 18th century. Further chapters considered the water highway, the older docks, the timber docks and the docks downstream, river traffic and riverside wharves, the industrial development of Lower Thameside, markets and trade, and ended with a description of the port authority. This study was the precursor to Bird's major work on ports (1963). He introduced the example of a hypothetical port situated at the head of an estuary, a concept developed later as the *Anyport* model. 'The Geography of the Port of London' was a landmark in the transition between purely historico-genetic studies and those which utilised modelling techniques.

5.3.5 Morgan

Bird was probably influenced by Morgan's study, 'Ports and Harbours' (1952). Following Morgan's death a second edition was published (1958), having been revised and updated by Bird. Morgan produced the first fully comprehensive study of ports, using examples from around the world, and therefore differed significantly from those historico-genetic studies which examined individual ports. Instead, ports and harbours were considered in terms of function and spatial format. The study also examined the problems of assessing and classifying ports, the use of statistics and types of administration.

Harbours were classified according to their physical setting and included those related to coastal submergence, Ria harbours, Fjords, estuary ports, fault harbours, headland and breakwater harbours, together with converging breakwater, converging jetty, detached breakwater and other artificial harbours. Morgan noted that 'It is ... the harbour which is worth distinguishing as artificial, for the port works of any port are inevitably artificial' (49). Bird (1963) subsequently adopted a similar approach in his own major contribution to the sub-discipline.

Morgan defined port types as primitive lighter ports, marginal quays, wharves off the bank, marginal quays along the waterfront, and marginal quays around the harbour. Morgan then considered quay systems, such as piers, moles, tidal basins and open docks, and wet dock systems. The functional classification of ports consisted of naval ports, fishing ports, ferry ports, harbours of refuge, ports of call and bunkering ports, trans-shipment ports, entrepot ports, free ports, and outports. Morgan commented that outports 'may appear to constitute a special class', but 'As a rule ... what are referred to as outports have been developed under the legal and

financial aegis of the older port' and 'Outports do not form a clearly defined class; it is preferable to say that there is often an outport tendency' (76-7). He differed from Pounds in limiting the use of the term outport to estuarine ports, while acknowledging that the shipping community in the UK frequently referred to ports outside London as 'outports'.

5.3.6 Rees

Rees' study, 'British Ports and Shipping' (1958), considered the major ports first before moving on to smaller ports. This work also considered the shipping which made use of the ports, an approach which was innovative. Each port was placed within the context of its physical setting, and then answers to a series of questions were sought. These concerned the purposes of the port, its equipment, whether any industries were established as a result of shipping, and whether there were any changes taking place in the nature of the traffic. Finally, each port's activities over a short period of time were described by examining the actual ships using the port and the trades in which they were employed. As Rees acknowledged, such a survey would quickly become out of date, but would have a value as an historical document.

5.3.7 Weigend

The emergence of port geography as a sub-discipline was recognised by Weigend in a work entitled 'Some Elements in the Study of Port Geography' (1958), in which he noted that 'The literature of port geography has become more abundant in recent years both in the United States and Europe' (185). The article concentrated on his perception of the basic elements, namely; port, carrier, cargo, hinterland, foreland and maritime space.

Weigend stressed the importance of the human factor in port development: 'Although the port may attempt, often successfully, to influence governmental policy in its favor, it is within the port's own realm of activity that greatest influence can be exerted on its economic well-being ... the aggressiveness and imagination of the port administration and commercial interests are vital to successful port operation' (188). He concluded: 'It has been demonstrated that in port geography the human factors predominate' (199).

5.3.8 Clark

Clark's work, 'The Ports of the Exe Estuary, 1660-1860' (1960), sub-titled 'A Study in Historical Geography', attempted to apply the methodology of historical geography to ports.

His work considered the setting and trade of the ports. The main criticism is that no attempt was made to illustrate the reconstructions of the ports. However, it has to be acknowledged that Clark's study was comprehensive and the text does refer to spatial developments.

5.3.9 Bird (*Anyport*)

Bird's study, 'The Major Seaports of the United Kingdom' (1963), is his *magnum opus*: indeed, the influence of this seminal work on port geography was profound and long-lasting. Its strengths were many. They arose from the sheer volume of material used in its production; the extensive bibliographies for each port; the quantity of photographs (more than 20) and of maps and diagrams (more than 100) used; and the scope of coverage possible in a publication of 430 pages.

The work's greatest legacy is the model of port development known as *Anyport*. Bird's study concentrated on port installations and 'at first sight they seem rather dissimilar in lay-out', but 'Closer investigation reveals a number of basic similarities' (24). By comparing these similarities it was possible to deduce common factors in port development, which could be used to demonstrate the development of a hypothetical port - *Anyport* - which was taken as being sited at an estuary head. This location was chosen because, historically, most ports evolved from this initial site. Bird stressed that 'The purpose of using the hypothetical *Anyport* is not to display a pattern into which all ports must be forced, but to provide a standard with which to compare the development of actual ports' (26). Although the model had been designed for British ports this did not preclude its use elsewhere. The model related to large ports and therefore its applicability to smaller ports was uncertain.

Bird presented his model as a series of Eras (periods), terminated by Epochs (points in time beginning a new or distinctive period). Eras were referred to as: I) Primitive; II) Marginal Quay Extension; III) Marginal Quay Elaboration; IV) Dock Elaboration; V) Simple Lineal Quayage; VI) Specialized Quayage. The model's general theme was the seaward movement, through time, of port installations in order to exploit the deeper water found downstream and the greater space available for expansion. The installations of the preceding era, now effectively redundant, were either abandoned or put to other uses.

Anyport was devised before the so-called 'container revolution' really began in the shipping industry. Bird acknowledged this in his later study of seaports and seaport terminals, suggesting that container cargo berths 'may even call into recognition a "special" case of *specialised quayage* - the era of *container quayage*' (1971, 72), which, unlike previous eras, could spread back upstream. Ultimately, this would result in 'the occupation of all waterside sites between the port nucleus and the open sea' (1971, 68).

5.3.10 Layton (*Bottenhamn*)

Existing port models also influenced Layton's study, 'The Evolution of Upper Norrland's Ports and Loading Places, 1750-1976' (1981), in which he noted that Bird's *Anyport* was concerned with major ports. Consequently, the *Bottenhamn* model, devised from his work on ports in the Gulf of Bothnia, was designed to address specifically the development of smaller ports, and for that reason was of potential significance to this thesis. Layton's model was divided into five stages: initial church; old town; new town; industrial quays; modern outport. He had considered Pounds' 'port-outport' model, recognising that it 'represents a division of port functions into two separate entities' (308), which lead to the 'eventual migration of port activity, i.e. relocation diffusion' (309). However, he held that *Bottenhamn* was more appropriate because it depicted a series of port relocations (involving expansion and subsequent relocation) over a longer time scale. Given that this extended over a period of 225 years, spanning the mid-18th century to the late 20th century, then it is difficult to see how he could justify that particular argument, because many 'port/outport' relationships had crystallised over a similar time scale.

Unfortunately, two factors militated against the *Bottenhamn* model being directly comparable with the ports of the Medina estuary. First, it was based on an area subject to rapid post-glacial rebound, totally unlike the Isle of Wight, which resulted in ports having to be relocated successively further downstream; secondly, it was devised for ports on non-tidal rivers, which also experienced severe winter icing, again unlike the situation pertaining in the Medina estuary. For these reasons it was considered inappropriate to devote further attention to this model.

5.4 Port system models

The next studies reviewed, covering the period 1963-95, are considered as representative works of the quantitative revolution, and typically make use of modelling techniques.

5.4.1 Taafe, Morrill & Gould

This study, 'Transport Expansion in Undeveloped Countries: A Comparative Analysis' (1963), is included for two reasons. First, although it examined more than one mode of transportation, the emphasis was firmly tied to ports; secondly, this work stimulated a great deal of discussion within the sub-discipline, with later academics modifying the original model.

The study by Taafe *et al* falls into Bird's S3 category and was based on the situations of Ghana and Nigeria. The derived model represented an interpretation of an ideal-typical sequence of transport development in a large area, involving the evolution of several ports as part of an overall system linking the hinterland of the interior to the coast. Consequently, it differed from previous work reviewed, where ports were considered on an individual or paired basis. The model was in six stages: scattered ports; penetration lines and port concentration; development of feeders and lateral connections; beginnings of interconnection; complete interconnection; emergence of high-priority 'main streets'. Although primarily descriptive, statistical information was shown diagrammatically on maps.

The authors acknowledged that their study was designed to provide 'an initial perspective' on the expansion of transportation in undeveloped countries, expressing the hope that future studies would 'bring about fundamental changes in the perspective presented here' (529).

5.4.2 Rimmer

The model of Taafe *et al* was criticised by Rimmer (1967) in his study, 'The Search for Spatial Regularities in the Development of Australian Seaports, 1861-1961/2', for neglecting changes in maritime space, while emphasising the development of landward connections. He revised their model, attempting to 'incorporate both the changes in the maritime and landward transportation networks ... based on the assumption that a general process of dominance ranking has taken place through the improvement of internal accessibility' (42). Rimmer's model was tested initially on New Zealand seaports and then refined for application to Australia. Both countries had only developed recognisable seaports since the arrival of European settlers; prior

to that they could be considered as undeveloped, allowing valid comparisons to be made with Ghana and Nigeria. The problem of establishing a methodology for comparing and ranking seaports was discussed in an earlier paper by Rimmer (1966), and the conclusions were applied to his revised model. The idealized-type sequence of port development was divided into five phases: 1) scattered ports; 2) penetration lines and port piracy; 3) interconnection and concentration; 4) centralization; 5) decentralization.

5.4.3 Bird

Mathematical and modelling techniques were adopted by Bird in 'Seaports and Seaport Terminals' (1971). The ports considered were on a global scale and aspects of port operation which had been virtually ignored in his earlier work (1963) were now analysed in depth. Modelling was used to measure the value of a seaport as a modern transport node, to evaluate the pull of the port in terms of transport costs, and to calculate an index of traffic concentration with reference to hinterlands.

The effects of the 'container revolution', Ro-Ro traffic and palletised cargo were considered, and ports and planning were examined in detail, reflecting the importance of port administration. The impact of the European Economic Community was discussed. In many respects, therefore, this work formed a natural progression from his earlier study.

5.4.4 Hilling

West African ports continued to attract attention, notably in Hilling's study, 'The Evolution of a Port System - the Case of Ghana' (1977). This followed an earlier paper on 'The Evolution of the Major Ports of West Africa' (1969) and a subsequent unpublished Ph.D thesis entitled 'The Development of the Ghanaian Port System' (1974).

Hilling's study sought to compare actual port development with two types of model. He noted that Bird's *Anyport* model had been adapted successfully for the Australian and East African situations, which suggested that it might also be applicable to the Deep-Water port era in Ghana. However, because these were modern ports, the historical seaward trend in development exemplified in *Anyport* was not present. Consequently, Hilling proposed that the ports might best be considered in terms of a port system, turning to the model devised by Taafe *et al* and subsequently refined by Rimmer. Here he was able to demonstrate that the phases of

Ghanaian port development could be reconciled with the model if it was modified. The phases were: primitive surf-ports; lighterage ports and surf-ports; deep-water port and surf-ports; deep-water ports. Related to this categorisation was the concept of measuring the index of concentration of activity which corresponded to these phases, this being achieved by a mathematical equation.

5.5 Recent studies

During the 1980s and early 1990s the sub-discipline of port geography attracted further interest in the UK, with several collaborative studies being undertaken. Port systems continued to be investigated, and the phenomenon of redundant docklands and associated urban renewal was also researched. A good example of the continuing interest in port systems was the study by two prominent workers in port geography, Hoyle and Hilling, entitled 'Seaport Systems and Spatial Change' (1984). This study, sub-titled 'Technology, Industry and Development Strategies', contained papers from 21 contributors. As its editors noted, during the post 1960 period there had been 'a shift in emphasis from single-port studies towards comparative analyses, including concern for port operations and cargo-handling technologies, and leading to a growing interest in the bases for port planning' (3).

Hoare's study, 'British Ports and their Export Hinterlands: a Rapidly Changing Geography' (1986), based on research conducted into the Bristol port situation, was notable because it demonstrated by mathematical modelling that the notion of seaports serving only an adjacent hinterland was no longer valid. The arguments used were the container revolution in shipping and the growth of inland freight terminals, resulting in Hoare's assertion that 'the mutual interdependence of local port and local region has diminished, probably never to return' (39). Such a radical departure from established thinking reinforced Bird's category of a world system in port studies, particularly with regard to large or major ports.

Todd's study, 'The Interplay of Trade, Regional and Technical Factors in the Evolution of a Port System: the Case of Taiwan' (1993), considered a port system which had developed within the discrete area of an island, offering the possibility that parallels might be found with the Isle of Wight. It proved to be inapplicable for four reasons: 1) the ports concerned were much larger than Cowes and Newport; 2) no port was situated at an upstream, tidal-head position on

an estuary; 3) the ports were all under a centralised state control, allowing only limited inter-port competition; 4) the island of Taiwan was large enough to be a separate nation.

A further study in Bird's category S5 - set comparisons - was a collaborative work by Hoyle and Charlier entitled 'Inter Port Competition in Developing Countries: an East African Case Study' (1995). This paper, concerning Kenya and Tanzania, also included Uganda because it involved the transport system of the whole of East Africa. The model devised by Taafe *et al* (1963) was modified yet again to take account of port development, inter-port competition and port-hinterland relationships during the period 1500 to 1990, with the revised model comprising 5 stages: 1500; 1850; 1900; 1960; 1990.

Hoyle had also collaborated with Pinder and Hussain in an earlier work, 'Revitalising the Waterfront - International Dimensions of Dockland Redevelopment' (1988), consisting of 15 papers by 18 contributors, which continued the theme of dealing with redundant dockland. This work fell into Bird's S8 category, which addressed retreat from the waterfront and reflected the widespread interest in waterfront revitalisation which was current at that time. The work was divided into 3 parts: I) frameworks for analysis; II) policy and practice; III) strategic planning issues.

5.6 Waterfront archaeology

Although port geography was global in coverage, British ports were not entirely neglected: Jackson's work, 'The History and Archaeology of Ports' (1983), was firmly in Bird's historico-genetic category and is included here for three reasons. First, it treated British ports thematically, rather than individually, with chapters concerning: the rise of ports, c1450-1660; harbour developments and port improvement, 1660-1840; the emergence of dock systems, 1690-1840; expansion: new docks and new ports, 1840-1870; the height of prosperity, 1870-1914; stagnation and decay, 1919-1980. Secondly, the extensive use of contemporary pictures and photographs reinforced the importance of using all forms of primary data - subject to critical review - in reconstructing ports in earlier times, especially when combined with chart and map data. Thirdly, the interpretation of the visible remains of earlier port structures suggested that other historically based disciplines, such as industrial archaeology, might contribute to a better understanding of change through time.

It was recognised during the 1970s that waterfront archaeology was largely neglected in urban studies of northern Europe. Since then a great deal of work has been undertaken, such that waterfront archaeology may be considered as a sub-discipline in its own right. Three international conferences were held (1979, 1983 and 1988). Arising from the earliest and latest conferences were two Research reports published by the Council for British Archaeology (CBA), the first being edited jointly by Milne and Hobley (1981) and the second by Good, Jones and Ponsford (1991). Significantly, Hobley commented that 'the three main urban research areas of origins, continuity, and development will be better understood as a result of the combination of archaeological investigations and documentary studies on not just the mercantile shore but also the whole area which abuts on to the river or sea. Waterfront development is an economic indicator not only for the town itself but in many cases for the hinterland also'. Furthermore, 'The economic viability of ports has to be understood in the context of the changing suitability of their situation, for silting or flooding and changes in trade routes and ship design could all result in a port's decline or migration to a more favourable site' (Hobley 1981, 1). These comments are particularly relevant to the study of estuarine ports, and therefore to this thesis, because they emphasise the need to study the entire waterfront and also because they emphasise the advantages of combining archaeological evidence with documentary primary sources in order to improve the understanding and significance of waterfront development.

Milne's study, 'The Port of Medieval London' (2003), resulted from thirty years of archaeological investigations and was 'presented through 5 thematic studies set alongside 8 chronological chapters reflecting the more readily-identifiable major changes' (9). A number of inter-related themes were considered: 'archaeological, topographical, economic, environmental, nautical and artefactual' (10), and secondary historical sources were referred to widely. Several reconstruction plans were also presented. Milne's work is significant because it adopted the reconstruction methodology of historical geography and the widespread range of thematic material, demonstrating that this approach is far from out of date.

5.7 Qualitative studies

By the early 1990s qualitative methodologies were evident in port geography. An influential

work, often referred to in later studies, was Westerdahl's paper, 'The Maritime Cultural Landscape' (1992). This was based on Scandinavian archaeology and discussed the human usage of maritime space. The term 'maritime cultural landscape' comprised 'the whole network of sailing routes, old as well as new, with ports and harbours along the coast, and its related constructions and remains of human activity, underwater as well as terrestrial' (6). It took into account such concepts as cognitive landscape, which denoted the 'mapping and imprinting of the functional aspects of the surroundings in the human mind' (6). Further work of a similar nature was Norcliffe, Bassett and Hoare's study, 'The Emergence of Postmodernism on the Urban Waterfront' (1996). This article, sub-titled 'Geographical Perspectives on Changing Relationships', represented another contribution to thinking about ports in a qualitative way and contended that even in the short space of 50 years, port-city relationships had altered dramatically and become more complicated. Expressions of post-modern culture on the waterfront were exemplified by 5 main groups of overlapping activities: employment; housing; recreation; hospitality industries; and culture/heritage. Each of these was explored in depth.

Hoyle adopted qualitative methods in his study, 'Scale and Sustainability: the Role of Community Groups in Canadian Port-City Waterfront Change' (1999), signifying a shift of emphasis. Although still following his favoured theme of waterfront change, Hoyle embarked on an exercise in human geography, using interview techniques to assess the perception and opinion of local communities as to their vision of a new waterfront for the future and how best to influence the changes necessary for its realisation.

Westerdahl's earlier paper probably influenced Parker's study, 'A Maritime Cultural Landscape: the Port of Bristol in the Middle Ages' (1999), concerning the port's landscape archaeology, by giving consideration to the cognitive aspects of this period. For example, attention was given to 'The sea and the rivers as a setting for the spectacle of trading contracts' (331), 'How citizens of Bristol perceived their river-port' (331), and 'Symbolism in civic festivals and processions' (334).

5.8 Conclusion

This review demonstrates that quantitative methodology continues to be used effectively in port

geography, while equally valid qualitative approaches were re-established during the 1990s. The use of archaeological data, together with primary/secondary historical sources, offers a more informed approach than earlier studies, especially when combined with the use of pictorial information. The reconstructive methodology of historical geography continues to be important in studies of an historico-genetic nature, such as that presented in this thesis.

Chapter 6: The selected approach: historical geography

6.1 Introduction

This chapter considers a fundamental aspect of the research; namely, the academic context within which it should be set in order to achieve its aim. A case is argued for the choice of historical geography as the most appropriate context, or approach. Consideration is given to some alternative contexts and the reasons for their rejection are discussed.

6.2 The case for historical geography

An important aspect of this study is the attempt to answer some basic questions relating to human activity, as manifested by the way in which the two ports at opposite ends of an estuary developed over a long period of time. For example;

1) On the basis that a small port already existed at Newport in the 16th century, then what prompted the decision to start building port facilities at Cowes?

2) Did the 19th century opposition of Newport Corporation to the development of Cowes as an autonomous port actually affect development?

3) What factors account for the decision to select the Cowes to Newport route as the island's first railway line, and how did it affect trade and development opportunities in the Medina estuary?

4) Were private companies able to influence the decision-making process of port development at Newport, given that many local businessmen were also members of the Corporation?

These are basically historical questions about specific places. It would seem, then, that the present study falls into the domain of historical geography and must use its approaches and methods to tackle the questions of interest. The development of the sub-discipline and its applicability to the research reported are reviewed below.

6.3 Historical geography - a review

'Geography .... may now be viewed as the study of the earth's surface as the environment and space within which human beings live' (Goodall 1987, 189). It is concerned with the structure and interaction of the ecological system that links human beings to their environment and the spatial system that connects one area of the earth's surface with another. This modern view also recognises that geography has many branches or sub-disciplines, each concerned with a limited range of topics.

Butlin (1993, 1) has defined historical geography to be 'the study of the geographies of past times, through the imaginative reconstruction of phenomena and processes central to our geographical understanding of the dynamism of human activities within a broadly conceived spatial context, such as change in the evaluation and uses of human and natural resources, in the form and functions of human settlements and built environments'. This encapsulates the philosophical stance and the methodological approach adopted in the thesis.

'Classical' historical geography became characterised by 'empiricism'; that is, a philosophy 'based on the belief that knowledge is the result of experience' (Goodall 1987, 150). Empiricism is fundamental to the philosophy of 'positivism', which holds that science is only able to deal with empirical questions, where genuine knowledge is restricted to observable facts and to the relationships between them, and 'that the various sciences [both natural and social] should be reducible to physics, and that the theoretical parts of good science must be translatable into statements about observations' (Concise Routledge Encyclopedia of Philosophy 2000, 696). The concept of Positivism originated in the Enlightenment, 'a wide-spread intellectual, cultural and technological/scientific movement, being the seedplot of the Modern Era' (Munslow 1997, 182), which took place in Europe during the 17th and 18th centuries.

In a seminal work by Darby, the relations of geography and history were discussed from a largely positivist standpoint, and the methodologies developed to deal with the perceived problems were elaborated. Darby considered that 'the term "historical geography" has come to be increasingly identified with an approach in which data are historical but in which the method is geographical. The purpose of the historical geographer .... is to reconstruct the geography of past times. While geography itself cuts through time at the present period, historical geography

cuts through it at some preceding period' (Darby 1954, 3,4,). Although the concept of reconstructing the past has been criticised, it remains a tenet of the sub-discipline. Darby recognised the limitations of the empirical descriptive approach, observing that 'The landscape we see is not a static arrangement of objects. It has become what it is, and it is usually in the process of becoming something different ... let us then not study a static picture, but a process that is continuing, and, seemingly, never-ending' (1954, 7). This summarises a fundamental problem of historical geography; namely, which methodology is likely to offer the most satisfactory solution to dealing with process, or change through time. A further difficulty exists because the observer and the observed are separated in time, yet this also makes historical geography what it is - a sub-discipline which seeks to engage with the geographies of past times from the present point in time. Darby went on to discuss the merits, and limitations, of using the method of successive cross-sections chosen at selected times during the past. This method is also referred to as synchronic analysis, or the study of the internal linkages of a system's structure at a particular point in time. Similarly, Darby examined the use of the vertical theme method, which analyses a landscape into its changing elements. This approach is also known as diachronic analysis, or 'the study of the processes by which changes in one component of a system are transmitted throughout that system' (Goodall 1987, 126). Estaville discussed (1991) the horizontal cross-section and the vertical theme methods: more significantly, he elaborated the possibility of combining the two methods as a means of reconciling some of the shortcomings inherent in both of them.

During the 1950s and 1960s what came to be termed the 'quantitative revolution' took place in Anglo-American geography, involving some far-reaching changes in the philosophical approach to the discipline (Darby 1983; Butlin 1993). These quantitative methods included 'mathematical techniques, spatial statistics and the extension of statistical analysis beyond an introductory suite of methods' (Robinson 1998, 1). The former emphasis on regional geography and areal differentiation was based on an idiographic approach, stressing the uniqueness and individuality of phenomena, rather than their similarities. It was replaced by a nomothetic approach, concerned with how generalizations about phenomena can be established and verified by seeking to formulate laws, models and theories of spatial structure. This new approach found expression in the sub-discipline of port geography, where academics such as Pounds (1947), Bird (1963), Taafe, Morrill and Gould (1963) and Rimmer (1967) devised models relating to the evolution of ports or port systems. Later work in the same genre

included that of Hilling (1977), who adapted Bird's earlier model, and Layton (1981). These models are considered later. Quantification was also introduced into historical geography along with the procedures of content analysis and catastrophe theory. Content analysis, an established theory in social science, is considered to be particularly appropriate to migration analysis, while catastrophe theory is 'in principle the method...well suited to many issues of change through time as it is concerned with sudden change in otherwise continuous systems' (Norton 1984, 43).

Two definitions of historical geography have already been quoted; Darby's of 1954 and Butlin's of 1993. Between these dates, Prince sought to explicate the meaning of historical geography by treating ideas about the past as lying within three defined realms of knowledge. These were: 'reconstructions of the real world of the past; images of the world in the past held by contemporary or by later writers; models of abstract worlds of the past created by theoreticians' (1971, 4). First, it was recognised that most effort in historical geography to date had been concerned with reconstructing the features of the external world, on the basis of the documentary evidence available at the time of the reconstruction. Secondly, the fact that contemporary writers were describing the world as they perceived it, at a point in time which was removed from that of the observer of the past, was seen as emphasising the differences in context which were inherent in historical writing. Lastly, the important role played by theoreticians was identified. Models could be derived to account for change through time and could also be used to test the operation of different hypothetical processes. By using the technique of counterfactuals, which compared what actually happened with what might have happened under alternative conditions, what has happened in the real world can be measured and more fully understood. By extension, the possibility existed that models could be used to predict backwards in time, or 'postdict', the geography of periods for which documentary evidence was scarce (Prince 1971, 5). The expression 'Abstract worlds of the past' was coined by Prince to summarise the theoretical approach which made use of modelling techniques. He recognised that most empirical studies of the past were essentially descriptive, while behavioural studies provided insights into the perception of past worlds and how decisions which altered them were made. However, 'neither approach alone leads to an understanding of how phenomena were organised in space, how they functioned or how they were changed from one state to another' (Prince 1971, 44-5). The use of models was seen as bridging the gap between the empirical and the behavioural approaches.

Moodie and Lehr criticised Prince's notion that historical geography could be classified into 'real', 'imagined' and 'abstract' worlds of the past on the basis that since 'the scholar's view of the past is a hypothetical one', then 'the tripartite classification....was misleading and illogical' (1976, 133). The main thrust of their argument centred around the validity of historical beliefs, reflecting an interpretation of historical geography as resting on the interaction between fact and theory. However, support for Prince's position came from Norton, who considered the three realms of knowledge a 'thoughtful and stimulating summary' and usefully tabulated the procedures identified with them (Norton 1984, 28-9). Despite some adverse criticism, Prince's categorisation continues to offer an insight into the way of thinking about the main problems associated with historically-based studies. These centre around the temporal separation between the past and the present and, perhaps inevitably, the difference in contextual perceptions held by past observers of their environment as compared to current perspectives of the past. Given these problems, the potential exists for modelling techniques to assist in interpreting the past.

A reaction against the quantitative revolution in historical geography began in the 1970s and was identified with the perception that 'the theory and methodology of the natural sciences ... offer models which are unhelpful or harmful to the social sciences and humanities' (Butlin 1993, 62). In historical and human geography this was manifested by turning to the theoretical and philosophical work of academics in the fields of the social sciences and politics, a trend referred to as a 'New Historical Geography' by Baker, who commented that 'consideration of man as a passive object rather than an active subject is, perhaps, the most serious criticism which might be made of such work both in traditional geography and in modern spatial analysis' (1979, 561). Theoretical and quantitative methodologies were related to positivism and the rejection of this philosophical position, engendered by the new emphasis on the agency of man, was to stimulate the consideration of humanist philosophy as an alternative approach. Although it was an over-simplification to categorise such critics as either Marxists or humanists, 'undoubtedly these were the two "camps" in the 1980s that produced the most sustained and effective alternatives to the discipline's previous paradigm' (Robinson 1998, 2). One manifestation was the emergence of behaviouralism, considered by Guelke (1982, 14) as explicitly recognising the importance of understanding human behaviour in relation to subjective conceptions of the earth. This approach attempts to explain spatial patterns of

behaviour in terms of cognitive processes by viewing people as thinking persons, by the way in which people come to terms with their physical or social environments. Baker (1976) was critical of this approach as it offered no means of inferring process from form. Allied to behaviouralism was the philosophical approach of phenomenology, which held that all knowledge originated in the world of experience and cannot be independent of that world. Billinge's lengthy critique of phenomenalism made the distinction between adopting this approach as a philosophy and as a methodology, concentrating on the latter in his paper. He commented that 'phenomenology admits no *a priori* hypotheses (however formulated) and nothing other than an intuitive understanding on the part of the perceiver himself' (1977, 64). Phenomenology could be acceptable if it implied merely that the subjective viewpoint was reasonable and that there were non-quantifiable sources which were worthy of attention. As Billinge noted, 'historical geographers ... have often turned to contemporary and necessarily partial or subjective sources for the reconstruction of the past' (1977, 66).

Another example of humanist geography was found in idealism. This 'seeks to understand the development of the earth's cultural landscapes by elucidating what the earth means to its people' (Goodall 1987, 220). Guelke posited idealism as the means of achieving historical understanding in geography. This was rationalised because he held that human activity on the land was a product of historical experience (1982, 2). As he perceived it, the objective of historical geography was to understand historical change, recognising that such change never took place in a vacuum of ideas, and historical geography was defined as 'the study of changes in thought expressed in human activity on the surface of the earth' (Guelke 1982, 3). Idealism enabled the historian to understand the actions of the past by re-enacting the thought processes involved in his own mind. The idealist position was criticised in an earlier paper by Baker (1979, 565) who pointed out the necessity of retaining one's own awareness as an external frame of reference in order to avoid the pitfall of failing to recognise a false consciousness of the past. Such necessary detachment may partially undermine the idealist position but, nevertheless, seeking to understand past human actions by attempting to put oneself in the contextual position of the persons involved at the time may provide some insights into their subsequent actions. Harris supported this position, commenting that 'the historical mind ... seeks to understand why people acted as they did, and this means understanding why they thought and felt as they did' (1978, 288). To achieve this the historical mind needed to be acutely sensitive to the motives behind action and contextual in its approach to understanding

these motives.

A further serious difficulty exists with idealism: 'We can never recapture the authentic flavour of a historical moment as it was experienced by people at the time because we, unlike them, know what happened next; and the significance which we accord to a particular incident is inescapably conditioned by that knowledge .... Like it or not, the historian approaches the past with a superior vision conferred by hindsight' (Tosh 2002, 184). Tosh continued: 'It is precisely our position in time relative to the subject of our enquiry that enables us to make sense of the past - to identify conditioning factors of which the historical participants were unaware, and to see consequences for what they were, rather than what they were intended to be' (2002, 185).

Another approach is that of structurationism, or structuralism, which concerns the study of underlying patterns of social life, as displayed in the beliefs and ideas held by members of society and their associated social behaviour. It emphasises the importance of studying human activity within structures of social relations and systems of social justice. Interaction may occur both consciously and unconsciously, resulting in the participants experiencing changes of view, action and reaction (Butlin 1993). The rationale for this philosophy was expressed by Norton thus: 'this approach is concerned with the study of relationships in order to understand the meaning of structures and their transformations' (1984, 49). In a paper which explored the problem of understanding and experiencing the past, Baker commented on the distinction between understanding the past by observing it objectively and attempting to experience the past by re-enacting it subjectively. This could be expressed as the difference between the empiricist and the idealist approach. He also held that 'a structuralist interpretation of the past which effectively combines these two approaches would, however, seem to be potentially more productive' (Baker 1978, 259, 260). However, the problems involved in conveying spatial structure, which is central to structuration theory, were highlighted by Butlin, who commented that 'a persistent problem is that while the use of narrative to capture place is not generally difficult, its ability to convey spatial structure is more problematic, and this is central to structuration theory'. Additionally, 'this structurationist perspective examines the wide questions of structure and agency' (1993, 64).

Butlin had also noted 'the now very close reciprocal connections between social theory and human geography' (1993, 64), a trend which became apparent in the latter part of the 1970s

through to the 1990s. However, Robinson, who become co-editor of the *Journal of Historical Geography* in 2000, noted that while qualitative methods have been used by sociologists and anthropologists, other geographers, 'notably physical geographers and those concerned with mathematical modelling and/or geographical information systems (GIS), have forged ahead with the use of quantitative techniques' (1998, 2). His opinion was that the result of substantial changes within human geography during the past four decades had been 'the establishment of two sharply contrasting "new" geographies' (1998, 2). The first, or quantitative, belonged to the early and mid-1960s and was the result of logical positivism, which lead to the adoption of statistical and mathematical modelling. The second, or qualitative, had crystallised in the middle 1980s and arose from 'the use of *critical social theory*, the injection of spatial considerations into that theory and, recently, an engagement with *postmodernist thinking* that has been part of a so-called "cultural turn" ' (1998, 2). During the 1980s and 1990s this was manifested as a change which took place in the perception of space and spatial structure. Instead of being merely a passive stage upon which human activity took place, space was seen as a less rigid medium, one which was shaped 'through interaction with different modes of social, economic and cultural reproduction' (Butlin 1993, 52). Space has continued to be treated as an objective or scientific measure, but is now also interpreted as a subjective experience which involves images, perceptions and a different understanding of space and territory. This recent trend in historical geography is exemplified by the attention given to power and control. Massey commented that some human geographers 'are now trying to rethink space as integrally space-time and to conceptualize space-time as relative, relational and integral to the constitution of the entities themselves (the entities are local time-spaces).' (1999, 262). Baker was critical of Massey's stance, commenting that 'a common interest in "space-time" is a weak foundation upon which to rebuild the links between physical and human geography' (2003, 32).

Modern Historical Geographies, edited by Graham and Nash (2000), offers the recent work of ten contributors. The editors acknowledge that historical geography has 'a long tradition of locating local studies within broader processes operating at wider spatial scales, of paying attention to both the specificity of the local and the wider economic, cultural and political processes and institutional structures', while observing that, since the 1980s, the divisions between cultural and historical geography became less distinct. They note that recent work is informed by post-structuralism, feminism, anti-racism and post-colonial perspectives.

Significantly, this means that contemporary historical geographers 'share concerns about the questions of power and meaning with other researchers more readily located within the traditional sub-disciplines of economic, cultural, political and social geography' (2000, 3). While noting that human geographers remained within their sub-disciplines of political, urban, cultural and historical geography, 'the boundaries between them started to blur' (Daniels *et al* 2001, 1). As Holdsworth has commented, 'the liberal eclecticism that has long characterized historical geography is still very much in evidence' (2002, 671), echoing an earlier comment by Heffernan, who became editor of the *Journal of Historical Geography* in 1997, who held that 'Historical Geography is, above all, a hybrid discipline' (1997, 2). Baker, in another recent work which emphasised the underlying structures of historical geography, recognised the evolving nature of the sub-discipline: 'Historical geography is constantly seeking and finding new research realms, it is constantly renewing itself, constantly moving on to new periods, new places and new topics' (2003, 7).

6.4 Human geography

The traditional interpretation of geography is that it has two branches: physical and human. Physical geography concerns the study of the natural environment, while human geography is directed towards the study of people and their activities. On this basis historical geography is part of human geography. The scope of human geography has expanded in terms of narrower, more specified aspects, and may therefore be construed as a form of systematic geography. Goodall referred to human and historical geography as being different branches of geography (1987, 190), implying that neither is subordinate to the other. If so, then a question which might reasonably be asked is what, if anything, distinguishes historical from human geography? The difference may lie, once again, in the separation of the observer from the observed, or it might involve the way in which a particular problem is addressed. Accordingly, historical geography might be interpreted as a form of human geography of the past, but one which uses its own specific methodologies to deal with temporal separation. Human geography would be primarily concerned with contemporary or recent affairs. Where such studies involve an historical element it would not employ the particular methodologies of historical geography. Earlier studies in human geography would then become 'aged' human geography and not historical geography. The two branches of geography have close similarities in that they are

concerned with human activity and share some terminology, but they are not quite the same.

Langton considered that there was 'no basis ... in the intellectual tradition or current practice ... to justify the separation of historical geography from human geography as a whole' (1988, 17). Historical geography could only be separate if it was a systematic sub-discipline - a scientific, analytical subject concerned with how human activity was spatially organised. Conversely, if it was considered to be a synthetic or regional discipline, concerned with place not space, then it was 'integrative or ecological, concerned with the relationship between human societies and the natural environments in which they live' (1988, 18). The difference in these academic positions could be seen as a reflection of the impact of the quantitative revolution, the subsequent reaction to that in the form of the New Historical Geography, and the later return to more theoretically informed studies.

6.5 Conclusion

The development of historical geography has been reviewed in Chapter 5, but the means by which the research into the 'port' and 'outport' on the Medina estuary can be linked to the sub-discipline need to be elaborated. Chapter 6 situates the research within academic conventions and considers the conceptual framework within which the research is reported.

Chapter 7: Conceptual Framework

7.1 Introduction

This chapter discusses types of research and considers issues relating to the development of the ports of Newport and Cowes.

7.2 Types of research

Three types of research have been postulated by Phillips and Pugh (1994); namely, exploratory, testing-out and problem-solving. This new classification replaces the traditional division of research into pure and applied, a distinction considered to be too rigid and not reflecting what happens in most academic disciplines. Research is exploratory if it tackles a new problem, issue or topic about which little is known, so that the research idea cannot be formulated very well at the beginning. Theories and concepts are examined to see if they remain appropriate, and whether existing methodologies can be used. In testing-out research, previously proposed generalisations are probed in order to determine their limits, enabling such generalisations to be improved by clarifying, specifying or modifying them as a continuous process. Lastly, problem-solving research begins with a particular, actual problem. Its solution requires that all available intellectual resources are brought to bear on the problem. Once defined, the method of solution to the problem has to be discovered, often involving a variety of inter-disciplinary theories and methods.

On this basis, Phillips and Pugh contend that the most appropriate route for achieving a doctorate is that of testing-out research, arguing that this approach enables work to be done within an established framework: 'Testing-out is the basic on-going professional task of academic research' (Phillips and Pugh 1994, 51). They acknowledge that this route involves some exploratory work, which may solve a number of discipline-based problems on the way. The problem-solving approach, though not totally rejected, is considered to be less structured and therefore appropriate to professionally more advanced research activities.

7.3 The Medina estuary as a subject of research

Two elements were considered in developing the research reported here. First, there is a well established corpus of previous research into ports, having its own set of definitions, concepts and models. Secondly, because the ports of Cowes and Newport have received no attention from academics their development and relationship are as yet unexplored. In order to deal with both elements the preferred approach of testing-out research was adopted, although that necessarily required a significant amount of exploratory research beforehand. The main thrust of this research is to use the Medina estuary as a case study, in order to evaluate the extent to which the 'port/outport' concept may be applicable to the Medina estuary and its continuing validity to modern port studies. Estuarine ports do not evolve in isolation: they are inevitably linked, perhaps by commercial association, or even by competition or conflict, and there are many examples to be found in north-west Europe. A notable characteristic of this relationship is the temporal separation between their foundation. The tidal head 'port' was commonly of medieval origin; by contrast, the 'outport' was normally founded several centuries later.

The founding of an 'outport' may result from the advantages of the site being recognised by the maritime community at the upstream 'port'. This aspect, together with an expanding estuarine trade making use of larger, deeper ships, may be the impetus which causes the 'outport' to be established and subsequently developed. In this respect it may be considered that the 'outport' depends upon the 'port' for its very existence, which may persist even after the 'outport' has been established. The upstream 'port' will already have its own hinterland and trading links, indicating a nodal function, and may be the administrative centre of the region with a relatively large population. Until, or unless, the 'outport' can displace the upstream 'port', in terms of these functions, then some dependency is likely to continue, in which case the passage of time may serve to emphasise the relative advantages of one over the other.

The exploratory part of this research involved the examination of much original source material. The use of the information gained was guided by a methodology which would emphasise the dynamics involved in the 'port/outport' relationship. While various indicators could be used to assess the relative importance of the two ports during the period under consideration, their spatial development has been chosen as the means of determining relative progress or 'success'. 'Success', as a notion, is explored in Chapter 8.

If the ports of Newport and Cowes were to be assessed purely in terms of shipping activity then the conventional methods of quantifying the amount of cargo handled, the number of passengers embarked and disembarked, or the tonnage of the ships making use of the port, would be the logical means of establishing their hierarchical positions. However, this research seeks to elucidate human endeavour in a wider context and, especially, to show how the natural environment has been exploited by the utilisation and modification of the land and water spaces which comprise the port area. The port area has been defined as 'the physical site of the port installations and the contiguous water areas, that is, the harbour and the port approaches leading in from the open sea' (Goodall 1987, 368). Essentially, this research seeks to trace the evolution of individual sites within the port area and to show how their functional use may have changed through time. The choice of spatial development as a measure allows for several methodologies to be proposed as ways of tackling the problem of analysing change, during four centuries, in two port areas at opposite ends of the Medina estuary. These methodologies are discussed and evaluated in chapter 9.

7.4 Perspective - a view from the 21st century

This research looks back at how the ports on the Medina estuary have evolved in order to arrive at their present condition. At the beginning of the sixteenth century the port facilities at Newport were rudimentary and of limited extent; at Cowes there was barely a settlement. Yet, in the space of four hundred years, while Newport expanded, Cowes grew to become the dominant port. This simplistic statement suggests many questions. For example;

a) What factors caused Cowes to develop?

b) When did Cowes overtake Newport in importance?

c) Was the development of both ports at a steady rate, or did it fluctuate, with periods of inactivity?

d) Why has Cowes continued to prosper, whilst Newport has become of minor importance?

These questions need to be answered when tracing the ports' development and to understand how the landscape of the port area has been adapted to meet the changing demands of human activity. Human Geography, as a discipline, allows for several interpretations of the term 'landscape', but within the context of this research it means the distinctive appearance given to place through the functional utilisation of the land and water spaces within the port area.

These spaces are sub-divided into individual sites in order to identify different functions at particular locations. Water spaces are included not only because certain functions, such as anchoring and mooring, take place within them, but also because some parts of the water space become land space through reclamation. The port areas of Cowes and Newport are components of the wider urban setting of the two towns; the large area of predominantly agricultural landscape in the central part of the Medina estuary effectively separates them. The waterfront of this agricultural landscape is punctuated by isolated industrial sites, which owe their existence to the presence of the River Medina and are significant to the development of the port of Newport.

7.5 Conclusion

In order to put the research reported here into an academic framework a new tripartite classification of research types was examined, which situated the study as a combination of testing-out and exploratory research. This would allow the wider definition of the port area which is proposed - the entire waterfrontage - to be assessed against existing models found within port geography, particularly with Pounds' 'port/outport' model, and in doing so would introduce the concept of the 'successful' port. In order to establish the significance of the spatial development of the ports of Newport and Cowes during a period spanning four centuries, the perspective adopted was one of retrospection - of looking back from the 21st century.

Chapter 8: The 'Successful' Port

8.1 Introduction

This chapter proposes the concept of the 'successful' port as a means of assessing the ability of ports to be adapted for changing spatial demands placed upon them through time. Factors which determine 'success' are considered.

8.2 Factors

One of the most important aspects to be elucidated in studying the ports of Newport and Cowes, and which is relevant to the 'port/outport' concept, is that of the notion of the 'successful' port. 'Success' within this context is considered to be the ability of a port to respond positively to changing demands placed upon it. A positive response indicates versatility and requires the presence of certain enabling factors: conversely, their absence implies a lack of versatility and may be construed as a negative response. The factors, listed below and then elaborated, are considered from a modern viewpoint, although their basic elements are applicable throughout the study period.

1) Physical characteristics
2) Economic viability
3) Commercial and political support

8.2.1 Physical characteristics

The port area must contain enough sites, or potential sites, to meet the requirements imposed by changing circumstances, for example: a larger waterfront for cargo or passenger-handling operations; deeper water alongside to accommodate vessels of greater draught; a larger land area, contiguous to a waterfront, to allow for the expansion of industrial, residential or recreational functions; better access to the navigable channel leading to the open sea; better access links to other modes of transport. Consequently, the site has to be either within the existing port area or closely connected to it by the navigable waterway. Fundamentally, the spatial capacity must be adequate and the physical layout of the site appropriate, for the intended usage. Where a site is deficient in these respects it may still be suitable for

development if remedial works are both physically possible and can be achieved within acceptable financial limits.

8.2.2 Economic viability

To develop a piece of foreshore for marine-related or non marine-related use, or to re-develop a site for a different use, involves expenditure. A site is developed, or re-developed, to meet some particular need and there must be the expectation that the costs incurred will be recoverable at some point in the future. This does not preclude the possibility of mistakes being made, perhaps by miscalculating costs, underestimating the difficulties that have to be overcome, or by over-valuing the income expected of a site. Unforeseen financial problems may also occur some time after the site has been developed, making it uneconomic to continue operating unless changes are made to the functional usage. Another possibility is that with the passage of time and, perhaps, changing circumstances, a site which was economic to operate originally becomes uneconomic, at least without expansion or modification. Such re-development again requires the expenditure of monetary resources which may not prove to be cost-effective, thereby prompting the search for a more suitable site.

Businesses within the port area which own or lease sites located on, or adjacent to, the waterfront are also influential in shaping the way in which the port develops or stagnates, as they provide employment opportunities. A business or industry specifically requiring a waterfront location to achieve its functional aims, or to provide access to maritime transport, is dependent on there being a suitable site or sites within the port area. If these are unavailable then the business may be relocated, creating an employment loss which may not be replaced.

8.2.3 Commercial and political support

The local community, both in the political and the commercial sense, must give support and encouragement for the port so that it can be adapted to changing demands through time. Local government, acting on behalf and with the consent of the population encompassing the port area, needs to recognise the value that the port represents, in terms of employment, amenity and conservation. Added to this is the demand for residential development, which became a particularly contentious issue during the last decades of the 20th century. The difficult balancing-act required of modern local government in exercising its powers as a local planning authority, by attempting to reconcile often conflicting demands on land-usage, is achieved

through establishing appropriate planning policies for the port area. Planning Policy Guidance notes (PPGs), determined by national government, provide the framework which underlies this process. The Isle of Wight Council, the local planning authority, adopted a Unitary Development Plan (UDP) on 18 May 2001, following extensive public consultation. In drawing-up specific policies for the port areas of Cowes and East Cowes, the Council took into consideration policies contained in non-statutory guidance, such as the Cowes Harbour Plan (1990) and the Cowes Harbour Development Plan (1994). The southern half of the Medina estuary, identified by the Council as 'Newport Harbour', was the subject of a planning brief in March 1997, resulting later in a consultative document (IWC 2002). Subsequently, the Isle of Wight Council has co-operated with the Isle of Wight Economic Partnership and the South East England Development Agency (SEEDA) in promoting the 'Project Cowes' (later the 'Cowes Waterfront') initiative, concerning the future development of Cowes, East Cowes and the River Medina valley as far as Newport harbour: The Strategic Development Framework which resulted from this initiative was later recommended for adoption by the Isle of Wight Council as Supplementary Planning Guidance (IWC, 2003).

Since the 19th century national government has sought to influence the way in which the ports of the UK are managed, often as a political reflection of the government of the day. The Tidal Harbours Commission (1845 & 1846) investigated the condition of the ports, with a view to improve them. In 1962 the Rochdale report of the committee of inquiry into the major ports of Great Britain recommended a centralised National Ports Authority. This report commented that 'we have no doubts that in present conditions Britain has too many small ports' (Ministry of Transport 1962, 205). At the turn of the 21st century the government published 'Modern Ports: A UK Policy', commenting that 'Our national economy needs a thriving ports industry. Yet despite the overwhelming importance of ports, their role in transport policy has been neglected' (Department of the Environment, Transport and the Regions 2000, 2).

8.3 Types of port organisation

From the late 19th century, but especially during the 20th century, the financial management of British ports has been complicated by the way in which they have been owned and operated. Ports owned by private companies, for example, Associated British Ports (ABP), are operated on a strictly commercial basis and the cost of the work entailed in developing a new site to

operational status must be recoverable within an acceptable timescale for it to be undertaken in the first place, although income generated from lessees or third-party operators may wholly or partially offset the expenditure involved. Owning a particular facility may also enhance the port's competitive position by enticing trade which would otherwise go elsewhere. However, it should be recognised that financial policies of companies may change through time, and what may have been acceptable at one period may be unacceptable in another, dependent on the prevailing company strategy and financial climate. The financial decision-making process may not be straightforward. This latter consideration may also be true of trust ports and municipal ports, examples of which are Cowes and Newport respectively, but these types of port have a different ethos to that of a privately owned port, as they are operated for recreational or commercial users on behalf, and for the benefit, of the local community. A port trust 'may perhaps be described as an *ad hoc* body created by, or under, statute for the purpose of managing a harbour and not having a share capital' (Douglas and Geen 1989, 27). Conservancy and other charges have to be set so that income generated by users is sufficient to meet the costs involved in managing the port, but any surpluses are re-invested in the port or perhaps, in the case of municipal ports, in the infrastructure of the local community. The management of a harbour by a local authority 'has implications from the financial point of view in that the relevant local harbour legislation generally provides for payments and receipts in respect of the harbour undertaking to be carried to, and form part of, the general rate fund' (Douglas and Geen 1989, 37). In privately owned ports any profits may be re-invested in the ports, but a proportion is distributed to share-holders of the company as a dividend on their investment.

Ownership of waterfrontages within the port area varies: some trust ports may own only one or two sites, although municipal ports normally own most of the sites in the port area under their jurisdiction. An interesting case is that of Portsmouth City Council, which owns the commercial dock area lying within the wider port area of the Dockyard Port of Portsmouth (Gripaios 1999). In contrast, privately-owned ports may own the majority of the waterfrontages in the port area, but not necessarily all of them. Whatever the port's status, in all cases where individual sites are not owned by the port operator, then the cost of developing that particular site has to be met by the private owner. Some port-related projects may be eligible for financial assistance from the European Union. The operation of land sites, especially those belonging to privately-owned ports, also has to be separated from the functions

and responsibilities which port organisations normally exercise in their role as a statutory harbour authority. These functions include the maintenance and buoying of harbour channels, regulating the movement of vessels, providing pilotage services and, in general, being responsible for managing the water space in a safe and environmentally-conscious manner.

8.4 Environmental issues

Although only relevant to the last part of the study period, the port industry has been forced to grapple with another problem affecting development within the port area; namely, the environmentally aware climate in which ports now have to operate. It came about only within the last decades of the 20th century, but is increasingly important. Most estuarine ports now contain areas subject to designation as being of environmental and conservation importance, effectively constraining development. During the 1990s several more stringent European Community directives were transposed into United Kingdom law. This has had a significant impact on the Medina estuary, as described in the 2000 reconstruction. Nationally, development proposals by port and harbour authorities have been adversely affected by the loss of some Permitted Development Rights, previously enjoyed by ports, which allowed for the automatic granting of permission for certain types of development. The ecological importance of estuaries has been acknowledged by port and harbour authorities, local authorities, water authorities, conservation bodies and English Nature, who have co-operated, more or less willingly, to produce Estuary Management Plans for many port areas, including the Medina estuary, in an attempt to reconcile conflicting pressures. The nature conservation lobby has, to date, been particularly successful in achieving its objectives, bolstered by the more onerous environmental designations referred to above. Port and harbour authorities, on the other hand, are now finding it more difficult to undertake such activities as maintenance and, especially, capital dredging of channels and berths within the port area (Burt 1997). This is likely to have a knock-on effect for the commercial usage of the port. In more general terms the concept of sustainability, allied with an increasing public awareness of environmental issues, means that port operators now face serious challenges in attempting to develop sites, particularly if they are considered to be in 'green field' areas. As a notable contributor to port geography has reiterated, 'by sustainable is meant developments which satisfy the needs of the present without compromising the ability of future generations to meet their needs' (Hilling 1995). The challenge to be faced is that, 'as well as protecting the environment for the future, we also need

to be aware that socio-economic development is essential for our well-being. One cannot have "sustainable development" without development' (Barham 2001). However, 'the environment and commerce need not be in opposition. In the long term, paying due regard to environmental considerations usually makes good economic sense for a particular development' (Burt 1997).

A detailed examination of the issues raised by environmental designations within ports is beyond the scope of this thesis, but future academics, looking back to the legislative climate in which ports operated during the early 21st century, will find this a rich vein to explore.

8.5 Conclusion

This chapter identified three specific factors which determine whether a port is able to continue functioning as a resource for marine-related activities, these factors being proposed a means of defining 'success' - a port's ability to provide waterfront sites which are suitable for such activities. If a port cannot provide these then it may lose some functions as trade and marine-related activities move elsewhere to more suitable locations, raising the question of how best to deal with areas of redundant dockland and other waterfront. Furthermore, the issue of environmental designations within estuaries was perceived as being an important determinant of waterfront development, and one with which the port industry must engage if a satisfactory balance between development and conservation is to be achieved.

Chapter 9: Methodology

9.1 Introduction

This chapter is concerned with tackling the problem of change through time. Several options are available for addressing this issue: the methodologies are discussed and the selected approach is then justified.

9.2 (Re)constructing the past

The word 'history' is used 'both for the continuous series of events that happen in the world and for the ordered arrangements of words and ideas that give a more or less coherent account of those happenings' (Stanford 1994, 1). It is history-as-account which primarily concerns this study, but writing such an account requires that the documentary evidence of past events is available, so that significant events can be identified. These selected events can then be interpreted in order to produce a written work. The possibility of achieving a fully informed study requires that all relevant documentary evidence is available, and this is unlikely to be the case. Almost certainly there will be gaps in the data, or periods for which data are relatively scarce. As Harris observed, 'survivals from the past comprise a complex, scattered, always incomplete, and often contradictory record' (1978, 287). Re-interpreting known documents and discovering new ones ensures that history-as-account is always being re-written.

A second problem involves the temporal separation between the observer and the observed, which could amount to years, decades, or centuries. The observer has to rely on the observations of others, but the prevailing context in which documents were written may change significantly through time: attitudes, a sense of what was important, and perceptions of the world may be contributory factors. The reason for creating the document is also a substantive issue, raising many questions, and the possibility that a document may be inaccurate or misleading must be considered. Perhaps the best that can be hoped for is that anomalies can be identified if there is enough contrary evidence.

9.3 Constructions or reconstructions

Reconstructing or re-creating accurately an event or situation from a previous time requires a complete knowledge of the physical conditions, prevailing mental attitudes and the context in which the particular activity took place. Without this information any reconstruction will inevitably be incomplete. It may be possible for something which occurred recently to be re-created, but events which took place several hundred years ago cannot be faithfully replicated. As Stanford has commented, 'it is quite impossible literally to repeat the past' (1994, 119). A further problem is that different causes may result in similar outcomes, which may result in the forming of erroneous interpretations and conclusions about the processes involved.

The debate which took place within the discipline of historical geography during the 1970s and 1980s between, on one hand, supporters of the positivist/empiricist position and, on the other hand, supporters of the humanist/behaviouralist/idealist position, was reflected in differing approaches and attitudes to the question of re-creating the past. The positivist approach made use of statistical and analytical methods, allowing constructions of past events to be devised: in contrast, the humanist approach attempted to re-construct the past, involving 'a process which relies upon empathy and intuition as well as upon evidence and imagination' (Baker 1978, 261). This holistic approach required 'an extension of the range of sources employed in historical geography ... to include all forms of evidence about people and places in the past' (Baker 1978, 261), acknowledging that attitudes were less easy to determine from historical sources than actions and events. Even Guelke, who espoused the idealist position, recognised the problem, commenting that 'a scholar concerned with the past cannot re-create or reconstruct the past as it actually was but ... creates an account of it based upon a selection of facts' (Guelke 1982, 5). Moodie and Lehr took an equally robust stance, predicated on their opinion that fact and theory could not be separated in historical enquiry, and commented that the 'historical scholar's picture of the past is a hypothetical construct' (1976, 133).

This study will attempt to integrate an understanding of the reasoning behind human actions and attitudes with a descriptive account of how this was actually made manifest by the development of two ports. Such an approach, described by Baker as being intermediate and structuralist, seeks to combine the strengths of both aspects of human activity. On this basis the continued use of the word 'reconstruction' to describe the situation at certain times during the past appears to be justified.

9.4 Change through time

This is the fundamental issue in historical geography, and one to which there is no totally satisfactory answer or methodology: acknowledging that change has taken place implies that past geographies are different from the geography of today. The horizontal cross-section method and the vertical theme method were introduced in Chapter 2, together with a preferred, third approach which seeks to combine both methods. This latter approach, a synthesis of diachronic and synchronic analyses, may be seen as supporting Norton's contention that historical geography should be concerned with 'an explicit process - form approach' (1984, 179). The elements of this approach are now elaborated.

9.5 The horizontal cross-section method

The cross-section method is used to describe the physical situation which existed at a selected times during the past, and has two sub-divisions: 'the past cross-section, also called the time slice or the horizontal method, and the relic cross-section, sometimes referred to as the retrospective or reflective method' (Estaville 1991, 310). Several factors require consideration:

9.5.1 Choice of dates

The pragmatic approach is to select a date for which there is a large amount of available documentation, enabling the reconstruction to be as comprehensive and accurate as possible. A disadvantage is that undue emphasis may be placed on this date merely because of the amount of data, possibly overlooking a more significant date for which there is only limited information. The corollary is that 'questions of relevance or adequacy are most difficult to decide where studies are based on a single source' (Prince 1971, 10).

Alternatively, a date is selected which coincides with a major break, or change, in the time continuum, where some specific event causes an interruption to otherwise progressive evolution - 'it becomes a search for critical events' (Prince 1971, 14). Such events may cause a change in emphasis or a radical shift in development trends, and may result in periods of rapid change and disturbance. During these periods it is 'only possible to obtain fleeting glimpses of relationships by confining attention to strictly contemporaneous events' (Prince 1971, 9). A solution to this difficulty is suggested by selecting dates which represent periods of relative stability, when little change is occurring. Baker referred to such reconstructions as 'static,

endeavouring to capture the character of the ... environment at a moment or period in time' (2003, 84). Dates immediately prior to critical events may be more appropriate, because a major problem with fast moving events is finding sufficient source material to give a full understanding of what is actually happening at the time.

The following dates have been selected as representing situations of relatively little change:

a) 1696 - the settlements at East and West Cowes had grown to become substantial population centres. Naval contract work was about to demonstrate the value of the port for ship-building. The re-export trade resulted in a slow increase in the number of quays. Port facilities at Newport were confined to the Town Quay, Somers Brook and the River Medina.

b) 1776 - the wharf and warehouse facilities at East and West Cowes had expanded to cope with the trade from the American colonies. The American War of Independence was interrupting this and having a significant impact on cargo volumes handled at the port, effectively halting the development of new wharves until the arrival of steam, in the following century.

c) 1866 - port facilities had expanded upstream at Cowes, and the railway line between Cowes and Newport had recently been constructed. At Newport the facilities were inadequate for the port's trade, and plans were made to construct a new quay downstream of Town Quay. The Cement Mills site was being developed. The local authorities at Cowes became increasingly strident, calling for a stake in the control of the Medina estuary. Shipyards at Cowes were busy with British and foreign orders.

d) 1939 - The Second World War World began. The shipyards at Cowes were fully developed and engaged in warship construction. Boatyards had spread upstream to their fullest extent, serving the yachting community. At Newport the quays had been extended downstream on both sides of the river.

e) 2000 - Shipbuilding had ended at Cowes, although boatyards and marinas continued to serve the yachting industry. Redevelopment schemes for several waterfront sites were proposed, including residential usage. The local Council had produced a Unitary Development

Plan. Environmental designations imposed further constraints on the commercial development of the estuary. Passenger and vehicular ferry terminals at Cowes were expanded to serve a modern fleet of larger vessels. Commercial vessel berths and facilities were rationalised. Newport's trade had dwindled, although its potential for commercial use remained. Redevelopment of redundant quays was proposed.

9.5.2 Thickness of cross-section

This is dictated by the amount of data available for the selected cross-section date. The likelihood of a totally representative collection of data being available for one specific date is low, leading to the use of data which approximates to the selected date. However, if it can be established, by comparing data on either side of the selected date, that there has been little significant change in a particular situation, then it may be reasonably inferred that the conditions were the same on the chosen date.

The time-span of the study is relevant: if measured in many hundreds of years then a date selected as being representative of a period of, say, fifty years may be justifiable. Alternatively, if the time-span of the study is only a few hundred years and, especially, if much has taken place in that period, then the cross-section will need to be relatively thin, in temporal terms, if it is to accurately represent the selected date. Darby acknowledged this problem, commenting that 'some cross-sections are so wafer-thin, that, paradoxically, they lack an historical approach' (1983, 423). This study attempts to deal with the historical, or processual, dimension by adopting a synthesised approach. Accordingly, it endeavours to achieve thin cross-sections because these offer the best means of assessing the relative development of the ports of Cowes and Newport at particular times during their evolution. They are treated as 'progress reports', approximating the *status quo* at selected dates.

9.5.3 Temporal separation

From a practical point of view, this effectively dictates the number of reconstructions which may be achievable within the constraints imposed by a thesis, tempered by the amount of description at the selected dates. Within an academic context, the separation is a function of the time-span of the period being studied, together with the approach adopted for dealing with historical process. If horizontal cross-sections were the only way of attempting to deal with the question of time, then it might be necessary to have many cross-sections, with some possibly

overlapping, in order to deal effectively with the problem. A synthesised approach makes this unnecessary, permitting dates to be selected which are representative of certain periods in the evolution of the two ports. The number of cross-sections provided has to enable stages in development to be identified and meaningful. Merely reconstructing the ports at the beginning of the 17th and 21st centuries is insufficient; human activity has been so intense and widespread that the spatial extent of the two ports at the beginning and the end of this period bear little resemblance.

A further problem with the temporal separation between successive cross-sections is the possibility that important aspects of development in these intervening stages may be missed, or that the context in which they were begun or ended may be obscured or misinterpreted. Adopting a synthesised approach minimises the risk of this occurring.

9.6 The relic cross-section

This approach attempts to 'recreate past geographies from their remnants found in today's landscape' (Estaville 1991, 312). Unfortunately, there are several problems associated with this method. First, not all features of a past landscape may have survived: some may be lost or obscured by later developments. Secondly, original features may have been modified for later uses. Lastly, as a result of these two possibilities, there is the problem of interpreting the importance and context of those features surviving as relics. Nevertheless, relics offer the prospect of augmenting our knowledge of the past, especially when documentary sources, such as maps and plans, are able to confirm that a structure remains unaltered. The possibility of combining and interpreting archaeological data with historical, documentary evidence would enrich both disciplines, and the case for what has been described as 'historical archaeology' was cogently argued by Newman (2001).

9.7 The vertical theme method

The diachronic subsection, also known as the vertical theme, genetic method or longitudinal study, 'isolates spatial relationships of particular phenomena that flow unbroken from one cardinal event through a relatively long period of time to another distinctive moment' (Estaville 1991, 315). It permits a particular theme, or several themes, to be traced along the time

continuum. The method allows process, or on-goingness, to be deduced and analysed, making it particularly suitable for 'the investigation of the consequences of man as an agent of change in the landscape' (Darby 1954, 8). Baker referred to this method as 'dynamic, trying to follow ... changing character over time' (2003, 84). However, there are some inherent difficulties to be considered:

a) loss of overall picture - by concentrating on the analysis of a particular landscape and its changing elements there is a danger that an appreciation of the overall situation may be lost. Process may be understood, but its result is liable to become of minor importance or overlooked. A synthesised approach, combining synchronic and diachronic analyses, should avoid this pitfall: process will be traced and analysed, but reconstructions of the overall picture will be provided at intervals along the time continuum.

b) lack of data - in order to understand process completely, as an unbroken chain of events, it is necessary to have a continuing sequence of data, but it is unlikely that this will be available. Scarcity of data may require an element of inferential input so as to maintain continuity, but this itself raises questions of accuracy and interpretation. The issue of the limits of inference in historical geography were critically analysed by Baker, who commented that there was a 'wider recognition of the need for more rigorous analysis of the sources available, not only in the case of obviously quantitative data but also in the case of seemingly qualitative data' (1991,219).

c) suitability of data - a fundamental issue relating to process concerns the suitability of the available data for this purpose. Documentary sources are particularly useful in establishing the location and extent of features, patterns of activities and the relations of forms and functions, but are less useful to analyses of change through time. However, studies involving process are concerned with how phenomena change from one state to another, requiring an understanding of the underlying dynamic functions which make this possible, such as socio-economic forces as well as political and religious institutions.

d) number of phenomena under consideration - there were many processes at work during the period under consideration, but in order to keep the study within manageable proportions it is necessary for descriptions of these to be abridged.

e) evolutionary rates of phenomena - phenomena considered worthy of analysis may consist of several elements, not all of which will necessarily evolve at the same rate. It is also unlikely that they will last for the same length of time: some may be intermittent, cyclical or occur in well-defined phases, creating difficulties of interpretation and presentation. A diagrammatic approach assists in dealing with this problem; for instance, land-use may be presented by depicting elements of process on one axis, with a time scale on the other axis, allowing individual sites to be identified and traced through time. Another approach is to adopt a schematic flow diagram, showing stimulus, process and effect along a horizontal axis, and major themes on a vertical axis. Linkages throughout the system could then be illustrated. This approach was used to good effect in a study which described and analysed the results of excavations on Reading waterfront sites (Hawkes and Fasham 1997).

9.8 Process and form

Norton took the discussion concerning process a stage further, arguing for a temporally oriented spatial analysis which involved process and form, simulation and counterfactuals: such procedures, which 'may include a theoretical component and quantitative testing, represent an extension of the conventional change-through-time approach' (1984, 51). Process comprised variables and their interrelationships, possibly experiencing continuous change; form, typically, was a stage in an ongoing development. It was recognised that any given form may result from many different processes, emphasising the problems associated with inferring process from form. The reverse approach, that of deducing form from process, was considered to minimise this particular drawback. Simulation, as expressed by Norton, 'is a technique which facilitates the generation of forms from hypothesized processes' and, more specifically, it was a procedure 'by means of which output may be derived from models which represent the structure of dynamic processes, and one particular simulation is therefore an experiment' (1984, 53).

An extension of this approach included the use of counterfactuals as a basic component of a cause-and-effect analysis. This technique explores the possibility of certain factors being present or not present, resulting in alternative possible outcomes. It is not proposed that the mathematical approach of the stochastic process be adopted in this thesis but, nevertheless, the use of counterfactual principles remains a useful technique for considering the possible outcomes which may have resulted if certain attitudes had prevailed, or if certain events had

taken place. Accordingly, this thesis has adopted a humanist approach.

9.9 Justification for the adopted methodology

Before arguing the case for the chosen methodology it may be helpful to re-state two objectives of the thesis: first, it will attempt to identify and explain the factors which have led to changing demands being placed upon the ports of Cowes and Newport; secondly, it will seek to describe how human activity has shaped and adapted the Medina estuary by developing the ports. In order to achieve these objectives the study will examine process and form; therefore, a methodology has to be adopted which will elucidate these aspects.

Understanding process requires an appreciation of the causal factors resulting in change through time and which may be identified with on-going themes or trends. The process under consideration is the evolution, during four centuries, of the waterfront sites in the ports of Cowes and Newport. Underlying such evolution is the rationale, or motivation, driving human behaviour and which, it may be argued, is a function of the socio-economic and political environment prevailing at different times during the period under consideration.

Form, or effect, is interpreted as the result of process, and manifested by the physical situation, shape and appearance of the relevant waterfront areas in the ports at any specified time during their evolution. Different sites within the ports may be exploited for development, or re-development, at various times throughout the study period. There may be occasions when activity is concentrated in one particular area, or when little or no change is occurring, but it will be useful to compare the relative state of development of both ports at selected times throughout their evolution in order to appreciate progress or stagnation.

The adoption of a synthesised methodology, combining the vertical theme and horizontal cross-section methods, is considered to offer the advantages of both approaches. The vertical theme method allows for on-going processes driving the development of individual sites to be traced and analysed in the intervening periods between reconstruction dates. It will be unnecessary to concentrate on specific dates, in an attempt to evaluate progress, thereby allowing process to be appreciated in a true, undistorted context in the reconstructions. The most recent data for each selected date are presented as horizontal cross-section reconstructions, providing descriptions of

waterfront sites in both ports. These will be considered as 'progress reports' or 'snapshots'. Such reconstructions need only be thin, in temporal terms, because processes are analysed separately, thus avoiding the blurring which would probably result from trying to link dates by the use of thick or overlapping cross-sections.

9.10 Conclusion

The methodology effectively defined the ethos of the thesis. The problem of dealing satisfactorily with change through time was recognised as the central issue of historical geography. The vertical theme method and the horizontal cross-section method were considered, and the case put forward for a hybrid synthesis of the two approaches. It was acknowledged that the accuracy and, therefore, the reliability of reconstructions and processes was dependant upon the availability and quality of source material. Human agency was considered to be fundamental to the process of change: accordingly, mankind is seen as having an active, not passive, role. The combined, synthetic approach could also be described as structuralist, because it sought to integrate an understanding of the reasoning behind human actions with a descriptive account of the actual development of the two ports.

Part II: Reconstructions and Process-to-Form Analysis

Chapter 10: The reconstructions

10.1 Introduction

The reconstructions for 1696, 1776, 1866, 1939 and 2000 are presented in this section. Although 2000 is temporally close to the date of the thesis, it is referred to as a reconstruction because of the many changes which began to take place in the Medina estuary at the end of the period leading up to this date. Therefore, it marks the beginning of a period of significant development in the port areas of both Newport and Cowes, in which many historic structures and waterfront areas are being redeveloped, or are about to be redeveloped. Its inclusion also enables the record and analysis of development during three and a half centuries to be brought up-to-date, using the same methodology as the earlier reconstructions.

An analysis of the factors stimulating change is presented as an example of process-to-form methodology, and uses a diagrammatic and narrative approach.

Chapter 10.2: 1696 Reconstruction

10.2.1 Introduction

The main problem in reconstructing a map for this date is that no accurate large-scale charts or maps of the 17th century appear to be available. The 1698 survey map of the central Solent, by Dummer and Wiltshaw (BL - Sloane, 3233.7), lacks detail of the Cowes area, although the accompanying text notes usefully that at East Cowes 'there is a good [ship-] building place, and some of the 4th and 5th rates have been there built' (BM - Add MSS 33279). The Exchequer Deposition of 1680/1 (NBC 45-245) gives measurements of the Customs-approved 'legal' quays, but the absence of a large-scale plan makes locating this information within Cowes harbour problematic: at East Cowes two of these quays extended south from 'the key whereon stands a crane opposite to the now dwelling house of Captain Benjamin Newland'. Quays need to be located close to deep water in order to be of use to vessels: at East Cowes this lay between the southern end of the Shrape and the inlet leading to the Marsh. An accurate hydrographic survey of Cowes harbour was not undertaken until that of Mackenzie (1783), and therefore the possibility exists that the bathymetry may have been different at the reconstruction date.

Two earlier surveys, approximately contemporaneous with the reconstruction date, offer some information. Van Keulen's chart (c1680) covers the central English Channel, including the Solent (Figure 2). The very fact that the Dutch were able to produce such a chart points to the volume of Dutch ships trading through this area, and to their expertise in marine surveying. Newport (Neuport) is depicted correctly as the largest settlement on the Isle of Wight. Conversely, no settlements are shown at East or West Cowes, perhaps reflecting the fact that they had only been recently established. The shape of the Medina estuary is broadly correct, with Cowes Roads being shown as an anchorage. The chart of the Isle of Wight by Greenville Collins (c1696) is of a larger scale than Van Keulen's, allowing more detail to be shown (Figure 3). The size of the settlement at West Cowes is depicted as being more extensive than that of East Cowes, and West Cowes Castle is prominent. The Shrape and the anchorage are shown. Newport is slightly displaced from its correct position, with the town layout very similar to that of Speed's 1611 map.

10.2.2 East Cowes (Map 8)

Using the regressive method it is possible to identify the most likely position and layout of the quays at East Cowes. Waterfront development within the urban, built environment frequently makes use of previous structures and sites. Working sequentially backwards from the 19th century, using the 1866 Board of Trade plan of East Cowes (BOT 6604), the 1865 Admiralty chart, the 1862 Ordnance Survey map, the 1841 Tithe Commutation map for East Cowes, the 1806 Land Revenue plan of Cowes harbour (PRO - MPC 713), and the 1783 Mackenzie hydrographic survey, indicates that the basic layout of the quays remained stable for these 80 years. The detailed 1841 map and 1806 plan both show adjoining quays which have the same dimensions as two of those referred to in the 1680/1 Exchequer Deposition. These quays lay immediately south of another small quay which protruded further into the sea: this appears to be Benjamin Newland's old 'crane quay', because measurements quoted with respect to a storehouse correspond to its position. The third quay mentioned in this document was called 'Urrey's or Loving's Key', and was 114 feet in length. It seems that this quay was extended later: a Customs Letter Book report (5 June 1756) stated that this quay was '333 feet in length but at present useless there being no place to land goods on or storehouses' (PRO - CUST 61.2). Another report (14 April 1756), referred to this quay and two others at West Cowes, noting that they 'are become quite obsolete and unfit for discharging ships, one of them being entirely washed away by the sea and the other two situated at so great a distance from a depth of water capable of bringing any vessel of burthen nigh them' (PRO - CUST 61.2). Mackenzie's 1783 chart shows a quay or wharf extending for approximately 330 feet northwards from the assumed 'crane quay', as far as the Old Road to Newport. However, the 1806 plan indicates that this waterfront had lost its northern part and appeared to have silted up, reinforcing the probability that this was 'Urrey's or Loving's key'.

10.2.3 West Cowes (Map 8)

At West Cowes there are further difficulties with this reconstruction date. First, there is uncertainty as to the actual position of the MHWS mark in the area immediately south of Point. The tidal regime induces a south-going flow close along the western shore and this aided the formation of the low-lying gravel spit which became known as Point. Behind this spit the 5 metre land contour diverges inland and an area of marshy land, perhaps barely covered at MHWS, existed in this location: a lease (10 July 1735) refers to this as a 'the Marsh' (Ward

1480). A chronicle attributed to Richard Thorold and entitled 'A Sketch of the Rise and Beginning of the Sea Port Town of Cowes', dated 7 October 1745, but with additions to the 1790s, notes that 'In...1729 was begun by Stephen Day & John Hollis that now famous Salt-work on a Marsh, where by the influx of the sea on the east - out of Newport River - made several deep channels through the same to the now Salt-house, in which channels children as well as cattle use to bath' (CWS/58). This suggests that the water here was approximately 1 metre in depth at high tide. The 18th century salt works, described in the 1775 reconstruction, comprised a feeding pond and salt pans. A report on the nearby salt works at Lymington described how this worked: 'The sea water is first admitted into feeding ponds, from whence it flows into levels, in which there are partitions, forming pans...of from twenty to thirty square perches each' (Vancouver 1813, 420). This suggests that the salt pans must have lain at a lower level than the feeding pond. A sea-wall or bund would have been constructed in order to protect these valuable salt pans from inundation at high-tide. This is confirmed by a lease (10 May 1788), which states that this 'ground was sometime ago banked up from the sea or river called Newport River in order to contain water for the supply of the saltwork and is now called the feeding pond' (Ward 1246). As Celia Fiennes noted of the Lymington salt-makers, during her travels in the 1690s, 'they are very carefull to keep their ponds well secured and mended by good Clay and Gravell in the bottom and sides' (Morris 1982, 70). However, the question remains as to the extent of this inlet before it became a salt works. Both the 1783 Mackenzie chart and the 1769 Andrews map indicate that the salt pans extended almost as far as the junction of the Newport Road with the road from Point, but it is possible that the ground here may have been partially excavated to provide a level surface. Consequently, the coastline shown in the reconstruction map is tentative.

A second problem at West Cowes is the effect of a stream in the area known later as St. Mary's Mead. It must have produced an area of marshy land, probably requiring a bridge crossing for the road, or track, which connected the Point ferry crossing with the settlement at West Cowes. A note by Sir John Oglander in his Commonplace Book for the period 1631 to 1633, when the settlement at West Cowes was still quite young, records 'What things...I have bene an instrument in parte and in all in the bwyldinge thereof' and includes 'The brydge at Cowes Castle', which may refer to the means of crossing St.Mary's meadow in order to gain access to the castle from the settlement. Thorold's chronicle mentions a workshop 'on the north side of the highway and leading to the Church (from the Bridge and high street)', which lends support

to this probability. The 1771 Mount Edgcumbe estate map, which might have been expected to show the location of this feature, is unhelpful because the central area of West Cowes was not then part of the estate and only the outlines of the roads are shown.

Lastly, the extent of the seaward development of the town of West Cowes and the precise location of quays is difficult to establish with certainty. The Exchequer Deposition of 1680/1 mentions two 'legal' quays; the first 'now called Loving's key' and the second not named. However, the report in the Customs Letter Book (16 April 1756), refers to 'Loving's key and also Vandeles's key', both of which 'are become quite obsolete' (PRO - CUST 61.2), indicating that they were probably located close to the high tide mark as it existed during the 17th century, but had become too shallow, either because of the increased size of ships or through silting, by the time the report was compiled. It is possible that they could have been incorporated into the incremental seaward expansion of West Cowes which took place during the 18th century, or that they could have formed the foundations for later quays. For example, a lease (26 December 1728) concerning the area adjoining Fountain Quay refers to a tenement 'with a way leading downe to the key and piece or plotte of ground whereon the storehouse formerly stood' (Ward 1069). The fact that a storehouse was located next to a quay suggests that cargo-carrying vessels were using this part of the port during an earlier period. More primary sources would have to be discovered in order to resolve the origins of some of the known 18th century quays.

The 19th century legal copy of a lease dated 20 April 1694 (JER/MISC 100), is a very significant document which provides a great deal of information concerning properties and their occupants in West Cowes. Unfortunately, these properties do not appear to be in geographical sequence, making positive identification of their location almost impossible. Exceptions to this might be the 'brewhouses' mentioned in the text, because changes in the names of public houses are often traceable, and also those properties which may have remained in the same family into the 19th century, when location plans began to accompany written title deeds. In a very few cases the geographical description alone identifies the location; for example, 'Kervill Lane' persists into the 21st century as Carvel Lane. Despite these shortcomings, this document provides valuable information as to the numbers and types of properties and occupants found within the town. Richard Lovinge, a merchant, either owned or occupied two properties, although no mention is made of a quay. William Levandeloe (Vandeles ?) was a baker, whose

property included a 'key', whilst the property of James Vaneccoe, a chyrugion (surgeon), also had a 'key'. Indeed, a total of 35 properties included a quay in their description, which seems a great many for a relatively small settlement. Given that the ground floors of properties along the High Street in West Cowes were just above the level of MHWS, which remains the case even today (Figure 4), then it may be that some of these 'keys' were not intended for use by vessels, but may have represented the seaward reclamation of the foreshore, or were used as a means of defending such properties from the recurrent problem of flooding. In discussing the medieval London waterfront, for example, the question has been raised as to 'whether, when medieval deeds relating to riverside properties very frequently refer to tenements with "quays" or "wharves", these terms necessarily bore the same primary connotation of docking facilities which they bear for us' (Dyson 1981, 37). Admittedly, the primary source document referred to above is dated 1694, but in temporal terms this is much closer to the medieval period than to the late 20th/early 21st century. Medieval towns frequently increased their area by utilising the shoreline: 'A waterfront zone often developed as a narrow strip of reclaimed land along the river bank or shore, modifying it to suit the needs both of landing and exporting of goods, and in time for housing, warehouses and other buildings' (Schofield and Vince 2003, 68). The bathymetry of the estuary mouth favoured East Cowes, where deep water lay relatively close to the shoreline, making it unnecessary for quays to extend very far to seaward. Conversely, at West Cowes, the foreshore was much wider and lay in an area subject to silting. This meant that quays had to be longer to reach deep water, but, on the other hand, the larger expanse of foreshore offered the possibility of reclaiming land for building purposes. As Milne has commented, riverfront development was a prominent feature of most medieval ports, and therefore 'It is important that archaeologists studying this development should distinguish an extension primarily designed to win land from one designed to create a deep-water berth, to overcome silting, or to consolidate the frontage. Only then would it be possible to make a correct assessment of the development of the area and of the port as a whole' (Milne 1981, 36). This cautionary note must surely also apply to historical geographers, even if its accomplishment is fraught with difficulty.

10.2.4 Summary

The picture which emerges of East Cowes is one which reflects the growth and expansion which had taken place since Robert Newland had built his quay there in the 1620s and the settlement had begun to develop. By the 1690s it had grown into a major centre for victualling

the ships which called at Cowes Roads anchorage, many of which were Dutch. Celia Fiennes visited the Isle of Wight during this period, observing that 'about seven miles thence [from Carisbrooke] is Cowes, both East and West, 2 ports for shipps to ride in [anchor], and be recruited with all sorts of provisions, which is done on very reasonable terms' (Morris 1982, 71). Perhaps more significantly, owing to the Navigation Acts, vessels trading with the American colonies were obliged to call at specified ports, such as Cowes, in order for their cargoes to be enumerated or quantified by the Customs authorities, before re-exportation was allowed. This created a requirement for cargo-handling quays and warehouses. Consequently, the shoreline south of the Shrape had been developed as a built waterfront to meet this need. The most seaward berths were at Loving's or Urrey's quay, upstream of which lay Benjamin Newland's 'crane quay'. To the immediate south of this were two more quays. All of these quays had storehouses adjacent to them. The southern part of this built waterfront lay closest to Point, at West Cowes, and here was established the ferry crossing which connected the two sides of the estuary. Beyond this, continuing in an upstream direction, was the piece of land bounded at the south by the inlet to the Marsh, and here a ship-building yard had been established.

On the western side of the estuary a track led from the ferry crossing at Point and followed the shoreline towards the settlement of West Cowes. About half way along this track, where the road from Newport descended the hill towards the shore, began a slightly higher piece of land. To seaward of this lay a shallow cliff, referred to in the 18th century as the 'Sea Cliff, beach or Strand' (Ward 1246). Beyond this the land fell away again towards St. Mary's Mead, where a bridge probably crossed a stream and the marshy land adjoining it. The majority of properties were situated to the north of this area, with those on the landward side of the main or high street lying just above the level of MHWS. Inland of this the ground rose steeply up towards wooded slopes. To seaward of the high street the process of foreshore reclamation was well underway, thereby increasing the amount of available building land, although access to the sea was maintained in several places in the form of gravel *hards*, or causeways (slips). Many waterfront properties possessed quays, some of which were probably little more than heaped-up shingle, while others would have been more substantial, probably consisting of stone, allowing vessels to berth alongside at high tide. In common with East Cowes, some of these quays were used for the Colonial trade, with at least 6 merchants being recorded as living in the town, most of whom would have been engaged in this trade. As might be expected in a port-town, a

significant proportion of the residents were seafarers: of the 149 persons named in the 1694 document (JER/MISC-100) no fewer than 38 were described as mariners, with many of them occupying waterfront properties. There were also at least 10 victuallers who, like their counterparts in East Cowes, would have been engaged in supplying provisions to the many ships on passage through the Solent. Apart from this, there was also at least one shipwright (Nye) engaged in ship-building.

10.2.5 Newport (Map 9)

The Newport reconstruction poses fewer problems than that of Cowes for two reasons. First, the spatial extent of the port area was much smaller and constrained within more defined limits. Secondly, because Newport was founded in the 12th century and incorporated later as a borough, the quantity and continuity of available primary source data which deal with the administration of the town are significantly higher than for Cowes, largely eliminating the need for speculative interpretations. In common with Cowes though, no detailed plans or maps for the reconstruction date appear to be available. However, this difficulty is partially offset by a small collection of sketch plans, dating from the early 17th century, which survive at Winchester College. These provide some useful information concerning part of the waterfrontage near the Town Quay. In addition to these sketch plans, John Speed's map of the Isle of Wight, published in 1611, also contains an inset of the town of Newport which appears to have formed the basis of a similar map by Rutgerus Hermannides, published (1661) as part of his *Britannia magna* (Figure 5). Although lacking in large-scale detail, these maps are useful because they show the port area, giving some indication of the cluster of buildings around the Town Quay.

The port area consisted of the tidal part of two streams: Somers Brook, known later as Lukely Brook, flowed around the north-western side of Newport before joining with the River Medina, a more significant feature which flowed around the east and north-east sides of the town. The Town Quay was built at their confluence and from here the Medina estuary extended northwards towards Cowes. Navigation upstream, on both Somers Brook and the River Medina, was constrained by mills and bridges, although there is evidence, referred to below, to indicate that at least one of the bridges could be temporarily moved clear to allow the passage of vessels. The southern or town side of these waterways was owned almost exclusively by Newport Corporation, who leased plots of land to residents of the town. St. Cross manor and

farm, owned by Winchester College, lay on the western side of the estuary, north of Somers Brook. During the period c1597 - c1616 there was a dispute between the Corporation and the College concerning the ownership of a strip of waste ground and foreshore opposite the Town Quay, where some houses had been erected by residents of the town on the area known as 'Beldome's land' (or 'litle balhill'). The Corporation evidently considered that it belonged to the borough, because the 1592 survey of town lands noted that this is 'land the towne hath alwayes accustomed tyme out of mynde to laye thereupon tymber slatts and also mendinge of their boates and nowe builte by the sayd Beldom', which began 'at the gallowes poynte, and so up all alonge by the hedge of the colledge of Winton [Winchester]' (NBC 45-22, 120). During the 18th century this area became known as Little London, which name persists into the 21st century. Several sketch maps were drawn to illustrate the early 17th century dispute. One of these (Figure 6) gives some indication of the width of Somers Brook, stating that 'the bredeth at the oden brige with the breth of the haven fouer schore and two yards' - approximately 75m (WCM 17296). This bridge was also known as 'Beldome's bridge', because it connected this area to the town itself. Another crossing, referred to as 'sheat brige', lay approximately 120 metres further upstream, towards St. Cross mill, at the end of Holyrood Street. The plan notes that 'the breth at sheat lane is fifty yards' (46 metres approx.). Upstream of this latter bridge the stream divided into two channels, which may have represented the mill race and an overflow bypass. The waterwheel at St. Cross mill is shown prominently on two of the plans. This layout of Somers Brook and its bridges is broadly similar to the map of Hermannides. Although the quoted dimensions of the stream may not have been precise, they are likely to represent the distances between opposite banks at high tide; at low tide an extensive area of foreshore would probably have been uncovered, either side of the fresh-water outflow from the stream. By 1696 the process of seaward reclamation would almost certainly have reduced the quoted width of Somers Brook, although to what extent is uncertain. The 1652 Terrar Book contains a significant comment concerning the part of Somers Brook adjoining the western side of the former Beldom's land, where the lease included a 'water mill lately built thereupon the river, not hindring boate passage nor the washing at the bridge at Somers Brooke'(NBC 45-101, 48). This suggests that waterfront development was not allowed to impede the navigation of the river.

The Terrar Books give brief descriptions of each property but do not specify their dimensions; these must be sought in the individual leases. For example, the 1652 Terrar Book refers to 'a

piece of void ground taken out of the woes [ooze] adjoining to Beldomes Bridge let to Mr. Nicholas Searle', a brewer (NBC 45-101, 43). A separate lease records that the same property was let to Francis Searle on 26 March 1694, being described as 'heretofore...a void piece of ground and was woes or mud adjoining to the bridge called Beldoms Bridge and lying betweene the same bridge and the Key.... conteyning in length from the said bridge towards the aforesaid key 76 foot [approx. 23.2 metres] and in breadth 60 foot [approx. 18.3 metres] (NBC 1-89).' This rectangular piece of inter-tidal foreshore was actually situated at the junction of Somers Brook and the Medina estuary and projected out from Beldom's land, clearly differing from the latter because it had been muddy foreshore previously rather than waste land. The importance of securing such land was emphasised in the covenant which required the tenant to 'maintain and keep repaired all of the walls, banks, fences and defences of the premises, both against the fresh river and the salt water' (NBC 1-89). Adjoining this 'void ground', where Somers Brook curved northwards into the Medina estuary, the previously disputed area known as 'Beldome's land' was re-leased by the Corporation to John Newland on 29 October 1651 and contained the new covenant that 'he shall make all along against his ground there a wharfe which shalbe foure foote further out into the Haven than nowe the wharfe' (NBC 45-16a, 593), providing further evidence of foreshore reclamation.

Most of the plots of waterfront land which lay north of Sea Street and Shishpool Lane had storehouses built upon them, some of which had been there since the 16th century. For example, an early Borough Court Book contains the town lands survey of 1592, which records that immediately south-west of the Town Quay were 'the storehouses in the tenure of Thomas Paydge and Emanuel Badd' (NBC 45-22, 122). The 1652 Terrar Book notes that one of these, a 'tenement or storehouse', had been 'letten to Mr. Stephen March' in December 1624 (NBC 45-101, 40), while at Michaelmas 1666 the adjoining storehouse was 'newe granted' to Henry Ringwood (NBC 45-101, 41). March's storehouse was let again on 21 April 1697 to 'Elizabeth Moore...widdow' and a significant feature of the lease was the 'free liberty...to make and maintayne some addition of wall in the said river [Somers Brook] to the wall of the said demised storehouse for the more convenient laying of boats to land goods into or to lade out of the same storehouse (not being any annoyance or prejudice to the water course)' (NBC 1-98). This specific reference to a cargo-handling facility for boats is a rarity which seems to relate only to this property, having been found nowhere else amongst the Borough MSS. It appears first in the 1652 Terrar Book (NBC 45-101, 40) and then in subsequent leases: NBC 1-98 (see

above) and 21 September 1726 (NBC 1-179) .

Immediately east of the Town Quay, backing on to the River Medina, was 'a corner tenement and kitchen' (NBC 45-101, 38) with an adjoining piece of ground, which by 1679 had become the Fountain Inn and was listed as 'The Fountain' in the 1694 Town Rental book (NBC 45-118). Beyond this, in the upstream (eastwards) direction, the 1592 survey commented that 'the towne land raingeth all alonge with tenements and gardens untill we come to Daleys land, Holleys land and Westmills lande' (NBC 45-22, 122). However, by the early 17th century, it would appear that the same process was taking place on this section of the River Medina as it was on Somers Brook, with plots of waterfront land being reclaimed from the foreshore. For example, the plot adjoining the corner tenement/Fountain Inn was leased to Stephen March in June 1624 (and then to John Hopkins in 1676), upon which was built a storehouse (NBC 45-101, 37). Between this property and the Fountain Inn lay the access to the 'piece of meadow ground sometime called the woes [ooze or mud] on the eastward part of the river' (NBC 45-101, 37). In order to gain access to the meadow it was necessary to cross the River Medina. Therefore, the Corporation decided that the lease should include a condition to make 'a convenient turning bridge at the key, over into the meade, for boates and barques to pass' (NBC 45-16a, 198), together with another condition which excluded from the lease the 'footway for the inhabitants of Newport to lay dust and soil on the premises where Mr. March shall appoint' (NBC 45-101, 37). These details are significant for two reasons. First, the requirement for an opening or swing-bridge indicates that vessels needed to pass upstream beyond the Town Quay, while the use of the term 'barques' suggests that these were larger than small craft or fishing boats and were probably capable of carrying cargo. Secondly, the deliberate dumping of soil and rubbish on the 'meade' strongly suggests a continuance of the policy of reclaiming this area from the sea, in order to increase the town lands, which had begun in the 16th century. For instance, at the View of Frankpledge held on 26 April 1581, a question had been moved 'for the title of the grownde called the ose [ooze] in what libertie the said ose shuld apertayne'. Witnesses had sworn that 'about xl [40] yeares paste the said grownde called the ose was parcell of the haven of Newport and at full sea [high tide] alwaies over flowen with salt water of the sea / And was a place for old botes and crayers to lye in for use of the towne'. But the 'cowncell of the towne' had leased it 'for the wynninge of the said grownde' (NBC 45-21, 285). The 1592 survey of town lands noted that this piece of ground was 'nowe woone and inclosed with a banke by the towne' (NBC 45-22, 120).

Continuing further eastward along the River Medina was the 'messuage or tenement, backside and roome [place] of ground wheruppon sometime stoode a tanne house', leased to Richard Joliffe, a merchant, on 3 December 1624 (NBC 1-49), and later to Nicholas Oden in June 1676 (NBC 45-101, 35). The fact that the leaseholder was a merchant suggests that the property was used for a trading function.

Perhaps the most significant feature of all these property leases is that no mention is made specifically to any wharves or quays which were used for cargo-handling purposes, with the exception of the liberty to build a berthing facility at the storehouse near the Town Quay. In spite of this, provision had been made for larger vessels to pass upstream on the River Medina by requiring the installation of a 'turning bridge' near the Town Quay and the absence of any built waterfront structure on the River Medina, such as quays or wharves, seems to imply that such vessels must have been merely pulled up on the foreshore in front of the various storehouses. The Town Quay played a crucial role within the port area by providing a place for trading vessels to berth, having originated probably during the medieval period. By the early 17th century it was depicted in a Winchester College document (WCM 17296) as being of ashlar construction and, indeed, remains so into the 21st century (Figure 7). The Town Quay was evidently a prized possession of the borough, for here the Petty (or Petie/Petit) Customs and Wharfage were charged on the cargo being loaded or discharged. It therefore represented a significant source of income. From at least the early 17th century until the 19th century it was leased to burgesses of the town: for example, in August 1653, it was agreed 'that William Mingeam shall have a grant of all the petit customes and wharfage of this towne to be heere collected for one yeare from Michaelmas next for ten pounds rent to be paid quarterly' (NBC 45-16a, 623). Because the Town Quay was such a valuable source of income it had to be maintained in good condition. For example, at the View of Frankpledge held on 26 April 1614 it was ordered that 'noe barque or boate that shall come to the keye shall fasten theare ropes to anye tymber worke of the keye uppon payne of xii d [12 old pence/1 shilling] everye tyme soe offendinge' (NBC 45-22,335), indicating that the quay was clad with wooden fendering which was vulnerable to damage if vessels were secured to it, probably because of tidal movements. In August 1644 the rates to be charged by the 'keeper cleane of the key' were agreed, 'for his labour for keeping cleane of the key of every boate laden with goods coming to the key' (NBC 45-16a, 670). The 'petty customes' of Newport were leased to John Edwards in 1679, 'he

sufficiently repayring the key from time to time' (NBC 45-16b, 168).

10.2.6 Summary

The Town Quay dominated the port area, both in structural and functional terms, being the focus of cargo-handling operations. Trading vessels loaded and unloaded different commodities here, their masters or owners being liable for the Corporation's Petty Customs and wharfage charges. To the west was Somers Brook, which was tidal as far as St. Cross mill, and crossed by three bridges. Piecemeal reclamation was taking place on the northern and southern banks, providing more land for building purposes. Storehouses, some of which dated back to the 16th century, were located in this area, having been leased by merchants from the Corporation.

Beldome's land, which lay on the corner of Somers Brook and the Medina estuary, was used for building houses and had a footbridge providing access to the town. This land had been reclaimed from the foreshore by the building of a wharf, or embankment. St. Cross manor and farm lay to the north and west, with its undeveloped foreshore extending northwards from Gallows Point as far as Dodnor Creek.

The southern foreshore of the River Medina and Somers/Lukely Brook was in the process of being reclaimed. Most of this land was owned by the Corporation, with many of the buildings being storehouses. The River Medina was tidal as far as Ford Mill, which lay on the eastern side of the town. An opening or swing-bridge was located close to the Town Quay, providing access to a large meadow across the River Medina, and allowing vessels to proceed upstream when required. This meadow, which lay on the eastern side of the estuary and to the north of the River Medina confluence, had been reclaimed from the sea during the 16th century and was also part of the Corporation's estate. Town residents were allowed to dump their rubbish on this land, helping to consolidate its reclamation. No buildings had been erected on it at the reconstruction date.

10.2.7 Conclusion

The contrast between the two ports was becoming evident even at this early stage in their development. At Newport the town land situated on the banks of Somers Brook and the River Medina was in the process of being reclaimed, but the available waterfront suitable for port-

related activities was constrained by the limits of tidal navigation represented by the mills and, to some extent, the bridges situated on these waterways. The potential existed for marginal quay extension northward along the western and eastern banks of the estuary, but at this point in time cargo operations were undertaken either at the Town Quay or alongside the leased warehouses. Irrespective of such spatial constraints, access to the port from the mouth of the estuary was limited both by the tidal regime and available depths of water in the navigable channel. At low tide the port dried out completely, resulting in vessels having to sit on the sea bed until the next flooding tide.

The situation was completely different at the estuary mouth. Although the port settlements at East and West Cowes had only started to develop since the beginning of the 17th century, by the 1690s there were several quays at both places. At East Cowes there was also sufficient space for another quay to be constructed south of those which already existed, while upstream of the inlet to the Marsh the potential existed for additional marginal quays. The extensive foreshore offered the possibility of reclaiming more land for the settlement to expand and for waterfront activities such as boat and ship-building to be undertaken, a process which was underway by 1696. Most significant was the greater depth of water available at the estuary mouth, making it possible for ocean-trading vessels to enter the port; by contrast, Newport was restricted to smaller, coastal vessels. The growth of the port settlements at East and West Cowes was a result of the lucrative and growing international trade which passed along the English Channel, whereas trade at Newport was restricted to a local or regional level.

Chapter 10.3: 1776 reconstruction

10.3.1 Introduction

There are fewer difficulties with this reconstruction as compared to that of 1696 because there are more primary source data, especially maps and charts, which are approximately contemporaneous with the reconstruction date. Mackenzie's chart of 1783 (Figure 8), is particularly helpful because of its detail and accuracy, while the 1771 Mount Edgcumbe estate map of the West Cowes area provides information on the southern and northern parts of the town. The Andrews map (1769) offers additional information, but since it covers the entire Isle of Wight the scale is smaller and therefore less detail is shown. Although these data are helpful, the problem of locating precisely some waterfront features still exists. A chart showing all the quays at both East and West Cowes originally accompanied a report made by the port's Customs officials on 18 April 1757 (PRO - CUST 61.2), but became separated from the report and is unavailable.

Two further sources of primary data are helpful in reconstructing the waterfrontages of the ports of Cowes and Newport, and describing their usage. The first resulted from the Napoleonic wars, which caused visits to continental Europe by the gentry to be curtailed and led to the Isle of Wight becoming an alternative destination. The island's favourable climate, its unspoilt and attractive scenery, the possibility of sea-bathing, together with the proximity of London and the obvious fact that a sea-crossing was involved, all combined to make the Isle of Wight increasingly popular during this period. Consequently, several travel guidebooks were produced, mainly by local authors, including those by Hassell (1790), Sturch (1791), Wyndham (1793), Albin (1795) and Tomkins (1796). All of these tended to rely on Worsley's earlier work, *The History of the Isle of Wight* (1781) in varying degrees for their historical and topographical information, although this was often supplemented with original observations.

The second source of information is pictorial; namely, engravings of the ports of Cowes and Newport by Tomkins (1757-1823), published in 1795 (Figures 9 & 10), one of Newport by King and Barth (fl 1790-1813), published in 1797 (Figure 11), and a further picture of Newport by Harraden (1756-1838), published in 1806 (Figure 12). The engravings by Tomkins illustrated his written work and, by comparing modern-day lines of sight from the same view

points, appear to be reasonably accurate. His pictures post-date the reconstruction date by 20 years, but the pace of waterfront development slowed significantly after 1776, and are therefore considered as acceptable evidence at the reconstruction date. King and Barth's depiction of Newport is corroborated by Harraden's picture and both may be considered to be even more representative of the reconstruction date because waterfront development at Newport was virtually stagnant during the late 18th century. The shape of the estuary and the positioning of buildings suggest that these pictures are accurate.

10.3.2 East Cowes (Map 10)

The quays discussed in the 1696 reconstruction persisted in a virtually unchanged condition through to 1776, although the northern part of the presumed Urrey's or Loving's quay had become disused during the mid-18th century, as already noted (PRO - CUST 61.2). Benjamin Newland's 'crane quay' and the two quays south of it continued in use, part of which comprised 'a small key belonging to Mr. Mackenzie' (Acc/M/62/1)[1]. Another quay had been built further upstream of these in approximately 1716: a report in a Customs Letter Book (5 June 1756), noted 'a key at East Cowes built about 40 years past', which was not a 'free' or legal quay, 'but goods have been frequently landed there by special sufferance without any detriment to the Revenue' (PRO - CUST 61.2). This new quay appears to have been situated immediately upstream (south) of the Custom House: another report in the Customs Letter Book (24 July 1771), notes that one of the 'sufferance' quays in the port, 'where goods are chiefly permitted to be landed or shipped to or from foreign parts ... by special sufferances', was 'Point Quay' (PRO - CUST 61.4). At its southern end was situated the ferry crossing to West Cowes, because this location offered the shortest crossing distance. All of these properties were on land which was formerly part of Beaulieu Abbey's grange, a portion of which was sold in October 1743 by Thomas Dummer and Myles Troughton to James Gill and comprised the 'slip storehouse', the 'Court storehouse' and 'all the keys and wharfes and slip thereto belonging' (Acc/M/62/1).

The Mackenzie family, consisting of George Mackenzie, followed by Anna, his wife, and later James, their son, seem to have taken over the plantation or colonial trade at East Cowes from the Newland family during the thirty years preceding the reconstruction date. The Poor Rate books for Whippingham parish provide evidence of the growth of trade with the American

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[1] George Mackenzie was a merchant, not to be confused with Murdoch Mackenzie, the Admiralty surveyor.

colonies, indicated by the increase in the number of storehouses on the waterfront and their gradual acquisition by the Mackenzie family during this period. The following extracts illustrate this, the year 1781 also being included in order to take account of acquisitions or construction work actually underway in 1776. As Graham has commented, after the Seven Years War, 'With the risk of capture [by privateers] in the English Channel removed, Atlantic traders in rice, as well as tobacco and sugar, switched to Cowes (Isle of Wight) as the port conveniently *en route* to Holland and the Low Countries (2002, 233).

Year	Property	Rates payable: £-s-d
1748	Capt. Mackenzey for his house and storehouse	2 - 0 - 0
	Mr. James Gill for late Mr. Newlands house and storehouse	1 - 4 - 0
	Mr. Read for his house and Custom House	3 - 0 - 0
1764	Mrs. Mackenzie's house and storehouse	1 -10 - 0
	.. .. warehouse on Crane Quay	0 - 9 - 0
	.. .. warehouse by Thompson's	0 - 6 - 0
	Mr. Gill's Custom House	1 -16 - 0
	.. .. warehouse next [to] Mrs. Mackenzie's	0 - 9 - 0
	Mr. Rose's warehouse late Newland's	0 - 9 - 0
	.. .. Red warehouse	0 - 9 - 0
	.. .. warehouse by Winter's	0 - 6 - 0
	.. .. 2 warehouses by Mr. Gill's	0 -12 - 0
1775	Mrs. Mackenzie's house and storehouse	3 - 0 - 0
	.. .. storehouse on Crane Quay	1 - 8 - 0
	.. .. storehouse by Thompson's	0 -12 - 0
	.. .. storehouse by Piddle's	0 -18 - 0
	.. .. storehouse by Mr. Gill's	0 -12 - 0
	.. .. new storehouse	1 -10 - 0
	Mr. James Gill's Custom House	3 -12 - 0
	.. .. .. Slip warehouse	0 -18 - 0
	Mr. Rose's storehouse by Mr. Gill's	0 -18 - 0
	.. .. storehouse by Mr. Spanner's	0 -12 - 0

1781	Mr. Mackenzie's house and storehouse	2 -13 - 4
	.. .. storehouse by Mr. Gill's	0 -16 - 0
	.. .. storehouse by Mallett's	0 -10 - 8
	.. .. storehouse on Crane Quay	0 -16 - 0
	.. .. storehouse by Linington's	0 -10 - 8
	.. .. storehouse by Dell's	0 -16 - 0
	.. .. storehouse by Mr. Gill's	0 -10 - 8
	.. .. new storehouse	1 - 6 - 8
	Mr. Gill's Custom House	3 - 4 - 0
	.. .. Slip warehouse	0 -16 - 0

Sources: Poor Rate Book 1748-1767 (WHIP/APR/1A/1)
.. .. .. 1767-1801 (WHIP/APR/1A/2)

The Customs officers noted (17 May 1769), 'the rice trade at this port is all in the hands of Mr. James Mackenzie and Co.' (PRO - CUST 61.4).

Immediately upstream of the ferry crossing and backing on to the Marsh was the ship-building yard bought by Joseph Nye (Ney/Nigh) in the 1690s. Philemon Ewer (the first of three successive generations to share this name), a ship-builder and timber merchant from Bursledon (Hampshire), purchased Nye's yard in 1745 (Holland 1971, 117). Mackenzie's 1783 chart shows a quay to the south of the yard's slipway, later called Seymour's quay, which appears to have been part of the shipyard, although the actual construction date is uncertain. It probably acted as a fitting-out berth for vessels launched or repaired by the yard, avoiding the inconvenience of these vessels having to anchor in the river. In 1809, when owned by William Mitchell, the shipyard comprised a 'house, slip and quay, shop and model [mould?] loft, timber yard, garden and smiths' shop' (WHIP/APR/1A/4).

Thorold's chronicle records that 'The 29th of January 1745 was launched the Salisbury ship of Warr of 50 Gunns built ... opposite to the point ferry by Mr Philemon Yewers ship-wright'

(CWS/58)[1]. In October 1744 Thomas Dummer leased to Ewer 'all that piece or parcell of marsh ground' (Harrison MSS) which lay behind the shipyard, probably for the storing and seasoning of timber. Philemon Ewer (I) died in 1750. His son, Philemon Ewer (II), 'continued the family business of timber merchant, and continued the shipyards at both Bursledon and at East Cowes' (Holland 1971, 117). During the 1750s and the 1760s Pleasant Fenn (Fen/Penn), Ewer's brother-in-law, supervised the ship-building work at East Cowes, which included the 'Cerberus', a 28-gun ship, in 1758 (Holland 1971, 117). Fenn also repaired merchant ships. The Port of Cowes Protest Book provides information on some of the difficulties encountered at the shipyard. For example, on 21 January 1757 the Master of the damaged ship 'Expedition' noted protest[2] that on 23 December 1756 Pleasant Fen, 'Master Ship-builder', 'did gett the ship on the [slip-]wayes where she stuck not being able to start her either forward or backward and could by no means in his power gett her upon the blocks and as the water ebbed the waies broke and splitt away insomuch that the ship was obliedged to be shoorn [shored-up?] and block'd up to prevent her oversetting' (CWS/2, 122).

The *Lloyd's List* shipping newspaper contains many entries during the 1760s and 1770s of ships calling at Cowes to have damage repaired. For example, it was reported (3 April 1764) that the 'Young Hendrick' came into Cowes harbour 'to repair the damage she sustained by being ashore on the south-side of the island' (*Lloyd's List* No. 2945), and on 6 April 1770 the 'Charming Molly' put into Cowes harbour 'in a very leaky condition and obliged to unload all her cargo....to repair her damage...before she can proceed on her voyage' (*Lloyd's List* No. 3565). The Customs Letter Books provide more evidence of the ship-repair industry during this period: a memorandum (6 March 1754) records that the ship 'St. John' had 'stranded ... on the South West of the Isle of Wight about 11 August 1750, filled with salt-water and her keel beat out with the rocks and almost her bottom and her hull' (PRO - CUST 61.2). After being sold at auction it was lengthened and rebuilt at Cowes. The expenses included payments to Pleasant Fenn (builder), Edmund Moody and James Day (ropemakers), James Day (masts, yards and deals), John Miller (sailmaker), Joshua Horrod (blockmaker), and Joseph Smith (anchor smith).

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[1] Holland quotes this as January 1746, but the discrepancy may arise from the English Gregorian calendar having New Year's Day on 25 March until 1752/3.

[2] 'Noting protest' is a term used in maritime law.

Apart from these ship-repair activities and naval contract work a great deal of ship-building for commercial owners was also being undertaken at East Cowes at the reconstruction date and in the years immediately preceding it. The following table, while not exhaustive, provides an indication of the ships built in the port of Cowes. Smaller boat and ship-building yards existed at West Cowes, as discussed below, but the larger ships were probably built at Ewer's shipyard, because the spatial extent of this site and its close proximity to deep water permitted the construction of the largest vessels capable of being built in the port.

Year	Ship	Tons	Owner
1752	Martha	100	J. Hornsley
1753	Liberty	70	M. Lee
1753	Prince Edward	60	Harvey
1753	Sincerity	70	Rich. Webb
1753	Nancy	80	R. Turvin
1754	Amity	50	Leon. Bowler
1754	Duke Cumberland	60	Cox and Co.
1763	Polly	180	Hugh Rose
1763	Bologne Packet	50	Merington
1763	Unity	75	M. Gregory
1764	Little London	250	Beswicke and Co.
1764	Medena	200	Mackenzie and Co.
1764	Antwerp Packet	80	Jas. Hodgekin
1764	Hartley	160	Richard Wills
1764	Lady Holderness	80	Sims
1765	Diamond	100	Joshua Stanney
1765	Good Intent	90	Curry and Co.
1765	Nelly	300	Margeson
1766	James & Charity	90	Capt. and Co.
1768	Joseph	90	Capt. and Co.
1769	Salerno Galy	150	Burstal and Co.
1774	Linnen Hall	200	Capt. and Co.
1776	Marazion	160	Capt. and Co.

1778	Phoenix	170	Folkestone

Sources: *Lloyd's Register* - 1764, 1765, 1766 &1778

Robert Fabian (I), a ship-builder at Eling, near Southampton, took over the lease of Ewer's yard in about 1774/5. The Whippingham parish Poor Rate books listed the property as 'Mr. Fabian's house and Marsh' in 1775 (WHIP/APR/1A/2) and in 1781 (WHIP/APR/1A/2), assessing it as having the second highest rateable value in East Cowes, probably reflecting its spatial extent and commercial importance. Fabian launched the 28-gun 'Andromeda' in 1777 (Holland 1971, 107-8). After Fabian's death in 1786 his son, Robert Fabian (II), continued to occupy Ewer's shipyard in partnership with Samuel Kent 'until 1792, when the partnership was dissolved' (Holland 1971, 108).

The shipyard site continued to define the upstream extent of significant waterfront development.

10.3.3 West Cowes (Map 10)

The Point area had developed considerably after 1696, the marshy inlet immediately upstream of it being used as a saltworks. The precise foundation date is unclear: a lease (10 July 1735) between the Rt. Hon. Richard Edgcumbe and Stephen Day required that Day 'shall within the space of 5 years ... make and errect a good and sufficient saltwork of 3 panns', but then referred to 'all that saltwork already erected and to be erected' (Ward 1480). This suggests either an expansion of an existing saltwork or, possibly, the formalising of on-going construction work. Thorold's chronicle recorded that 'In ... 1729 was begun ... that now famous saltwork' (CWS/58) which, although inexact, supports an earlier foundation date. By 1766 the saltern was occupied by James, nephew of Stephen Day (Ward 1557) and was similarly described 20 years later in another lease dated 3 February 1786 (Ward 1523). The Mount Edgcumbe estate map of 1771 shows the area as a saltern. During the late 1770s/early 1780s the saltern became disused and was then used as a timber yard. In September 1787 most of the Mount Edgcumbe estate on the Isle of Wight was sold, the properties being itemised in the 'Particulars and Conditions of Sale'. The salt pans were described as being 'formerly used as a Saltern, with a large store-house; now let to Mr. John Jelly, who occupies the Whole as a Timber-Yard' (CWS/28), and were similarly described in the sale document, dated 10 May 1788 (Ward 1246). From this evidence it seems likely that the saltern was still operational in 1776.

On the southern side of the Point peninsula was the 'new built messuage' and the 'shipwright or shipbuilders yard', let to John Cleaver, a shipwright, on 2 January 1766 (Ward 1557). This yard partially adjoined the saltern, but on its south-west side lay the 'beach or strand to low water mark for laying ships or vessels to fit and breem [bream] and for lanching [launching] ships vessels boats and barks from the yard or building place' (Ward 1557). Breaming involved the cleaning of marine growth from ships' bottoms (Finch 1973, 74), which suggests that the shipyard had a repair function in addition to actually building vessels. This is supported by George Hansen's letter to Newport Corporation (8 September 1841), stating that 'the slip[-way] is precisely the same as it was in my grandfather John Cleaver's time who haul'd up and launched many vessels on this very spot, since him Mr. John Gelly used it for the same purpose for ... thirty years' (NBC - 41(13A)-3).

On 12 June 1740 George Mackenzie leased three tenements and 'the large new built warehouse' (Ward 1529) adjoining the Point road at the front and the saltern and beach at the rear. He also built a quay on the northern side of the Point peninsula, opposite the warehouse, at about the same time. A report in the Customs Letter Book (5 June 1756), refers to 'one other [quay] at West Cowes side adjoining the ferry built about 16 years past', which was not a 'free' (legal) quay but 'goods have been frequently landed there without detriment to the Revenue' (PRO - CUST 61.2). Another Customs report (24 July 1771), refers to this as 'Point Quay, West Cowes' (PRO - CUST 61.4). Mackenzie's chart shows two jetties projecting towards the fairway channel at right-angles to the quay, providing berths for ships requiring deeper water than was available at the quay. On 15 February 1762 another lease was granted to Anna Mackenzie of East Cowes, the widow of the lately deceased George Mackenzie, comprising the 'beach or strand' around the eastern and south-eastern part of the Point peninsula and 'all the keys warehouses and other buildings that are already built' (Ward 1558). The 1771 Mount Edgcumbe estate map register shows these properties as occupied by George's son, James Mackenzie, who was also a merchant. George Mackenzie's warehouse, used to store rice from the American colonies, was built of dressed stone and remains standing into the 21st century (Figure 13).

Adjoining Mackenzie's warehouse and the shipyard was a tenement, referred to as a brewhouse in 1740 (Ward 1529), and by 1766 as 'the Duke of Cumberland' (Ward 1557), no doubt

patronised by travellers waiting to cross the river, as well as seamen and shipyard workers.

The next significant feature encountered along the Point road towards the settlement of West Cowes, was Saltern quay. A lease to Stephen Day (29 September 1750), refers to this as the 'stage warfe or hard lately built by the said Stephen Day opposite to his Salt house' (Ward 347). Thorold's chronicle noted that 'In the year 1750/51 Mr. Stephen Day begunn the key at the foot of the clift from his dwelling house to the salt-work east of the Highway whereon is now the Rope Walk' (CWS/58). The Saltern quay consisted of a stone quay projecting across the foreshore, from which Mackenzie's chart showed two finger-jetties continuing seaward into deeper water. On 16 September 1755 Thorold recorded that a storehouse on the quay was being raised 'for the reception of rice, sugar or other goods from foreign parts - intended from ships that is to lay in the channel near the stone key or getty head now likewise erecting' (CWS/58). Thorold noted on 14 April 1756 'The two first ships at Day and Gregorys New key West Cowes - east of the salt house - out of which Rice was this day landed out of one of them' (CWS/58)[1]. The port's Customs officials evidently wanted this new quay made free or legal, noting in a report (18 April 1757) the 'advantage in respect of Day's key that it is an open situation and more convenient to the Custom House' (PRO - CUST 61.2). The 1771 Mount Edgcumbe estate map shows several storehouses on this quay, which were referred to in May 1786 as 'large storehouses or buildings' (Ward 1246). Although the two finger jetties have been replaced since the 1750s, the stone quay remains into the 21st century (Figure 14).

Between the Saltern quay and the beginning of the main settlement of West Cowes lay a shallow cliff, described in a lease (29 September 1750) as the 'sea cliff beach or strand' (Ward 347), which extended for approximately 200 metres. A condition imposed on the lessee, Stephen Day, involved 'building a key and fencing and securing the said premises' (Ward 347). An indenture of sale to James Day (Stephen Day's nephew), dated 10 May 1788, stated that this land, 'heretofore called the sea cliff beach or strand', had been 'since converted and made into a wharf or quay for shipping and unshipping of goods and now laid out and used by James Day as a deal and timber yard and rope walk' (Ward 1246). This suggests that at the reconstruction date there was a quay, probably the structure shown adjacent to the Saltern quay on the 1771 Mount Edgcumbe estate map. A ropewalk, lying parallel to the shore and extending for

[1] Mark Gregory was Day's financial backer.

approximately 150 metres, lay between the cliff and the Point road, and abutted the rear of Birmingham Hall, the residence of part of the Day family (1771 Mount Edgcumbe estate map and register). Further support for this interpretation is provided by a report by the Customs officials (18 May 1757), who commented on the Saltern Quay and then referred to 'an adjoining key, rope house walk etc. lately erected by the late Mr. Stephen Day' (PRO - CUST 61.2).

At the northern end of the sea cliff, where the ground started to dip towards St. Mary's Mead, lay the area known as Atwick's. Stephen Day leased the seaward part of it (20 February 1737), the property comprising the 'new erected ... dwelling house ... and key' (Ward 1521); on 20 December 1763 it was leased to James Day (recited in Ward 1246). By 1750 the waterfront here was described as the 'key lately built' (Ward 347), but the 1771 Mount Edgcumbe estate survey also shows another quay in the occupation of James Day, referred to as Giles's quay, which adjoined the older quay at its northern end, extending further seawards across the foreshore. When James Day purchased Atwick's from the Mount Edgcumbe estate (10 May 1788) the sale indenture described the two quays separately: the dwelling house and garden also included the 'wharf or quay ... adjoining, now used as a coal wharf', and there was the 'builders yard/wharf called Giles's quay' (Ward 1246).

From Atwick's the road, known later as the High Street, continued parallel to the shore. A succession of waterfront properties lay between the road and the high-water mark, their names taken from 17th century lessees in this area. A cluster of maritime industries occupied them. The first part was known as Stallard's, a portion of which was let to Mr. William Woolger and described in 1787 as 'a large Store-house for making [ships'] Blocks, Yard, and convenient Wharf or Quay for the harbour' (CWS/28), and in 1788 as 'Woolger's Quay' (Ward 1246). The land adjoining Woolger's and Giles's quays was described as 'a Boatbuilder's Yard, with a Beach or Quay opposite to the *Trumpeters*; now let by Mr. Woolger to Mr. Jelley' (CWS/28). The *Three Trumpeters* public house was situated on the landward side of the road, facing Day's 'dwelling house and garden' (Ward 1521 & 1246). After Stallard's the next property was 'Metford's and the south part of Lacey's ... consisting of a House, occupied by Mr. Read ... with a large Boat-Builder's Yard and Wharf' (CWS/28). The north part of Lacey's was leased to James Ratsey, a shipwright, on 29 September 1750 (Ward 1375), and was described (1787) as 'on lease to Mr. Linthorne Ratsey', one of James Ratsey's sons (CWS/28). The property included 'a good Yard and Quay for building Boats; let to Mr. Sam Read', together with 'a

Boat-house, Yard and Quay; held by Mr. Ratsey' (CWS/28). The indenture of sale to 'Lin Ratsey ... shipwright', (1 January 1788), referred to this property as being 'late in the occupation of James Ratsey [senior] deceased' (CWS 187-183), which suggests that in 1775 the yard was still being operated by him. The boat-yard site was augmented (5 October 1775) by the inclusion of another property, most likely a brew-house or public house, by an indenture of assignment between Richard Cooke, a brewer from Newport, and Samuel Kent, a ship-builder (CMM - Ratsey MSS).

Between Lacey's and the Custom's watch house at the northern end of the town lay the central core area of West Cowes. No detail was depicted on the 1771 Mount Edgcumbe estate map, it being identified merely as the 'Town of West Cowes - John Stephens Esqr.'. Subsequently, most of this part of the town was purchased by the Ward family in addition to the Mount Edgcumbe estate. Separate property leases are available, which almost invariably include details of abuttals. Despite this, interpreting the actual layout of the waterfront remains problematic, because these early leases were not generally illustrated with plans. Even where later property documents allow the history of individual sites to be traced up to the present day, the possibility exists that the actual layout was significantly different in the 18th century, especially where changes of use may have been involved, which reinforces the importance of further contemporaneous primary source data. Hence the 1783 Mackenzie chart is particularly useful in reconstructing the central part of West Cowes.

Mackenzie's chart shows a quay located between the shipyard at Lacey's and the quay at the *Fleece*. This intervening quay, the precise function of which is unknown, was partly occupied by Isaac Blandford, a pilot and ship owner. Separating Blandford's quay and the *Fleece* quay was a slipway (Town Slipway), providing access to the sea from the road (High Street). A Court case, heard at the Quarter Sessions of Easter 1799 (Rex v William Richardson), concerned the stopping up of a public way by 'laying across oak timbers also by placing spars and booms from the *Fountain* [formerly the *Fleece*] Quay to the quay belonging to Mr. Isaac Blandford' (Regina v Ward: box 3/6 - uncatalogued MSS). Blandford's quay (Figure 15), of ashlar construction, was shown on an 1823 plan of this area (Regina v Ward: box 6/6 - uncatalogued MSS) and on Admiralty charts from 1856 to the end of the 20th century (BA 2793). In the late 1990s it was engulfed by the Town Quay redevelopment scheme.

It may be useful to consider here the several means of public access to the sea and their different uses, because they were not only important as port facilities but also, in the particular case of those located in the vicinity of the *Fountain*, a notable source of dispute and litigation. In addition to the Court hearing referred to above, two further cases were tried during the 19th century, both involving schemes by the Ward family to develop the *Fountain* quay as a privately owned landing place to the detriment of claims to a public right of access to the sea. In all three cases such public access was upheld, the Courts having accepted the argument that these means of access were part of the public highway. Accordingly, the responsibility for maintaining public access (and later the ownership) fell to the local authority of the day, being inherited most recently by the Isle of Wight Council. The 1799 case explains the function of these accesses: 'there are three sorts of ways for landing passengers, goods, cattle, viz: causeways which are upon a rise and best adapted for persons; wharfs for goods; slips for cattle and loose wares such as coal, timber, bricks, but it will answer every purpose'. However, 'Few passengers land there now owing to the convenience of the private causeways belonging to the owners being kept in a good state of repair by the inn-owners for the purpose of inducing travellers to land there and resort to their inns' (Regina v Ward: box 3/6 - uncatalogued MSS). Mackenzie's 1783 chart shows the three main public accesses to the sea, namely; Market slip, Sun slip and Town slip.

The next area of the waterfront comprised several adjoining properties. The southernmost was described in a lease (26 December 1728) as 'the *Fleece* alias the *Golden Fleece*', which was bounded on the south by 'a landing place called the slip [Town Slip]' (Ward 1069). The property included the 'plott of ground whereon the storehouse formerly stood' and the 'key ... in length from the west part from the gates that enters the said key to the sea 100 feet of assize' (Ward 1069). Another lease (28 February 1765) refers to the property adjoining on the northern side, known later as the *Dolphin*, which included 'the key extending itself to low water mark on part of which ... Samuel Todd had then erected or built a new key' (Ward 1581). Adjoining the *Dolphin* on its northern side was yet another property, referred to in a lease (25 July 1782) as a 'tenement ... on the East side of the High Street ... and stable, backside and key ... commonly called the *Vine Inn*' (Ward 1392). All of these adjoining properties, which were brewhouses or public houses, had their own causeways leading down to the low water mark, providing convenient landing places for their patrons.

Proceeding northwards, the next significant feature appearing on Mackenzie's chart is the quay which projected seawards behind the *Sun Inn,* together with an adjoining slipway. The primary data include a rarity amongst 18th century documents; namely, a lease containing a large-scale plan. The plan, drawn by 'I. Mallett, Surveyor' is shown on the reverse side of the document, dated 6 July 1776, and shows the High Street, ('Cowes Street') between *Sun* slip and Market slip, together with two adjoining roads. *Sun* slip is shown as a 'Quay', while Market slip is referred to as a 'Quay or Cause-way and Waggon Road leading to the Cause-way and Ground for landing Goods, 19 Feet broad up to the Front of other houses in Cowes Street' (Ward 1237). The notation is significant for two reasons. First, the use of the term 'quay or cause-way' (my emphasis) seems to imply that what was essentially a gravel slipway across the inter-tidal foreshore could be described in a legal document as a quay. This tends to reinforce the argument advanced in the 1696 reconstruction that the term 'quay' did not necessarily have the same connotation in the early modern period as it does in the late 20th/early 21st centuries; a further example will be given shortly. Secondly, the notation is significant because it describes how the slipway was utilised.

Mackenzie's chart shows two further prominent features between the *Sun* slip and Market slip. The first is probably Ratsey's quay, which became a sail-loft in the 19th century and was demolished during the 1960s. The second, Hewitt's quay, lay upstream (south) of Market slip, and much of this structure remains visible into the 21st century, although somewhat overwhelmed by the 19th century property built on it (Figure 16).

The Custom's watch house and slip lay approximately 60 metres north of Market slip, being leased from the Mount Edgcumbe estate. As previously noted, the Custom's House was at East Cowes, but it was necessary for the officials to be able to observe and attend ships arriving at the anchorage. This was achieved by having a lookout position at the 'Watch House', with facilities for launching and recovering boats at all states of tide. A letter from the port's Customs officials (10 May 1766) noted that the 21 year lease had expired but could be renewed, 'this appearing to us the most convenient place' (PRO - CUST 61.3). A lease (30 May 1794) refers to this as 'the tide surveyor's office with the Watch House, boat house, yard, wharf, stage and slip' (Ward 800). H.M. Customs retain an office on this site to the present day.

Lying to the north of Watch House Lane and backing on to the High Street was a triangular

piece of land, approximately 70 metres in length. At the southern end of this was a boat builder's yard, described in a lease (8 May 1789) as a 'piece of ground with appurtenances, used as a Boat Builder's yard together with the wharf or quay [my emphasis] thereunto belonging, in the occupation and possession of Peter Schuldt' (Ward 1550). Fortunately, the lease also includes a plan and this shows the 'quay' as merely a piece of foreshore of an irregular shape, which adds further support for the relatively loose definitions of wharf and quay at the reconstruction date as compared to the modern day (Figure 17).

From this triangular piece of land the undeveloped foreshore extended northward as far as West Cowes Castle.

10.3.4 Summary

At East Cowes the number of wharves had increased since 1696, the Mackenzie family strengthening their hold on the colonial trade, as reflected by storehouse occupation. Robert Newland's crane quay was still in operation. Nye's old shipyard had been resuscitated after its acquisition by the Fabian family, and a significant amount of ship construction and repair work kept it busy for several decades either side of the reconstruction date. In common with the 1696 reconstruction, the developed waterfront ended effectively at the southern end of the marsh inlet.

The West Cowes waterfront had developed greatly since 1696. At Point, which marked the southern extent of the settlement, there was now a saltworks, shipyard, storehouse and cargo-handling quay. Saltern Quay had also been built to take advantage of the American colonial trade and was in the hands of the Day family, who seemed to be in competition with the Mackenzie family business. The core settlement at West Cowes was more intensively built-up, having expanded on to the foreshore in several places, with additional quays and a ship/boat-building yard. Three brew houses had built their own private causeways and there were several public accesses to the sea. The Customs service had a lookout place, enabling them to communicate vessel movements to the Customs House at East Cowes.

10.3.5 Newport (Map 11)

There are fewer difficulties in achieving a satisfactory reconstruction for Newport in 1776 in comparison to 1696 because of the availability of two large-scale maps. Regrettably,

Mackenzie's 1783 chart does not extend as far as Newport. However, the 1769 Andrews map, which covers the entire Isle of Wight in 4 sheets, contains a large-scale inset map of the town of Newport, including the port area (Figure 18), while the 1776 survey map of St. Cross Farm is particularly useful because it shows the largely undeveloped foreshore lying north of Gallows Point before modifications to this part of the waterfront took place in the 19th and 20th centuries, and also shows some detail of the area known as Little London (Figure 19). The engravings by Tomkins and Harraden provide useful supplementary pictorial evidence of the general layout of the port area.

Significant quantities of information concerning waterfront sites owned by the Corporation of Newport are available in the Terrar books, Poor Rate books, town rental books and individual leases, while the Convocation books provide some details of the usage of the port. However, most of the late 18th century leases which contained plans were 'lost' before IWCRO undertook responsibility for Newport Corporation MSS, making the reconstruction more difficult to achieve. The problem of tracing precisely the early sequence of lease-holdings is exacerbated for three further reasons. First, the Terrar books for 1623 and 1677 are unavailable and presumably also 'lost', despite being listed in catalogues inherited by IWCRO. Secondly, although properties are listed sequentially, not all of the waterfront appears to have been let for development at the same time during the early 17th century, leaving intervening pieces of void ground to be leased at later dates and then included in subsequent Terrar books. Lastly, some lease-holdings were divided into several smaller plots, which were amalgamated later into larger holdings; alternatively, other larger plots were sub-divided later into smaller plots. Fortunately, for the purposes of the 1776 reconstruction, properties described in the 1749 Terrar book (NBC 45-103) are also given their reference numbers as shown in the 1652 or 'Old' Terrar (NBC 45-101) which, despite some inaccuracy, provides an element of continuity linking successive centuries. Nevertheless, individual leases remain the critical primary source data.

The general layout of the waterfront was very similar to that of 1696, although the process of reclaiming the inter-tidal foreshore resulted in the narrowing and partial canalisation of Somers Brook in particular, and of the River Medina to a lesser extent. For example, Newport Corporation leased (27 November 1723) to James Reynolds some land on the northern side of Somers Brook, part of Little London (NBC 1-148), and again on 16 July 1753 (NBC 1-317). The same land was leased (10 September 1761) to Richard Drake (NBC 1-373), and then (29

October 1771) to John Clark (NBC 1-420). All four leases refer to a 'parcel of void ground with the dock enclosed' and contained the covenant to maintain Beldam's or Little London Bridge which led to the premises and also 'the wharf all along against the premises' and the 'wharfs, keys' belonging to the premises. These leases are significant for two reasons. First, they refer to the 'dock enclosed', an expression found nowhere else in the primary sources consulted in researching the 1696 and 1776 reconstructions. This seems likely to have meant a deliberate setting back of the waterfrontage over a short distance, permitting other small craft to pass more easily while providing an improved berthing facility: support for this interpretation may be found in a Winchester College lease of 1875 (WCM 17460), which shows two such areas on Lukely Brook (Figure 19a). Secondly, the very fact that there was a requirement to maintain the wharf and 'keys' suggests that the original foreshore had been developed to the extent where this had become necessary. The Town Rental for 1770-1 noted merely that Richard Drake paid 10 shillings 'for Little London' (NBC 45-183), but when this area was re-leased to Henry Howe on 2 April 1788 it included the 'piece of ground formerly taken out of the river adjoining to the causeway leading from the footbridge which lieth over the river' (JER/MISC/152). The mention of a 'causeway' suggests that the foreshore was still sufficiently undeveloped and wide enough in places as to present an obstacle to crossing Somers Brook.

The remainder of Beldam's land (Little London), was also leased by Richard Drake and comprised 'several messuages or tenements and a parcel of ground' (NBC 45-103). This area is shown clearly in Harraden's engraving (1806), with small vessels lying on the foreshore in front of the wharf or quay which extended to Gallows Point. On the south-east corner of Beldam's land was the piece of ground which had been previously inter-tidal foreshore and let to Nicholas Searle, as described in the 1696 reconstruction. By 1749 this was described as being in 2 parts (moieties) (NBC 45-103,34 &35), one of which had been leased to Robert Eyre and John Cook (Michaelmas 1738), with both parts including 'the buildings thereon granted'. However, the 1749 Terrar Book also contains details of 'rents without lease' which includes 'Mr. Eyre and Mr. Cook - the mill on the east side of Little London Bridge' (NBC 45-103). This may indicate that the mill was valued more than the other buildings on the property, and therefore justified a higher rental, or it may reflect an unforeseen change in use. One moiety was let to John Clark on 18 September 1770, but the covenant to maintain the whole premises 'against the fresh water and salt water' was still in place (NBC 1-416). This piece of land

remains to the present day with the right-angled corner on its south-eastern boundary (Figure 20).

St. Cross Farm extended north of Gallows Point. The 1776 survey, consisting of a map and register, provides a description and the spatial extent of each individual plot, indicating that virtually all of the farm was leased to James Kirkpatrick. At Hurst Stake, approximately 1km from the Town Quay, was an 'alehouse and garden': adjoining this was 'The shipwrights yard and cottage house' (WCM-21312, 43-4). The actual occupier of the yard is not shown, but the Convocation Book for this period records that at a meeting of Newport Corporation (30 April 1783) it was agreed that 'James Day ... aged 14 years be put apprentice to John Siers of the parish of Carisbrooke, Shipwright' (NBC 45-16d), suggesting that Siers may have occupied the yard at the reconstruction date.

The waterfront properties on the southern bank of Somers Brook began at Sheat Bridge and extended eastwards, bounded on the south by Sea Street. The first property, 'late of Rumbal Adams' (JER/MISC/152), was upstream of a mill and footbridge, so that the waterfrontage here is likely to have been usable only by small vessels. Next came the property leased at Michaelmas 1770 to Richard Drake (NBC 45-103). A subsequent lease to Richard Drake (19 September 1785) described this as a 'tenement ... used as a brewhouse (as part thereof then was) and a mill' (NBC 1-520), and included a footbridge over Somers Brook. Between this property and Beldam's Bridge were four tenements, known collectively as the Caule or Cole Garden, each let with a separate lease, one of them being described as a storehouse (NBC 45-103, 37-9 &40).

Adjoining Beldam's Bridge, continuing towards the Town Quay, was a piece of land described as being 'sometimes of the heirs of John James' (NBC 1-255) for which no specific usage has been established. After this came three storehouses and finally the Town Quay with its small slipway.

The first storehouse was let (Michaelmas 1773) to Catharine Macaulay, having been previously let (Michaelmas 1756) to George Mackenzie, merchant, of East Cowes (NBC 45-103, 33). Mackenzie's Will of 1759 refers to 'my nephew Mordo Macaulay of Newport, Isle of Wight, Merchant' (JER/PROB/67a), providing evidence of a family connection between successive

lessees. The next two storehouses were originally Stephen March's old storehouse, referred to in the 1696 reconstruction, which was later sub-divided. First came the storehouse leased (Michaelmas 1768) to Henry How (NBC 45-103, 32), and next to it was the storehouse leased (Michaelmas 1773) to Joseph Major (NBC 45-103, 31). Both storehouses shared a common access. Joseph Major's property was the part of March's old storehouse for which had liberty had been granted for building a wall into the river to assist in the berthing of vessels, as discussed in the 1696 reconstruction. However, an entry in the 1749 Terrar Book refers to it being re-leased (Michaelmas 1755) to John Major and includes a comment about the rent 'after building the said storehouse' (NBC 45-103, 31). This suggests that the old storehouse had been rebuilt, either wholly or partially, or perhaps extended further out onto the foreshore, possibly enclosing the part used previously as a berth for vessels.

As mentioned above, Somers/Lukely Brook contained two water mills; one by the Caule Garden and another at St. Cross. Further upstream were several more. Each mill, with the possible exception of the one at the Caule Garden, had a pond or mill dam for storing water, which would be released for driving the mill wheel as required.

Dredged material had to be removed when it became necessary to cleanse the ponds of the accumulation of fluvial sediment. The simplest and most careless way of disposing of this sediment was to dump it further downstream. The Convocation Book for the early 1770s contains several entries which illustrate the problems which this caused and the clash of interests occurring between different users of the river and estuary. For example, a meeting of the Corporation (25 May 1771) was called to consider the 'Complaint ... that the owners of several mills upon Carisbrooke stream have thrown great quantities of mud, dirt and earth down the said stream by which means the navigation of Newport River is greatly obstructed' (NBC 45-16d). The last thing that was needed was additional silting of the berths and fairway channel in the port area. It was not just the 'navigation' which was affected: on 30 April 1772 it was noted that Henry Burnett, the lessee of the River, who paid rent for using the estuary as an oyster fishery, refused to pay any more rent 'unless he is indemnified for all damages which had been sustained in his stock of oysters by the mud scoured from the ponds on the Carisbrooke River destroying the same.' (NBC 45-16d). Later that year, on 30 October, the Corporation agreed that Burnett should be 'forgiven one years rent' for 'having sustained great loss and damage in his oyster beds by means of the mud and filth turned into the river'(NBC 45-

16d). The Corporation evidently considered this to be a serious problem because the Convocation Book noted (13 September 1774) that the remainder of a bill had been paid 'for carrying on the prosecution against the millers for turning the mud into the river' (NBC 45-16d).

The Town Quay remained the focal point for cargo-handling operations in the port for those cargoes not handled directly at storehouses, and it appears that the Corporation wished to improve the facilities available there in the period leading up to the reconstruction date. It was agreed (19 September 1760) to lease the petty customs and wharfage to George Taylor, providing he accepted the 'covenant to put up a crane at his own expense and put the Key in good repair' (NBC 45-16b). Taylor apparently agreed, but must have had second thoughts because a week later (26 September) he applied to be discharged from his agreement, leaving the Corporation having to re-auction the lease (NBC 45-16b). A crane was erected at a later date, because it was noted (30 April 1783) that a new lessee was 'to covenant to ... repair and keep in repair the storehouse, crane and quay.' (NBC 45-16d), while on 16 June 1786, Edmund Minson was granted a similar lease, with 'the use of the crane to be inserted and a covenant ... to keep it in repair.' (NBC 45-16d).

The piece of meadow ground on the eastern side of the estuary, previously referred to as the ooze, continued to be leased by the Corporation and was described in the 1749 Terrar Book as 'the Marsh and Corn Water Mill' (NBC 45-103, 29). The location of the water mill is problematic: a lease to Ann Redstone (10 November 1769) refers to the 'piece of ground herein after mentioned [the Marsh] and a corn water mill thereunto adjoining'(NBC 1-404). Unfortunately, the Andrews map does not show the mill, but it seems more likely to have been situated on the River Medina than the actual estuary because of the need to impound water. It may have been a tide mill, perhaps only enclosing the river partially while still allowing the passage of vessels.

Ann Redstone's lease also contained the significant covenant to 'keep in repair the banks which separate and divide the piece of ground demised from the ... Newport River in such manner as the tide may not overflow the same' (NBC 1-404). This provides further evidence of the Corporation's policy of consolidating the meadow as part of the town land, probably as a means of increasing the town's rental income. However, it is conceivable that the Corporation was

sufficiently far-sighted as to recognise the need for more quay space, which would in itself create a greater income from new tenants and port dues. No contemporaneous evidence for this has been found yet, but in 1840 this area was proposed as the site for quay expansion, as elaborated in the 1866 reconstruction.

Redstone's lease contained no specific mention of a bridge connecting the meadow to the town, nor was there in the next lease of this area, dated 22 May 1787 (NBC 1-546). Andrews' map, which shows all the crossing places on Somers Brook, indicates none on the River Medina until Coppins Bridge is reached. This suggests that the 17th century structure had been discontinued, perhaps because of the difficulties and expense involved in maintaining a swing-bridge. Alternatively, there may have been some 'unofficial' or temporary crossing arrangement.

The waterfront on the southern side of the River Medina had seen a proliferation of storehouses since 1695, but establishing precisely the layout of this more developed waterfront from entries in the 1749 Terrar Book (updated to the early 1800s) is problematic. Fortunately, the difficulty is largely overcome by a large-scale plan and accompanying register of this area which was produced in 1839 as part of the scheme to improve the navigation of Cowes Harbour and the River Medina (HRO - DP/73-1&2). The owner and occupier of each individual waterfront plot were identified, and the frequent continuity of family ownership during successive generations allows virtually all land holdings to be identified and reconciled with the Terrar Book by using regressive methodology.

Immediately east of the Town Quay were 'several tenements and storehouses', let to Ann Hopkins (Michaelmas 1775), including the *Fountain* (NBC 45-103, 30). Beyond this were two storehouses, including March's old property, both let to James Haskoll at Michaelmas 1772 (NBC 45-103, 28-9). Next came a large storehouse, later sub-divided, leased to Nicholas Cook at Michaelmas 1768 (NBC 45-103, 27), followed by a larger waterfront area, let to Mark Rogers (Michaelmas 1768), comprising 'several tenements, backsides and gardens, storehouses and wharf' (NBC 45-103, 25). After this was a further storehouse, let to James Kirkpatrick at Michaelmas 1772 (NBC 45-103, 26). Adjoining that was 'a piece of ground', let to Philip Ballard at Michaelmas 1770 (NBC 45-103, 23), described (October 1799) as 'the Coal Wharf' (NBC 45-16d).

From here onwards the River Medina narrowed to a width at high tide of approximately 8 metres for the last 60 metres before Coppins Bridge basin was reached. This part of the waterfront was used as a tan-yard, let to John Cook at Michaelmas 1759 (NBC 45-103, 24). At the southern boundary of the tan-yard, adjoining the Coppins Bridge basin, was the 'new built brick storehouse' let to Philip Ballard on 20 April 1770 (NBC 1-414), next to which was the storehouse let to Elizabeth Smith at Lady Day (March) 1740 (NBC 45-103, 22).

As referred to above, individual occupiers of storehouses usually handled their own cargoes. The Town Quay was for general use and from this the Corporation received an income in the form of Petty Customs and wharfage charges. However, shortly before the reconstruction date it appears that the Corporation sought to increase this income by extending these charges to their storehouses. The Convocation Book records (20 April 1763) that it was agreed to insert a clause into all subsequent leases such that tenants had to pay 'dutys of wharfage and Petty Customs for all goods, wares and merchandizes which shall ... be landed upon or shipt from the said storehouse ... in the same manner as if such goods, wares and merchandizes were landed upon or shipt from the common quay of the said borough' (NBC 45-16d). This was probably seen as an imposition by tenants, who were already paying rent for the use of the storehouses. There is no further mention of this issue until a meeting held on 15 August 1768, when the Corporation decided to revoke the clause (NBC 45-16d). This example illustrates the thorny issue of port charges.

10.3.6 Summary

After 1696 much of the previously undeveloped waterfrontage at Newport was exploited by the building of more storehouses, especially along the southern bank of the River Medina where the first 65 metres presented a virtually uninterrupted succession of such properties. The Town Quay remained important as a common-user facility for handling cargoes and had its own crane, while most of the leased storehouses were able to load or unload vessels berthed alongside them. Somers Brook retained its 2 earlier crossings and had an additional footbridge: conversely, the River Medina no longer seems to have had a permanent bridge across to the meadow. The banks of the estuary, extending north of the Town Quay, remained undeveloped with the exception of a small ship or boat-building yard at Hurst Stake, on the western shore.

10.3.7 Conclusion

The advantages of East and West Cowes as compared to Newport were more apparent after 1696. Deep-water berths were constructed on both sides of the estuary mouth and the potential to extend such waterfront development upstream of the ferry crossing area remained unexploited. Newport had experienced the intensification of waterfront development, notably on the River Medina, and had the potential to expand downstream along the estuary. However, such marginal development would not overcome the main deficiency of the port, namely, the lack of water. The fairway channel in the port approach would still be relatively shallow, thereby restricting access and the draught of vessels, and berths would continue to dry out at low tide, imposing unwelcome stresses on vessels making use of them. Therefore, although spatial constraints at Newport could be overcome, draught restrictions would effectively limit the size and the cargo capacity of the vessels making use of the port. Unless its access channel could be deepened, Newport could never hope to rival Cowes but would be restricted to the shallow-draught vessels of the coasting trade.

Chapter 10.4: 1866 reconstruction

10.4.1 Introduction

The availability of large-scale, accurate cartographic data enables the spatial extent and layout of the waterfront of both ports to be established without recourse to manuscript sources, although the latter provide supplementary information. The principal source is the series of OS maps, dated 1862-4, with scales from 1:2500. These are complemented by Admiralty chart number 2793: the 1856 edition covered Cowes harbour at a scale of 1:3650, with Newport depicted at 1:7300, whereas the 1865 edition, at a scale of 1:2380, extended only 500 metres upstream of the ferry crossing area and was heavily reliant upon the 1862 OS map for its land features. Further large-scale cartographic data are available: the 1839 map and register of the entire estuary, relating to the Cowes Harbour and River Medina Improvement scheme (HRO - DP/73-1&2), and the 1841 Tithe Commutation map and Terrier for the parish of Whippingham (JER/T/335-6) both assist in dating waterfront development during this period. The general increase in the use of mapping extended to property documents, the majority of which contained plans.

The quantity of Newport Corporation data relating to Cowes show a marked increase as compared to the earlier reconstructions and is particularly noticeable from c1825 onwards: for example, the minute book of the Cowes Harbour Committee (NBC 45-236) is particularly useful, as is a large collection of un-catalogued MSS which relate to both ports (NBC 41(13A)-3).

10.4.2 East Cowes (Map 12)

The presumed Urrey's or Loving's Quay, north of the old Crane Quay, was converted into a ship-building yard with a pier and a slipway 'to haul up his yachts' (NBC 41(13A)-1) by Robert Bell. Newport Corporation agreed to lease the foreshore in front of the quay on 6 April 1854 (NBC 45-236). The ship-yard, known later as Columbine Yard, was in place by 1856.

The quays and storehouses south of Crane Quay remained in use, although on 16 December 1865 the Corporation agreed to an application by Mr. Welch Thornton for the construction of a landing stage and pontoon for passengers, to be used by the Southampton steam ferry company

(NBC 45-80), the Board of Trade having consented on 20 March 1866 (BOT 6604). The landing stage and pontoon were situated at the southern end of the 17th century quay, north-west of the old Custom house.

On the southern face of the above quay was a slipway known as the White Hart Causeway, part of Lord Gort's estate, and named after the inn on the opposite side of the High Street.

In 1838/9 the Custom House was transferred to West Cowes, the premises at East Cowes being taken over by the Coastguard service. Mackenzie's Point Quay, immediately south of the foreshore in front of the Custom House, changed significantly after 1776. In 1842 the northern part was purchased by Trinity House, the lighthouse and pilotage authority. The Harbour Master at Cowes reported to Newport Corporation (8 August 1845) that 'the govermant man from The Dockyard is a building a stage ... for the Queen to land' (NBC 41(13A)-3). During the early 1840s Queen Victoria and Prince Albert acquired the original Osborne House, replacing it with a much larger building. Foreign royalty and government ministers visited Osborne House, so that a convenient and private landing place was necessary. Trinity Wharf was ideal for this purpose. The cartographic data depict this new stage lying parallel to the quay behind it, providing a berth in deeper water.

It was noted (1849) that the old ferry service was 'about to be replaced by a floating bridge' (Nattali, 262). The 1856 chart shows a 'steam bridge', situated to the south of Seymour Quay, a position the modern-day floating bridge continues to occupy.

The river is narrowest immediately upstream of the ferry crossing area, restricting the space available for sailing vessels to manoeuvre. During the French Revolutionary and Napoleonic Wars the difficulty for passing vessels was amplified when prison ships were moored in this area, as depicted on a map of 1806 (PRO - MPC 713). Newport Corporation's Mayor wrote (5 April 1803) to 'My Lords', reporting a complaint made 'by the different masters of vessels having to spurn this place; of the navigation of the Medina River being completely obstructed and rendered impassable by the mooring of Army depot prison ships in such a situation as to prevent the vessels passing', and requesting that they 'give immediate directions in these ships to be moored in their former situation' (NBC Class 28-3). It seems likely that something was done, because no further references to this problem have been found.

During the thirty five years preceding 1866 the southern part of the waterfront was developed as a shipyard by the White family. Thomas White (1773-1859), a shipbuilder, was first recorded in the Poor Rate book for Whippingham parish at Midsummer 1806 as a house-holder. At this time Fabian's old shipyard was owned by William Mitchell, another shipbuilder (WHIP/APR/1A/4), although Smith (1983, 112) has suggested that John Gely (Jelly) was using the shipyard during the latter part of the 18th century. On 24 July 1833 Newport Corporation leased to Joseph White (1801-?), son of Thomas, an area of inter-tidal foreshore which faced the river, 'so long as he does not impede the navigation', together with 'the use and occupation of the adjoining land to low water mark' (NBC 1-711). This area, lying to the south-west of the Marsh, provided the necessary space for the establishment of a new shipyard, known later as Falcon Yard. However, Fabian's old yard must have continued in use for some time, because the 1841 Tithe Commutation map terrier described it as a 'dock yard' and 'house', occupied by 'Joseph White and others'. In a letter to Newport Corporation (9 July 1844), Mr. Schuldt referred to this waterfrontage as 'another hard between the ferry and Seymour Quay, where vessels haul in for the purpose of cleaning and refitting' (NBC 45-236), which suggests that some ship-repairing activity continued on the site. It was known as Gridiron Yard by the end of the 19th century, although the date when the gridiron was installed is uncertain. An 1850 report refers to the yard as 'Mr. Schuldt's Yard' (US - COPE 98 WHI 61, 18).

The 1841 Tithe map terrier described Falcon Yard as comprising 2 parts; a 'patent slip' extending into the river and a 'smithey, work shops etc.' in the area adjacent to the Marsh, indicating the amount of investment which had taken place. Unfortunately, the period from the late 1830s to the early 1840s was one of economic crisis for Britain: 'in 1841 the recession moved into depression again' (Briggs 2000, 255), affecting trade and also ship-building. The Whites did not escape these difficulties: in 1841 Joseph White was bankrupt, with the lease of Falcon Yard being put up for auction on 21 October that year. The sale catalogue described it as a 'Shipwright's Patent Slipway, Tackle, and Machinery thereon, together with the Lofts, Shops, and Buildings connected therewith' (Ward 923). However, the White family appear to have retained Falcon yard, because on 14 September 1868 the Corporation leased the same foreshore and adjoining ground to John Samuel White (1838-1915), grandson of Thomas White, when it was described as a 'patent heaving up slipway' and 'buildings' (NBC 1-857).

An 1850 report described the sanitary conditions of Whippingham parish (US - COPE 98 WHI 61), noting that at East Cowes: 'In the Marsh, houses are standing literally over cesspools' (6), and went on to describe the squalid conditions and diseases found there. The report described how the tidal Marsh was reclaimed, noting 'the closing [of] a large open ditch at the back of the village (East Cowes) into which the tide enters ... by filling in and raising the land' (13). The reclamation prevented timber from being seasoned there and a replacement timber 'pond' or pound was created on the foreshore between the former Marsh inlet and Brook's Stage during the early 1840s, as shown on the 1856 Admiralty chart.

George Eyre Brooks was a property developer/speculator, whose scheme to construct superior residences within a garden setting at East Cowes Park eventually failed, although a few properties were built. Newport Corporation admitted Brooks' ownership, by adverse possession, of the piece of foreshore lying inshore of Joseph White's leased area, in a committee report of 1843 (NBC 41(13A)-3). Charles Moreing's report to Newport Corporation, (16 August 1843), referred to the 'old quay or landing place' where Brooks' new wooden pier had recently been erected at the southern end of this foreshore (NBC 41(13A)-3). Subsequently, a large expanse of the foreshore claimed by Newport Corporation was leased to Brooks on 9 November 1843 (NBC 1-671). The 1839 map for the river improvement scheme shows the old quay as 'Squibb's Quay', which lay next to the 'rope manufactory' on the adjacent waterfrontage (HRO - DP/73-1 &2). This old quay post-dated 1775, although its actual construction date is uncertain. The rope-walk, owned earlier by Nicholas Gerrans (NBC 1-711), required a considerable length of straight and level ground, a condition fulfilled in this location. By the 1860s the rope-walk had gone, being replaced by the equally straight Clarence Road.

The cartographic data indicate that by 1866 this area of foreshore was partially reclaimed, with dwellings built on it, while Brooks' Quay was occupied by a gasworks. Approximately 300 metres upstream was a small quay serving the East Cowes Park brickyard, but between Brooks' Quay and the brickworks were approximately 30 houses, which fronted Clarence Road and had gardens running down to MHWS. 'Halliday's ship building yard' was at Kingston *hard*, as indicated in a lease of 1869 (Ward 1437). Kingston Quay lay 200 metres further upstream; the construction date and function are uncertain, but it may have been provided for the use of the adjoining Kingston Farm and other farms in the neighbourhood, most of which were owned by

Lord Seymour.

10.4.3 West Cowes (Map 12)

The estuary bank, from Medham to the ferry crossing, was owned by W. G. Ward. At Medham, where 300 metres of waterfront were leased to Captain Graham, there was a *hard* and a small quay (Ward 1437). Maycock and Silsbury refer to Medham *hard* as where 'locomotives and rolling stock were landed until 1902' (2001, 173), the Cowes and Newport Railway having opened in 1862. North of Medham was an area of salt-marsh and inlets used as an oyster-rearing pond. Crossing it, for 'use as a roadway, for ... cartage', was 'the embankment now existing at the southern end of the Oyster Pond known as Somerton Pond', as described on 15 February 1869 (Ward 1437).

The next significant piece of waterfront comprised an area of agricultural land and Shamblers Brick Field, which together extended over a distance of approximately 250 metres and was adjacent to Shamblers Copse. At least four kilns were in use at the brickyard, two of which lay to the west of the railway line and were connected to a small jetty by a railed trackway. In 1869 it was described as a 'Brick Factory let to Thomas Wheeler' (Ward 1437). Four years after the reconstruction date, on 25 March 1870, the entire property was leased again to Thomas Wheeler, who had liberty to use any part of it as a brickyard. A clause required the lessee to 'place all the surplus earth and spoil from the brickfield' on the foreshore, endeavouring to 'reclaim as much foreshore as possible raising the same to a height not less than 2 feet above High Water Mark ordinary Spring tides' (Ward 750). The area of reclaimed foreshore extended for approximately 200 metres. This suggests that W. G. Ward, who owned Fountain Quay and was part owner of a ferry company, had the acumen to recognise, as early as the 1860s, the potential of the brickfield site for a future quay adjacent to the railway line between West Cowes and Newport. Later, the area became Medina Coal Wharf, and remains in use into the 21st century.

West Cowes gasworks was situated 350 metres north of the brickyard, the intervening waterfront mainly comprising Dallimore's Farm. The cartographic data indicate that between 1856 and 1865 the gasworks quay was extended a further 55 metres across the foreshore, accessing deeper water, and had a railed trackway for transporting coal supplies from vessels to the gasworks. This quay extension abutted the southern end of the feeding pond of the former

saltworks, sold by James Day to George Ward on 24 February 1820 (Ward 1251). By the 1850s it functioned as a timber 'pond' or pound and was still used for this purpose in 1866, as part of the Medina Shipyard.

Following Thomas White's completion of Thetis Dock in 1815, he began to develop the seaward part of the old saltworks as a shipyard. This became known as the Medina Shipyard. A report by the Commissioners for Improving the Town of West Cowes (10 October 1820), noted that 'capacious docks, wet and dry, have ... been constructed at great expense' (NBC 41 (13A)). The survey map which accompanied the River Medina Improvement scheme of 1839 depicted the yard as having a single slipway with an adjoining quay, described as a 'Shipwrights Yard - Patent Slip etc.' (HRO - DP73/1&2). White attempted to attract more repair business by constructing the Medina Drydock in 1844. This new dock was situated to the south of the earlier slipway and was double its length and breadth. Several entries in Newport Corporation's MSS relate to the new jetties and foreshore reclamation necessary for completing this project. For example, a report by Mr. Owen (30 January 1845), noted 'the new dry docks, just built by Messrs. White' and the application 'to erect stages on piles on either side of the entrance to the dock' (NBC 45-236). Thomas White's endeavours were successful: on 3 September 1844 the Harbour Master reported to Newport Corporation that 'Now there are a great number of large steam vessels such as the West India and Peninsula steam vessels come into Cowes to repair etc' (NBC 41 (13A)-1).

By 1866 the shipyard had developed further (Figure 21); another slipway had been constructed between Medina drydock and the original slipway, a sheerlegs or three-legged crane had been built, and a tramway system linked all parts of the yard. Williams (1993) has elaborated the shipbuilding activity of the White family in the port from c1840 onwards, although some comments relating to the location of Nye's old yard at East Cowes appear to be inaccurate.

John Gelly's former yard continued in operation as a 'Shipwrights Yard and dwelling house', owned by Charles Hanson (HRO - DP73/1&2), and by 1866 was known as Point Shipbuilding Yard.

Thomas White acquired Mackenzie's storehouse at Point, being identified as the owner in 1839: similarly, Mackenzie's 18th century quay was absorbed by the construction of the 'Thetis Dock

and Shipbuilding Yard' (HRO - DP73/2). Thetis drydock, opened in 1815, was intended to attract commercial vessels for repairs. The engraving used to advertise the dock (Figure 22), described it as 'capable of Docking Merchant Ships from 600 to 700 Tons Register and embraces every Convenience connected with the Repairs of Shipping for affording Economy and Dispatch'. The length of dock was 140 feet (42.6 metres), the breadth at the gates was 36 feet (10.9 metres), the breadth of the dock was 52 feet (15.8 metres), and it had '11 to 14 feet (3.3 to 4.2 metres) water at Spring Tides'. Unfortunately, within three decades the increasing size of ships meant that Thetis Dock was inadequate, prompting the construction of Medina Dock (Williams 1993, 12). However, it remained in use until the early 1860s for smaller vessels (Figure 23).

Medina Commercial Wharf (Saltern Quay) remained the principal cargo handling facility at West Cowes and included several bonded stores. On 20 August 1846 the Harbour Master reported that W.J. Day was 'building a new stage in place of the one that was washed down in a gail of wind a few years ago' (NBC 41 (13A)-1), the cartographic data indicating that the new jetty extended further seawards into deeper water. An additional wharf was constructed on the south-eastern side during the period 1856 to 1865. Solent Wharf was situated immediately north of Medina Commercial Wharf, the Cowes Harbour Committee having agreed (29 September 1856) to lease the mudland in this location to John Lallow, 'he covenanting to improve accordingly' (NBC 45-236).

The waterfront between Solent Wharf and Giles's Quay, known formerly as the sea cliff, had changed noticeably since 1776. Several buildings, including the Custom's house, a tavern and a brewery had been constructed, replacing the 18th century ropewalk.

Both Giles's and Woolger's Quays were extended further seawards after 1776. The adjoining shipyard, owned by the Ratsey family, was increased in size: a letter to Newport Corporation from Michael Ratsey (29 July 1839) stated that he had 'lately purchased the building yard and premises of Mr. John Cooke, lately occupied by Mr. Charles Miller [boat-builder] at West Cowes', and that he intended to 'lay down a patent slip in front of the same' (NBC 28-3). At a meeting of the Cowes Harbour Committee (22 December 1847), Ratsey complained of the Corporation's delay in responding to his request, saying that he had 'therefore made one [slipway] opposite to his own land' (NBC 45-236). By 1866 the shipyard extended as far as

Blandford's old quay, with jetties projecting seaward.

The complicated history of the *Fountain* Quay was one of difficulty and dispute, a situation which continued intermittently during the 19th century. Although beyond the scope of this thesis, the *Fountain* Quay's significance to West Cowes as a maritime link to the mainland is deserving of a comprehensive study. O'Brien (1973) went some way towards this, although his work concentrated on shipping activity rather than waterfront development. Of particular value is the large collection of un-catalogued documents, held by IWCRO, relating to the Court case Regina v Ward 1877, some of which are referred to here.

George Ward bought the *Fountain Inn* and quay from Robert and William Sanders in 1822 (Ward 1093&1098), at which time its spatial extent had not changed since the 1776 reconstruction. A writ of *ad quod damnum* was issued (18 June 1823) concerning the enclosure of some foreshore adjoining the quay by George Ward and his intention to 'build a wharf or quay' on it (*London Gazette* No. 17935). This extension to the existing quay was constructed in 1824, being described as 'supported by arches, the vaults formed by which were converted into coal stores' and then 'let at 30*l.* to a steam packet company, in which Mr. Ward was co-proprietor to the extent of one-fourth' (*The Reform Bill 1832: Proceedings of Courts of Revision in the Isle of Wight*, 166). Mr. Cooke, a witness in a later Court case, stated that the coal vaults were unsuccessful: 'the *Alsene* ... a collier' came 'close alongside ... and put the coals in the vaults', but 'the vaults were filled with mud and it was a failure' (Regina v Ward 1877: Box 5/6 un-catalogued MSS). The 1839 River Medina Improvement scheme register describes the structure as 'Fountain Wharf and Coal Vaults, and Causeway or Landing place', next to the 'Causeway or Landing place to Vine Inn' (HRO - DP73/2). The close proximity of these causeways hindered access to *Fountain* quay, the owners of a steam packet company having complained (21 February 1839) of the 'want of more room between the causeways at Cowes Quay' (NBC 41 (13A)-1). The solution adopted was reported to Newport Corporation by the Harbour Master on 25 March 1846: 'G.H.Ward Esq. is building of a stage between the Vine and Fountain Causeway ... it is thought it will go 90 feet or 100 feet from Fountain Quay' (NBC 41 (13A)-1). This stage appears on the 1856 chart, but by 1866 it had been removed. The replacement structure was a floating pontoon, closer to the fairway channel and connected to the quay by a walkway. A floating pontoon has remained the means by which passengers embark and disembark at the ferry terminal.

By 1866 the Town slipway, between Blandford's Quay and Fountain Quay, had been reclaimed from the foreshore by the construction of Town Quay, which extended seawards as far as W.G. Ward's New Fountain Causeway. The intention was to provide a public facility to challenge the effective monopoly held by the Ward family in handling cargo and passengers in this part of the port. In 1862 the Local Board of Health in West Cowes had successfully petitioned the Government for permission to transfer from Market Slipway to the New Fountain Slipway the local power to erect a public quay, submitting that the 'Fountain Slipway, where vessels may lie alongside, goods and passengers may conveniently land and be shipped, that such landing-place is immediately opposite the Railway Terminus, and in all respects a desirable locality for the purpose' (*Local Government Supplemental Act* 1867 (No.2)). A clause in the Act prevented the Local Board from doing anything which might obstruct vessels using the Fountain Quay, which meant that the Town Quay could never be extended further into deeper water. The New Fountain Slipway was no longer of any use to Ward and on 2 April 1867 he leased it to the Local Board of Health (Regina v Ward 1877, Un-catalogued MSS), In fact, the Town Quay was too shallow except for small vessels and therefore never posed a commercial threat to Ward's Fountain Quay. On 27 March 1900, the Chairman of the Cowes Urban District Council gave evidence to a House of Lords Select Committee on another matter, but also stated that the Town Quay was 'Very little use ... only vessels, such as barges, at high tide and half tide can get in - and boats' (*Cowes Pier Bill* 1900, 21).

Since 1776 the waterfront between the Fountain Quay and Market Slip had been subject to incremental development: for example, the Corporation leased (21 December 1835) to John Eames, a merchant, the small piece of foreshore behind the *Sloop Inn* for enlarging his existing quay, which abutted the southern side of Sun Slip (NBC 1-717). The quays in this area were identified on the map which accompanied the Proceedings of the Courts of Revision, in respect of the Reform Bill 1832. After Ward's quay came Hale's, followed by Eames's and then Ratsey's. Lastly, just upstream of Market Slip, were Hewitt's and Scriven's quays. These small quays (Figure 24) remained in use in 1866.

The situation between Market Slip and Watch House Slip was notably different. In 1865 Dr. Charles Kernott promoted the construction of a pier adjacent to Market Slip, involving 'a pier, jetty and landing place ... for the embarking and landing of passengers, goods and merchandise'

(HRO - DP 274). Had this pier been completed it would have competed with Fountain Quay. On 26 March 1900, Mr. Pember, Q.C., referred to Kernott's Pier: 'the Wards, father or son - I do not know which - bought it up and destroyed it', adding, 'I believe, as a matter of fact, the pier was never finished' (*Cowes Pier Bill 1900: Select Committee of the House of Lords - Minutes of Proceedings*, 7) (Figure 25).

The Parade was liable to wave damage during northerly gales owing to its exposed position. The Commissioners for Improving the Town of Cowes (the predecessors of the Local Board of Health) wrote to Newport Corporation (19 October 1837), noting the 'present very dilapidated and ruinous state of a considerable portion of the Parade' and the 'quantity of rubbish which was continually washing into the harbour in consequence of the same' (DC1-uncatalogued). The Corporation appears to have done nothing, but on 24 February 1840 the Commissioners were informed that Mr. Ward would provide 'stone from Gurnet [Gurnard] and shingle, or Alum Bay as may be most suitable. Chalk, sand and shingle from Alum Bay', in order to rebuild the Parade wall (DC1-uncatalogued).

Newport Corporation's inactivity regarding conservancy functions in Cowes harbour is well illustrated by their response to repeated calls during the 1820s for dredging to be carried out: at a meeting it was 'unanimously resolved that although the Corporation are conservators of the Newport River and harbour of Cowes and as such have rights to prevent incroachments by individuals yet that they do not feel themselves called upon to remove obstructions caused by the natural accumulations of sand or shoals in any part of the navigation' (NBC 45/16d). In fact, as demonstrated below, the Corporation did actively concern itself with maintaining and improving access to the Newport end of the estuary.

10.4.4 Summary

Significant changes had taken place since 1776. First, the introduction of steam vessels led to the establishment of a regular ferry service linking East and West Cowes with Southampton. Dedicated landing facilities were provided on both sides of the port, allowing passengers to embark or disembark at any state of tide. Secondly, although boats still used the old slipways, the ferry service between the expanding towns of East and West Cowes was improved by the introduction of a steam-driven floating bridge. Thirdly, a railway was constructed between West Cowes and Newport, reducing considerably the time taken to travel from the island's

principal port to its most important town. In addition, the railway opened up the possibility of distributing more easily the bulk commodities imported into the island, and of establishing industrial sites along the western side of the river. Taken together, these three changes represented a means of breaking down the insularity of the island as a whole and the communities within it.

Fourthly, after the White family came to Cowes, the boat and ship-building industry began to expand on both sides of the River Medina: at West Cowes most of the former saltworks was developed, while at East Cowes the old shipyard was superseded by Falcon Yard.

Lastly, development had begun on the waterfront upstream of the ferry crossing area. The older port settlements at East and West Cowes were clustered along the margins of the estuary mouth, so that any port expansion had to be further upstream. By 1866 this process was well underway, with parts of the inter-tidal foreshore having been reclaimed, while some previously marginal agricultural waterfront had undergone a change of use.

The quays which had flourished before 1776 in serving the Colonial trans-shipment trade continued in use, although predominantly for coastwise cargoes. Two of the quays at East Cowes were adapted for specialised uses; namely, the new ferry berth and Trinity Wharf. Where most of the local workforce had been employed previously in handling commodities, by 1866 the shipyards had taken over this role.

10.4.5 Newport (Map 13)

The 1863/4 OS map of Newport, with a scale of 1:2500, enables the layout of the waterfront to be established with accuracy. It not only validates the accuracy of the 1839 River Medina Improvement scheme map, but also covers Lukely Brook, an area largely excluded from the earlier map.

The cartographic data indicate that the waterfront on both sides of the Lukely Brook and on the town side of the River Medina remained virtually unchanged since 1776, although a large brewery site had been developed on Lukely Brook, between St. Cross Mill and Sheat Bridge. These data also show a bone mill on the northern end of the Marsh, erected between 1775 and 1839. However, the most significant difference concerned the ownership of waterfront

property. Storehouses formerly leased by Newport Corporation had been sold, mainly to the sitting tenants, during the period 1815 to 1820, as recorded in addenda to the 1749 Terrar Book of the Corporation estate (NBC 45-103). The only exception was the storehouse on Town Quay, which suggests that the Corporation intended to maintain full ownership and control of this valuable asset. The storehouses appear to have been some of the last Corporation properties to be sold, as detailed in the Convocation Book (NBC 45-16d). On 30 April 1813 the Corporation decided to sell its town properties, except those in Quay Street or Sea Street, 'for the purpose of defraying the expenses of erecting the new Town Hall and Market House'. Shortly afterwards the Corporation had to sacrifice all of its town property to pay for the construction work, a committee being empowered (13 May 1815) to 'sell and dispose of such parts of the remaining property ... as they may deem expedient and necessary' for 'discharging the balance now due'. On 28 October 1820 the Corporation decided that unsold property should be 'immediately advertized to be sold by Public Auction'.

The Marsh represented an exception to this policy, because it continued to be leased. This anomaly has two possible explanations; either there were no bidders for the Marsh, which seems unlikely, or it was excluded from the sale of properties. In the latter case it is reasonable to infer a deliberate policy to retain the Marsh for future development. There is evidence for this, as described in previous reconstructions, but the Convocation Book entries dealing with the sale of property make no specific reference to the Marsh. However, other data of the 1840s and 1850s, referred to shortly, suggest a continuance of the earlier policy to retain the Marsh for development.

Perhaps the most significant data concerning the period 1776 to 1866 are two Newport Corporation reports of 1839, copies of the solicitor's letters which are located at the back of the minute book of the Cowes Harbour Committee (NBC 45-236), together with a consultant's survey map and proposals, all of which deal with a scheme for improving the River Medina and Cowes Harbour. Although most of the scheme was never implemented, because of the costs involved, it offered a valuable insight into the Corporation's attitude towards the management of both ports. It demonstrated: 1) an awareness of the spatial inadequacy of the port of Newport as it then existed; 2) a recognition of the Marsh as a resource for future quay expansion; 3) an appreciation of the potential for a direct connection with London, via the railway then being constructed from the capital to Southampton. Because the scheme

influenced the future development of Newport's waterfront some elaboration is included here. Furthermore, since the spatial layout of the port remained unchanged between 1839 and 1866, it is reasonable to infer that these data are representative of the situation at the reconstruction date. The first report, presented to the 'Town Council' on 12 April 1839 (NBC 41(13A)-3), described Newport's trade. Even allowing that some figures may have been inflated to bolster the Corporation's case, the details in the report present a useful picture of how the port's waterfront facilities were used and the difficulties faced by its customers.

The committee, appointed (14 December 1838) to 'examine the question respecting the clearing and deepening [of] the River Medina' (1), consulted port users and recommended an alteration to Armstrong's earlier proposal. This alteration involved making 'the excavation from the Bone Mills instead of the present [Town] Quay ... and to form the New Quay on the Marsh Land instead of along the bank at Little London'(2). The report described the 'Coal Trade', which represented 'the largest amount of tonnage' (approximately 10,000 tons annually) (2). It continued; 'At present the ships almost invariably discharge their cargoes at Cowes, the merchants there and at Newport frequently uniting in the purchase of and assisting each other in the delivery. The present wharfs of the merchants extend up the Carisbrooke and Shide streams, on either side of the present [Town] Quay' (5). The committee admitted that 'if the colliers could deliver their cargo direct to the merchants' wharfs, there would clearly be a great saving: but such an improvement cannot be contemplated. The present narrow stream cannot be deepened without risk and injury to the buildings with which it is lined. They are however convenient for the purpose of the trade' (6). These comments illustrate graphically the inadequacy of the port.

The 'London Trade' was 'estimated at 1500 tons annually ... consisting of shop goods, furniture, etc.', but 'very great delay and inconvenience are constantly experienced, from the want of regular and uninterrupted access to the Quay. The vessels are very often obliged to unload into, and take their cargo on board from lighters [barges]' (2). The 'Coasting Trade' was 'principally with Southampton, Portsmouth and Lymington, and amounts to 6000 tons annually', and 'about two-thirds of this traffic consists of Corn' (3). The 'Corn and Flour Trade' was 'one of the most important belonging to the port', although merchants complained of the 'difficulties, delays, and expenses they incur by the frequent want of sufficient water to float their vessels when laden' (3), and therefore 'obliged to send a great part of their cargoes in

lighters half way down the river, subjecting their goods to damage from wet and pilfering, and exposure' (3,4). The 'Remaining Miscellaneous Trade' (1200 tons), comprised 'building Stone, Bricks, Tiles, Sand, Salt, etc.', and 'about 900 loads of oak, ash, and elm Timber ... annually exported from Newport', and 'about 1300 loads of fir Timber and Deals imported into it' (7). 'Bones to the amount of 350 tons annually, are also imported' and there were 'exports of Chalk and Manure' (7).

A deepened fairway channel had another advantage, 'if it were rendered practicable for a small steamer to come to the [town] quay at all times of the tide', resulting in a 'saving of expense and trouble in journeys to Cowes, Southampton and Portsmouth' (8). This suggests that the Corporation had foreseen the growth in travel, and increased revenue, resulting from the development of a railway network. The report noted 'the growing importance of Ventnor and the Undercliff, affording ... increased accommodation for invalids during the winter, the Southampton Railway being nearly completed, which will be the great road to London from the major part of the Island' (9): Newport might become 'the general rendezvous of Commercial Shipping in communication with London by the Railroad from Southampton' (10). The report dismissed other steam vessel links with the mainland: 'Whether the Medina be deepened or not, Cowes, and not Ryde, will in all probability be the more frequented route to and from London' (9).

Sir John Rennie, a noted port engineer, presented his proposals for the 'Cowes Harbour and Medina Navigation' on 21 Ocober 1839 (HRO - DP73/1&2). At Newport the plan envisaged a new channel cut into the river bed from the West Medina Mills to the Marsh, giving a depth of 6 feet (1.8 metres) at MLWS and an average width of 65 feet (19.8 metres). This ambitious scheme entailed the removal of approximately 95,000 cubic metres of material and involved the construction of a quay at the Marsh, 100 metres in length, effectively widening the river by a further 12 metres. A new opening bridge would connect the old Town Quay to the new quay.

At West Cowes the scheme involved the establishment of an arbitrary line between Thetis Dock and the Parade, beyond which there should be no constructions on the foreshore. As described in a solicitor's letter to Mr. Ward's agent (16 December 1839), 'the proposed Bill does not extend to the erection of quays, but only to the preservation of a uniform line, for the uninterrupted flow of the tides in and out of the harbour, beyond which no projection should be

made' (NBC 45-236). Mr. Ward opposed the scheme because it affected his estate, especially Fountain Quay. A training wall or 'half-tide jetty' would be constructed from Seymour Quay at East Cowes, to deflect the ebb tidal stream into the fairway channel, thereby scouring the mud and gravel which was accumulating.

On 3 December 1839 the Corporation's committee submitted a statement and report to the Town Council (NBC 41 (13A)-3). The report referred to Armstrong's earlier scheme and the subsequent plan 'made by John Rennie for much greater extent of improvement and involving a consequent much greater amount of expenditure' (1). It appears that the committee was sceptical of the scheme's financial viability, despite making a strong public case for it, because they recommended the Council not to 'attempt any measure of reverting to the levying of the full extent of Tolls, Customs or Dues which have for some time been only partially levied, as such would probably lead to litigation and dispute', nor to 'recommend the charge on a Borough Rate, the present Income of the Corporation being scarcely equal to the Expenditure' (3). Instead, they recommended that the Corporation grant to the 'Commissioners to be appointed ... a lease of the Town Quay, the Town Store[on Town Quay], the Wharfage Dues, the Petty Customs, the Harbour Dues, the Fishery' (3). These measures could be interpreted as a somewhat prescient strategy by the Corporation to distance itself from such a grandiose scheme.

By December 1840 John Rennie had amended his earlier plan; 'Cowes Harbour' was removed from the title, which became the 'River Medina Navigation'. His appended note stated that the only works then proposed were 'the improvement of the present channel ... from near the Folly to Newport including the construction of a quay on the Marsh, also the construction of a swivel bridge to communicate with the same next the present Quay' (HRO DP73/1&2).

Part of this revised scheme was eventually undertaken, with the construction of a New Town Quay and a connecting bridge. During the period 1840 to 1866 the Marsh continued to be leased and was the subject of further debate by Newport Corporation. For example, on 2 October 1849 the Finance Committee agreed that 'the question of the course to be taken to render the Marsh land more valuable to be considered', while on 8 November 1850 the same committee decided that 'notice to be given to determine the tenancy of the Marsh - with a view to its improvement' (NBC 45-191).

Newport Corporation leased the Marsh to Thomas Brading on 29 September 1855, with a significant covenant that the tenant agreed not to 'land, unship or embark or ship ... from the land hereby demised any goods, wares or merchandize whatsoever' (NBC 1-781a).

On 23 July 1856, the Finance Committee reported on 'the state of the Marsh and of the embankment sluice' and found that 'the northern part ... is to a considerable extent covered with gas tar ... from the adjoining gas works'. Because of the 'defective state of the sluice the tar escapes into the river', while the 'influx of the saltwater over the bank at every ordinary spring tide effectually prevents any use of the other parts of the Marsh'. The committee suggested that 'if the surface ... were raised to the height of the land adjoining the Bone Mill and the sluice and embankment repaired and a better access obtained' then it would be 'available as building land' and 'return an income'. In the mean time the Corporation also continued with an earlier usage of the Marsh: the Finance Committee agreed (27 June 1865) to lease the untenanted part, although the Council retained the 'liberty to put rubbish on the land as they have been accustomed to do' (NBC 45-191).

Some dredging was undertaken at Newport, the Corporation having entered into an agreement with a contractor (8 August 1857). The 'Proposed Improvement of the River Medina' entailed an excavation from 'the head of Newport Quay to a point opposite Hurst Stake' and consisted of the 'various widths and depths already pointed out by the Surveyor', the dredged material being 'regularly deposited on the Newport Marsh and properly levelled' (NBC 1-800a). A consultant's statement, dated 2 August 1877, confirmed that this dredging had taken place (NBC 1-904a).

The 1856 Admiralty chart shows a gasworks occupying the south-eastern part of the Marsh. A consultant's report (2 August 1877), refers to the original plant: 'In 1851 the Corporation requested my brother to arrange with Sir A. Hillary's engineer, as to the piece of land required for new gas works and the site', the latter being recommended to be 'fixed at a sufficient distance from the Sea Street store[-house]s to enable the river to be widened' (NBC 1-904a). The gas works, later enlarged considerably, remained until the 1990s, when the area was redeveloped.

Further downstream, on the western side of the estuary, Blackhouse Lane was laid on the

Winchester College land north of Gallows Point to provide access to St. Cross cottages and the brick field at Underwood's Luck. The cottages were constructed between 1775 and 1856. They are relevant to the waterfront because of the small boatyard and slipway on the foreshore in front of them.

Downstream of Underwood's Luck, near Hurst Stake, the small shipyard which appeared on the 1776 Winchester College survey map and register (WCM 21312, 43-4) was not shown on the 1856 Admiralty chart.

The next significant features were two tide-mills, referred to originally as the East and West Medina Mills, although both had other names. These were located approximately 1km south of the *Folly Inn*, and were constructed during the French Revolutionary War. Tomkins, a traveller and engraver, described them as 'rival mills, situated on each side of the river. These are immense piles of brick and stone-work; and though far from picturesque ... their want of beauty is amply compensated by their utility. They are said to be capable of grinding forty loads of wheat in a week ... These fabrics also possess every convenience for baking biscuits for the use of the Navy, of which considerable quantities are daily shipped to Portsmouth' (1796, 181-2).

The earliest reference to East Medina Mill yet identified is dated 4 June 1790, when Newport Corporation noted a 'complaint ... made that great nuisances and obstruction have been lately occasioned in Newport River by large quantities of mudd and dirt being thrown into it by the persons concerned in building the mills situate on the east side of the said river, commonly called the Botany Bay Mills' (NBC 45-16d). The 1856 Admiralty chart shows the mill as being situated adjacent to the waterfront, while the small 'T' jetty shown on the 1839 River Medina Improvement scheme map allowed access at high tide. The mill building was still standing in the 1930s, but at the beginning of the 21st century all that remains is the mill pond.

West Medina Mill was owned by the Queen's College, Oxford, as part of its extensive land-holdings in the Medina estuary. On 5 June 1810 the Queen's College permitted Henry and Mary Dennett, their sitting tenants, to sub-let the property to 'James Westmore of Gosport ... Merchant'. The demised property was described as 'that luck or inlet of water called Werror and Dodnor Luck which is part of a farm and lands called Werror' and included 'all that messuage, mill, millhouse, storehouses and other erections and buildings on or over the said

Luck' (Ward 950). In a subsequent lease (9 September 1825), the Queen's College allowed George Ward, the current sitting tenant, to sub-let the property, again to James Westmore (Ward 953). The map of the 1839 River Medina Improvement scheme shows a length of sea-wall adjacent to the outfall channel from the mill pond, which was probably the location of the quay. Shortly afterwards the mill was let to Charles Francis and Son, and converted to cement production, making use of mud from the river and local chalk supplies. The 1856 Admiralty chart indicated that while the original mill site was unchanged, several storehouses and a jetty had been constructed approximately 100 metres further north. It appears that the site developed rapidly, because the 1863 Ordnance Survey map indicated that this jetty had been replaced by a new length of quay built downstream from the site of the original mill. Expansion at the site continued to the point where, in 1876, only 10 years after the reconstruction date, an Isle of Wight travel guidebook noted that the 'chief article of commercial export is the cement manufactured at Dodnor', where 'the large pools of pulverized mud exposed to the air, and the domed kilns sending out clouds of steam and smoke, seldom fail to attract the attention of the traveller' (Jenkinson 1876, lxxxiii).

10.4.6 Summary

In terms of spatial extent and utility, the waterfront along the Lukely Brook and River Medina was essentially unchanged since 1776, while the Town Quay remained a common-user facility. Development of the Marsh had begun, a gas works being constructed on part of it, although the Corporation continued their policy of land consolidation by using other parts for the disposal of town rubbish and material dredged from the estuary. Similarly, the exploitation of Winchester College's waterfront within the main port area had begun, with a small boatyard being established north of Gallows Point.

Two tide mills were constructed downstream of the main port area before the turn of the 19th century, the western mill being converted during the 1840s to enable cement to be produced. These mills introduced to the Newport end of the estuary a capability of manufacturing large quantities of refined products which were not restricted solely to consumption on the Isle of Wight. The cement mills site was of particular importance because its spatial dimensions permitted future expansion.

The introduction of the railway linking Cowes and Newport had taken place only six years

before the reconstruction date, therefore its impact on the western side of the estuary, in terms of waterfront development, had not become apparent.

10.4.7 Conclusion

The dichotomy which existed between the ports at opposite ends of the Medina estuary was reinforced after 1776. Whereas at Cowes the waterfront continued to be exploited, either by re-developing existing sites or reclaiming areas of foreshore, the situation at Newport was largely one of stagnation. The significant exception to this was the establishment of an industrial area at the cement mills, in a location entirely separated from the historic port area and one which possessed a large 'green-field' site and deeper water.

The maritime transport links also exemplified their differences: both East and West Cowes possessed a direct steam ferry service to the mainland, while Newport could only hanker after such a facility. Although the railway connected both ends of the estuary, Newport was still reliant upon port facilities at Cowes for access to Southampton by ferry.

However, Cowes and Newport shared two factors in common. The first was that in both ports there were sites beyond the developed area of waterfront as it then existed which were suitable for the construction of new berth facilities or the establishment of those commercial enterprises requiring access to the water. The second factor was that in both ports such potential had been recognised; in Cowes by George Ward, who endeavoured to make provision for a quay site at Shamblers, and at Newport by the Corporation, who clearly planned to utilise the Marsh for a new quay at some point in the future.

Newport had no option but to expand downstream, while at Cowes any expansion was necessarily upstream, because of the relatively congested nature of the built environment at the estuary mouth, offering few opportunities for growth, and its exposure to unfavourable sea conditions.

The available depth of water remained the critical determinant of the future 'success' of both ports. The scheme to canalise or 'improve' the River Medina had not materialised by 1866, leaving Newport at a serious disadvantage as compared to Cowes in respect of access by commercial vessels.

Chapter 10.5: 1939 reconstruction

10.5.1 Introduction

Sufficient cartographic data are available to achieve a reconstruction without using documentary sources, although the latter provide a useful chronology of development. The OS map (1898) bridges the period between maps of 1863 and 1939, the latter having a scale of 25 inches to the mile (approximately 1:2500). Hydrographic data are available: a revised edition of the 1881 survey was published (1938), but charts were continually updated by large and small corrections, making it very difficult to obtain chart BA 2793 corrected only to 1939. Chart coverage extended only just upstream of the ferry crossing area, therefore the OS map remains the primary datum for establishing waterfront features.

Photographs of the period c1890-1939 are available: some are accessible at IWCRO, although many are in private collections. Beken of Cowes and Aerofilms have extensive archives.

The period 1866-1939 was one of significant change with respect to non-cartographic sources for two reasons. First, in 1897 the administration of the port of Cowes was assumed by the Cowes Harbour Commission. Committee minute books are available, although some remain in draft form. Unfortunately, no files of correspondence have survived.

Secondly, by virtue of the Crown Lands Act 1866, the licensing of development within ports and harbours was transferred to the Harbour Department of the Board of Trade, a function previously undertaken by the Admiralty's Harbour Department. The PRO holds a large quantity of BOT records, while some original letters are available in the collection of un-catalogued Corporation MSS held at IWCRO (41 (13A)-3).

Meetings of the Cowes Harbour Commission, Newport Corporation and its successor bodies were reported in the *Isle of Wight County Press*. Some meetings appear to include verbatim comments made by individuals. Although this cannot now be substantiated, the widespread use of shorthand notes by reporters makes possible such accuracy.

Oral testimony, in the form of personal communications, is available as a primary source for the

first time in this thesis.

Three books published during the 1990s by Mrs. R. F. Spencer Brading of East Cowes concern local events. Volumes 1 and 2 covered East Cowes from 1303 to 1939, while volume 3 concerned West Cowes from 1750 to 1914. The late Mrs. Spencer Brading made no attempt to write history, confining herself to a chronicle of events. Although containing much information the value of these books is diminished because primary data sources are frequently omitted. Rosetta Brading's family were involved in construction projects at East and West Cowes and she had access to family diaries and business records. This makes her a useful secondary source.

10.5.2 East Cowes (Map 14)

An important development in port infrastructure was the building of the Shrape breakwater, partly because of the weather protection it offered, but primarily because of its effect on the tidal regime within the outer port area and, consequently, the pattern of silting. The proposed scheme of 1839 included the construction of a training bank from East Cowes for modifying the scouring action of the ebb tidal stream, but nothing came of this and silting in the main fairway channel remained a serious problem. The Cowes Harbour Commission unsuccessfully sought funding for a breakwater scheme during the 1920s, and on 3 January 1934 published an 'Explanatory Memorandum' concerning a proposed training bank and dredging for which they again sought funding (CHC - un-catalogued). It noted that, 'In ten years ... 109,000 cubic yards have been removed from the River Bed, but with the silting at a rate of about one foot per annum the Main Channel cannot be properly maintained and at the present time the position is very serious'. Furthermore, 'the alteration of the Shrape has undoubtedly had a considerable effect on the Bed of the River at the Harbour mouth', such that 'the Shrape is losing its value and the West Cowes Channel is being gradually replaced by a new channel .. between the East side of the Gravel Bank and the West margin of the Shrape'.

The Memorandum referred to Newport's trade: 'nearly all the coal for the Isle of Wight comes through Cowes Harbour and that the import for the past twelve months amounted to over 156,000 tons, and the various imports to Newport Quay which are free of Cowes Harbour dues were 117,851 tons'.

The training bank was not built, but instead a breakwater was constructed in 1937. This was largely successful in deflecting sediment across the outer face of the estuary, such that only a small amount of dredging was necessary to maintain the depth of the main fairway channel, although some was still required along the West Cowes waterfront between Fountain Quay and the ferry crossing area.

An esplanade was constructed at East Cowes, which stabilised the erosion of the headland along the side of the estuary mouth. It stretched for approximately 820 metres from the vicinity of Old Castle Point and comprised a concrete sea wall with three slipways for launching boats. The esplanade opened in June 1924 and remains into the 21st. century.

Columbine Yard changed significantly after 1866, although most change did not take place until 1937. During the 1890s the yard was acquired by the Liquid Fuel Engineering Company and used for building small craft. In 1904 Samuel E. Saunders took over the yard and built motor boats. This marked the beginning of the Saunders Roe company, whose subsequent expansion had a major impact at East and West Cowes, both visually and for employment, which continued into the 21st century. The development of the company, which built lifeboats, motor boats, seaplanes and hovercraft, has been documented by Tagg and Wheeler (1989/1993).

In 1920 the Columbine Yard site still retained the old pier and seaplane slipway (Figure 26). The 1937 redevelopment scheme resulted in the pier being demolished to make way for a seaplane slipway. The impact on the built environment was huge, with a large area of buildings between Union Street and Columbine Road being demolished. A seaplane hangar and workshops were constructed, their sheer size dominating the landscape (Figure 27).

The layout of the ferry terminal remained unchanged since 1866, although it now handled cargo vessels and passenger ferries. A causeway remained on the southern side of quay next to the ferry terminal, opposite the White Hart Inn (Figure 28). On 19 October 1897 this was conveyed to the local Council by the owner, the Hon. J.G.P. Vereker, being described as a 'slipway, landing place, quay ... known as the White Hart Causeway', the Council covenanting to 'put the said slipway ... in a good state of repair and ever hereafter maintain...in repair as a landing place for the use of the public' (IWC: un-catalogued MSS).

Trinity Wharf was altered in 1867 by adding a new jetty, set at an angle to the old stone wharf behind, which included a floating pontoon and connecting brow. The deeper water enabled vessels to berth more easily, because the new wharf was parallel to the tidal streams, while the inclusion of a pontoon allowed access to vessels irrespective of the tide. In 1895 the jetty was reconstructed (Figure 28).

The remaining part of the old quay, known as Matthews' Quay (Brading 1990,148), was used by coastal vessels. A plan of Trinity Wharf (20 July 1929) refers to this as Shepard's Quay (CHC - un-catalogued MSS), being operated then by Messrs. Shepard Brothers (Figure 28).

Fabian's old shipyard was renamed the Gridiron Yard in c1880. In the 1890s a new brick shed and slipway were constructed on this site, allowing yachts to be built under cover (Couling 1984, 26-7). Later, this shed was used for seaplanes, before returning to small craft work.

Falcon Yard expanded across the foreshore after 1866, parts of the reclaimed land nearest to Clarence Road being used for workshops. The 1898 OS map indicates that this process was largely complete, the original area of foreshore leased by Joseph White having been entirely reclaimed. The northern, widest part of the site was used for ship-building (Figure 29). After launching, vessels were moved later to the engine works at West Cowes for the fitting of their means of propulsion and other equipment. Warships and merchant vessels were launched from the yard at East Cowes.

Victoria Wharf, located between the southern end of the Falcon Yard and the gasworks, was leased by the East Cowes Sailing Club in 1911 (Brading 1990, 174), and has remained in the club's occupation. The cartographic data indicate that the gas works site had not changed since 1866, although the foreshore was reclaimed to the north and south.

By contrast, the waterfront between the gasworks and the brickyard changed after 1866, the foreshore to seaward of the houses on Clarence Road being reclaimed for the development of a boat-building yard. The BOT informed Newport Corporation (20 January 1876) of an application by 'Mr. William Halliday, yacht builder', to enclose a section of foreshore to the south of the gasworks with an embankment (BOT H388/NBC 41 (13A)-3). This property was later owned by Charles Hansen & Sons, a yacht and boat building company, and known as the

Goshawk Yard (Figure 30).

The brickyard site became a boatyard, a local observer noting (1932): 'Minerva Shipyard was ... Tommy Langley's Brick Works'. However, 'in the early [18]70's ... Messrs. C. Hansen and Sons acquired this site for a new hauling-up slip and shipyard, but the lower end was never very satisfactory, because it was such a costly matter damming the tide back', although used 'until Mr. George Marvin took it over' (Guy 1932, 16). Minerva Yard's patent slipway was capable of accommodating large yachts (Figures 30 & 31).

Kingston Yard, a small boat-building yard operated by George Souter, had 2 slipways extending across Kingston *hard*. It was located immediately downstream of an industrial area which had developed in the 1920s, on a site previously occupied by the workshops and jetty of the Royal Naval College. The College was established at Osborne House in 1903, following Queen Victoria's death, while the site at Kingston was completed in 1904 (Brading 1990, 158-9). In April 1921 the College closed, leaving vacant the Kingston site. On 17 July 1926 the *Isle of Wight County Press* reported that the Isle of Wight Electric Light and Power Company 'appeared to have become possessed' of the College engineering workshops and land at Kingston, including 'the rights to the foreshore, the pontoon, and everything appertaining to it'. By 1928 a newly built power station was producing electricity for the entire island, replacing several smaller power stations (Brading 1993, 59). The 1939 OS map shows a quay and pier, used by vessels delivering coal, and a tramway running from the quay to the power station. This development marked the beginning of industrialisation at Kingston (Figure 32).

The waterfront above Kingston was agricultural until 250metres from the *Folly Inn* at Whippingham, where a factory unit was built just before the First World War by S. E. Saunders to produce wood laminate for building motor boats and, later, seaplanes. The Jubilee report of the Cowes Harbour Commissioners (1947) stated that the Saro Pier at the Folly works was approved in 1928 (CHC - un-catalogued) By 1939 the waterfrontage extended for 150 metres, with 2 jetties constructed over the foreshore.

On 7 July 1939 the port authority approved the construction of a slipway and hard at the northern side of the Folly Inn (CHC - Report Book 4).

10.5.3 West Cowes (Map 14)

The shallow lagoon opposite Kingston was used since the early 20th century for tipping the town rubbish of West Cowes, although the precise date when this began is uncertain.

In 1874 the two Isle of Wight railway companies promoted a joint Parliamentary Bill which included the addition of a spur siding to the proposed jetty at Shamblers, the latter being opened for rail traffic in 1878 (Maycock and Silsbury 2001,69, 79). Hill noted that in 1878 the 'Railway Company has built a large and commodious landing-pier in the harbour ... for the landing of coals and other articles of merchandize. The pier is connected by a siding with the ... Railway, and will be a great convenience, as vessels will go to the pier and discharge their cargo into the railway-trucks, which will be dispatched to all parts of the island' (1879, 208).

An assessment of the jetty's condition was given in evidence by William Shelford, a civil engineer, during the Select Committee proceedings of the unsuccessful 1896 Cowes Harbour Bill. He stated that the jetty was 'in a very ... unsafe condition', being 'constructed of timber piles braced together by timber, and some of these braces were eaten absolutely through by the worm, and were no longer doing any duty whatever, and many of the piles were so weakened at the bottom there is no doubt they could not carry an ordinary locomotive'. Furthermore, 'there were no appliances for more than one steamer [to discharge cargo]' (1896, 75).

During the period 1920 to 1927 two proposals were made by the Southern Railway to construct a new solid quay to replace the old wooden jetty; these were opposed by Newport Corporation. The *Isle of Wight County Press* (12 February 1927) reported the comments of the Corporation's chairman: 'During the preceding 37 years Newport had sunk £24,000 in improving the facilities for trade at the quay and their liabilities amounted to something like £17,000. To meet that liability they had to rely on the income from dues and rents from quayside property ... at present they had a revenue of about £3,300 to meet liabilities of about 3,500'. They were 'relying on increased returns to provide the balance', and 'had good reason to fear that if this Bill were passed and the extensions at Medina Wharf carried out it would seriously affect their revenue at the Quay ... merchants would take advantage of the facilities for larger vessels ... which would be provided nearer the Solent'.

These comments should be seen in the context of the Corporation's contemporaneous

programme of building further quays at Newport. A compromise was reached in April 1927, such that the Southern Railway and the Corporation avoided the heavy costs entailed in going before a Parliamentary Committee. The Corporation accepted a doubling of the annual compensation of £40 already paid by the railway company for loss of port income. The new concrete wharf, operational in 1929, had overhead gantry cranes for discharging vessels, while several rail sidings were available for coal trucks (Figure 33).

The shallow bank, located between the gasworks at East and West Cowes, became an issue after the construction of Shambler's jetty. The hydrographic data of 1856 and 1865 show the bank as lying in mid-stream, with a charted depth of approximately 2.5 feet (0.75 metres) less than the fairway channel to the north and south. A small passage existed on the bank's eastern side but was close to the channel margin, requiring local pilotage knowledge. Until the Shambler's jetty was built it was unnecessary for such deeply laden ships to navigate beyond the bank; afterwards the Gasworks Bank became the critical factor in proceeding upstream beyond the ferry crossing area. G. E. Luter, Cowes pilot, gave evidence (13 March 1896) at the Select Committee Proceedings of the Cowes Harbour Bill, 1896, regarding port practice: 'coal ships "race" to get over the bank to be first to the railway jetty - ships do ground and have to wait for the rising tide to proceed'. Newport Corporation was made aware of the bank on several occasions; for instance, on 16 March 1894 the Harbour Master reported that 'the mud bank about 500 yards below [the] jetty was an obstruction to navigation and he advised removal by means of a dredger'. At another meeting (10 January 1895) the Harbour Master again reported that there was 'a bank near [the] railway jetty 300 feet long and 90 feet wide - and that if it was taken away about 2 feet deep the Channel would be as deep as at [the] Floating Bridge. It would be a great convenience if so taken away, but not an absolute necessity' (NBC 45-91). As the control of Cowes was likely to be lost to a new administrative body, Newport Corporation sought to do as little as possible. On 3 January 1895 the Town Clerk was instructed to inform the railway company that 'in the event of the Corporation retaining control they would give [the] matter their first attention', while on 19 April 1895 the Cowes Harbour and River Committee decided to recommend the Council to 'spend a sum not to exceed £20 in removing the mud' (NBC 45-91). In fact nothing seems to have been done, even after the Cowes Harbour Commissioners took control of the port. The Gasworks Bank remained the limiting factor for ships until the late 1990s, when some dredging was undertaken.

An area of agricultural waterfront extending for 300 metres downstream from the Medina Wharf site was opened up for development following the building of Arctic Road, which ran parallel to the shore and immediately east of the railway line. This area was conveyed to George Marvin (29 September 1879), on condition that a road was laid across it within 1 year, with a further connection being made northwards to the existing Arctic Road within 5 years (Ward 1421). Following the construction of the road, a large boatyard was established. On 24 March 1885 Marvin entered into an agreement with E. G. Ward for the construction of a recess under Arctic Road so that a winch room could be installed (Ward 1423). The winch supplied the motive power for hauling up a slipway cradle at the southerly end of the boatyard. Lock gates were fitted to the slipway, which became effectively a drydock.

At the downstream part of Marvin's Yard the *Bianca* slipway was installed for the repair of smaller vessels making use of the yard. During the period from c1900 to the outbreak of the Second World War, the foreshore between the drydock and Bianca slipway was used for the annual winter lay-up of private steam yachts (Figure 34). A yachting directory commented that 'the nursery for yachts out of commission is that of Mr. George Marvin, whose berths and stores may be numbered by hundreds. On the slipways ... may be daily seen huge yachts undergoing ... "laying up" or "fitting out" ' (Yelf 1904).

The area between Marvin's Yard and the gasworks was conveyed (27 August 1883) to Clare Lallow, 'yacht builder' (Ward 1425). This property comprised 60 metres of land between Arctic Road and the 'High Water Mark', together with 75 metres of foreshore down to 'Low Water Mark'. By 1939 the foreshore had been reclaimed entirely for use as an area for storing small craft and equipment during the winter.

Larger gas holders were installed at the gasworks site. A narrow stone pier projected 45m across the foreshore to MLWS and was fitted with an unloading gantry and aerial cable for transferring coal cargoes from vessels to the gas works (Figure 35).

Adjoining the northern side of the gasworks was a strip of land and foreshore, conveyed to Joseph Atkey on 16 April 1889 (Ward 1435). The central part comprised most of the timber pound, formerly the 18th century feeding pond. During the 1890s the landward part was used for constructing houses for shipyard workers, while the timber pound itself was reclaimed and

used for storing 'yachts' furniture and fittings' during the 'laying up of yachts while out of commission' (Yelf 1904). The site continued to be used for this purpose in 1939.

Abutting J. S. White's shipyard was the yacht and boat-building business of C. Sibbick, known as Albert Yard, located at the end of Thetis Road. In addition to offices and sheds there were four hauling-up slips. The cartographic and pictorial data of 1939 indicate that Sibbick's yard had become part of White's shipyard, large boat-building sheds having been erected on the site.

Hansen's old boatyard, adjoining the northern end of J. S. White's shipyard, was auctioned in March 1899 (*Isle of Wight Herald*), and absorbed by its larger neighbour. Between 1911 and 1912 the remaining drydocks at the southern end of White's shipyard were filled in, providing more space for the erection of engineering workshops and finally separating the functions of the yards at East and West Cowes. In 1938 the main section of White's frontage was straightened entirely by the reclamation of a "V" shaped area at the northern end of the shipyard (Williams 1993, 32,54): by 1939 the waterfrontage extended for 275 metres, with 190 metres being used as a fitting-out quay (Figure 36).

A large and prominent 'hammer-head' crane, capable of lifting 80 Tons (approximately 82 Tonnes), was erected in 1911 and used for lifting heavy engine components into ships berthed at the fitting-out quay. These components, such as boilers and steam turbines, were constructed in large workshops on the shipyard site.

The depth of water available at the West Cowes shipyard, together with the length of the slipways at East Cowes, limited the size of vessels which could be constructed. However, this was not a disadvantage as the types of warships built - destroyers, frigates, minelayers, patrol boats and submarines - were those most in demand during both World Wars.

Following John White's sale of the obsolete Thetis Dock in 1862 the new owners leased it to Pickfords, a shipping and transport company, together with the adjoining wharf. In 1894 Pickfords bought the entire property. The 1898 OS map shows that Thetis Dock had been filled in, although the actual period when this took place has not been established. In 1939 Thetis Wharf (Figure 37) was still used by the small vessels operated by Pickfords' subsidiary company, Crouchers Ltd., who maintained a daily service to Portsmouth and Southampton,

carrying general cargo. Pictorial data indicate that three tripod cranes for handling cargo had been installed at the wharf between 1932 and 1939.

The cartographic data indicate that the northern part of the foreshore between Thetis Dock and the Commercial Wharf and Legal Quay (formerly Saltern Quay) was partially reclaimed by 1898, a quay and small boatyard being constructed on the site. The boatyard was operated by Mr. H. Guy, who built various small craft. Mr. S. Saunders purchased the quay and the southern area of foreshore in 1917, which then became the site for the Solent Works of Saunders Roe (Figure 37), comprising a large workshop used for building seaplanes and flying boats (Brading 1993, 11), and a sloping concrete apron built across the foreshore. Solent Works was totally destroyed during an air raid in May 1942 (Williams 1993, 63).

The Commercial Wharf and Legal Quay was little changed since 1866, although some storehouses had been removed. It was used daily by the small cargo vessels of Shepard Brothers, which carried general cargo (Figure 37).

Clare Lallow's boatyard, abutting the northern side of the Commercial Wharf and Legal Quay, had expanded since 1866; additional slipways were installed and the former Bannister's yard adjacent to it was acquired. Another small boatyard with slipways, immediately downstream of Lallow's yard and behind Mew's old brewery in Medina Road, was constructed in 1899 by A. E Marvin, the Cowes Harbour Commissioners giving consent on 6 March that year (CHC - Moorings Committee).

The remaining part of the former sea cliff was largely unchanged since 1866, although some small slipways and landing places were built by riparian owners.

The waterfront area beyond this point, described previously as a cluster of marine industry, had expanded further after being acquired by Messrs. W. White & Sons in 1878. This company (un-connected with J. S. White's yard) became established at Vectis Works, formerly Michael Ratsey's property, on the seaward side of the High Street. The change of ownership is confirmed by a lease dated 30 April 1879 (Acc 81/94J/21). Messrs. W. White & Sons built steam launches and yachts, together with their engines and other fittings. Cartographic and pictorial data indicate that the yard's slipways had been extended further seaward to MLWS

after 1866 and that a large wharf was constructed at the southern end of the site in c1930 (Figure 38).

Blandford's old quay was used as a coal yard by the firm of Read Brothers from c1930.

The Fountain Quay area was largely unchanged since 1866. The newly-built Town Quay was extended a further 20 feet (6.1 metres) along the side of the old causeway in 1867, and all three former causeways had been either shortened or removed. During the period 1878 to 1880 two criminal trials were held concerning the levying of tolls at W. G. Ward's Fountain Quay. Mr. Ward was found guilty of obstructing public access at the southern end of his pontoon. A public footbridge was installed at the southern end of a later pontoon, as shown in a lease dated 4 January 1893 between E. G. Ward and his lessees, the ferry company (Ward 1607). Public access for pedestrians has been maintained by this means ever since, while during the 1930s a larger, rectangular pontoon was installed, together with a bridge capable of taking the weight of motor cars.

The waterfront between Fountain Quay and Market Slip remained virtually unchanged since 1866, with some minor incremental development evident from the cartographic data. The main change was in its usage, with the small quays, such as Hewitt's and Scriven's, losing their cargo-handling function. By 1939 all general cargo was discharged at Fountain Quay, Thetis or Shepards wharves.

The remains of Kernott's Pier, adjacent to Market Slip, were wrecked during the tornado event of 29 September 1876.

The Parade was appointed a public highway in an indenture (9 September 1879), between the Ward estate and the Local Board of Health for West Cowes (IWC - un-catalogued). The Parade has remained largely unchanged since then (Figure 39). The major exception to this was the construction of the Victoria Pier, completed in 1902. Its function was to provide a berth facility for Solent excursion steamers. Although these vessels did use the Fountain Quay they were often delayed by regular passenger ferries, which had priority. E. G. Ward opposed the building of the pier, claiming that it would be an obstruction to vessels departing his Fountain Quay, which often proceeded stern-first to the estuary mouth before turning around.

The proceedings of the Select Committee of the House of Lords, which took evidence during March and May 1900, elucidate the arguments put forward by the promoters of the Private Bill and the opposition, and contain valuable ancillary information concerning port usage. The Cowes Pier Act received Royal assent on 25 June 1900. The Victoria Pier was used frequently by excursion steamers in the period up to the Second World War (Figure 40).

10.5.4 Summary

Several major changes took place after 1867. First, the landscape of the northern part of the port area was transformed by an expansion of the ship-building industry and the introduction of aircraft-building. J. S. White's shipyard sites at East and West Cowes increased in spatial extent and complexity, with large workshops, building gantries and the 'hammer-head' crane. This was compounded by the large hangar and workshops of Saunders-Roe at Columbine Yard, East Cowes, together with those at Solent Works, West Cowes. The increased labour force necessary for this industrial output resulted in the growth of the towns on both sides of the estuary.

Secondly, the cargo-handling berths had undergone a significant change in location. General cargo was rationalised to Thetis Wharf and the Commercial Wharf, rather than being landed at smaller quays throughout the port, although ferry traffic continued to use established facilities at East and West Cowes. The most significant difference was in the construction of a bulk-handling berth at Shamblers, West Cowes, known later as the Medina [Coal] Wharf, which transferred most of the port's cargo-handling capacity upstream of the ferry crossing area, away from the built urban environment. This was amplified when an electric power station was constructed at Kingston, East Cowes, with even more coal entering the port.

Lastly, an increase in yachting gave rise to a significant industry in boat-building and servicing. Ratsey's old yard was expanded by W. White & Sons, and C. Hansen & Sons developed new boatyards along a large section of the waterfrontage of East Cowes. The building of Arctic Road in West Cowes permitted the establishment of more boatyards on the western side of the estuary.

The trend of upstream development, which was becoming evident in 1866, was fully expressed by 1939. Although further development of the waterfront took place later, the majority of the

urban waterfront was developed by 1939 (Figure 41). Most subsequent changes involved changes in use, rather than the exploitation of previously un-developed sites.

10.5.5 Newport (Map 15)

OS maps are the principal cartographic sources, with 1908 and 1938 editions available at a scale of 1:2500. Photographic evidence is also available.

Newport Corporation provided large quantities of primary manuscript sources, the Finance Committee minute books (NBC 45-191/192) being especially useful, while primary sources from Winchester College and the Queen's College, Oxford are relevant with respect to parts of the western and eastern sides of the estuary.

The port was transformed, in several spurts of activity, during the period between the reconstruction dates of 1867 and 1939, with a succession of marginal quays being built on the eastern side of the port, together with sea wall improvements and the construction of two marginal quays on the western side. The old port site, comprising Town Quay and the wharves along Lukely Brook and the River Medina, was largely superseded by the marginal quay development which took place in a seawards direction along both sides of the estuary.

The initial phase of expansion involved the building of a quay on the Marsh. Previous reconstructions have indicated that this was the preferred site, because Newport Corporation owned the property and had pursued a policy of reclamation to make it suitable for the purpose, but the construction costs precluded the Corporation from undertaking the task unaided. It was therefore fortunate that rival railway companies were competing to link the original Cowes to Newport line with the line between Ryde and Sandown. This could be achieved only by erecting a bridge over the Medina estuary, which the Corporation controlled and claimed to own. Without a bridge the railway network would have remained a collection of separate lines, each having its own terminus, which would have been most unsatisfactory. This, coupled with the Corporation's ownership of the Marsh, explains why the Isle of Wight Newport Junction Railway agreed to construct a 100 metre quay at their expense, as one of the clauses in the agreement which allowed a bridge to be constructed. Clearly, the Corporation was in a position to exert a great deal of leverage and the railway company was effectively held to ransom.

Construction of the new quay began in March 1875 (Maycock and Silsbury 2001, 59), although on 6 July that year the Town Clerk was directed to write to Mr. Stileman, the railway contractors' engineer, to complain that 'only half of the pier in the river had been constructed and to request that the whole pier and works be constructed together' (NBC 45-192). During this period the Corporation was also negotiating with the Queen's College for a road access to the new quay from Snook's Hill, on the road between Newport and Ryde, as noted in meetings of the Finance Committee on 26 June and 26 July 1875 (NBC 45-192). This committee was heavily occupied with the development of the new quay: for example, on 8 July 1875 it determined that 'it was more desirable to have a fixed crane [for the new quay] large enough to lift 6 Tons [6.1 Tonnes]'. On 20 July 1875 the committee discussed the removal of the head of the old Town Quay, which would have obstructed the building of the new quay had it remained in position. It was agreed to 'allow the point on the old quay to be removed at once without interfering with the [existing] crane' (NBC 45-192). Hitherto, the ancient Town Quay appears to have retained its original shape, although the eastern side had to be underpinned on one occasion, but the construction of the new quay and the means of connecting it to the old Town Quay required that modifications be carried out. The northern part of the old Town Quay was re-aligned and shortened in order to accomplish this, and explains the change in outline shape which is apparent when comparing cartographic data of c1840 and 1908.

On [blank] April 1876 Mr. Giles (the Corporation's consultant engineer) was 'dissatisfied with the Bridge and works for connecting the old quay [to the new quay] and was authorised to endeavour to arrange with Mr. Stileman that a swing bridge should be erected in lieu of that proposed, to swing on the north side of the stream running to Coppin's Bridge' (NBC 45-192). The erection of a swing bridge was particularly significant, because it reinstated a formal crossing between the north and south sides of the River Medina (Figure 42). In late 1878 the New Town Quay was completed. The swing bridge was replaced in 1924, with modifications being carried out in 1925 to meet objections by local traders.

The high-level railway bridge included an opening section to allow the passage of sailing vessels to the Old Town Quay and River Medina. Another feature of the bridge was that it included a railway line at quay level, which crossed by means of a separate lifting bridge, in order to connect with rail sidings on the New Town Quay (Maycock and Silsbury 2001, 75).

This latter arrangement caused great inconvenience to port users and was only a short-lived feature. The main high-level opening bridge was a source of difficulty and dispute, this being an inevitable consequence of having a busy railway crossing over an equally busy estuary, the foci of respective operations being in close proximity. A section of railway line had to be lifted and rolled back to allow the passage of high-masted sailing vessels. Vessels and trains both experienced delays on occasions, a problem exacerbated as the opening structure aged. The local shippers complained frequently: for example, on 15 September 1923, Mr. Shepard of Messrs. Shepard Brothers Ltd. claimed that 'the machinery in use to raise the bridge was obsolete, and in their reply [to his earlier complaint] the Railway Company did not deny it'. Furthermore, 'the frequency of the trains was partly responsible for the delays at the bridge' (*Isle of Wight County Press*). The construction of quays downstream of the old port centre, reported below, together with the decline of sailing vessels, resolved this situation. The River Medina became even narrower after the railway bridge and viaduct had been built, with the channel being constricted within the quay walls of the 18/19th century storehouses and the brick viaduct. Vessels had little room to manoeuvre, and were reduced to being poled as a means of propulsion (Figure 43).

Lukely Brook was used from c1890 by small barges operated by W. B. Mew, Langton & Co. Ltd., which transported barrels and crates of beer from the Royal Brewery in Crocker Street to the brewery quays in the (old) Town Quay basin for transfer to larger vessels (Figures 44 & 45). The water level in the tidal part of Lukely Brook was maintained by means of a lock gate and sluice (Moore 1984, 73). A small section of barrel-rolling track was installed on the brewery quays to expedite the transfer (Figure 46). This operation continued to be carried out in 1939 (Figure 47).

On 23 July 1896 the Corporation leased from the Crown a piece of foreshore extending for 300 feet (91.4 metres) south of the cemetery, for building an extension to the New Town Quay (NBC 1-1094). This extension consolidated the northern part of the Marsh and continued to the first part of the widening estuary, the latter becoming known as Corporation Quay (Figure 48). Corporation Quay was extended a further 112 metres downstream, terminating at the outfall of Fairlee Hole Stream, after another lease was granted to the Corporation by the Crown and the BOT on 11 July 1907 (NBC 1-1416). Beyond this extension the undeveloped foreshore continued northwards (Figure 49).

Following the building of Corporation Quay two un-connected events took place which promoted the construction of additional quays. First, as a result of the legal proceedings and compromise of 1912, the Corporation's ownership of the foreshore and sea bed in the southern part of the Medina estuary was conceded by the Crown. In the absence of Crown leases the issue of rent payment did not arise, thereby providing a saving in expenditure. However, because there was a public right of navigation over tidal waters (Douglas and Geen 1989,3), the BOT still had to give its approval for construction works. Secondly, unemployment became a serious problem during the Depression of the 1920s, to the extent that the Government set up Unemployment Grants Committees which offered financial assistance for building schemes making use of unemployed labourers. Newport Corporation took advantage of this benefit on several occasions.

During 1924-5 the Corporation negotiated the purchase of Seaclose Field, which stretched from the Fairlee Road to the estuary. The field was owned by Messrs. Shepard Brothers, a long-established firm of barge owners and traders in Newport and Cowes. The firm's principal, Mr. H. Shepard, was also a member of the Town Council, but drove a hard bargain for the purchase, as referred to in *Isle of Wight County Press* reports of the period. Since most of the field was intended for use as a recreation ground, financial assistance towards its purchase was available from the Ministry of Health under the provisions of the Public Health Act, 1875. Seaclose Quay (Figure 50) was built in 1926-7, the Unemployment Grants Committee again helping to defray the cost of borrowing money for its construction.

On 2 April 1933 Newport Corporation entered into an agreement with a firm of contractors for extending Seaclose Quay a further 100 metres, together with associated dredging (NBC 1-2448). This marked the last phase in the process of extending marginal quays downstream on the eastern side, which in its fullest expression involved 560 metres of quay, from the old Town Quay almost to Five Trees Point. The plan for the Seaclose Quay extension included provision for yet another extension to just beyond Five Trees Point, but this never came to fruition.

As new lengths of quay were constructed so large areas on them were leased, providing additional income for the Corporation. An *Isle of Wight County Press* report (12 December 1925), stated that the Corporation 'have not only erected the quay walls, but have made the

extensive quay surface accommodation conveniently available for trade purposes, and for the heavy motor-lorry and other traffic to and from the quay. Large new stores necessary for meeting the needs of the larger vessels trading to the quay are springing up by the quayside at the northern end, and there are also large depots for petrol and oil'. There were also 'extensive depots for the large quantity of imported materials, which now go to the making of our macadamised roads ... to say nothing of stacks of timber and other materials'. This glowing report, while factually correct, makes no mention of any deepening of the estuary because none had taken place. Yet the 'larger vessels' required deeper water. It might be argued that the Corporation's efforts in building quays ever further downstream, where there was a natural if slight increase in water depth as the estuary slowly deepened, may have been its response to the problem posed by deeper vessels. If so, then not only does it suggest that the Corporation had accepted that dredging the fairway channel in the estuary was impracticable, but it also indicated that the solution adopted was hopelessly inadequate.

A programme of quay construction was also undertaken on the western side of the estuary. For example, a new quay wall was built during 1924-5 at Little London, to replace the existing structure: on 12 April 1924 it was reported that the Unemployment Grants Committee had informed the Corporation that the scheme was 'approved for a grant of 50 per cent. of the interest on the loan' (*Isle of Wight County Press*). The warehouses on the landward side of Little London Quay were occupied by Messrs. Shepard Brothers, as cited in a Winchester College lease dated 17 September 1897 (WCM - 14041). In 1895 a large warehouse, known as the Model Stores, was erected by Messrs. Shepard Brothers at Gallows Point (Figure 51).

Winchester College leased to A. F. Shepard some of the land which lay to seaward of Blackhouse Lane, known as Carpenter's. This comprised a 'cottage with the garden and premises', leased on 10 April 1890, together with the adjacent 'site of a boathouse with the ground adjoining', leased on 7 August 1884 (recited in NBC 1-1239a). On 7 February 1900 the entire property was re-leased to the Corporation (NBC 1-1239a). Adjoining the southern end of this property was a narrow strip of land abutting the foreshore, which was leased by Winchester College to Newport Corporation (2 August 1893). The Corporation covenanted to maintain and use this land 'for a public hard for the use of the inhabitants of Newport and for no other use or purpose whatsoever' (NBC 1-1044).

On 21 April 1915 Newport Corporation purchased from Winchester College all of the land to the east of Blackhouse Lane. The parcel of undeveloped waterfront extended downstream from Gallows Point (Figure 52), and included the cottage at the southern end of the boatyard at Carpenter's (NBC 1-1656). On 13 October 1923 it was reported that the Corporation's Finance Committee 'recommended that the Surveyor be instructed to prepare amended plans for the erection of a quay wall at Carpenter's, Blackhouse Lane, between a point north of the Ark property and Carpenter's-hard', seeking BOT approval and applying for financial assistance to the Unemployment Grants Committee, these being obtained in December 1923 (*Isle of Wight County Press*). It was reported (12 April 1924) that the Corporation's Surveyor was being urged to complete Carpenter's Quay (*Isle of Wight County Press*).

The boatyard at Carpenter's was operated by W. H. Bishop, who entered into an annual lease agreement (3 July 1916) with Newport Corporation, in its new role as owner of the foreshore (NBC 1-1696). An accompanying plan shows a series of stages projecting over the foreshore, 'for the purpose of mooring and laying up boats', and the cottage and boathouse, located to the south of the slipway, both of which remain prominent features of this area into the 21st. century. On 2 May 1922 the Corporation gave Bishop permission to erect a shed near the boathouse, the boatyard being referred to as 'Odessa Yard'. The part of Odessa Yard which lay to the north of the cottage appears to have been leased separately by Winchester College and sold subsequently to the sitting tenant. The exception to this was the slipway: on 7 July 1916 the foreshore upon which it was constructed was leased by Newport Corporation to P. J. Croucher of Messrs. Crouchers Ltd. (NBC 1-1697). St. Cross Cottages lay immediately north of the slipway (Figure 53).

The last phase in quay building involved the reclamation of Underwood's Luck, a marshy inlet to the south of Five Trees Point, enabling the construction of Blackhouse Quay. This quay extended for approximately 185 metres and was directly opposite the future site of Seaclose Quay: a Newport brewing firm, Messrs. Mew Langton and Company Ltd., contributed a small piece of land to assist with the construction. The concrete outer quay wall was reinforced by the inclusion of a large quantity of old iron bedsteads, these being laced together with steel cables (Slater 2001, pers. comm.). Underwood's Luck was filled gradually with town rubbish and dredged material from the estuary, the final surface being covered with a layer of gravel (Figure 54). On 13 February 1926 it was reported that Messrs. Brooks were prepared to lease

the central portion of the new quay if the Corporation would dredge the area in front of the quay and also construct a new concrete road to service the site (*Isle of Wight County Press*). On 9 July 1926 the Corporation purchased from Winchester College a further small piece of land at the northern end of the site in order to increase the overall size of the quay (NBC 1-2074).

J. H. Slater, 'Concrete specialist', leased the southern end of Blackhouse Quay from Newport Corporation (3 July 1933), the agreement including a provision for the shared use of the berth facilities with the neighbouring tenant, Messrs. Brooks (NBC 1-2471). Stone, coke and coal were imported at the quay, together with granite chippings from Jersey (Slater 2001, pers. comm.).

By the reconstruction date of 1939 the spatial development of the main port area had been complete for a decade (Figure 55).

The Cement Mills site expanded and developed considerably after 1866. By 1939 the main site covered an area of approximately 6.8 hectares (Figure 56). Earlier kilns, situated next to the railway line, were replaced by a much larger complex of kilns, chimneys and other industrial buildings located closer to the quays. The site was served by its own railway sidings and included areas for the storage of bulk materials. Since the early 1900s chalk supplies were obtained direct from the large pit at Shide, near Newport, which had its own rail connection to the main Sandown to Newport line. To the west of the main site, beyond the Cowes to Newport railway line, was a large clay pit having an area of approximately 5 hectares. The pit was served by a tramway, which provided the means of transporting supplies of clay.

The depth of water available at the Cement Mills quays was slightly greater than at Newport. This is supported by a subsequent Admiralty chart of 1958 (BA 2793), which indicated a drying height of 3 feet (0.9 metres) at the Cement Mills, and since MHWS at this site was charted as 13.6 feet (4.1 metres) then the maximum depth at MHWS was 10.6 feet (3.2 metres). These measurements are 19 years older than the reconstruction date, leaving open the possibility that the quays may have been slightly different in 1939.

This scene of industrial activity was not mirrored on the opposite side of the estuary: the 1939 OS map shows the East Medina Mill as disused, although the retaining walls of the tidal mill

ponds remained intact.

10.5.6 Summary

This reconstruction described a major expansion of port facilities: new quays were constructed downstream of the old Town Quay on both sides of the estuary, transforming the port's spatial extent. On the eastern side the Marsh was finally enclosed with a quay wall, becoming the New Town Quay, and was followed by Corporation Quay and then Seaclose Quay; on the western side Little London Quay was rebuilt and was followed by the building of Carpenter's Quay and then Blackhouse Quay. The development of the railway network on the Isle of Wight required an opening bridge over the estuary at Newport, adding a further constraint to sailing vessels proceeding to the old port area. The introduction of motor vessels and the construction of the new quays ameliorated this problem.

Despite the grandiose proposal of 1839 to canalise the Medina estuary, no serious dredging actually took place, leaving the port tidally constrained. Some capital dredging was done in association with the programme to create new quays, but the main fairway channel remained untouched.

The Cement Mills expanded to become a major industrial site, making use of mineral supplies on the Isle of Wight for its manufactured output. The supply of raw materials and the dispatch of the finished product were both aided by the improvement in transport facilities offered respectively by the expanded rail network on the island and more quay space at the site.

10.5.7 Conclusion

The 1939 reconstruction described the ports of Newport and Cowes when they had both reached their maximum spatial extent. At Cowes the northern part of the waterfront on both sides of the estuary was dominated by a cluster of industrial sites, while the southern part was characterised by facilities for the yachting industry and bulk cargo-handling quays. At Newport the port area had been greatly expanded on both sides of the estuary, and industrial activity at the Cement Mills had also reached its maximum spatial extent. Therefore, 1939 may be interpreted as the zenith of port expansion and development: after the Second World War the focus of port activity moved steadily to the re-development of existing sites, often accompanied by a change in use. As a result of the expansion programme, Newport possessed large areas of quay space, representing a valuable resource to be exploited. Similarly, the

extensive boatyard facilities at Cowes, previously used in the yachting industry, offered large areas of waterfront for re-development.

Newport Corporation's programme of quay building was adequate for the types of commercial vessels making use of the port at the time, but the fundamental problem of the lack of water remained unsolved. Without addressing this problem Newport would remain vulnerable to any changes in the pattern of shipping. In particular, an increase in size of bulk-carrying ships would mean that they could only be handled at Cowes, thereby having a negative affect on the grain and timber trade to Newport, while the available depth of water at the Cement Mills site could only accommodate small vessels. Furthermore, although the general cargo trade at Newport was serviced by daily barge shipments to and from Southampton and Portsmouth, any major changes to this established pattern were likely to have a significant impact on future trade. However, Cowes also had limitations: the Gasworks Bank and the depth of water available at Medina Wharf and Kingston Wharf set an upper limit on the draught of vessels, and hence their size. Vessels proceeding to the latter berths also had to negotiate a blind bend in the vicinity of the ferry terminal at East Cowes, where the presence of the floating bridge compounded the navigational difficulties for large vessels.

In retrospect, the programme of port expansion at Newport gave only a short-lived benefit to trade, before the inherent advantages possessed by Cowes were demonstrated once more.

Chapter 10.6: 2000 reconstruction

10.6.1 Introduction

This reconstruction relies heavily on cartographic and pictorial sources, but is supplemented with manuscript sources in order to establish the chronology of development.

Bathymetric data are available in the 1966 and 1997 versions of Admiralty charts (BA 2793) for Cowes and Newport, with scales between 1:3500 and 1:12000. OS maps cover the entire estuary at a scale of 1:2500, the most recent version being up-dated to 1999. These maps remain the principal source for establishing waterfront features.

Pictorial data which are available comprise: aerial photographs of Cowes by Simmons Aerofilms, dated from 1956 to 2000; a photographic archive held by the Cowes Harbour Commission; further aerial and terrestrial photographs of the entire Medina estuary, dated 1979 to 2003, held in a private collection. The Cowes Harbour Commission archive includes a complete set of committee minute books for the period 1939 to 2000, together with a large collection of plans and development proposals for individual sites. These enable the chronology of site development to be established to the nearest year.

A further primary source is a short film made by Bishop of port activities in Newport and Cowes during the 1950s. The film illustrates the importance of the general cargo trade to Shepard's Wharf and Thetis Wharf in Cowes and to the quays at Newport.

During the period 1988-1990 the Isle of Wight Development Board, in conjunction with the Cowes Harbour Commission, undertook a programme of research into waterfront usage. The Cowes Harbour Plan (1990) was adopted later as a non-statutory guidance document by the local planning authority and is a useful secondary source. Further research into the economic importance of the Medina estuary was carried out by consultants, resulting in the Cowes Harbour Development Plan (1994).

The local planning authority (Isle of Wight Council) holds details of planning permissions granted for specific sites on the waterfront of the entire Medina estuary. These are available

for public scrutiny. Newspaper reports of committee meetings of Newport Borough Council and its successor bodies, together with the Cowes Harbour Commission, are available for the entire period 1939 to 2000 in the *Isle of Wight County Press* archive.

10.6.2 East Cowes (Map 16)

After the Second World War it was found that the breakwater structure required attention: on 12 October 1945 the Cowes Harbour Commissioners' breakwater sub-committee stated that 'something would have to be done in the next two years' (CHC - Report Book 4). On 2 December 1955 it was noted that 'tipping of limestone in connection with the consolidation of the breakwater commenced on 30th November' (CHC - Report Book 5). This method was unsuccessful and the Commissioners agreed (7 July 1956) to construct a concrete wall instead (CHC - Report Book 5). The Harbour Master reported (7 February 1958) that 'all work should be finished in about a week's time' (CHC - Report Book 6). The works included a small extension to the original breakwater.

The Columbine Yard site was largely unaltered from 1939, although a larger slipway replaced the original seaplane facility. The main change has been in its functional usage, reflecting several changes in ownership. During the 1960s and 1970s the British Hovercraft Corporation built a range of large and small hovercraft (Figure 57), but during the early 1980s marine-oriented work ended at this site, as Westland Aerospace, Westland Aerostructures and then Guest, Keen & Nettlefolds Aerospace (GKN) undertook the construction of large components for the aircraft industry. Columbine Yard became redundant during 2002 following a rationalisation of GKN sites in East Cowes and was purchased subsequently by the South East England Development Agency (SEEDA), on behalf of the Isle of Wight Economic Partnership and the Isle of Wight Council. Future plans for the site, renamed Venture Quays, included a mix of residential, marine-related industry and leisure activities (*Isle of Wight County Press* - 30 January 2004). In 2004 construction of wind turbine blades began at this site as part of an expansion scheme by Vestas, a Newport based company (*Isle of Wight County Press* - 27 February 2004), whose activities are reported below, with blades being transported to Southampton on specialised, shallow-draught vessels for world-wide shipment (Figure 58).

The Red Funnel ferry terminal changed in order to meet the demands of new vessels and different trade. In 1949 a new service was introduced, described in 1954 by the ferry company

as 'normally performed by ... a converted tank carrying vessel ... The Norris Castle can carry upwards of 30 motor cars and vehicles run on and off under their own power'. Larger loads could also be carried and, significantly, 'by sending loaded vehicles traders avoid all the expense of double handling involved in shipment by the normal type of cargo vessel' (Red Funnel Steamers, Ltd. 1954, 23). A slipway was built alongside the existing terminal to enable the vessel to berth end-on. The general increase in motor vehicle numbers led to the introduction of larger Ro-Ro ferries in 1965 (Arnott 2002, 57), such that the existing berth became unsuitable. As part of this expansion programme the Cowes Harbour Commission agreed (1964) to the construction of 'a new ramp, slipway and dolphins[1] ... to create improved terminal facilities to deal with considerably increasing traffic' (CHC - Minute Book 1963-73). The new berth facility included a floating pontoon structure giving direct access for pedestrians. The ferries 'were modified and lengthened in 1975 to accommodate more cars and became drive-through vessels' (Arnott 2002, 57). In the early 1990s these older ferries were replaced by even bigger vessels, entailing the construction of a new, larger berth and the redevelopment of the ferry terminal. A link-span was installed for vehicular traffic. The vehicle marshalling area adjacent to the terminal was enlarged, in order to cope with the increased vehicle capacity of the new ferries. During the winter of 2003/4 two of the ferries were 'stretched' in order to increase capacity, requiring the installation of a high-level loading ramp (Figure 59).

In 1963 Trinity Wharf was extended southwards, following the line of the existing jetty, as far as the old ferry causeway. On 11 January that year the port authority gave consent for the additional pier structure (CHC - Report Book 6), enabling larger vessels to berth. A buoy maintenance workshop was built on the solid quay area at the rear of the jetty. Engineering maintenance work on pilot cutters was also undertaken, an adjacent gridiron being available for hull inspections. In the late-1980s Trinity Wharf was discontinued as a marine base, although lightships were still maintained. During 2004 the site was advertised for sale, but was used in August that year as a terminal for the temporary fast-craft passenger service between East Cowes and Lymington during Cowes Week (Figure 60).

The old ferry landing place at the southern end of Trinity Wharf became derelict, although

[1] A 'dolphin' is a structure, comprising several connected timber or steel piles, which is driven into the sea-bed. Vessels are able to rest temporarily against dolphins, in order to execute berthing manoeuvres.

much of the original stonework of the causeway and access steps remains in situ. In the early 1980s a pontoon and bridle bridge were installed by the Isle of Wight County Council, to provide a landing place for the pedestrian ferry service which operated during periods when the floating bridge was undergoing maintenance.

Lallow's Gridiron Yard was used during the 1980s and 1990s as a winter storage facility for day-class racing yachts, a usage which continued after the yard's sale in c1994. Adjacent to it, Seymour Quay was redeveloped in c1984, with 'yachtsmans cottages' being constructed on the site (Figure 61).

Shipbuilding continued at the Falcon Yard until 1965 when the yard was closed. In April 1966 it was sold to 'the British Hovercraft Corporation, the former Saunders-Roe aircraft manufacturers, by then part of the Westland Group of companies', after which 'The building berths were progressively removed and filled in behind a quay wall to provide a large area of hard-standing' (Williams 1993, 72). Subsequently this site became part of Westland Aerostructures. During 1991 the process of consolidating the quay wall was completed when the remaining frontage was sheet-piled and back-filled, providing a large open area (Figure 62). All marine-oriented usage ceased, with the workshops being used for manufacturing structures for the aircraft industry. The site was acquired by GKN, in whose ownership it remained at the beginning of the 21st. century.

On 6 January 1956 the East Cowes Sailing Club's application to extend their property at Victoria Quay was considered and later agreed by the port authority (CHC - Report Book 5), involving the reclamation of a further 25 feet (7.6 metres) of foreshore.

The gasworks site became redundant after the Second World War, although the main structures remained until 1955, including the 'two disused gas holders' (3 June 1955: CHC - Report Book 5). This site became part of the Westland Group's property holding in East Cowes.

During the 1950s the Goshawk Yard was divided into two parts, with R & W Clark taking over the northern end and Groves & Guttridge acquiring the southern part. Both parts continued to be used for yacht servicing. During the 1970s the entire site was united again under the name of Clarence Yard. By the 1990s only the northern part continued in use as a marine oriented

facility, including the 90 tonne boat slipway, while the remainder was used for a variety of purposes, a situation which continued into the 21st. century (Figure 63).

The Minerva Yard site changed radically after 1939. The 1966 Admiralty chart indicated that the northern part, including the Cornubia slipway, was operated by C. E. Clark (Shepperton) Ltd. and continued in use for yacht servicing, although the Royal National Lifeboat Institution had acquired a small area for the construction of a workshop. The southern part became disused. In 1964 the port authority was informed by the Ministry of Transport of plans for the construction of a 'Marina Boatel' on the Minerva yard site, and on 10 February 1967 it received an application from Willment Marine Ltd. to establish a marina. The site also included the northern part of Little Shamblers Copse. Development took place in a rather desultory manner, the Harbour Master reporting on 19 September 1969 that 'work ... commenced some time ago had now been discontinued and that there was a risk of soil erosion into the river forming silting', while on 19 June 1970 the port authority instructed its Clerk to write to the Crown Estate Commissioners, asking them to withdraw their licence, because 'it was apparent no further work had been done' (CHC - Minute Book 1963-73). Apart from the installation of a pontoon complex along the quay wall, very little development was undertaken at this large site. In the late 1990s the property changed hands, and during the period 1998-2001 a housing estate was built and the pontoon complex up-graded (Figure 64).

The southern part of Little Shamblers Copse remained partially wooded until it was used during the early 1970s for the construction of a tank farm. Oil pipelines connect the tanks with the discharging berth for coastal tankers at Kingston North Wharf. A small remnant of ancient woodland separates the tank farm from the gas works site (Figure 65).

On 9 September 1949 the port authority agreed to a proposal by the Southern Gas Board for the construction of a gas works at Kingston (CHC - Report Book 5), which included the reclamation of foreshore and the construction of a piled jetty to provide a berth for collier vessels. Three gas holders were built, one of which extended over the foreshore (Figure 66). During September 1956 the port authority consented to gas pipelines being laid across the Medina estuary at the southern end of the Kingston industrial area (CHC - Report Book 5). In the mid-1960s gas production ceased at Kingston, after which the Isle of Wight received its gas supplies from the mainland, via a pipeline. The berth at Kingston North Wharf was then used

for coastal tankers. On 26 October 1965 a report noted the 'danger which existed at Kingston while vessels were discharging butane and petrol there by reason of the proximity of the refuse tip on the west bank of the River Medina' (CHC - Minute Book 1963-73), at the southern end of Medina Wharf. In c1992 three articulated 'Chicksan' arms were installed, replacing the flexible hoses which had been previously been used (Figure 67). This facility remained into the 21st. century as the only site on the Isle of Wight where bulk cargoes of oil products can be received.

Adjoining the southern side of the tanker berth at Kingston North Wharf was a piled storage area. Although not originally intended as a berth it was used during the period c1980-c2002 for receiving cargoes from coastal vessels of crushed stone and dredged aggregate for the building industry (Figure 65).

The power station site at Kingston was 'in regular production until 1971, when 2000 MW stations began operation on the mainland', several power cables having been laid across the Solent during the period 1941-67 (*Histelec News* 24). The power station was closed in 1976, but 'electricity generation returned to the island in 1982 when the Central Electricity Generating Board commissioned a gas turbine generating station' (*Histelec News* 24). Although capable of supplying the Isle of Wight, the new power station's purpose was to reinforce the National Grid. Bulk fuel oil is discharged from coastal tankers at a berth fitted with articulated arms, and then stored in a small tank farm (Figure 65).

At the reconstruction date the power station site defined the southern limit of the developed waterfront at East Cowes, but the adjoining 'green-field' area immediately to the south was identified in the Unitary Development Plan as appropriate for future marine-related employment.

The former Saro Works site near the Folly Inn was used for manufacturing laminate and plastic products until c1989, when the factory closed down, since when it has been derelict (Figure 68). In addition to having a dilapidated water frontage the site also has poor road access, Folly Lane being privately owned, narrow and not designed for heavy goods traffic. These factors are likely to preclude the site being re-developed for commercial purposes.

The Folly Inn remains an important focus of yachting activity in the central part of the Medina estuary. Extensive pontoon moorings for visiting yachts have been provided by the port authorities on both sides of the boundary which separates them. Although the Folly Inn falls just within the jurisdiction of Newport Harbour, the Cowes Harbour Commissioners gave approval on 12 July 1963 for an extension to the pier (CHC - Report Book 6). In c1991 a new pier was built to replace the old one, which had become unsafe.

10.6.3 West Cowes (Map 16)

The large area to the south of Medina Wharf continued to be used for tipping rubbish into the 1960s. As a result, the site is considerably higher than the adjoining land. It was used temporarily as an open storage area, but remains undeveloped.

Several changes took place at Medina Wharf after 1939. The overhead gantries were removed following the withdrawal of steam train services on the Isle of Wight in 1966. This loss of the rail distributive network, coupled with a general reduction in coal consumption, resulted in the gantries becoming redundant. During the 1970s small coastal tankers discharged oil cargoes at the northern end of the wharf. In c1979 the area formerly occupied by rail sidings at the southern end of the wharf was used for the construction of grain silos, a development initiated by the Isle of Wight Grain Board. Approximately 25,000 tonnes of grain are exported annually from Cowes, mainly comprising feed wheat, but including small quantities of pulses, rapeseed and linseed. Coastal vessels are loaded using portable equipment rather than a fixed conveyor system, so that the wharf remains unencumbered when other commodities are handled by mobile crane (Figure 69). Another development which took place in the 1980s was the installation of a radiused conveyor system for the discharge of sea-dredged aggregates. This is situated next to the grain silos. Washing and grading of the aggregate is undertaken in order to provide supplies for the construction industry. During the 1980s a ready mixed concrete plant was located at the northern end of the wharf, but this was dismantled in c1990. Other cargoes which are imported include timber and crushed stone.

The former Marvin's Yard was sub-divided during the late 1950s. The area between Medina Wharf and the drydock was acquired by W.A. Souter & Son (Cowes) Ltd. in c1960 for use as a boatyard. On 13 October 1961 plans were approved for a new slipway and on 13 April 1962 for a piled extension of the existing slipway (CHC-Report Book 6). Further development took

place in 1969 when approval was given for a further concrete slipway (CHC-Minute Book 1963-73). The site was taken over by English Estates in c1978 and used for a variety of small businesses. Victory Yard operated at this site between c1984 and c2000, undertaking the repair and maintenance of motor yachts (Figure 70). However, the bulk of Marvin's Yard, including the drydock, was acquired by E. Cole and Sons during the 1960s. The drydock continued in use, supported by a repair facility in the adjacent workshops (Figure 71). Coles' Yard was taken over by the owners of the short-lived Cowes Express ferry company in c1991 and renamed Britannia Wharf. The drydock's gates were removed and their supports demolished to allow access for the ferries, effectively ruining the drydock facility. The new owners were unsuccessful in gaining planning permission to build houses on the site, which remains largely derelict at the beginning of the 21st. century.

The northern part of the former Marvin's Yard became the National Sailing Centre (known later as Club UK), before being acquired in 1987 by the Lister Trust, a charitable foundation, and renamed the UK Sailing Centre. The name was changed again to the UK Sailing Academy during the early 1990s. It provides sailing courses for young people, with a large part of the site comprising accommodation facilities, in addition to boat storage and maintenance areas. A large accommodation block occupies the site of the former Bianca slipway, although the piers remain (Figure 72).

Immediately north of the UK Sailing Academy site is a Sea Cadets centre and the Island Youth Water Activities Centre, both of which also provide sailing and boating opportunities for young people. Adjoining this site is the Whitegates jetty and pontoon, a public landing facility provided and maintained by the local authority, now the Isle of Wight Council. The port authority having agreed to the plans for a dinghy landing pontoon on 11 January 1963 (CHC - Report Book 6).

Immediately downstream is an area owned and operated during the period c1975-c1982 by Cheverton Workboats Ltd., but which in c1983 was leased to FBM (Marine) Ltd. as part of their shipyard facility in the former J. S. White's shipyard. In 1990 the site was acquired by Cowes Marine Services Ltd. The old stone quay of the former gasworks was partially dismantled, the seabed immediately downstream being dredged to provide a boat-lift facility (Figure 73). A further change took place in c2000 when the site was taken over by GBR, a

yacht racing syndicate.

After the closure of J. S. White's shipyard in 1965, the engineering works at West Cowes continued to produce equipment for several more years. However, 'On 20 April 1977 the Company name was changed to Elliot Turbomachinery Ltd' (Williams 1993, 72-3). In 1981 the yard was closed again, but in the following year several companies took over parts of the old shipyard site. The southern part, adjacent to the Cowes Marine Services Ltd. site, was acquired by FBM (Marine) Ltd. and used for the construction of small to medium size passenger vessels, such as the 'Red Jet' ferries for Red Funnel (Figure 74). The main part of the waterfrontage, including the 'hammerhead' crane, was acquired by ABMTM (Souter) Ltd. and also used for small vessel construction until the mid-1990s. In 1990 the so-called 'container revolution' arrived in Cowes, with the 'hammerhead' crane being used as a Lift on-Lift off (Lo-Lo) facility for a short-lived service between Cowes and Southampton, which attempted unsuccessfully to compete with Red Funnel ferries (Figure 75). During 1992 Souter's Yard undertook engine replacement and maintenance on cross-Channel 'Sea Cat' ferries (Figure 76). In c1999 FBM (Marine) Ltd. ceased production at the site, their premises also being acquired by GBR. Dwindling work at the end of the 20th. century has resulted in the large area of waterfront occupied by ABMTM (Souter) Ltd. becoming virtually disused. The northern part of the former J. S. White's site, adjacent to the chain ferry crossing area, continues in non marine-related work.

Thetis Wharf was used by small general cargo vessels until the early 1960s. It was extended seawards following the approval given by the port authority on 9 September 1960 for 'the sheet piling of the existing stone wall and the construction of an open jetty on piles and straightening out of the jetty at the southern end' (CHC Report Book 6). In c1965 the wharf changed hands, being renamed Spencer Thetis Wharf, and was used as a masting and rigging facility for large sailing vessels, and occasionally as a lay-by berth for commercial vessels (Figure 77). During the late 1980s the two northern cranes were removed, leaving the southern crane for the stepping of masts and other lifting work. The short-lived Cowes Express ferry company operated a service to Southampton during 1990/1, a large pontoon having been installed at the northern part of the property as a berth for their craft. This pontoon remains in place at the beginning of the 21st. century and is used for small passenger vessels. During Cowes Week 2003 it was used for the temporary Wightlink fast-craft service to Lymington (Figure 78).

Since then the northern part of the wharf and pontoon have been leased to another passenger vessel company. In 2004 the main part of the site was sold, leaving its future usage uncertain.

The Solent Works site of the former Saunders-Roe company continued to be used for marine-related activities during the 1950s, Princess flying boats being stored on the concrete apron adjacent to the slipway. During the 1970s the site was used as a terminal for the hovercraft service between West Cowes and Southampton, after which it was acquired as a yacht and boat hard-standing area, as part of Shepard's Wharf boatyard. The former hovercraft terminal was used as a yacht chandlery until the mid-1980s. In 2001 the port authority acquired the entire site for eventual re-development.

Shepard's Wharf continued in use for handling cargo until c1965. Pictorial data indicate that a tripod crane was installed on the southern jetty during the period 1939 to 1956, and this remains into the early 21st century. During the 1980s Shepard's Wharf was acquired for a small craft and yacht servicing facility and a boat-lift installed (Figure 79). In 2001 the boatyard was acquired by the port authority, in addition to the preceding site.

Lallow's Yard remains virtually unchanged from the situation in 1939, although a new pier was constructed in 1958 (CHC - Report Book 6). A diesel and petroleum spirit refuelling facility was constructed on the new pier for use by small craft, while the slipway continued in use for the maintenance of small commercial craft into the 1990s (Figure 80). Lallow's Yard changed hands in c1994, and activities at the site have diversified into some non marine-related activities.

Marvin's old boatyard, adjacent to Lallow's Yard, continued in its original usage as a yacht servicing yard until the late 1970s, after which the site was redeveloped for residential purposes. The area was renamed Tide's Reach and included a slipway and jetty for the benefit of the residents (Figure 81).

In 1952 the Cowes Corinthian Yacht Club was established at Mew's brewery site in Birmingham Road. On 7 June 1957 the port authority gave approval for the construction of a 'concrete landing stage on open piles at the club premises' (CHC - Report Book 6). A small pontoon complex was added to the landing stage during the 1980s.

The former sea cliff area at the rear of Birmingham Road has been developed by some of the residential owners in order to establish private landing facilities for recreational craft. Small areas of foreshore have been reclaimed, although the line of the original sea cliff is substantially intact.

After the Second World War the shipyard at Vectis Works was owned by F. Dinnis Ltd. On 12 February 1960 the port authority was informed that the Ministry of Transport had given consent for the construction of a new slipway and reconstruction of the two existing ones at the yard (CHC - Report Book 6). In c1965 the shipyard was acquired by Messrs. Groves and Guttridge. A scheme for 'marine development at Vectis Works', including a marina and fuelling pontoon was approved by the port authority on 23 August 1968 (CHC - Minute Book 1963-73). The plan involved the construction of a large concrete apron on the site of the slipways, reclaiming and enclosing this area entirely, and the erection of a breakwater at the northern end of the site. A pontoon complex with shore access enabled large numbers of yachts and other recreational craft to be berthed. In the early 1980s this site changed hands and was renamed Ancasta Marina. By 1991 the marina was dilapidated and under threat of redevelopment for residential purposes. It was acquired by the Cowes Town Waterfront Trust in order to preserve and expand the area as a yachting event centre. A replacement breakwater was built during the late 1990s, further extending the pontoon complex, as an element in the redevelopment of this area. The scheme included the Town Quay and the Red Funnel ferry terminal. The marina site is the principal venue for entertainment during the annual Cowes Week regatta (Figure 81).

Read Brothers continued to use Blandford's old quay until the late 1950s, after which the site was acquired by the Cowes Harbour Commission for the construction of a harbour office and workshop. As part of the Town Quay redevelopment scheme of 1998/9 the old quay was completely enclosed within a newly reclaimed area of foreshore, and the seaward end of the 19th century Town Quay was demolished.

In c1949 a larger, rectangular pontoon was installed at Red Funnel's Fountain Quay, which included a bridge capable of taking motor vehicles. Following the introduction of larger ferries during the 1960s an elevated pedestrian gangway was fitted. A high-speed hydrofoil service to Southampton began in 1969 (Arnott 2002,56), using the north-west side of the pontoon as a

berth for these craft. During the period 1992/4 these craft were replaced with three 'Red Jet' catamaran vessels, a fourth vessel being delivered in 2003. In c1990 vehicles were excluded from the pontoon, owing to the condition of the connecting bridge. Soon afterwards, with the introduction of even larger Ro-Ro ferries on the service, calls by such vessels were discontinued at West Cowes. The old structure was replaced with a new, smaller pontoon for the 'Red Jet' high-speed ferries during the Town Quay redevelopment scheme of 1998/9, complementing the replacement terminal building which had been constructed on Fountain Quay in c1989 (Figure 82).

The waterfrontage between Fountain Quay and Cowes Castle remains largely unchanged since 1939, the only significant differences being the demolition of Ratsey and Lapthorn's sail loft in the early 1960s, and the construction of a new solid quay and piled jetty in 1957/8 at the Island Sailing Club's premises adjacent to H.M. Customs watch house. In c1990 a replacement pontoon structure for the Island Sailing Club was also installed, providing better facilities for its members (Figure 83).

A reduction in the excursion passenger vessel trade after the Second World War, coupled with the problem of weather damage because of the exposed position, led to the demolition of the Victoria Pier in 1960, but otherwise the Parade is unchanged since 1939.

10.6.4 Summary

The reconstruction of 2000 ends a period of significant change in waterfront use throughout the port. First, J. S. White's shipyard closed down in 1965, resulting in the large shipbuilding site at East Cowes being turned over to non marine-oriented activity. The West Cowes side fared better, because its engineering workshops were available for similar work and the 'hammerhead' crane remained in use for servicing vessels. By the turn of the 21st. century most of this activity had ceased, leaving the future of the site in question.

Secondly, the former Saunders-Roe/Westland/GKN waterfrontage at East Cowes was used less for marine-oriented activity in the period leading up to 2000. Columbine Yard was disposed of in 2002, although some maritime activity has returned in 2004, with the manufacture, storage and shipment of wind turbine blades. However, its future also remains in question. The Columbine Yard and Falcon Yard sites have the potential to change radically the urban area of

East Cowes because of their spatial extent.

Thirdly, the boat-building and boat repair yards at East Cowes have almost completely changed their function: the Gridiron Yard is now used only for storage; the Goshawk Yard, subsequently renamed Clarence Yard, is little used for marine-related activities; the Minerva Yard has been developed for residential purposes, although a large pontoon complex remains. At West Cowes a similar picture emerges: with the exception of some marine-oriented use at English Estates and the UK Sailing Academy, most of the former Marvin's Yard is disused, notably the drydock; the former Cowes Marine Services site, now occupied by GBR, is used mainly for boat storage; the future of Spencer Thetis Wharf remains uncertain; Shepard's Wharf boatyard will be redeveloped for residential purposes, the boat storage yard probably being relocated to the Kingston area of East Cowes; the residential development of Tide's Reach has replaced a small boatyard; Vectis Works has become a marina.

Commercial vessels are consigned to either Kingston Wharf or Medina Wharf, while the old general cargo trade to Shepard's Wharf and Thetis Wharf disappeared, such cargo now being carried by ferry. The only other commercial vessel trade is the specialised transport of wind turbine blades from the Columbine Yard.

The Red Funnel ferry company replaced its entire fleet within the space of 10 years, with catamarans instead of hydrofoils, and three larger Ro-Ro vessels. Furthermore, the passenger terminal and pontoon at Fountain Quay, West Cowes were totally renewed, while the terminal at East Cowes was rebuilt and a much larger vehicle marshalling area provided. The programme of enlarging the vehicle ferries will be completed during the winter 2004/5. Red Funnel has been able to beat off the competition on the Cowes to Southampton route during the 1990s from a container feeder service and another high-speed ferry company. Earlier, the hovercraft service to Southampton was also ultimately unsuccessful. However, Red Funnel does not have a monopoly on cross-Solent travel, as Wightlink and Hovertravel compete on other routes.

10.6.5 Newport (Map 17)

The old warehouses adjacent to Sea Street continued in use until c1976 together with Sharp's timber yard near Coppin's Bridge, on the site of the former tan yard. In 1978 the warehouses

were demolished and the timber yard business concentrated on another site in the town (Bradley 2004, pers. comm.). The quay wall at the site of the former warehouses remains into the 21st. century (Fig 84).

Following the reduction of the island's railway network to the single line between Ryde and Ventnor in 1966, the opening bridge, the Newport station site, and the viaduct alongside the River Medina became redundant. They were demolished soon afterwards to make way for a new flyover road bridge carrying the dual carriageway from the Coppin's Bridge area towards West Cowes, the river banks being re-aligned as part of the scheme.

Lukely Brook continued to be used until c1955 by the small barges of W. B. Mew, Langton and Company Ltd. which transported barrels from the Royal Brewery in Crocker Street to the Old Town Quay basin for transfer to larger vessels (Pritchett 2006, pers. comm.). During 1979-80 the old storehouses at Little London were converted into the Quay Arts Centre, and soon afterwards the adjoining storehouses at Sea Street were converted for residential use (Figure 85).

The usage of the port during the decade in which the general cargo trade declined was described in the 'Official Guide' to Newport of c1962. This document was sponsored by Newport Corporation and the comments indicate a biased stance: 'Amongst Principal Users of Newport Harbour (the principal Port for all Export and Import Goods Traffic in I.O.W.) are Vectis Shipping Co., Ltd., and its subsidiary Vectis Roadways, who handle some 1,500 tons of General Cargo per week between the Island and mainland with their fleet of modern motor vessels and diesel lorries. Mobile cranes and fork trucks are extensively used to facilitate the rapid handling of all types of cargo. The Companies' Motor Coasters of up to 300 tons capacity are often seen in the port loading or discharging cargoes from London and North Coast ports' (Newport Official Guide 1962, 53). The Corporation evidently still perceived Newport's port accommodation to be superior to that of Cowes, but the growing threat to trade posed by the Ro-Ro ferry service to East Cowes appears to have been ignored.

The New Town Quay and Corporation Quay continued in use until c1980 for importing general cargo and timber cargoes, the latter often being brought upstream from vessels moored on buoys off Medina Wharf (Figure 86). Morey's timber warehouse at the southern end of Seaclose

Quay was demolished in c1975. During the 1980s Corporation Quay and the northern part of New Town Quay were fitted with linear pontoons for use by visiting yachts, while the apron of New Town Quay was used for storing yachts during the winter. Such usage continues into the 21st century, reflecting the change of use from commercial to recreational activity (Figure 87). The Jubilee storehouse, at the northern end of Corporation Quay, was converted to Council offices during the late 1990s and is now the only building on this quay.

Seaclose Quay continued to receive cargoes from coastal vessels up to the mid-1990s, but following the cessation of trade to the main berths at Newport it has been used for large recreational craft and as a lay-by berth for other vessels. In 2001 the northern part of the quay was redeveloped as a waterfront restaurant and hotel (Figure 88).

Little London Quay was used regularly for handling cargo up to the late 1960s and continued to receive occasional cargoes into the 1970s. Since then it has been used to provide berths for recreational craft. The warehouse was converted for leisure purposes in c1980. Shepard Brothers' Model Stores, on the former Gallows Point, were demolished in the mid-1980s and the site redeveloped for residential use (Figure 87).

The southern part of Carpenter's Quay was used for a variety of purposes, some of which were marine-related. Photographs taken during the 1950s depict 2 sheds between Odessa Boatyard and the Model Stores; these survived up to the 1980s, but have since been demolished. At the beginning of the 21st century this part of the quay remains unused (Figure 88). By contrast, Odessa Boatyard has continued in marine-related activity up to the present date. The 1950s film, referred to earlier, shows the slipway in frequent use for maintaining the small motor barges which traded to the port at that time. During the period 1989-91 the slipway was used for overhauling large dumb barges. Since then it has been used for recreational craft. The finger pontoons upstream of the slipway provide berths for small recreational craft, while larger craft are moored downstream of the slipway at a pontoon complex installed in c1980 (Figure 88).

Blackhouse Quay continued to receive coal, stone and other bulk cargoes until c1970. In the 1980s the southern part was used for the reception of sea-dredged aggregates from coastal vessels. A washing and grading plant on the quay processed the dredged material, supplying

sand and gravel for the construction industry. This operation continued until c1998, after which the processing plant was dismantled, although processed material was delivered from Southampton until c2003 using small coastal vessels. Since then an intermittent trade in this material has continued, using a very small vessel (Figure 89), but Blackhouse Quay is essentially disused and available for redevelopment.

The foregoing description concerns the spatial extent of the port to Five Trees Point. An important development took place in 2000 which extended maritime activity further downstream and brought new trade to the port. This resulted from the Isle of Wight Council's decision to establish an employment site on the northern fringes of the town. St. Cross Business Park was begun in 1998, with Structural Polymers (SP) Systems moving to the new industrial area that year. SP Systems produce the composites used particularly in the wind turbine industry. In 2000 another factory was built adjacent to SP Systems by Aerolaminates, a leading manufacturer of wind turbine blades. In 2002 Aerolaminates became NEG Micron Rotors. The new site offered the twin advantages of a neighbouring composite supplier and proximity to the waterfront. In December 2000 a Marine Transfer Facility (MTF) was completed, allowing a specially designed barge to load the wind turbine blades (Figure 90). The MTF is located mid-way between Hurstake and Dodnor, adjacent to the NEG Micron Rotors factory (Figure 91). The berth is within an area subject to several environmental designations and therefore the Isle of Wight Council consulted widely and then imposed numerous conditions before granting planning consent for the MTF (IWC - TCP/20425/K-P/00823/99). For example, the berth can only be used over a limited high-tide period during daylight hours between Monday and Friday. The barge, *Blade Runner I*, has a loaded draught of less than 1 metre, therefore only 50 cubic metres of seabed material needed to be removed to allow access at high-tide. In 2002 a longer vessel, *Blade Runner II*, was built, in order to transport larger blades (Figure 92), while in 2004 NEG Micron Rotors merged with a rival company, becoming Vestas Blades UK Ltd. The wind turbine blades are taken to Southampton for loading onto deep-sea vessels for world-wide distribution.

At Dodnor a small slipway and jetty are operated by the Medina Valley Centre, a residential field centre established in 1963, which offers environmental and outdoor education (Figure 93).

The Cement Mills continued to produce cement until 1944, after which both bulk and bagged

cement cargoes were brought from the mainland, the site becoming a distribution centre for the Isle of Wight (Pritchett 2004, pers. comm.). During the period c1960-80, small coastal tankers brought cargoes of petroleum spirit to one of the berths at the Cement Mills, storage tanks being located adjacent to the former railway line between Cowes and Newport. Cement shipments ceased in 1983, with bulk cement being brought from the mainland by lorry, using the Ro-Ro services to the island. Since then the two southern quays have been used occasionally as lay-up berths for vessels, or for discharging cargo (Figure 94). During the 1980s a sea-dredged aggregate berth was installed at the third, northernmost quay. A washing and grading plant processed the raw aggregate, providing sand and gravel for the construction industry. However, this trade ceased in 1989, after which the Cement Mills site has been used mainly for the storage and distribution of cement products, although a small ready-mix plant continues to operate at the northern end (Figure 95). The 3 quays are currently disused, but the potential remains for future use. The Isle of Wight Council's Unitary Development Plan (2001) recognised this potential, policy Mineral 6 stating that it will 'seek to safeguard and will permit the improvement, modernisation and extension of imported and marine aggregates wharves at the following locations [with some conditions]: (a) - West Medina, Stag Lane, Newport'. In August 2004 the West Medina Mills 'brown-field' site, comprising 6.2 ha (15.3 acres), was acquired by SEEDA (www.coweswaterfront.co.uk - newsletter 4).

The old mill pond at the former East Medina Mill was converted for use by recreational craft during the 1970s, a pontoon complex being installed to provide berths. Access to Island Harbour marina was achieved during the 'stand' of high-tide by means of a lock. The smaller mill pond, at the southern part of the site, was opened during the early 1970s to allow the paddle steamer *Ryde* to be berthed, since when the vessel has become derelict (Figure 96). Residential properties were constructed on the landward side of the former mill pond in the 1980s, and a small boatyard was developed adjacent to the marina complex.

10.6.6 Summary

The period 1939-c2000 saw the ending of established trade in the port: first, the berths on Lukely Brook became disused, followed by those of the River Medina; secondly, the general cargo trade to New Town Quay, Corporation Quay and Seaclose Quay effectively ceased during the 1960s, with such cargo being carried increasingly on Ro-Ro ferries to East Cowes; thirdly, the bulk cargo and timber trade to these estuary quays ended during the 1980s. The exception

to this was the import of sea-dredged aggregates at Blackhouse Quay, which virtually ceased during 2003. The result of this loss of trade was characterised by the removal of many storehouses, with a small amount of residential development taking place at the former Gallow's Point area. Most sites have remained vacant, leaving them available for redevelopment.

A notable exception to this withdrawal from maritime activity has been the continuing use of the Odessa Boatyard for servicing commercial and recreational vessels, although many of the port's quays have also been used for resident or visiting recreational craft.

At the turn of the 21st century a new trade in transporting wind turbine blades began from an industrial site close to the main port area: the latter became effectively redundant for commercial purposes, with the exception of the leisure industry (Figure 97). In contrast, although the large industrial site at the Cement Mills ceased production it did retain a commercial role, becoming instead an importer of manufactured product from the mainland and a storage and distribution centre.

10.6.7 Conclusion

The decline of shipbuilding at East and West Cowes, in conjunction with a retreat from marine-related activity at two of the former Saunders-Roe/Westland/GKN sites, as well as Trinity Wharf, Britannia Wharf and Clarence Boatyard, has left large areas of waterfront at the northern part of the estuary with the potential for redevelopment. These sites either possess, or are close to, some of the deepest water available within the port and their effective sterilisation by residential development would end, in the short to medium term, any prospect of marine-related activity being revitalised. Similarly, with the exception of Odessa Boatyard, the quays at Newport are moribund and available for redevelopment, although the Cement Mills site offers the possibility of re-establishing commercial usage by coastal vessels. The Unitary Development Plan and the supplementary planning guidance approved as part of the Cowes Waterfront initiative contain policies for the entire Medina estuary, concentrating on existing developed waterfrontage in the main urban areas or 'brown-field' sites. While these policies may be seen as a reflection of the 'success' of the two ports up to the present time, by acknowledging the trend of past events in terms of waterfront usage, they are of crucial importance in determining the future of both ports. Although adequate water depth and

waterfront space may exist, the other important factor in measuring 'success' - the local governmental support for marine-related port activity - must also be demonstrated by appropriate planning policies in order for Cowes and Newport to retain a maritime function. It remains to be seen whether the existing policies are robust enough to accommodate conflicting pressures within the two ports by allocating sufficient waterfront for the long-term 'success' of both.

Chapter 10.7 Analysis of composite reconstruction map of East and West Cowes (Map 18)

10.7.1 Introduction

Although individual reconstruction maps were produced for each selected date, it was considered that a composite map would illustrate the trends in spatial development of the waterfront and emphasise those particular areas where such development had been greatest and least. Newport was excluded from this exercise because the majority of downstream marginal quay development had taken place within a short period and individual reconstruction maps were considered to illustrate adequately the waterfront development within the port area.

10.7.2 Development trends

Several elements can be identified:

1) West Cowes - 17th and 18th century seaward development took place in the area between Fountain Quay and Watchhouse Slip However, this area is close to the navigable channel and only limited development was necessary to obtain access for the coastal craft making use of the waterfront. Berths in this area became redundant during the 19th century, since when further development has been virtually static. For larger vessels it was necessary to extend berths further to seaward, such as at Saltern Quay, where the inter-tidal foreshore was wider. Similar vessels also berthed at Point Quay, where the closer proximity of the navigable channel required only limited seaward development.

In the area adjacent to St. Mary's Mead (now Cowes Yacht Haven) the inter-tidal foreshore was widest, allowing significant amounts of seaward reclamation to take place without encroaching on the navigable channel.

2) East Cowes - 17th to 19th century seaward development took place to a limited extent, because the navigable channel was in close proximity. The majority of berths in this area have continued to be used, although those closest to the Shrape Mud were not usable by larger vessels.

3) East and West Cowes - Marshy inlets, perhaps only covered with water at high tide, have provided opportunities for large amounts of spatial development, most recently as shipbuilding yards on both sides of the estuary and as boat-building yards at East Cowes.

4) East and West Cowes - 19th and 20th century marginal quay building took place upstream of the ferry crossing area, where large quantities of agricultural land were available for development. These berths continue to be used.

10.7.3 Conclusion

By using different colours for each reconstruction date the historic trends in spatial development become readily apparent. The use of a Geographical Information System (GIS) would make such composite maps easier to achieve.

Chapter 11: Process-to-form dynamics

11.1 Introduction

The purpose of this section is to present a synopsis of the process to form dynamics which have shaped the ports of Newport and Cowes. Two steps are involved: first, the identification of each stimulus - the causal factor or force - which has acted as a catalyst in bringing about a change to the *status quo*. The second step is to describe briefly the process resulting from the stimulus, or stimuli, manifested as form or actual development. Processes are tabulated on the vertical axis of the diagram, with time being shown on the horizontal axis. Reconstruction dates are indicated with pecked vertical lines (Diagram 5).

This method has two advantages: first, the processes operating at any given time can be identified readily; secondly, the reasons for selecting certain dates for horizontal time reconstructions become more apparent.

Process to form descriptions are presented chronologically, based on the approximate date when the process first began. No attempt is made to rank processes in terms of importance, as each has been significant during a particular period, nor to 'measure' one process against another. Curves for each process attempt to indicate when each process became more or less significant, or when there was no change in significance.

11.2 Stimuli and process

1) Trade at Newport:

Stimuli - (i) The ending of the war with Spain and the accession of James I to the throne led to an increase in maritime trade and shipbuilding;

(ii) The grant of a further town charter by James I enabled the Corporation to raise the income from local charges;

(iii) Entrepreneurial merchants, such as Stephen March and the Newland family, began victualling the ships anchoring at Cowes Roads, selling Isle of Wight produce, especially grain, at higher prices than those paid to their suppliers;

(iv) The increase in trade required additional storage space within the port area.

Process - Plots of Newport Corporation's waterfront land on Somers Brook and the River Medina were leased to merchants for building storehouses. Further consolidation of the Marsh took place.

2) Trade at Cowes Harbour:

Stimuli - (i) The general increase in trade, noted in 1, resulted in larger numbers of commercial vessels, notably Dutch, transiting the Solent and using the Cowes anchorage to seek shelter and obtain local supplies of food and water;

(ii) An element of security at the anchorage was provided by the guns at West Cowes Castle;

(iii) Piracy in the Solent area was virtually eradicated.

Process - The port settlements at East and West Cowes were established and expanded. Quays were built and slipways/causeways were used for handling domestic cargo, such as coal and for passengers. The port of Newport was displaced as a source of victuals.

3) Re-export trade at Cowes:

Stimuli - (i) The Navigation Acts of 1651, 1660, 1673 and 1696, of which the 1660 Act was the principal enabling statute, required produce from Caribbean and North American Colonies to be landed at certain English or Irish ports, including Cowes, for assessment (enumeration) of Customs duty, before final delivery to consignees. A boom in trade began in the 1670s (the 'Commercial Revolution'), involving the re-export of enumerated commodities;

(ii) Cowes became the principal port in the English Channel for enumerated colonial cargoes during the high period of British mercantilism (1756-75).

Process - An increase in the number of 'legal' and 'sufferance' quays at East and West Cowes, especially during the 3rd quarter of the 18th. century, where enumerated goods were landed, combined with an increase in the number of storehouses on these quays, used for the temporary storage of such goods.

4) Shipbuilding and ship-repairing at East and West Cowes:

Stimuli - (i) The 'Glorious Revolution' (1688/9) resulted in England's participation in the War

of the League of Augsburg (1689-97) and the War of the Spanish Succession (1701-14). The demand for warships, unable to be fulfilled by Royal dockyards, led to the placing of contract work at merchant shipbuilding yards;

(ii) The requirement for ship-repair and maintenance sites for ocean-going vessels, in an area close to the main trade route of the English Channel;

(iii) The requirement, during the late 18th. and early 19th. centuries, for vessels built for the Customs service, to combat organised smuggling;

(iv) The arrival of Thomas White in the early 19th. century, seeking suitable locations for the development of shipbuilding and ship-repair facilities;

(v) The demand for warships, especially during World Wars I and II.

Process - The development of shipbuilding and ship-repairing yards: at East Cowes by Nye, the same yard being acquired later by Ewer and then Fabian, both of whom also built naval contract vessels in the 18th century. During the 1840s a shipyard was developed by Thomas White and expanded later by his sons, the yard lasting into the 1960s; at West Cowes a shipbuilding and repair yard was developed by Gelly at Point during the late 18th century. Thomas White built a drydock at Thetis Yard, Point, in 1815. Subsequently, White acquired Gelly's Point Yard and developed a large shipbuilding and ship-repair yard on the site of the former saltern to the south of Point. This yard was used later for fitting engines to vessels constructed at East Cowes, up to the 1960s.

5) Establishment and growth of manufacturing industry to the central Medina estuary: Stimuli - (i) The French Revolutionary War (1793 to 1802) and Napoleonic War (1803 to 1815);

(ii) The demand for cement as a result of urban development.

Process - Two tidal inlets in the central Medina estuary (Binfield and Werrar) were exploited for the construction of tide mills. East and West Medina Mills produced 'biscuit' for the Royal Navy, using local grain supplies. West Medina Mill was used later for cement production. This site was developed into a major industrial centre, using local supplies of clay and chalk, with marginal quays providing berths for coastal vessels. Production of cement ceased (1944), but the site continues to be used as a storage and distribution centre.

6) The establishment and growth of yachting:

Stimuli - (i) The French Revolutionary War and Napoleonic War prevented the gentry from visiting continental Europe for 'grand tours'. The Isle of Wight became a favoured alternative destination for sea-bathing and travel;

(ii) visitors to the island made use of the packet service to Cowes and recognised the potential of the port of Cowes for yachting purposes;

(iii) Facilities for building small to medium size vessels already existed in the port, (Ratsey's Yard and Point Yard, West Cowes);

(iv) Marine tradesmen were available (ship-wrights, sailmakers, ropemakers, chandlers);

(v) Suitable anchorages for small to medium size sailing craft existed in the outer part of the estuary mouth;

(vi) The gentry began owning and racing their own sailing craft, having been involved in betting on races between pilot vessels. The first yacht club was formed - The (Royal) Yacht Club, which later became The Royal Yacht Squadron;

(vii) Queen Victoria and Prince Albert selected East Cowes as the location for their own residence, which encouraged the construction of properties there for the gentry and retired naval officers, these being situated close to yachting facilities.

(viii) Yachting competitions attracted increasing numbers of participants, including foreign yachtsmen, up to the First World War. The economic depression between the two World Wars curtailed yachting.

Process - Yacht construction began at West Cowes (Point Yard and Ratsey's Yard) and at East Cowes (Falcon Yard). Yacht repair and maintenance facilities were established at West Cowes (Lallow's Yard and Marvin's Yard) and at East Cowes (Columbine Yard, Goshawk Yard and Minerva Yard). Smaller yards were developed at East Cowes (Kingston) and at West Cowes (Shamblers). Steam yachts were built and maintained at West Cowes, notably at W. White's Vectis Yard.

7) Division of ownership and control within the Medina estuary:

Stimuli - (i) Proceedings of the Courts of Revision, resulting from the Reform Bill (1832), identified the anomaly of some waterfront properties at East and West Cowes being included in Borough of Newport;

(ii) Neglect of dredging in the port of Cowes by Newport Corporation;

(iii) Difficulties encountered by waterfrontagers at East and West Cowes in obtaining approval from Newport Corporation for development;

(iv) Rental costs relating to foreshore leases negotiated with Newport Corporation;

(v) Ratepayers at East and West Cowes sought control of the port area at Cowes as part of growing civic awareness which began during the mid-19th century;

(vi) Legal action by an oyster fishery company to enforce perceived fishery rights;

(vii) Recognition by the Board of Trade, Cowes Harbour Commission, Newport Corporation and the oyster fishery company of the need to settle the question of ownership of the foreshore and seabed.

Process - Petitions by the local authorities/tradesmen of East and West Cowes resulted in the *Cowes Harbour Act* (1897), which divided control of the Medina estuary between the Cowes Harbour Commission and Newport Corporation. After the question of ownership was settled (1912), the Corporation and its successor bodies owned the southern part of the estuary and controlled development. The northern part was acknowledged to be Crown land, and the Cowes Harbour Commission commented on navigational matters. The BOT was consulted concerning public rights of navigation. Since c1970 the local authority exercised development control within the estuary.

8) The Isle of Wight rail network:

Stimuli - (i) Growth of the rail network on the mainland, with lines from London to Southampton and Portsmouth;

(ii) Recognition that the West Cowes to Southampton ferry route offered the fastest connection between Newport and London;

(iii) Expansion of sea-bathing resorts on the Isle of Wight;

(iv) The potential for the jetty at Shamblers, West Cowes to be linked to the railway line;

(v) The desire to link the Cowes to Newport line with the line between Ryde and Sandown;

(vi) A demand for local supplies of cement.

Process - The West Cowes to Newport railway was built (1862) adjacent to the Medina estuary.

The later jetty at Shamblers, together with extensive rail sidings, permitted large quantities of coal to be handled and transported to Newport. The connection of this line to other lines (1875) allowed coal to be distributed more widely. Passengers gained access to resorts on the entire island. The requirement for a connecting bridge across the port area at Newport enabled Newport Corporation to include the construction of a new quay on the Marsh as part of the financial deal struck with the railway company. Shide chalk pit was connected to the railway line, enabling supplies of chalk to be transported direct to the Cement Mills.

9) Downstream expansion of marginal quays at Newport:

Stimuli - (i) Newport Corporation recognised (late 19th century/early 20th century) the inadequacy of the facilities at the historic core of the port;

(ii) Attempts by the Corporation to retain trade by providing marginal quays on the Medina estuary;

(iii) The availability of an unemployed workforce and financial grant aid.

Process - The extension of the New Town Quay and the construction of Corporation Quay and Seaclose Quay (eastern waterfront). The rebuilding of Little London Quay and the construction of Carpenter's Quay and Blackhouse Quay (western waterfront).

10) Industrial site and quays at Kingston, East Cowes:

Stimuli - (i) The decision to build a single power station to supply electricity for the Isle of Wight;

(ii) The availability of a large, vacant site with deep-water access for sea-borne supplies of coal;

(iii) A requirement to replace the existing, small gasworks at East and West Cowes, re-locating a new, larger gasworks clear of residential areas, possessing water access for coal supplies;

(iv) The decision to cease coal gas production on the Isle of Wight, following the construction of a gas main across the Solent;

(v) A requirement for a dedicated berth for handling hazardous cargoes from coastal oil tankers;

(vi) The decision to build an oil-fired electricity generating station to supplement the National Grid.

Process - The construction of a coal-fired power station at Kingston and the later addition of an adjoining gasworks required berth facilities for coastal vessels. Following the subsequent closure of the gasworks a berth became available, enabling a bulk petroleum and oil facility to be installed for use by coastal tankers. A tank farm was constructed, providing a storage and distribution centre for oil products. The construction of an oil-fired power station included a new berth for coastal tankers. The quay apron between the two tanker berths received cargoes of crushed stone and sea-dredged aggregates.

11) Roll-On, Roll-Off (Ro-Ro) ferry service between East Cowes and Southampton:
Stimuli - (i) Increase in car ownership after the Second World War;

(ii) Requirement by general cargo consignees to reduce costs by eliminating the double-handling of cargo delivered to the Isle of Wight;

(iii) The availability of medium size tank-landing craft, after the Second World War, suitable for conversion to carry vehicles;

(iv) The development of larger Ro-Ro ferries capable of carrying larger numbers of vehicles;

(v) The acquisition of sufficient land at East Cowes for a large vehicle marshalling area;

(vi) The development of link-span technology, enabling the rapid loading and discharge of vehicles.

Process - The replacement of the traditional Lo-Lo ferry service to East Cowes with early types of Ro-Ro vessels required the construction of a slipway to enable these vessels to berth end-on. The number of commercial vehicles being carried increased during the 1960s, reducing and finally eliminating the need for small general cargo vessels to make use of the quays at Newport and at West Cowes. The size of the Ro-Ro ferries increased to cope with the greater demand for vehicle and passenger space, and additional vehicle marshalling space was added at East Cowes. During the 1990s three larger ferries were introduced on the route and the frequency of the service was increased to cope with demand.

12) Yachting and boating activities after the Second World War:
Stimuli - (i) The general increase in leisure time and disposable income experienced nationally

after the second World War made recreational boating more widely accessible to the population;

(ii) The introduction during the 1960s of mass-produced fibre-glass yachts and boats;

(iii) The availability of the large expanse of sheltered water within the Solent, which resulted in it becoming the most densely populated area in the UK for recreational vessels;

(iv) The establishment and growth of Cowes yacht clubs: West Cowes (Royal Yacht Squadron, Royal London Yacht Club, Royal Corinthian Yacht Club, Island Sailing Club and Cowes Corinthian Yacht Club; East Cowes (East Cowes Sailing Club);

(v) The owners of resident and visiting yachts required moorings and maintenance facilities at Cowes and Newport;

(v) The demand for training in recreational boating;

(vi) The demand for pontoon moorings and walk-ashore berthing facilities.

Process - Boat storage and launching facilities were developed at the Island Sailing Club, Cowes Corinthian Yacht Club and East Cowes Sailing Club, and mooring facilities provided in the Medina estuary by Newport Corporation and Cowes Harbour Commission. Walk-ashore facilities were developed at East Cowes Marina, Groves & Guttridge Marina and Shepard's Wharf at West Cowes, Island Harbour Marina at Binfield/Whippingham and Odessa Boatyard, Newport, while yacht and boat maintenance facilities were developed at Shepard's Wharf and Victory Yard, West Cowes, and at Island Harbour and Odessa Boatyard, Newport. The demand for training in yachting and boating led to the establishment and growth of Club UK/UK Sailing Centre/Academy at West Cowes and at the Christian Sailing Centre/Medina Valley Centre, Newport.

13) Residential waterfront development:

Stimuli - (i) The desirability of waterfront properties, for investment purposes or as second homes, manifested during the period c1980 to the present;

(ii) The recognition by speculative developers of the demand for such properties;

(iii) The availability of under-used or redundant waterfront areas arising from a failure in demand from commercial and industrial concerns as a result of changes in technology and, perhaps, economies of scale;

(iv) The requirement of central government during the late 1990s for large numbers of residential properties to be built, especially in south east England.

Process - The acquisition of waterfront areas by developers, followed by attempts to gain planning consent for residential development. Waterfront properties were constructed at Seymour Quay (c1984) and at Island Harbour Marina (1980s). Pressure for further residential development at Groves & Guttridge (Ancasta) Marina and Britannia Wharf justified the compilation of the Cowes Harbour Plan (1990) and the Cowes Harbour Development Plan (1994), both involving consultation with stakeholders and statutory bodies. The Medina Estuary Management Plan, written in 1997 and revised in 2000, involved stakeholders and statutory bodies, and was drawn up within the context of existing and proposed environmental designations for the entire estuary. A Unitary Development Plan was adopted by the Isle of Wight Council in 2001, which included policies for the waterfront in the urban areas of East/West Cowes and Newport, together with the intervening semi-rural part of the Medina estuary. Consultation was undertaken concerning the regeneration of Newport Harbour (2003), with residential development considered as an option for some sites. The Cowes Waterfront initiative, covering the entire Medina estuary, divided the waterfront into zones of activity and was adopted as supplementary planning guidance in 2003. Further residential development took place on under-used land at the East Cowes Marina site during the period 1998-2000. Compromise solutions, where limited residential development was considered as 'enabling' the establishment of some parts of specific waterfront sites elsewhere for marine-related employment opportunities, have been given planning consent, e.g. at Shepard's Wharf: these may influence the determination of future planning applications within the port areas of East/West Cowes and Newport.

14) Environmental/Ecological designations:

Stimuli - (i) The designation of the inter-tidal area between the Folly Inn and Seaclose, Newport as a Site of Special Scientific Interest (SSSI), following an ecological appraisal undertaken by the Nature Conservancy Council in 1975;

(ii) The report by the House of Commons Select Environment Committee for coastal planning, which led to the recognition by national government in 1992 of the need to adopt a strategic approach with respect to coastal and estuary management;

(iii) The requirement for English Nature, as the statutory adviser to national government on conservation matters, to propose candidate sites within the coastal zone for designation as Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and

Ramsar sites, so that European Union law could be implemented by the UK;

(iv) greater leisure and wider education of the UK population led to the growth of the environmental movement and awareness of the natural environment.

Process - The non-statutory Medina Estuary Management Plan (1997/2000) attempted to reconcile the economic and recreational use of the estuary with the expected implementation of more rigorous ecological designations within it, by providing an integrated approach to the management of the resources and activities which take place in the estuary. The SSSI was extended northwards as far as the power station at East Cowes and the former refuse disposal site south of Medina Wharf, enabling all inter-tidal foreshore between East/West Cowes and Newport to be proposed as a candidate SPA. The sub-tidal part of the estuary, hitherto excluded from conservation measures, was proposed as a candidate SAC; this comprised the entire area of Cowes and Newport harbours. The area of wetland at Dodnor was proposed as a candidate Ramsar site. All proposed international designations were later imposed, the effect of which was to place constraints on such activities as maintenance dredging and the provision of additional boat moorings, as well as development. These designations are a material factor in determining planning applications and have been incorporated into the Isle of Wight Council's Unitary Development Plan and the Cowes Waterfront initiative. Capital dredging and waterfront development are subject to statutory environmental assessment, and any development proposals within the semi-rural part of the Medina estuary are unlikely to receive consent unless they have minimal impact on the environment; e.g., the MTF facility at Hurstake, Newport.

11.3 Conclusion

The processes described represent those identified as being the most important; other, less important processes, may exist. Several processes may be operating at any given time, resulting in complex changes to the waterfront.

Chapter 12: Conclusions to Part II

Three conclusions can be drawn from the research reported in Part II:

1) The Corporation of Newport, which claimed ownership and control over the northern part of the Medina estuary during most of the period under consideration, was concerned solely with the value of the port of Cowes as a source of income. The problem of silting was ignored: when Trinity Wharf, East Cowes was needed for royal use during the 19th century, it was the Admiralty which was obliged to carry out essential dredging. Newport Corporation's lack of commitment to Cowes stemmed from its overriding concern with trade at Newport, which involved vessels having a relatively shallow draught as compared to those trading at Cowes: so long as there was sufficient depth of water in the upstream half of the estuary then the Corporation evidently saw no need to spend money at Cowes, an attitude exemplified by the river improvement scheme of the 1840s.

2) The two ports operated as totally separate entities, a situation formalised after control of Cowes harbour was conceded in 1897. This event induced the Corporation to increase its protectionist stance towards Newport. First, during the 1920s, it attempted to obstruct the re-development of Medina Coal Wharf, fearing that trade to Newport would be lost, and then in the late 1920s and 1930s it undertook a major programme of quay building at Newport. The new quays were intended to safeguard the port's trade and succeeded in doing so until the late 1960s, after which the advent of Ro-Ro ferries and the decline in the viability of small coastal vessels, coupled with the fundamental problem of insufficient depth of water, conspired to hasten the end of Newport as a commercial port. At the turn of the 21st century the wind-turbine trade from Newport, using specialised, shallow-draught vessels, represented a limited (and perhaps short-term) revival of commercial traffic.

3) The spatial development in the ports of Cowes and Newport raises the question as to whether either, or both, can be considered to be 'successful'. On the positive side, Cowes developed into a major industrial area, building ships, seaplanes and other vessels; expanded as a yachting centre; accommodated commercial vessels requiring berths; provided large sites for gas and electricity installations, and accommodated an increasingly large ferry operation. On

the negative side, Cowes was unable to compete with Southampton in the provision of drydocks. On balance, Cowes may be considered to be a 'successful' port.

At Newport the situation is complicated. On the positive side, the development of marginal quays addressed the problem of lack of berths, at least until the 1970s; the establishment of the MTF resuscitated a limited, specialised trade in the 1990s, and a small commercial boatyard continues in operation. On the negative side, the fundamental problem is that the port virtually dries at low tide, and channel depths are relatively shallow at high tide. However, the Cement Mills site has the potential to be redeveloped for use by coastal commercial vessels. On balance, Newport may be considered to be marginally 'successful'.

Part III: Conclusion

Chapter 13: Elements

13.1 Introduction

Part III has three elements. First, the techniques of testing-out research are applied to the exploratory research of Part II by comparing port models with the Medina situation; secondly, an argument is advanced, with the use of appropriate examples, that the continuing maritime value of Newport is not unique, in that tidal-head 'ports' do not inevitably decline but have the potential to remain as viable commercial undertakings if they possess the requirements of a 'successful' port; lastly, the relevance of Pounds' port/outport model to modern-day port geography is emphasised by considering the example of a proposed major port in Germany.

13.2 Application of the *Anyport* and 'Port/Outport' models to the Medina estuary

In considering models it should be borne in mind that they are generalisations which reflect broad trends or patterns. If this were not so then every port could have its own model, matching the circumstances which are peculiar to itself. Such a multiplicity of models would not assist in the identification of common factors in port evolution. However, it should also be recognised that only part of any particular model may be applicable, and that elements of more than one model may be identified.

13.2.1 *Anyport*

The basis of this model is that an estuary is considered as one unit, with development spreading downstream through time; accordingly, the Medina estuary is treated in the same manner, with Newport, the central Medina estuary, and then Cowes considered in turn.

a) Newport

Era I - *Primitive*: The port nucleus is identified with the 16th century (medieval?) Town Quay site, at the confluence of the River Medina and Somers (Lukely) Brook. Quay Street led directly away from the port nucleus, uphill to the town centre. Storehouses were constructed during the 16th to 18th centuries on the town side of the River Medina and Somers Brook.

Era II - *Marginal Quay Extension*: A rudimentary quay was built during the 17th century on the western side of the estuary, at Beldom's Land. No further marginal quays were built until

1878, when the (New) Town Quay was constructed on the Marsh. Between 1897 and 1933 marginal quays were built successively downstream on both sides of the estuary, moving the focus of activity away from the primitive port nucleus.

The progression of *Anyport* is interrupted at this point, as Eras III (*Marginal Quay Elaboration*), IV (*Dock Elaboration*) and V (*Simple Lineal Quayage*) are not found at Newport. However, the Marine Transfer Facility built in 2000 at Dodnor, within Newport's expanded urban envelope, is postulated as an example of Era VI (*Specialized Quayage*).

b) Central Medina estuary

A detached element of Era II *Marginal Quay Extension* associated with a tide mill was built at Werror in the 1790s and extended downstream during the 19th and 20th centuries, becoming the Cement Mills site.

c) Cowes

Era I is absent because, as predicted by the model - there cannot be a primitive port nucleus at an estuary-mouth port. *Marginal Quays* of Era II were built at West Cowes during the 17th and 18th centuries, notably the Point Quay and Saltern Quay, together with the 17th and 18th century quays at East Cowes. The indented quays opposite the Custom House may represent Era III. Eras IV and V are absent, but the 19th/20th century Medina (Coal) Wharf (West Cowes) and the 20th century Kingston wharves (East Cowes) represent Era VI. These latter wharves share a characteristic of Era VII (*Container Quayage*) in that they developed upstream of the earlier quays.

The disjointed sequence of eras in the Medina estuary suggests that *Anyport* does not fit the circumstances: first, the geographical separation between the ports is large, adding weight to the argument for treating them separately; secondly, although a primitive port nucleus existed at Newport, *Marginal Quay Extension* developed at Cowes before occurring at Newport. Furthermore, *Specialized Quayage* developed almost contemporaneously at Newport and Cowes. Although it may be acceptable to modify a particular stage of the model, the omission of successive eras must compromise its functional integrity. *Anyport* 'involves an addition to or a change in the physical lay-out of the port' (Bird 1963, 26-7), which implies a cumulative process, rather than an unconnected sequence of events.

Despite elements of *Anyport* being found in both ports, and in the central Medina estuary, it is reasonable to conclude that the model would not predict actual development in either Newport or Cowes.

13.2.2 'Port/Outport'

Pounds identified the tidal limit of an estuary as the usual location for a medieval port, because it offered a diminished length of road haul for commodities, gave protection from sea raiders, and the tidal range was usually less than on the coast. Newport lies at the tidal limit of the Medina estuary and therefore may be considered as the 'port'.

Pounds defined four main factors in the 'abandonment of the river port or its partial replacement by an outport' (1947, 217):

1) Silting of estuaries and lower courses of rivers - this took place at Newport, but especially in the outer part of Cowes harbour.

2) Increasing size of vessels - Pounds commented that 'it is difficult, if not impossible, to separate from the consequences of the silting of rivers those arising from the increasing size and draught of vessels'. Furthermore, 'there came a time when the port authorities had to choose between the high cost of canalizing and developing the waterway and the cost of building a new port downstream' (1947, 217). However, 'vested interests of shipping firms, municipal corporations and political bodies have assisted or retarded the growth of outports' (1947, 216). As the reconstructions have shown, Newport Corporation strove to inhibit the development of Cowes during the 20th century, having seriously considered canalizing the estuary in the 19th century.

3) *Ports de Vitesse* - These are equivalent to modern ferry ports. They developed because of the necessity for speed in conveying mail, passengers and certain types of cargo and were associated with the growth of railways, being sited so as to give the shortest sea crossing. These attributes can be identified with West Cowes.

4) Time and cost of navigating the estuary - these concern the passage of vessels between the 'outport' and the 'port'. Vessels may be delayed in waiting for a sufficient tidal height to proceed up or down an estuary, Additional costs are incurred with pilotage charges and, in modern times, greater fuel consumption. This situation existed in the Medina estuary.

The four main factors indicate that Cowes represents the 'outport' for Newport and therefore the model would predict the actual pattern and processes of development on the Medina estuary.

13.3 The waterfront at tidal-head 'ports'

In the UK the use of the historic cores of 'ports' by commercial cargo vessels ceased during the closing decades of the 20th century for several reasons:

1) the economies of scale in the shipping industry arising from using larger vessels resulted in smaller ships, which were suitable for shallow, tidally constrained 'ports', becoming uneconomical to operate;

2) the boatyards which serviced the smaller commercial vessels making use of such estuaries either closed or turned to the recreational boating market in order to continue in business;

3) In some cases, the established advantage held by 'ports', in terms of proximity to population centres and local hinterlands, was lost as road and rail transport routes to the larger 'outports' were improved;

4) the decline in trade at 'ports' resulted in a loss of income from harbour and cargo-handling dues, and of rental income from waterfront property;

5) tidal-head 'ports' tended to suffer from silting, and the cost of dredging in order to maintain navigable depths in fairway channels and at berths, together with other conservancy costs, was not matched by a declining port income. For example, Preston (Figure 98) was totally abandoned as a commercial port in 1981, with no further dredging being carried out in the Ribble estuary, because operating costs became unsustainable (Dakres 1986), yet in 1958 the quantity of cargo handled was 1.5 million tons (Port of Preston, 1962).

6) The use of the waterfront close to central urban areas by marine-related industries, particularly by commercial vessels, is considered by local planning authorities as incompatible, and therefore 'inappropriate', with urban regeneration schemes, which focus on the waterfront as an asset to be exploited for residential, business or 'heritage' purposes. Policies adopted in statutory Development Plans have to reflect national government's Planning Policy Guidance (PPG), much of which is driven by the concept of sustainability. This fosters the idea of bringing the population closer to its work place by devising planning policies which promote residential development near town and city centres, using 'brown-field' sites: 'For sites no longer required for port uses...local authorities and developers should ... first ... consider sustainable transport uses and then uses which will promote regeneration' (PPG 13: Transport,

para 11). Planning Policy Guidance reflects the reality of 'port' situations, where the original port area became too shallow, too spatially constrained and encumbered with urban growth to accommodate the commercial vessels which operated during the closing decades of the 20th century. Such areas were suitable for regeneration.

However, in the waterfront areas located immediately downstream from historic 'port' locations, yet still within the spatial envelopes of their modern-day expanded urban areas, there have been opportunities for marine-related usage to be developed. Three examples are presented below, demonstrating a principal argument of the thesis, namely, that the decline of tidal-head 'ports' is not inevitable if they possess the requirements of a 'successful' port. Indeed, one of these examples shows that a tidal-head 'port' can actually expand, even with a major port at the estuary mouth.

13.3.1 Truro (Maps 19 & 20)

The old quays near the city centre, used until the early 20th century, were located at the head of the Truro River, part of the upper Fal estuary, in an area subject to silting (Figure 99). These cargo-handling quays, now redundant, are currently being developed for residential or non marine-related business purposes (Figure 100). The wharf at Newham, 1km downstream from the city (Figure 101), was connected to the railway in 1855 (Fairclough 1970, 18) and used until the 1960s, when the railway line became disused. During the 1970s, Lighterage Quay was constructed near Newham, 1.5 km downstream from the city centre, and continues to be used by small to medium size commercial vessels (Figure 102). Cargo handled comprises bulk commodities, agricultural products and building materials (www.portoftruro.co.uk 2001).

Falmouth, located at the estuary mouth, has concentrated on ship repair activities and the bunkering of vessels (Figure 103). During the 1990s it became a port of call for cruise ships (www.falmouthport.co.uk). Falmouth has not displaced Truro as a commercial port because its geographical position is relatively isolated as compared to that of the tidal-head 'port', which occupies a nodal point on the Cornish peninsula. Truro serves a large hinterland because of its road links: 'The port is close to the A30 ... the A38 to Plymouth and South Devon and the A39 to North Cornwall and North Devon' (www.portoftruro.co.uk 2001).

13.3.2 Ipswich (Maps 21 & 22)

This medium-size port is located at the tidal-head of the Orwell estuary, while the major port of Felixstowe lies at the estuary mouth. The medieval quays at Ipswich were situated near the town, but in the 17th and 18th centuries the port area expanded downstream. In 1841 the port area was enclosed as a Wet Dock, with an access lock, the New Cut being excavated in order to maintain the River Gipping's egress to the estuary (Wren 1976, 134-41). A new lock was built in 1881, enabling the Wet Dock to accommodate larger vessels (Figure 104). In 1924 Cliff Quay was constructed immediately downstream of Wet Dock, on the eastern side of the estuary, and extended further downstream on three occasions (Malster 1978, 19). During the 1970s quays were constructed on reclaimed land at West Bank, opposite Cliff Quay (Wren 1976, 134-49), and as a result an increasing majority of vessels berth outside the Wet Dock (Figure 105).

The northern end of Wet Dock was redeveloped during the late 1990s, with land previously used for port activities being converted for residential and commercial use (Figure 106). This process continues, with EEDA (East of England Development Agency) being involved in acquiring redundant grain stores for redevelopment (Figure 107). Part of Wet Dock was utilised for Neptune Marina (Figure 106), while the opposite side became the Ipswich Haven Marina. Vessels carrying timber cargoes occasionally use Wet Dock, but the sale of a nearby timber storage site for residential development suggests that this trade will be relocated elsewhere within the port, the Wet Dock being given over completely to recreational vessels.

The port was bought by Associated British Ports (ABP) in 1997 and handles containers, dry bulks, forest products, general cargo, liquid bulks, and Ro-Ro freight traffic (ABP Ports Handbook 2004).

The port of Ipswich has continued to develop for the following reasons:

1) good road and rail connections to London and the Midlands have enabled the port to expand its traditional hinterland of East Anglia;

2) close proximity to the European mainland has enabled Ro-Ro ferry links to be established, taking advantage again of road connections;

3) minimal dredging has maintained the fairway channel at 5.6m below C.D., while berths at Cliff Quay and West Bank are maintained at 8.2m and 5.7-6.7 m respectively (Dover Strait Pilot 2005, 277). There is a large tidal access 'window' and berthed vessels remain afloat;

4) the port estate contains vacant waterfront land adjacent to Wet Dock and West Bank, available for development, and 'ABP has submitted a Harbour Revision Order to develop an old power station site downriver from the main port ... which could ... create 550m of additional quay' (*Lloyd's List* 31 March 2003);

5) the port has capitalised on redundant water space at Wet Dock by creating facilities for recreational vessels, thereby generating additional income.

6) most of Ipswich's trade is not in direct competition with the 'outport': Felixstowe handles very large container ships and Ro-Ro passenger/freight vessels. Felixstowe old dock, originally opened in 1886 and renovated during the 1950s (Figure 108), is now used for tugs, while the addition of more berths has made Felixstowe Britain's largest container port (Figure 109). Ipswich and Felixstowe are members of the Haven Gateway Partnership, which includes Harwich International Port, Harwich Navy Yard and Mistley Quay (located on the adjoining Stour estuary), together with local councils. In effect, the ports of Ipswich and Felixstowe complement rather than conflict with each other, as each has its own market niche.

13.3.3 Rochester (Maps 23 & 24)

The Medway estuary is of complex form and the basic 'port/outport' relationship is complicated by port facilities at the former naval dockyard at Chatham. Rochester, founded during the Roman period, was located at the lowest bridgeable point. An engraving of Rochester (1738), indicates that quays existed immediately downstream of the bridge, on both sides of the estuary (Figure 110). A Royal Dockyard was established at Chatham, 3km downstream, during the Tudor period. Chatham Dockyard was enlarged significantly during the period 1864-85 (www.medway.gov.uk 2004), which included the construction of three dock basins.

The Medway estuary was used for cement production in the 19th and 20th centuries: 'Originally seven cement works were crowded on to less than half a mile of north shore ... just downstream from Rochester Bridge' (Stoyel & Kidner 1990, 81), the jetties in use being replaced later with marginal quays. At Cory's Quay, on the southern side of the estuary and within 1km of the city centre, large quantities of coal were landed up to the 1960s: this now receives sea-dredged aggregates (Figure 111). Limehouse Reach, between Rochester and Chatham, was used until the 1980s to moor commercial vessels, their cargoes being loaded on barges (Figure 112) for transport upstream of Rochester bridge (Rees 1958, 127).

In 1984 the naval usage of Chatham dockyard ceased, being replaced by commercial port operations at the largest basin (No.3). Chatham Dock is part of Medway Ports and can accommodate medium to large size vessels (Figure 113). Road links are good and a rail connection has been re-established (www.medwayports.com 2004).

In 1953 the Kent Oil refinery was built on the Isle of Grain, at the western side of the estuary mouth (Rees 1958, 125). During the 1990s most of this was replaced with a container terminal - Thamesport - now owned by Hutchinson Ports UK (HPUK), which handles large ships (Figure 114). Plans to extend the container terminal have been abandoned in order to accommodate a major new Liquified Natural Gas (LNG) terminal and production plant on the Isle of Grain, which 'could mean an additional 3.3 million tonnes of cargo coming through the Medway annually' (www.medwayports.com 2004).

Medway Ports completed a major capital dredging of the approach channel to Thamesport in 2002 (www.medwayports.com 2004): The Port Director reportedly said, "The [Environmental Impact Assessment] study was carried out in co-operation with environmental groups ... This consensual approach, working together, has been very successful' (*Lloyd's List*, 23 February 2000). Such an approach suggests that the port management has the necessary skills required of a 'successful' port.

By the late 1960s a port had been constructed at Sheerness, on the eastern side of the estuary mouth; subsequently, this was extended further upstream. Sheerness, part of Medway Ports, handles fruit, vehicles and forest products (Figure 115).

While Thamesport, Sheerness and Chatham are busy, trade at Rochester is declining. The quays on the north bank of the estuary at Rochester, especially Euroquay (3.5 km from the bridge), are well used, but on the south bank of the estuary, closest to the city, Medway Council and its predecessor used Compulsory Purchase Orders to acquire a 2.5km stretch of waterfront, including several commercial vessel berths (Figure 116), in order to regenerate the city centre in collaboration with SEEDA: 'the council now owns all these wharves and half a million tons of cargo a year is looking for somewhere to go' (www.seaandwater.org 27 February 2004). Medway Council's view is that 'substantial areas of the site are derelict, under-used and suffer from contamination' (www.medway.org 2004), (Figure 112). It seems likely that this scheme

will proceed, leaving the quays on the north bank of the estuary to comprise Rochester port.

13.4 'Port and Outport': a current issue

The Medina situation and the three examples of small to medium size ports described above demonstrate that 'successful' tidal-head 'ports' continue to play an active role in maritime activities within the UK. However, the current situation in Germany, described below, indicates that the 'port/outport' relationship also continues to be relevant to major ports on the European mainland.

Two neighbouring 'ports', Hamburg and Bremen, are both autonomous city-states with a long history of rivalry. Hamburg, on the River Elbe, developed Cuxhaven as a *port de vitesse*/outport, while Bremen, on the River Weser, developed Bremerhaven as its outport (Map 25). Bremerhaven became a major port with a large container terminal, completely overshadowing Bremen. Conversely, Hamburg retained the bulk of the trade, successively enlarging its container terminals and deepening the River Elbe, while Cuxhaven remained a relatively small port.

Hamburg and Bremen disagreed recently on the location of a new port which would handle the next generation of very large container ships, a situation complicated by local and regional political parties having different points of view. The original proposal was that the cost of building the new port would be shared between the two city-states and the adjacent regional state of Lower Saxony. Two sites were considered; Cuxhaven, at the mouth of the Elbe estuary, and Wilhelmshaven, an existing deep-water oil terminal on the mouth of the River Jade, close to Bremerhaven. Cuxhaven was favoured by Hamburg, whose Minister for Economics and Ports reportedly said, 'Hamburg has no interest in financing a port which could possibly compete with its own' (*Lloyd's List*, 15 May 2002). Bremen preferred Wilhelmshaven, because 'the geographic proximity will ensure Bremen's influence on the project' (*Lloyd's List*, 21 June 2002). Following a meeting between officials of Bremen and Lower Saxony, the start of the Jade-Weser-Port project at Wilhelmshaven was announced. Lower Saxony's Prime Minister reportedly said, 'Germany needs this port in order to take advantage of the anticipated growth in worldwide water transport' (*Lloyd's List*, 15 June 2002). The situation continues to evolve, but it appears that the need for a deep-water port to be

located at Wilhelmshaven is now recognised by Hamburg.

The dynamics of politics, finance and self-interest, which are all displayed in this example, emphasise that the 'port/outport' relationship is not an outdated academic construct; rather, it continues to be a substantive and, at times, difficult issue. Furthermore, Pounds' model remains a valid and effective means of defining the relations between tidal-head and estuary-mouth ports.

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