

**The Gwent Levels:
The Evolution of a Wetland
Landscape**



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The Evolution of a Wetland
Landscape**

By Stephen Rippon

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Front: The south western part of the Caldicot Level, looking west, with Wentlooge in the background. Porton lies bottom left, Goldcliff Point centre left, and the Uskmouth Power Station top right.

Rear: (top) Monksditch, looking north from The Grange ST 370 844, Llanwern Steel Works in background; (bottom) pollarded willows east of Whitson. From ST 382 489 looking north.

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General notes

- 1 Modern place-names spellings are used, unless in a direct quotation from another source.
- 2 All radiocarbon dates are uncalibrated (bp), and are given with their laboratory numbers.
- 3 Dendrochronological dates are identified as such in the text.
- 4 Unpublished archaeological material: a limited number of unpublished archaeological discoveries have been referred to in the text, prefixed NM, NAR, and SMR. Newport Museum (NM) has an extensive collection of material from the Levels, recorded here by accession (Acc) numbers. The NAR (National Monuments Record of Wales) is maintained by the Royal Commission on Ancient and Historical Monuments in Wales in Aberystwyth. The SMR (Sites and Monument Record) is maintained by the Glamorgan Gwent Archaeological Trust in Swansea.
- 5 Unpublished documentary material: references to this material are prefixed by a code for their current location: GLRO (Glamorgan County Records Office, Cardiff); GwRO (Gwent County Records Office, Cwmbran); NLW (National Library of Wales, Aberystwyth); NRL (Newport Reference Library).
- 6 The largest collection used is the Tredegar archive in the NLW. The code ‘Tred’ refers to written manuscripts, while ‘Tredegar’ refers to maps.
- 7 Other abbreviations used in the text are given in the list of sources. Published primary documentary sources are given in italics.
- 8 A glossary of technical and local terms is given after the conclusion.

Summary

In its narrowest sense, 'landscape' is often regarded as simply the countryside's visual appearance. This study hopes to show how the landscape is actually the product of a wide range of factors including historical processes. The Gwent Levels are a flat alluvial plain fringing the northern bank of the Severn Estuary in South East Wales. The area is drained by a network of ditches, known as reens, that form the basis of a very distinctive landscape and rich wetland ecology. This landscape is entirely of mankind's making and results from the protection of saltmarshes from tidal inundation and their subsequent enclosure, drainage, and conversion to pasture and arable.

Reclamation began in the Roman period, probably being carried out by legionaries based at Caerleon. After a period of post-Roman flooding, the area was recolonized during the medieval period, this process probably having been started by the new Norman Marcher lords. Monastic houses, notably a priory on the Levels at Goldcliff and the nearby Tintern Abbey, also played an important part. The medieval economy appears to have been mixed, though in the later medieval period demographic and climatic decline prompted a shift towards pastoralism. This became accentuated in the post-medieval period, as the Levels produced a range of agricultural surplus for trade with Bristol and Somerset.

Proximity to the urban centres of Cardiff and Newport, and the importance of the Severn Estuary as a major transport corridor, has meant that large areas of the Levels have been lost to development. Current threats to this important landscape are reviewed.

Zusammenfassung

Gwent Levels (eine Ebene in Südostwales)

Oft wird die 'Landschaft' im engsten Sinne des Wortes einfach als sichtbarer Begriff des Landes betrachtet. Diese Studie hofft zu beweisen, wie sehr eigentlich die Landschaft ein Produkt verschiedener Faktoren, inklusive historischer Begebenheiten ist. Gwent Levels ist eine flache, verschlammte Ebene, die an das nördliche Ufer der Severn Mündung (Severn Estuary) in Südostwales grenzt. Diese Gegend wird durch ein Netz von Gräben, die sogenannten 'Reens' entwässert. Dies bildet die Basis einer charakteristischen Landschaft mit reichem Sumpfgebiet und Ökologie. Diese Natur ist vollständig aus Menschenshand geschaffen worden und stammt aus den Zeiten, als die Salzsümpfe gegen Flutwellen – Überschwemmungen geschützt wurden und die später eingezäunt und in eine Weide – und Ackerlandschaft verwandelt wurden.

Der Umbau, der wahrscheinlich von den in Caerleon stationierten Legionären durchgeführt wurde, begann in der Römerzeit. Nach einer Periode von Überflutungen in der Nach-Römerzeit wurde die Gegend in Mittelalter wieder besiedelt. Dieser Prozeß wurde wahrscheinlich von den neuen Normannischen Sumpfbesitzern angefangen. Klöster – beachtenswert sind hier ein Priorat auf den Levels bei Goldcliff und die naheliegende Tintern-Abtei – spielten dabei eine wichtige Rolle. Die mittelalterliche Ökonomie scheint gemischt gewesen zu sein, obwohl im späterem Mittelalter wurde dies noch verschärft, da die Levels eine Reihe landwirtschaftlicher, überschüssiger Produkte für den Handel mit Bristol und Somerset erzeugten.

Die Nähe zu den Städten Cardiff und Newport und die Bedeutung der Severn Mündung als einen wichtigen Transportweg bedeuteten, daß große Flächen der Gwent Levels dem Fortschritt zum Opfer fielen. Gegenwärtige, dieser bedeutenden Landschaft bedrohende Gefahren, werden revidiert.

Sommaire

Dans son sens le plus étroit, on estime souvent que le mot 'paysage' signifie simplement l'aspect visuel de la campagne. Cette étude a pour objet de vous démontrer que le paysage est en fait le produit d'un grand éventail de facteurs, y compris le processus de l'histoire. Les Gwent Levels sont une plaine alluviale plate en marge de la rive nord de l'estuaire de la rivière Severn, au Sud-Est du Pays de Galles. La région est drainée par un réseau de fossés, qu'on appelle des 'reens' et qui forment la base d'un paysage très distinctif et d'une riche écologie de marécages. Ce paysage est entièrement le résultat des activités humaines et est dû à la protection contre les marées des marais salants et, par la suite, à leur clôture, assèchement et transformation en pâturages et terres arables.

La reprise des terres commença dès l'époque romaine et fut probablement entreprise par des légionnaires basés à Caerleon. A la suite d'une période d'inondations, après l'époque romaine, la région fut à nouveau colonisée durant l'époque médiévale; ce furent probablement les nouveaux seigneurs normands des Marches qui commencèrent ce processus. Les maisons monastiques, notamment un prieuré des Levels, à Goldcliff, et l'abbaye voisine de Tintern, jouèrent également un rôle important. L'économie médiévale semblait être mixte bien que, vers la fin de l'époque médiévale, le déclin démographique et climatique entraînaient un changement vers l'élevage. Ce mouvement s'accrut à l'époque post-médiévale, car les Levels produisirent toutes sortes de surplus agricoles.

qu'ils vendirent à Bristol et au Somerset.

La proximité des centres urbains de Cardiff et de Newport, ainsi que l'importance de l'estuaire de la Severn, cette grande artère d'acheminement, signifie que de grandes parties des Levels ont été perdues à l'aménagement. On suit de près ce qui menace cet important paysage actuellement.

Crynodeb

Yn ei ystyr fwyaf cyfyng, mae 'tirwedd' yn aml yn cael ei ystyried fel ymddangosiad gweledol cefn gwlad yn unig. Gobaith yr astudiaeth hon yw dangos sut mae'r tirwedd mewn gwirionedd yn gynnyrch amryw byd o ffactorau, gan gynnwys prosesau hanesyddol. Gwastatir llifwaddod yw Lefelau Gwent ar gyrion glannau gogleddol Moryd Hafren yn Ne-ddwyrain Cymru. Draenir yr ardal gan rwydwaith o ffosydd sy'n dwyn yr enw reens ac sy'n darparu cysail ar gyfer tirwedd neilltuol dros ben ac ecoleg gyfoethog tir gwlyb. Tirwedd yw hon a grewyd yn gyfangwbl gan y ddynolryw ac mae'n ganlyniad i amddiffyn morfeydd heli rhag gorlifiad

y llanw, cyn cau amdanynt, eu draenio, a'u troi'n borfa ac â'r wedi hynny.

Dechreuwyd ar y gwaith adfer yn ystod cyfnod y Rhufeiniaid, yn ôl pob tebyg gan lengfilwyr â'u canolfan yng Ngaerleon. Wedi cyfnod o orlifiad ôl-Rufeinig, ailwladychwyd yr ardal yn ystod y cyfnod canoloesol, gyda'r broses hon wedi'i chychwyn yn ôl pob tebyg gan arglwyddi Normanaidd newydd y Gororau. Yn ogystal, chwaraewyd rhan bwysig gan y mynachdai, yn enwedig priordy ar y Lefelau yn Allteyrn, a'r Abaty yn Nhyndyrn gerllaw. Ymdengys mai cymysg oedd yr economi ganoloesol, er i'r dirywiad demograffaid a hinsoddol yn ystod y cyfnod canoloesol mwy diweddar ysgogi newid i gyfeiriad bugeilyddiaeth. Daeth hyn yn amlycach yn ystod y cyfnod ôl-ganoloesol, wrth i'r Lefelau gynhyrchu amrywiaeth o orgynnyrch amaethyddol ar gyfer masnachu gyda Bryste a Gwlad yr Haf.

Mae agosrwydd at ganolfannau dinesig Caerdydd a Chasnewydd, a phwysigrwydd Moryd Hafren fel un o'r prif dramwyfeydd cludiant, wedi golygu bod rhannau helaeth o'r Lefelau wedi'u colli i ddatblygiad. Caiff y bygythion presennol i'r dirwedd bwysig hon eu harolygu.

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*Stephen Rippon,
Department of Archaeology, University of Reading,
February 1995.*

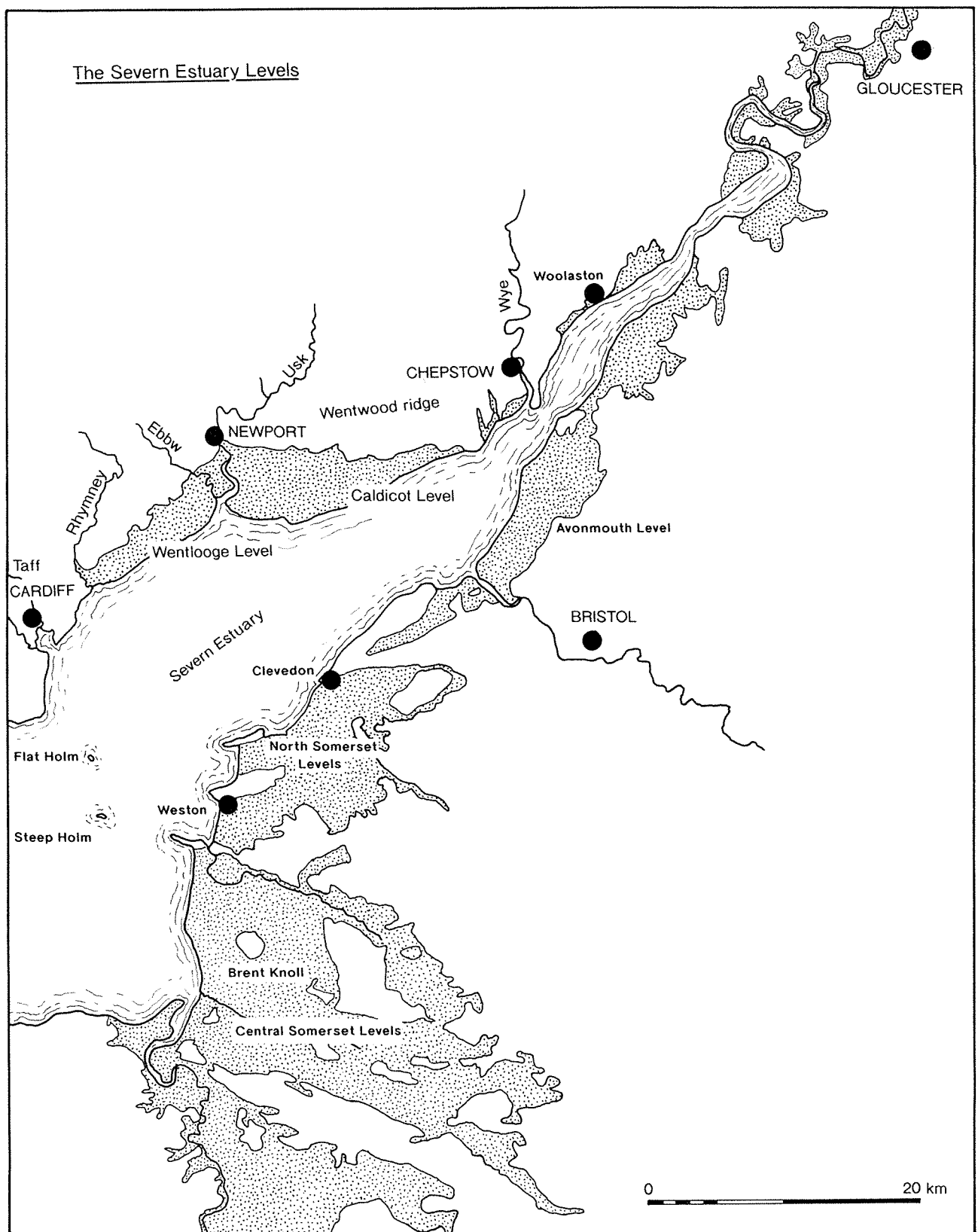


Fig 1 The Severn Estuary Levels, showing places referred to in the text.

1 Introduction: The Gwent Levels and the Historic Landscape Study

The Monmouthshire Moors illustrate the successes of the past and the failures of the present. They demonstrate the vision and determination of generations long since buried in the vaults of history
(Morgan 1954, 17)

A landscape perspective on the past

Britain has a long tradition of landscape appreciation and we are fortunate in having a countryside of great diversity and beauty. However, it is only relatively recently that the antiquity of our rural landscapes has come to be recognized (eg Aston and Rowley 1974).

This study is a detailed examination of one small part of the British countryside, the Gwent Levels, an area of reclaimed coastal alluvium on the northern side of the Severn Estuary (Fig 1; Rippon 1993a; forthcoming a). One of the fundamental aims of this study is to show how the integration of a wide range of material, and careful examination of evidence contained within the present, or 'historic', landscape, can allow a detailed elucidation of how an area has changed over time. As such, the methodology could be applied to any block of countryside.

In certain aspects the reconstruction of landscape change is rather easier in coastal wetlands than dry land environments, because occasional episodes of flooding have led to landscapes of different periods being physically separated by deposits of alluvium. Thus, coastal landscapes can be thought of as a series of layers, with culturally rich horizons interspersed with periods of abandonment and flooding. Most attention here will focus upon the last cultural layer, that is the present pattern of fields, roads, and settlements. This can be termed the 'historic' landscape.

Wetlands from peat and prehistory to historic landscapes

Wetlands have a very high biodiversity, being ecologically rich with a wide range of flora and fauna (there is a substantial literature on the nature of wetlands, for which Williams (1990) is a good summary). As such, they have always

attracted people, from periods when hunting and gathering was the basis of subsistence, to even quite recent times when the wetland resources provided an invaluable supplement to an agriculture-based economy. Once reclaimed, this was a difficult environment; the alluvial soils were heavy, and communities on the Levels lived with the constant battle to maintain the drainage system. However, the soils were fertile and yields were high, making the struggle worthwhile.

The need to control water is a major characteristic of coastal wetlands and has had a major impact upon the landscape. Sea-walls along the coast prevent marine inundation, and a network of ditches ('reens': known as 'rhynes' in Somerset, and 'sewers' in other coastal wetlands) and gullies ('grips': known as 'gripes' in Somerset) drain the fields and prevent rain water, including that flowing off the uplands, from flooding the Levels (Fig 21; Plates 2, 3, 4, 5, 10). This landscape, based upon the traditional drainage system, along with the distinctive flora and fauna, makes these coastal Levels of great interest.

Wetlands also have a great value in their ability to preserve archaeological deposits, notably organic artefacts, and deep sequences of palaeoenvironmental indicators (Coles 1984, 10–18). This was first recognized in Switzerland during the last century, with the identification of remarkably well preserved lake villages (see Coles 1984, 19). Despite a series of other major discoveries, including lake settlements in the Somerset Levels (Bulleid & Gray 1911), wetland archaeology was somewhat neglected in Britain until the 1970s. The breakthrough once again came in Somerset, after it was realized that further important sites were being destroyed through peat cutting (Coles & Coles 1986, 33–9). Major state funded programmes were established to assess, record and in some cases rescue this evidence in Somerset, then the Fenland, wetlands of North West England, and most recently Humber-side (Coles & Coles 1986; Hall & Coles 1994; Howard-Davies *et al* 1988; Ellis 1993).

In all these cases, the greatest threat was to peatlands that were being destroyed through desiccation and commercial extraction. Generally, these areas are richest in remains of the pre-Roman period, and so understandably, peat and prehistory have dominated the wetland agenda (eg *Peat and the Past: A Survey and Assessment of the Prehistory of Lowland Wetlands of North West England*; Howard-Davies 1988).

There are two major areas of our wetland heritage that have been overlooked. Firstly, extensive areas of coastal alluvium seemed to be in less immediate danger and so received less attention; this is most clearly seen in the distribution of work carried out in Somerset (Coles & Coles 1986, figs 2, and 4) and the Fenland (Hall & Coles 1994, fig 1). Secondly, while below-ground archaeology received considerable attention, the wealth of evidence lying on the surface of the Levels did not. Pioneering work was carried out in the Fenland on the Roman evidence (Phillips 1970) and a wide range of documentary research has been carried out on a number of areas (eg Hallam 1954; 1965; Williams M 1970). Despite this early research there has been little attempt to integrate archaeological and documentary material, in order to study the last phase of wetland development, the 'historic landscape'.

Just as the buried archaeology is under threat in our wetlands, so too is the 'historic landscape'. The evidence is often fragile, comprising ephemeral earthworks, ageing buildings and a pattern of fields not suited to modern farming methods. Many areas of coastal alluvium lie close to major conurbations and the extensive areas of flat, cheap land are seen as ripe for development. Therefore, wetland landscapes are under great pressure from industry, housing, and agricultural improvements. The Fenland, for example, has been turned into an arable prairie, while large parts of the Avon Levels are under Bristol Docks and the Avonmouth industrial complex.

Research in the Gwent Levels

Until the 1980s, the Gwent Levels had seen only a little archaeological (eg Morgan O 1882; Nash-Williams 1951; Locke 1970–1) and historical (eg Davies 1956; Sylvester 1958) attention. A huge area had already been lost to Cardiff and Newport docks along with their associated industrial developments. A range of ill-recorded discoveries hinted at the archaeological wealth of this area, though no systematic work was carried out (eg Barnett 1961; Locke 1970–1; Morgan 1878). It was the keen eyes of a local amateur, Derek Upton, and interest shown in his discoveries by local museums, that first led to an appreciation of the archaeological resource in the intertidal zone (eg Whittle & Green 1988). At about the same time, geologist John Allen began studying the sequence of deposits that was laid down in the Severn Estuary during the post-glacial rise in sea level. He identified a series of dated sedimentary units, representing major periods of landscape change (eg Allen 1987; Allen & Rae 1988).

The importance of the 'historic landscape', though not named as such, was first recognized by John Allen and his colleague from Reading University, Michael Fulford, in a seminal paper on the Wentlooge Level (Allen & Fulford 1986). This proposed that the unique pattern of fields around

Peterstone was Roman in date, a hypothesis since confirmed by excavation (Fulford *et al* 1994).

The late 1980s and early 1990s saw a flurry of activity on the Gwent Levels, with a series of major archaeological projects in advance of a number of large developments (Rumney: Parkhouse & Parry 1990; Caldicot Castle Lake: Parry 1990; Nayling 1991; 1992, 1993; the Second Severn Crossing: Ferris & Dingwall 1992; Godbold & Turner 1993; 1994; Parkhouse & Lawler 1990). Discoveries made by Derek Upton in the intertidal zone were also suffering from erosion, leading to a series of small recording exercises (Aldhouse-Green *et al* 1992; Allen & Rippon 1994; Whittle 1989) and a major programme of work at Goldcliff (Bell 1992; 1993; 1994).

Reflecting the national trend, the 'historic landscape' has received little attention, apart from the work of Allen and Fulford (1986), though a review of landscape evolution on all the Severn Estuary wetlands was carried out during the early 1990s (Rippon 1993a, b; 1994a; forthcoming a). As the range of threats facing the Gwent Levels in particular increased, so did the concern of Cadw's relevant inspector of ancient monuments, Rick Turner, who commissioned a detailed examination of the Gwent Levels' 'historic landscape'; this book represents the fruits of that study.

The Gwent Levels and their importance

There are c111.2 km² of reclaimed estuarine alluvium between the rivers Ely and Wye in South East Wales (Figs 1–2). Formerly known as the Monmouthshire Moors, the area is now widely called the Gwent Levels, though partly falling in the county of Glamorgan. Together, the Levels form a coastal plain up to 6 km wide, fringing the northern side of the Severn Estuary. The two largest Levels are Wentlooge, between the rivers Rhymney and Ebbw, and Caldicot between the river Usk and the bedrock promontory at Sudbrook; these two areas form the focus of this study. There are smaller areas of alluvium at: Cardiff East Moors between the rivers Rhymney and Taff; Cardiff West Moors between the rivers Taff and Ely; the Level of Mendalgief between the rivers Ebbw and Usk; and the St Pierre and Mathern/Chepstow Levels between Sudbrook and the river Wye (Fig 2B).

Similar areas of alluvium fringe the Severn Estuary on its English side, in historic Somerset and Gloucestershire (Fig 1). Together, these wetlands form one of the most distinctive types of landscape in the south west of Britain, one of the many *pays* in that region (eg CC 1994; Fox HSA 1989). The physical nature of the landscape, its flatness, heavy soils, vulnerability to flooding, the resulting ecological diversity and dynamic history of human settlement in South East Wales, have all

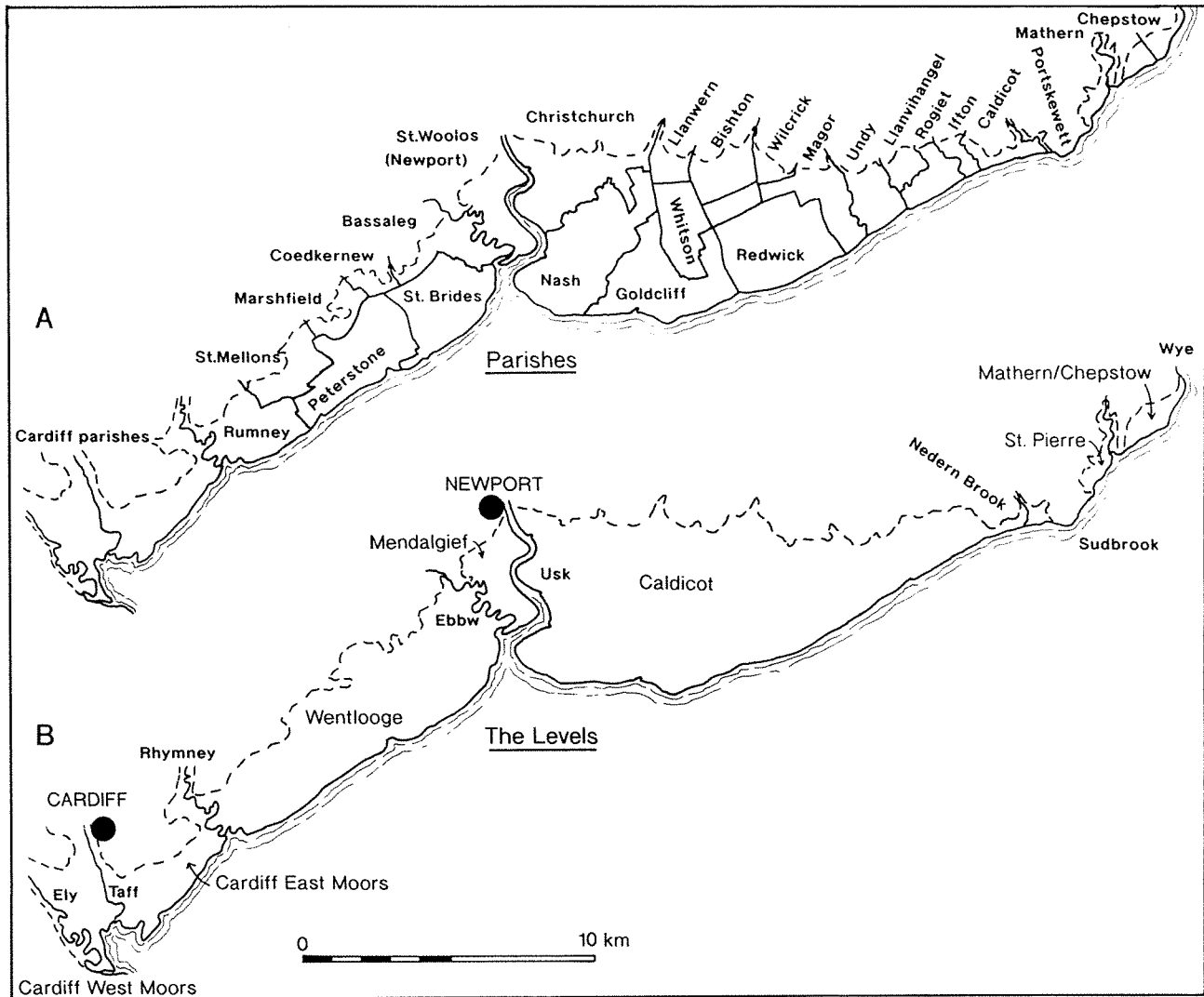


Fig 2 The Gwent Levels. A: parishes wholly or partly on the Levels (based on maps of 18301, GwRO D.1365/12; B: major topographical divisions.

contributed to forming the region's distinctive character.

All landscapes are historical, and in an increasingly congested country all areas of open countryside can be seen as having a special value. The rural landscape is a great cultural asset, preserving evidence of mankind's exploitation of their environment over thousands of years. While stressing that all open spaces are important, it must also be acknowledged that some areas are more valuable than others. The Gwent Levels are an example, being particularly important for four interlinked reasons: the landform, ecology, archaeology, and historic landscape. They also provide extremely high quality agricultural land, with good yields both of hay and arable crops.

When studying one particular region in detail, there is always the danger of overstating its importance, particularly when the area is threatened by development. However, as an SSSI, one of the top historic landscapes in Wales (Kelly 1994, table 5)

and the source of nationally if not internationally important archaeological remains (eg Bell 1993; Nayling *et al* 1994), the Gwent Levels are of special significance.

Land-form

The Levels were created through gradual sediment deposition on the banks of the Severn during the post-glacial rise in sea level (see Chapter 2). The resulting coastal plain is the largest reclaimed wetland in Wales and it provides one of the most extreme examples of a landscape totally crafted by mankind. Even though the adjacent uplands of Wentwood (Fig 1) are modest by Wales' standards, these hills still provide a stark contrast to the flat expanse that fringes the coast. As a physically defined region, they could not be more distinctive.

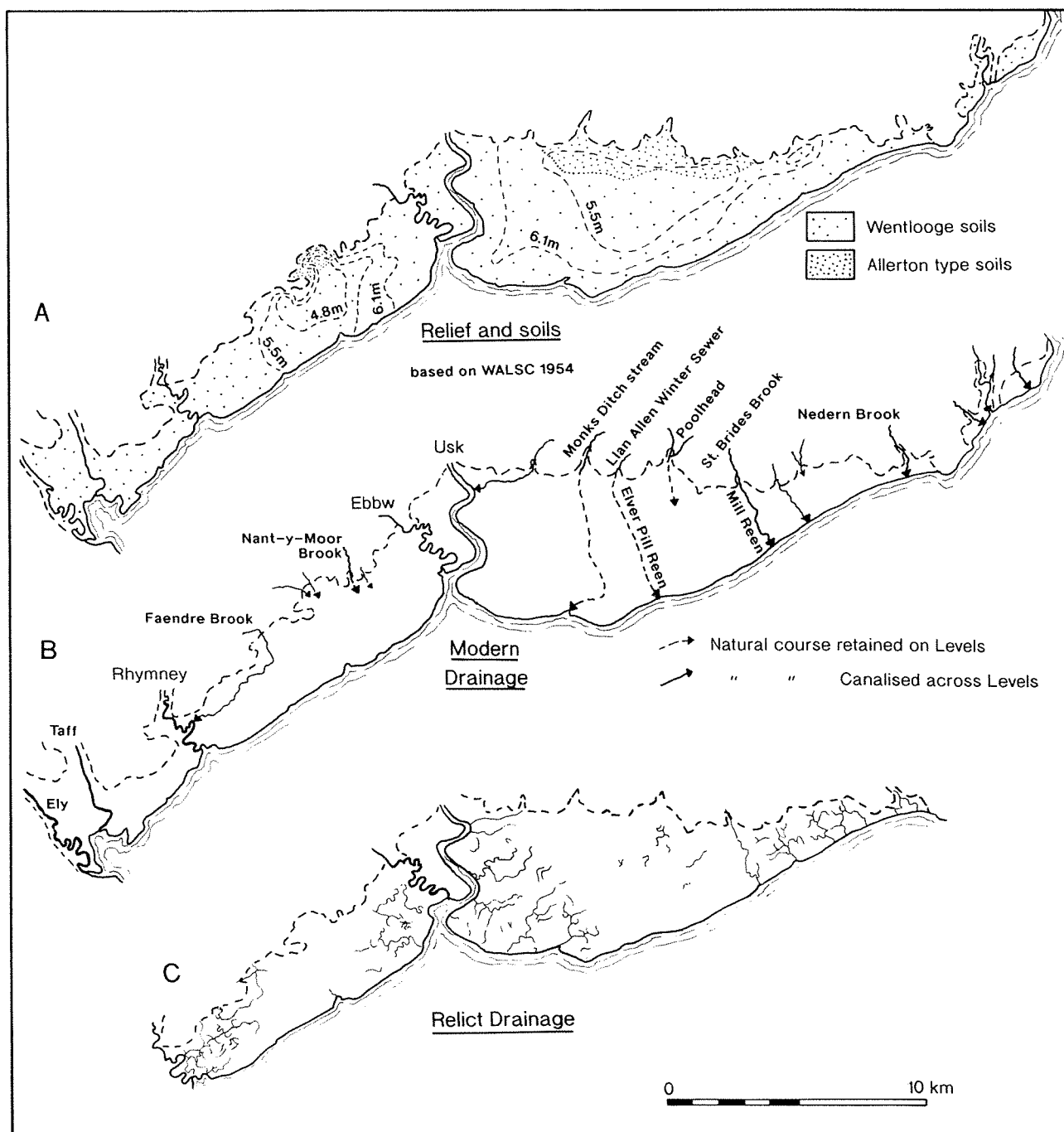


Fig 3 The Gwent Levels.

Relief

Fig 3A

This whole area lies below the level of the highest tide and without sea-walls would be frequently inundated. Most of the Levels lie between 4.5 and 6.1 m OD, rising to 6.7 m or more towards the coast (WALSC 1954, 7, 33-4). In Wentlooge, there is a low-lying inland basin forming a poorly drained back-fen below 4.9 m. In Peterstone this basin extends as far south as the coast, but elsewhere it is ringed by higher ground rising to c 6.7 m. The back-

fen basin in Caldicot follows a similar pattern, extending towards the coast just east of Goldcliff Point. In both cases, the zone of higher land has been eroded away in the central parts of these coastlines.

This broad picture of slightly higher ground lying towards the coast has become rather more exaggerated in recent centuries as the back-fen is sinking. Soft deposits such as peat consolidate over time. This is particularly significant in areas such as the back-fen, where there is a great depth of peat. Green and Rogiet Moors are currently drained with the aid of pumping, which like the construc-

tion and continuous pumping of the Severn Tunnel, appears to have caused subsidence (WALSC 1954, 34–6).

Because of their low-lying, nature, the Levels are dominated by the need to control water. There are two sources of flooding; tidal inundation, and freshwater runoff from the uplands that receive between 0.9 and 1.0 m of rainfall a year, flowing into streams and rivers that discharge across the Levels (WALSC 1954, 7).

Mean high water spring tide (MHWST) lies at c6.2–6.4 m OD, but is occasionally exceeded. This is shown by the frequency with which saltings as high as 7.3 m are covered, as predicted tide heights are affected by wind and barometric pressure (WALSC 1954, 33). A major flood in 1606–7 reached as high as 7.14 m (based on commemorative plaques on Goldcliff, Redwick, and Peterstone churches: see Boon 1980, fig 16; WALSC 1954, 32).

The relationship between tide height and the Levels' elevation is also changing. In their unreclaimed state, saltmarshes gradually increase in height along with rising sea levels. The construction of a sea-wall halts sediment deposition on the reclaimed area, but mean sea level beyond the wall continues to rise. For example, Allen and Rae (1988) calculate that Roman mean sea level was c 1.6–1.7 m lower than today. Thus, when the land was first reclaimed, the sea-walls need not have been as substantial as today.

Soils

Fig 3A

Soils on the Levels are mostly of the 'Wentlooge Series', first classified by Robinson (1930, 258), now renamed the 'Newchurch 2 Series' (Soil Survey 1983). Generally, they consist of brownish-grey, moderately friable silty clays, becoming more grey in colour and heavier in texture with depth. The surface layers are slightly acidic, though below c0.4 m the clay is usually calcareous (Avery 1954, 54). Soil conditions show some variation related to elevation and distance from the coast. In the higher, coastal areas they are rather more loamy (silty clay loam) and better drained. This is to be expected as areas closest to the source of inundation will see the deposition of slightly coarser sediments (WALSC 1954, 10).

In the lower-lying back-fens, soils are heavier due to a greater proportion of very fine sediment and the underlying peat being on or very close to the surface. The soils here, described as having a 'thin dark-coloured, highly organic surface layer' (Avery 1954, 54), would seem to be similar to the 'Allerton Series' soils found in particularly low-lying locations adjacent to uplands in the Somerset Levels (Findlay 1965, 114–16; Rippon 1991b, fig 20).

In the lowest back-fens, the underlying peat strata are just below the surface. On Caldicot this

is the case in an area from Wilcrick Moor, past Llandeenny and Magor to Undy and Severn Tunnel Junction. In Wentlooge a similar area occurs below Coedkernew (Avery 1954, 55). The surface layer is a dark brown-grey silty clay loam with a high organic content, and rests on a rust-stained grey silty clay. These soils are similar to those of the 'Midelney Series' in the Somerset Levels (Findlay 1965, 122–4; Soil Survey 1983).

Drainage

Fig 3B

Major rivers that presently dissect the Levels are the Ely, Taff, Rhymney, Ebbw, and Usk. They drain extensive areas of upland and though they must all have existed from long before the Roman period, their courses are likely to have changed over time as they meandered across the Levels. The broad corridors of these early rivers can be prefixed 'proto-' (eg Fig 34).

A range of lesser streams that drain parts of the uplands must also have flowed across the Levels. These include the river Nedern, St Brides Brook, Llan Allen Winter Sewer, Monks Ditch stream, and Nant-y-Moor Brook. After reclamation, these streams were usually canalized as they crossed the Levels, or even placed in raised earthen aqueducts that carried their waters across the low-lying back-fens (Fig 4.1–2; Plate 10 and back cover).

Before reclamation, the saltmarshes that comprised the Levels would have been drained by a network of tidal creeks (Figs 3.C and 4.1). The courses taken by many of these can be identified in the present pattern of field boundaries, since they were often retained as drainage features (Fig 4.24). Inland areas were generally reclaimed later and any existing features were ignored. Here, the courses of natural drainage channels can sometimes be identified as vegetation marks and earthworks. The best-preserved examples are on Caldicot Moor, where a series of dendritic drainage systems can be identified.

There is no evidence that the Gwent coast was ever fringed by sand dunes, as is the case in Somerset just across the Estuary. Indeed, local conditions mean that it is unlikely that the Gwent coast could ever have seen dune formation, as it is relatively sheltered from the prevailing wind (John Allen pers comm).

Nature Conservation

The importance of the Levels in terms of their ecology is now well established and reflected in their designation as a Site of Special Scientific Interest (SSSI) based on their distinctive reed ecology. They are one of only a few surviving areas of coastal wetland of this type in Britain, though the particular ecology of the Gwent Levels is unique among them (NCC 1982, 8).

In 1977, the then Nature Conservancy Council (NCC) published a report on 'Nature Conservation on the Gwent Levels' (NCC 1977). This described the ecological interests, highlighting the importance of the reens and their dependence upon careful management of the water system. In 1979 a small area, Magor Marsh, was designated a Site of Special Scientific Interest. In 1982 the NCC produced a new report, 'The Gwent Levels: The Past, Present and Future' (NCC 1982), which included a more detailed assessment and reviewed the mounting development threats. A series of subsequent flora and fauna surveys in 1982–5 showed that the Levels met the criteria for SSSI designation, which was subsequently carried out for 5906 ha from 1987 to 1993.

Ecological interest is mainly restricted to the reens, banks, and associated hedgerows; the nature conservation value of the fields themselves has been largely lost, though they are included in the SSSI since they form a vital part of the water management system. Mud-flats and saltmarshes in the Estuary itself also provide internationally important feeding grounds for migratory birds with a significant wintering population. This is reflected in their separate designation as an SSSI covering c10,000 ha (NCC 1982, 9), and proposed designations under the European Birds Directive (as a 'Special Protection Area'), and International Wetlands Convention (as a 'wetland of international importance' or 'Ramsar' site).

Archaeology

Recent work has also shown that the Levels have particularly rich buried archaeology both in the intertidal zone and inland of the sea-wall (Fig 7; Chapters 2 and 3). Over most of the Levels, pre-historic and Roman deposits are sealed by post-Roman alluvium. Even the most advanced methods of non-interventional (ie non-excavational) prospecting cannot identify such sites without excavation, making them very vulnerable to loss through ignorance.

The benefit of this blanket of alluvium and the resulting waterlogged conditions is that preservation of archaeological deposits is excellent. Any disturbance of this alluvium, or lowering of the water-table, will threaten this preservation. Current planning procedures and PPG 16 have gone some way to protect the archaeological resource, but there is as yet little statutory protection for buried archaeology in the Levels. Before this study started there were just two scheduled ancient monuments, both medieval moated sites, though several stretches of relict sea-wall have now been put forward as candidates for scheduling. Many other important earthwork features of the historic landscape, such as the raised watercourses and grip systems, cannot be scheduled as they are still in use.

The historic landscape

The historic landscape consists of all aspects of mankind's exploitation of a particular environment that survive and contribute to the landscape's present character; it could be regarded as 'above-ground archaeology' (Rippon 1995b, 100). In well-preserved landscapes, such as the Gwent Levels, there are a series of well integrated and articulated components, including the pattern of fields, roads, and settlements. The whole is greater than the sum of each part; individual sites or landscape features, while important in themselves, assume a much greater significance if they lie in a wider landscape with contemporary and related features.

The physical nature of the Levels, notably the flat relief and heavy but fertile soils, along with the process of wetland reclamation, has created a highly distinctive landscape dominated by the need to control the water system. One of the critical character-defining features of this landscape is that it has been totally hand-crafted by mankind, transforming tidally inundated saltmarsh into rich agricultural land. In the French school of landscape history, they would form a classic example of a *pays* (Davies M 1956, 5; Fox HSA 1989).

The 'historic landscape' of the Gwent Levels has received much less attention compared to the ecology and below-ground archaeology, resulting in a corresponding lack of protection. Until recently, there were other distinctively wetland landscapes around Britain, but many have been lost due to improved drainage, mechanized farming and the subsequent loss of field boundaries and ditches. The devastation of the Fenland landscape is a fine example. The remaining reen-based landscapes are few and far between, notably elsewhere around the Severn Estuary, especially in Somerset, and the English south coast Levels such as Pevensy and Romney Marsh. Therefore, the Gwent Levels represent one of the most extensive and best preserved reclaimed coastal wetland landscapes.

Early topographical writings show that the area has for long been recognized as possessing a unique landscape, noted for its specialization in agricultural surplus production (eg Camden 1607, 107; Fox J 1794, 11). The ecological diversity is a critical part of this landscape, with a wide range of environments providing a series of resources which mankind could exploit (Rippon 1995b, 102–4). These range from transformed landscapes such as meadow and arable behind the sea-wall, through to natural environments such as summer grazing on saltmarshes. Even today these natural resources are exploited in traditional ways, with a fishery at Goldcliff (Caldicot Level) and several farmers still grazing their cattle on the intertidal saltmarsh off Rumney (Wentlooge Level).

The cultural heritage of this landscape is now reflected in the Levels being recognized as a 'landscape of exceptional historic interest' in the Cadw/CCW 'Register of Landscapes, Parks and

Gardens of Special Historic Interest in Wales' (Kelly 1994; forthcoming). Though a non-statutory designation, this broadly equates with the status of grade I listed buildings (Kelly 1994, 29). The importance of the landscape is also reflected in the Levels' designation as a 'Special Landscape Area' by several local authorities (GwCC 1993; MBC 1993; NBC 1993). Despite the Roman reclaimed landscape of Wentlooge being unique in Britain and possibly North West Europe, and the medieval landscapes being among the best preserved in Britain, c 40% of the Levels have been lost already (see Chapter 7). Such a nationally important landscape desperately needs further protection.

The creation of a reclaimed wetland landscape

see Fig 4

The method of reclamation of any coastal wetland, not protected by natural beach or dune barriers, is as follows. In some areas, activity may have occurred on the unprotected tidal saltmarsh (Fig 4.1); examples include salterns, which required a supply of tidal waters, or seasonal shepherds' huts. Once the decision had been taken to drain the marsh, a sea-wall was constructed, usually close to the coastline and along the major tidal rivers as far as the bedrock margin (Fig 4.2; Plate 9). A rudimentary system of drainage then had to be established to enable minor upland streams and rivers to discharge their waters into the estuary without flooding the area now protected from tidal inundation by the sea-walls. This was achieved through the canalization and embanking of watercourses and former tidal creeks (eg Plate 10 and back cover).

Settlements were then established on the now protected higher coastal areas. In many cases settlements appear to have lain on the edge of small, roughly oval-shaped areas of c 20–40 acres termed 'infields' (Fig 4.3). These were carved out of an open landscape and tended to be oval, since there were few existing features in the landscape to constrain their shape. An oval is also a very 'efficient' shape, reducing the perimeter to area ratio and avoiding awkward corners (the same principles apply to medieval deer parks and woodland assarts: Rackham 1990, 153, fig 31). 'Infields' are found throughout the Gwent Levels (eg St Brides; Nash; Redwick; Chapel Tump, Undy; Figs 17 and 27) and elsewhere around the Severn Estuary (see Rippon 1994a, fig 4). These and other early settlement foci were linked by trackways, which also allowed livestock to be driven from the permanently occupied higher lands by the coast to seasonal pastures in the back-fen and on the remaining intertidal saltmarshes (Fig 4).

Land around the 'infields' was subsequently enclosed and drained by ditches in a piecemeal fashion (Fig 4.4). In the earliest enclosed areas, small irregularly-shaped parcels of land were

enclosed, often 'lobe-shaped' in plan. An overall framework for this gradually emerging landscape was provided by the 'infields', rudimentary drainage system, pattern of trackways, and former tidal creeks that became fossilized in the field boundary pattern. As the open moor was eaten away, the droveways were left at the centre of long broad strips of un-enclosed land. These linear, often funnel-shaped, street commons are a distinctive part of the landscape on the higher coastal areas. This complex type of landscape is termed 'irregular' (see Chapter 4).

In contrast, the lower-lying back-fen areas were left as open moor, used for common grazing. Freshwater runoff from the uplands would flood these areas, and threatened the enclosed fields towards the coast. To combat this, banks were constructed along the landward/northern edge of the enclosed lands (Fig 4.5); these earthen 'fen-banks', known locally as 'walls', can still be traced as sinuous field boundaries roughly parallel to the coast. At some stage a very rudimentary system of enclosure and drainage was developed on the back-fen, involving a handful of major reens and banks.

Over time, as population increased, more land was required and parts of the open moor adjacent to the old lands were drained (Fig 4.6). As the enclosures moved into the ever lower-lying back-fen areas, sequences of fen-banks were constructed. Eventually, the surviving areas of unenclosed moor were greatly reduced and came to be a valued resource. These remaining common pastures survived into the 19th century, when along with many of the street commons and small parcels of roadside waste, they were also enclosed. These areas tend to have 'planned' or 'regular' landscapes.

Along the coast, saltmarshes in front of the sea-wall were either eroded away, or grew through gradual accretion. If the latter process was dominant, then eventually the sea-wall might be moved forward, so enclosing more land (Fig 4.A–C). If the saltmarsh was completely eroded away, the base of the sea-wall would be undermined. In this case, if wooden revetments could not halt the erosion, the sea-wall would have to be moved back to a new location cutting across the line of earlier fields and leaving some previously reclaimed lands in the intertidal zone (Fig 4.I–III). If a phase of erosion was subsequently replaced by one of deposition, the old ground surface would then be buried under a saltmarsh (Figs 4.III and 7.B).

It looks as if the whole of Wentlooge and at least part of the Caldicot Levels were enclosed by sea-walls and drained during the Roman period. In terms of the subsequent c 1700 years, the Levels can be divided into two very broad landscape types. Firstly, there are those areas showing continuity between the Roman period and the present day; and secondly, landscapes of discontinuity, which saw flooding in the post-Roman period and the burial of the Roman landscape under alluvium. In the case of the latter, recolonization was necessary in the medieval period.

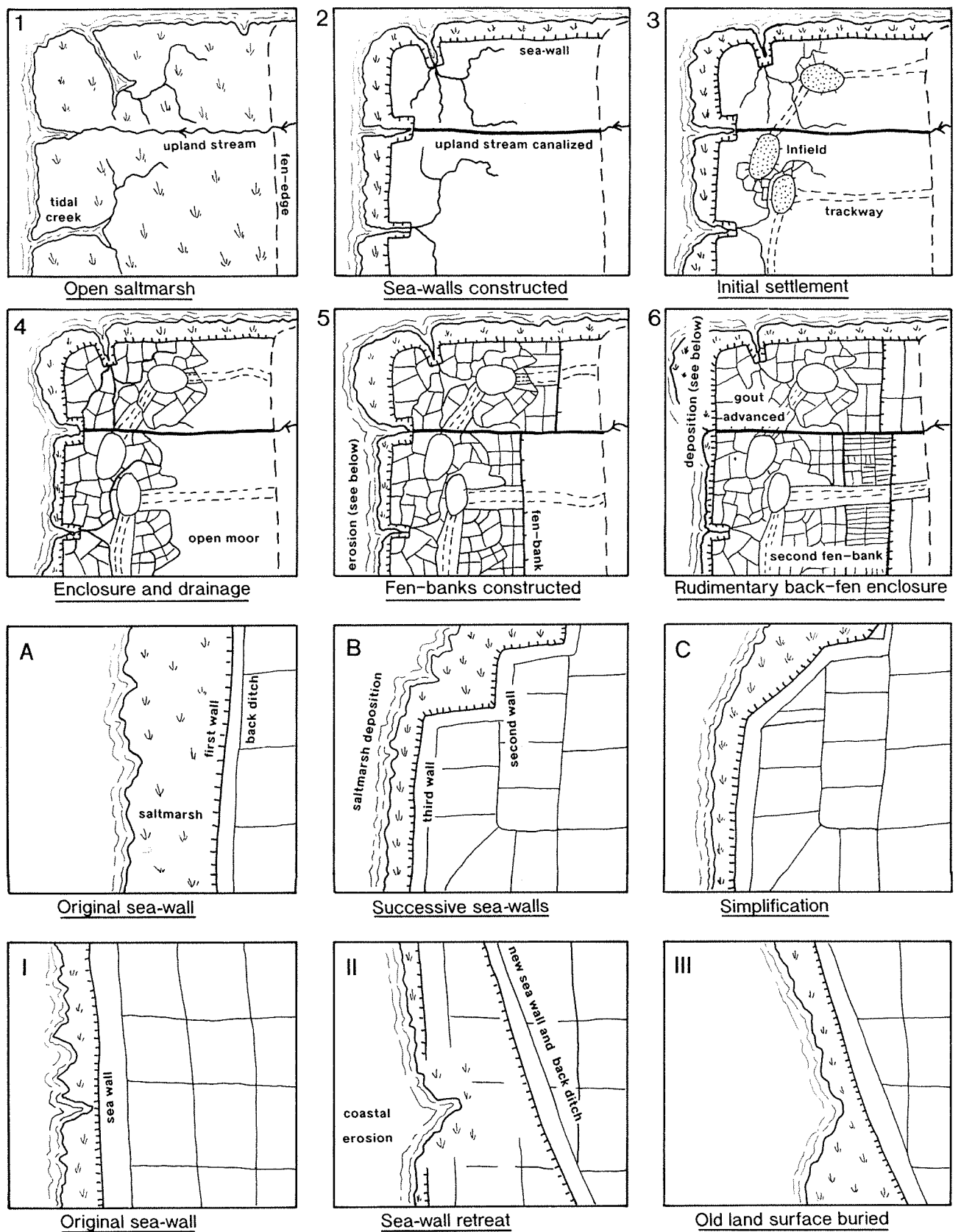


Fig 4 Schematic model for the creation of coastal wetland historic landscape. 1-6: the sequence of enclosure and drainage. A-C: the advance of sea-walls. I-III: the retreat of sea-walls.

This represents the process of reclamation, but does not explain why it happened. Though the intertidal wetlands were rich in natural resources, their value was greatly increased through drainage since the fertile soils produced rich pasture and high arable yields. At times of rising population, reclamation on the Levels provided a source of much needed new land. However, periods of rising sea level, increased storminess and high rainfall made arable farming on the Levels increasingly difficult, and there would subsequently be a shift to pastoralism or even abandonment. Regional and national trends in population, varying demand for grain, meat or dairy produce, and the growth of local and regional markets, also affected agricultural regimes on the Levels. This range of interrelated factors will be considered in later chapters.

The Gwent Levels Historic Landscape Study (GLHLS)

The importance of the Gwent Levels, in terms of their landform, nature conservation value, archaeological and palaeoenvironmental record, and historic landscape has been described above. However, like many other important landscapes in Britain, the area is under great pressure from development and agricultural improvement (Chapter 7). There is, at present, little statutory protection that can be given to historic landscapes, but as a first stage Cadw: Welsh Historic Monuments and the Countryside Council for Wales have collaborated in producing a 'Register of Landscapes of Special Historic Interest in Wales' (Kelly 1994; forthcoming). This identifies the historically most important areas of countryside, in order to inform the planning process.

The Register of Landscapes involved a rapid assessment for the whole of Wales. This work forms the first two of five stages which Richard Kelly identified in the study of historic landscapes. Firstly, there is recognition, achieved through professional consensus. Secondly, this is followed by primary appraisal, involving a rapid assessment of each landscape (resulting in the Cadw/CCW register). The third stage of the all-Wales study embraces the evaluation and identification of key character-defining features of each landscape. The fourth stage is too detailed to be carried out on a national scale and is where projects such as the Gwent Levels Historic Landscape Study take over. It involves detailed analysis and interpretation of an area, to provide a greater understanding of its landscape history. The fifth stage is that of management, protection, and the dissemination of information; this Gwent Levels study should make a major contribution to stage 5 as well.

The GLHLS was jointly funded by Cadw and CCW and undertaken by the author at the Department of Archaeology, University of Reading. It

aimed to achieve a much better understanding of how and when the landscape evolved (described here), and then identify and describe the various 'character areas'; the latter is summarized in Chapter 7 and fully reported separately (Rippon 1995a). A steering committee included representatives of Cadw, CCW, Gwent and South Glamorgan County Councils, Monmouth and Newport Borough Councils, and the NRA; the considerable assistance of all these organizations is acknowledged.

Various studies of 'historic landscapes' have been undertaken recently for both academic and planning processes, but no established methodology exists (eg CC 1991a; 1994; Hooke 1993; Kelly 1994; Lambrick 1992). The approach adopted here combines features from a number of other studies in disciplines such as archaeology, history, geography, and sedimentology (eg Allen 1987; Hallam 1954; Kelly 1994; Lambrick 1992; Rippon 1991a; 1993a; forthcoming a; Shennan 1986; Silvester 1988; Williamson 1987). It is hoped that the multi-disciplinary method used here will provide a model for other work on landscapes. The project was initially driven by pragmatic issues of preservation and management; a series of proposed major developments threatened to destroy large parts of this remarkable area. However, while producing data for the planning process, intended to have an impact upon decision making, the project also proved to be a sound piece of academic research which will hopefully be of much wider interest.

The methodology

The Gwent Levels have received some academic attention from historians and geographers (eg Courtney 1983; Davies M 1956; Silvester 1958; 1969). A recent synthesis of these works placed the Gwent Levels in the context of the Severn Estuary Levels as a whole (Rippon 1993 a; b; forthcoming a). It formed the groundwork for this study, which represents the most detailed historical research yet undertaken. The approach was multi-disciplinary, using a wide range of sources: topographical, documentary, cartographic, archaeological, earthwork, and palaeoenvironmental. While some attempt has been made to reconstruct the landscape at certain chronological intervals, the major emphasis has been upon understanding how the landscape came into being, through reclamation, enclosure, and changing patterns of landuse – the process of landscape change.

It is important to stress that the collection of data is a relatively easy matter; the challenge is to interpret that material. Any landscape must be viewed in a holistic way; though the component parts are of interest in themselves, it is only when the landscape is viewed in its entirety that its complexity can be fully appreciated.

The causes of changes in the landscape, notably the varying demand for resources, must be sought at both a local and regional/national level. Environ-

mental changes played an important part, especially fluctuations in relative sea level. Evidence for human activity is stratified within the sediments laid down during alternate periods when the sea/saltmarshes covered the Levels ('transgressions') and then lower relative sea level allowed vegetation to colonise the area ('regressions').

Definition of the study area

In other studies, a variety of indicators have been used to define the edge of the Levels. On occasions a particular contour, such as 7.5 m (NCC 1982, 6), or 8 m, the traditional limit of the Great Flood of 1606–7 (IDB; Dean Jackson-John pers comm) have been used. Another approach is to take the edge of the alluvium, or the area of water-filled field boundaries shown on current Ordnance Survey 1:25,000 maps. The problem is that these indicators do not all match up; even the geological and soil survey maps show the edge of the alluvium in different places. In some areas, such as parts of Caldicot, the edge of the Levels is clearly marked by the sharp intersection of the flat alluvium and relatively steep uplands; this is not the case in parts of Wentlooge.

Another problem is that as sea level is rising, the 'fen-edge' will have moved gradually upwards and inland. Sea level has risen by c 1.6–1.7 m since the Roman period (Allen & Rae 1988, 225); thus, the edge of the Levels c 1700 years ago would have been c 1.6–1.7 m lower than today. When looked at from above, this places the Roman fen-edge a short distance to the south of where it is now.

In this study, the edge of the Levels is taken from a set of maps drawn for the Commissioners of Sewers in 1830–1 (eg Figs 8 and 14; GwRO D.1365/1–2). This was the organization responsible for maintaining the drainage system, and their jurisdiction marks the traditional edge of what were locally known as the Levels. These maps have the added benefit of being drawn at a large scale unlike the geology and soils maps which are only available at 1:50,000.

Desk-top study

Work began with a review of the secondary literature and wide consultation with individuals and organizations with knowledge of the Levels. Detailed landscape analysis started with plotting slight but important variations in relief and soils (Fig 3A). This was followed by an examination of the pattern of field boundaries and roads, shown on a variety of cartographic sources, and supplemented by the examination of air photographs to identify earthworks (eg Fig 5). All the data were plotted at 1:25,000. This desk-top study was combined with field visits to key areas.

One of the aims of this work was to establish the sequence in which the reclamation of different areas had taken place. As well as simple morphological and metrical analysis, the landscape was

subjected to a 'regressive' study (see Rippon 1991a and Williamson 1987 for a detailed description of the methodology and examples of its application). This approach involves taking a detailed map of an area and gradually removing elements of a known age. The examination of air photographs and historical cartographic sources can also add earlier features that have been lost from the landscape in recent times. A relative sequence then has to be established for what remains. For example, when a railway or motorway is built, it slices through the landscape, sometimes cutting fields in half; a rectangular field can become two triangular fields if the road cuts across its diagonal. Thus, the road can be identified as stratigraphically later than the fields. On the Gwent Levels the same is true of the sea-wall, which has clearly been set back and laid across an earlier system of fields (eg Figs 4.III and 27). Thus, the landscape can be thought of as a series of layers that need to be carefully peeled off, one by one.

One of the major techniques used in this study was the analysis of form. Patterns of field boundaries, roads, and settlements were found to be of great significance, particularly when used in conjunction with a wide range of other sources. To a certain extent, this involved developing a typology of the use/delimitation of space. Austin (1985, 203) has identified three main problems with such morphological analysis: firstly, that it is easy to reconstruct the simple patterns from the complex, but almost impossible to reconstruct complex ones; secondly, that the processes of change themselves are seldom explored methodologically and critically; and thirdly, that dating is difficult to achieve, since it cannot be implied simply from morphology and typology. All of these issues are addressed throughout this study, but suffice it to say that complex patterns can indeed be reconstructed, understood, and dated, if a sufficient range of data and methods are applied.

Though archaeological material for the medieval period is somewhat lacking on the Levels, documentary research has contributed to our understanding of how the landscape evolved, particularly in terms of enclosure, drainage, and landuse. Virtually none of the landscape elements identified in the morphological analysis, such as reens, sea-walls, lanes, and farms, have documented origins, and so in most cases all we can say is that they existed by a certain date, a *terminus ante quem* for their construction. The majority of documented landscape features could be identified with those that survive on the ground. Many are named on cartographic sources, especially on the vital set of maps drawn up by the Commissioners of Sewers in 1830–1. In other cases an approximate location of a landscape feature could be worked out through descriptions such as 'x lay to the north of y', where the location of y is known (eg '2 acres in West Mead abutting Dukes Reen').

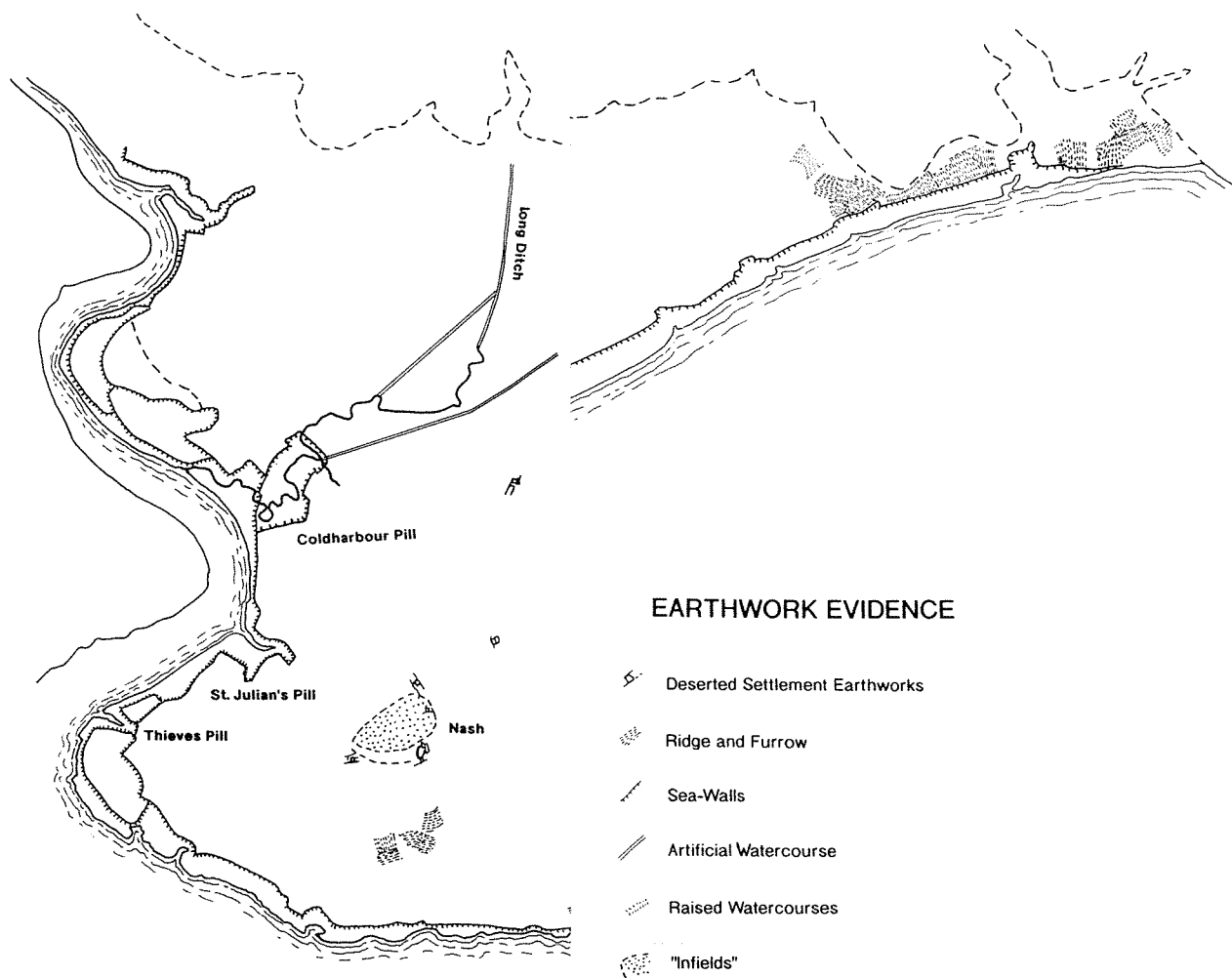


Fig 5 Caldicot Level: earthwork evidence.

are also important chronological variations: Goldcliff, Magor, Redwick, and Rumney have the most medieval material, though Bishton, Christchurch, and Undy also fare well in the 16th century. In the later post-medieval period, Caldicot, Christchurch, Magor, Nash, and Redwick are well served; Goldcliff is rather disappointing.

Place and field-names

Unfortunately there is no good national survey of place-names in Wales (see Pierce 1986–7), and very few local studies (eg Pierce 1960). Since many of the names on the Levels are English, a certain amount can be said on the basis of similar names across the border (eg Field 1993; Gelling 1988). Some Welsh field-names can be translated using a modern Welsh-English dictionary.

Sources relating to the history of landuse

In addition to incidental references in deeds and surveys described above, a wide range of material can be called upon in order to reconstruct the history of landuse on the Levels. The modern landscape is almost entirely pasture, and recent writings suggest that the Levels are wholly unsuitable for arable (eg ‘farmers relate with relish the story of ill-fated attempts to enforce the ploughing-up policy in the last war’: Sylvester 1958, 12). However, a wide variety of material shows that this has not always been the case.

While there is a wealth of archaeological and palaeoenvironmental evidence for the period up to the 1st millennium BC, the past two millennia are more poorly understood. At present, the only palaeoenvironmental assemblage for the latter period is from Rumney Great Wharf (Wentlooge) which indicates a predominantly pastoral landscape but possibly with some arable (Fulford *et al* 1994, 201–6).

There are occasional references in medieval documents to specific landuse (usually arable, meadow or pasture), but in most cases they simply refer to ‘land’. From the 16th century, the situation improves as wills become more abundant. There is also a range of topographical writings, such as Leland (1543) and Camden (1607), which allow a more general impression of the state of the Levels. From the late 18th century there are the agricultural surveys of Young (1769), Fox J (1794), and Hassall (1815). These reports, written for the Board of Agriculture, were essentially expositions of the advantages of enclosure and other means of improvement and thus pay considerable attention to the Levels.

For the 19th and 20th centuries we are fortunate in having a series of detailed agricultural surveys studied by Chapman (1973). These sources include the Crop Returns of 1801 (see also Williams D 1950–2), the Tithe Files/Awards of c 1840 (see also Kain 1986), and yearly parish landuse surveys

from 1866. Finally, there are later topographical descriptions of agriculture on the Levels (Fothergill 1870; WALSC 1954) and the ‘Land Utilisation Surveys’ of 1933–4 (Clarke 1943) and 1962 (Gough *et al* 1965) though the latter is incomplete.

Earthwork evidence

Figs 5 and 21

The Welsh Office air photograph collection was consulted for the whole study area. Coverage was quite patchy and a definitive plot of the earthwork evidence was not attempted. A wide range of earthworks were detected, including drainage systems (‘grips’, Plates 4 and 5; ‘ridge and vurnow’, Plate 2), ridge and furrow (from arable cultivation; Plate 3), abandoned sea-walls, raised and canalized water-courses (Plate 10 and back cover), deserted settlements and abandoned natural creeks.

The most common type of earthwork evidence is slight ridging on the surface of fields designed to aid drainage (Fig 21). Many orchards were planted on very pronounced ridges; a particularly fine example survives at Great Newra in Goldcliff (Plate 6). Most ridging relates to the drainage of meadow, known as ‘grips’ (Plates 4 and 5), and ‘ridge and vurnow’ (see below; Plate 2). Some ridging appears to have been created through prolonged ploughing of arable land, known as ‘ridge and furrow’ (Plate 3). The two can be difficult to distinguish from air photographs, though proper ridge and furrow has a more rounded profile.

In several areas, a sequence of sea-walls can be detected through air photographic, cartographic, and field evidence (Fig 23: along the Usk; Fig 34: east of St Brides). Sea-walls become redundant when the saltmarsh in front is enclosed by a new wall. Unfortunately, when this occurs the old wall is often demolished in order to provide material with which to build the new structure. However, a particularly fine stretch of relict sea-wall survives at Rumney Great Wharf (Fig 37), whose construction is dated to the late 16th century (Allen 1988). In most places, the present wall has seen many episodes of rebuilding, though several stretches retain their traditional appearance of a simple earthen bank, sometimes faced with carefully dressed and placed blocks (eg Rumney, St Pierre, Undy). However, on the whole these have been heightened, fronted with massive stone boulders and topped with concrete wave return walls.

Landscape characterisation (see Chapter 7)

The landscape can be divided into a number of ‘character areas’. The key character-defining features of each include the pattern of fields, roads, and settlement. In some cases it may be possible to identify individual reclamations of a few hectares, while elsewhere fairly homogenous landscapes

covering several km were enclosed and drained over a longer period of time. The landscape is, therefore, characterized in terms of its historical evolution and the resulting morphology and appearance.

Having divided the landscape into a number of character areas, a short assessment was carried out for each area. A methodology for characterizing landscapes has been proposed by Lambrick (1992),

based on the criteria for scheduling ancient monuments, and this is adapted by Kelly (1994). That approach has been further modified for this study, though a decision was taken not to score or grade areas. The GLHLS Landscape Assessment Report is to be published separately (Rippon 1995a).

2 The prehistoric background: Rising post-glacial sea level and the creation of the Levels

Introduction

The extensive alluvial plain that is now the Gwent Levels was created by the post-glacial rise in sea level and associated sediment deposition on the banks of the Severn. The basic sequence of deposits that make up the Gwent Levels is broadly the same throughout the Estuary: basal sands/gravels/peats, lower alluvium, peat horizons, and upper alluvium (Figs 6 and 7B). For the Gwent Levels, extensive borehole analysis,¹ several major archaeological projects,² and detailed observation of foreshore exposures³ have provided a wealth of stratigraphic and palaeoenvironmental material, making this one of best understood Flandrian sequences in the country. The work of John Allen in particular has allowed a generalized sequence of sedimentary units to be identified, including the 'Wentlooge Formation' which makes up most of the Flandrian (post-glacial) sequence (Fig 6; see Allen 1987; 1990; Allen & Rae 1987; 1988). Though not yet formally classified as such, the Wentlooge Formation can be divided into 'lower', 'middle', and 'upper'. However, it must be stressed from the outset that there is considerable spatial variability in the exposed stratigraphy, and that what follows can only be a very general model for landscape development.

There are insufficient data with which to attempt a palaeogeographical reconstruction such as that recently published for the Fenland (Waller 1994). However, there have been a number of nationally important archaeological discoveries from the Gwent Levels and the intertidal zone (Fig 7A). These are discussed in a chronological framework provided by the changing environment, notably the sequence of 'transgression', when marine influences and particularly saltmarshes predominated, and 'regression' when tidal inundation decreased and freshwater plants colonized the former saltmarshes. The geological, stratigraphical, and palaeoenvironmental contexts of these archaeological finds are critical and are therefore described in some detail.

In summary, before the last Ice Age, during the Ipswichian interglacial, sea level was above that of today. During the last glaciation, the Devensian, water levels in the Severn Estuary may have been c -100 m OD. The subsequent post-glacial (Flandrian) rise in sea level led to the deposition of

alluvium in a predominantly saltmarsh environment: the 'lower' Wentlooge Formation. Mesolithic people exploited the intertidal resources, possibly establishing a number of campsites such as that near Goldcliff Point. Mesolithic footprints have also been discovered at several locations.

At the end of the Mesolithic, the rapid rise of sea level slowed and a reed swamp established itself over the former saltmarsh. Woodland, or 'fen carr', spread over the Levels, which was terminated by a period of occasional marine flooding, killing the tress that can still be seen on the intertidal peat shelf as areas of 'submerged forest'. In the Neolithic and Bronze Age, a second reed swamp developed, followed by a raised bog, in turn gradually inundated at the end of the Bronze Age. Several settlement sites have been identified of later Bronze Age date, by Caldicot Castle, and in the intertidal zone off Magor, Undy, and Rumney Great Wharf.

The Iron Age saw a major marine transgression covering virtually the whole Levels, though at Goldcliff peat growth resumed with a second period of fen carr woodland. A series of remarkably well preserved wooden structures at Goldcliff date to this period. There was subsequently another marine transgression which only appears to have been halted in the Roman period through the construction of sea-walls. However, there was some occupation of the late Iron Age saltmarsh surface, for example at Magor Pill.

Note that all uncalibrated radiocarbon dates used are given with their laboratory number, standard deviation, and 'bp'. Calibrated dates, or those derived from dendrochronology or documentary sources use AD/BC. Sites referred to are located in Figure 7A.

The Palaeolithic

The Levels lie on a bedrock platform at -5 to -10 m OD, backed by an ancient cliff line. This platform, forming the 'outer Severn Valley' (Allen & Fulford 1987, 237; Anderson 1968), is cut by deeply buried channels at the mouths of the Wye, Mathern Pill, Nedern, Usk, and Rhymney (Anderson 1968; Anderson & Blundell 1965; Welch & Trotter 1961, 131; Williams GJ 1968). These narrow gorges were probably cut during the late Devensian low-stand of the sea (Allen 1990, 15), and join an even more

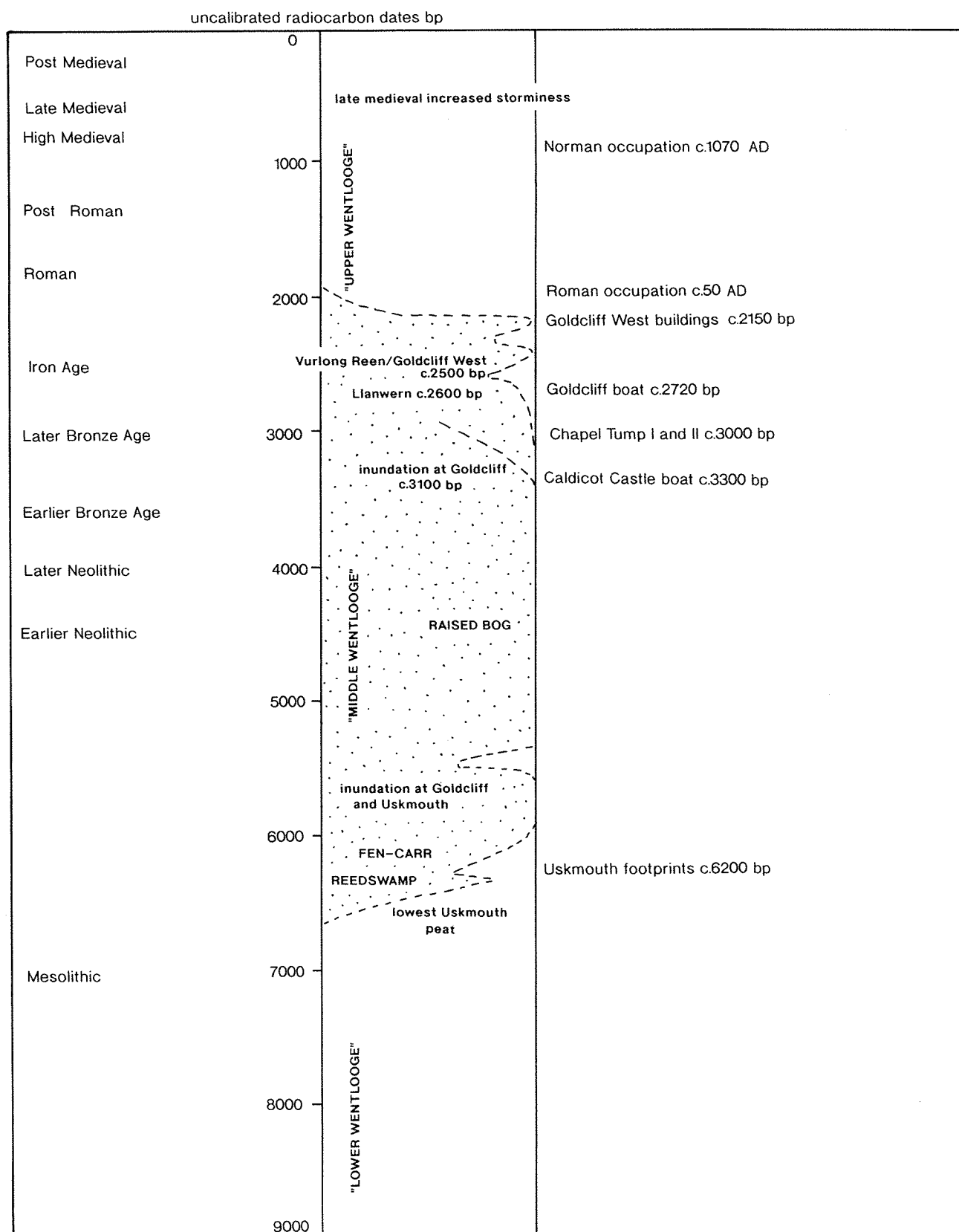


Fig 6 Simplified environmental history of the Gwent Levels, identifying the major periods of marine transgression and regression.

deeply incised 'inner valley' channel of the river Severn lying at the centre of the Estuary (Allen & Fulford 1987, fig 1a). Between these gorges there are ridges of bedrock, of which a small remnant of one, Goldcliff Point, can still be seen protruding through later sediments.

Boreholes (Anderson 1968; Anderson & Blundell 1965; Locke 1970–1; Godwin & Willis 1964, 128; Parkhouse & Parry 1990, Appendix 1; Williams 1968) show that both the gorges and platform are sealed by sands and gravels. At Llanwern these gravels contain numerous intertidal and rocky-shore mollusc shells, which have produced a minimum-age radiocarbon date of 25,450 bp (Andrews *et al* 1984, 970, figs 3–4), though Whittle and Green (1988, 27) warn of the inaccuracy of radiocarbon dates from carbonates of this age. Indeed, amino-acid racemization dating of the molluscs has shown the Llanwern gravels to belong to the Ipswichian interglacial period *c* 120,000–130,000 years ago (Andrews *et al* 1984, 970–72).

Pleistocene gravels are also known from two current intertidal exposures, at Goldcliff and Sudbrook Point. At Goldcliff a fossil beach, possibly dating to the last Ipswichian interglacial period, has been studied by John Allen. He reports that the upstanding area of bedrock has been largely eroded away, though parts of the former encircling beach, consisting of cemented sands and gravels, survive. This is partly overlain by a head deposit, formed from material transported off the island as a result of freeze-thaw, probably during the Devensian (John Allen *pers comm*); this contains a large number of animal bones (Bell 1993, 86).

Gravels in the intertidal zone at Sudbrook have yielded several Palaeolithic implements, namely two Levallois flakes, two ovate handaxes, a fragment of a third handaxe, several crude cores, and a waste flake (Green 1989, 194–6; Godbold & Turner 1993, 4, 45; Parkhouse & Lawler 1990, 28). The upper 'terrace' gravels, closest to Sudbrook Point, are distorted by periglacial ice-wedges and are thought to represent part of the main river flood plain terrace of the Severn, deposited during the Devensian (Allen & Fulford 1987, 237; Whittle & Green 1988, 112–13). The lower gravels, known as the Bar, are of unknown age, but appear to be characteristic of river bed gravels, rather than flood plain terrace deposits (Godbold & Turner 1993, 4; Whittle & Green 1988, 112–13).

Therefore, during cold glacial periods such as the Devensian, what is now the Severn Estuary was then a normal dryland river valley flood plain (the 'outer valley'), forming part of the territory of mobile hunter-gatherer bands; the river itself was confined to the deeply incised 'inner valley' at the centre of the plain, and the sea was *c* 150 km to the west (Allen & Fulford 1987, 237–8; Hawkins 1971). During the warmer interglacials, such as the Ipswichian, sea levels would have been somewhat higher than today, with the estuary flanked by gravelly beaches.

The Mesolithic: the 'lower' Wentlooge alluvium

After the last glacial period, sea level rose rapidly. The former flood plain deposits were eroded back, before rising sea levels started to deposit greenish-blue-grey estuarine silty clays comprising the 'lower' part of the Wentlooge Formation. No date is available for the inception of this alluvium, though *c* 9000 bp is plausible (Aldhouse-Green *et al* 1992, 16). Environmental work at Magor and Coldharbour Pills (Simon Haslett *pers comm*; Locke 1970–1, 8), Caldicot Moor (Parkhouse & Lawler 1990, 31–41) and Uskmouth (Aldhouse-Green *et al* 1992) supports the generally accepted view of a mudflat/saltmarsh environment of deposition. The rise in sea level took place too quickly for vegetation to grow and peat to develop.

Wild animals roamed over this foreshore. Undated aurochsen (extinct wild cattle) bones have been found at a number of locations in the intertidal zone (Locke 1970–1, 8), including off Sudbrook Point (Godbold & Turner 1993, 4). At Rumney, an incomplete articulated skeleton was dated to 4060±70 bp (CAR-851) (Green 1989, 187–94). Aurochsen bones were also recovered from the foreshore off Uskmouth in 1970 (Locke 1970–1, 8) and in 1987 skeletal remains of three individuals were excavated. One was substantially complete and dated to 4660±70 bp (CAR-1096) (Whittle & Green 1988, 124).

Human exploitation of the Mesolithic saltmarsh

During the period when the 'lower' Wentlooge was being laid down, the Levels were intertidal saltmarshes and mudflats (see above), though pollen evidence from Uskmouth suggests that a reed swamp was developing along the fen-edge (Aldhouse-Green *et al* 1992, 26–8). The earliest evidence for human activity is from Goldcliff, where an occupation horizon rests upon the late glacial head deposits (Fig 7C; Plate 11 centre right and front cover). Charcoal from the horizon is dated to 6430±80 bp (GU-2759) (Bell 1993, 86). The occupation layer produced a dense scatter of worked flint and chert (mostly debitage), together with charcoal, animal bone and hazelnut shells. Traces of a possible hearth and post hole were also uncovered.

Roughly contemporary with the occupation at Goldcliff are several trails of human footprints discovered at Uskmouth, dated to *c* 6200 bp or shortly before (Aldhouse-Green *et al* 1992). A mattock carved out of a deer antler found nearby probably dates to the 7th or 6th millennium bp; such tools are thought to have been used for digging in soft sediments (perhaps for digging cockles from the coastal mudflats?) (Aldhouse-Green *et al* 1992, 46–7). Another set of human footprints has been recorded near Magor Pill, in estuarine alluvium

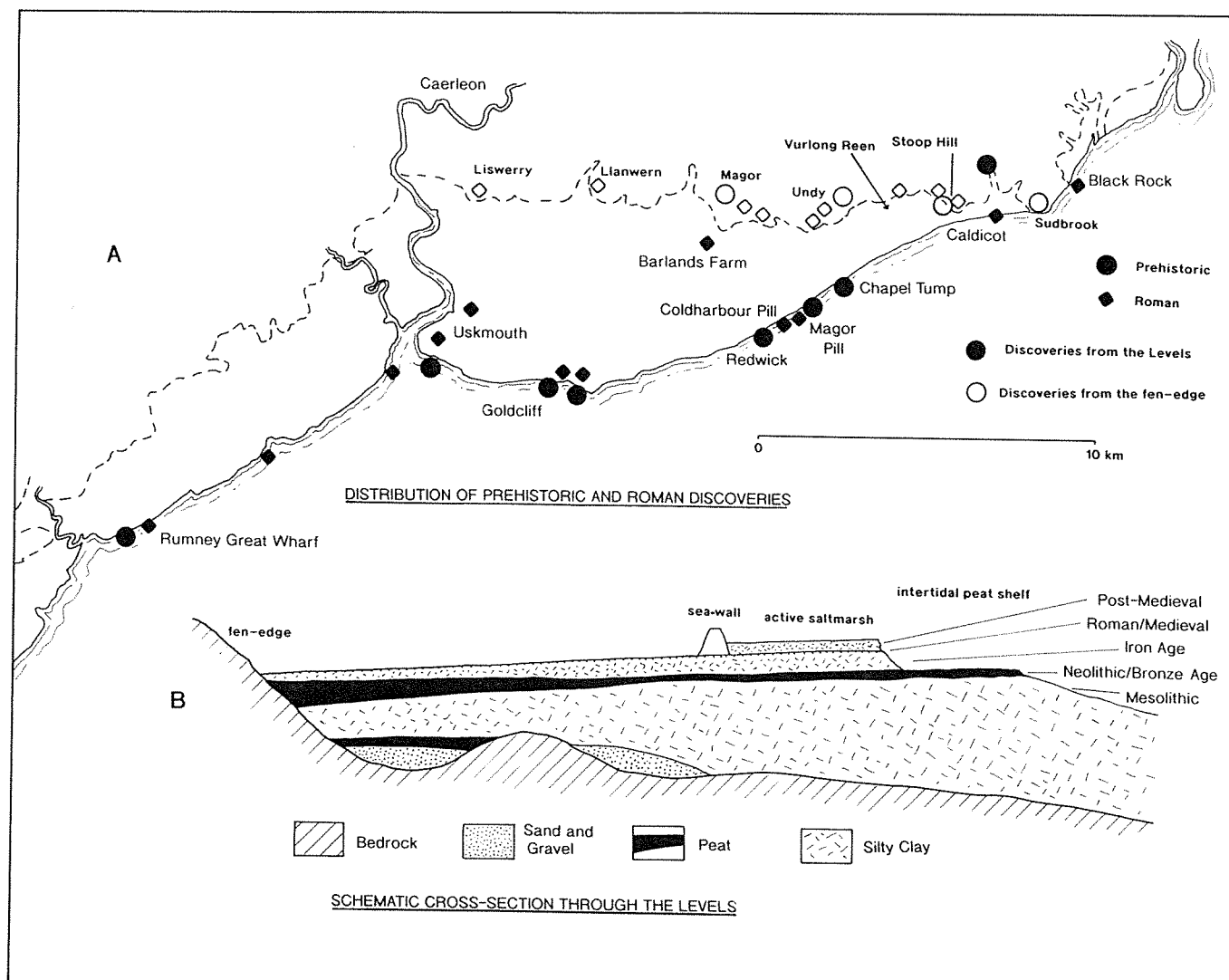


Fig 7 The Gwent Levels. A: distribution of prehistoric and Roman discoveries. B: schematic cross-section through the Levels linking geological deposits and periods of human exploitation (based on Allen and Fulford 1986).

beneath a peat deposited dated to 5720 ± 80 bp (OxA-2626) (Aldhouse-Green *et al* 1992, 43–6).

The later Mesolithic to Bronze Age: the 'middle' Wentlooge peat complex

Towards the end of the Mesolithic, c 6000 bp, the very rapid rate of sea level rise slowed, when it was c 8 m below the present mean sea level (Allen 1990, fig 4), allowing terrestrial vegetation to colonize the former mudflats and saltmarshes. The peats that resulted form the 'middle' part of the Wentlooge Formation. They are known from boreholes, deep excavations, and in the intertidal zone where they are most easily studied. Though intertidal exposures of peat are known on the English side of the Estuary (eg Bridgwater Bay: Kidson & Heyworth 1973, 1976; Clevedon Pill:

Whittle & Green 1988, 178), they appear to be more widespread on the Welsh side (Godwin 1940; 1943; Locke 1970–1; North 1955, 58; Smith & Morgan 1989, 145).

The intertidal exposures are nearly continuous between the mouths of the Wye and Rhymney. In many cases, particularly close to the prehistoric coast and tidal rivers, the stratigraphy is complex, with a number of peat deposits intercalated with alluvium.⁴ By contrast, borehole data suggest that inland the peat forms a single, near-continuous horizon.⁵ Various investigations, notably along the line of the Second Severn Crossing and in the intertidal zone off the Caldicot Level, suggest the Neolithic and Bronze Age landscape was a mosaic of environments with much spatial and chronological variation. There are at least four broad vegetation types represented in the peats: firstly, 'moist woodland, characterized by woody debris, abundant stumps and prostrate trunks'; secondly, 'fen carr,

typified by comparatively small trees, either dispersed or in small clumps, accompanied by the remains of reeds and sedges'; thirdly, 'reeds swamp, dominated by reed debris and detritus settled in shallow ponds and lagoons'; and fourthly, 'raised bog, characterized by mosses in cushion-shaped masses' (Allen 1992b, 348–9).

At several places the remains of whole trees are preserved in the intertidal peat, forming what is now a 'submerged forest' (eg Goldcliff, Magor, Chapel Tump, Sudbrook). To the west of Sudbrook Point, a small patch of alder roots have been dated to 6040 ± 70 bp (Beta-54829) (Godbold & Turner 1993, 20). Nearby, eighteen fallen trunks and large branches have been recorded, one dated to 5760 ± 70 bp (Beta-54827); the three timbers that were identified turned out to be oak (Godbold & Turner 1993, 11). These dates compare favourably with those for wood peats at Uskmouth (5810 ± 80 bp: OxA-2628) and Goldcliff (5850 ± 70 bp: CAR-1438). The peat formation at Magor Pill started a little later (5720 ± 80 bp (OxA-2626): Aldhouse-Green *et al* 1992, 43–6; 5680 ± 70 bp (Beta-73058: Allen & Rippon 1994).

At Sudbrook, the submerged forest appears to have been inundated, and no further peat growth occurred; this is not surprising as the area lies close to the mouth of a formerly important tidal river, the Troggy/Nedern. At Goldcliff and Magor/Undy, away from any major tidal rivers, peat continued to develop forming a raised bog; further submerged forests developed during the later Bronze Age/Iron Age (see below).

The main sequences

Uskmouth

The earliest of three peat formations, separated by estuarine clay, is in the intertidal zone to the south of Uskmouth (Aldhouse-Green *et al* 1992). The thin lowest peat represents the brief appearance of a reed swamp during the 'lower' Wentlooge Formation (a radiocarbon date of 6140 ± 100 bp (OxA-3307) is thought to be too young because of recent contamination. After a return to saltmarsh conditions, humans walked across the saltmarsh and their footprints have been preserved. Pollen from the saltmarsh-derived clay indicates a reed swamp not far away, probably fringing the fen-edge. Later, the reed swamp spread over the site (6250 ± 80 bp OxA-2627; 6260 ± 90 bp CAR-1178), representing part of what was to become a widespread peat deposit throughout the Levels. At Uskmouth, this was succeeded by alder fen carr woodland, $c 5810 \pm 80$ bp (OxA-2628). The stratigraphy shows that there was a return to saltmarsh conditions and then a third period of peat growth; these events are at present undated.

At Margam, near Port Talbot, and on the English side of the Estuary peat also developed on former saltmarshes at this time (Godwin & Willis 1961; Heyworth & Kidson 1982; Smith & Morgan

1989, 163), suggesting a widespread pause in the rate of relative sea level change.

Goldcliff

The intertidal peats around Goldcliff Point have seen a number of research programmes, notably detailed pollen analysis of a deep peat sequence east of Goldcliff Point (Smith & Morgan 1989) and archaeological/palaeoenvironmental investigation at a number of sites to the west and south west of the Point (Fig 7c, Bell 1991; 1992; 1993; 1994).

East of Goldcliff Point, around $c 6000$ bp, the Mesolithic estuarine clays were succeeded by a reed swamp, implying increased freshwater influence (5950 ± 80 bp (CAR-659): Smith & Morgan 1989, 150–7). The reed swamp gradually dried out and was succeeded by woodland dominated initially by willow and quickly followed by alder with a little birch (5850 ± 80 bp (CAR-658): Smith & Morgan 1989, 152); extensive areas of submerged forest can be seen both east and west of Goldcliff Point (Allen 1992b, fig 16b; Bell 1993, figs 27 and 31). Occasional lenses of blue clay appear in the sequence of peat that formed from this fen carr woodland east of Goldcliff Point, indicating periodic marine incursions. However, $c 5500$ bp the woodland was killed off by more sustained flooding (5530 ± 90 bp (CAR-657) to 5360 ± 80 bp (CAR-656): Smith & Morgan 1989, 152). There was a return to reed swamp $c 5350$ bp, which in turn was replaced by a sedge fen and slightly drier conditions, and then the development of a thick raised bog $c 5000$ bp (5020 ± 80 bp (CAR-652): Smith & Morgan 1989, 153; a second date of 4720 ± 80 bp (CAR-653) appears too young). This corresponded with the 'elm decline' and the appearance of agriculture on the adjacent drylands (see below; Smith & Morgan 1989, 160). At least one band of clay within the raised bog indicates a flooding episode. The environment east of Goldcliff Point then reverted to reed swamp, before being inundated around $c 3100$ bp (3130 ± 70 bp (CAR-644): Smith & Morgan 1989, 154; once again, a broadly similar date for the submergence of the peat is seen around the Severn Estuary and Bristol Channel: Smith & Morgan 1989, 164).

Further west, between Goldcliff and Goldcliff Pill, the surface of the raised bog is cut by a series of palaeochannels filled with clay, and with a number of tilted peat blocks along the edge; this presumably represents the onset of marine erosion of the raised bog surface. One of these palaeochannels contained a small wooden structure, possibly a platform or trackway, dated to 2720 ± 70 bp (CAR-1434) (Bell 1993, 86). This structure contained two planks from a sewn boat, one of only a handful of Bronze Age boat fragments known from Britain. Both the palaeochannels and raised bog are sealed by further estuarine clay.

A little further west the raised bog continued to develop rather later and was eventually sealed by a sequence of thin peats and clays (Bell 1993, 81).

Here, a date of 2580 ± 70 bp (CAR-1438) has been obtained from the surface of the raised bog; this is comparable to a date of 2660 ± 110 bp (Q-691) from the surface of the peat inland at Llanwern (Godwin & Willis 1964) and 2510 ± 60 bp (Beta-63590) from Vurlong Reen (see below), but much later than the cessation of peat growth east of Goldcliff island (see above). Perhaps peat formation east of the island was halted by flooding along a tidal river or pill (such as the former course of Monksditch: see Fig 12). Other bedrock islands around the Severn Estuary have affected sedimentation patterns in their surroundings in this way (see Allen 1992a; Rippon 1991b). First millennium bc flood horizons have also been identified from the Somerset Levels (Hibbert 1980; Housley 1988).

Continuing the sequence in the area between Goldcliff Point and Goldcliff Pill, the surface of the raised bog was overlain by a thin layer of clay (Bell 1993, 81). There was subsequent peat growth, another episode of flooding represented by a band of clay, and then the development of a fenwood peat, dated to 2270 ± 70 bp (CAR-1351; Bell 1993, 81). A series of timber buildings and trackways were constructed at this time in a landscape subject to periodic flooding; a series of radiocarbon dates concentrate between c 2200 and 2100 bp (Bell 1993, 99, table 2).

Caldicot Moor

In the low-lying back-fen of Caldicot Moor, a series of deep sections and auger holes at Vurlong Reen revealed a sequence of deposits overlying the gently sloping bedrock margin (Dingwall & Ferris 1993; Ferris & Dingwall 1992; Parkhouse & Lawler 1990, 8–11). Close to the fen-edge, sediments are largely colluvial, derived from material washed off the adjacent hillside. Moving onto the Levels, a deep peat deposit c 2 m thick and overlying alluvium of the 'lower' Wentlooge Formation intrudes into this sequence; the peat was also sealed by estuarine alluvium (Dingwall & Ferris 1993, figs 10–11).

The history of peat growth on Caldicot Moor is broadly similar to that at Goldcliff. Around c 5800 bp (5780 ± 70 bp (Beta-63595): Walker & James 1993, 65), the estuarine conditions were replaced by a wet fen carr woodland, dominated by alder, and muddy slow moving waters (Caseldine 1993, 71; Smith D 1993, 73; Walker & James 1993, 65–8). Around c 4000 bp (3950 ± 70 (Beta-63592): Walker & James 1993, 65–8) this wooded environment was replaced by a more open reed/sedge swamp, which persisted to c 2500 bp, when the area was flooded and estuarine sediments were deposited. Plant and beetle remains suggest that the waters were becoming more acidic, indicating small still pools and lakes; however, there was no raised bog like that at Goldcliff (Caseldine 1993, 71–2; Smith 1993, 75). The presence of certain plant species also suggests some marine influence from c 3200 bp (Caseldine 1993, 71–2).

Boreholes show that the 'middle' Wentlooge Formation peat deposits underlie virtually the whole of the Levels. In places, however, it was interrupted by substantial tidal creeks, such as that investigated at Nine Meads, also along the line of the Second Severn Crossing (Dingwall & Ferris 1993, 3–6). This area was part of the broad corridor occupied by the river system later called West Pill, which drains the uplands of Llanvihangel, Rogiet, and Ifton. A series of auger holes across the area reached a depth of c 5 m (c 1.9 m OD), revealing c 1.3 m of intercalated peat and estuarine clay, suggestive of frequent marine transgression. At 3.24 m OD, a uniform deposit of estuarine clay blankets the Nine Meads area and occupies the rest of the alluvial sequence; there is no evidence of the deep peat sequence seen at Vurlong Reen just c 1 km to the north west.

Rumney Great Wharf

Less work has been carried out on the peat sequence and intertidal exposures on the Wentlooge Level, though John Allen has carried out an initial reconnaissance at Rumney Great Wharf (Allen 1987) and a number of test pits have been dug nearby around Newton Farm (Parkhouse & Parry 1990). As would be expected, the peats are thin and decrease closer to the river Rhymney (John Allen pers comm). Analysis of pollen, plant macrofossil, and foraminifera evidence from the peat sequence at Newton shows the familiar transition from saltmarsh, through reed and sedge swamp to fen carr vegetation, here dominated by willow and later birch; this was succeeded by the development of a raised bog (Parkhouse & Parry 1990, 30–2, 57–65). This was then inundated, with a return to saltmarsh conditions.

Peat is also exposed in the intertidal zone. A date of 2180 ± 50 bp (SRR-2678) from the top of the peat at Rumney Great Wharf (Allen & Fulford 1986, 94) is remarkably similar to dates from the top of the peat at Goldcliff. However, it appears stratigraphically too young, such is the depth of alluvium between it and Roman occupation horizons of the 2nd or 3rd century AD.

Human activity in the peatlands

The landscape setting

The stratigraphic and palaeoenvironmental evidence described above suggests that from the end of the Mesolithic (c 6000–5800 bp), through to the end of the Bronze Age, the Levels were dominated by first a wet alder woodland, and then more open reed swamps and raised bogs. Predecessors of the major tidal rivers must have flowed through the Levels, along with numerous smaller rivers and streams which also drained areas of upland. The exact lines of these channels may never be known as they lie buried under later sediments and will have changed over time as the slow-moving streams sluggishly meandered across the Levels.

However, borehole data suggest that a buried palaeochannel lies just to the west of Barlands Farm in Magor (Lawler & Nayling 1993, 109–10). In fact the presence of this channel is no surprise, as minor streams drain a sizeable area of adjacent upland including the Poolhead Valley between Bishton and Wilcrick. These streams currently flow into the artificial Wilcrick Moor Reen (Fig 28), which must always have had a natural predecessor. Air photographs show the earthworks/vegetation marks of a number of minor meandering creeks in the Poolhead Valley, possibly the last remnants of a more substantial palaeochannel. A near complete Roman boat has been discovered beside a quay in a silted up channel near Barlands Farm in Magor (Lawler & Nayling 1993). This channel system in the Poolhead Valley may also relate to a substantial palaeochannel in the intertidal zone south of Redwick village, identified by Derek Upton, or the Magor Pill channel complex (Allen & Rippon 1994).

Caldicot Castle Lake

Another substantial river channel complex has been investigated in the Nedern Valley, near Caldicot Castle; the following account is based upon the most recently published summary (Nayling 1993). The area was flooded in the post-glacial period, along with the rest of the Levels. The 'lower' Wentlooge Formation extends up the valley, with a number of brief regressions represented by minor peat horizons; one has radiocarbon dates of 4360 ± 80 bp (CAR-1322) and 4670 ± 80 bp (CAR-1323), indicating an early-mid Neolithic date. This sequence was cut by a series of river channels which flowed through a saltmarsh environment. A line of hazel piles was driven into the course of the earliest channel have produced radiocarbon dates of c 3500 bp, implying an early Bronze Age date (3620 ± 70 bp (CAR-1317), 3550 ± 70 bp (CAR-1314) and 3430 ± 70 bp (CAR-1415); Nayling 1993, 77).

The next channel complex contained dense spreads of wood, stone, and bone. A major discovery was a substantial fragment of a sewn plank-built boat, with radiocarbon dates ranging from 3150 to 3450 bp. The environment was freshwater. A later channel also contained spreads of stone, wood, and faunal remains, along with a cluster of roundwood posts, radiocarbon dated to c 3000–2900 bp, and various other timbers driven into the channel; dendrochronology has produced an absolute felling date of 998–7 BC for one of these timbers. Much of this material appears to have been deliberately dumped and may include waste from cooking. The animals represented were predominantly sheep, with some cattle, pig, horse, and dog. This was once again a freshwater environment, though perhaps with occasional marine incursions. Plant remains suggest increased clearance on the surrounding uplands. After some silting, two parallel lines of posts were driven into the channel, possibly the foundations for a bridge or jetty; one timber has a

dendrochronological date of 990–89 BC.

Intertidal discoveries

Returning to the Levels themselves, the various fen carr and reed swamp habitats that predominated during the Neolithic and Bronze Age had a high resource potential in terms of biotic diversity. Fish, wildfowl, and plants such as reeds (for thatching and basketry) would all have been collected. Unfortunately there is relatively little evidence for human activity on the Levels themselves during this period.

A small number of flints, including a knife, were found at Vurlong Reen, from the Neolithic alder-carr peat (Dingwall & Ferris 1993, 8; Parkhouse & Lawler 1990, 9). These need not indicate occupation, but merely the passing of someone gathering wetland plants or on a hunting expedition; such activity may also account for the Neolithic arrowhead from Rumney Great Wharf (Fulford *et al* 1994, 196). Forays onto the Levels were probably based from camps on the fen-edge, and a small flint assemblage and possible Bronze Age pottery sherd from Stoop Hill in Caldicot may indicate such a site (Dingwall & Ferris 1993, 3, 10; Parkhouse & Lawler 1990, 24).

A number of other unstratified finds from the intertidal zone suggest at least occasional frequentation of the area. A Neolithic flint flake has been recovered off Sudbrook (Godbold & Turner 1993, 45, fig 2) along with two other flakes and two cores that can only be broadly dated as post-Mesolithic. A Neolithic flint axe has been found off Magor (Green S 1989, 196). Three Middle Bronze Age implements have also been discovered: a spearhead from Portland Ground and a palstave and spearhead from Rumney Great Wharf (Green S 1989, 196–8).

During the construction of Newport Docks in 1910, a human skull, described as 'Neolithic' for an unspecified reason, and an assemblage of animal bones were recovered (Locke 1970–1, 9–10). The context is not altogether clear, though the depth of -30 ft OD (c 13 m below the surface) suggests they are either Mesolithic (for this is below the height of the late Mesolithic to Bronze Age peat sequence) or from a silted up later palaeochannel cutting through the peat. A second human skull was discovered at Uskmouth in 1961 at -10 ft OD (c 10.5 m below the surface); this appears to have been from a peaty horizon (Locke 1970–1, 10–11), and is likely to be late Mesolithic to Bronze Age in date. A human skull has recently been recovered from the peat sequence at Goldcliff, probably dating to the Neolithic; fragments of human skull have previously been recovered from the area (Bell 1993, 88).

Several important later Bronze Age sites have been discovered in the intertidal zone of the Caldicot Level, particularly in the area from Collister Pill to just west of Coldharbour Pill. One of the best preserved sites lies to the south of Chapel Tump Farm in Undy, adjacent to a substan-

tial silted up palaeochannel that cuts through the earlier peat deposits (Whittle 1989, 200–12). A circular arrangement of wooden posts probably relates to a roundhouse (Chapel Tump I). An outer ring of posts formed a circular pattern c 10 m in diameter, representing the wall of the building; an inner ring of substantial load-bearing posts would have supported the roof. Two timbers have yielded dates of 3170 ± 70 bp (CAR-992) and 2910 ± 70 bp (CAR-402). A concentration of charcoal, burnt stone, several flint implements, and Late Bronze Age pottery suggest some sort of occupation, associated with a dirty clay layer above the main peat deposit. Plant remains include one fragment of cereal chaff, along with blackberry and elderberry seeds. Nearby, another scatter of cultural debris has yielded dates of 3080 ± 70 (CAR-956) and 2830 ± 70 bp (CAR-961) (Chapel Tump II: Whittle 1989, 211). A second roundhouse has been observed but not properly recorded just to the west of Collister Pill; an unstratified sherd of pottery found nearby appears to be of later Bronze Age date (Derek Upton and Nigel Nayling pers comm).

A third later Bronze Age site has been recorded in the intertidal zone just to the east of Coldharbour Pill. A scatter of pottery, burnt stone, animal bone, and charcoal was associated with several sharpened stakes, though the latter do not appear to form a coherent pattern. This has yielded a radiocarbon date of 2900 ± 80 bp (CAR-991) (Whittle 1989, 212–17). A similar scatter of material has been observed but not properly recorded to the east of Magor Pill (Derek Upton pers comm).

Just to the west of Coldharbour Pill, part of a trackway has been excavated. It was c 0.5 m wide, consisting of a layer of brushwood, overlain by bundles of brushwood laid longitudinally, pegged along one side. Cut marks on the pegs suggest they were fashioned with a metal axe head (Whittle & Green 1988, 124). The structure was not dated, but appeared to lie in a thin layer of dirty grey clay, overlying the main peat shelf; this is a similar sequence to the Chapel Tump sites, dated to c 3000 bp (see above). Presumably, this trackway was built to cross a creek in the surface of the saltmarsh, to facilitate movement in the increasingly wet landscape. Another scatter of animal bone and burnt stone lies just to the east, in a palaeochannel or possibly a curving ditch (Derek Upton pers comm).

John Allen (pers comm) has discovered three late Bronze Age sites in the intertidal zone off Rumney Great Wharf. Site 1 was observed in the eroding mud cliff towards the river Rhymney. It sat in a thin layer of organically rich silt, c 0.75 m above the main peat layer and contained a spread of charcoal, bone/teeth (all cattle) and pottery along with burnt and possibly worked stone. The charcoal yielded a radiocarbon date of 2250 ± 60 bp (Beta-39437). This site is suggestive of activity on the surface of a saltmarsh which was for a short while infrequently inundated, allowing some vegetation to colonize.

Site 2 lies c 200 m north east of site 1, and comprises a mass of red baked silt, probably representing a camp fire, lying in the upper most layers of the peat. Once again it is associated with pottery and burnt stone. An adjacent palaeochannel has also produced late Bronze Age pottery.

The third Bronze Age site at Rumney Great Wharf, c 200 m north east of site 2, and consists of a circular arrangement of split oak posts, c 5 m in diameter. It lies on top of the peat shelf, with a strew of cultural debris, including pottery, bone, and burnt stone, stratified within the interface of the peat and overlying clay. This is the equivalent stratigraphic context to the intertidal sites off the Caldicot Level (see above), suggesting exploitation of the reed swamp as the sea was starting to encroach. One of the wooden posts has given a radiocarbon date of 3080 ± 50 bp (Beta-46951).

These various Bronze Age sites from the Gwent Levels represent activity in the area over several hundred years. This concentration of sites on top of the peat shelf may be illusory, since its surface is highly visible and regularly scoured by the sea as the soft overlying alluvium is worn away. The peat layer itself is eroded in large blocks, as the equally soft clay beneath is undermined. As a result, the peat layer is only ever seen in section and we rarely get exposures of surfaces within the peat mass. Very occasionally, wooden structures are seen within the peat sequence, such as John Allen's observations (pers comm) of possible trackways protruding from the peat in the side of the later palaeochannel at Rumney Great Wharf (see Fulford *et al* 1994, fig 3 for the location of this channel).

Patterns of exploitation on the surrounding uplands

The pollen sequences from Goldcliff and Vurlong Reen identify a series of periods when woodland on the uplands overlooking the Level was cleared (Smith & Morgan 1989; Walker & James 1993). The earliest clearance, dated at Vurlong Reen to c 5500–5300 bp (late Mesolithic), pre-dates the introduction of agriculture and appears to indicate that human activities were having an impact on the woodland cover. The second period of woodland decline, dated at Vurlong Reen to c 4900–4250 bp (early Neolithic), suggests that pasture was replacing woodland and that agriculture may have been practised; the start of this period is marked by the 'elm decline' seen throughout Britain and Europe at about c 5000 bp.

At Goldcliff East, the 'elm decline' is indeed dated to 5020 ± 80 bp (CAR-652) and is immediately succeeded by signs of agriculture (Smith & Morgan 1989, 153). There was subsequently a woodland regeneration c 4750 bp, followed by renewed clearance by c 4350 bp (Smith & Morgan 1989, 153–4). From c 3670 bp agriculture reappears in the pollen

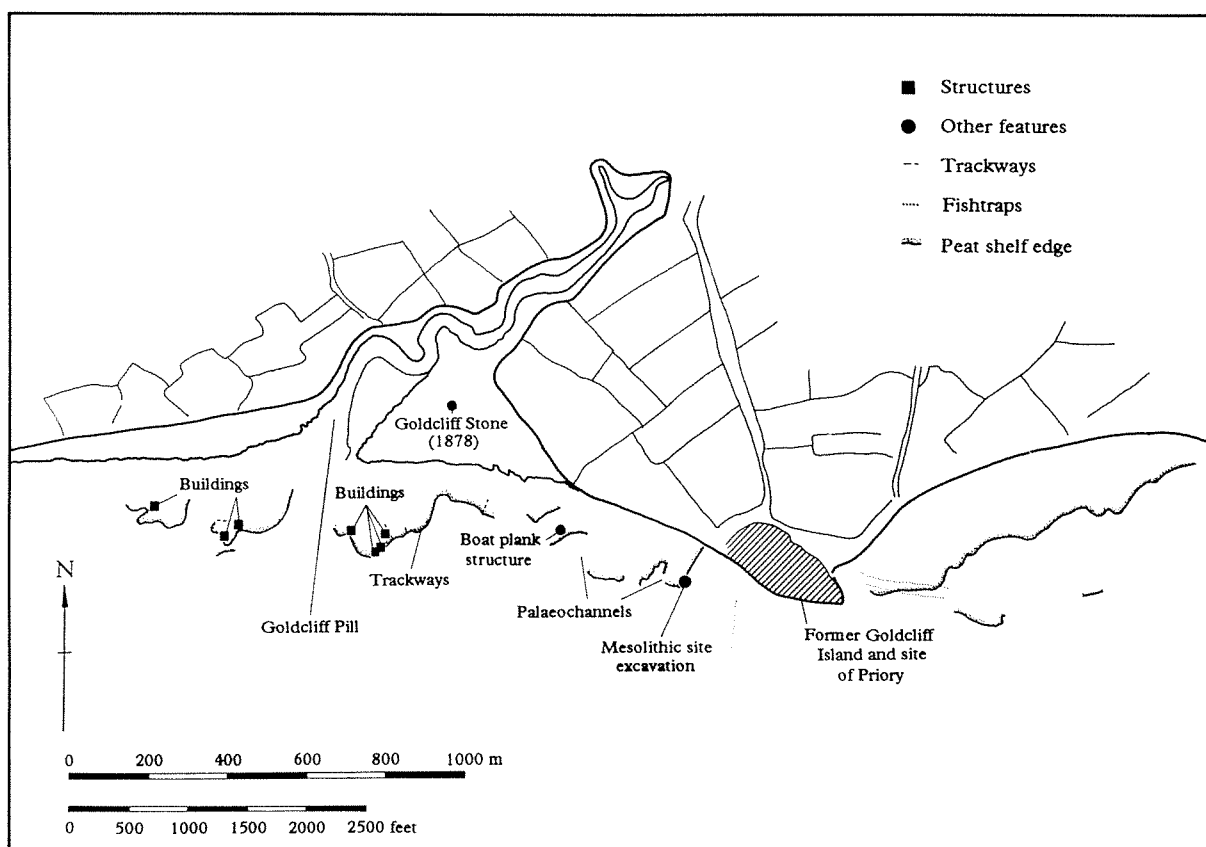


Fig 7C Intertidal survey at Goldcliff (reproduced by permission of Martin Bell).

record, with increased intensity from c 3500 bp; the evidence from this sequence stops at c 3100 bp. However, the longer Vurlong Reen sequence indicates that from c 4000 bp onwards (late Neolithic), woodland gradually declined, though there was a short-lived forest regeneration between c 3050 and 2700 bp (later Bronze Age).

Once forest cover is cleared, and bare soil is exposed, erosion becomes a problem as upland soils are washed downslope. Such deposits are found close to the fen-edge as layers of colluvium, intercalated with estuarine sediments. At Stoop Hill in Caldicot, one phase of pronounced colluviation was associated with Neolithic/Bronze Age flints and a sherd of pottery (Parkhouse & Lawler 1990, 35).

The Iron Age marine transgression: the 'upper' Wentlooge alluvium

As described above, towards the end of the Bronze Age (from c 3200 bp) a substantial marine transgression started to flood the Levels (Fig 6). This was a gradual process and in places peat continued to form as other areas were flooded. Dates of inundation are as follows: Goldcliff East c 3100±70 bp; Llanwern c 2600±110 bp; Vurlong Reen c 2510±60; Goldcliff c 2580±70 bp; Magor Pill c 2430±70 bp; Rumney Great Wharf c 2180±50 bp (see above). At the same time, a major marine transgression

flooded much of the Somerset Levels, reaching its maximum extent at c 2550±50 (Q-2459) (Housley 1988, 74, 79).

Eventually, virtually the whole of the Gwent Levels were inundated, except some of the lowest-lying back-fen areas. The greenish/grey/blue slightly silty clay of the 'upper' Wentlooge Formation is similar to the 'lower' Wentlooge alluvium, and though the 'upper' Wentlooge was less saline (Parkhouse & Lawler 1990, 16, 31–4), environmental analysis has confirmed that it was deposited under marine conditions (eg Rumney Great Wharf: Allen 1987, 163; Magor/Coldharbour Pills: Simon Haslett pers comm; Locke 1970–1, 8). Towards the coast, where tidal inundation would have been most frequent, the landscape was probably one of mudflats; further inland, saltmarshes would have dominated, with areas of reed swamp in areas adjacent to the fen-edge.

Human activity in the Iron Age saltmarsh

Not surprisingly, there is less evidence for occupation on the Levels during the marine transgression. However, a little to the west of the Late Bronze Age settlement at Chapel Tump, a trackway consisting of woven hurdles has been dated to 2400±70 bp (CAR-960) (Whittle 1989, 21). It appears to have crossed a remnant of the formerly more extensive palaeochannel.

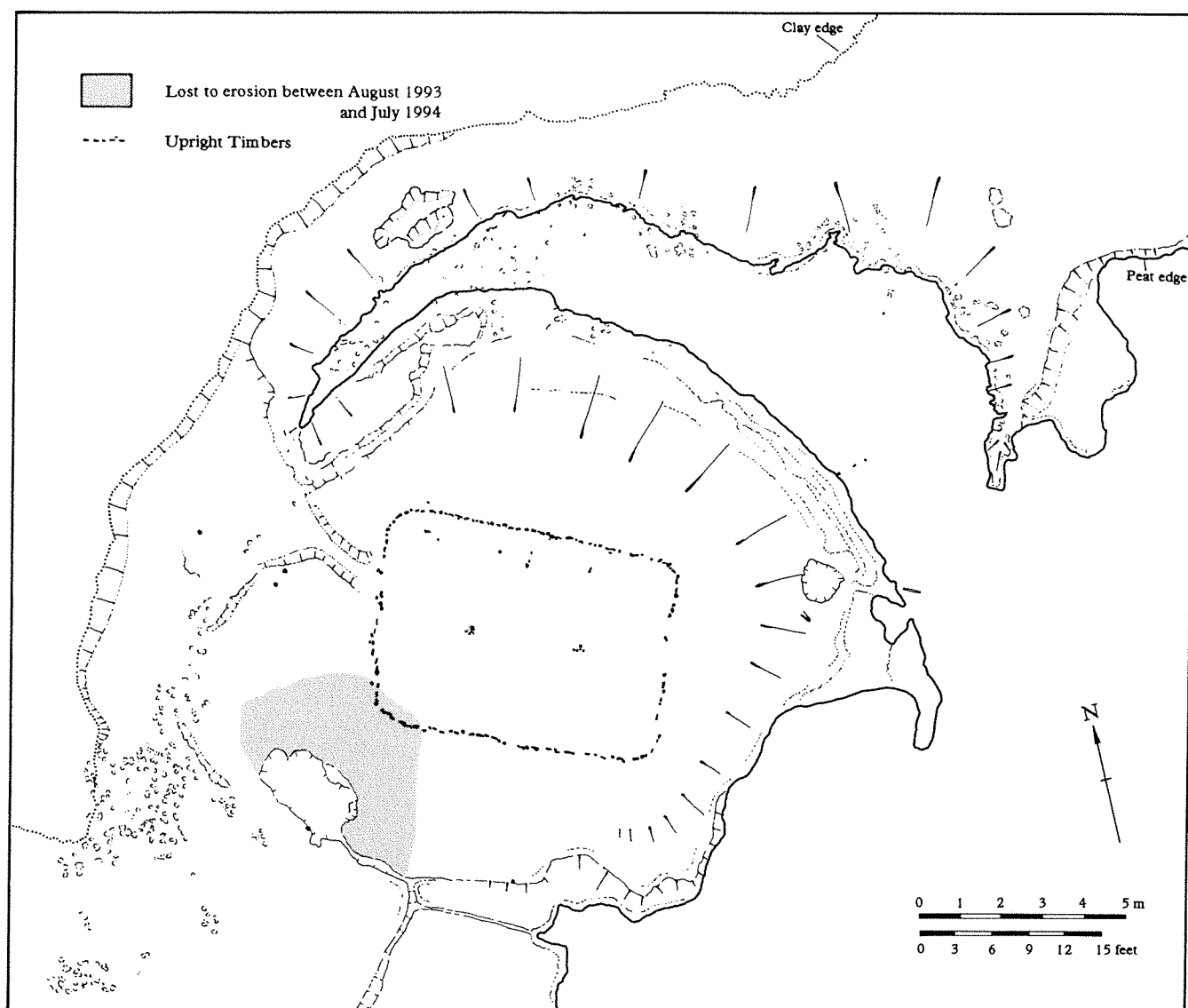


Fig 7D Building 6, Goldcliff (reproduced by permission of Martin Bell).

The major Iron Age site lies to the west of Goldcliff Point (Plate 11 and front cover; Bell 1993; 1994). Here, the Bronze Age raised bog was inundated around $c\ 2580 \pm 70$ bp (CAR-1438), but peat growth resumed by $c\ 2270 \pm 70$ bp (CAR-1351). Careful survey and excavation has revealed seven well preserved timber buildings associated with this uppermost peat (Fig 7C). The structures often lie on raised peat hummocks, surrounded by slight palaeochannels the surface of which contain the impressions of hundreds of cattle hoof-prints. Some of the buildings are associated with brushwood trackways, of which at least twelve are known.

The buildings are dated to $c\ 2200$ – 2100 bp (Bell 1993, table 2) and typically measure $c\ 7$ by 5 m, with rounded corners and entrances mid-way along the shortest sides (Bell 1991, 13–15; 1992, 15; 1993, 90–4). Some of the walls (eg Building 6 Fig 7D)

were constructed of roundwood verticals every $c\ 0.6$ m, with the intervening areas filled with vertical split timbers, all sharpened with blows from an iron axe, and the roof supported by two axial posts. Building 1, by contrast, had wattle walls. In three examples even the floors survive, made out of pieces of roughly cut roundwood placed corduroy-fashion diagonally across the interior. In Building 1, this roundwood was overlain by a well-defined layer of reeds, running along the long axis of the building; this may represent deliberately laid flooring or post-occupation reed growth. The timber used was predominantly alder, but also included oak, birch, elm, maple, and willow (Johnson 1993). Several of the timbers show signs of having been replaced, which along with their fairly substantial nature, suggests a life of at least several years.

Excavations of several buildings and trenches

across their surrounding palaeochannels have produced very few artefacts apart from a scatter of bones. During 1993 part of a wooden container and two withy ties were recovered. In 1994 a partly articulated cattle skeleton was discovered in one of the palaeochannels.

The Iron Age landscape at Goldcliff was varied. West of Goldcliff Pill, a series of rectangular buildings lay on the surface of the raised bog (Bell 1993, 97). Further east, between Goldcliff Point and Goldcliff Pill, another group of buildings appears to have been built in areas of fen woodland, though to the east this gave way to a reed swamp (Bell 1993, 97–9). In order to cross these wetter areas, a network of trackways was constructed. During the period of occupation there were occasional marine floods. This is best demonstrated at Buildings 1 and 2. To the north of these structures, thin layers (1–2 mm) of clay were identified in the peat; two of these overlay wood chips laid down to consolidate the entrance to Building 1, but timbers laid for the threshold to Building 2 lay within one of these clay bands (Bell 1991, 15–16). Eventually the whole site was inundated and alluvium of the ‘upper’ Wentlooge Formation sealed the landscape once again.

Such rectangular buildings are unique in the British Middle Iron Age, and are not restricted to Goldcliff; similar structures have been noted by Derek Upton in the intertidal zone to the south of Redwick. Parallels for these buildings are also known from the continent (Bell 1991, 16).

The Middle Iron Age landscape at Goldcliff was subsequently flooded and sealed by alluvium, marking a return to saltmarsh conditions. However, even then there was some human activity, notably beside a substantial tidal river at Magor Pill (Allen & Rippon 1994; Whittle 1989, 217–21). A scatter of

unstratified material has been recorded in the intertidal zone and excavation of a palaeochannel produced several sherds, some burnt stone and animal bones. Presumably, the occupation from which this material was derived lay on alluvium deposited by the marine transgression that overwhelmed the Bronze Age peat bog; however, this has been lost to erosion. A date around the 1st century BC has been ascribed to the pottery, well after the height of the transgression.

Notes

1. Anderson 1968; Anderson & Blundell 1965; Locke 1970–1; Godwin & Willis 1964, 128; Parkhouse & Parry 1990, Appendix 1; Williams 1968.
2. Bell 1992; 1993; 1994; Dingwall & Ferris 1993; Nayling 1991; 1992; 1993; Parkhouse & Lawler 1990; Parkhouse & Parry 1990; Parry 1990.
3. Aldhouse-Green *et al* 1992; Allen 1987; Allen & Rippon 1994; Bell 1992; 1993; 1994; Fulford *et al* 1994; Godbold & Turner 1992; 1993; Green 1989; Locke 1970–1, 8; Nayling 1991; Smith & Morgan 1989; Whittle 1989.
4. Chapel Tump 1 and Coldharbour Pill: Locke 1970–1; Whittle 1989. Goldcliff Pill: Bell 1991. Goldcliff East: Smith & Morgan 1989, 146. Rumney: Parkhouse & Parry 1990, Fig. 2; John Allen pers comm. Uskmouth: Aldhouse-Green *et al* 1992. Barland's Farm: Lawler & Nayling 1993.
5. Eg Barland's Farm: Lawler & Nayling 1993, 109. The Second Severn Crossing evaluation: Parkhouse & Lawler 1990. Llanwern: Godwin & Willis 1964. Bishton & Whitson: Locke 1970–1, 4–5.

3 From the Roman period to the Dark Ages: initial reclamation and the failure of sea defences

It was during the Roman period that the first efforts were made to drain the Gwent Levels. Ever since the discovery of an inscription at Goldcliff in the 19th century, antiquaries had speculated over a Roman origin for the present sea-walls. However, it was only in the 1980s that the nature of the Roman landscape started to be understood. This chapter tells how the possibility of a Roman drainage system on Wentlooge was first recognized, and then firmly dated. The evidence for Roman occupation on Caldicot is reviewed, including that along the fen-edge. A period of post-Roman flooding which buried large areas under alluvium is then considered, along with the evidence of Dark Age charters that suggest that the Levels remained a natural wetland landscape.

The Wentlooge landscape

Initial recognition of a Roman landscape

The present pattern of field boundaries on the Wentlooge Level can be divided into three broad types; the south west (Rumney) and north east (St Brides) areas have small irregular shaped fields, while in the central area (Peterstone) the landscape is one of long, narrow, rectilinear fields (Fig 8). Such a pattern is unique on all the Severn Estuary wetlands (Rippon 1993a; forthcoming a).

At Rumney Great Wharf, south east of Cardiff, part of this field system can be seen cut into the intertidal peat shelf (Fig 9), indicating a major episode of coastal retreat and the repositioning of the sea-wall across the previously reclaimed landscape (Allen & Fulford 1986; Fulford *et al* 1994). An extensive strew of Romano-British cultural debris has been recorded in the intertidal zone and recent saltmarsh deposits (Boon 1975). The date of the pottery ranged from the late Iron Age to the 3rd or 4th century AD, while the latest date among several coins recovered was of *c* AD 330 (Boon 1980, 26).

A later survey of the adjacent mud cliff revealed Romano-British pottery in context; a ditch observed in cross-section in the mud cliff had been cut into, and was sealed by, blue-grey alluvial sediments of the 'upper' Wentlooge Formation (Allen & Fulford 1986, figs 5 and 6, B1). This ditch yielded un-abraded Roman pottery, burnt clay, worked stone,

broken/fire fractured beach cobbles, iron ore, coal, and animal bones. Other Romano-British pottery, animal bone, and fired clay was recovered from the adjacent mud cliff, particularly from a buried soil that seals the ditch. This buried soil was overlain by sediment of the Rumney Formation, deposited after the sea-wall had been moved back to its present position, leaving part of the formerly reclaimed area, the 'Wentlooge Surface', open to estuarine inundation (Fig 7B; Allen 1987, 162–7).

In reviewing the stratigraphic sequence it was argued that the buried soil seen in the sea-cliff equated with the present ground surface landward of the sea-wall (Fig 7B). This implied that land behind the sea-wall had not received significant alluviation since the Roman period. Feature B1 at the Rumney Great Wharf site appeared to run at right angles to those ditches cut into the peat shelf (which were aligned with reens behind the sea bank), and Allen and Fulford argued that it formed part of the same ditched field system. As the fill of B1 was of Roman date, so, by extrapolation, was the field system behind the sea-wall. Thus, on the basis of these observations it was postulated that the 'planned' landscape of the Wentlooge Level was laid out in the Roman period, when the former salt-marsh must have been protected by a sea bank from marine inundation and drained by a series of ditches. However, ditch B1 and other features observed in the mud cliff containing Roman material could not be seen in plan because, unlike the ditches sharing the same alignment as those behind the sea bank, they were not sufficiently deep to penetrate the peat shelf. As a result, their relationship to the rest of the ditch system actually remained unresolved.

A counter argument

Later fieldwork landward of the sea-wall appeared to cast some doubt over the Roman date of the Wentlooge Surface and the buried soil recorded in the mud cliff. Parkhouse and Parry (1989, 38; 1990, 75–80) argued on the basis of a single, experimental, archaeomagnetic column that the Roman ground surface was *c* 1.5 m below the Wentlooge Surface behind the sea-wall, at roughly 4.6 m OD (1990, Test Pit 108, figs 16 and 26). There were thin layers of peat just above and below the postulated

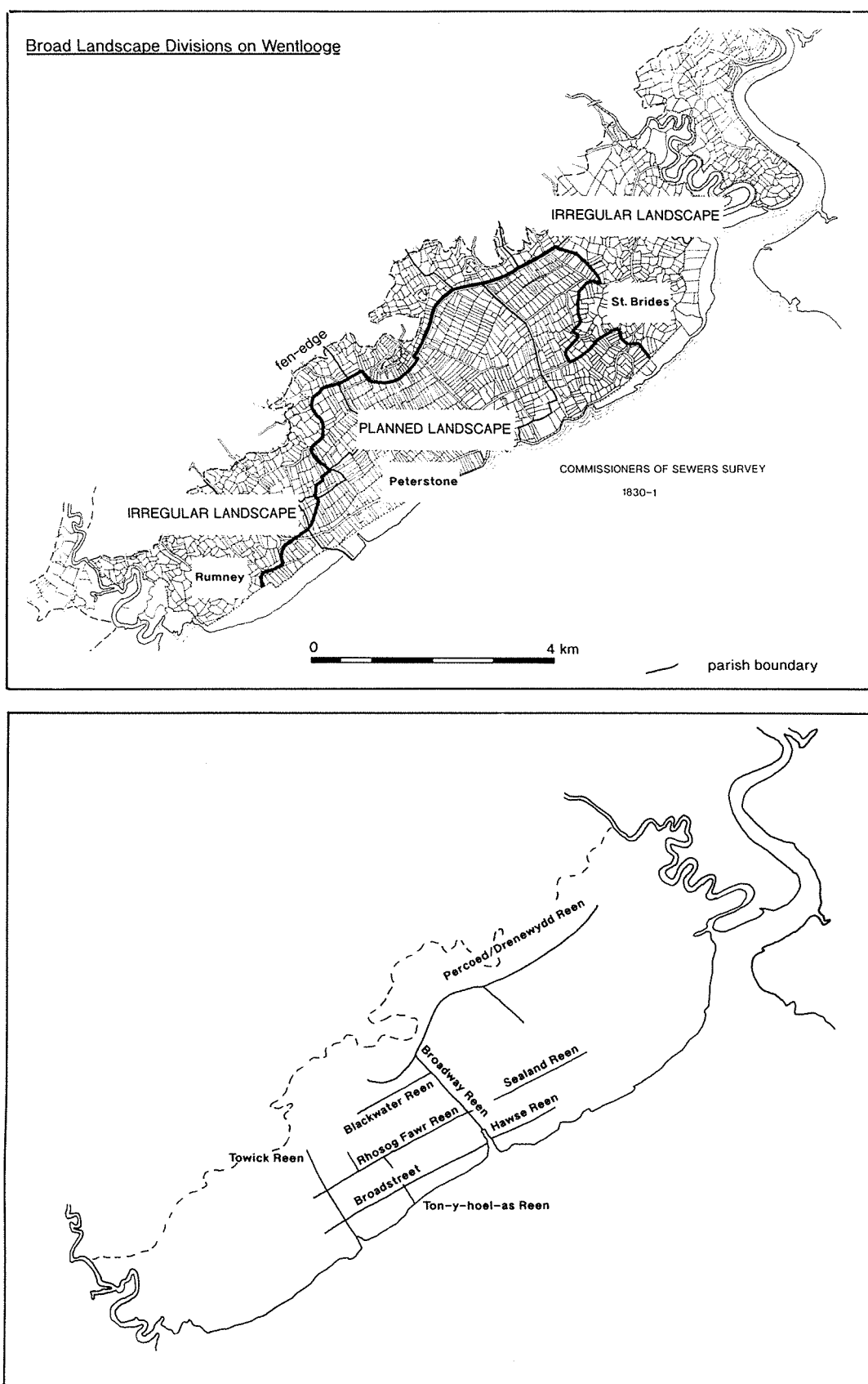


Fig 8 Wentlooge Level: broad division of field-boundary pattern into 'irregular' and 'planned'. The southern part of the 'planned' landscape, around Peterstone, is of Roman date. (Field boundaries based on maps of 1830, GwRO D.1365/12).

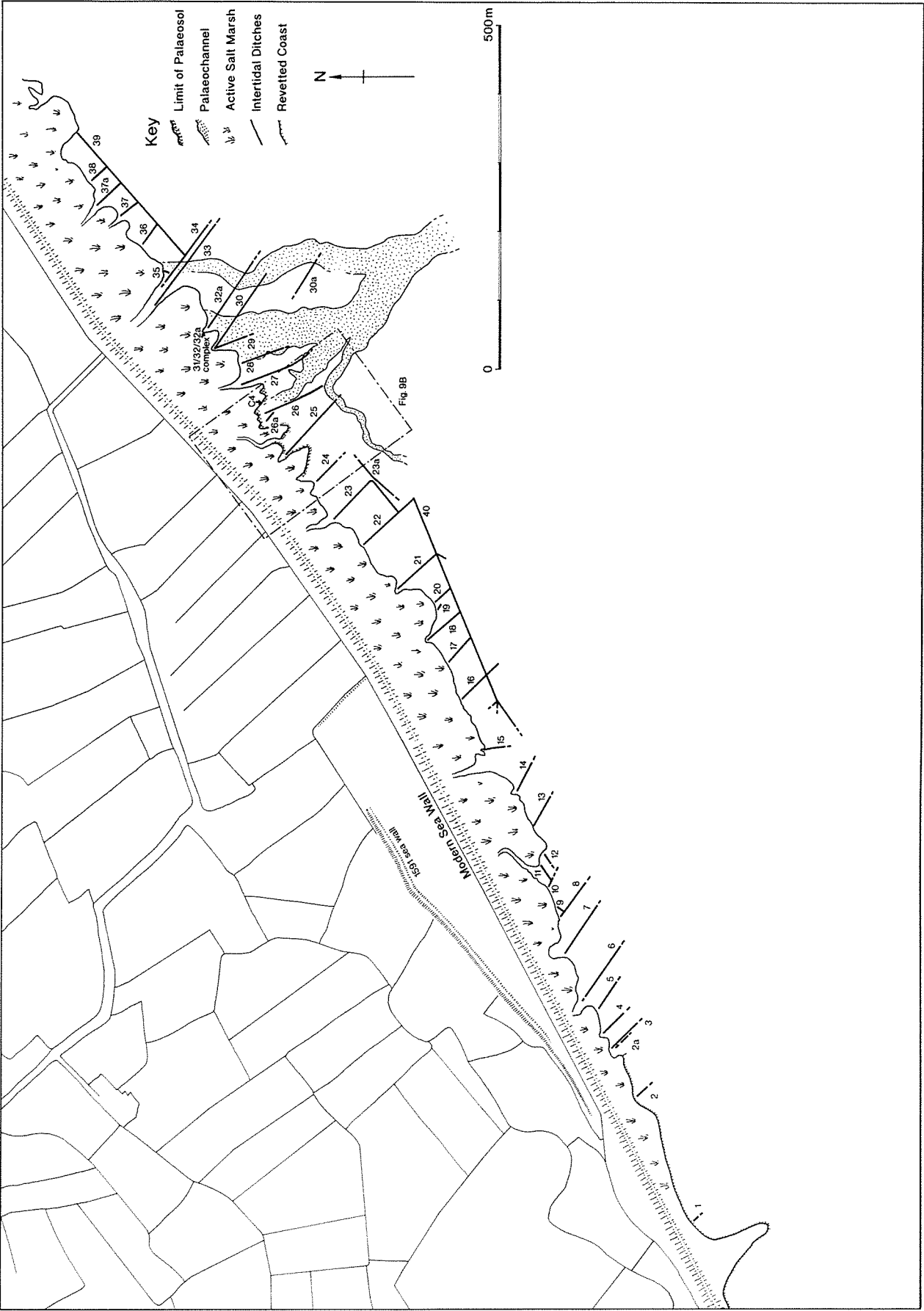


Fig 9A Runney Great Wharf, Wentlooge: ditches and palaeochannel in the intertidal zone (reproduced from Fulford et al 1994).

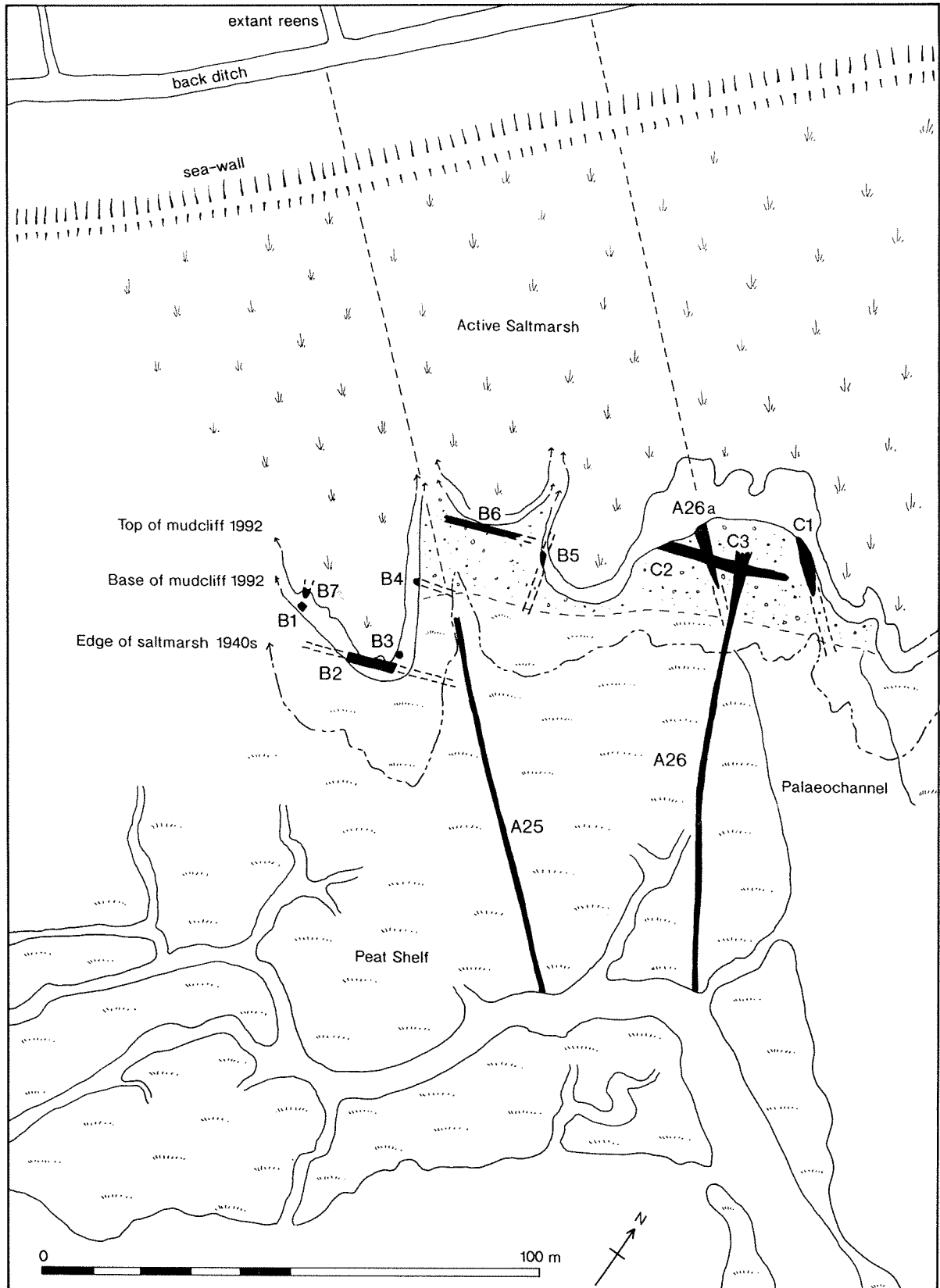


Fig 9B Rumney Great Wharf, Wentlooge: major features surveyed and excavated west of the palaeochannel, including two (A25 and A26) which line up with extant reens behind the sea-wall (from Fulford et al 1994, fig 3). Ditch C1, which produced abundant Roman material, is parallel with this system (from Fulford et al 1994, fig 4 with additions).

depth equating to c 2000 BP, but neither radiocarbon dates nor artefacts were obtained to confirm or refute the archaeomagnetic date. As a result of their placing the Roman ground surface at such a great depth, Parkhouse and Parry (1990, 78) postulated a major phase of post-Roman flooding, during which it would have been impossible to have maintained any sort of field system. Hence, they argued, the present 'planned' landscape and ditches in the intertidal zone must be post-Roman, and the stratified material from ditch B1 (despite its demonstrably fresh condition) was regarded by them as redeposited and thus residual.

Survey and excavation in the intertidal zone

Thus, before the 1992 fieldwork, there was still not conclusive evidence of a Roman date for the present pattern of long, rectangular fields on Wentlooge. There were certain key issues that needed to be addressed by fresh fieldwork: was the Roman material recovered from ditches and other features exposed in the mud cliff contemporary or residual; were the Roman ditches in the mud cliff on the same alignment as those cut into the peat shelf and behind the sea-wall; was the buried soil that of a saltmarsh or a reclaimed land surface? It was also desirable to obtain a larger assemblage of material culture as well as environmental data to determine the economic status of the site, and to clarify chronology.

Continued erosion of the mud cliff was revealing more ditches with Romano-British material as well as other indications of settlement, and this prompted a programme of survey and excavation in the spring of 1992 (Fulford *et al* 1994). This unusual excavation in the intertidal zone not only provided dating evidence for two field systems, but also a range of evidence for the Roman environment.

Areas of superficial beach sand were cleared and the mud cliff cleaned to reveal traces of two field systems. The earliest comprised features that on the whole were not cut deep enough to appear under the beach, but were exposed in the mud cliff (Fig 9B: B2, B4, B5, and C2). Observations by the John Allen and the author in March 1995 revealed another ditch (B6) on the same orientation as B2, B4, and C2, exposed through continued erosion of the mud cliff (see fig 9B). It lies c 13 m north of B4, and contained a few fragments of pottery, bone and stone. Superimposed upon this initial field system was another, comprising the pattern of long narrow fields cut into the peat shelf and that forms a continuation of the field system inland of the sea-wall (Figs 9A; 9B: A25, A26/A26a, and C1). In 1994, the author noted that a further ditch (B7), probably parallel to A25, is emerging c 30 m to the west, as the mud cliff erodes back. It lies just north west of pit B1 (see below). All these features were cleaned, planned, and sectioned, producing Roman material.

Two features were of particular importance; a well yielded an important assemblage of waterlogged plant remains (Fig 9B; B3), while a ditch (Fig 9B: C1) contained a huge assemblage of material culture, including several near-complete pots that cannot have been residual or redeposited. A substantial pit was also partly recorded (B1), but contained very little material. Occasional observations by the author in 1994, as the mud cliff eroded back, indicate that B1 was rectangular in plan (c 0.5 by 1.2 m), and contained a complete cow skull along with a worked timber c 0.1 m square. A smaller pit, c 0.4 m in diameter lay c 8 m to the east, c 7 m west of ditch B2.

The study of the environmental evidence and the animal bones allows us to reconstruct a fuller picture of the economy of settlements on the Wentlooge Level than was previously possible (the following discussion is based upon Fulford *et al* 1994, 206–11). The evidence of waterlogged seeds from the well confirms an absence of a full salt-marsh vegetation, though it does suggest an environment of damp pasture, possibly with some tidal influence, perhaps periodic inundation by high tides or storms. The seeds of weeds associated with spring-sown arable are present, but are also typical of nitrogen-rich disturbed ground to be expected around a settlement. The only potential crop remain was a single seed of flax, which is also tolerant of slightly saline conditions. The evidence of the pollen from one of the ditches (B4) suggests that cereal cultivation was more important than the seeds from the well would indicate. However, while it is difficult to define the catchment area of the pollen, it does point to an open and predominantly pastoral landscape with some cereals and weeds associated with arable, an environment consistent with the way a newly-reclaimed wetland might have been exploited (Fulford *et al* 1994, 207).

The animal bones are also informative. The presence of both lambs and calves is strongly indicative of sheep and cattle husbandry, while the raising of horse is supported by the high proportion of their bone. Indeed, it has been speculated that the provision of horses for the Roman army was a powerful reason behind the reclamation of the Wentlooge Level (Allen & Fulford 1986, 114–16).

Although the 1992 excavation provided no context for the iron-making slag which is so abundant on the beach, that it is restricted to this particular site argues for a Roman date for this activity. There is no easy way of estimating the scale of iron-making at Rumney, though the total quantities of slag can be estimated in tonnes, rather than tens of tonnes (Fulford *et al* 1994, 207).

The success of this diverse economic regime at Rumney can, perhaps, be seen in the evidence of the pottery, the most abundant artefact from the site (Fulford *et al* 1994, 208). It is difficult to explain the overwhelming predominance of Dorset BB1 unless it was imported directly across the estuary from North Somerset. Had the BB1 arrived

at Rumney from an intermediate source on the Welsh side, perhaps via the fort at Cardiff, far more local ware would have been mixed in with the assemblage. Amongst the limited amount of local ware the decorated sherds compare closely with material found on settlements in South East Glamorgan. Along with probable products from the Llanedeyrn kilns north of Cardiff, this suggests that the emphasis of the limited links that Rumney did have with South Wales lay westwards (towards the river Rhymney, Cardiff, and southern Glamorgan), rather than eastwards (towards the river Usk, Caldicot, and Caerwent). Only the possibility of an origin for the iron ore in the Forest of Dean rather than the south eastern margin of the South Wales coalfield (Allen & Fulford 1986, 101) argues for links up the estuary as well as across it to North Somerset.

Despite the economic diversity of the settlement and its local and regional links, there is little evidence of wealth. The absence of building materials either stratified in the ditches or loose on the foreshore (eg mortared stone, brick, and tile), combined with the presence of quantities of burnt clay or daub, suggests timber-framed buildings with wattle and daub infill and thatched roofs. Apart from pottery, the site has yielded very few other artefacts such as personal ornaments or tools.

It would, therefore, seem that Wentlooge was reclaimed during the Roman period. The construction of a sea-wall need not have been on the same scale as that of today, as the Roman sea level was c 1.6–1.7 m lower (Allen & Rae 1988). However, the laying out and digging of the drainage system and construction of the necessary tidal gouts was a major feat of planning and engineering, and may well have been the responsibility of the army. There were two forts close to the Levels: a legionary base at Caerleon by the Usk (Boon 1987) and a smaller fortress at Cardiff, beside the Taff (Webster 1984, 305). Legionary fortresses generally had an area of land around them reserved for the use of legionaries, the *prata* or *territorium*, one of the prime functions of which was to provide pasture for animals, including horses (Mason 1988, 163). The reclaimed Levels would have served this purpose very well.

The extent of the survival of the Roman landscape

It was originally postulated that the whole of the Wentlooge landscape was of Roman origin, including the areas of 'irregular' landscape to the south west and north east (Fig 8; Allen 1988, 137). It was argued that here the Roman engineers simply exploited the pre-existing pattern of natural creeks in order to create their fields, whereas inland, the creeks disappeared and a wholly artificial drainage system had to be created. However, a detailed examination of the field boundary pattern and

variations in relief (Fig 3A) suggests that these areas with an 'irregular' landscape were flooded in the post-Roman period, and that the Roman landscape appears only to survive in the central part of Wentlooge.

In terms of field boundary morphology, the 'irregular' landscape is identical to other areas known to have been reclaimed after post-Roman inundation of the Severn Estuary Levels (eg Rippon 1994a, fig 12.3). This need not rule out a Roman date in Wentlooge since the same method of reclamation, resulting in the same type of landscape, could be used in different periods. However, it does suggest that the assumption of a Roman date requires further examination.

In the intertidal zone south of Newton, the rectilinear pattern of drainage ditches extends much further west than the landscape of similar fields inside the sea-wall. Several intertidal ditches are aligned with extant drains behind the sea-wall, but most do not, even when the pattern of major grips is taken into consideration. Even those ditches that do line up do not extend very far inland.

The ground surface in the area of 'irregular' landscape is also very elevated, lying well above modern MHWST (Fig 10). Nowhere else in the Estuary are known Roman ground surfaces above present MHWST, suggesting that there must have been some post-Roman deposition of alluvium in the areas of 'irregular' landscape on Wentlooge. Unfortunately there is no detailed survey of the relief in this area, though Parkhouse and Parry (1990) calculated the ground surface heights at 21 locations between Maerdy and Newton Farms. This shows that around 100 m from the wall, the ground surface is 5.4 m OD (nine test pits); this is broadly the same as the palaeosol seen in the intertidal mud cliff. At 200 m north of the sea-wall this rises to 5.8 m (average of seven test pits), and at 400 m the ground is around 5.9 m OD (average of five test pits). This trend in the relief suggests that there was a source of flooding from the north west, presumably the river Rhymney.

The Roman landscape appears to consist of a number of rectangular and trapezoidal blocks of long narrow fields. Several axial elements can be identified, of which three are parallel to the shore, with a WSW/ENE orientation. The first is Broadstreet Common that, though in its present form seems to be a medieval droveway, is unusually long and, most critically, aligns itself with a green lane to the east of Peterstone church which runs as far as Peterstone Gout. This in turn is aligned with Hawse Reen on the opposite side of the Gout. Altogether, we have a remarkably straight alignment of c 4.3 km (Fig 34).

Another axial boundary lies exactly parallel to Broadstreet Common and c 600 m to the north, and includes part of Great Hassocks, Rhosog Fawr, and Sealand Reens; it runs for c 5 km. To the west the alignment is slightly disjointed, but it must be

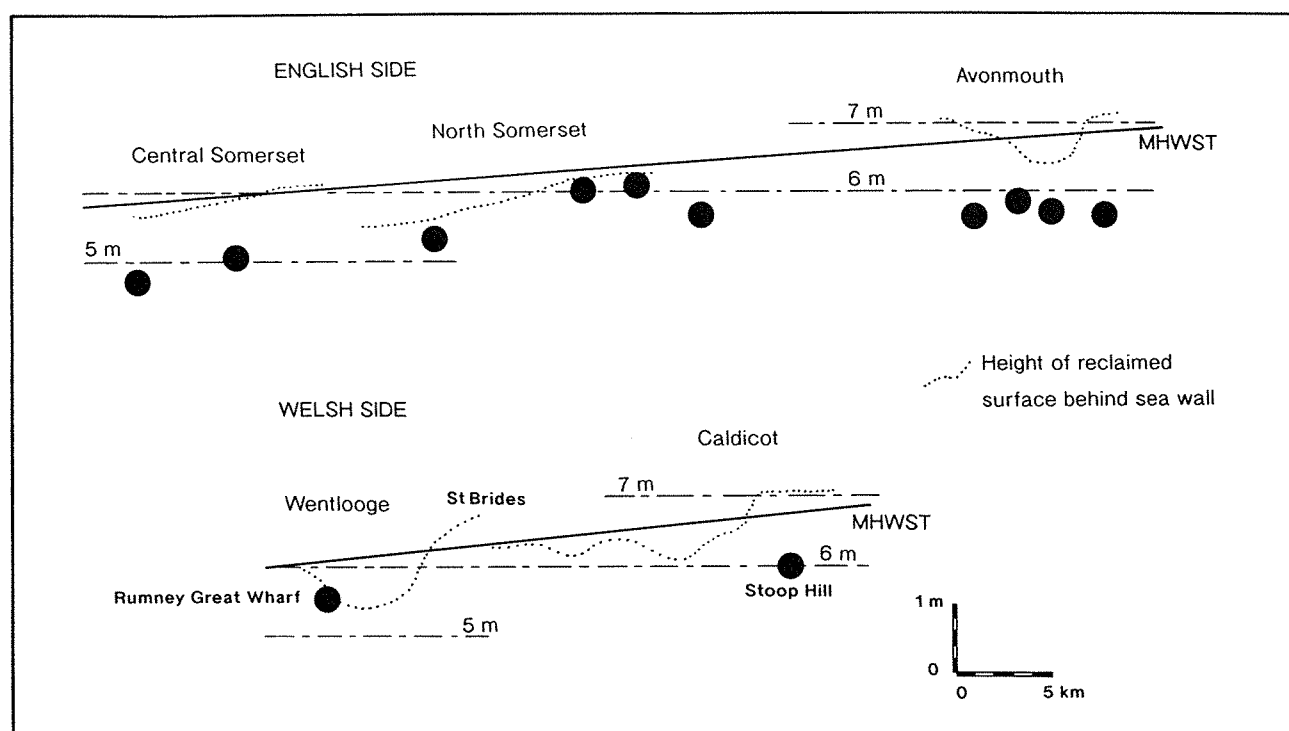


Fig 10 Roman occupation horizons around the Severn Estuary in relation to modern MHWST (which increases up the Estuary). Note how the present ground surface in St Brides (Wentlooge) is above modern MHWST, unlike all other known Roman horizons.

remembered that these water-filled reens require cleaning at least every few decades and after c 1700 years may have shifted off line slightly. Besides, they may never have been completely straight in the first place. The third shore parallel axial boundary, Blackwater Reen, is close to the fen-edge and lies c1 km to the north of the second.

There are four possible axial boundaries perpendicular to the coast. These are Towick Reen, Ton-y-hoel-as Lane, Broadway Reen, and the northern part of Hawse Lane. The latter is included purely by reason of its orientation; the fields between it and Broadway Reen are clearly not Roman, yet are very different to the medieval recolonization landscapes of St Brides (see Chapter 5). They have all the hallmarks of being late/post-medieval in date. If the Roman landscape was buried in this area, it seems strange that Hawse Lane should have survived. It is possible that in the Roman period this area saw rudimentary enclosure by the axial roads, but was otherwise left as an area of open moor.

Though other areas have superficially similar patterns of long narrow fields, Peterstone is unique in the extent to which they possess an overall coherence. For example, a block of regular strip-based fields lies around Maerdy in St Brides, but these strips are c 80–90 m long, whereas in Peterstone they can be up to 600 m long. Fields in the Peterstone area have widths based on a unit of c 16 and 20–21 m; there appears to be no regular width in the Maerdy area.

The landscape on Wentlooge clearly illustrates a degree of deliberate planning. Roman planned landscapes are known elsewhere in Europe, often with a characteristic grid pattern known as centuriation (eg Dilke 1971). The Wentlooge landscape is clearly not centuriated and indeed, there are no convincing examples of centuriation in Britain (but see Rippon 1991a, fig 6).

A careful attempt was made to try to establish whether there were any consistent units of measurement used in the Roman landscape, bearing in mind the c 1700 years of shifting boundaries, mentioned above. Allen and Fulford (1986, 113) found that field areas clustered around 10,000 m², 15,000 m², 20,000 m², and 25,000 m². These are very similar to 4 (10,080 m²), 6 (15,120 m²), 8 (20,160 m²), and 10 (25,200 m²) Roman *iugera*.

The analysis carried out here concentrated on field widths and lengths. Fields with one side represented by a road were ignored because of the possibility of recent road widening. The current 1:2500 series of maps was used for accuracy, though the loss of boundaries in the few decades before their date of survey means that the sample of original field widths is rather small. The very distinct block of fields around Maerdy (in St Brides) contained fields with widths ranging from 17 to 44 m; there was no clustering when plotted on a graph and no obvious unit of measurement used. By contrast, in central Peterstone, while widths varied from 9 to 59 m, there were distinct clusters at 16 and 20–21 m. The major Roman field unit of plan-

ning was the *actus* (35.5 m), used for example in measuring out turbaries (peat cuttings) in Fenland (Hall & Coles 1994, 118). Another planning unit used in Britain was the *pes monetalis*, equivalent to 0.295 m (Crummy 1984, 5). There is no conclusive proof that either of these was used in Wentlooge.

Another major feature in the modern landscape that may date back to the Roman period is Percoed/Drenwydd Reen. This remarkable drain skirts around the fen-edge from the western side of Marshfield to the edge of Tredegar Park in Duffryn. It must have acted as a catchwater drain, collecting freshwater that ran off the uplands and channelling it to sea via Broadwater Reen and Peterstone Gout. A parallel with the Car Dike on the Lincolnshire fens is possible (Simmons 1979).

There is no direct dating evidence, though several characteristics suggest that Percoed/Drenwydd Reen might be Roman. Firstly, it clearly pre-dates the surrounding pattern of fields; unfortunately, the fields are not closely dated, though to the south of Marshfield they may be Roman. Secondly, the reen forms the boundary of, and pre-dates the final crystallization of, five parishes: Bassaleg, Coedkernew, Marshfield, Peterstone, and St Brides. The date when parish boundaries became established in this area is unknown, though they are generally thought to date to around the 12th century (see Chapter 5). The number of manors through whose lands the Percoed/Drenwydd Reen cuts is even greater (see Chapter 5); it seems unlikely that so many lords and communities would be able to co-operate on such an undertaking, and a period when there was a single authority seems more likely.

The Caldicot Level

The Goldcliff Stone

One of the earliest and most important Roman finds from the Levels is the Goldcliff Stone (*RIB* No 395) found in 1878, 'washed from the lower part of a bank on the shore of the Bristol Channel at Goldcliff' (Fig 12; Morgan 1882). It actually appears to have been eroded out of the sea cliff 'bank' not the present sea-wall (Boon 1967, 125; Knight 1962, 34), but all too often it has been assumed that the stone refers to the present sea-wall (eg Nash-Williams 1951; but also see below). The stone, dating to the late 2nd or 3rd century, refers to 33 paces of work by legionaries on a linear feature and its shape indicates that it was designed to be set into an earthwork bank (Boon 1980, 28).

Boon (1967, 126; 1980, 28–9) and Wachter (1974, 376) argue that the linear feature referred to in the Goldcliff inscription may have marked the edge of the *territorium* of Caerleon (see above). By implication, this would be a north–south boundary not necessarily implying reclamation. As Boon (1980, 29) observes, 'To define the legionary *territorium* would have been necessary from the first, so that the earthwork will have had some predecessor [the

fort at Caerleon was founded around AD 75, at least a century before the date of the stone]; to improve it [the *territorium*] by drainage, or protect it from the overflow of waters, will have been the next step'. Thus, the Goldcliff Stone need not imply reclamation, but that it was felt necessary to define the *territorium* suggests that the land was of some value.

Settlements and tidal creeks on the Caldicot Level

Three main concentrations of Roman material are known on the Caldicot Level: at Magor Pill, around the mouth of the Usk, and around the bedrock outcrop at Goldcliff Point. The Magor Pill site is clearly extensive and of considerable complexity (Allen & Rippon 1994). Hundreds of sherds of pottery (1st century and later) including samian ware, fragments of a leather shoe, part of a wooden bowl, and fragments of heavy cast bronze sheet were found in 1950 in the intertidal zone (SMR 0445, 2530; NAR ST48 SW 6; Nash-Williams 1951). The scatter of material also contains large quantities of medieval/post-medieval pottery (Derek Upton pers comm; NM Acc 87.461). The Roman material appears to have been derived from stratified occupation now buried beneath a recent saltmarsh (Derek Upton pers comm); only medieval and later material was found *in situ*, in a silted up palaeochannel, during a recent survey (Allen & Rippon 1994).

Behind the sea-wall, Roman pottery was found in 1931 at the site of Magor Sewage Works (Boon 1967). In 1966, 1st to late 3rd century pottery and animal bones (cattle) were found 10 ft (3.1 m) below the surface (SMR 2346; Boon 1967; Locke 1970–1, 11; NAR ST48 NW 23). Published references to Roman burials from this site are wrong and result from an incorrect grid reference; the actual site is Magor Brewery on the fen-edge (see below).

Magor Pill is documented as a small port during the medieval period and there is no reason why it should not have served the same function during the Roman period. Traffic on the major Roman road from London to South Wales crossed the Severn from the port of *Abonae*, probably located just west of Bristol (Bennett 1985). The location of the port (or ports) on the Welsh side is not known, though Magor Pill must be a contender. It is interesting to note that a possible Roman road runs south from the Caerwent–Caerleon road towards the site, reflected in a remarkable alignment of roads and field boundaries starting just west of Penhow and running straight down to the edge of the Levels at Magor; it is directly in line with the Roman site at Magor Pill (Fig 11).

An important find of the Roman period from the Gwent Levels is a plank-built boat c 10 m long from Barlands Farm, Magor (Nayling *et al* 1994). This lay in a silted up palaeochannel, close to a structure

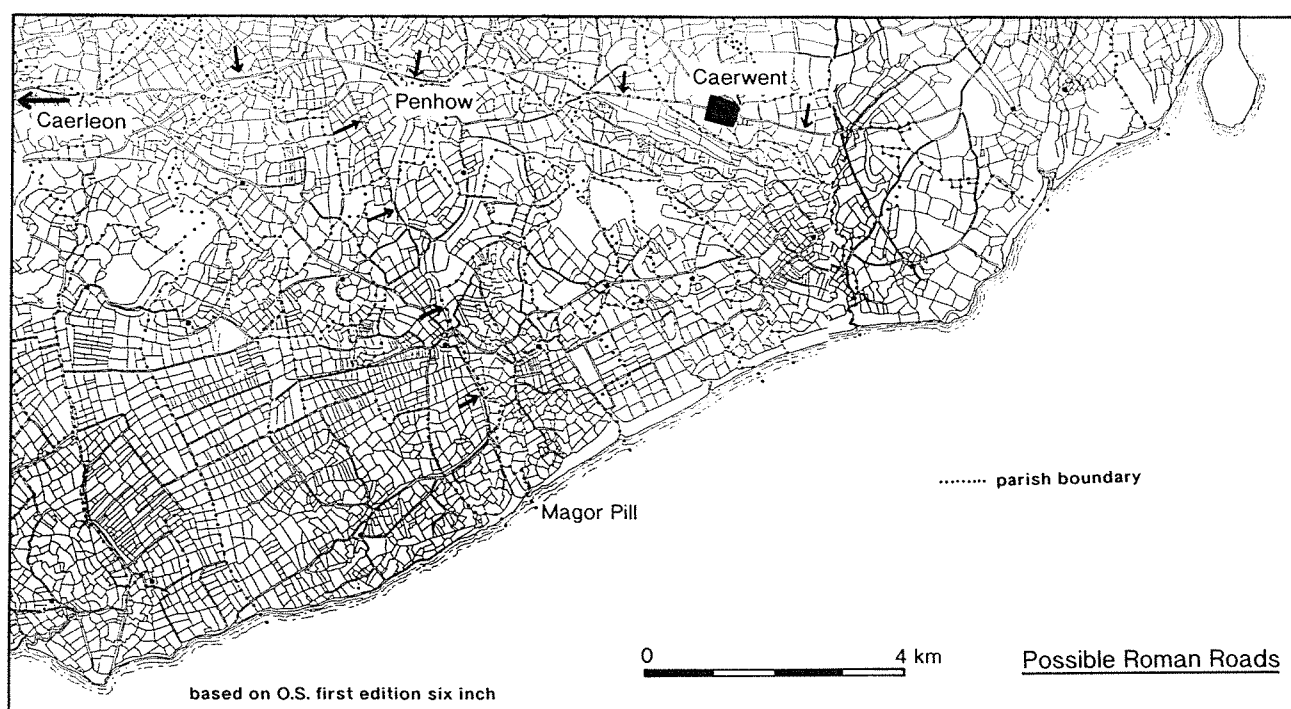


Fig 11 Possible Roman roads west of Caerwent and down to Magor Pill (field boundaries based on Ordnance Survey First Edition Six Inch maps).

of wood and stone *c* 5.2 m long, possibly a landing stage. Associated pottery dates to the mid to late 3rd century. A relict watercourse can be detected on air photographs in this area, though it cannot be traced to the coast. This channel might have been part of the substantial Magor Pill complex (see above), or part of another creek system, possibly related to a totally silted-up palaeochannel visible in the intertidal zone off Redwick (I would like to thank Derek Upton for showing me this site).

The second concentration of Roman material on the Caldicot Level is around Goldcliff Point (Plate 11 and front cover). Before 1994, a handful of unstratified sherds from various locations suggested the presence of occupation in the vicinity. Recording during the construction of a small lake has revealed a number of ditches, cut from a land surface buried under alluvium (Bell 1994, 136–42; pers comm). This is the first clear evidence from the Caldicot Level of Roman reclamation, though the possibility of a tidal creek system extending as far north as Barlands Farm suggests that the extent of reclamation around Goldcliff may have been quite limited.

The third concentration of Roman material from the Caldicot Level is around Uskmouth. At Nash, the spoil resulting from the digging of sludge pits was dumped to the south of the sewage works. Large amounts of Roman pottery and animal bone were found in two of these spoil heaps (SMR 3718 and 3936). The sherds dated from the mid 1st to early 4th century AD, though there was very little material dated to the mid 3rd century onwards (Jarvis & Webster 1991, 217). A grey ware jar was discovered in 1984 (NM Acc 84.54). Material col-

lected from two locations during the construction of the Uskmouth Power Station in 1958 and 1959, consisted of pottery, including samian ware, and animal bone (Barnett 1961); it was 4.27 m below the surface. The 1958 assemblage was dated from the late 2nd to early 4th century (Jarvis & Webster 1991, 218–19).

There are also intertidal strews of Roman material near Chapel Farm in Undy (NM Acc 31.39; 85.218) and to the west of Sudbrook Point, where finds include a complete jar (NM Acc 85.209). Several pottery sherds and coins have been recovered from the foreshore at Caldicot (SMR 0484, 4406, and 4407). On Wentlooge, intertidal strews of Roman material have been recorded off Rumney Great Wharf (see above), Peterstone Gout (Allen & Fulford 1987, fig 1), and Great Wharf in St Brides (NM Acc 61.1/1–46).

The coastal bias in the distribution of all these sites may be a genuine reflection of the pattern of Roman settlement, that is on the higher ground towards the coast, avoiding the low-lying back-fen. It is also at least partly a reflection of the opportunities for archaeological observations and modern industrial developments, which also concentrate in these areas.

Though there appears to have been a certain amount of post-Roman flooding and alluviation on the Caldicot Levels (see below), any upstanding earthworks may well have survived, protruding above the alluvium. There are several elements in the historic landscape which are clearly earlier than the rest and may date to the Roman period. The most interesting is to the south of Goldcliff

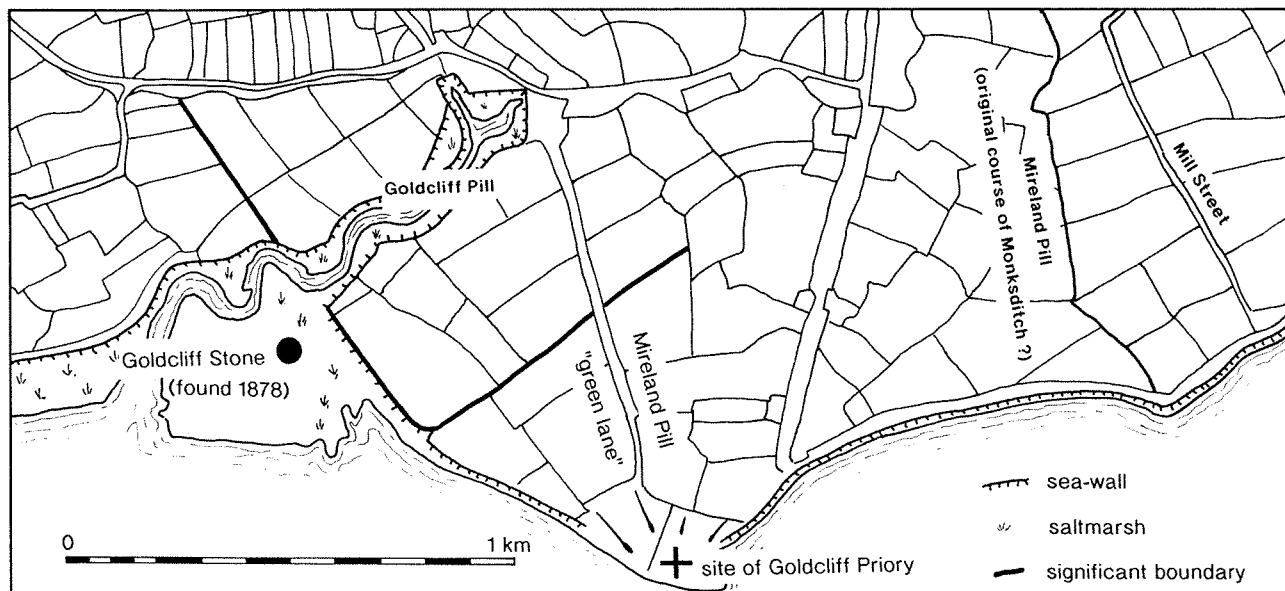


Fig 12 A curious feature pre-dating Goldcliff Pill and the Mireland Pill 'green lane', Caldicot Level (field boundaries based on Ordnance Survey First Edition Six Inch maps).

(Fig 12). A field boundary runs south east from the village as far as Goldcliff Pill. There is nothing in the field to distinguish this boundary from any other, but its exact line is then continued to the south of the Pill by the sea-wall. Another boundary is exactly perpendicular to this sea-wall, meeting it in a smooth curve. The Goldcliff Stone was found a few metres away.

Though this curious boundary is undated, it appears to pre-date the droveway north of Goldcliff Point (the "Mireland Pill 'green lane'"), which presumably existed when this was the site of a priory. The boundary also appears to pre-date the present Goldcliff Pill; this embanked pill may date to the late medieval period, when the whole sea-wall along this coast was set back (see Chapter 6).

Most of the pottery assemblages from the Levels cease by the mid 4th century. However, this is also seen on most other Roman settlements in South East Wales, where the production and importation of pottery appears to go into steep decline before the end of the Roman period (see Barnett *et al* 1990, 144; Robinson 1988, xxi; Vyner & Allen 1988, 118). Hence, the absence of late 4th century pottery cannot be used to argue that occupation on the Levels ceased altogether. However, the pottery assemblages from Nash and Magor Pill suggest that occupation declined during the late 3rd/early 4th century; this may simply be due to a slight shift in location, or increased flooding.

Fen-edge settlement (Fig 7A)

As might be expected, the fen-edge provided a major focus for settlement. At Thompson's Farm Quarry in Christchurch, Roman bronze objects and coins found in 1910 indicate a settlement on the

hillside just above Liswerry Common (Davies HM 1924). A stone coffin was recovered from the same area in 1939 and interpreted as Christian on the basis of its orientation and lack of grave goods; coffin nails recovered from the vicinity suggest further burials (SMR 0171; NM Acc 24. 274 A/5).

At the Magor Brewery site, a Roman tile fragment, an iron object, and scraps of pottery were found during building work in 1978 (Dowdell & Metcalf 1978; note wrong grid reference: see Maynard 1993, 6). Two inhumations were discovered, around 2 m below the surface, one, an adult male 25–30 years of age in a wooden coffin. As they were found in a service trench, proper excavation was not possible; the sections were cleaned but no grave cut was visible. One burial was radiocarbon dated to the 4th to 7th centuries AD (SMR 2346, 3597, 3979; NAR ST48 NW 32; Dowdell & Metcalf 1978; Maynard 1993). Roman bronze objects have been recorded from Magor village (SMR 3996).

Another major fen-edge settlement lay at Caldicot, where kilns (Barnett *et al* 1990) and an enclosure (Dingwall & Ferris 1993) have been excavated. Pottery and tiles have come from Llanwern (SMR 2493, 3717), as well as Roman bronze objects from West End Farm Undy (SMR 3937) and Ifton village (SMR 0485). A considerable amount of residual Roman material from a medieval moated site east of Undy village suggests a site nearby (Page 1993; Page & Maylan 1993), and material has recently been uncovered from Undy churchyard.

Therefore, the general distribution of Roman settlement appears much like that of the medieval period. There were two main areas; the fen-edge, and the higher coastal areas of the alluvium. A strong correlation is emerging between Roman occupation and the mouths of tidal pills. However,

there has been insufficient work to say whether the Roman settlement pattern was dispersed or nucleated.

Post-Roman flooding

Many of the wetlands around the Severn Estuary appear to have seen substantial periods of marine inundation in the post-Roman period (Rippon 1991b; 1992; 1993a, 365–7). This often led to the deposition of c 0.5–0.7 m of alluvium over the Roman ground surface, which in places is preserved as a buried soil horizon (eg Rippon 1991b, fig 20).

In the Gwent Levels, the lack of archaeological work behind the sea-wall means that it is difficult to determine whether there was post-Roman flooding. On the Wentlooge Level, it would have been impossible for the entire Roman field system to be maintained during sustained periods of flooding and alluvial deposition, so that the present ground surface in the Peterstone area is essentially that which existed in the Roman period: the 'Wentlooge Surface'.

However, the buried soil at Rumney Great Wharf has broadly two horizons: a darker lower layer with charcoal, pottery, and bone, and a much lighter upper horizon with no archaeological material. This suggests that the upper part of the palaeosol may represent a brief period of inundation (Fulford *et al* 1994, 209), which hypothesis receives tentative support from the pollen analysis (Keith-Lucas 1994). This also fits with the elevated nature of the 'irregular' landscapes on Wentlooge (see above; Fig 10).

On the basis of present information, it is impossible to determine the extent of post-Roman flooding on the Caldicot Level. Roman material from Magor Sewage Works is recorded at 3.05 m below the surface, c 3 m OD (Boon 1967); this depth suggests that the material is derived from a palaeochannel, possibly that which can be seen in the intertidal zone (Allen & Rippon 1994). At Uskmouth Roman material is recorded from 4.27 m below the surface (3.05 m OD) and must also come from a palaeochannel (Barnett 1961, 12–13). Therefore, neither of these finds can be used to determine whether or not the Roman ground surface has been buried.

The two Roman burials from Magor Brewery (Dowdell & Metcalf 1978, note incorrect grid reference; Maynard 1993, 6) apparently came from a depth of c 2 m. It seems unlikely that a grave would be cut through 2 m of heavy clay, and if this depth is correct, some post-Roman alluviation seems probable.

At the Caldicot 'villa' site, a long test-trench on the edge of the Levels revealed two possible buried soil horizons, at a depth of 2.0–2.2 m (4.6 m OD; contexts 267/275) and 1.0 m (6.0 m OD; context 265) (Parkhouse & Lawler 1990, 1924). The upper buried soil was associated with abraded Roman sherds, but sealed by colluvium rather than marine alluvium (Parkhouse & Lawler 1990, 24). Later

work on the site, upslope of the test-trench, also identified c 0.8 m of colluvial overburden (Dingwall & Ferris 1993). The most important site in fact is near Goldcliff island, where a number of ditches have been observed buried under alluvium (Bell 1994; pers comm).

The Post-Roman landscape

Fig 13

The scarcity of both archaeological and documentary evidence for the centuries between the withdrawal of Roman authority c AD 400 and the Norman Conquest means that the post-Roman period is indeed a 'Dark Age'. The stratigraphic evidence described above suggests widespread flooding and a return to tidal saltmarsh conditions.

Limited evidence for the nature of the Levels comes from a handful of charters, many of which contain the descriptions of the estate boundaries; I should like to thank Chris Hurley for discussing the translation of these bounds. The largest collection of charters is in the Chartulary of the bishops of Llandaff, the 'Book of Llan Dav' (abbreviated to *Ll*; Davies W 1979; Evans JG 1893). Further charters are found in the 'Saints' Life' of St Cadoc (Wade-Evans 1944). Other saints' lives also provide interesting fragments of information. All the references that these sources contain suggest a broadly unreclaimed landscape on the Levels, with few if any man-made features.

The earliest charter refers to Mathern. In c 620 King Meurig gave a *territorium* (estate) there to the Bishop of Llandaff (*Ll* No 141). The bounds are as follows:

From the mouth of the Pill Merrick brook upwards to the pool by, Lybiaw's stone ... downwards to the ruins, to the pool. Along the pool to the mouth of the Aber [mouth of a river or confluence] pwll [pill] Neuyenn on the Wye. Along the Wye and the Severn, with its weirs and landing-places for ships, as far as the mouth of the Merrick Brook

(Evans JG 1893, 369).

Pill Merrick brook flows into St Pierre Pill. Evans (1893, 369) identifies 'Aber pwll Neuyenn' as Hunger Pill in Chepstow. It may in fact represent the now canalized stream that runs down the centre of the Mathern Level and marks the boundary between Mathern and Chepstow.

St Pierre Pill (Pill Merrick, or 'Meurig') is next described in the works ascribed to Nennius in 828–29 (Morris J 1980, 1):

There is another wonder in the aforesaid country, called Gwent. There is there a spring by the wall of Pydew Meurig, and there is a plank in the middle of the

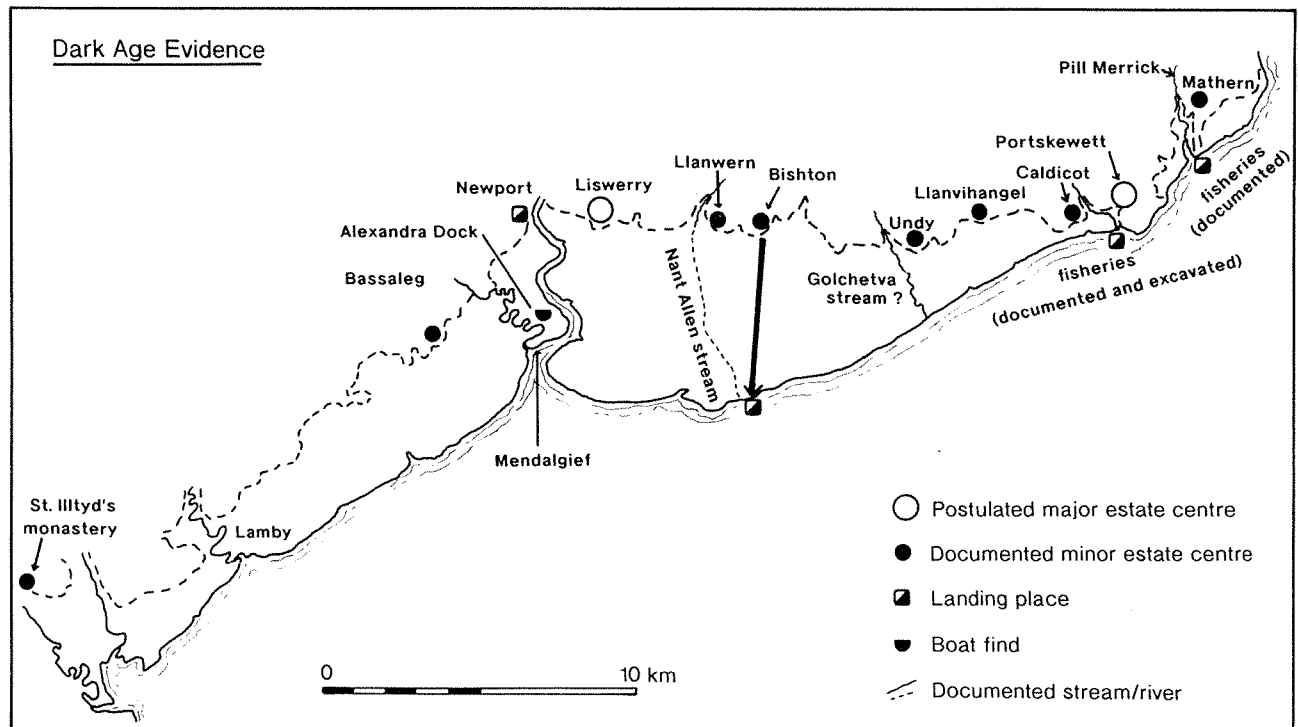


Fig 13 The Gwent Levels: Dark Age evidence.

spring, and men may wash their hands and faces, and have the plank under their feet when they wash. I have tested it and seen it myself. When the sea floods at high tide, the Severn spreads over the whole shore and touches it, and reaches to the spring, and the spring is filled from the Severn Bore, it draws the plank with it to the open sea, and it is cast about in the sea for three days, but on the fourth day it is found in the same spring

(*Nennius*, 72; Morris 1980, 42)

Another informative charter is that of Bishton, with its detailed boundary clause (*Ll* No 180b; Evans JG 1893, 373–4):

From Aber [mouth of a river or confluence] Nant [stream or brook] Alun into the marsh as the brook leads upwards to its source. From its source over the Cecin [ridge] straight on at once to the top of Sychnant [dry brook], on the other part of the Cecin. Along the Sychnant [dry brook] downwards as far as the pant [valley] in the wood. Along the Sychnant [dry brook] towards the right as it leads downwards as far as the ridge of the Allt near Cestill Dinan. Along the Cecin of the ridge of the Allt to Rhiw [slope] Merchiau. Along the Rhiw [slope] downwards as far as the spring of Glyble. Along the Gulyble downwards as far as the marsh. Through the marsh straight making for

Hendre Merchitir. From the Hendre to the Dead Pools, westwards along the Cecin of Cethin through the marsh as far as the Lontre Tunbwllch. From the Lontre of Tunbwllch straight through the marsh as far as Aber Nant Alun where the boundary began.

The charter probably dates to *c* 710 and also refers to shore rights (Davies W 1978, 174). Like the reference to the mouth of Aber Nant Alun, these rights might suggest that the estate extended to the Severn. Llan Allen stream now flows into Elver Pill Reen, and must form the western side of the estate (Fig 13). 'Hendre Merchitir' may be derived from Hendref meaning 'the old tref' or 'township'; the permanent, and therefore winter, settlement on the fen edge.

In *c* 1015, a King Edwin (note the English name) granted three *modii* of land at 'Villa Iunuhic', probably in Undy, to the Bishop of Llandaff (*Ll* No 249b). The boundary description runs:

Nant y Gov on one side; on the other side Nant y Golchetva as far as the Pill, to the ash tree towards the east. From the ash tree straight downwards to the Nant y Golchetva; along it as far as the Pill. From the ash tree, on the other side, as far as the Gwver as it leads down towards Nant y Gov, to the Pill

(Evans JG 1893, 381).

JG Evans (1893, 381) equates Golchetva with St Brides Brook, formerly called Olchva, which flows into Mill Reen; the other pill in presumably Collister. It is possible that this estate was that of Chapel Tump (Chris Hurley pers comm).

The Caldicot bounds of c 895 refer to the river Troggy (now Nedern) and the fish weirs and moorings for ships at its mouth; there is no reference to any other topographical feature on the Levels (*Ll* No 235b; Davies W 1978, 183; Evans JG 1893, 378). The bounds of 'Tref Peren' (Llanvihangel, c 895; *Ll* No 235b) were marked on the Levels by a 'ditch', but there are no other features of significance. Other charters also show the importance of the Estuary for fishing and shipping. In the charter of St Julians (Christchurch), dated to c 864, there is a reference to fish weirs (*Ll* No 225; Evans JG 1893, 377). Moorings and fish weirs are also referred to in the bounds of Mathern, dated c 895, along the rivers Wye and Severn and in the mouth of Pwllmeurig (*Ll* No 234; Evans JG 1893, 369).

The hagiography of St Gwynllyw, written c 1130 but based on material written shortly before the Norman Conquest, suggests another small trading centre may have lain near Newport. In the time of King Gruffydd ap Llewelyn and Edward the Confessor (their reigns overlapped in c 1063), English merchants are said to have frequently gone to the mouth of the Usk in order to trade. They were required to pay tolls, but a dispute led to an English boat being attacked (*VSBG*, 1857). These saints' lives are notoriously unreliable documents, but Courtney (1994, 112) has argued that a small 11th century trading station near Newport would not be unbelievable.

It is probably no coincidence that the two possible Dark Age political centres, or 'Llys', in this region lay on the fen-edge, adjacent to major tidal rivers and landing-places. A Llys was a lordly court, a 'centre for justice and administration and where tenants brought food rents'; it was often a religious centre as well with a church serving the region (Knight 1993, 8).

Knight (1970–1, 17; 1993, 7) has identified Portskewett as the location of a royal seat. The place-name Portskewett means 'the Port in Gwent IsCoed' (Gwent below the forest, ie Wentwood). The Irish monk St Tatheus was supposed to have landed at Portskewett (Knight 1993, 5); the mouth of the Troggy just below the cliffs at Sudbrook would provide the obvious landing-place, though St Pierre Pill is a possibility (Wood 1914, 83). A 12th century writing, possibly containing much older elements, calls it 'one of the three chief ports of the Island of Britain', while a Welsh poem, written possibly as early as the 7th century, describes it as 'the beautiful Porth [Port] *Esgewin*' (Knight 1993, 7). A high status estate centre at Portskewett may have been associated with a number of timber structures in the intertidal zone to the west of Sudbrook Point, relating to fishing.¹

Another major fen-edge estate centre is

Liswerry, beside the Usk close to the possible landing place at Newport. The place-name may be derived from 'Llys'; spellings of the name include 'Llysweyrye' (1653: NLW Tred 43/2), though the earlier forms are different (eg 'Leswry' 1294: Bradney 1932, 286).

Two other Dark Age sources refer to the Levels, though whether they contain much truth is unclear. The *Life of St Gwynllyw* describes a disastrous flood. Details include houses being inundated, and cattle and horses swimming in the flood waters, giving the impression of an agricultural landscape (*VSBG*, 183). The earliest reference to drainage in this region comes from the *Life of St Illtyd*, written c 1140, in which he is described as thrice and vainly constructing 'an immense dyke of mud and stones' across the mouth of the valley where his clas or monastery lay, at Llantwit Major (*VSBG*, 211). Such works are commonly ascribed to saints by their biographers, and may well be totally fictional.

A variety of documentary and place-name evidence suggests that the uplands fringing the Levels were already well served with churches by the 11th century (Brook 1985–8; Rippon 1993a, 305–6, fig 4.D.1, Appendix 4.D.III). There are just two 'Llan' place-names on the Levels: St Brides Wentlooge (Llansanfrid) and Peterstone (Llanbedr Gwynllwg). Both are recorded from the 16th century, but do not appear to be of greater antiquity (Diane Brook pers comm). However, the lack of other ancient 'Llan' names on the Levels may simply be due to the renaming of settlements after the English conquest and settlement of the area, and so cannot be used as evidence for a lack of Dark Ages centres on the Levels.²

During the late 9th and early 10th centuries, South Wales was subjected to Viking raids, and a Viking pin has recently been recovered from the foreshore off Portskewett (NM Acc 92.16). During the construction of the Alexandra Dock south of Newport, the remains of a timber boat were discovered, recently radiocarbon dated to 1000±80 bp (950±80 uncal ad; HAR-3203; Hutchinson 1984). This calibrates to 1020±80, giving a two standard deviation range of 860–1180 (Courtney 1994, 112).

There is slight evidence for Viking settlement on parts of the Levels. The place-name 'Lamby' at the very south western end of the Wentlooge Level may be of Viking origin. It is first documented in 1401, and includes the Old Norse '-by', meaning farmstead/village (Pierce 1960, 171). Mendalgief, the area between the rivers Ebbw and Usk, may also be a Scandinavian place-name, derived from 'mynn' (Old Norse for 'river mouth'), 'deild' (Old Norse for 'a share'), and 'gjaev' (Old Danish for 'a flat tongue of land between two watercourses') (Paterson 1920, 42–3). Two islands in the centre of the Severn Estuary, Steep Holm and Flat Holm (Fig 1), contain the Old Norse word '-holm' meaning island, but as this became a Middle English word it cannot be used as evidence of Scandinavian settlement. There was, however, a fleeting Viking

presence, when in 914 some of the routed army fled to 'Steopanrelice' (Steep Holm) (Rendell & Rendell 1993, 2830).

Therefore, the years between the end of the Roman period and the eve of the Norman Conquest is indeed a 'Dark Age' for the Levels. The limited archaeological and documentary evidence suggests a period of flooding, presumably following the failure of sea defences. There is no evidence for reoccupation until the late 11th/early 12th century (see Chapter 5), though such is the dearth of material there will always be some doubt over the post-Roman and pre-Norman contribution to the historic landscape.

Notes

- 1 These include trackways radiocarbon-dated to (all uncal ad): 830±90 (Beta-54,828; Godbold & Turner 1993, 40), 860±80 bp (Beta-56,188; Godbold & Turner 1993, 40), and 900±60 (CAR-1068; NM Acc 88.92), and fish traps dated 990±60 (Beta-54,832; Godbold & Turner 1993, 40), 960±70 (Beta-54,831; Godbold & Turner 1993, 40) and 1020±70 (GU-3238; NM Acc 88.93).
- 2 The SMR states that a Celtic style cross slab is currently in Nash Manor; its original provenance is stated as unknown. It dates to the ninth century and has stylistic parallels with the Isle of Man and Shetland (Nash-Williams 1939, 150, plate XXXV; 1950, 1578). Though the County SMR places this as Nash in Gwent, it actually came from Nash in Glamorgan (Nash-Williams 1939, 150).

4 The historic landscape: drainage and exploitation of a reclaimed wetland

Introduction

Following a phase of post-Roman flooding, the Gwent Levels were recolonized during the medieval period. It was then (except in central Wentlooge where the Roman drainage system survived) that the present, or historic, landscape came into being. The historic landscape can be regarded as the evidence, surviving above ground, of mankind's exploitation of the environment. A division can be made between, firstly, features that are still in use (eg the pattern of fields, roads, settlements etc.), the historic landscape proper, and secondly, traces of earlier landscapes that have been abandoned and only survive as earthworks; the latter can be termed a relict landscape, but does form part of the character of the wider historic landscape (eg a deserted medieval village, ridge and furrow, and abandoned mine workings).

In terms of the Levels, the historic landscape can be seen as that which lies on the surface of the alluvium. The phrase 'historic', in this case, might be considered as a little unfortunate, as central Wentlooge has a landscape dating to the Roman period, long before any documentary sources are available (apart from the Goldcliff Stone). Indeed, in parts of East Anglia, the present pattern of fields dates back to the pre-Roman period (Rippon 1991a; Williamson 1987). Therefore, the phrase 'historic landscape' while usually referring to features that have their origins in the Saxon, medieval or post-medieval periods, should actually be regarded as chronologically neutral.

In order to understand how the historic landscape was created, we must understand the social and economic contexts in which the Levels were gradually reclaimed: the Norman Conquest and settlement of southern Wales; the system of estates and manors that were subsequently established; changes in population and the associated fluctuations in demand for grain, meat, and dairy produce. Most of all we must understand the processes behind landscape formation.

This section looks at the system of territories/communities within which the Levels were exploited. A basic typology of landscapes is introduced, followed by a brief description of the various elements that make up those landscapes: settlements, fields, natural resources, and the drainage system.

Systems of landscape exploitation

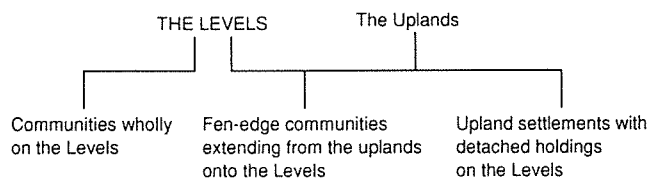
The Levels are defined in terms of their physical and cultural characteristics. They are one example of their generic landscape type, coastal alluvial wetlands. These possess a distinctive and relatively uniform physical character, particularly noticeable in an essentially upland region such as Wales. They possess a strong sense of unity in terms of people's perception and exploitation, resulting in a distinctive suite of 'articulated landscape elements' (Darvill *et al* 1993, 565), notably drainage reens and sea-walls.

However, in terms of the history of mankind's exploitation of this landscape, it must be stressed that the Levels should not be isolated from the immediately adjacent uplands, as in certain cases, both these environments were exploited by communities living in settlements on the fen-edge. This group can be sub-divided into those townships which only included low-lying back-fen (Llandeveyny, Bishton, Llanwern, Coedkernew, Marshfield, and St Mellons), and those that extended all the way to the coast/major tidal rivers. In some cases, the higher coastal ground provided a location for secondary settlements (Bassaleg/Duffryn, Magor, and Undy), though not in all cases (Caldicot, Ifton, Rogiet, and Llanvihangel). A further group of parishes contain small parcels of alluvium associated with broad river flood plains (Mathern, St Pierre, and Portskewett).

Only Redwick, Whitson, Goldcliff, Nash, St Brides, and Peterstone occupied territories wholly on the Levels, based in settlements on the higher coastal areas; their territories usually contained a variety of environments, including parts of the lower-lying back-fen and open saltmarshes.

The final element in this mixed pattern of exploitation is that some upland settlements had rights of common pasture, or owned detached parcels of land, on the Levels. This was termed 'accommodation land' (Bowstead 1872, 314) and is one cause of the highly dispersed nature of landholding. In 1954, 3069 acres (12% of agricultural land on the Levels) was accommodation land (WALSC 1954, 12). Most of the remaining land (20,060 acres; 83%) was in 'self contained economic units, typically consisting of a farmstead with a relatively small block of land attached, with one or more blocks scattered over a wide area' (WALSC 1954, 12).

The diagram below summarizes the various territorial units on the Levels:



The process of reclamation and resulting landscape morphology

Figs 4, 14–16

Two very broad types of landscape can be isolated on the Levels, based on the pattern of fields and the processes that created them: 'irregular' and 'planned'.

Type A: 'Irregular' landscapes

The 'irregular' landscapes are characterized by small fields of various shapes, and broad droveways with an abundance of roadside waste which often led to large funnel-shaped 'street commons'. The pattern of fields often fossilizes the meandering courses of former saltmarsh creeks, and settlement tends to be abundant and dispersed. This landscape type is generally found in the higher coastal areas, the earliest areas to be settled. Initially, land was protected from tidal inundation by the sea-wall and protected from freshwater flooding through the establishment of major reens and gouts. The 'irregular' landscape was then created through a gradual process of reclamation, with new parcels of land being enclosed when and as new land was required by the population.

Type B: 'Planned' landscapes

'Planned' landscapes can be sub-divided into four groups.

B1: 'Regular' landscapes Parliamentary

The first type includes the highly rectilinear patterns of fields and roads laid out within a framework of long, perfectly straight boundaries. Roads are similarly straight and lack any roadside waste. The fields are rectangular or almost square. There are three areas of such landscape on Caldicot (Green Moor, Broadmead, and Caldicot Moor; Figs 14 and 16), all of which were areas of parliamentary enclosure of the 19th century. Cardiff East and Leckwith Moors also had landscapes of this type (Fig 35).

B2: 'Regular' landscapes strip-based

The second category of 'regular' landscape is very similar, though usually involves slightly smaller blocks of land. Fields are typically long and narrow,

though these 'strip-based' fields have always been enclosed by ditches and are not derived from open or common fields. This landscape is commonly found in the low-lying back-fens, and is derived from the enclosure of large areas of formerly open moor (eg Rottenlands in Bishton and around Maerdy in St Brides; Figs 14 to 16).

B3: 'Intermediate' landscapes

The third type of 'planned' landscape, though possessing generally rectilinear fields, lacks the overall rigid framework of the previous groups; it is rather 'intermediate' in nature between the 'regular' and 'irregular' types. 'Intermediate' type landscapes tend to occur in fairly low-lying areas and are characterized by small blocks of generally rectangular fields, in a framework provided by lanes with a certain amount of roadside waste. Settlement is usually limited, and restricted to these roads. This landscape type is typified by Porton (front cover; Figs 14 and 16) in Goldcliff and western St Brides in Wentlooge (Fig 15).

B4: Linear landscapes

The fourth type of 'planned' landscape is that dominated by very long, narrow, straight-sided fields. The main area is the Roman landscape of central Wentlooge, though another example dating to the high medieval period occurs in Whitson (Figs 14 and 33; Plate 13). An area of 'linear' type landscape in Llanwern is undated (Fig 14).

In all these 'planned' landscapes very few boundaries are derived from natural watercourses. It is not that natural channels never existed; earthworks and vegetation marks prove that they did. Rather, such pre-existing features were ignored when these landscapes were laid out. A good example is Hardmoor Stream, on Caldicot Moor. This forms the parish boundary between Rogiet and Llanvihangel, and until the enclosure of the Moor in 1850 was a meandering creek. Once enclosed and drained the stream was filled in, but the parish boundary is still shown on maps as meandering across the area (Figs 18 and 38).

Thus, the incorporation of natural watercourses into the field-boundary pattern of 'irregular' landscapes reflects very different processes of reclamation. Here, it was a gradual and piecemeal affair using whatever boundaries were available. By contrast, in 'planned' landscapes large areas were enclosed in one go and any existing features were swept away in order to maintain the rigidity of the new layout.

The landscape of Caldicot and Wentlooge can be divided into a number of broad 'character areas' (see Chapter 7 and Fig 42). Table 1 below summarises the nature of each of these areas.

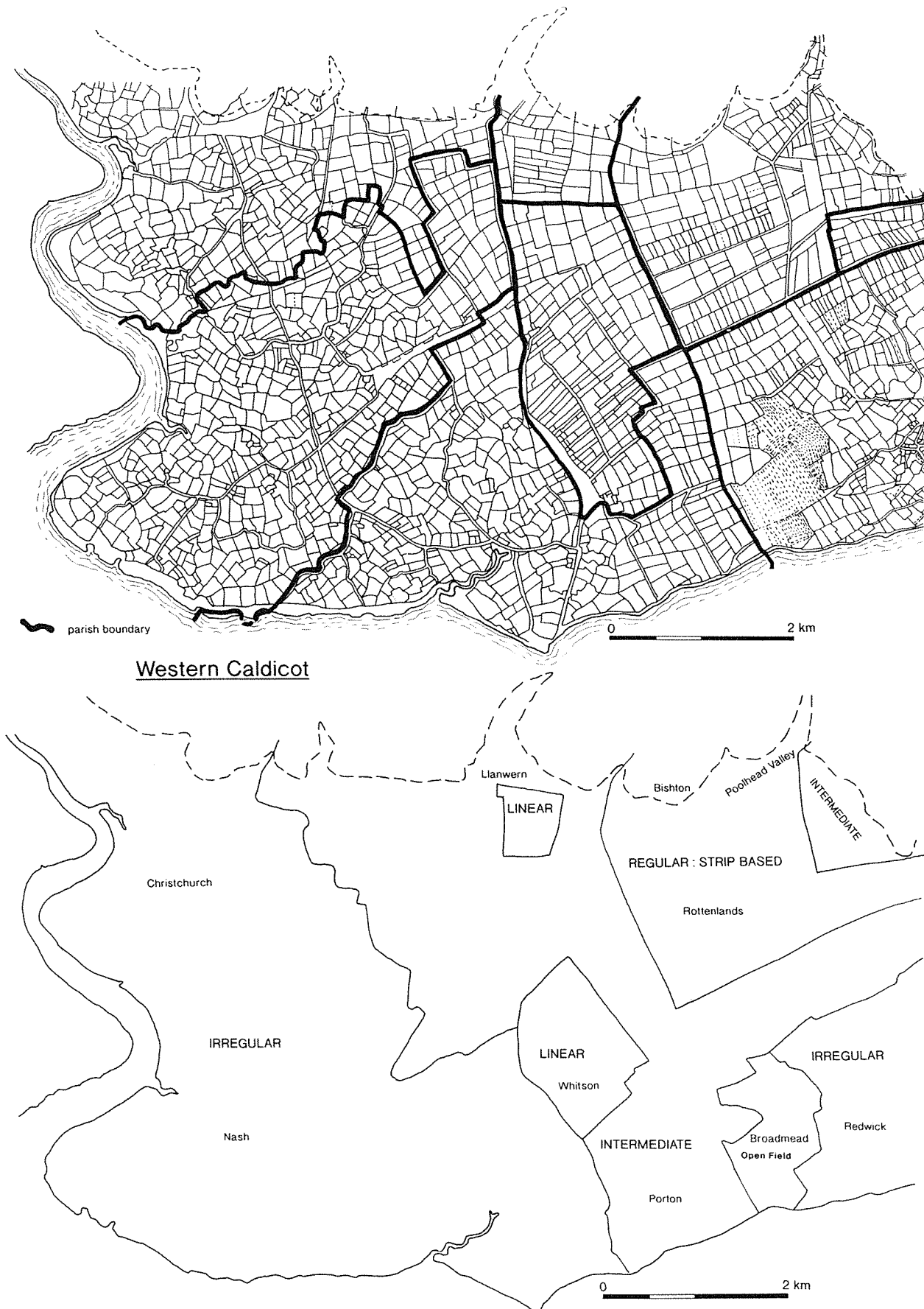


Fig 14 The field-boundary pattern of western Caldicot, with the major morphological types identified (based on maps of 18301, GwRO D.1365/12).

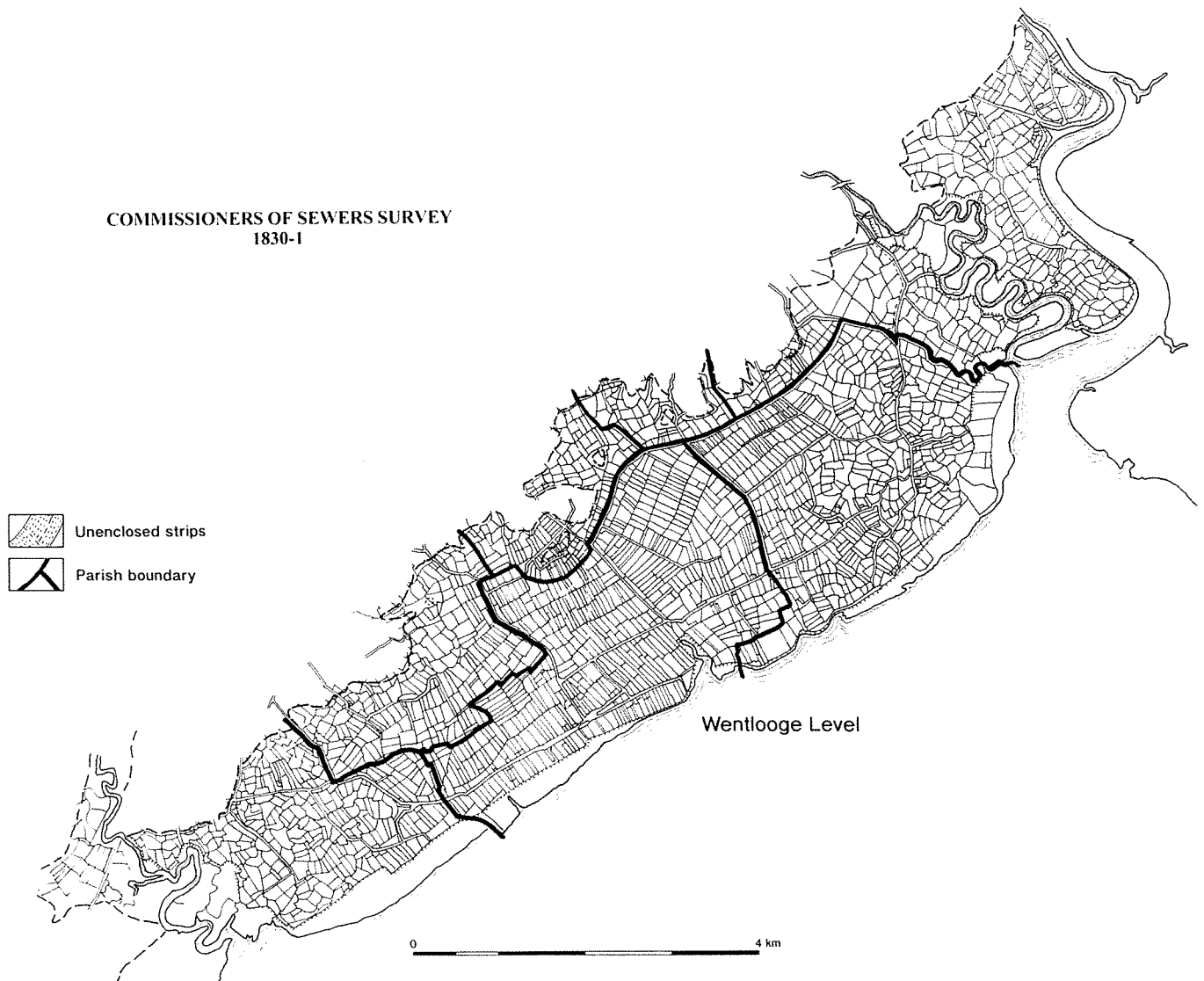


Fig 15A Wentlooge Level: field-boundary pattern in 1830 (based on maps of 1830-1, GwRO D.1365/12).

Table 1: Landscape morphological zones (see Figs 15-16, and 42)

A: 'Irregular'	Nash/Goldcliff; Redwick/Magor/Undy; Caldicot fen-edge. Mendalgief; Rumney; St Brides.
B1: 'Regular': Parliamentary	Broadmead, Redwick; Caldicot Moor; Green Moor.
B2: 'Regular': Strip-Based	Christchurch/Nash/Whitson back-fen; northern Redwick; Maerdy; Trowbridge.
B3: 'Intermediate'	Porton; Bassaleg/Coedkernew/Marshfield back-fen.
B4: 'Linear'	Peterstone; Whitson.

Landscape elements

These various types of landscape consisted of a number of articulated elements including settlements, fields, and roads. The varying range and form of these components gives each landscape type a distinctive character.

Settlements and standing buildings

The primary settlement locations, following the protection of an area of former saltmarsh by sea-walls, often seems to have been around roughly oval-shaped slightly raised areas. These pre-date

the pattern of surrounding roads and field-boundaries, as opposed to being superimposed upon them. On the Gwent Levels, examples are known at Nash, Chapel Tump (Undy), St Brides and Lower Grange (Fig 17) along with several in Redwick (Fig 27). These enclosures are also a common feature on the reclaimed coastal wetlands elsewhere around the Severn Estuary (eg Rippon 1994a, fig 4).

The term 'infields' has been adopted for these sites (see Rippon 1993a; 1994a), though more work needs to be carried out before their function is fully understood. Some may represent the western British tradition of oval religious enclosures, seen for example in South West Wales (James TA 1992),

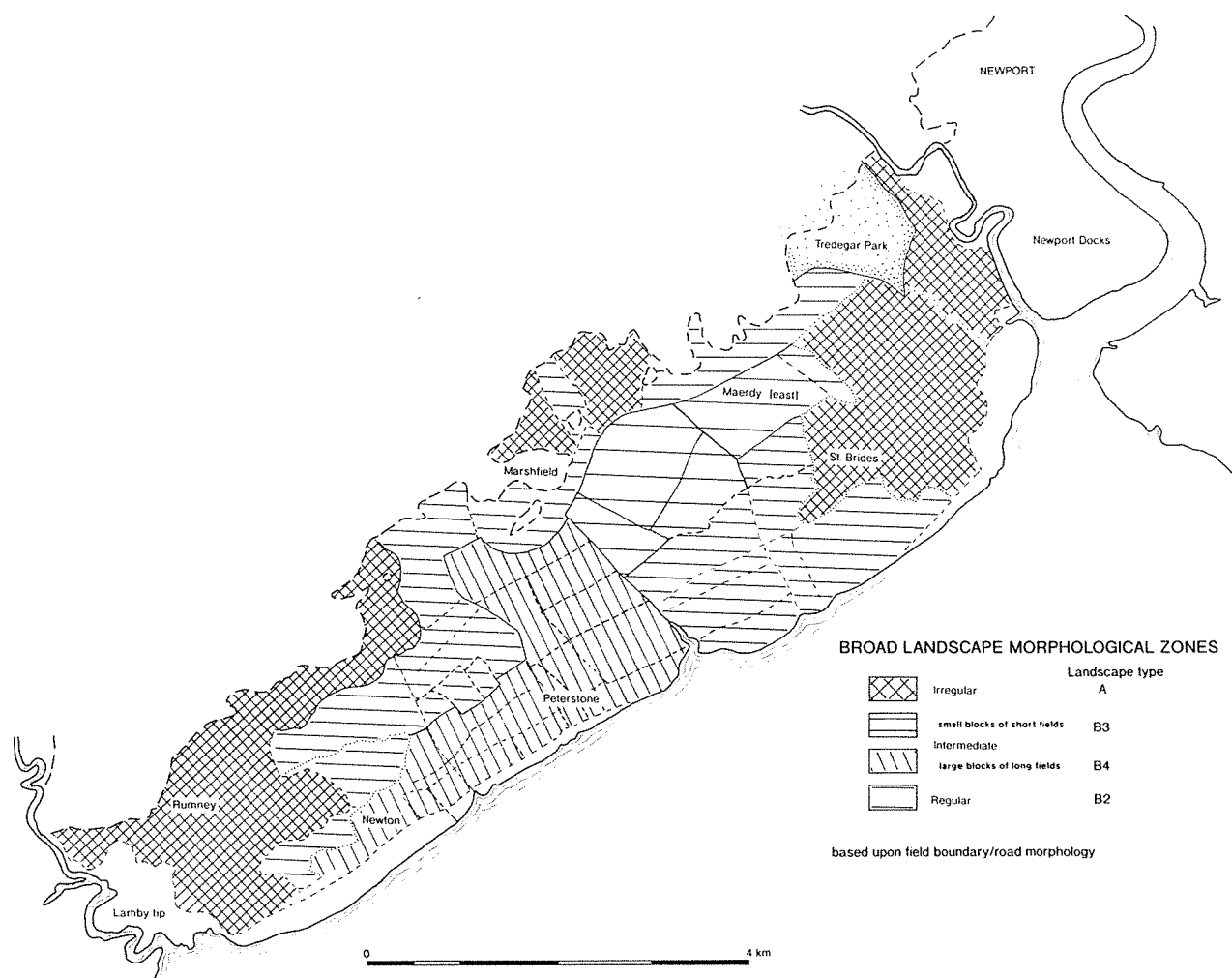


Fig 15B Wentlooge Level: landscape morphological zones (based on maps of 1830–1, GwRO D.1365/12).

though most are too large to be simple oval churchyards as are found widely in the South West (eg Brook 1992). There is a general tendency for existing farms to occur around the periphery of the 'infields', and in the Somerset Levels at least one example, at Withy near Huntspill, has traces of reversed-S profile strip fields (Rippon 1994a, fig 4). However, other cases, such as Vole near East Brent and Puxton near Banwell (both also on the Somerset Levels), have traces of deserted settlement earthworks covering the 'infield'.

The explanation favoured here is that these oval areas represent simple 'assarts' in an open landscape with relatively few existing features to constrain their shape (Fig 4). Thus, they were able to adopt the simplest and most efficient enclosure form, an oval, maximising the area:perimeter ratio.

Settlement subsequently spread out over the newly reclaimed lands, and developed into a four-fold hierarchy of villages, hamlets, farmsteads, and cottages. This can first be studied in detail on mid-18th century and later maps, though there is no evidence that the basic settlement structure (nucleated or dispersed) in any area changed

significantly until the proliferation of roadside cottages in the post-medieval period.

Isolated cottages were usually labourers' residences, sometimes with an outhouse and small plot of land. They were built in villages, hamlets, adjacent to farmsteads, and sometimes in more isolated locations besides roads and commons, encroaching upon the waste ground (squatters). The latter can be regarded as a 'peripheral' location particularly favoured in the post-medieval period as population expanded and manorial/community controls declined.

The basic medieval agricultural unit in any rural area is the *farmstead*, typically consisting of the farmhouse, ancillary buildings, a garden, orchard, and paddock(s). On the Levels these occur in villages (eg Redwick), hamlets (eg Porton), spread along major roads (eg St Brides; Peterstone), and in more isolated locations scattered throughout the landscape (eg Nash). A number of farms and cottages lie away from the main areas of settlement, adjacent to the sea-wall (eg Little Porton in Goldcliff; Fig 18). One possibility is that they were fishermen's houses, though it is not known whether

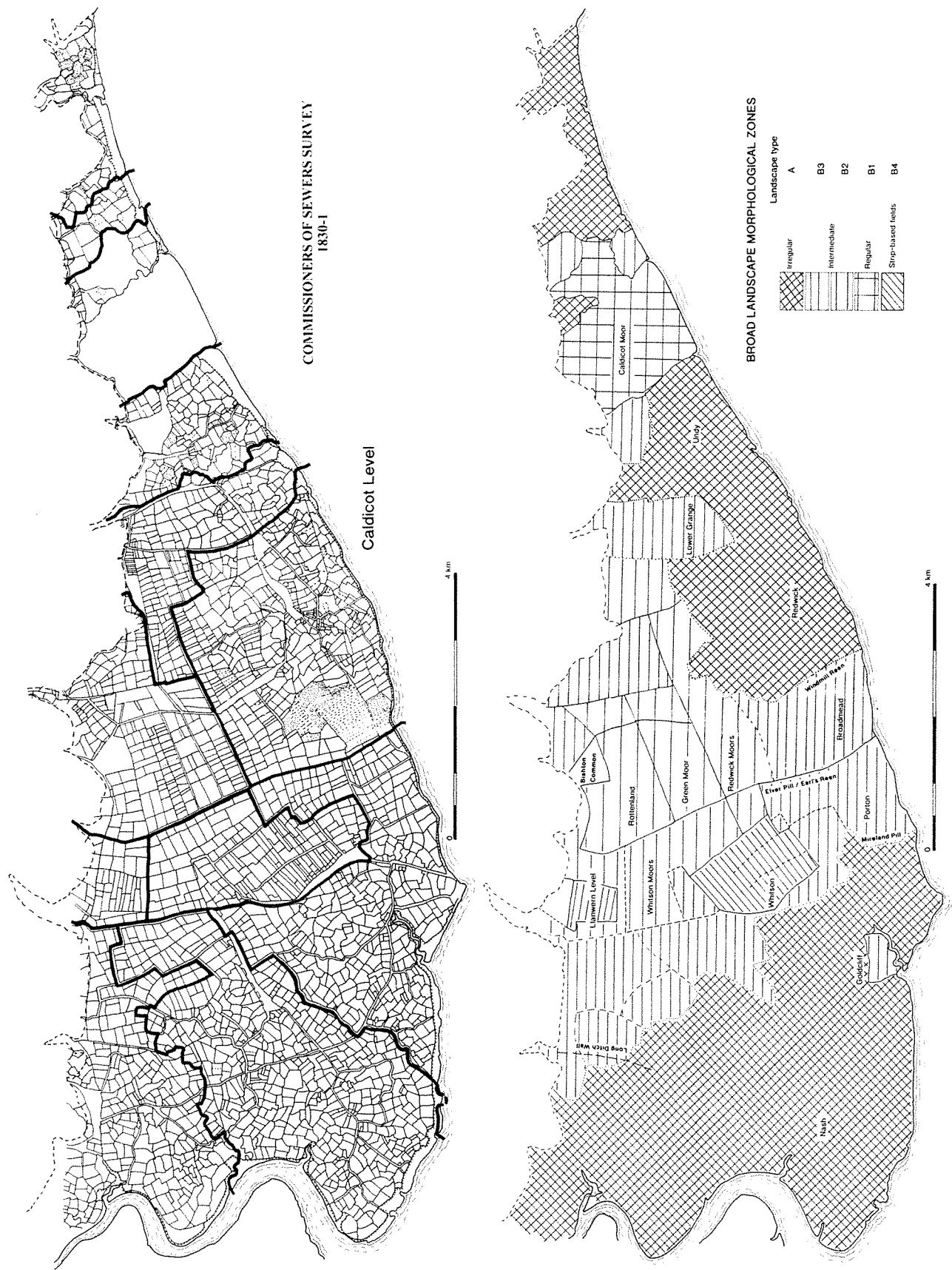


Fig 16 Caldicot Level: field-boundary pattern in 1831 and landscape morphological zones (based on maps of 1830-1, GwRO D.1365 / 12).

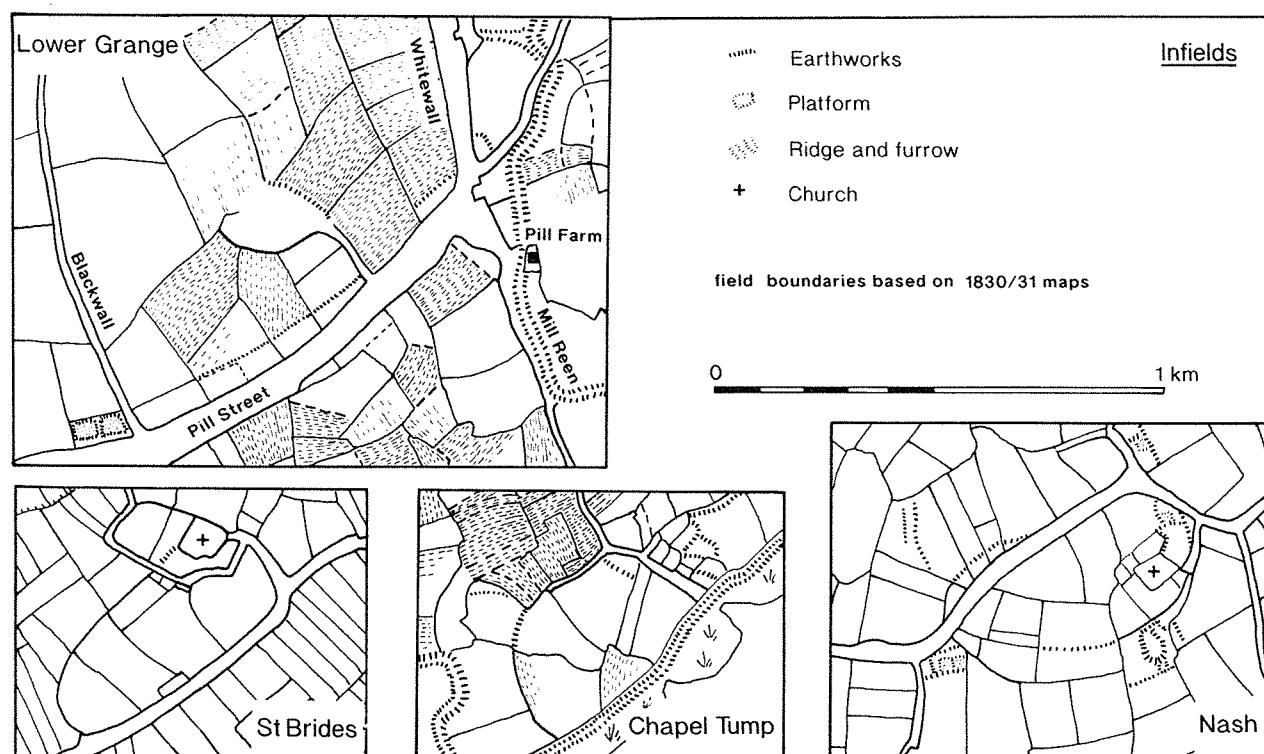


Fig 17 'Infields': Lower Grange, St Brides, Chapel Tump and Nash. Earthworks from air photographs.

they pre- or post-date the retreat of the sea-wall. If they were earlier, then they would originally have been normal inland farms.

Occasionally, a small cluster of farmsteads and cottages form a *hamlet*. These gradually formed along the major street commons (eg Broadstreet in Nash) and at cross roads, colonising the major areas of roadside waste there (eg Pye Corner, Nash).

The largest nucleation of settlement was the *village*, with a church, usually about half a dozen or more farmsteads, a range of cottages, and services provided for the local population such as a church, blacksmith, inn, and so on. A division can be drawn between nucleated settlements that grew organically, often around street commons (eg Redwick), and those villages that show signs of having been deliberately planned (eg Whitson). The first is a well known form of settlement in areas without the classic nucleated village and regular open field system of landscape organisation (eg West Midlands: Dyer 1991, 36–43; East Anglia: Warner 1987, 29–43; Fenland: Silvester 1993, 28–34; also see Taylor 1983).

However, in both cases (organic and planned villages) the decision by communities or landlords to nucleate settlement reflects a deliberate and conscious attitude towards the management of land. The degree of settlement nucleation in South East Wales generally is closely tied to the strength of English manorialization, and with the exception

of Whitson, all the nucleated villages on and around the Levels are associated with well developed open field systems; both show a marked decrease as one moves from eastern into western Caldicot and onto Wentlooge. The settlement patterns in those parishes which fall at least partly on the Levels can be summarised thus:

Settlement wholly within nucleated villages on the fen-edge:

Llanwern, Bishton, Llanvihangel, Rogiet, Ifton, Caldicot, Portskewett.

Nucleated villages on the fen-edge with dispersed settlement on the Levels:

Magor, Undy.

Nucleated villages in parishes wholly on the alluvium:

Redwick, Whitson.

Parishes with dispersed settlement on both the uplands and Levels:

Christchurch, Duffryn, Rumney.

Dispersed settlement wholly on the Levels:

Nash, Peterstone, St Brides.

Dispersed settlement wholly on the uplands:

Coedkernew, Marshfield, St Mellons.

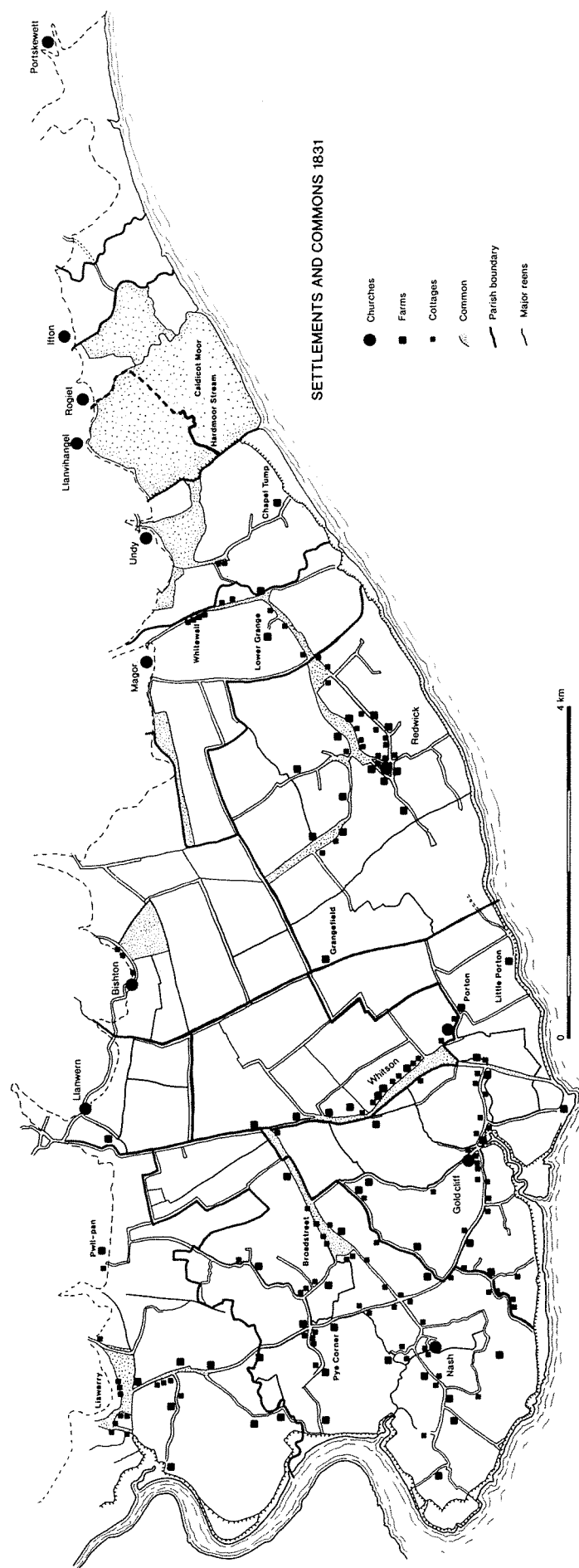


Fig 18 Caldicot Level: settlement and commons, 1831 (based on maps of 1830-1, GwRO D.1365/12).

Agriculture

Roads/droveways

Fig 18; Plate 12

There are three categories of roads on the Levels, which can be conceptualized as forming a dendritic system. Firstly, there are the primary access routes: Liswerry to Goldcliff/Whitson, Magor to Redwick, and Newport to St Brides, Peterstone, Rumney, and on to Cardiff. Secondly, there are the secondary roads that lead off from these main access routes; they almost invariably form the skeleton of both the 'irregular' and 'planned' landscapes since they appear to pre-date the establishment of the surrounding fields. Thirdly, there are minor lanes leading off these roads to individual farms.

Many of the early 'roads' were originally long narrow commons, delimited by a drainage ditch on either side. These droveways were vital for communication and the movement of livestock, for example from summer grazing in the back-fen or saltmarshes to winter lands closer to settlements; in 1761, the lane at Tatton in Nash is indeed recorded as a 'driving way' (GwRO D.337 44/1). When the position of roads became firmly fixed, usually through the 19th century Enclosure Acts, areas of waste on either side were enclosed, creating long narrow fields on one or both sides of the road. In places these fields survive (eg Lighthouse Road in St Brides; Saltmarsh Lane in Nash/Goldcliff), but elsewhere the strips of land have been amalgamated into the adjacent larger fields. Most roads on the Levels are now covered in tarmac, though a few 'green lanes' survive (eg Plate 12).

Commons

Fig 19

There were four broad types of common land, mostly now enclosed. Firstly, there were areas of back-fen that remained unenclosed simply because they were so low-lying and ill-drained (eg Green Moor, Rottenlands, Liswerry, Pulpen, Bishton, Undy). Secondly, there were a series of long funnel-shaped commons and droveways characteristic of the 'irregular' landscape (eg Broadstreet in Nash, Broadstreet and Broadway in Peterstone, Clifton, Whitson, and possibly Porton in or around Goldcliff). The third type of common was the smaller areas of roadside waste (see above). Finally, there was Caldicot Moor, which stretched from the fen-edge to the coast. The reason why at least the higher coastal part of this moor was not enclosed and drained in the medieval period along with the rest of the coastal zone of the Levels is not clear, though it must relate to the different policies of the lords and tenants here, compared to the area further west.

The earliest cartographic sources enable many commons to be located, while the examination of documentary sources, field-boundary patterns, and

earthworks allows the identification of several more. For example, the documented Pulpen Common (eg 1656: GwRO D.695/92-3) can be located on the basis of a sinuous boundary enclosing an area of rather straight boundaries clearly enclosed after the surrounding area.

Field structure

The broad morphological division between 'planned' and 'irregular' field patterns has been introduced above. In addition to this classification, the way in which fields were exploited is also of importance.

Many fields were always enclosed by a ditch or hedge and held by a single owner ('in severalty'). This was particularly the case in Wentlooge and western Caldicot. In contrast, substantial parts of eastern Caldicot were exploited communally (Fig 20). In their literal sense, 'open fields' were areas of land laid out in strips defined by grassy bulks, rather than fences or hedges; such fields are found throughout Wales, but they lack the communal arrangement for management found in England (Griffiths 1989, 239). In these English-style common fields, villagers were allocated a certain number of strips each spring, that they cultivated for just that season. In the following year, they would be allocated strips elsewhere.

In rigidly organized 'regular' open field systems, all the arable land of the village was divided between a small number of fields, usually two, three or four. Tenants had land in each of these, and all the strips in one particular field grew the same crop. In more 'irregular' open fields, arable land was divided between a much greater number of fields. The cropping units were sub-divisions of these fields, blocks of strips known as 'furlongs' or 'lengths' (Fig 20). Tenants would often have strips in just a few of the fields though the whole field was communally grazed after the harvest, thus providing natural manuring (Sylvester 1958, 18-22).

The field-boundary pattern that resulted from the enclosure of these open fields might reflect the patterns of earlier strips, retaining the curved or reversed-S profile derived from ridge and furrow (eg south/east of Redwick, Figs 20 and 27). If a block of strips, or whole 'furlong', was enclosed then the resulting field may reflect its shape (eg south east of Redwick's Broadmead common field?). By contrast, when the remaining part of Broadmead common field in Redwick was enclosed by Parliamentary Act, a pattern of large rectangular fields totally unrelated to the previous pattern of strips was created.

Several areas of 'intermediate' and 'planned' landscape have long narrow fields which were unrelated to open field agriculture. Some examples are known to have been laid out in the post-medieval period and to have always been held in severalty, and the Romans, who used a similar pattern on Wentlooge, never used common field agriculture. Thus, there appears to be a long-standing tradition

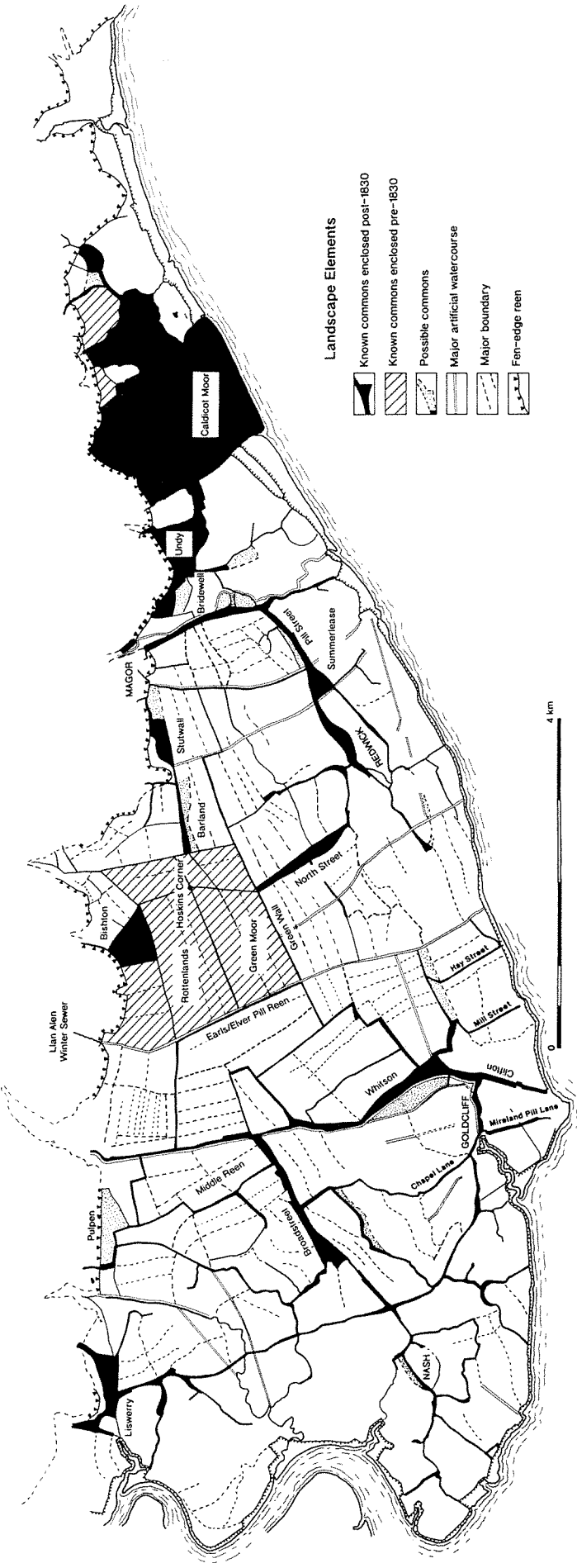


Fig 19 Caldicot Level: major landscape elements.

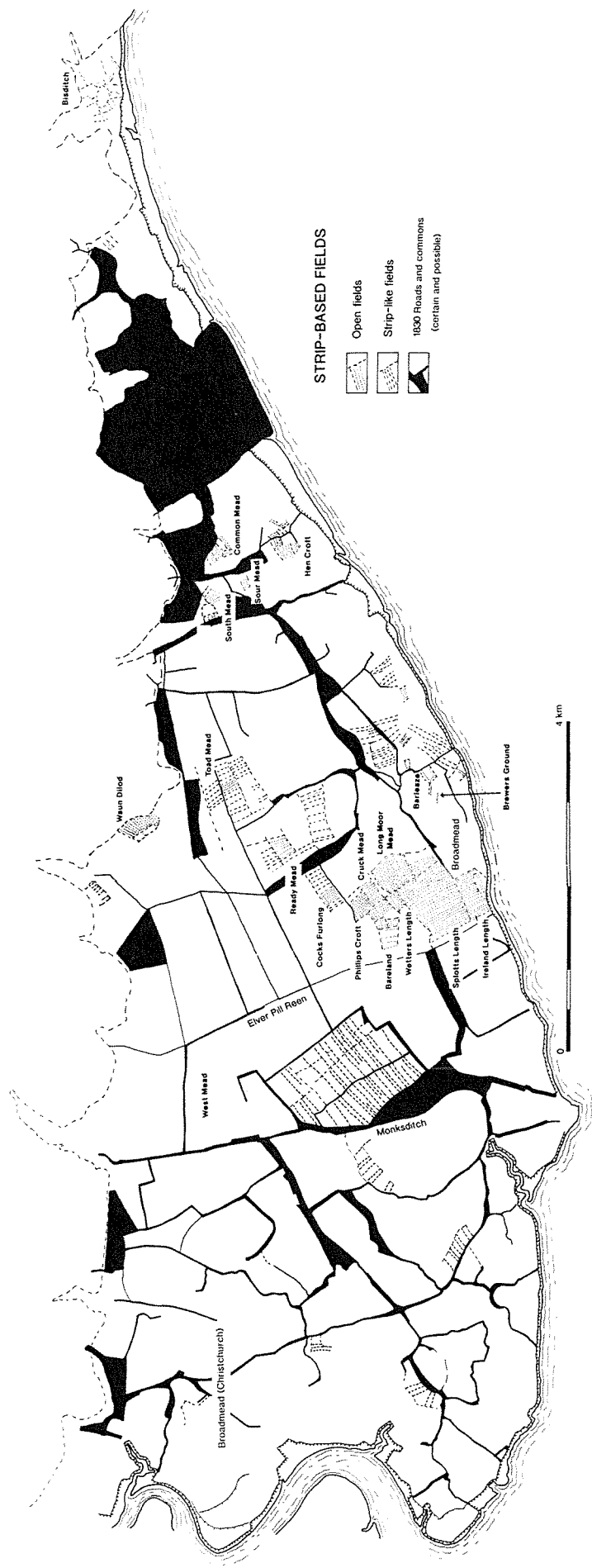


Fig 20 Caldicot Level: 'strip-based' fields, including open / common fields (based on maps of 1830-1, GwRO D.1365 / 12).



Plate 1 Bridge (possibly eighteenth century) over Mireland Pill, south of Goldcliff village. From ST 370 826 looking north west.

of long narrow fields, probably because this shape leads to a greater length of field boundary (ie ditch) per field area, which improves drainage.

Field boundaries

Field boundaries on the Levels consist of water-filled ditches, acting as property boundaries, drains and 'wet fences'. Major roads and minor footpaths crossed reens using a bridges (eg Plate 1). Very slight banks often develop beside reens, caused by the gradual accumulation of material dredged up during cleaning. Deliberately constructed banks along field-boundaries (commonly found on dry land) are not a characteristic feature of the Levels, apart from the major fen-banks or 'walls' (earthen banks) that were designed to control flooding.

Reens are also a source of water for livestock, for which ramps, or 'waterings', were built to allow easy access. There were also some ponds on the Levels, known locally as 'pools', though few survive today. They were occasionally surrounded by slight banks ('bunds'), while at least one side would be in the form of a gentle ramp, to give access to livestock.

Hedges tend to occur alongside most minor field boundaries. They are now absent from the major reens, to make mechanical cleaning easier (Scotter *et al* 1977, 80). Some hedges were well wooded and included pollarded willows, an important economic

resource (Plate 7 and back cover). The traditional method of laying hedges is sadly in decline, though there are two practitioners active in eastern Caldicot. Hedges are now increasingly cut mechanically, or left to grow scrubby. In the low-lying back-fens hedges tend to be absent, and field ditches are typically flanked by occasional isolated willows.

Ridging

Fig 21

There is a wide variety of ridging found on the surface of fields on the Levels. The most ephemeral, known locally as 'ridge and vurnow' (Plate 2), is largely restricted to the Caldicot Level. Though created through ploughing, it was designed purely to aid the drainage of meadow and pasture. Ridges were created by mouldboard ploughing up, and then back down, a line, turning the sods to the centre of the ridge. This was done five times, before starting on the next ridge.

Great care needs to be taken in distinguishing this from true 'ridge and furrow'. The latter is the result of prolonged ploughing for arable cultivation and tends to be very rounded in section, with a distinctive reversed-S plan (Plate 3). 'Ridge and vurnow' tends to be rather more angular in section, with flatter topped ridges, and is usually straight in



Plate 2 Very faint 'ridge and vurnow'. South of Redwick village, from ST 414 837, looking north east.



Plate 3 Ridge and furrow. West of Chapel Road in Goldcliff, from ST 359 836, looking north east towards Llanwern Steelworks (2 km away).

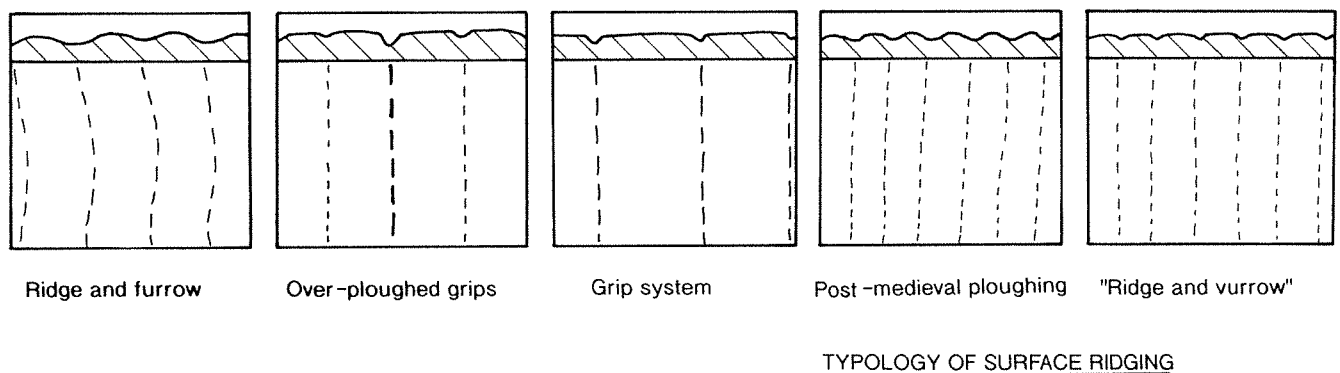
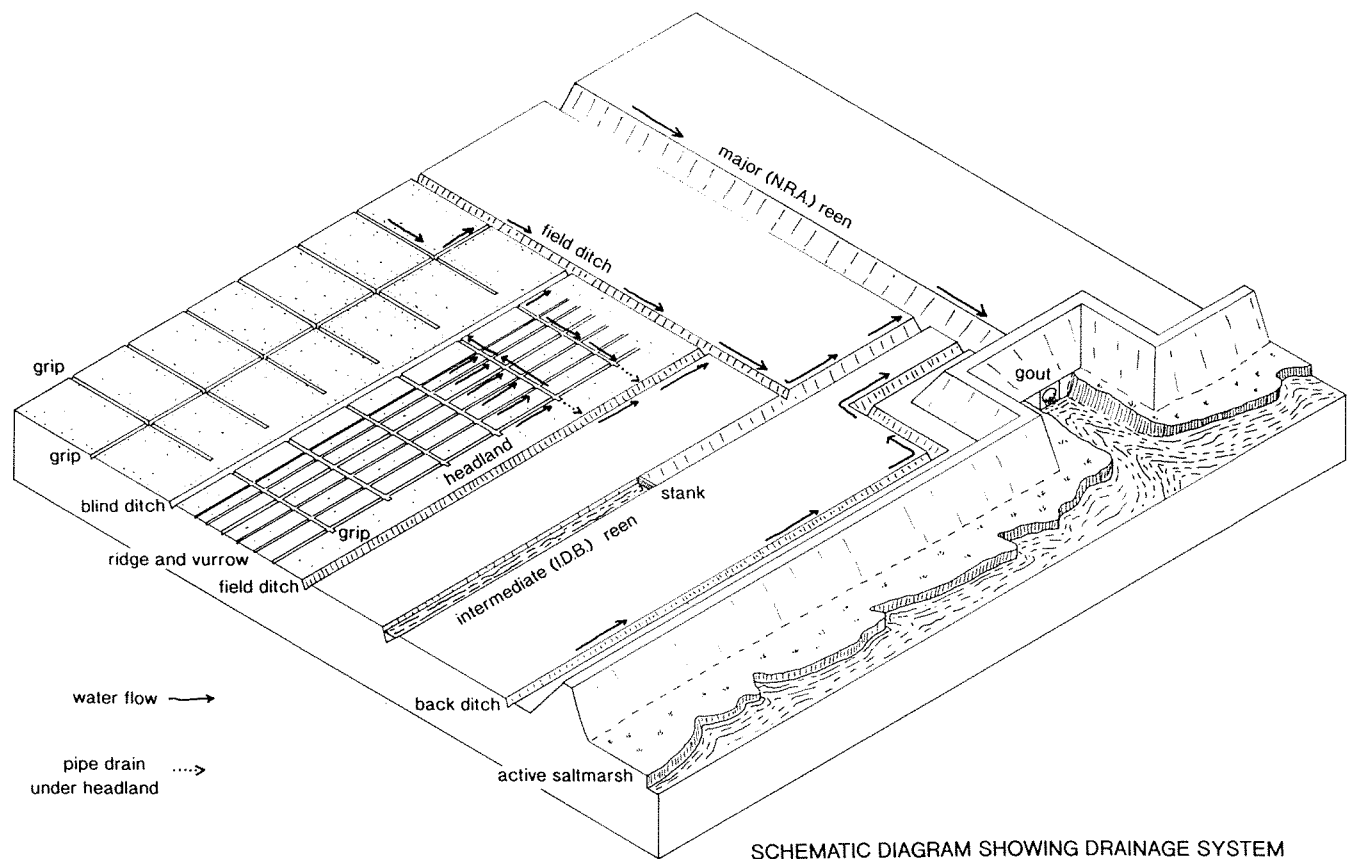


Fig 21 Schematic diagram showing the drainage system, and a typology of ridging on the surface of fields.

plan (Plate 2). A third type of ridging is derived from ploughing for arable, but only for a short period of time during the post-medieval (especially the Napoleonic) period (Chapman 1973, chp 4). This tends to result in narrower, straighter ridges (Taylor C 1975, 143) and is therefore particularly difficult to distinguish from 'ridge and vurrew'.

It has long been thought that there is little proper ridge and furrow in Gwent, though it is not clear whether this had always been the case or if it had been destroyed by later ploughing (Courtney 1983, 293). A few examples are known on the fen-edge (see Courtney 1983, 294, fig 113) and recent fieldwork has revealed more (Barber 1993, 10).

However, careful examination of 1940s air photographs and subsequent fieldwork by the author has revealed some fairly certain arable derived ridge and furrow in some areas of 'irregular' landscape, especially on the higher coastal parts of Redwick, Magor, and Undy, as well as in Caldicot parish. Some of this occurs in areas known to have been open fields in 1831 (eg Hen Croft, north of Chapel Tump in Undy; Figs 5, 17, and 20). By contrast, there are few possible traces west of Redwick (but see Plate 3).

A second type of ridging on the Levels is known as 'gripping' (Plates 4 and 5). It is found throughout both Caldicot and Wentlooge. Water from the field



Plate 4 Grips, filled with rushes. North east of Great Newra in Goldcliff, from ST 362 849, looking east.



Plate 5 Grips (running left to right) with blind ditch down centre. West of Porton, from ST 382 824, looking north.

surface (and vurrows if present) flows into larger gullies known as 'grips'. These are usually arranged in a rectilinear grid, though some herringbone patterns can be found. The spaces between the grips were known as 'spanes'.

Various local farmers can recall how grips were traditionally created. They were spade dug and were typically *c* 15' (*c* 0.4 m) wide at the top, *c* 9' (*c* 0.2 m) wide at the bottom and *c* 18' deep (0.5 m). Spacing varied, but they were commonly 22 yards (*c* 20 m) apart. One man would be expected to dig 110 yards a day (*c* 100 m). The spoil was dumped to one side, then loaded onto a cart and dumped in a mound, known as a 'tump'. This allowed the spoil to dry, killing any rushes. The soil could then be spread over the fields. In many cases an area around the edge of a field is not gripped, to allow access for farm vehicles. Water is piped from the grips, under these 'headlands', and either into a major drain, known as a 'blind ditch', or directly into the field-boundary ditch.

The grip systems might be confused with water meadows. This was a system of irrigation introduced to Britain from the Netherlands in the late 16th century, based on a series of parallel ditches fed by a leat from a stream (Betley 1986, 133–5; Newman 1988, 81–2). Though Monksditch (Plate 10 and back cover) might generate sufficient head to water, there is no earthwork evidence for such a system on the Gwent Levels.

Agricultural landuse

There are five main categories of landuse currently represented on the Levels: arable, improved (ie under-drained and occasionally ploughed) pasture, unimproved pasture (ie drained by grips), rough ground, and orchards. Pasture predominates today, though this was not always the case. The amount of arable on the Levels has fluctuated considerably in the past, with high points in the 12th/13th and late 18th/early 19th centuries. In the last decade or so the proportion of arable has increased, both for maize (a fodder crop) and cereals. This arable tends to concentrate on the higher coastal lands. The lower-lying back-fens are still the most poorly drained. The amount of waste ground on the Levels is now negligible, though unenclosed common land was once a major feature of the Levels. There are similarly very few areas of traditional hay meadow.

Orchards were once a common sight in the landscape, but have also declined in recent decades (TACP 1994). Monmouthshire and Gloucestershire were a major cider region from the 17th century (Newman 1988, 93). At one time virtually every farm on the Levels had its own orchard, often planted on fields with pronounced ridging. The distribution of orchards, both past and present, closely follows that of settlement, and hence they tend to be a feature of the 'irregular' landscapes (for the situation in 1962 see Gough *et al* 1965). Sadly, many orchards have now been cleared, though some

fine examples survive around Redwick and Newra in Goldcliff (Plate 6). A cider press has been rebuilt in the bus shelter by Redwick church. There is also a reference to pear growing in Goldcliff (1806: GwRO D.43/4599).

Natural resource exploitation

Once protected from marine inundation by the construction of sea-walls, areas of the lower-lying back-fen would have gradually developed a freshwater vegetation comprising rough grassland pasture, reed swamp, and fen carr woodland, depending on the intensity of grazing and quality of drainage. These areas provided a range of important resources.

Withies and woodland

Managed woodland can provide an important source of fuel and material for basketry and building. Surprisingly, there are very few references to areas of managed woodland, known as withy beds, on the Gwent Levels; much of the timber requirements may have been supplied by pollarding willows (Plate 7 and back cover). The local term for pollarding is 'lopping', and it was required to prevent the trees from becoming top heavy and splitting, as well as providing timber. Trees along reens were also important as their roots helped to bind the clay.

A withy bed is recorded in St Pierre (1623: GwRO 501/71), and a coppice is referred to in Redwick (1806: GwRO D.25/1101). In 1639 there is reference to one acre of woodland in Nash (GwRO D.501/446), while 'woody ground' is recorded in the same parish in 1704 (GwRO Man/E/133/0054); this woodland may have been withies either in use or overgrown, or simply areas of semi-natural woodland that had been allowed to grow.

Both archaeological evidence (eg Johnson 1993) and early documentary references suggest that alders were the naturally predominant tree on the Levels, at least in the lower-lying back-fens. For example, the boundary of Bassaleg, described in *c* 1100, runs 'through the alders into the marshy land on the east side of Pencarn' (Pelteret forthcoming). In the 13th century, Tintern Abbey had 40 acres of alder wood in Llanwern Moor; it is not specified whether this was managed (*CChR III*, 90–100), though in 1248–9 it was described as a 'grove' (ECR 64/3). This fen carr, such as is found in the back-fen at Magor Marsh Nature Reserve today, is probably similar to the natural alder woodland referred to above, though even this is secondary vegetation, colonizing former fields.

There are several small patches of deciduous woodland on the Levels, especially around St Brides and to the north of Whitson. These are mid 19th century in origin (NCC 1982, 19) and are not typical of the wetland landscape.



Plate 6 Orchard, east of Great Newra. The trees actually stand on slightly raised ridges. From ST 363 847, looking west.



Plate 7 Pollarded willows, east of Whitson. From ST 382 489 looking north.

Duck decoys (Green C 1994)

In their natural state, saltmarshes, reed swamps, and alder woodland would have provided a rich habitat for wildfowl. However, the progress of drainage encouraged the development of special areas with which to attract and then catch birds. A pond, usually artificial, was surrounded by woodland to provide a secluded environment. The pond had a number of arms, known as 'pipes', which were covered in netting. The birds were either enticed or driven down the arms, from where there was no escape (Croft and Aston 1993, 42).

These duck decoys are an 18th to early-19th century feature of the back-fens; there are two certain examples on the Gwent Levels, both on Caldicot (Fig 5), at Whitson and Nash, and a possible example in Magor. A 'duck pool' is first recorded in Whitson in 1758 (GwRO x.M000/912); it is referred to as a 'decoy pool' in 1781 (GwRO D.43/3813). The Nash decoy pool was built after 1790 as it is not shown on a map of that date (NRL x.M000/912). Its earliest representation is on the first edition of the Ordnance Survey one inch map surveyed in 1812. Both ponds probably went out of use soon after the railway was constructed in 1850, as this destroyed the secluded environment. Both are now under the Llanwern Steelworks.

A third possible decoy pool lies to the south of Llandeenny, in Magor parish (ST 416 863), where a field marked 'Duckpool' is shown on a map of 1751 (NLW Lockwood vol. 1, folio 10).

Fisheries

Both archaeological (Godbold and Turner 1994) and documentary (eg *Ll* No 235b) evidence exists for fish weirs in the intertidal zone and along the courses of the major tidal rivers from at least the Dark Ages. The right to fish was closely guarded by manorial lords, and even into this century complex legal disputes were entered into regarding fishing rights (eg 1912: NRL q.M040/346). Matthews (1933) gives a detailed account of the various fishing methods and structures.

Not surprisingly, there are few references to fishponds on the Levels; a fish pool is referred to in Undy in 1270 (Morgan and Wakeman 1863, 41), though this could lie in the upland part of that parish; a fishpond is recorded in Redwick in 1610 (GwRO D.43/2659).

Lakes and pools

Three field-names appearing on the Levels might be indicative of areas of open water on the Levels: 'lakes', 'meres', and 'pools'. However, all have alternative meanings and there is very little supportive evidence for there ever having been natural lakes on the Levels.

There are several references to 'lakes' on the Levels, though their nature and location is uncertain. The place-name 'lake' can mean stream (Field

1993, 51), while in 1692 a presentment to the Court of Sewers ordered that a 'lake' on Tatton Wall was to be raised two feet high and six feet wide, implying that it referred to a bank (GwRO D.695/1).

'Lake' is still used as a farm name in Christchurch. The earliest reference is in 1548 when a 'tenement and land called Lake' is mentioned (NLW Llang. A.1060). In 1550 a will refers to 'all tenements and lands in the laake' (Hunt 1985, No 104). A will of 1531 (Hunt 1985, No 47) describes 6s 8d left 'to make the lake which is called Lady's Lake' in Nash or Christchurch.

There are also references to 'meres', which can mean an area of open water. For example, there is a field-name 'the meers' east of Newra in Goldcliff (NRL x.M000/912, folio 22), and in Redwick 'Cox Meares' is referred to in 1474 (*Brad IV*, 238), near Cox Lane/Furlong and Wall. Two 'free meares' are mentioned in Christchurch in 1655 (Bradney 1932, 291). However, 'mere' could mean a boundary or fields close to a boundary (Field 1993, 64, 146), as in the case of Mere Reen to the north of Broadmead (see below).

'Pool' can also imply an area of water, though a derivation/corruption of *pwll*/pill (stream) is also possible. There is a reference to Chimney Pool in 1601 (NLW Bad.D. 2198); this is presumably Kimney Pool shown on the Ordnance Survey First Edition Six Inch map just to the south of Cox Furlong. In Magor, Summerlease Pool and a Pool Farm are referred to in 1758 (GwRO D.695/93).

Seasonality

Until quite recently, much of the grazing on the Levels was only available during the summer; now only Ballan Moor, in the valley of the river Nedern, floods seasonally. In the past, there would have been an annual movement of livestock from upland pastures in the winter onto the Levels for the summer. Even into the post-medieval period parts of the Levels were termed 'accommodation land', since they were used for fattening animals on the lush grass. Such a pattern of husbandry need not imply transhumance, where whole families moved with their livestock, as herders could have looked after the stock.

There are several indications of seasonal exploitation of resources on the Levels. Summerlease in Redwick is first recorded in 1722 (GwRO D.25/120), though a Summerway is mentioned in 1617 (D.43/4009). Other Summerways are referred to in Goldcliff (1290: *CChR II*, 35861), Caldicot (1613: NLW Tred. 147/131), Ifton (1677: *Brad IV*, 124), Llanvihangel (1709: NLW Tred. MSS/169), Peterstone (1782: GwRO D.4/005) and Whitson (1720: GwRO D.695/92). That some areas dried out sufficiently for use by Easter may be referred to in 'Esteresteywlong' recorded in Redwick (1351: NLW Bad.D. 158), and 'Estereffreyland' in Magor (1561-2: NLW Bad.D. 168).

Though regularly inundated by the tide, salt-

marshes can provide valuable grazing. The medieval term for these saltmarshes was 'wharf', periodically flooded areas of grazing outside the sea-wall (eg Pugh 1963, 190–4; *Rumney Customal*, 299). During the post-medieval period, many of these wharfs were enclosed and drained and the name was retained. Hence, 'wharf' also became the term used for areas of reclaimed saltmarsh. Most references to wharfs are 17th century or later and it is often unclear whether they had been enclosed and drained (eg Ifton 1677: Bradney 1929, 124; Undy 1711: GwRO D.668/25).

Trade and industry

Windmills

Windmills are found on both the Levels and adjacent uplands (see Courtney 19812). There is no evidence that they were ever used for pumping/drainage. The earliest reference is at Magor in 1334 (Courtney 19812, 50). Rees (1932) locates two windmills in 14th century Goldcliff, though Courtney (1981–2, 50) could trace no evidence for their having been wind rather than water powered. A Windmill Tump (tump = mound) is referred to in Nash (1704: GwRO Man/E/133/53). In Redwick, a Windmill Tump is recorded in 1654–5 (GwRO D.25/187); the mound survives at ST 402 845. This could be that referred to in Magor in 1334, as Redwick was part of Magor manor at that time (Courtney 1981–2, 50).

Watermills

Most mills on or adjacent to the Levels appear to have been water powered. It is testimony to the productivity of the Levels and their hinterland that there were so many mills in the region. The earliest reference is to a mill at Caldicot in Domesday. Goldcliff Priory had two each at Goldcliff, St Brides Netherwent and Undy, and one each at Liswerry, Milton, and Whitson (Williams 1970–1, fig 1; 1990, 52); one or both of the St Brides mills may have lain on the fen-edge in Llandeveyney, a detached part of the parish. Mills are also recorded at Aberweythel (Magor Pill), Magor itself and Rumney (Bradney 1932, 230; Courtney 1981–2; Jack 1981, 114) during the 13th and 14th centuries.

In 1314–16 there were two watermills in Rumney (Reeves 1979, 52). In 1466 there is reference to Rumney Mill and New Mill (Bradney 1993, 7). New Mill lay to the north of the parish near Llanedeyrn, so New Mill presumably lay at the mouth of Pill Melin south of Newton on the Levels (melin = mill). The weir on the pond of New Mill had to be repaired in 1446–7 and a new stone wall was built between the floodgate and the water wheel at great expense; the sides of the pond required repair as well with mud and clay (Reeves 1979, 190). However, this investment was in vain as New Mill fell out of use between 1466 and 1521–22 (*Brad V*, 7; Reeves 1979, 64).

Ports

Landing-places for ships in sheltered tidal pills and creeks are documented from pre-Norman times and continue until the early post-medieval period. They were essential for trade and communications, enabling the communities on the Levels to export their agricultural surplus to Bristol (see Chapter 6).

The drainage system

Fig 21

A hierarchy of drainage channels

The system of drainage on the Levels consists of a hierarchy of channels (Scotter *et al* 1977, 77–9; Sylvester 1969, 293–4; WALSC 1954, 10–12). The top of this hierarchy is always regarded as the raised, high-level 'pills' that carry upland streams across the Levels to the coast. However, of the drainage channels that run north-south from the fen-edge, only two, Monksditch and Mill Reen are actually raised (Fig 5; Plate 10 and back cover). These do not contribute to the drainage of the Levels themselves, and for this, in the case of Monksditch, a lower-level channel runs just to the west.

However, Monksditch did contribute to the irrigation of Whitson; a survey of 1656 describes how 'the parishioners [of Whitson] may as they have time out of mind keep a nogger or wooden peg in the planks in the bottom of Monksditch Pill over the Gout Ditch Reen to let water into the said parish whenever required' (GwRO D.695/92). Thus, Monksditch normally carried water through Whitson but during the summer, when water was required for irrigation and drinking by livestock, it could be tapped off.

Over the rest of the Levels the drainage system works as follows (Scotter *et al* 1977, 77–9; Sylvester 1969, 293–4; WALSC 1954, 10–12). Water drains from the surface of fields into the vurrows, grips, blind ditches (Plates 2–5), and into field ditches. These minor drainage features are maintained by individual farmers, an ancient duty of customary tenants (eg Goldcliff 1663: GwRO D.43/258). The field ditches feed into c160 km intermediate reens (eg Plate 8), now maintained by the Internal Drainage Board. The water then flows into c 80 km of major reens, now maintained by the National Rivers Authority.

The major reens discharge their waters into the Severn Estuary via tidal doors under the sea-wall, known locally as gouts. In most cases, these gouts were at the heads of embanked tidal pills, set back several hundred metres from the coast. The trend in the 18th century and later was for the gouts to be moved downstream so that the sea-walls ran continuously along the coast (Fig 4.6; eg Magor Pill: Allen and Rippon 1994; Coldharbour Pill: Allen & Rippon forthcoming). Only Goldcliff Pill and Julians Gout (Uskmouth) remain deeply recessed.

Water levels in the reens are maintained by a



Plate 8 A 'stank', which enables water levels in reens to be controlled.

series of structures now known as 'stanks' (but formerly 'gouts'; Plate 8), documented from the mid 13th century (ECR 64/3). They are simply a series of planks set across the reen in order to control the height of the water. During the winter they are lowered to prevent flooding, while in the summer they are raised in order to pen water for irrigation and watering livestock.

Most of the Levels are still drained using this hierarchy of reens and the action of gravity. However, in 1961 pumps were installed at 'Noah's Ark', Undy, to drain 285 ha of Caldicot Moor (CCW 1991, 2; Scotter *et al* 1977, 78), and recently pump drainage has also been introduced on Green Moor (Colin Green pers comm).

Walls

Until recently, earthen banks or 'walls' were an important part of the flood control system, documented from the mid 13th century (ECR 64/3). These were up to three feet high and four feet broad (eg GwRO D.695/1) and were mainly found in the lower-lying back-fen. They were designed to prevent fresh waters in the open moors flooding improved lands to the south and west. For example, the owner of Langstone Moor had to 'maintain a wall of sufficient height and breadth ... so to keep the water of Langstone Moor from coming over out of

its right course' (1656: GwRO D.695/92). Most if not all walls had reens adjacent to them, which in many cases preserve the name of the wall (eg Blackwall Reen and Whitewall Reen in Magor).

Sea walls

Until a few decades ago, the sea-wall was a simple earthen embankment running along the whole of the coastal frontage of the Levels, and along the tidal rivers. In 1801, Coxe (1801, 43) suggested that the walls in Caldicot had recently been faced with stone, while in Wentlooge they remained earthen. Traces of this original facing can be seen in places, such as Undy.

The present appearance of the sea-wall is largely a creation of the last forty years. In 1954 the Welsh Agricultural Land Sub-Commission prepared a report on the Monmouthshire Moors, and recommended that in order to improve their agricultural productivity, sea defences had to be improved (WALSC 1954, 234). These improvements were carried out from 1953 to 1974 (Colin Green pers comm), and often involved revetting the front of the sea-wall with large stone boulders, and topping it with a concrete wave return wall (Plate 9). A ditch behind the sea-wall, known as the 'back ditch', acts as a normal reen and serves to store water when the gouts are closed at high tide (Plate 9).



Plate 9 Sea-wall east of Porton, with back ditch in landward side. This stretch of wall was rebuilt in the 1960s, and is rubble faced with a concrete wave return wall. The saltmarsh in front has been totally eroded away. From ST 385 824, looking east; Porton House in background.

The administration of the drainage system

The maintenance of the drainage and flood defence system was firmly embedded in medieval tenurial agreements on the Levels. One of the medieval manorial officials was known as the 'approver', who carried out regular inspections of sea-walls and gouts, and could cause 'ameracements' (payments) to be levied on anyone not doing their part in their upkeep (Reeves 1979, 168). The lord was directly responsible for maintaining the vital sea gouts whereas tenants were charged with the sea-walls and watercourses. All these responsibilities were later taken over by the Commissioners of Sewers, and their successors, the Internal Drainage Board, still levy the 'Sea-wall Charge' and 'Reen Rent Charge'.

In the late medieval period, a range of sources describe the system of customary tenure that prevailed in Rumney. By 1314–15, many duties that the tenants traditionally had to perform for their lords had been commuted to cash payments. The exception was grip digging (Reeves 1979, 171); was this regarded as just too important to allow the service to be commuted? Deeds often include provision for maintaining drainage works. For example, in 1445 a tenant rented 12 acres of land, 1 acre of

'warth' and another parcel of warth called 'Lordestontes' on condition that he maintained at his own cost the sea-walls and watercourses on his land (NLW Tred. 146/1; Reeves 1979, 179).

In England, government involvement in the maintenance of sea defence began in 1258 when a Commission was appointed to Romney Marsh in Kent (Derville 1936). Similar 'Commissions of Sewers' were established on other English coastal wetlands, but the first Act covering the whole country was in 1427. The Crown ordained that, since it was its duty to protect the realm from the sea, Commissioners of Sewers were to be sent to all parts of the country where needed, though there is no evidence that a Commission was established in Monmouthshire at this time. Unfortunately, Dugdale (1662) does not include the county in his famous 'History of Embanking', and generally there appears to be much less evidence for the early presence of national government involvement in drainage matters during the medieval period in Wales, compared with elsewhere in the kingdom. This presumably reflects the peculiar status of the Marcher lordships.

The earliest known Commission covering the Gwent Levels was appointed in 1504, covering those parts of Wales 'within Goldcliff marsh from the eastern part of Caldicot Moor to the bridge called Newport bridge in length, and from the port

of Goldcliff and Aberwerton to Polpenne [Pwll-pan], Bishopston [Bishton] and Mergar [Magor] in length' (*CPR Hen. VIII, II*, 380). The next references are in 1607–8, when a special Commission into sea defences was established for Rumney (Courtney 1983, 291–2), and in 1621 when the Commissioners dealt with a dispute over a fishing weir in the river Wye at Monmouth (NLW Tred. 59/56).

The earliest surviving records of the Court of Sewers, which oversaw works carried out by landowners and tenants, date from the 17th century. The sequence of near-continuous records deposited in the Gwent Records Office starts with the earliest book of minutes and presentments (surveys) commencing in 1692 (GwRO D.695/1), though a schedule of records surviving in 1764 (GwRO D.695/324) indicates that the earliest minute book then extant was 1689. However, there are various fragmentary pieces of archive dating from the mid 17th century, including a presentment for the Hundred of Wentlooge dated 1641 (NLW Tred. 59/175). A volume dated 1753 contains copies of surveys dated 1720, some of which at least are copies of a survey made in 1656; this only covers western Caldicot (GwRO D.695/92). The earliest complete survey is dated 1754 (GwRO D.695/93). Matters relating to the Court of Sewers also appear in the Monmouthshire Quarter Session records, commencing in 1722 (GwRO Q/C. of S.). Sketch maps were drawn of Caldicot (NRL M.430/912) and Wentlooge (NRL x.M000/912) in 1756, but otherwise the earliest Commissioners' maps are those of 1830–1 (GwRO D.1365/1–2).

The constitution of the Commissions of Sewers was published by Coxe (1801, 416–17). Commissioners were local gentlemen, often Justices of the Peace, appointed by the Crown and the Duchy of Lancaster usually for a period of ten years, who presided over the Court of Sewers. Local tradition says that the Commission met at Level Court down Saltmarsh Lane, on the Goldcliff-Nash boundary. This building was demolished some time ago, though a fragment of the substantial stone building does survive (I would like to thank Mr Preece for showing me these ruins).

The Commissioners appointed two expeditors, one each for Wentlooge and Caldicot. They were in charge of seeing that the orders of the Court were carried out, as well as collecting the land tax levied on every acre on the Levels. Each parish had a surveyor and three or four jurors, who surveyed all the sea-walls and reens a fortnight before the Spring session of the court. Their 'presentments' listed all the defects, and the court then empowered individuals to carry out the necessary works. In the case of an emergency, each Commissioner was allowed to 'have a view' (examine the problem) and issue orders for repairs. The Commissioners could force landowners to maintain walls, banks, ditches, bridges, and gouts on all the low-lying land in the south of Monmouthshire affected by the sea. They had powers to restrict anything that might impede the drainage, including mills, dams, fishing weirs, and locks.

In 1884, the Caldicot and Wentlooge Level Act made the Commissioners of Sewers directly responsible for maintaining sea-walls and major reens, ending the tradition of local landowners undertaking the work. The Commissions ceased to function in 1942 when the Usk Catchment Board took responsibility for the sea defences and major rivers; the Caldicot and Wentlooge Levels Drainage Board, established by a statutory revision of the 1930 Land Drainage Act, was responsible for the internal reens (Colin Green pers comm; Scotter *et al* 1977, 79; WALSC 1954, 11). In 1948 responsibility for the sea-walls and major rivers passed to the Usk River Board, which undertook a major programme of investment following the Welsh Agricultural Land Sub-Commission report (1954). They in turn were replaced in 1965 by the Usk River Authority, the Regional Water Authorities in 1974 and the National Rivers Authority in 1989 (Colin Green pers comm; Gustard 1933; Sylvester 1969, 394).

The NRA currently maintains 54,010 m of major reens on Caldicot and 25,050 m on Wentlooge, of which 4537 m (8.4%) lie in urban/industrial areas. The IDB maintain 103,618 m of lesser reens on Caldicot and 61,533 m on Wentlooge; 11,558 m lie in urban/industrial areas (19%).

5 The high medieval landscape: The Norman Conquest, marcher lords, monastic houses and reclamation

This chapter starts by examining the major socio-political changes that took place on and around the Levels in the 11th and 12th centuries. These are important, for they provide a context for the recolonization of the Levels. Though there is limited evidence for a late Saxon presence in the region, no evidence for reclamation at this time exists. The Norman Conquest is briefly considered, followed by an examination of the estate structure at this time. The English colonization is then examined, including the establishment of manors, villages, and open fields.

The emergence of the present 'historic' landscape through the processes of reclamation is then examined. There is no evidence that the recolonization of the Gwent Levels had begun before the Norman Conquest. In the early 11th century, the Caldicot Level was probably once again a tidal saltmarsh, as were the eastern and western ends of Wentlooge. The Roman sea-wall may have survived in places, particularly along the central Wentlooge coast. The reconstruction and repair of the sea-walls appears to have been carried out by the early Marcher lords, who subsequently settled the newly reclaimed lands.

Detailed examples of reclamation in Redwick, Goldcliff, Whitson, and along the fen-edge are examined. The recolonization and rehabilitation of Wentlooge is then described. The development of the settlement pattern is considered, and in particular the emergence of a major centre at Magor. Finally, patterns of landuse and the important resources of the common moors are examined.

A late Saxon presence?

The north eastern part of Gwent was conquered by the English during the late Saxon period, possibly with a burh established at Monmouth (Courtney 1994, 111). There is also some evidence for late Saxon penetration in South East Gwent. The 10th and 11th century Llandaff charters mention some fifty English names in South East Wales as a whole (Davies W 1979, 145; Williams AG 1993, 448), including a King Edwin who appears to have had land at Undy (*Ll* No 249b).

In 1063 Harold Godwinson (later King Harold) defeated King Gruffudd ap Llywelyn of Gwynedd and built a hunting lodge at Portskewett (Courtney

1983, 47; Knight 1993, 7; Williams AG 1993, 449). RR Davies (1987, 3, 9, 26) argues that this suggests the annexation of South East Gwent was imminent, though it could also be argued that the construction of a hunting lodge would follow the conquest of an area.

The Norman Conquest

The initial advance into South East Wales took place in the 1070s led by William FitzOsbern, Earl of Hereford (Davies RR 1987, 24–9). Courtney (1986) argues that the initial occupation of Gwent was very partial, and possibly limited to territories previously claimed by Harold. AG Williams (1993, 451) also sees a limited conquest in this early period, with Gwent being a 'military subjugated zone intended to support imminent advance further along the Welsh littoral'. The area occupied appears to have been limited to that east of the Usk (Davies RR 1987, 34).

The advance faltered c 1075, though an enclave was established at Cardiff in c 1081, as Morgannwg, west of the Usk, became a client kingdom (Davies RR 1987, 29–43; Lightfoot 1992, 157). The advance resumed in the 1090s, with the whole of South East Wales conquered in the following fifteen years (Davies RR 1987, 29–43). The newly occupied territory remained in royal hands until the early 12th century, when it was divided into lordships (Courtney 1983, 59–63). Netherwent lordship covered much of Monmouthshire east of the Usk, but later fragmented, one of the products being the lordship of Strigoil (Chepstow) covering the fen-edge townships east of Collister Pill (Llanvihangel, Rogiet, Ifton, Caldicot, and Portskewett).

The lordship of Caerleon was established by Domesday, but was seized by the Welsh around 1155 during the anarchy of Stephen's reign. Part of the lordship was recovered by the English in 1217, but the manors of Edlogon and Lebenydd (in Christchurch parish) were held by Welsh lords until 1270 (Courtney 1983, 61–3, 177).

The English occupied Newport by 1107 when along with Gwynllwg (between the rivers Usk and Rhymney) it became part of the new lordship of Glamorgan; in 1317 it became a lordship in its own right (Lightfoot 1992, 157; Reeves 1979, 6).

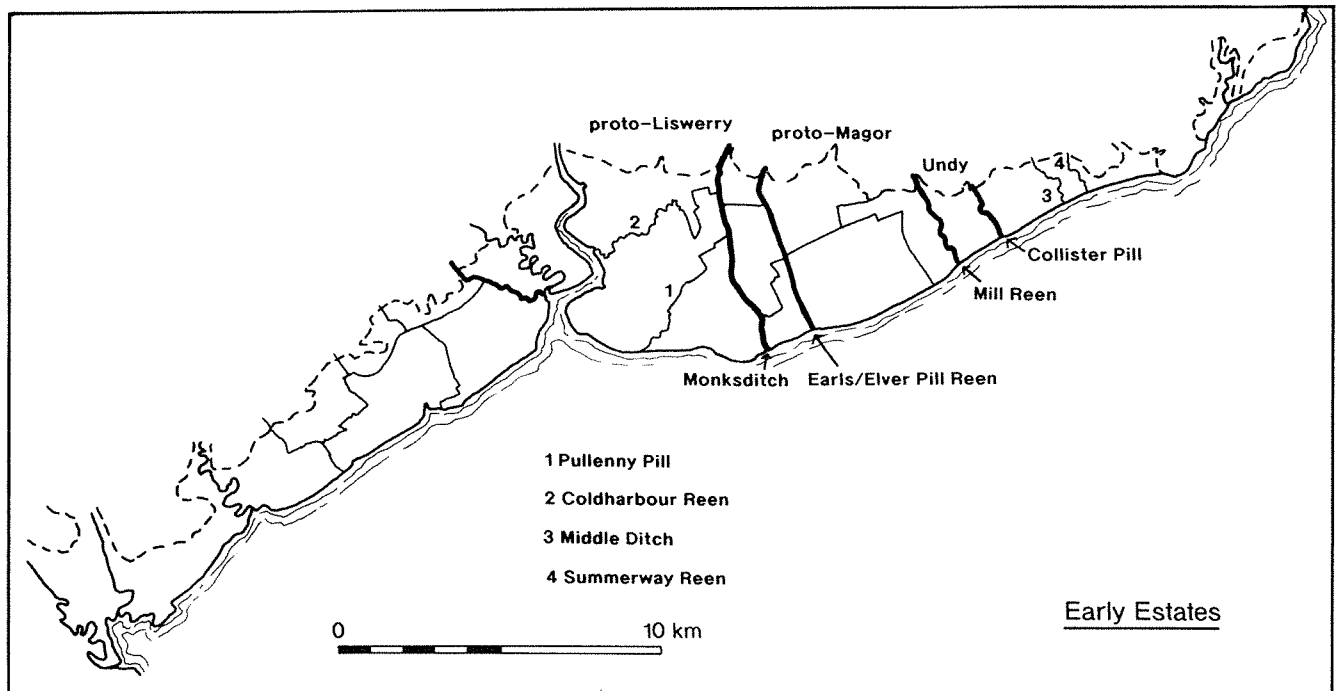


Fig 22 The Gwent Levels: early estates.

Early estates

It is difficult to determine the pattern of estates that the Normans inherited. Under the traditional Welsh system of land organization, laid out in the early medieval law books, the smallest unit was a *tref*, 50 of which made up a *commote* (similar to an English Hundred) (Davies 1979, 43). A 'tref' can be roughly equated to an English vill, township or tithing, representing the basic community unit. However, the situation in South East Gwent is complicated by two factors. Firstly, there is the possibility that a Roman estate structure survived until around the 8th century, when it began to fragment (Davies W 1978, 624). Secondly, in the late 11th/early 12th century it appears that the new English lords reorganized the landscape, creating nucleated villages, and a feudal/manorial system of tenure. Thus, the Welsh system of 'trefi' may never have existed, or if it did, may have been lost in the Norman period.

During the early medieval period, documentary and topographical evidence indicates that a series of churches were established on the fen-edge. Some, such as Bishton, Caldicot, Llanvihangel, Llanwern, and Mathern are documented, while others at Coedkernew and Marshfield can be postulated on the basis of the early form of their churchyards (Brook 1985–8). As we have seen, Dark Age charters also suggest that a series of estate centres existed on the fen-edge, with territories that traversed both the uplands and Levels. Where the boundaries can be worked out, there is a general coincidence between the Dark Age estate, manorial boundaries (as described in 16th/17th century

surveys) and parish boundaries (first shown on maps of the mid 18th century).

However, this early evidence is limited, and is concentrated in the eastern part of Caldicot (eg Bishton, Caldicot, Ifton, Llanvihangel, and Rogiet). At least by the early post-medieval period, this simple relationship between manor and parish does not hold true for Wentlooge, where there was a far more fragmented pattern of tenure. Indeed, a series of surveys state that the bounds of these manors could not be given because their lands were so intermingled (eg 1710: GwRO D.668/1). The pattern of inheritance on Wentlooge and in Nash and Christchurch was also different to the rest of Caldicot; in these areas, Welsh 'ultimo-geniture' (Junior Right) predominated, whereby the youngest son was the main beneficiary (Reeves 1979, 169).

A key question is whether post medieval parish boundaries can tell us anything about earlier territorial arrangements in these areas. On the basis of the charter and manorial bounds that we have, it seems reasonable to assume that the parishes did indeed follow early estate boundaries, at least on the Caldicot Level. In most areas it is apparent that parish boundaries tend to follow major features in the landscape. In areas of 'irregular' landscape they followed the meandering lines of major watercourses (Fig 22);

Coldharbour Reen:	Nash–Christchurch
Pullenny Pill/Saltmarsh Lane:	Nash–Goldcliff
Mill Reen:	Magor–Undy
Collister Pill:	Undy–Llanvihangel
Hardmoor Stream:	Llanvihangel–Rogiet
Middle Pill:	Rogiet–Ifton
Summerway Reen:	Ifton–Caldicot

Elsewhere, parish bounds followed major artificial features such as Elver Pill Reen (Goldcliff–Redwick; Bishton–Llanwern–Whitson) and Blackwall Reen (Redwick–Magor).

In all cases, these landscape features must have been in existence before the parish boundary assumed its current position. The date of parish creation is unknown, though in England parishes are thought to have stabilized by the later 12th century (Morris 1989, 229). On this basis, it would be tempting to assume that features such as Elver Pill Reen and Blackwall were also in existence by then. However, it is possible that parish boundaries might have changed over time as new physical features were created in the landscape, particularly after an area of open waste ground was enclosed and drained. This might well account for the way in which the Christchurch/Nash boundary zig-zags through the area of 'intermediate' landscape in the back-fen (Fig 38), as it seems inconceivable that this pattern of fields is as early as the late 11th/early 12th century.

In certain cases, it appears as if one parish was carved out of another. One example is Redwick, which may have been carved out of Magor; it is no surprise, therefore, to find that Redwick was a sub-manor and chapelry of Magor in the medieval period (Courtney 1983, 59). We might expect that the Dark Age centre for this large estate was at Magor (see below), and that when the lowland part of that estate was reclaimed, a subsidiary settlement was established at Redwick.

However, there is a complication. The Bishton charter might indicate that the Dark Age estate extended to the coast (see above), resulting in a configuration of boundaries suggesting that it may have been part of the early Magor/Redwick estate. In later periods, Bishton maintained access to the sea via a droveway alongside Earl's Reen (later Elver Pill Reen) shown on a map of 1772 (GwRO D.501/1332). Bishton maintained one half of Earl's Reen (1601: NLW Bad.M. 2198) and half of Earl's Gout on the coast (1656: GwRO D.695/92).

Elver Pill Reen forms the boundary of five parishes: Goldcliff, Whitson, and Llanwern to the west, with Bishton and Redwick to the east. It traverses the low-lying back-fen and the higher coastal areas. In all places it pre-dates the pattern of surrounding fields. In the higher coastal area, a 12th century or earlier date seems probable for reclamation, settlement, and therefore boundary definition (see below). There is no evidence for a natural watercourse preceding Elver Pill Reen which may have marked an estate/parish boundary which was realigned when Elver Pill Reen was built. Therefore, this reen must have existed by the 12th century; could it have survived from the Roman period?

Another major boundary was Monksditch (Plate 10 and back cover), whose original outfall possibly lay east of Goldcliff Point along Mireland Pill (the boundary between Goldcliff and Porton; Fig 26;

GwRO Man/D/102/0007). The area west of Monksditch (and possibly Elver Pill Reen) may all have been part of the Edlogan and Lebenydd estate (the core of which later became Christchurch parish), based at Liswerry. A large area of that part of the estate on the Levels was granted to Goldcliff Priory in c 1113 (see below).

On Wentlooge, the pattern of parish and manorial boundaries is very different. The Bassaleg/St Brides boundary follows a natural watercourse, but otherwise parish bounds follow artificial features such as Percoed/Drenwydd and Broadway Reens. The parish boundaries between Peterstone and St Mellons, and Peterstone and St Brides, zig-zag through the pattern of Roman fields, clearly post-dating them. Manors did not form discrete nucleated territories, but were scattered throughout a number of parishes (eg 1700: GwRO D.43/5397). Thus, not surprisingly, it appears as if the manorial and parish structures on Wentlooge both post-date the Roman landscape.

The English colonization

South East Gwent forms part of a broad belt of English settlement in South Wales covering the lowlands of Pembrokeshire, Gower, Glamorgan, and Gwent (Courtney 1983; Davies M 1973, 488–9; Davies RR 1987, 93–100; Williams M 1975, 57–9). The main English migration was during the late 11th to early 12th century.

The new manors and villages were partly settled by English tenants, though the proportion of English to Welsh is unclear (Davies RR 1987, 93–100). English place and field-names could have been imposed by the new Norman lords and their officials, but personal names must presumably reflect the ethnic origins of the population. Using medieval estate documents, it can be seen that the greatest proportion of English personal names was in the extreme south east of Gwent (Courtney 1983, 70, 233). The further west one moves, the fewer English names are found; Wentlooge had a predominance of Welsh personal names (Courtney 1983, 209; Thomas V 1987, 5).

A similar trend can be seen in field-names. In most of the Caldicot Levels, there are very few Welsh field-names. The number increases significantly as one moves west into Christchurch (eg 1585: NLW Powis 12657; 1654: NLW Llang. A.1060), though even here English names are predominant. Welsh is far more common on the Wentlooge Level, and used in the vast majority of field-names (eg 1625: NLW Tred. 56/240). The most Anglicized area appears to have been to the east of Elver Pill Reen. Thus, Whitson was the most westerly knight's fee in the lordship of Caerleon, lying in an untidy zone of transition in the feudal/tenurial structure of the region from one dominated by Anglo-Norman peasant plantation to the east (with nucleated villages and open fields), to an area in which Welsh traditions survived under a thin

veneer of manorialization to the west (Courtney forthcoming).

Settlements

The new Norman overlords seized the pre-existing estates, established English-style manors, and exercised control through a series of castles located at strategic points and in areas of the greatest agricultural potential, including Chepstow, Newport, Rumney, and Cardiff (Courtney 1983, 240–3). They proceeded to establish nucleated villages and common fields, both of which were alien to the Welsh. These two elements are closely linked, as communal agriculture requires the population to be concentrated in one location, allowing the rest of the available land to be laid out systematically as common fields. This gives the lord much greater control over both human and agricultural resources.

There is slight evidence of several fen-edge villages having been planned. At Caldicot tenements are arranged along a very straight main street, while at Magor and Llanvihangel they are laid out around a sub-rectangular green (this is especially clear on early estate maps, eg 1766: NLW Tredegar 1016). Evidence for the plantation or renaming of settlements in the Norman period includes the large number of English ‘-ton’ names on or around the Levels.

Table 2 below lists all the ‘-ton’ names in the area; those in italics lie on the Levels. They include actual farms, along with road and field-names which might indicate the location of deserted settlements. Not all of these ‘-ton’ names will be derived from Norman settlements, but a fair proportion probably are. The distribution certainly shows a very marked bias towards the areas where other evidence suggests Norman influence was greatest (eg nucleated villages, open fields).

Open fields

Unenclosed fields were familiar to the Welsh, as described in 12th and 13th century law books and court rolls, but these lacked the communal cropping, rotations, and fallowing that characterized English common fields (Courtney 1983, 45, 277–9). The field systems established in South East Gwent by the English lords appear much closer to those found in England compared to the rest of Wales. There is no evidence for communal cropping in any of the common fields on the Levels, though this merely reflects the lack of suitable medieval documentary records, especially manorial court rolls, and the predominant meadow in the better documented post-medieval period. However, field-names do include typically English terminology such as ‘acre’, ‘furlong’, and ‘land’.

The distribution of known common fields concentrates to the east of Elver Pill Reen, though there are examples to the west including the common

meadow of Broadmead in Christchurch first documented in 1375 (NLW Bad.D. 1839) (Fig 20). In 1398, Goldcliff was granted 58 acres of arable land and 5½ acres of meadow called ‘Durrantesfeld’, between ‘Gillangespulle’ to the south, ‘Blanchispulle’ to the east, and the river Usk to the north and west (ECR 64/5); proximity to the River Usk implies that this area was in western Nash.

Several field-names might indicate the presence of English style common fields on Wentlooge, notably in St Brides. References include ‘Gretbrodefelde’, ‘Lytylb de felde’, and ‘Revenfurlonge’ in 1408, (Courtney 1983, 283), ‘Churchfield’ in 1629 (NLW Tred. 54/16), and ‘Nawes [Hawse?] filde’ in 1669 (Courtney 1983, 283).

It should be emphasized that though most fields in Wentlooge and western Caldicot may not have been exploited communally to a great extent, other aspects of the landscape did require collective management, notably common grazing and maintenance of the drainage system.

The establishment of manors

Within the English lordships the general pattern was for the fertile lowland areas to be exploited directly through the establishment of English style manors; such areas were known as ‘Englishries’ (Reeves 1979, 8; Sylvester 1969, 116–17). The upland areas took longer to conquer and, when finally subdued, they tended to keep their Welsh customs and be exploited less directly, for example through the payment of food renders instead of rent; they were known as ‘Welshries’.

The English subjugation of South East Wales was firmly based upon feudalism; it was a ‘joint stock enterprise by barons and vassals, under the ultimate control of the king’ (Davies RR 1987, 93). Each lordship was divided into manors or ‘knight’s fees’ (Davies RR 1987, 94) which appear to have been closely related to the preceding pattern of estates (see above).

By the 13th century, most of the coastal zone of South East Gwent was divided into manors. Initially there was probably a simple relationship between township, manor, and parish but over time the situation became more complex. For example, Caldicot appears to have broken down into at least four manors: Caldicot, Westend (or Caldicot by Caerwent), Priory (or Eastend), and Dewstow (GwRO D.668/25; Bradney 1929, 110–15; Birbeck 1970, 14).

An even more complex pattern is seen in the Welsh areas of western Caldicot and Wentlooge. For example, by 1700 the four parishes of Coedkernew, Marshfield, St Brides, and Peterstone, were divided between fourteen small manors which bore no relationship to the parish structure (GwRO D.43/5397; Thomas V 1987, 4, 15). These manors included St Brides, Sutton, and FitzJohn de la Moor lying wholly in St Brides parish, and St Peter’s in the Moor wholly in Peterstone, while

Table 2: '-ton' place-names*Caldicot level and hinterland*

Bishton	Bishopston (renaming of Welsh Lann Catgualatyr; Bradney 1932, 257)
Cardiff	Costenton (near Grangetown, West Moors; 1266: Birch 1897, 284) Sturton (1824: GLRO D/D BE/1)
Christchurch	Milton (1319: <i>CPR Edw.II, III</i> , 376) Templeton (unlocated, near Somerton; 1542: NLW Bad.D. 1482) <i>Traston</i> (1560: NLW Bad.D. 550)
Goldcliff	<i>Clifton</i> (1656: GwRO D.695/92) <i>Henton</i> (1565: Bradney 1932, 283) <i>Porton</i> (1271: Bradney 1932, 275)
Ifton	<i>Collstons</i> (origin of Collister Pill?; 1622/4: GwRO Misc. MSS 1453) <i>Iveton</i> (= Ifton; 1314: Bradney 1929, 124).
Llandevenny	<i>Barton Street</i> (= Barland Street; 1793: GwRO Misc. MSS 433)
Magor	Milton (<i>Brad IV</i> , 228)
Mathern	Langston (1553: NLW Bad.Gp II 14,749) Newton (= Moynes Court; 1362: Bradney 1929, 52)
Nash	Runston (1262: Capel <i>et al</i> 1978, 638) <i>Preston</i> (unlocated; 1610: GwRO D.43/322) <i>Tatton</i> (1583: Bradney 1932, 287–8)
Portskewett	Earl'ston (a close of land; 1630: GwRO D.501/648) Harberdeston (1363: Bradney 1929, 97) Wallston (1498: Bradney 1929, 87)
Redwick	<i>Alfowton Wall</i> (1495: <i>Brad IV</i> , 243) <i>Cockerton Reen</i> (1831: GwRO D.1365/2) (= Ockington ?; 1687: <i>Brad IV</i> , 238) <i>Harpston</i> (near Broadmead) (1501: <i>Brad IV</i> , 239) <i>Velton Street</i> (1428–29: GwRO D.43/3803)
St Pierre	Itton (1362: Bradney 1929, 52)
Undy	<i>Garston</i> (1554: GwRO D.43/5678) <i>Norton</i> (1762: GwRO D.896/105)
Whitson	<i>Wyteston</i> (1279: Knight 1970–1, 19)

Wentlooge level and hinterland

Marshfield	Castleton (1558: Bradney 1993, 98)
Peterstone	<i>Peterston</i> (1533: GwRO D.302/0007)
Rumney	<i>Newton</i> (1700: GwRO Man. 110/17)
St Brides	<i>Sutton</i> (1597: NLW Tred. 23/7)

– names in italics are on the Levels; those not in italics lie on the adjacent uplands.

Cogan Pembroke, English Dowlais, and Ebboth/Greenfield had land in both. Cogan Fleming had land in St Brides, Peterstone, Marshfield, and Bassaleg parishes (GwRO D.668/1). This fragmentation, or 'sub-infeudation', was due to the division of knights' fees, each fraction becoming an independent manor; for example, Cogan Fleming was regarded in 1658 as a tenth of a knights' fee (Thomas V 1987, 16). Therefore, the manorial structure has no bearing upon the settlement pattern or history of reclamation.

Domesday

The south eastern part of Gwent is partly recorded in the Herefordshire Domesday Book (Thorn & Thorn 1983), but mainly occurs under Gloucester-

shire (Moore 1982) in an untidy and anomalous section that follows the account of Gloucester. Only Portskewett and Caldicot are actually mentioned by name, with other villas only referred to as groups of un-named villages, for example:

Under Waswic the reeve there are 13 villages, under Emwy 14 villages, under Bleio 13 villages and under Iudhael 14 villages. These pay 47 sesters of honey, 40 pigs, 41 cows, and 28s for hawks. The value of the whole £9 190s 4d

(DB, W2).

Moore (1982, eg W9) claims that these un-named villages can be identified with medieval manors. Sometimes, this is on the basis of the later history

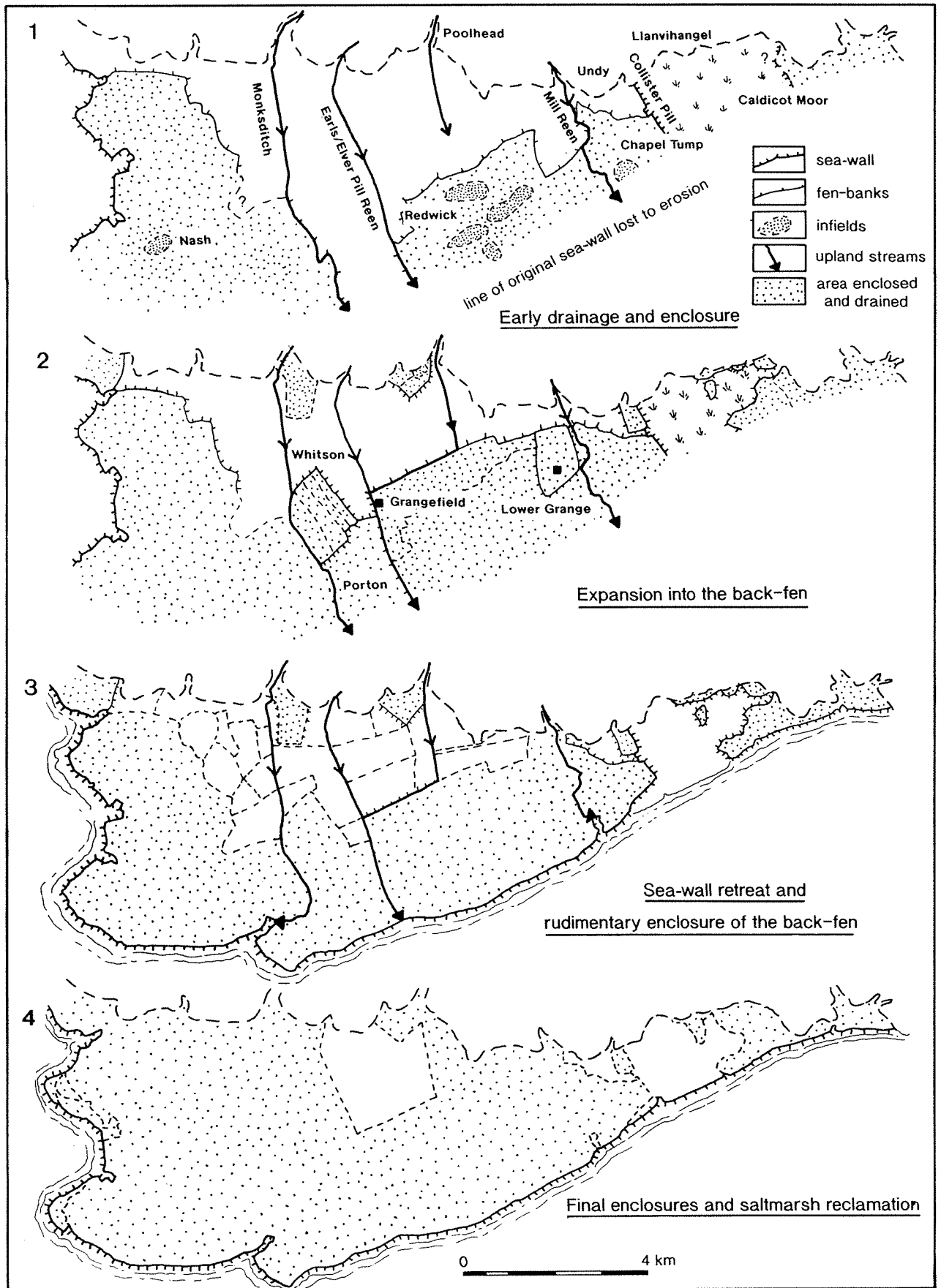


Fig 23 Caldicot Level: broad history of reclamation.

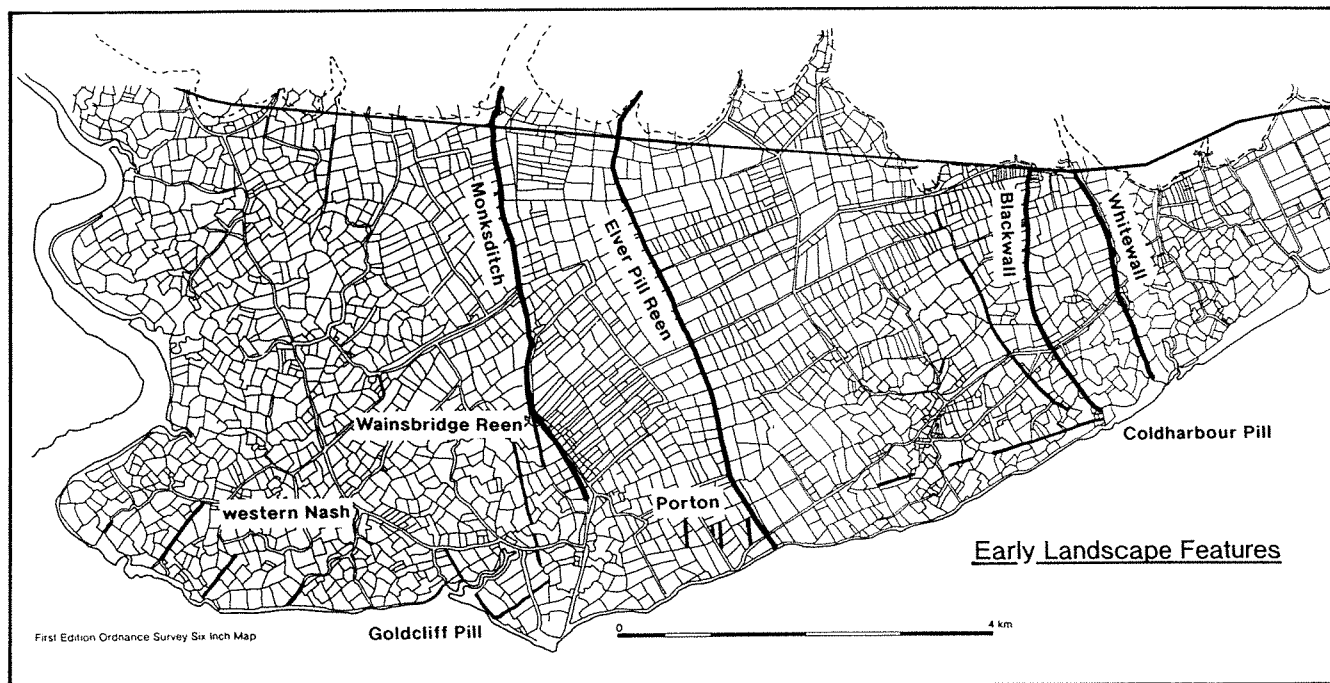


Fig 24 Caldicot Level: early features in the historic landscape (field boundaries based on Ordnance Survey First Edition Six Inch maps).

of land ownership, and occasionally through church dedications, though in other cases it is not clear on what basis the identification is made. Using Moore's interpretation, all the medieval parish centres on the Caldicot Levels are in Domesday (Nash, Whitson, Goldcliff, and Redwick), as well as several other holdings (Traston, Porton). This would imply that reclamation must have started very soon after the Norman Conquest, if not before. However, Courtney (1986) casts some doubt over this approach to identifying the Domesday villas, and in the majority of cases there is little or no evidence to support Moore's interpretation.

The Domesday assessment, where made, was not in hides but *carucates*, indicating that feudalization was underway. Moore (1982, note W6) argues that the *carucate* used in Wales was equivalent to the 'land for x ploughs' used in parts of England, and that the lack of hidation shows how the area had only recently come under English control. Sometimes, places were not even divided into *carucates*, but were assessed using the Welsh system of food renders, as in the example above (Darby 1977, 326).

The process of reclamation

The context English colonization

Actual reclamation of the Gwent Levels is usually undocumented. The initial act must have been protection from inundation by building a sea-wall (Fig 4); this is totally unrecorded. The next stage was the creation of a drainage system and division

of land into fields. The earliest secure reference to this is an agreement between Urban, bishop of Llandaff, and Count Robert of Gloucester in 1126, concerning 100 acres in the marsh between the rivers Taff and Ely (Cardiff West Moors). The area could be used, it is stated, for ploughing or pasture (Boon 1980, 33). While there is no reference to sea defences, drainage must have been undertaken for arable cultivation to have been possible.

It is unclear when the recolonization of the Wentlooge and Caldicot Levels began, though in the case of Caldicot at least, it must pre-date c 1113 when Nash and Goldcliff were granted to the new priory of Goldcliff; the gift included chapels at these two places, indicating that this was not an unpopulated wasteland. We know too little about the Roman landscape to be sure whether the 12th century sea-walls could have been of Roman origin or totally new creations. In Wentlooge, the Roman defences may well have survived over long stretches, though major breaches along the tidal rivers would have required sealing.

As described above, it is tempting to see the settlement of the Levels in the context of the general process of English colonization. The new English lords often planted migrant settlers on virgin lands or in areas hitherto not intensively or permanently cultivated (Davies RR 1987, 98). If the '-ton' place-names do indeed date to this period, then most of the higher coastal parts of the Levels with their 'irregular' landscapes must have been settled during the late 11th to 12th centuries.

Survivals from the Roman landscape

Fig 24

Without early documentary references, we must attempt to establish a relative chronology for how the landscape evolved. On Caldicot there are a number of major artificial reens or alignments of minor field boundaries, that appear to pre-date the main pattern of fields; the 'historic' landscape was created through a process of 'infill' between these features. The curious boundary cut by Goldcliff Pill has been described above (Fig 12). Two other major examples of early artificial reens flow into Coldharbour Gout, and one running south of Redwick, and the other west of Blackwall (Fig 27). A more fragmentary example runs through the centre of Goldcliff (Fig 24), comprising a series of field-boundaries that form a remarkably straight alignment, parallel and c 300 m to the west of Wainsbridge Reen. This can be traced in a fragmentary form for c 1250 m between the Goldcliff-Whitson road and Grange Farm. Monksditch, Elver Pill Reen, Blackwall, and Whitewall also pre-date the surrounding fields. They all carry upland streams across the Levels and form the framework for the later drainage system and parish structure.

Three parallel alignments of boundaries in south west Nash also appear to be very early in the landscape history, while there are hints of a similar field system underlying the present landscape of Porton (Fig 24). An estate map of 1791 shows three parallel boundaries c 320 m apart, on a slightly different orientation to the Porton 'planned' landscape (GwRO Man/D/102/0007).

Some of these features may be survivals from the Roman landscape, such as upstanding linear earthworks that were high enough to protrude above the post-Roman alluviation. Whitewall is particularly interesting, in that it runs roughly parallel to Blackwall, and forms the continuation of an alignment of boundaries that runs across the upland landscape and appears to be a Roman road (Fig 11).

The responsibility for sea-wall construction

In the Roman period, we can be reasonably confident that only the legionary authorities would have been capable of such an enormous task as draining Wentlooge and possibly Caldicot. However, by the medieval period, after the failure of the Roman flood defences, the Levels were divided between numerous estates (see above). On Caldicot these tended to occupy fairly discrete territories: Nash/Goldcliff possibly with Whitson/Porton; Magor/Redwick possibly with Bishton; Undy; Llanvihangel; Rogiet; Ifton; Caldicot (Fig 22). The process of reclamation had to start either with the repair of Roman sea-walls or the building of a new structure(s). Was this a co-ordinated effort, or did the different estates work separately?

Different communities/landowners certainly had different policies towards reclamation. This is most

clearly seen either side of Collister Pill (Fig 23). To the east, in Llanvihangel, there was almost no attempt at reclamation, whereas to the west, in Undy, a sea-wall ran from the fen-edge to the sea and hence along the coast; clearly these two communities managed their parts of the Levels entirely separately.

Later erosion has caused the loss of the 12th-century coastal wall, so we do not know whether Caldicot west of Collister Pill was enclosed by a single sea bank, implying that all the communities/landowners with land on the Levels worked together. If individual communities had operated separately, we would expect to see the Undy scenario repeated, with sea-walls running from the fen-edge, along the coast, and back to the fen-edge; there would not have been a continuous sea-wall along the coast (Fig 25).

Therefore, three possibilities present themselves (Fig 25). Firstly, that our early estates did indeed work separately, and that sea-walls originally ran north-south, from fen-edge to the coast, along the estate boundaries (eg along Monksditch, Elver Pill Reen, Blackwall, Whitewall, and Mill Reen). Undy is the most likely contender to have worked alone (but see below). Magor Pill appears to have been tidal as far inland as Pill Farm, at the south east corner of the Lower Grange estate (Allen & Rippon 1994), while northwards, Mill Reen is embanked and might have served as a sea-wall.

A second scenario is that the old Roman sea-wall survived and simply needed repairing; this would have required some degree of co-operation between the various estates/communities as there was no point in one community having a strong wall if its neighbour did not.

Thirdly, there is the possibility of a single new sea-wall built as one, which might imply that a single authority was responsible. That Goldcliff Priory was granted Goldcliff and Nash, with chapels there, suggests that the wall was in place by c 1113. The most plausible context for its construction then becomes the lord of Caerleon who granted these lands, or the king who initially held them. It is therefore interesting to note that the eastern boundary of the Caerleon lordship was Collister Pill.

Maintenance of the drainage system

Monksditch

There are very few contemporary medieval accounts of the drainage system. One invaluable document is an undated 16th(?) century copy of a mid-13th century deed, possibly of 1248-9, when a prior called Henry is recorded at Goldcliff (Williams DH 1970-1, 51) (ECR 64/3; I would like to thank Martin Bell and Pete Bowers for kindly supplying this document transcribed by Jonathan Parkhouse). It records a grant by Henry, prior of Goldcliff and the convent there, to William Blewett, lord of

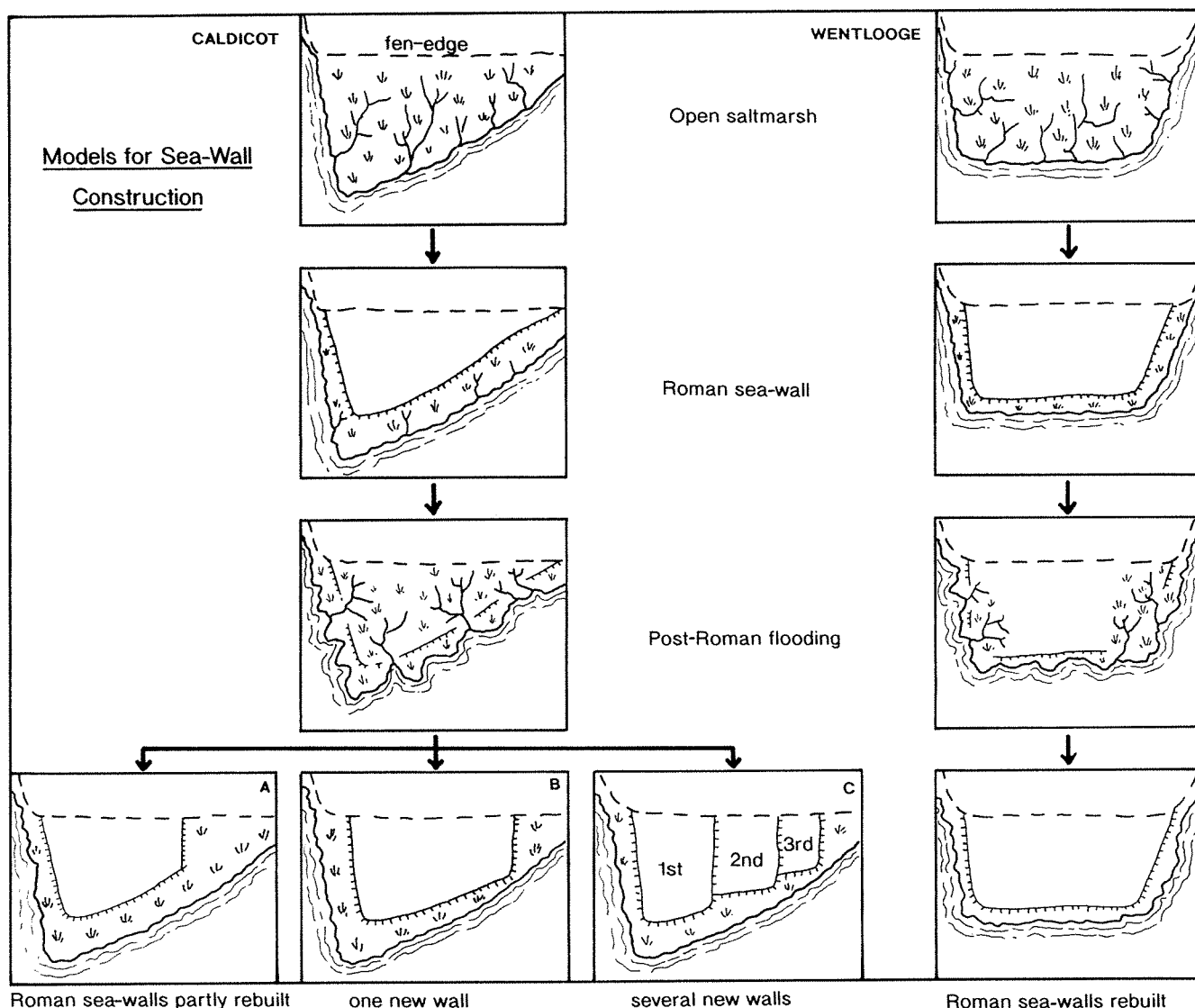


Fig 25 Schematic models for the construction and rebuilding of sea-walls.

Langstone and his heirs, of:

... a gout across *dubeleis* stream through the middle of the monks' land as far as their great gout, which falls into pullard to drain William's meadow, which lies between the land of Andrew, the chaplain of K[ar]liun [Caerleon] and the pasture of Lanwarne [Llanwern] on the one side, and the meadow of Lord Nicholas de Mora and the Monks' Embankment (*fossata*) next to *dubeleis* on the other, to hold the said gout in perpetuity, rendering annually 10s. sterling at Easter; on condition that the prior and monks have a sluice running in their embankment whenever need arises. If the meadow should flood so that damage is done to the monks' land, the grant [gout?] is to be stopped until the flood has subsided; when it subsides, the gout may

again be opened.

William and his heirs are bound to maintain a wall on the east side of their meadow from the wall belonging to Andrew the chaplain up to the alder grove of Llanwern, and another wall on the north from Nicholas' meadow aforesaid to the Monks' wall next to *dubeleis*.

William and his heirs are bound to make and maintain these walls so that no fresh water passes them, nor may they allow any water to enter the gout except water from their meadow.

The prior and monks and their successors are bound to embank (*fossare*) and maintain the wall which lies between *dubeleis* and the aforesaid meadow, from

Andrew's land as far as the land of Llanwern to the same height as their wall called Monckewall, except for 20 feet in

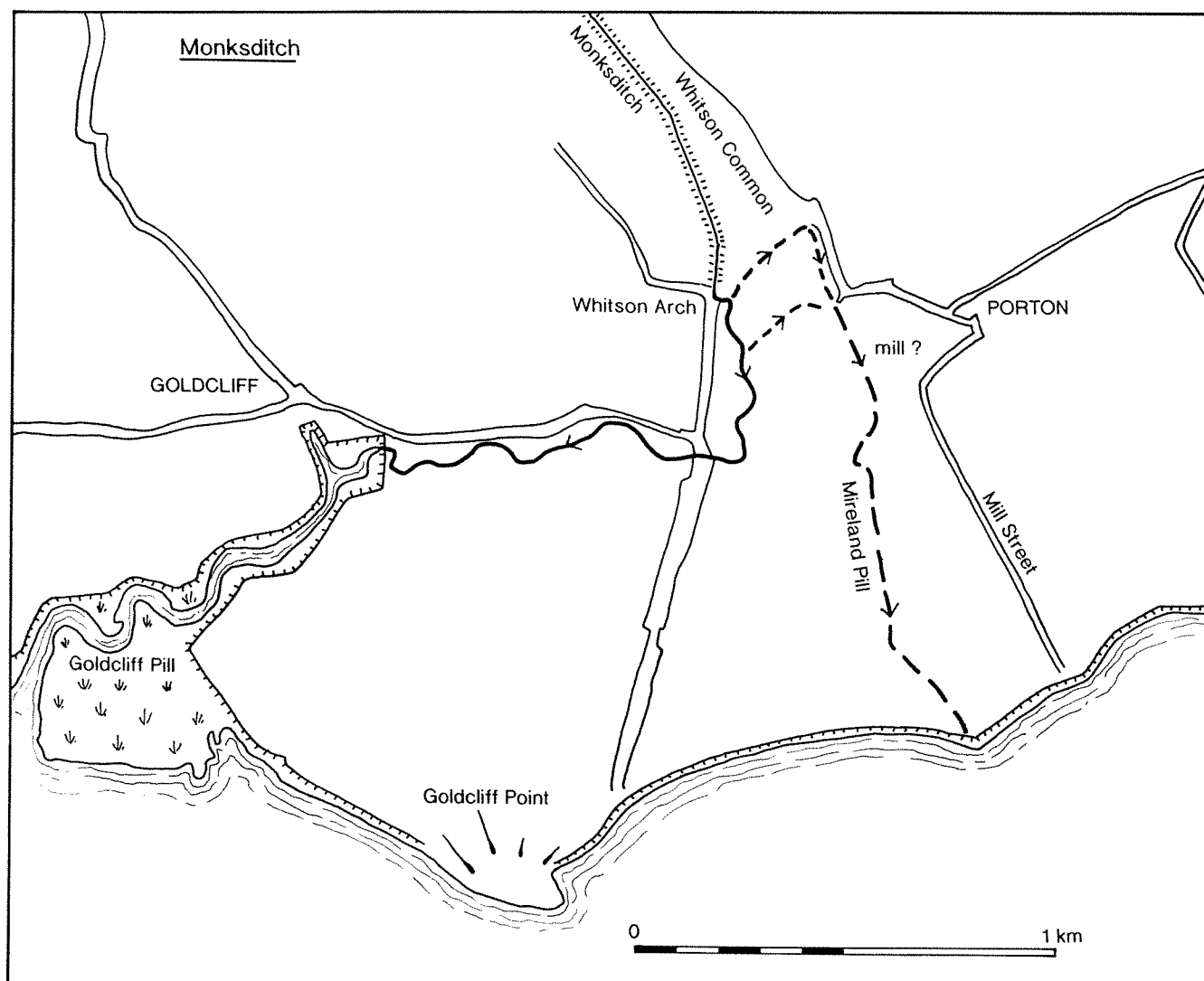


Fig 26 Monksditch: a possible earlier outfall (Caldicot Level).

length in the same wall to the north of the aforesaid meadow which the Monks granted to William and his heirs in perpetuity, for them to have free ingress and egress for carrying on their business. William and his heirs shall maintain the said 20 feet in length to the same height. If a breach occurs in the wall which the Monks do not mend, William and his heirs may repair the breaches from their land up to the same height.

William and his heirs are bound to make and maintain the said gout at their cost, and to find timber to make the sluice whenever need arises; the Monks and their successors are to make the sluice at their costs whenever need arises, and the sluice is to be closed whenever need arises.

For this grant William paid 40s sterling.

If the 10s annual rent is not fully paid by the term when it is due, the monks and their successors may force William and his heirs by seizing the said gout, or any oxen which are found on their land until the said 10s has been fully paid.

The watercourse appears to be bounded by Llanwern and Monksditch. 'Dubeleis' is first recorded in the charter bounds of Llanwern dated c 970, though it is not possible to relate any of the features recorded in that document to the present landscape (*Ll* No 240; Evans JG 1893, 380). However, on the opposite side of Llanwern to 'Dubeleis' was a place called 'Gulyble'; this is also in the bounds of Bishton (*Ll* No 180b) and so must have lain on the eastern side of Llanwern. Thus, 'Dubeleis' was to the west of Llanwern, presumably the stream now called Monks Ditch that flows down through modern Milton into Monksditch. In 1474, there is a references to 'Develes alias Monkedich' (ECR 654).



Plate 10 Monksditch, west of Whitson, from ST 371 844, looking north.

The document of 1248–9 implies that ‘Dubeleis’ stream is the reen adjacent to Monksditch (re the ‘Monks Embankment next to *dubeleis*’). By 1474, the names *develes* and Monksditch appear to have been synonymous (ECR 654 above). The series of regulations regarding the closing of the gout during floods and maintenance of walls shows the importance of very careful control of the drainage system.

Monksditch currently flows into the Severn via Goldcliff Pill (Fig 26). Below Whitson Arch it no longer needs to be raised and embanked, and instead cuts a meandering channel south westwards to Goldcliff Pill. However, there is evidence that it may once have taken a different course. The earliest map to show Monksditch, that of Saxton in 1577, shows it entering the Severn to the east of Goldcliff Point, along a line roughly that of the modern Mireland Pill (I would like to thank Colin Green for first pointing this out). The many 17th century county maps show a similar picture, though they are often simply copies of Saxton’s map of 1577 (Michael 1985). The earliest map to show Monksditch’s present course is a sketch dated 1756, drawn for the Commissioners of Sewers (NRL M.430/912).

There is some tentative corroborative evidence that Monksditch originally flowed directly south. A mill is mentioned in a survey of Goldcliff dated 1663, which describes a ‘watercourse called Monksditch running from Milton [on the fen-edge near Llanwern] towards the mill of the manor [of Goldcliff]’ (Fig 32; GwRO D.43/258). A survey of

Porton dated 1704 refers to a ‘Millstreet’ running to the coast; presumably this is the driveway which runs south from Great Porton/Whitson Church (Fig 26; GwRO Man/E/133/0054). This implies that the mill was in this area, close to Mireland Pill, rather than Goldcliff Pill.

The early references to ‘Monksditch’ imply that it was constructed by the monks at Goldcliff, to avoid freshwater flooding of their lands (see above). An alternative possibility is that it was an earlier feature in the landscape that the monks took over, and which assumed their name.

Rumney

The other area in which we can gain an insight into the medieval drainage system is in Rumney, a demesne manor of the lordship of Newport (see Reeves 1979, 50–64, 167–95). That part of the manor on the Levels was a valuable asset; for example, the 147 acres of moor were worth 8d per acre/year, compared to 4d per acre/year for 31 acres of land on the dryland part of the estate.

Between 1317 and 1356 there are references to five stone sea gouts in Rumney (Phillips 1990, 226). Along with eight yards of wall either side, they were the responsibility of the lord; tenants were obliged to furnish earth to support the gouts, as well as maintain the rest of the sea-wall (Phillips 1990, 226). In 1455–6 two new gouts were constructed, called ‘Rogers’ and ‘Poul Melyn’ at a cost

of £52 14s 1d and £57 each respectively (Phillips 1990, 226; Reeves 1979, 170). 'Rogers Gout' took fourteen weeks to build. Four different ships brought 40 loads of stone from Penarth (1s 8d to 4s 10d each), along with six boatloads of 'filling stone' (1s each), eleven boatloads of limestone for burning to produce lime for mortar (1s each), and two boatloads of paving stones (3s each). For an eight week period, 117 of the lord's tenants were working on its construction. Curiously, in the Rumney Custumal of 1532 there are just five gouts again (Reeves 1979, 169), suggesting either that two of the 1317–56 outfalls had gone out of use, or that the 1455–6 structures were simply existing gouts that were rebuilt. The custumal also refers to three closes of upland in the manor from which no heriots were collected in return for the service by their tenants of keeping the gouts in good repair for the lord (Reeves 1979, 170). In 1626, two gouts called Poolmelyn and Poolmones Gouts were described as ruined by the spring tides and needing repair (NLW Corn.D., 12).

The opening lines of the Rumney Custumal of 1532 (PRO S.C.12/12/15, ff 12–16; Reeves 1977) demonstrate how sea defences were clearly regarded as of prime importance:

This lordship is called the hundreth of Rumpeny and the Town of Rumpny Peterston holy ...

This lordship and hundred lieth by the See side so that in case the See breke in it distroieth the lordship for it lieth loar then the See.

All the See bancks toward the See and for the defence of the hundred be at the chargez of the tenants and every tenant knoweth his part which he stendeth charged with.

There be v. Gotes [gouts] of Ston substanciall made which every of them have Gats [gates] that span [close] when the salt water cummeth and Open and let forth the Freshe water.

The lord stendeth charged with thiez Gotes and xxiiii Fote over every side the Gates And the tenants be bounden to coverd the ston work of the Gotes with Erthe.

The lord hath withowte the See walls ground that is called warth and in Sumer it is medw ground and wynter drowned And Nerer unto the See there is ground called monywarth which the See haith distroied albeit the lord aunsoered the profitts therof. ...

The lord haith no Fyne [entry fine] of the mony warth because it lieth in daunger of water.

The See wynneth and Eteth much of thuis grond withoute the See walls away.

The Enprower enproweth everything

to the most advauntage of the lord as when harriots be preysed to enprowe them for more money. And also to overse the Gotez and sea walls. And to cause amerciaments to be set on the tenants for the safe keepyng of the walls.

The emergence of the landscape on Caldicot

Figs 23, 24, 27, 28, and 29

Once the land had been protected by sea-walls from inundation and divided into manors/communities, the process of drainage and laying out fields began. Two very different examples of how this proceeded are given below: firstly Redwick, where it began at the coast and gradually progressed inland, and secondly, various cases where reclamation started from the fen-edge and proceeded seaward. The role of monastic landlords will then be considered, notably relating to Goldcliff Priory and Tintern Abbey.

Redwick

Fig 27

Redwick is an extensive parish covering 2090 acres of the central Caldicot Level, stretching from the coast to the edge of the low-lying back-fen. Settlement was mostly nucleated in the village, towards the centre of the parish. No Welsh name is known (Bradney 1932, 236); the English name means 'dairy farm amongst the reeds' (Mills 1991, 238). From at least the late 13th century, Redwick was a sub-manor and chapelry of Magor (Courtney 1983, 180, 190). The way in which the land of Magor surrounds Redwick on two sides suggests that Redwick may have been carved out of Magor at an early stage (see above). Redwick has a very good selection of documents, including several early surveys (1707: GwRO D.668/25; NLW Tred. 149/55; NLW Tred. MSS/169; 1712: GwRO D 43/542), and a large collection of calendared deeds (GwRO D.43/*passim*). The most important of these is dated 1683 and transcribed by Bradney (1932, 238–41) referring to a series of 15th century leases and deeds.

The landscape of Redwick falls into three broad areas (Figs 16 and 27): the zone of 'irregular' landscape on the higher coastal land, with a cluster of 'infields' around the village; the open fields of Broadmead to the west; and an extensive block of 'intermediate'/'planned' landscape to the north. The general pattern of landscape evolution follows the model on Figure 4.

Settlements and street commons

The village of Redwick lies at the centre of the parish, by the junction of two elongated oval

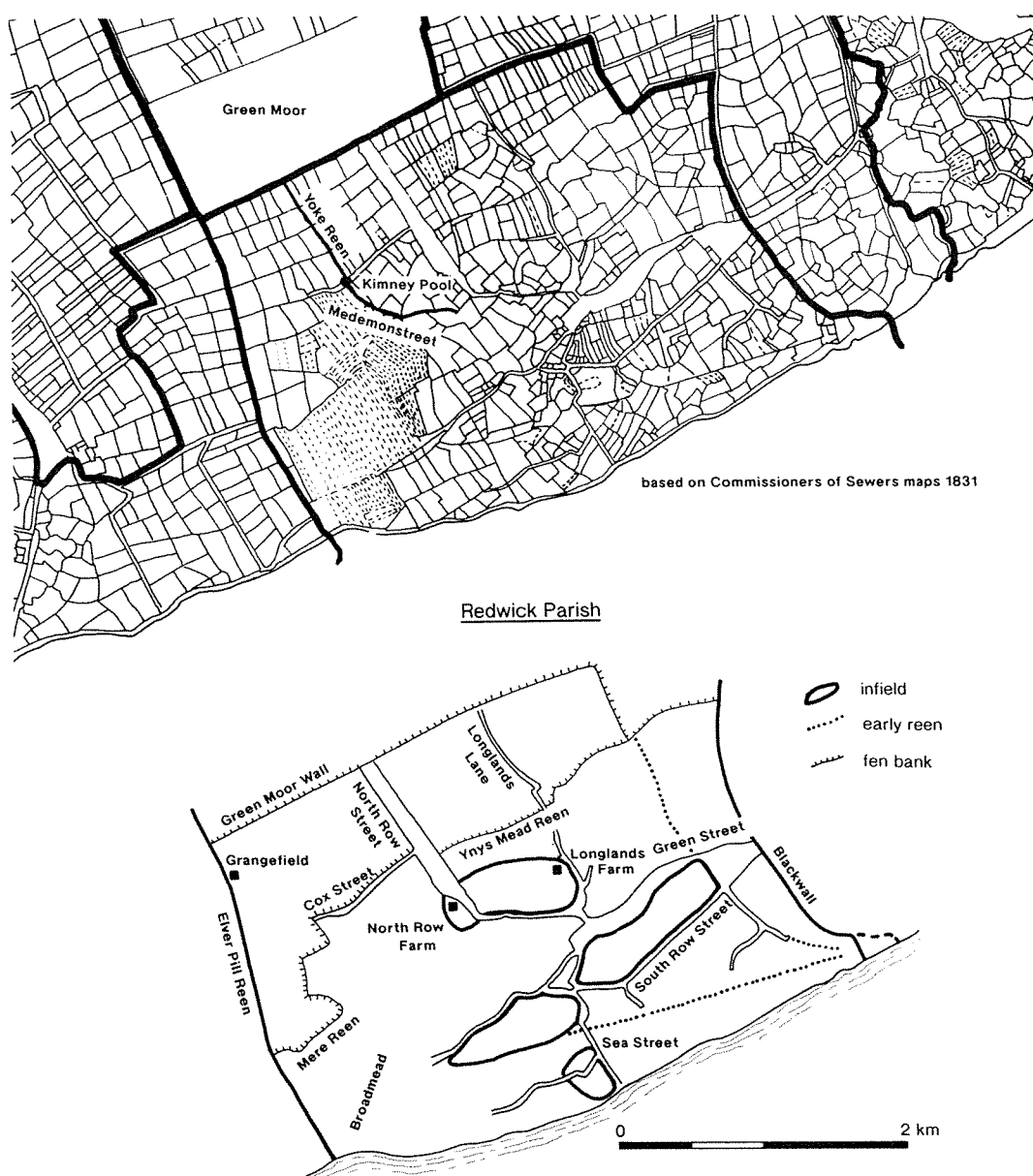


Fig 27 The landscape of Redwick (Caldicot Level): field-boundary pattern in 1831 (GwRO D.1365/12), and major landscape features.

'infields' representing the pioneering phase of settlement. That to the east of Redwick village is defined by Green Street to the north and South Row Street to the south. Both of these very straight roads are the product of 19th century enclosure of long narrow street commons. The second oval enclosure can be traced to the south of South Row Reen; once again it is surrounded by street commons. Windmill Reen appears to cut across its western end.

A third large 'infield' is suspected to the north of Redwick village and partly defined by North Row Street and Longlands Lane, which both curve around its edges. North Row Farm lies to the west and Longlands Farm to the east. A fourth possible 'infield' lies south of the main village, east of Sea

Street. Air photographs show that the present rectangular fields appear to enclose a more sub-rectangular enclosure, around which the sea-wall appears to curve.

In addition to the street commons that define these 'infields', there were a number of others. North Row Street is a funnel-shaped common that runs north from the village to Green Moor. The earliest reference to North Row Street is in 1657 (GwRO D.501/109), though in 1428 a 'Velton Street' is noted as running from Redwick church to Green Moor (GwRO D.43/3803). West Row Street, first recorded in 1474 (*Brad IV*, 240), runs from the village to Broadmead. Sea Street (earliest reference 1687: *Brad IV*, 239) runs south from the church. In 1430, there is a reference to 'Medemonstreet', to the

south of Cox Street (GwRO D.43/4002). It is possible that this is the curving boundary that runs between Cox Street and North Row Street, and which appears to cause Windmill Reen to bend west.

The earliest boundaries

These 'infields' and droveways were presumably laid out soon after the area had been protected from tidal inundation through the construction of a sea-wall. The adjacent areas would also have been drained at this stage and fields laid out. Other features in the landscape that can be regarded as relatively early are Elver Pill (formerly Earl's) Reen which forms the western parish boundary, and Blackwall forming the eastern boundary. Both pre-date the pattern of fields, and were presumably laid out across an empty landscape. The third major north-south watercourse, Windmill Reen, appears to be a later feature, since it cuts across fields in the 'irregular' landscape of Redwick, including the western 'infield'. The earliest reference to Windmill Reen is in 1503 (*Brad IV*, 238), though major elements in the 'intermediate' landscape which appear to post-date it (see below) are recorded by the 15th century, giving an earlier *terminus ante quem*.

The northern limit of the 'irregular' landscape is Ynys Mead Reen, which curiously is not documented before the late post-medieval period. Ynys means 'island' or 'river meadow' (Convery 1992, 173). However, in 1601 a reen is recorded starting from 'Newyears Goroth' and ending at 'Chimney Pool' (NLW Bad.M. 2198); if the latter is Kimney Pool (at the junction of Cox Street and Yoke Reen), then this reen is presumably Ynys. An 'Avenelles-meade' is mentioned in 1504 (NLW Bad.D. 1038). Sylvester (1969, 401) suggests this was related to 'Anneswall' (1569: NLW Bad.D. 170) which she equates with Ynys Wall. It appears to have been the line of a fen-bank, enclosing all the lands initially colonized from Redwick and protecting them from floodwaters from the low-lying back-fen.

The southern common fields

Fig 20

Redwick had extensive common fields. The 1831 map shows four small fields to the south west of the village: between Windmill Reen and Sea Street (not named), Cae Bach, Brewers Ground, and Barlease. 'Bar'- field-names can be derived from barley, indicating that for a time at least this common field may have been used for arable cultivation (Field 1993, 96).

Field boundary patterns suggest the presence of another common field just to the east of Sea Street. Logically, 'South Field', referred to in 1712 (GwRO D.43/542), must lie in this area. The same is true of a number of early common fields, such as

'Calnescroft' and 'Chainesmead' (first referred to in 1430: GwRO D.43/4002), which lay near a mill. 'Robertsland' (1361: GwRO D.501/79), was adjacent to 'Cheleshalfacre' (1454: GwRO D.501/80) and 'Colesland' (GwRO D.43/3803). 'Robertsland' may have become 'Robbins Land', which in 1707 lay to the east of Sea Street and south of South West Street (NLW Tred. 149/55). If so, these early common fields also lay to the south of Redwick village.

Broadmead

Fig 20

Broadmead was the largest common field, covering c 1 km² west of the village, the earliest reference to which is 1422 (*Brad IV*, 239). On the 1831 map, the unenclosed strips of land were arranged in blocks (equivalent to furlongs) called Splots Length, Ireland Length (earliest reference 1704: GwRO Man/E/133/54), Long Moor Mead (a Longland is recorded in 1501: *Brad IV*, 238), Wetters Length (earliest reference 1712: GwRO D.43/542), Cruck Mead, and Phillips Croft (earliest reference 1474: *Brad IV*, 240). Cruck Mead and Phillips Mead lie to the north of Waller Bank, shown on the 1831 map. Waller Bank appears to form part of a major boundary cut by Windmill Reen, which may have formed the original northern boundary of Broadmead.

The later northern limit of Broadmead appears to have been marked by Mere Reen, a continuation of Ynys Mead Reen; 'Mere' means boundary (Field 1993, 64). To the west Broadmead was bounded by Earl's Reen, and to the east by Windmill Reen. The south east area was largely enclosed by 1830, though the resulting field-boundary pattern is suggestive of the early enclosure of open field, retaining the outline of furlong blocks. A small open field beyond Mere Reen called Bareland, is first recorded in 1503, as Inner and Outer Barelands (*Brad IV*, 238). In 1712 it is specified as having been part of Broadmead (GwRO D.43/542).

The northern common fields

Three common fields are shown on the 1831 map to the north of Ynys Mead Reen. 'Cocks Furlong' (first recorded in 1422: *Brad IV*, 239) lies in the south eastern part of what can be identified as 'Blackmoors', first recorded in 1474 (*Brad IV*, 238). In 1712, 'Black Moors' were described as having Cox Wall to the west, Green Moor Wall to the north and 'Kimmeys Wall' to the south (GwRO D.43/542). Therefore, Cox Wall must have run north-south, possibly along the present Yoke Reen. Green Moor Wall (also called Moore Wall; earliest reference 1502: *Brad IV*, 240) must be the southern boundary of Green Moor. 'Kimmeys Wall' (earliest record 1474: *Brad IV*, 240) presumably ran along Cox Street (first recorded in 1430: GwRO D.43/4002) to the extant Kimney Pool (the junction of Cox Street and North Row Street).

The second open field shown in 1831 to the north of Ynys Mead Reen was Ready Mead (derived from reedy?), first recorded in 1483 (*Brad IV*, 239). This lay to the east of Cutt Furlong, and to the north of Maggescroft (1483: *Brad IV*, 239). The 'Cutt' field-name element implies this was a common field, since it refers to a parcel of land in a shared meadow, similar to 'lot' or 'dole' (Field 1993, 23). The third common field in the very northern part of Redwick in 1831 was Toad Mead, first recorded in 1493 (Williams DH 1965, 25).

An abandoned episode of drainage?

Figs 24 and 27

There are also two major field-boundaries in Redwick that no longer appear to have names. The first runs to the south of the village from Great House to Coldharbour Pill. South of Redwick village it appears to curve northwards, but its original line can be traced intermittently as far west as Windmill Reen. At various places the line of this boundary is broken by fields that clearly formed part of an extensive common field, fragments of which survived to be mapped in 1831, such as Barlease. It is unclear whether this boundary cuts across areas of strip-like fields, or if the open fields were laid out across the boundary.

The second major boundary that no longer appears to be a named reen runs roughly north-south. It once again appears to have its origin at Coldharbour Reen, and runs north through Summerleaze to Stutwall Reen. This feature appears to pre-date the surrounding landscape and does not appear to cut across the lines of fields.

However, despite appearing to be major features in the landscape, neither of these major boundaries was a reen maintained by the Commissioners of Sewers in the 19th century (something which can normally be taken as an indicator of the major elements of the drainage system). Therefore, we appear to have two early features that diminished in importance.

The documentary record includes numerous references to a 'Blind Ditch', though this name does not appear on the Commissioners of Sewers map; the earliest reference is 1540 (*Brad IV*, 240). Therefore, it is possible that 'Blind Ditch' was either later renamed, or relates to one of these abandoned features described above. The references to 'Blind Ditch' include it butting 'Picked End' (1712: GwRO D.43/542) and 'Picked Mead' (1687: *Brad IV*, 239). A 'Picked Mead' lies adjacent to the major north-south boundary, but all the other evidence suggests 'Blind Ditch' was the east-west ditch, such as a reference in 1712 (GwRO D.43/542) to it being to the north of Barlease and South Field (see above).

Early fen-edge enclosures

Once the sea-wall had been constructed, most effort went into draining and settling the higher coastal ground; the lower-lying back-fens adjacent to the fen-edge settlements tended to be left as open moor. However, there were a number of places along the fen-edge that saw early reclamation.

The Poolhead Valley

Fig 28

A series of fen-edge enclosures can be identified in the mouth of the Poolhead Valley in Bishton. A small block of fields represents a discrete intake of moor to the north of what was later known as Common Mead (1758: NRL x.M000/912). By 1831 these fields were owned by numerous individuals, with no one person having an extensive holding (GwRO D.1365/2). This suggests that the smaller fen-edge fields represent early reclamations by tenants; indeed one parcel is called 'Chortmede' (first referred to in 1557: NLW Bad.D. 113), possibly derived from 'Chorlemede', meaning serfs' meadow (Field 1993, 176). This is in sharp contrast to areas to the south, which have far larger and more regular fields and were clearly enclosed later; they were almost exclusively owned by the bishop of Llandaff. This pattern of fields is derived from the enclosure of a former open field (1751: NLW Lockwood vol. 1, folio 6) called Riding, first documented in 1557 (NLW Bad.D. 113). 'Ryding' is derived from the Old English for a clearing; it is usually used in a woodland context (Field 1993, 67), but can refer to assarts/enclosures of meadow and common land (Newman 1988, 56).

A number of meadows in this area are recorded from the 16th century; 'Aylwarrsmeade' (1541: NLW Bad.D. 109), 'Chortmede', and a 'Ryding mead' lay to the south of 'Lordes Mead' and north of Green Moor (1557: NLW Bad.D. 113; 1575: NLW Bad.D. 913); 'Bystonys mede' (1562: NLW Bad.D. 115), 'Short Meadow' (1575: NLW Bad.D. 913), and 'Great Mead' also lay adjacent to Ryding and Green Moor (1575: NLW Bad.D. 914). 'Edward's Mead' is referred to in 1756 (GwRO D.43/3625); this may be the 'Aylwarrsmeade' of 1541. None of these can be located with any precision, but the locational information given suggests that they all lay in the area of early fen-edge enclosure in the Poolhead Valley north of Ridings Reen.

The pattern of fields east of Wilcrick Moor Reen (in Llandevenny and Wilcrick) is almost wholly 'intermediate' or 'planned', suggesting a relatively late date of origin. This is not surprising as it covers one of the lowest parts of the back-fen. However, some reclamation, probably fen-edge, occurred quite early, since meadow is referred to in the 13th century: six acres of land had 'Blakewalle' on the east and a meadow called 'Vroggmede' to the north (NLW Bad.D. 546). In 1508, a meadow

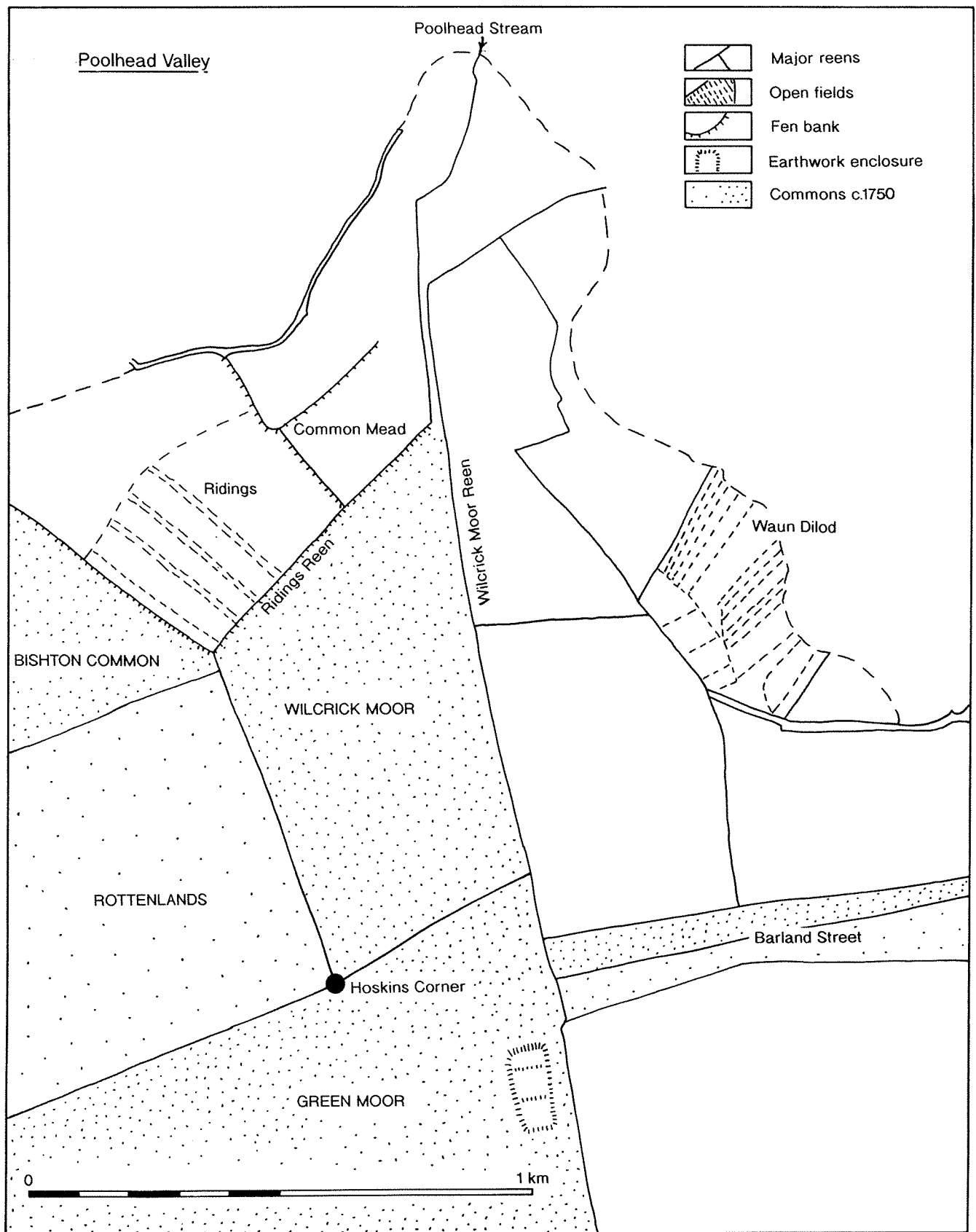


Fig 28 The Poolhead Valley (Caldicot Level) showing the early open fields, and late enclosed common moors.

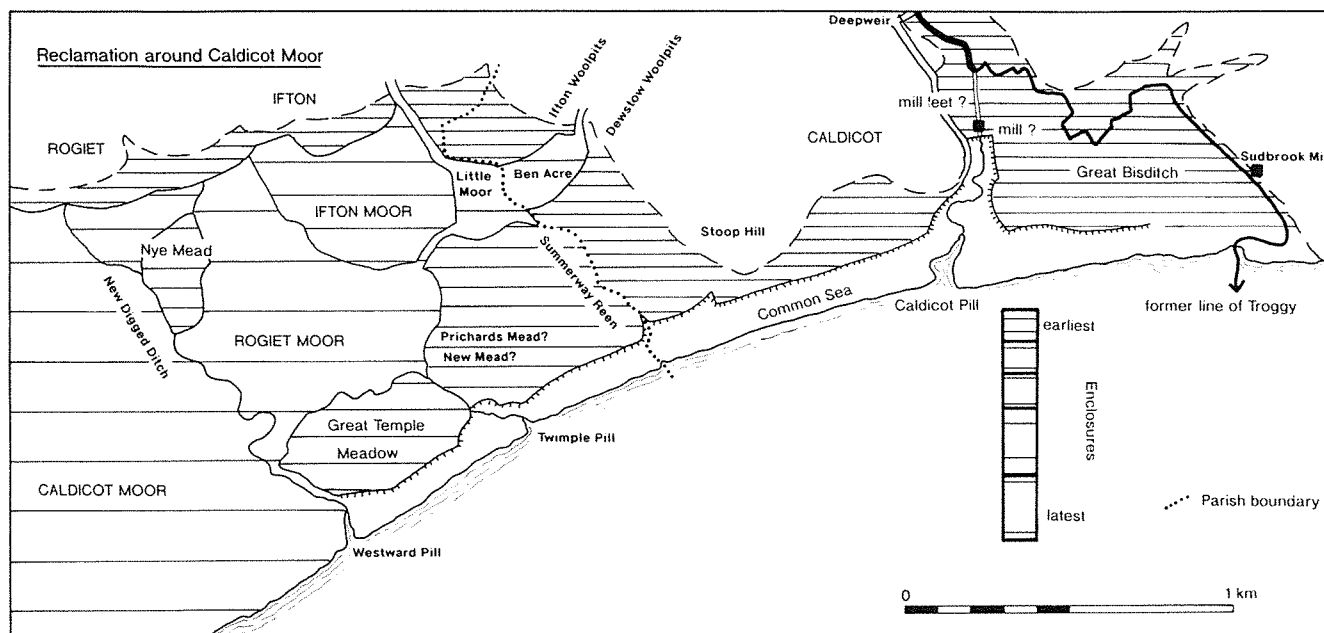


Fig 29 Reclamation around Caldicot Moor (Caldicot Level).

called 'Llandevenue ys mede' is recorded (NLW Bad.D. 1734), which in 1672 was described as a common meadow (GwRO D.31E. DON/1951). Another open field, Waun Dilod, survived to be mapped in 1831 (GwRO D.1365/2). A 'Llandevenny Wall' is referred to in 1712 (GwRO D.43/542). A map of 1751 shows the whole area to have been enclosed except for Barecroft Common and Barland Street (NLW Lockwood vol. 1, folios 9 and 10).

The remaining area, south of Ridings Reen and west of Wilcrick Moor Reen, was common moor until the early 18th century. A rudimentary system of drainage existed by 1552, when the bounds of Bishton manor describe a stream (Poolhead Brook) flowing down to the corner of Green Moor, then to a bridge called 'Green Moors' and on to a gout at 'Tyskin's Corner' (now Hoskin's Corner; Fig 28) (GwRO D.43/4547). This suggests that the major reens dividing Green Moor, Rottenlands, and Wilcrick Moor existed by that date, though the pattern of intervening fields was only laid out from the 18th century (eg map of Rottenlands; 1751: NLW Lockwood vol. 1, folio 6).

Early reclamations around Caldicot Moor

Fig 29

The present river Nedern was formerly called the Troggy, referred to in c 895 (*Ll* 235b). The original outfall lay immediately south of Sudbrook Point, but by the mid 18th century the river had been diverted to its present course flowing into Caldycot Pill. The original line of the Troggy is shown on a map of 1771 as a meandering watercourse used as the parish boundary called Southbrook (PRO map 2281). There is a substantial silted-up palaeo-

channel in the intertidal zone that relates to this original outfall (Godbold and Turner 1992, 45, fig 24; 1993, 4, fig 2).

The Caldicot manorial bounds of 1613 describe the following landmarks along the old course; the Troggy/Nedern to Deepweir, then 'Chark Brook' to 'William Lewis' Mead', 'Vallis Mead', 'Dinhams Meadow', Bisditch, to the patches of mead made by 'Portskewett's Ford' called 'Base Half Acre' and 'Alder/Toder-fordes Acre', along the brook to Sudbrook Mill, Sudbrook Pill, and to the Severn (*Brad IV*, 111; NLW Tred. 147/31; *D of L*, 135-6). The present Nedern leaves this ancient line at Deepweir and flows south along a very straight, obviously artificial, course to Caldycot Pill.

The date when this diversion occurred is not known. Parkhouse and Lawler (1990, 48) suggest it was carried out shortly before 1785, when a shipyard was constructed at the pill and the river was diverted in order to flood the dock. However, a map of 1771 names Caldycot Pill and annotates the area to the north as 'corn mill here formerly'; the road that leads to this point is called 'Millpond Lane' (now called Pill Row). A sale document of 1734 describes 'half an acre of arable in the Caldicot common field called Millfield, joining the footpath from Caldicot Cross to the common called Common Sea, and the millpond that leads from Deepweir to the Common Sea' (GwRO D.337/6/1).

A mill is first documented at Caldicot in Domesday. A fulling mill is recorded in 1275, and again in 1613 along with two water-powered grain mills (Bradney 1929, 111; cf Jack 1981). The 1613 survey allows one of the mills to be located at the head of Caldycot Pill, as it is described as next to the Common Sea (Bradney 1929, 111), shown on the map of 1771 (PRO map 2281). Therefore, the diversion of

the Nedern was probably to provide water for the mill which certainly existed in 1613, and may have been that recorded in 1086. The location of the other mills is unknown. One of them may have been Sudbrook Mill, known to have lain beside the old course of the Troggy (see above; Fig 29), under the present paper mill (eg 1777: GwRO D.501/1332). However, this was in Portskewett and may represent a fourth mill in the area.

To the east of the modern Caldicot Pill, most of the reclaimed land was part of an extensive common field known as Bisditch, large parts of which survived to be illustrated on the 1831 Commissioners of Sewers map (Fig 20). Bisditch is first recorded in the late 13th century as pasture (GwRO D.43/5559). However, there clearly had been arable cultivation, as testified by furlong names such as 'Bean Meadow' and 'Bean Close' (map 1777: GwRO D.501/1332). 'Hemp Acre' is also shown on this map, but first recorded in 1707–8 (GwRO D.501/628). There is very well developed ridge and furrow in this area (Fig 5), that appears to have existed in 1615, when half an acre of meadow in Bisditch was described as 'between the ridges next to the warth' and the meadows of three named individuals (GwRO D.501/616). Piecemeal enclosure of the open field appears to have begun by the early 18th century, but is rarely documented; for example, in 1707 there is a reference to one acre of enclosed land in Little Bisditch called Hen Acre (GwRO D.501/626). The surviving open field was finally enclosed in 1859.

West of the modern Caldicot Pill there are a series of fen-edge reclamations documented from the 13th century. This is a typical 'irregular' landscape, created through piecemeal nibbling away of the common moor, creating 'lobe-shaped' blocks of small fields. Axial elements in this landscape were the broad droveways, which linked the various resources (enclosed fields, common moors, salt-marsh grazing) with the fen-edge settlements. One of these, 'Summerway', ran between areas called Ifton Woolpits and Dewstow Woolpits, through Ben Acre and Little Moor, to Rogiet and Caldicot Moors (Fig 29; 1613: *Brad IV*, 111; map 1759: GwRO D.1670/0069; map 1770: PRO 2281). 'Wlputtesmede' is first recorded in the late 13th century (GwRO D.43/5557); the name may be derived from 'Wolfpits' or traps (Field 1993, 75). Dewstow Woolpits formed part of a lobe-like reclamation to the north of a common called Ben Acre (GwRO D.1365/1, folio 3; PRO map 2281). Also called Little Common/Moor, this area of waste lay at the end of the lane from Caldicot village and formed the continuation of Ifton Common into Caldicot parish (GwRO D.1670/0069).

Further south, a 'New Mead' lay close to 'Prichards Mead' in Ifton and the Summerway (1613: *Brad IV*, 111; 1697: GwRO D.668/25). The earliest reference to 'New Mead' occurs in the first half of the 13th century (GwRO D.43/6166). A sale document of 1613 and the survey of 1697 refer to

Great and Little New Mead in this area (NLW Tred. 48/92; NLW Tred. MSS/169). A West Mead is also recorded in 1697 (NLW Tred. MSS/169). By 1830, all these areas were enclosed, though a small parcel of open field survived to the south of Ben Acre.

Seaward of this area lay a common known as the Common Sea (Fig 29; 1613: *Brad IV*, 111). It was bounded by Caldicot Pill to the east and Summerway Reen (the parish boundary) to the west (map 1771: PRO 2281). A summary of Caldicot's customs in 1655 stated that the Common Sea was for the use of Caldicot's tenants (*Brad IV*, 113).

The zone of small fen-edge reclamations extended along the coast into Ifton. Meads included 'Little Temple' (map c 1800: NLW Tredegar 933) and 'Pichers Mead', recorded in the bounds of Ifton (1677: *Brad IV*, 125). A 'Summerway' appears to have led from the fen-edge, through a common to the coast (*Brad IV*, 125). This block of landscape was separated from open moor to the west by Middle Ditch (*Brad IV*, 125).

Another early reclamation called Great Twimple lies towards the coast (Fig 29; map c 1800: NLW Tredegar 933). 'Temple' is first recorded in Ifton as land called 'Temple Acre' in the early 13th century (WiltsRO 436/42), and later references place this in the 'West Field' (1677: *Brad IV*, 124), implying a dry land location. However, 'land called Twenepul near the land of John Picot' is also mentioned in the early 13th century (WiltsRO 436/42); the reference to Picot's land shows that 'Twenepul' was a coastal reclamation and illustrates that Temple is derived from 'pwll', meaning pill. There is no evidence that the Knights Templar held land here. An actual meadow called Temple is first recorded in 1692 (NLW Llang. C/678). The bounds of Ifton (1677: *Brad IV*, 125), map of 1770 (PRO 2281), and undated map of c 1800 (NLW Tredegar 933) clearly place Great Temple by the coast. Its eastern boundary was marked by 'Dwimple Ditch' (1677: *Brad IV*, 125) and its western boundary by Westward Pill (PRO 2281).

The western most lobe-like fen-edge reclamation, Nye Mead (Fig 29), is first recorded in 1475 (WiltsRO 436/54). It occupies a promontory of slightly higher ground surrounded by open moor (eg map 1766: NLW Tredegar 1016). It lay to the south of Rogiet common moor, distinguished as separate from Caldicot Moor by 1710 (NLW Tred. 149/24). Nye Mead's western edge was marked in 1677 by a 'New Digged Ditch' (*Brad IV*, 267). It is not clear whether this implies the whole reclamation was recent, or whether the ditch had simply been cleaned.

The monastic estates

Figs 30–31

The Church was a major landowner in medieval Britain, and took an active role in improving its estates through drainage; the Gwent Levels were

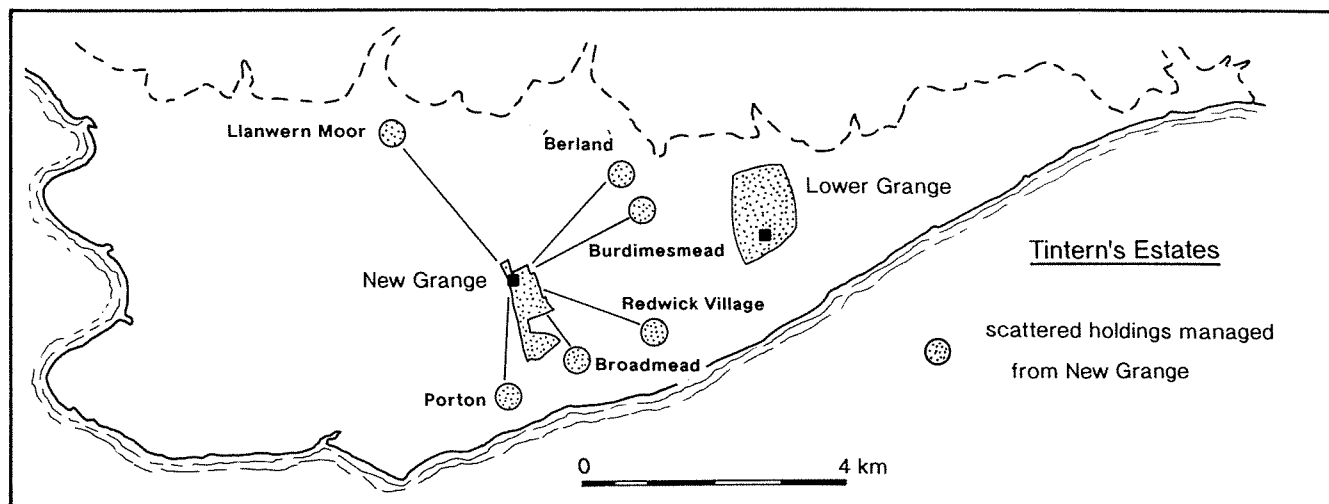


Fig 30 The estates of Tintern Abbey (Caldicot Level).

no exception. However, though monastic estates were extensive, it should be stressed that particularly in Wentlooge, by far the greatest proportion of land on the Levels was owned by secular lords. The two main ecclesiastical holdings were those of Goldcliff Priory (Fig 32) concentrated in Goldcliff and Nash, and Tintern's granges in Magor and Redwick (Fig 30). Llantarnam Abbey also held a grange at Pwll-Pan (later called Pulpen), with significant amounts of meadow (Williams DH 1990, 30). Keynsham Abbey in Somerset (latterly in Avon) also held lands on the Wentlooge Level (Gray 1990, 186–7).

The advowson of St Peter's in the Moor chapel (Peterstone) and 60 acres of land were granted to St Augustine's Abbey, Bristol, in 1147 (GwRO D.302/0007) and the abbots appear to have had quasi-manorial rights in the area. Unfortunately, there appears to be little by way of archives surviving for the abbey's holding (Sabin 1960). In 1546–7, a sale document refers to the 'chapel and the site of the manor of St Peter's in the Moor with 52 acres demesne lands called the Maynes and two barns belonging to the said chapel ... of the late monastery of St Augustine's next to Bristol (whereunto the premises lately belonged)' (NLW Tred. 110/121).

The granges of Tintern Abbey

Figs 30, 31, and 36

Tintern had two granges on the Levels and one on the adjacent uplands. Lower Grange in Magor was a discrete block of land which the monks were responsible for draining in or soon after 1254 (CChR III, 88–97). New Grange in Redwick was a moated farmstead responsible for managing Tintern's lands in Redwick (Williams 1965, 25). These certainly included a tenement close to the church, several parcels in Broadmead and land in 'Burdimesmead' adjacent to Tadmead. Land in

other parishes included 30 acres in 'Berland' to the north of Green Moor, 40 acres on Llanwern Moor and 50 acres at Porton in Goldcliff (CChR III, 96–100; Williams 1965, 26).

Lower Grange

Tintern's early charters relating to Magor were collected together and confirmed in 1307 (CChR III, 88–97). The *inspeximus* of 1307 refers to a charter of Gilbert, Earl of Pembroke, dated c 1114–50, in which the monks of Tintern received land on Magor moor 'divided by ditches', implying at least rudimentary enclosure and drainage (CChR III, 88–9; Boon 1980, 34). In 1245, Tintern was given permission by Walter, Earl of Pembroke and lord of Strigoil (Chepstow), to enclose the land of its Moor Grange at Magor by a ditch, and to make consequential arrangements for enclosure and drainage within it (CChR III, 88–97; Boon 1980, 34). The same document also stipulates that the keepers of the mill at 'Aberweythel' should assume responsibility for the watercourse running through the middle of the 'white wall', so that the monks would not suffer from any defect in it, or in the sluice which controlled the outlet into the Severn. In 1493 there is a reference to the repairing of watercourses on Moor Grange (NLW Bad.M. 14,482).

Tintern was granted Upper Grange (on the uplands of Magor: Fig 36) sometime between 1133 and 1148, in exchange for land held in Wilcrick which was included in its foundation grant of 1131 (Williams DH 1965, 1). Williams (1965, 9) is probably right in assuming that 40 acres of undulating land (*munedam*) granted to Tintern by William Marshall in 1242–6 was at Upper Grange, not on the Levels (cf Parkes and Webster 1974, 140).

In 1291 (*Taxatio*, 282b), the Moor Grange comprised 50 acres of meadow, valued at twice the normal rate for pasture in other holdings of the abbey. It also contained two *carucates* of ploughland; the value was half as much again as arable on

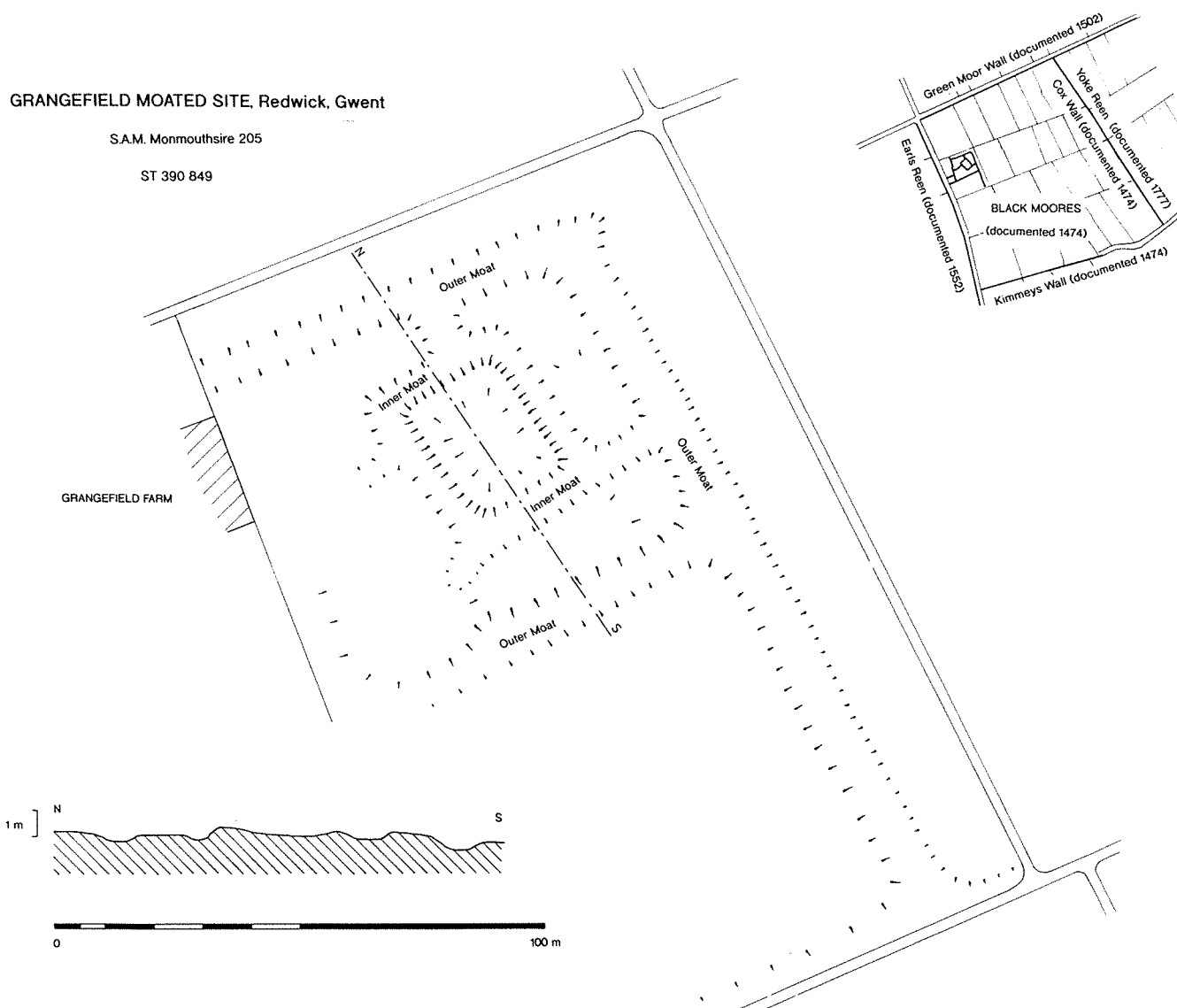


Fig 31 Tintern's grange at Grangefield (Caldicot Level); surveyed by Pete Bowers of University College Lampeter.

other granges (Boon 1980, 34; Williams DH 1984, 225). Arable land is also referred to in the *Valor Ecclesiasticus* of 1535 (Williams DH 1965, 17).

The extent of Lower Grange can be clearly identified on the 1831 map, as a discrete block of land owned by the Duke of Beaufort, successor to the estates of the Earl of Worcester who received Tintern's lands after the dissolution (*CLP Hen. VIII, XII(i)*, 350–1). Its bounds are Whitewall Reen to the east, Pwll Uffern Reen to the north, Blackwall Reen east to the West and Pill Street to the south. The area between Whitewall and Mill Reens appears to have been common land, later largely enclosed as two roughly oval areas (Figs 17 and 19). Earthworks suggest that Pill Street was once much wider than it survived to be in 1831. Lower Grange Farm itself appears to lie within a small oval enclosure of around five acres. The rest of the estate was divided by a series of north–south boundaries, within which ridge and furrow was oriented east–west (Fig 17).

Grangefield and Tintern's 'New Grange'

Figs 30 and 31; Williams DH 1990, 31, pl 45

The Grangefield moated site lies in the north west corner of the parish. A detailed earthwork survey was carried out by the author, Pete Bowers and students from Saint David's University College, Lampeter, in 1994. The site consists of an inner enclosure, c 20 m by c 25 m, on a slightly different orientation to the surrounding outer enclosure (c 40 by c 55 m) and adjacent field boundaries. This suggests that the original moat was built in an area of open moor, with no pre-existing boundaries to constrain its shape. When the outer moat was dug the surrounding area had been divided into fields, causing it to be on a different orientation to the inner one.

This appears to have been the site of a minor grange of Tintern Abbey (Williams DH 1984, 278;

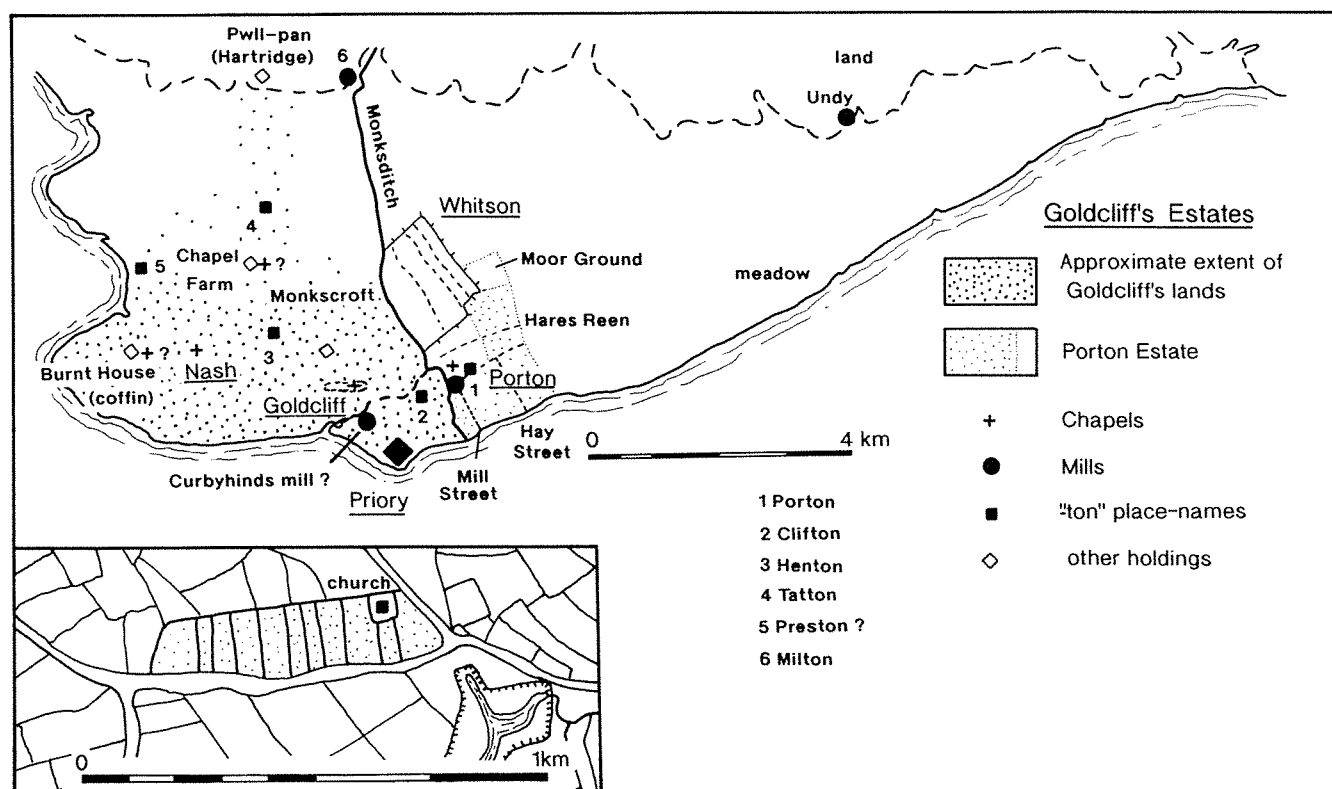


Fig 32 The estates of Goldcliff Priory (Caldicot Level).

1990, 31). The modern place-name, Grangefield (first recorded in 1687: *Brad IV*, 239) suggests that this is the location of 'New Grange' recorded in 1572, when a deed refers to seven acres of meadow/pasture adjacent to New Grange and Green Moor Wall (NLW Bad.D. 254). The site probably administered Tintern's lands in Redwick and Green Moor, though it is not known when the abbey acquired the site. A barn in the present farm complex could be 16th century or earlier, and could relate to the monastic phase (Nicky Evans pers comm).

In 1831 New Grange was owned by the Duke of Beaufort. Though the extent of Beaufort's holdings in 1831 cannot be taken as exactly those of the medieval grange, it is interesting that the estate included all the land in north west Redwick beyond Broadmead and Mere Reen, including the area documented from the 15th century as 'Black Moores' (*Brad IV*, 238). It seems as if Tintern was granted the waste ground beyond the common fields, constructed the grange, and then enclosed the surrounding land.

Green Moor was a large extra-parochial common moor between Redwick and Bishton (Fig 19), first recorded in 1327 (*CIPM VII*, No 46). In c1596 it was estimated to be around 300 acres (NLW Tred. 149/54), much the same size as mapped for the first time in 1831. It was part of the medieval lordships of Redwick and Magor, though the tenants of Bishton, Goldcliff, Llandevenny, Porton, Whitson, and Wilcrick all had rights of pasture there (NLW Tred. 149/54).

Goldcliff Priory and the reclamation of south western Caldicot

Fig 32

Goldcliff is not referred to directly in Domesday, though it is one of the manors that Moore (1982; *DB W19*) identifies as being included among the numerous unnamed villis. The present village and parish church is situated on the Levels c 1 km north west of the bedrock island upon which the priory was built. The foundation charter implies that a church already existed at Goldcliff, though it is not clear whether this was on the island (Plate 11 and front cover) or where the present village is situated.

Goldcliff Priory

Goldcliff Priory was founded in c 1113 when Robert de Chandos, lord of Caerleon, granted land to the abbey of Bec, near Rouen in France. The place-name is derived from the bedrock outcrop at Goldcliff Point which Giraldus Cambrensis described as a 'golden rock' in 1188 (Bradney 1932, 272). A range of charters relating to the priory survive, though there are no detailed surveys (*CChR II*, 361-3; Bradney 1932, 273-74; Cowley 1977; Crouch and Thomas 1985; Graham 1929; Hicks 1934; Williams 1970-1). The foundation charter refers to the church of Goldcliff, chapel of Nash (*Fraxino*), moorland in Nash and Goldcliff, and the manor of



Plate 11 Goldcliff Point from the north west. The well preserved Iron Age timber structures lie in the intertidal zone (centre right). A buried Roman landscape was recorded during construction of the pond (centre). The medieval priory lay on the bedrock outcrop (centre top).

'Pwll-pan' (C&T, No 1); the latter actually be may be Hartridge Farm near Pwll-Pan, since Llantarnam Abbey held the latter (Williams DH 1990, 77). All these lands were probably carved out of the lord of Caerleon's large putative demesne estate of Edlogon and Lebenith, possibly based at Liswerry (see above; Fig 22).

A grant of c 1148–54 makes reference to 200 acres in Goldcliff Moor, 'Blanchesfeld' in Nash (ECR 64/5), and the mill of 'Bide' (Milton) with eighteen acres (C&T, No 5; ECR 64/61). In 1201 further land in Goldcliff Moor was added to the estate (GwRO Man/C/129/0005).

In 1291, Goldcliff held most of the higher coastal land in Nash and Goldcliff, along with a large part of the back-fen; 7 *carucates* of land, 100 acres of meadow and 3 mills and tanneries in Goldcliff/Nash/Whitson; 13 acres of meadow in Magor; 21 acres of land and 2 mills in Undy; 2 mills in St Brides; and a water-mill at Milton (*Taxatio*, 281; Williams DH 1984, 205). Apart from Milton, the location of these mills is unknown, though one of the lanes in Porton was known as Mill Street (see above). Another mill may have lain between Goldcliff Pill and the Point, where the sea-wall was called 'Curbyhinds' in 1656 (GwRO D.695/92); the derivation of this name is unknown, though a water-mill called 'Curbehinds' is recorded in Shirenewton in 1652 (Bradney 1929, 113).

The mill at Milton was the 'Bide' mill granted to

Goldcliff in c1154/8 (C&T, No 5; ECR 64/61). Milton itself is first recorded in 1319 when Goldcliff Priory granted to William de Walleys of Llanwern a mill and some land in Goldcliff and 'Multon' (Milton) and 'a plot of land 100 feet long and 10 feet wide in Goldcliff to make a channel underground, by which water from his land in Llanwern may descend to the sea' (CPR *Edw.II, III*, 376). This channel is also referred to in 1322 (CAP No 3360, 4101). William de Walleys was also given permission to divert the course of a stream in Milton 'descending of old time' from the mill (CPR *Edw.II, III*, 376).

In the late medieval period the priory fell on bad times. As an alien priory (one attached to a foreign monastery) the outbreak of war in 1295 led to royal interference in its affairs and regular demands for payments to the Exchequer (Cowley 1977, 221; Graham 1929; Williams DH 1970–1). The payments Goldcliff made steadily declined throughout the 14th century (CPR *Edw.I, III*, 175; CFR V, 49). In 1324 serious flooding is recorded, and payments to the exchequer were reduced as a result; during 1351, a further reduction occurred as a result of the pestilence (Graham 1929, 112). In 1424, low-lying land was flooded and storms caused the parish church, situated in the Priory nave, to be destroyed and a new church built inland (CPR *Hen.VI, I*, 265). Around 1440, the priory's assets were granted to Tewkesbury Abbey, and then to Eton College in 1450 (Graham 1929, 119).

The parish and village of Goldcliff

The present village of Goldcliff is located at the head of Goldcliff Pill. It lies in a relatively regular block of tenements, with a planned appearance (Fig 32 inset). Analysis of the 1:2500 map suggests that a very tentative planning unit of 8 perches (16½ feet) might have been used. By 1424 the nave of the priory was used as the parish church (see above) but this was destroyed by a storm and the church was then moved inland. It has always been assumed that it was moved to where it stands now. However, the present structure is curious, as the north side of the nave lacks any windows. The tower is of a different fabric and has clearly been tacked onto the nave. It is tempting to see this church as having been an early barn conversion.

There appears to have been at least one other chapel in the parish, at Porton (see below). Earthworks of a moated site c 1 km to the north of the parish church have been traditionally regarded as the site of a chapel; a survey of 1663 refers to 'Chappell Field' (GwRO D.43/258), and the adjacent road is called Chapel Lane, but both lie close to the parish church. There is no evidence that the earthwork site is anything other than a moated farmstead.

Nash was also a chapelry of Goldcliff, first documented in c1113, when it was included in the foundation grant of Goldcliff Priory (C&T, No 1). In addition to the parish church, there is a Chapel Farm on the road between Pye Corner and Broad Street Common, first documented in 1653 (NLW Tred. 8/1). This may simply refer to land owned by the chapel. Another potential chapel site lies c400 m west of Burnt House Farm, where a medieval stone coffin was discovered (Barnett 1962).

The generally dispersed pattern of settlement in Goldcliff and Nash dates to at least the 16th century. Henton is first documented in 1565 (*Brad IV*, 283), Cross Farm and Clifton in 1656 (GwRO D.695/92). However, the '-tons' of Clifton, Henton, Tatton, and Traston might relate to the Norman colonization. 'Preston' manor is unlocated. A 'Preston Pill' in Nash is first recorded in 1610 (GwRO D.43/322), while in 1630 there is reference to the manors of 'Milton, Preston, and Traston' (NRL q.M040/346). The only major pills in Nash are Coldharbour and St Julians, both recorded along with Preston Pill in 1773 (NLW Carter 26), and Thieves Pill not documented until the 19th century (now under Uskmouth Power Station). This might favour the latter as Preston Pill.

As might be expected, the sheltered waters of Goldcliff Pill provided the ideal location for a harbour. The earliest evidence is a grant of freedom from tolls so that the priory might buy and sell goods in Bristol, Newport, and Cardiff; the priory also held several tenements in Bristol (Williams DH 1970-1, 49). A port is recorded at Goldcliff in 1504 (*CPR Hen.VII, II*, 380), while in 1561 Goldcliff is described as 'another pill where there is much

landing of goods to convey to the ships of Bristol' (*Phaer*, 493). It is included in a list of ports and landing-places along the Monmouthshire coast dated 1578 (Dawson 1932, 13). 'Pillport' is referred to in 1663 (GwRO D.43/258).

Porton

The coastal area between Goldcliff Point and Redwick is unusually low-lying, and has a much more 'regular' landscape than the rest of Goldcliff. The only settlement is the ancient manor and small hamlet of Porton. A chapel or church at Porton was granted to Goldcliff Priory in 1245 (*Ll*, 291; Evans JG 1893, 291). Along with Whitson, it is included in a list of churches dated c 1348 in the Book of Llan Dav (Evans JG 1893, 322), though the *Valor Ecclesiasticus* lists a church at Whitson, but only land is noted at Porton (*Valor IV*, 377). It is not clear whether Porton had burial and christening rights (Bradney 1932, 275; Brook 1985-8, 78; Courtney 1983, 189; Williams DH 1970-1, 50), though there are references to the 'church of Porton' as opposed to the chapel (eg *Llan Dav*, 291).

The location of Porton church is not known. Pete Bowers has carried out a field survey of land to the north of Little Porton but found no trace of any possible building. Local tradition claims that Porton church was washed out to sea, though a quick scan of the foreshore by the author revealed no evidence. In fact, the obvious location for the church is by Great Porton, suggesting that what is now Whitson church was once that of Porton (see below); this however then leaves the question of where Whitson church lay.

A manor is recorded at Porton in 1271 (Bradney 1932, 275). In the late 13th century a messuage, 47 acres of arable land and 2 acres of meadow in Portreveston were granted to Tintern Abbey (*CChR III*, 96-100). The post-medieval Porton estate occupied the whole of Goldcliff parish east of Mireland Pill, apart from this block of fields to the extreme north (map 1791: GwRO Man/D/102/0007). These are the 60 acres of 'Moor Ground', recorded in 1709-10 between Earl's Reen (on the east), the street towards Green Moors (to the north) and the Keywall (to the west) (GwRO D.501/353). Though not named as such, Moor Ground is mapped in 1777 (GwRO D.501/1332). In 1388, Porton was claimed by the Crown as part of its Magor estate (Courtney 1983, 180). In 1536, Goldcliff Priory held the manor of Great Porton though Tintern leased some land there (*Valor IV*, 371, 376).

There is sufficient regularity in the major roads and boundaries to suggest some degree of planning in the landscape of Porton (eg Fig 16). The main elements are the street common running east from Great Porton with Hare's Reen marking its northern edge, and the two north-south roads, identifiable as Hay Street and Mill Street described in a survey of 1704 (GwRO Man/E/133/0054; Plate 12), but first documented in 1692 (GwRO D.695/1).

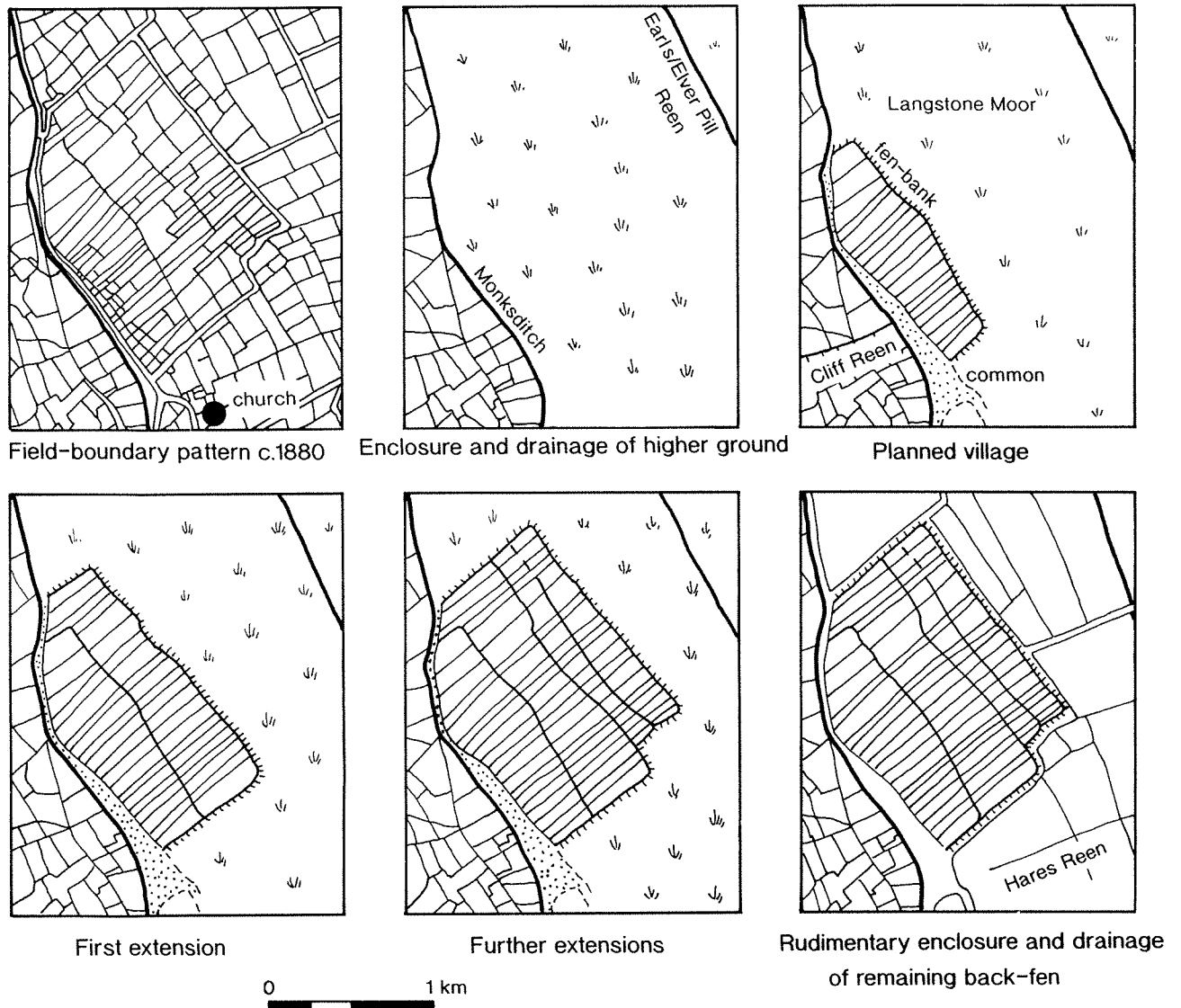


Fig 33 The development of Whitson, Caldicot Level (Field boundaries based on Ordnance Survey First Edition Six Inch maps).

There is another major linear boundary *c* 300 m to the north of Hare's Reen. This is cut by the Whitson/Goldcliff parish boundary, suggesting that it existed before the creation of Whitson parish.

Whitson

Fig 33; Plate 13

Whitson is the smallest parish on the Levels, occupying just 800 acres on the edge of the low-lying back-fen. Monksditch, on its western edge, lies on the 5.5 m contour (cf Figs 2A and 3A) which marks the approximate edge of the 'irregular' landscape in Goldcliff (Fig 14). Whitson village has a highly distinctive layout yet unfortunately is poorly documented. The Commissioners of Sewers survey of 1656 is the earliest detailed record (GwRO D.695/92).

Figure 33 shows the field-boundary pattern in

1881–2, and suggests a model for how it came about. Morphologically, the landscape is dominated by the planned village, consisting of a block of very long narrow fields, running perpendicular to a funnel-shaped common. Though longitudinally these strips extend for some 1 km, they are divided laterally by three boundaries, at least one of which was formerly a lane.

The sequence appears to be as follows. The earliest area to be enclosed and drained was the higher ground west of Monksditch. A church and settlement may have been established at Porton. The area between Monksditch and Elver Pill Reen was an open moor. The settlement of Whitson was then laid out along the edge of a street common. A fen-bank prevented flooding from the back-fen, while Cliff Reen took water from the village, under Monksditch, to the coast. The long narrow strips of land were subsequently extended several times, until the present block took shape. The remaining



Plate 12 Green lane east of Porton. Probably 'Hay Street'. From ST 393 827, looking north west.



Plate 13 Whitson from the south. The parish church can be seen bottom left. The funnel shaped common, with the post-enclosure road down the centre, lies to the west of the village (centre left). Llanwern Steelworks lies to the north (top right).

areas of open moor were subsequently enclosed, with larger and more rectangular fields. The common was the last area to be enclosed.

A detailed metrical analysis was carried out of the extant boundaries in Whitson, using 1:2500 maps. A unit of c 210–220 feet was found to be quite common for the widths of strips, corresponding to a third of a furlong (660 feet) but no convincing standard unit of measurement could be recognised. The metrical units by which fields were laid out and subdivided in the medieval period show considerable variation, particularly up until the 13th century (Grierson 1972, 27; Jones A 1979), and unless the likely local units for South East Monmouthshire can be identified, progress on understanding how Whitson was laid out is unlikely. The length of strips varied considerably, as the first fen-bank was not parallel to the edge of the common.

It is curious that the village lies c 400 m north of the present parish church, suggesting that the planned settlement was laid out after the church was constructed (if this was indeed Whitson church; but see above). It has a fine Norman doorway, which may give a *terminus post quem* of the 12th century for the planning of the village, though it was not uncommon for early doorways to be transported and rebuilt elsewhere. The shape of the Whitson–Porton parish boundary suggests that it was established after the landscape was laid out. This is supported by the way in which it zig-zags through fields and cuts across a presumably pre-existing boundary c 300 m to the north of Hare's Reen. Hence, Whitson parish may have been carved out of Porton/Goldcliff.

The closest parallel for a settlement of Whitson's morphology is in Holland (Netherlands), known as the 'cope' system (Besteman 1986, 338). Settlements of this pattern occurred when a great landowner appropriated the 'regality', or rights of exploitation of wilderness areas, and leased them to colonists for a minimal rent in order to have them reclaimed. A settlement was strung out along a street on the highest ground, with long narrow tenement strips laid out perpendicular to that street, extending into the lower ground. This reclaimed area was surrounded by an embankment. Over time, the area of drained land needed to expand and the tenement strips were extended, and a new embankment constructed.

This pattern is matched at Whitson and other planned settlements in South West Wales (eg Templeton: Kissock 1992, fig 5). Slight changes of orientation in the longitudinal boundaries at Whitson, along the line of the lateral lanes, does indeed suggest phased development. One curious feature is that the first lateral street, Middleway, is not parallel to the edge of the street common or Monksditch, as would be expected if either feature had been used as a 'base-line' for the planning.

Some of the planned villages in South West Wales were the work of Flemings who settled there during the 12th century, as described by Giraldus

Cambrensis (Richter 1976, 18–21). Specialist 'village founders', called 'locatores', including a Fleming called Wizo, are known to have founded planned settlements in Pembrokeshire, including Wiston (Kissock 1992, 39, 42; Rowlands 1980). This was done through the king, particularly Henry I in the period 1107–11, who also held the Gwent lordships at this time. There is, however, little evidence for Dutchmen in the Gwent Levels, though there is a village called Flemingston c 20 km west of Cardiff. Hassall (1815, 282) describes a local tradition that the Levels were drained by Dutchmen, but this was regarded by him as supposition. A manor of Cogan Fleming is documented in the St Brides area of Wentlooge in the late 17th century (GwRO D.43/5397; Thomas 1987, 15–16), though its antiquity is unknown; the earliest reference to Cogan is 'Cogans Wharf' in 1315 (*CIPM III*, 248; Bradney 1993, 1). The place-name Whitson (Wytheston/Wytteston in 1291) appears to have a English personal name prefix (T Roberts/N Edwards pers comm). Therefore, although there are intriguing Dutch connections in Whitson, no firm conclusion can be reached.

There is little indication of when the settlement was founded. Remembering the dangers of fitting archaeological evidence into a documentary framework, a number of contexts can be suggested. Moore (1982) identifies Whitson as one of the unnamed vills in Domesday, but the earliest reference is actually 1314, when it is recorded as part of Langstone Manor (*CIPM V*, 336). The possibility that this documented settlement could have been replanned into the present village at a later date cannot be ruled out, though such an upheaval in the late medieval period (see Chapter 6) makes this unlikely.

Goldcliff owned land at Whitson in 1291 (*Taxatio*, 281; Williams DH 1970–1, 51), though it is not referred to in the foundation charter; if Monksditch was indeed the boundary of the Caerleon lordship's demesne estate, Whitson must have been a later addition. Goldcliff Priory belonged to the Benedictine Order, who managed their estates like secular lords, for profit. They rented lands out, and it would not have been impossible for them to have created a planted settlement (Cowley 1977, 62). There is a parallel for this at the monastic estate of Monkton in Pembrokeshire, where a monastery was given twenty *carucates*; they kept a few for a demesne, planted a settlement and rented out the rest (Jon Kissock pers comm).

Since Whitson appears to have been created after the higher coastal land in Goldcliff was enclosed and drained, a date after the early 12th century is most likely. Assets of the priory were seized by the Crown in 1295, so that if the monks were responsible for founding Whitson, it must have been before this date (Graham 1929, 111). Thus, if Goldcliff Priory was responsible, a mid 12th to late 13th century date seems likely.

By 1314, Whitson was once again part of the lordship of Caerleon, being held off the manor of

Langstone. If we postulate its earlier ownership by Goldcliff, then a possible context for its loss was during the late 13th century when, as an alien priory dependent on a foreign superior, it became increasingly harassed by the English Crown (Graham 1929, 111). Following France's invasion of Aquitaine, Edward I seized the property of alien priories. In 1289, Goldcliff was also suffering from deteriorating relations with its patron, Gilbert de Clare, Earl of Gloucester and Lord of Caerleon; de Clare even seized the liberties of the priory for a year or so (Williams DH 1970–1, 42). In 1314 we hear of Whitson in an inquisition following the death of Gilbert (*CIPM* V, 336). There is no reference to Goldcliff losing lands in 1289, nor any indication of how de Clare acquired Whitson, but its seizure from the priory cannot be ruled out. However, it is impossible to say whether de Clare seized an area of land and planted a settlement, or seized the settlement itself. Another possibility is that the land Goldcliff owned in Whitson was not the planned village; maybe the lords of Caerleon always held the estate and it was they who founded the settlement.

The St Pierre and Mathern/ Chepstow Levels

Fig 2

The date when the areas of alluvium in Chepstow, Mathern, and St Pierre parishes was reclaimed is not clear. A lease of 1545 mentions 'Brodemead', 'Holemead', 'Horsemarsh', 'Little Hill Mead', 'Monkmede Wharf', and 'Smale Wharf' (NLW Tred. 10/1). 'Brodemead' may have been a common meadow as several parcels are described there. 'Monkmead' certainly was a common meadow as there was a dispute over its enclosure in c1500 (Courtney 1983, 288). Horsemarsh is shown on the oldest estate map of anywhere on the Gwent Levels, covering St Pierre Pill (1669: GwRO Misc. MSS 896).

A survey of 1640 refers to 'Almonds', 'Birds', 'Harry', 'Kings', 'Os', 'Newton', and 'Richards' Meads (*Brad IV*, 52). 'Newton Mead' is also on the 1669 map (GwRO Misc. MSS 896). A 'Bordberdmershe alias Richelese' mentioned in 1545 (NLW Tred. 10/1) may be the 'Richards Mead' of 1640. 'Bigsmarsh' and 'Goose Marsh' are recorded in 1653 (*Brad IV*, 57). 'Alinson' and 'Munke mead' are recorded in 1711 (Bradney 1929, 53). A map of 1763 shows the location of 'Kings Marsh', 'Lay Furlong', 'Lords Mead', and 'Bean Marsh' (NLW Badminton vol 1, folio 2).

The Level of Mendalgief

Fig 2

It is not known when the peninsula of land between

the rivers Usk and Ebbw was reclaimed. The area is difficult to study, not least because the landscape has been totally destroyed through the construction of Newport Docks.

It is covered by the 1830 Commissioners of Sewers maps and various other drainage records. This reveals that the area had a typical 'irregular' landscape, of small fields, broad droveways with abundant roadside waste, commons, and the fossilized meandering courses of former tidal creeks. There were several blocks of long narrow fields but no surviving open fields. The road pattern was based upon a spinal droveway, the Mendalgief Road. This led to a common of the same name. Much of the peninsula was part of the Tredegar estate, and maps of c1760 show two farms along the road and two cottages by the common (NLW Tredegar vol 8, folio 58). Overall, this is the same type of landscape as eastern St Brides and western Christchurch–Nash, and presumably dates to the same period (11th to 13th centuries), since reclamations of a later date tend to have more 'intermediate' or 'planned' layouts.

Reclamation in the Wentlooge Level

Fig 34

Figure 8 shows a broad three-fold division of the Wentlooge landscape. The model put forward here is that the late Iron Age saltmarsh was crossed by various tidal creeks, such as that recorded at Rumney Great Wharf (Fig 34.1; Fulford *et al* 1994). During the Roman period, a sea-wall was constructed (since lost to erosion) and the higher coastal areas at least were enclosed and drained by a remarkable planned landscape (Fig 34.2). This is buried to the north east and south west due to late/post-Roman flooding leading to the deposition of alluvium and re-establishment of tidal creeks (Fig 34.3). Roman sea-walls and river floodbanks had to be repaired in the medieval period, and the areas that had been smothered in alluvium were re-enclosed and drained. Recolonization of these areas led to the creation of 'irregular' landscapes (Fig 34.4).

The low-lying back-fen areas of north east Peterstone and St Brides may have been unenclosed even in the Roman period (see Chapter 3; Fig 34.2). In the medieval period, alder fen-carr might have covered some areas. For example, the Bassaleg charter, dated c1100, describes its bounds as going:

downwards through the alders into the marshy land on the east side of [the stream called] Pencarn, and so into the pool [stream] which flows into the Ebbw. From the Ebbw out into the sea and along to Tenbith and so up directly through the marshy ground to the broad stone ...

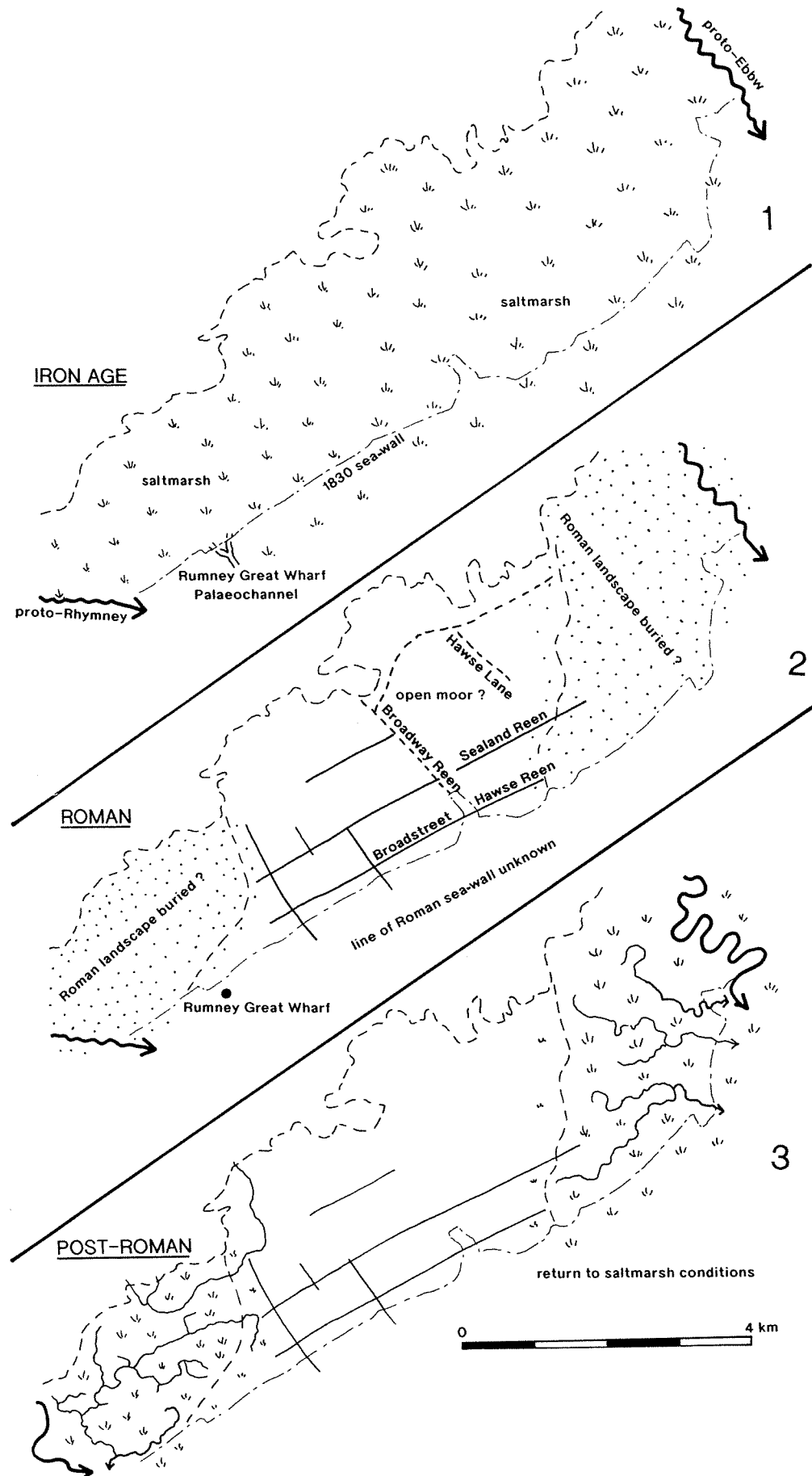


Fig 34 The development of the landscape on Wentlooge.

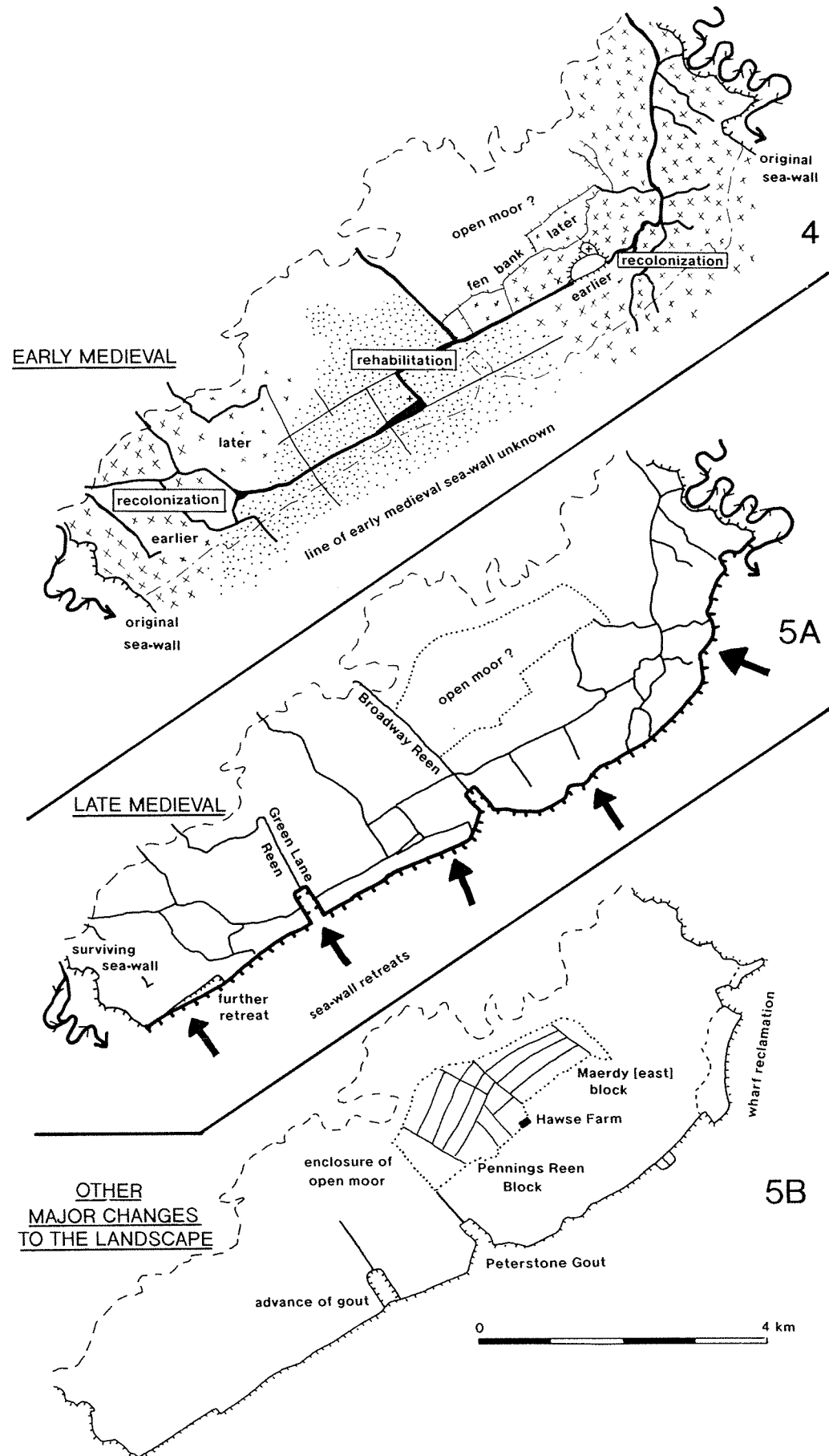


Fig 34 (cont)

(Pelteret forthcoming; I would like to thank David Pelteret for supplying a copy of this paper in advance of its publication).

In the Caldicot Level, the landscape developed within blocks of territory corresponding to the manors/parishes. These bounds appear to have been laid down before most of the landscape was created. On Wentlooge that is not the case. The nature of lordship in Wentlooge was so fragmented that it bore no relationship to parishes (see above). For example, there is a fen-edge bank that runs west from just north of St Brides' church, across the parish boundary and into Peterstone.

The sequence around St Brides' is similar to that around Redwick. The settlement focus was the 'infield' to the south of the church (the church itself may lie in a second, smaller, enclosure; Fig 17). To the east of the 'infield' the field-boundary pattern is typically 'irregular', with just an occasional block of strip-based fields; there is little to distinguish this landscape from that of Nash.

To the west of the St Brides' 'infield' there is a very different landscape, comprising numerous small blocks of strip-based fields, often with slightly curving profiles. Some even appear to have reversed-S profiles, characteristic of medieval common fields. To the east, a major element in this landscape area is the meandering lines of several natural watercourses, one of which forms its northern edge. To the west, there is greater regularity due to the presence of a number of relatively straight south west/north east oriented boundaries; in several cases these appear to line up with elements of the Roman landscape in Peterstone. Therefore, though individual Roman fields did not survive in this area the major drains/walls did, to give a basic framework to the medieval recolonization.

To the north of St Brides' church there is a clear fen-edge boundary (Fig 34.4). East of Hawse Farm this appears to incorporate the line of a natural creek, whereas to the west it is clearly artificial. Several dog-legs in its line (and that of the Summerway green lane) indicate a number of successive westward expansions in the enclosed area. A subsequent fen-bank, Wheel Lane, also exists to the north.

During the late medieval period the sea-wall was moved back (Fig 34.5A). On the whole this was to its present position, apart from St Brides Wharf and Green Lane Reen gout where it was later moved forward, and Rumney Great Wharf where the sea-wall was later moved back (Fig 37).

One of the final areas to be enclosed was north of Hawse Farm, bounded by Hawse Lane to the west, Percoed Reen to the north, Fox Covert to the east, and Wheel Lane to the south (Fig 34.5B). It is referred to here as the 'Maerdy (east) block'. Once enclosed, Green Lane was extended northwards through the area, parallel with Hawse Lane. The

area between them was divided up by three south west/north east oriented reens, 80 m, 95 m, and 80 m apart. The intervening areas were divided into long narrow fields. Though superficially similar to the Roman fields of Peterstone, these were much shorter and the longitudinal boundaries more curving. Maerdy Farm lies at the centre of this block and may have been founded straight after the enclosure.

A second area of late-enclosed land, the 'Pennings Reen block', lies to the west of Hawse Lane (Fig 34.5B). Hawse Farm lies in the south east corner, beside Hawse Lane and just beyond the old-enclosed lands of St Brides. The whole area between the old fen-bank and Percoed Reen may have been enclosed in one go, but a fairly regular grid could only be fitted into the northern area; a more radial pattern had to be adopted to the south. It is in fact possible that the whole of this area and the Maerdy (east) block were enclosed at the same time, since the distances between the main longitudinal boundaries are remarkably similar: 80 m, 90 m, and 85 m. To aid the drainage of this area, a new reen appears to have been cut across the older enclosed lands to the south, and just to the west of Ty-Coch Farm. This may be the new reen cut between Pencarn and Quay Gout in 1691 (Thomas 1987, 65).

There were a number of other changes to the landscape in the post-medieval period. Saltmarsh reclamation took place off St Brides, and a formerly recessed gout at Green Lane Reen was moved forward. Tredegar Park was first created c1664 by Sir William Morgan, who built the present house. The southern part of the park was known as the Home Farm and was never ornamented except for an avenue of chestnut trees; it was managed mainly for sporting purposes (Whittle 1992, 147; Phillips 1990).

The Cardiff Moors

Fig 35

The areas of alluvium between the rivers Rhymney and Ely are generally called the Cardiff Moors. Both areas were extensively developed by the time of survey for the Ordnance Survey First Edition Six Inch maps and, lying in Glamorgan, they were not covered by the Monmouthshire Commissioners of Sewers maps of 1830–1. However, large areas are covered in a fine series of estate maps (c 1760: NLW Tredegar vol 10; 1824 : GLRO D/D BE/1), though these do not provide complete coverage. Therefore, Figure 35 is a composite map, showing different areas at slightly different times. Early dock developments, shown on some of the maps, are not included.

The area between the rivers Taff and Ely comprises Cardiff West, Ely, and Leckwith Moors. Reclamation started by 1126 (see above; Boon 1980, 33). The name West Moor dates back at least to

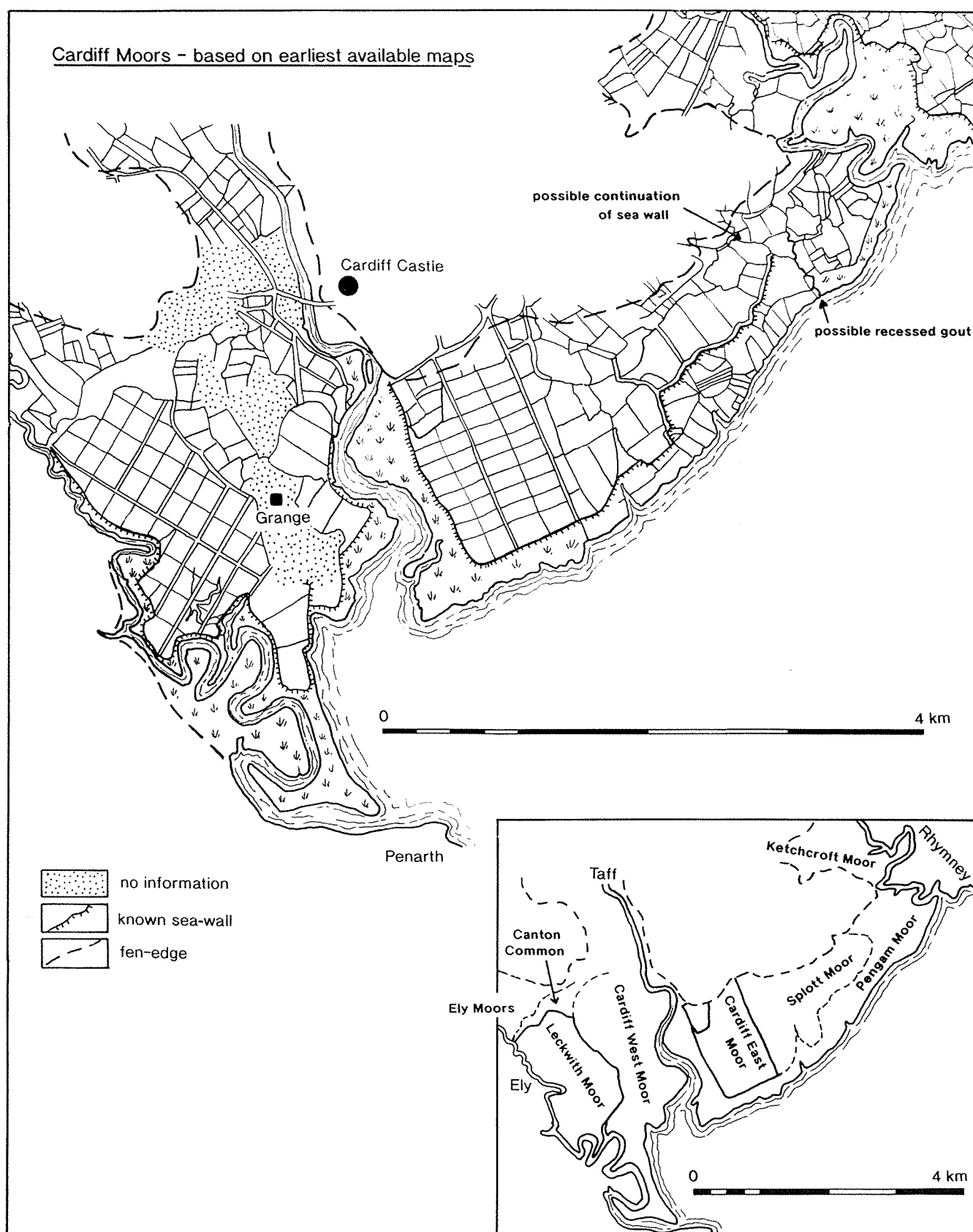


Fig 35 Cardiff Moors, based on the earliest available estate maps (see list of sources). These maps are not all contemporary and do not cover all areas.

1325 when one acre of land there was involved in a land transfer (GLRO D/DC 2). Margam Abbey owned a grange on the moors west of Cardiff which has given its name to the Grangetown district of the city (Birch 1897; Williams DH 1990, 30). The estate was granted to Margam c 1200 and protected from flooding by embankments and reens. DH Williams (1984, 306; 1990, 30) claims it had a largely pastoral economy dominated by sheep, though in 1338 Earl Gilbert granted Margam 'common of pasture in the marsh on the west of Cardiff between the Taff and Ely, the monks only paying for each herd of cattle as much as the burgesses [of Cardiff] did at the time of William' (Birch 1897, 236).

The landscape around Cardiff West Moors appears to be 'irregular'. Leckwith Moor, in contrast, bounded by Cardiff West Moors to the north and east, and Canton Common to the north and west, has a much later landscape, with a uniform pattern of almost square fields; this was clearly a post-medieval reclamation (reminiscent of Caldicot Moor). North of Canton Common lie Ely Moors. They once again had an 'irregular' landscape and a field-boundary pattern suggestive of the former existence of open fields.

The area between the rivers Taff and Rhymney was known as Cardiff East, Ketchcroft, Pengam, and Splott Moors (GLRO D/D BE/1). Like Leckwith, Cardiff East Moor has a very rectilinear landscape, clearly of post-medieval date. The remaining areas to the east have 'irregular' landscapes, with meandering natural drainage channels incorporated into the field-boundary pattern. There are a number of sinuous droveways that run from the fen-edge settlements such as Penham, Splott, and Adams-down Farms, and Roath village. A sea-wall is shown on a number of early maps, but this stops midway between the coast and fen-edge; a field boundary may continue its line, having turned through roughly 90 degrees (Fig 35).

The area in front of the sea-wall is shown on these maps as having been divided into plots, including strip-like fields. It is not clear whether these were once protected by another sea-wall, since lost to erosion, or whether they simply represent the parcelling up of the saltmarsh. The former is more likely, and a curiously straight boundary on Pengam Moor may represent the line of the old sea-wall and recessed tidal gout.

Development of the settlement pattern in the medieval period

There is virtually no documentary evidence for the existence of individual farmsteads on the Gwent Levels until the late 15th century (Moorbarn on Broadstreet in Nash is the earliest farm to be documented, in 1474: ECR 654; Henton Farm in Goldcliff is recorded in 1565; Bradney 1932, 283). Medieval references to Nash, Goldcliff, Whitson,

Porton, Redwick, Peterstone, and St Brides relate to the township or parish; they refer to a territory not a settlement. Hence, the same terms of reference are used for Nash, with its dispersed settlement pattern, and Redwick, with its nucleated village.

As described above, Wentlooge and the western part of the Caldicot Level always appear to have had a dispersed settlement pattern. Some of the earliest farmsteads are probably those with '-ton' place-names, such as Henton, Porton, Tatton, and Traston (see Table 2), possibly dating back to the late 11th/12th century English colonization of the area. The large number of '-ton' names in Redwick parish, preserved as street (eg Velton), field (eg Harpston), reen (eg Cockerton), and wall (eg Alflowton) names is curious. Field-names are known to record the presence of long abandoned settlements (eg 'wick', 'worth', and 'huish' names on the Somerset Levels: Costen 1992). It is possible that during its initial colonization, a dispersed settlement pattern was established in Redwick, and that at a later stage the present village was created through a process of nucleation.

The date of origin of most farmsteads on the Levels is unknown. Some are undoubtedly recent and have been established since the Levels were first mapped in detail in 1830–1. This is certainly true of many cottage sites, that are characteristically founded on enclosed strips of roadside waste. For the remaining farmsteads, it is likely that the older ones tended to be on the higher coastal ground, closer to the parish church. Over time, new farms were created in this same area, as well in lower-lying inland areas particularly along the street commons and droveways.

Such a gradual migration of settlement inland has recently been well documented in the English Fenland, where the main period of settlement around the droveways was from the 13th to 14th centuries onwards (Silvester 1988, 160–9; 1993, 28–34, esp Fig 3.3). A similar loose concentration of settlement around commons and greens is known from various places in Britain, from the West Midlands (eg Dyer 1991, 36–43) to Suffolk (eg Warner 1987, 29–43).

Well-dated archaeological evidence for a similar process is lacking from the Gwent Levels, though several threads of evidence do support such a model. Firstly, there is the broad distribution of settlement. This concentrates on the higher coastal areas and then fingers its way into the inland areas along the street commons with an ever decreasing density of farms. The origins of these farms is unknown, but some at least existed beside commons and droveways by the 16th century (eg Moorbarn and Henton; see above).

There are just three unstratified medieval pottery assemblages from the Gwent Levels, all on Wentlooge. Two come from the fieldwork of John Allen, at Broadstreet Common opposite Sluice Farm in Peterstone, and Rumney Great Wharf;

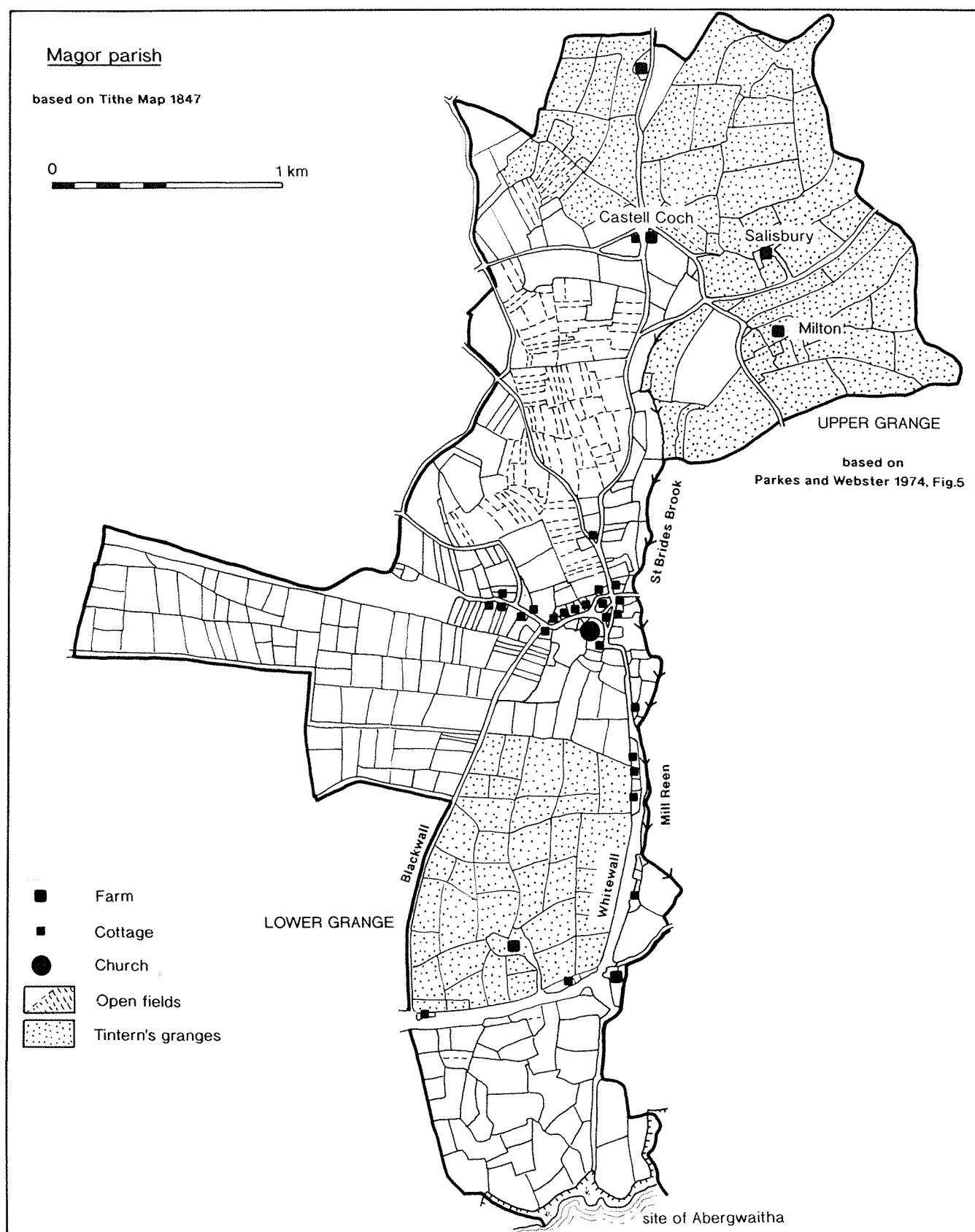


Fig 36 Magor parish (Caldicot Level) based on Tithe Award map 1847.

both are dated to the 12th to 14th centuries (John Allen pers comm). These two sites, along with the potentially early Newton place-name, suggest that Peterstone always had a scatter of farmsteads along its coastal zone and beside Broadstreet Common. The third assemblage, seen by Diane Brook (pers comm), came from just south of the church and contained nothing earlier than the 13th century.

In St Brides, the distribution of farmsteads on the 1830 maps shows a clear pattern, with virtually all sites being on or very close to the Newport-Cardiff road. There are two notable exceptions: Maerdy and Hawse Farm. The former lies in the centre of a large block of very rectilinear fields that appears to be the last part of the Wentlooge Level to be reclaimed (see above). Hawse Farm lies on the northern edge of the old-enclosed lands of St Brides', beyond the possible fen-bank. It is at the south eastern point of another block of very 'regular' landscape, also probably enclosed relatively late. Both these farmsteads probably relate to the reclamation of their associated blocks of land.

The town and port of Magor

Fig 36

Magor is a classic strip parish, extending from the higher uplands, across lower foothills and onto the Levels as far as the coast. It contains a substantial nucleated settlement, located on the fen-edge, along with several minor manors on the uplands, all in existence by the early 14th century: Castell Coch, Salisbury, and Milton (Bradney 1932, 228–31). A well developed open field existed immediately north of the village. In addition, Tintern Abbey had two granges in the parish: Upper Grange (Merthyr-geryn) on the uplands, and Lower Grange on the Levels (Parkes and Webster 1974).

The place-name Magor is derived from the Welsh 'Magwyr', meaning a wall (Bradney 1932, 228). It has also been called 'Penfagwyr', meaning walls-end (as Pen-Y-Bont is translated into English as Bridgend; Bradney 1932, 228). It is tempting to see this wall as Whitewall or Blackwall. Interestingly, Whitewall, first documented in 1245 (*CChR III*, 88–97; Boon 1980, 34), continues the line of a possible Roman road (Fig 11).

Apart from the castle boroughs at Newport and Cardiff, just one settlement on or adjacent to the Levels appears to have developed into a significant commercial centre during the medieval period. The royal manor of Magor is possibly an example of a 'promoted borough', that is one created by granting the status to an existing settlement rather than started afresh (Courtney 1994, 115); no borough charter exists (Beresford 1967). A market is documented at Magor in 1590, and burgages are first recorded from 1648 (GwRO MAN/B/79/001; NLW Tred. 58/59; Courtney 1994, 115). In the 17th century Magor was only one of six places in Mon-

mouthshire to have a school (Courtney 1994, 132).

A minor port, called 'Abergwaitha', appears to have been located on the coast at Magor Pill. The place-name 'Abergwaitha' is derived from the Welsh for river mouth (Aber) and works (gwaitha) (Wood 1914, 104). It is first recorded in 1245, when the keeper of the mill (presumably tidal) there assumed responsibility for maintaining the watercourse in Whitewall (*CChR III*, 88–97; Boon 1980, 34). In 1270, Roger Bigod's survey of Wentwood refers to a house in Magor, 'near the East Common, called the Little Common on the one side and abutting the way leading from Abergwaitha towards Wentwood' (Morgan and Wakeman 1863, 41–2). Both references imply that the site lay at the seaward end of the lane that runs alongside Whitewall to the mouth of Magor Pill.

In 1327, there is a reference to 'the port of Aberwythel now wholly deserted' (*CIPM VII*, No 46). Evidence for sea-borne trade around the Severn Estuary at this time is provided by a boat recently discovered in the sediments of Magor Pill, which has yielded a dendrochronological date suggestive of a 13th century date for its construction (Nigel Nayling pers comm). It is possible that the port was attached to Tintern Abbey's Lower Grange, just as its grange at Woolaston in Gloucestershire had two quays on a pill beside the Severn (Fulford *et al* 1992).

The name remained in use for over 300 years. In 1398, there is a reference to the king claiming Magor, Redwick, Porton, and 'Pulle'; this may be Aberwythel (Bradney 1932, 229). 'Aberweithell' is referred to in 1413, though no context is given (*Brad IV*, 229). In 1469, there is another reference to the mill at 'Aberwaithel' (*Brad IV*, 230), while in 1504, 'Aberwythel' was referred to as one of the landmarks used to define the area of a Commission of Sewers (*CPR Hen.VIII, II*, 380). In 1561, there is a reference to a 'pill where there is a great landing of small boats with butter, cheese, and other kyndes of vittalles to ships' (*Phaer*, 483). In 1578, 'Aberwaythells creek or pill' is listed in a commission into ports and havens in Monmouthshire (Dawson 1932, 13). Aberwaithan Gout is mentioned in 1601 (NLW Bad.M.2198) and 1627 ('Aberwaythan': NLW Bad.M.545; Aberwaithene: NLW Tred. 68/3), while a deed of 1605–6 refers to one acre at Aberwathan (GwRO D.43/3994). The latest reference is in 1659, to a way leading from the cross at Magor towards 'Aberwaythan Pill' (GwRO D.25/228).

Wood (1914, 102) and Bradney (1932, 147) equate Abergwaitha with Coldharbour Pill. The earliest reference to Coldharbour is 1668–9 (NLW Tred. 58/110) and it has come to refer to the outfall of Blackwall Reen. However, a wide range of evidence suggests that Abergwaitha is in fact Magor Pill. Firstly, only Magor Pill could have been a port, as there is no substantial palaeochannel cutting through the peat shelf at Coldharbour. Though some Roman and medieval pottery has been

collected from the vicinity of Coldharbour Pill, there is no great concentration of material, and what there is can be regarded as part of the dispersed scatter of debris derived from Magor Pill.

Secondly, the earliest map to depict the area (a sketch of the Caldicot Level dated 1756: NRL M.430/912) suggests that Coldharbour was once the name for Magor Pill as well. In front of the sea-wall there was a wide saltmarsh, cut by the channels of Magor and Coldharbour Pills which are clearly seen almost to merge. The map label 'Coldharbour' is at their joint mouth, approximately c 200 m from the sea-wall. Therefore, it seems as if when the saltmarsh eroded back, and the two channels separated, the name Coldharbour went with Blackwall Reen. Indeed a close examination of Wood's (1914, 104) text shows that he may have been confused, since he says Abergwaitha lay by a stream that rises near Penhow and flows through Magor; this must be Mill Reen.

The place-name 'Coldharbour' is itself intriguing. It has often been thought to have a strong association with former Roman settlements (eg Astbury 1980, 71). However, a detailed review of the occurrence of 'Coldharbour' place-names nationally has shown this not to be the case. Rather, it appears to have been a term common in the first three quarters of the 17th century as a 'fashionable derogatory term for a miserable house (usually, it appears, at some distance from any others)' (Coates 1984, 75).

There may have been several mills in Magor, adding to the impression that this was an important centre. The earliest reference is at 'Aberweythel' in 1245 (*CChR III*, 88–97; Boon 1980, 34), and the mill at 'Aberwaithell' is referred to again in 1469 (*Brad IV*, 230). In 1315–16, there is reference to a fulling mill called 'Herles' in Magor, which Jack (1981, 114) locates in the village. This may indeed have been the case, and air photographs show what appears to be a canalized stream, possibly a mill leat, in the valley of St Brides Brook. As this stream crosses the Levels it is embanked, in the same way as Monksditch, and known as Mill Reen.

In 1334 there is a reference to a windmill in Magor, though this may have been located in the sub-manor of Redwick (Courtney 1981–2, 50), where a windmill mound is known north west of the village. In the 18th century there were cider and corn mills (1763–5: GwRO D.43/2790, 4425).

Common moors

Fig 19

The low-lying back-fen was the last area of the Caldicot Level to be reclaimed. One reference suggests that its enclosure had begun surprisingly early. In the mid to late 13th century Tintern Abbey was granted 40 acres of alder wood with land in the moor of Llanwern 'as the dike and bounds divide it'

(*CChR III*, 96–100).

However, one of the defining characteristics of the Caldicot Level was the fact that large parts of the back-fen remained open common land until the 18th/19th centuries. By 1831 there were two main blocks of common moor, Green Moor and Caldicot Moor, in addition to a number of smaller back-fen commons, such as Liswerry, Bishton, Stutwall, Bridewell, and Undy. Many roads also had areas of roadside waste, along with several street commons linking settlements in the higher coastal areas with the back-fen moors (eg Broadstreet in Nash, Whitson, and North Street in Redwick).

Caldicot Moor was an important economic resource, particularly for grazing livestock. This pastoral landuse clearly affected the landscape morphology, shown for example by the road from Llanvihangel to the moor having a funnel-shaped entrance (eg map 1766: NLW Tredegar 961), a feature typical of stock-management landscapes. Four rivers crossed the moor: Westward Pill, Middle Pill, New Digged Ditch, and Pool Rough. They were to be maintained by the tenants of Llanvihangel, Rogiet, and Ifton 'for their own good, otherwise all their lands between Caldicot Common and their houses also would be overflowed with high springs of the sea' (1613: *Brad IV*, 111).

The term Green Moor may originally have referred to a much more extensive area than survived to be mapped in the 18th century. In 1307, Tintern is recorded as having eighteen acres of pasture in the northern part of Green Moor called 'Berland', presumably Barlands just south of Llandevenny (Fig 28). By the 15th century, Green Moor had largely assumed its post-medieval form, being bounded by Green Wall to the south, and Earl's Reen to the west. How far north it extended is not clear.

Though remaining as common land, large parts of the back-fen saw at least rudimentary enclosure and flood elevation measures by the mid 16th century. In 1520, there was flooding on Llanwern Moor because 'Middle Ditch' in Goldcliff had not been kept clean (Courtney 1983, 291); a 'Middle Reen' is shown on the 1831 Commissioners of Sewers map just to the west of Monksditch, but north of Broadstreet Common in Nash.

A survey of the Bishton parish bounds made in 1552 gives valuable information as to the conditions of the moors at that time (GwRO D.43/4547). The perambulation starts in the south west of the parish 'abutting the upper part of Green Moor'. It moves 'north along a reen to a brook Nant Halen' (now called Llan Allen Winter Sewer). The bounds proceed up this brook and round the upland part of the parish. They then descend down the brook from Poolhead to the corner of Green Moor, to the bridge called Green Moors, and then southwards to 'Tyskin's [Hoskin's] Corner' and to the 'Upper Gowte'. The unnamed reen leading to Nant Halen is Elver Pill Reen, called 'Earl's Reen' in 1601 (NLW Bad.M. 2198). The reference to a 'gowte', or sluice-gate, at Hoskin's Corner suggests that there was

rudimentary enclosure of Rottenlands at least around its bounds, and even limited flood elevation (Fig 28).

In the 18th century the area between Green Moor and the fen-edge was called Rottenlands; there is no sign of any early fen-edge enclosures (cf the Poolhead Valley: see above). Rottenlands has a highly rectilinear landscape, divided in two by Lady's Reen, first recorded in 1705 (GwRO D.695/104); from 1754 (GwRO D.695/93) this was known as Leading Reen. This suggests that the moor had seen at least rudimentary enclosure and drainage by that date, though individual fields were yet to be laid out. That part of Rottenlands closest to the fen-edge, west of Bishton Common, was enclosed by 1758 (NRL x.MOOO/912), but when the southern block was mapped in 1782, its division into fields was still incomplete (NRL x.17000/912).

Air photographs indicate that a substantial earthwork enclosure once existed just south of where Barland Street met Green Moor (Fig 28). Its function is unknown, though plausibly it might be associated with stock management on the common moor.

By contrast, Wentlooge had very little common land by 1830. By that time, the only common was Broadstreet, though many of the other roads had areas of roadside waste. The pattern of field boundaries parallel to Broadway Street suggests that it may too have once been a wide street common.

Landuse

There is only fragmentary evidence to suggest the agricultural regime on the Levels during the medieval period, though there certainly was significant arable farming. In 1291, Goldcliff Priory had seven *carucates* of land and 100 acres of meadow in Goldcliff, Nash and Whitson (*Taxatio*, 281; Williams DH 1970-1, 51). The *carucates* may have been arable, for the same survey describes 50 acres of meadow and two *carucates* of arable land at Magor's Lower Grange; the value of this arable was one and a half times that on upland estates. Porton had 47 acres of arable in 1307 (Bradney 1932, 275). Arable land is also referred to in Goldcliff in 1319-22 (CAP Nos 3360, 4101).

The seasonal grazing of cattle is demonstrated by a charter of 1290 confirming the possessions of Goldcliff Priory, which refers to a 'way called Sumerwei' in Goldcliff Moor (*CChR II*, 358-61). That much of the grazing on the Levels has at various times only been seasonal is reflected in the number of other references to droveways called 'Summerway' (eg Caldicot: NLW Tred. 147/131; Llanvihangel: NLW Tred. MSS/169; Redwick: current name).

Generally, the medieval landscape appears to have been one of mixed agricultural landuse. The reclaimed lands towards the coast supported a mixture of arable, pasture and meadow. The lower-lying areas inland would have been meadow or common pasture, along with areas of probably managed fen-carr woodland. The coastal salt-marshes were exploited for seasonal grazing.

6 The late medieval and post-medieval periods: a late medieval crisis and the shift to pastoralism

The 14th century crisis?

The late medieval period saw the four problems of socio-political unrest, demographic decline, economic stagnation and environmental deterioration. In different ways, each of these would have made life on the Levels more difficult, and considering the constant need to maintain sea-walls and the drainage system, it might be expected that the communities may have moved onto the more favourable uplands. That was not the case.

There were serious revolts in Wales at the start of both the 14th and 15th centuries, which directly affected the Levels. For example, in 1315–16 the tide mill at Rumney was damaged during the uprising (Reeves 1979, 190). The Owain Glyndŵr revolt of c 1400 led to around fifteen years of unrest. In 1402, Newport and Caerleon were devastated (Bradney 1993, 25; Owen 1989b, 210–11) and it is unlikely that communities on the Levels escaped. Ministers' Accounts from Rumney manor reflect this; in 1400–1 the income was £111 5s 10d and in 1406 £15 2s 4d; by 1434 it had recovered to £102 3s 2d (Reeves 1979, 175).

Plagues hit southern Gwent in 1348–9, 1361–2, and 1369 (Rees 1924, 246). In 1351 payments by Goldcliff Priory to the Exchequer were reduced because of the pestilence (Graham 1929, 112). In 1361 Caldicot had 41 customary tenants; by 1366 it had 4, and by 1372 none (Rees 1920, 124; 1924, 249–54). In 1362, rent had fallen from 63s in previous years to just 4s 5d. Out of 1303 customary works, only 132 were carried out (Rees 1924, 246); presumably the maintaining of sea-walls, reens, and grips had suffered. By 1366 the cultivation of corn on the manor had ceased and the demesne was farmed out; by 1374 the lord of the manor had disposed of all his stock (Rees 1924, 251). The case of Caldicot may have been unusual, but the pestilence must have had a serious impact upon the Levels and their hinterland.

Two more general implications of the demographic decline were, firstly, a decline in manorial authority, as the loss of tenants allowed customary obligations and services to lapse. Portions of demesne and vacant tenements were taken up by freemen and villeins, and an active land market developed (Rees 1920, 128). The weakening of social regulation was exacerbated by the disappearance of

Goldcliff Priory. The effect that this might have had on maintenance of the drainage system can only be guessed at, but an example might be provided by the flooding of Llanwern Moor in 1520, because 'Middle Ditch' in Goldcliff had not been kept clean (Courtney 1983, 291).

The second result of the 14th-century population decline was a fall in grain prices and increased demand for meat. This would have made pastoral farming more profitable, and herein lies one of the reasons why the Levels fared so well during the late medieval period. However, there can be no doubt that conditions on the Levels were getting more difficult. From the 13th century there was a general climatic deterioration, with increased storminess and coastal flooding (Bailey 1989; Rippon 1994a). In Glamorgan, this is reflected in the migration of sand dunes (Toft 1988) and coastal erosion leading, for example, to the destruction of a harbour at Colhuw, near Llantwit Major south west of Cardiff, in the 16th century; it now lies c 200 m off shore (Davies & Williams 1991). In Gloucestershire, two small landing stages at Woolaston Grange also lie in the intertidal zone having been abandoned sometime after the late medieval period (Fulford *et al* 1992).

This chapter looks at the effect of climatic deterioration in more detail, and goes on to examine how a specialized pastoral economy enabled communities on the Levels to cope with the changing economic environment. Unfortunately, we have very little evidence for the 14th or 15th centuries, though a wealth of 16th century material shows that the pastoral economy was well developed by then. Continued changes in landuse, a trend towards enclosure of common fields, and an increasing trade with Bristol, enabled the Levels to take advantage of their inherently fertile soils and geographical location.

Coastal retreat along the Gwent Levels

The late medieval period

In 1324 the value of Goldcliff Priory's lands was recorded as 'reduced due to inundation', and in 1424, there was further serious flooding as storms destroyed part of the priory itself (*CPR Hen. VI, I*,



Plate 14 Triangular shaped field behind the sea-wall, east of Porton. From ST 393 827, looking north east.

265; Williams DH 1970–1, 44, 46). In 1446–7 and again in 1451–2, the tide mill at Rumney suffered damage from the sea (Reeves 1979, 190). In 1466, land was flooded in Duffryn by the Ebbw topping its banks (Bradney 1993, 7). The Rumney custumal of 1532 actually describes how the sea was eating away at the coast (see above: Reeves 1977, 301). Camden (1607, 633) described the chapel at Sudbrook as ‘standing so close to the sea, that half the churchyard has gone’.

Along most of the present coastline there is just one sea-wall, in contrast to the major tidal rivers, particularly alongside the Usk, where there is a series of sequential sea-walls resulting in the accretion and periodic reclamation of saltmarshes (Figs 4.A–C). However, along the open coast erosion, not deposition, has been the dominant process, resulting in sea-walls having been set back rather than moved forward.

In its present form the sea-wall largely dates to a piecemeal rebuilding between 1953 and 1974, though in places the older structure survives as it was not deemed necessary to strengthen it (eg St Pierre). There are also several places where kinks in the line of the sea-wall were smoothed out, and traces of the old line can still be seen (eg around Magor Sewage Works: Allen & Rippon 1994; forthcoming).

However, the line of the present sea-wall cannot be the original one, as it cuts across the grain of the landscape, in the same way as a motorway or railway slices through fields (as in Fig 4.I–III). The result is a series of small triangular fields

immediately behind the sea-wall (Plate 14; eg south of Saltmarsh in Goldcliff, east and west of Porton, and in Caldicot parish).

The position of the earlier sea-wall is unknown, though fieldwork in the intertidal zone at Magor Pill suggests that it was at least 350 m in front of its present line, or perhaps as much as c 600 m (Allen & Rippon forthcoming). Waters (1955, 21) recounts a conversation with a local farmer, Henry Rees, who claims to have found the remains of a man-made sea defence 300 yards (c 282 m) beyond the mouth of Peterstone Pill, along with 25 to 30 graves containing inhumations. The existence and status of Porton church is unclear (see above), though local legend, recounted by various farmers, suggests that Porton church was washed out to sea.

The date when the sea-wall was set back is not documented. However, an intertidal spread of pottery at Rumney Great Wharf, probably from an eroded settlement, contains no material later than the 14th century. Though this does not give the date when the site started to be eroded, it does suggest that the sea-wall must have been set back sometime after that date. In 1415, there is reference to a piece of land in St Brides with ‘Key Gowte and a road called Muddlewalle’ on the east, and ‘Herbardis Warth outside the sea-wall’ to the south (NLW Tred. 67/25). If the setting back had occurred shortly before this time, would the reference have been to ‘the new sea-wall’?

A little to the west there is a double row of stakes, that appears to have originally been filled

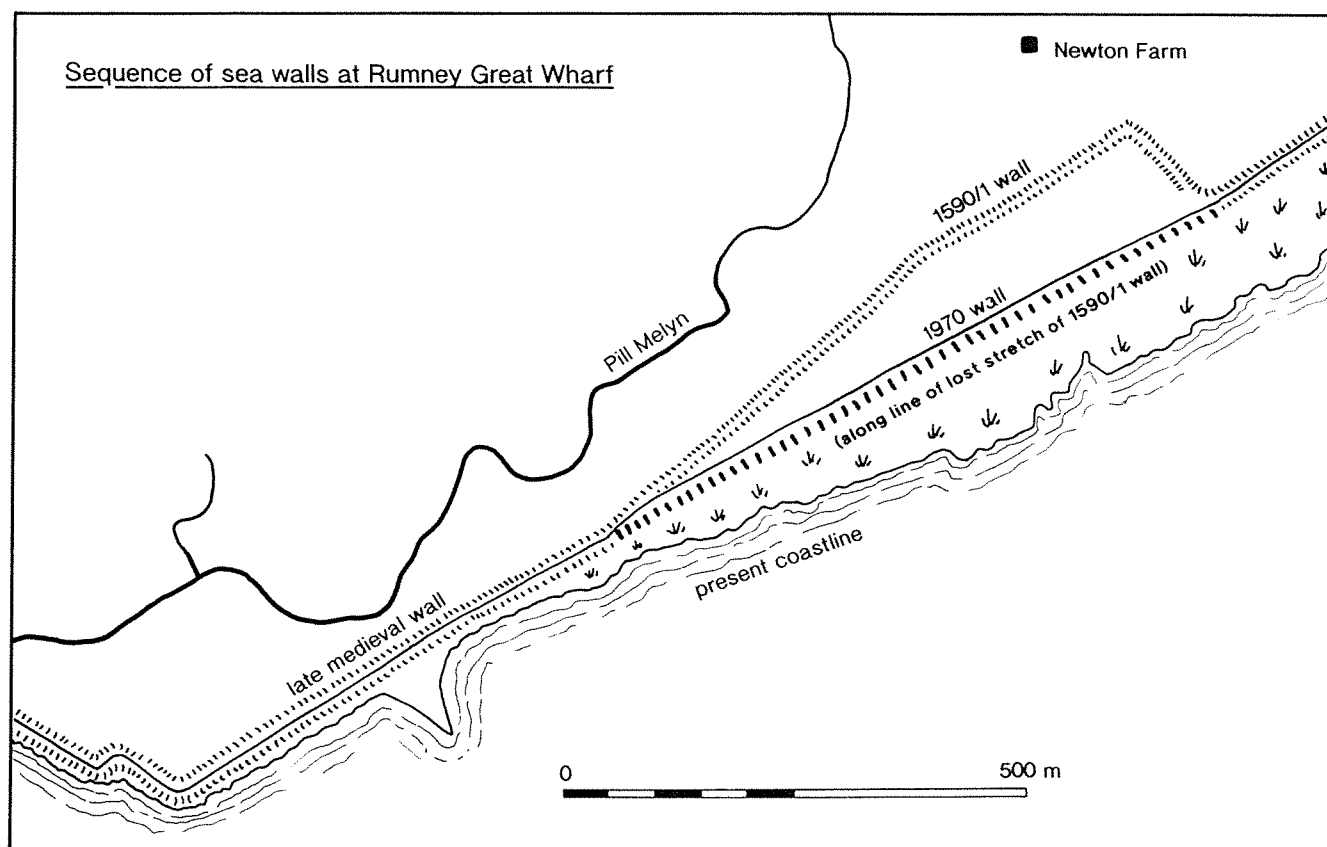


Fig 37 The sequence of sea-walls at Rumney Great Wharf (Wentlooge Level).

with stone rubble; a radiocarbon date suggests a late 15th century date (410 ± 40 bp, SRR-2699: Allen & Fulford 1986, 107–8). This structure may be a revetment along a small creek, in which case it must have been in an intertidal context; thus, the sea-wall must have retreated to its present location by that date.

We also know that the retreat certainly occurred before 1591, for in that year a small part of the sea-wall was moved back once again:

... note that the manor of Rompney lies adjoining the sea. There is a wall between the sea and the lordship, for the defence of the same, which wall being about 2 years in great decay, why by commission new made and placed more into the land than before it was, by reason whereof there was cut out and left betwixt the sea and sea-wall 28 acres most part meadow and pasture

(Court Aug, 455–6).

That short stretch of wall which was set back survives to this day (Fig 37), with some particularly fine stone facing (though this is not necessarily of the same date). Breaks in this facing probably represent the sections of wall allocated to different farmers to maintain. The sea-wall was moved forward to its present position in 1970 (Colin Green

pers comm), which was presumably its line before 1591.

Thus, all the evidence points to a 15th-century date for the setting back of the sea-wall, at least on Wentlooge. It appears that both here and on Caldicot, the wall was moved back as a single exercise; there do not appear to be changes in form or alignment along the lines of parish/manorial boundaries which would suggest that different communities worked separately. This implies a considerable degree of co-operation, possibly through the Commissioners of Sewers.

The great flood of 1606–7

The climatic deterioration that started in the late medieval period continued into the early post-medieval period, culminating in the great flood of 1606:

In the month of January last [1606–7] the sea being very tempestuously moved by winds, overflowed its ordinary banks and did drown 26 parishes adjoining on the coast side in the county of Monmouthshire, all spoiled by the grievous and lamentable fury of the waters

(cited in James 1900–1, 54).

So wrote an anonymous writer regarding the

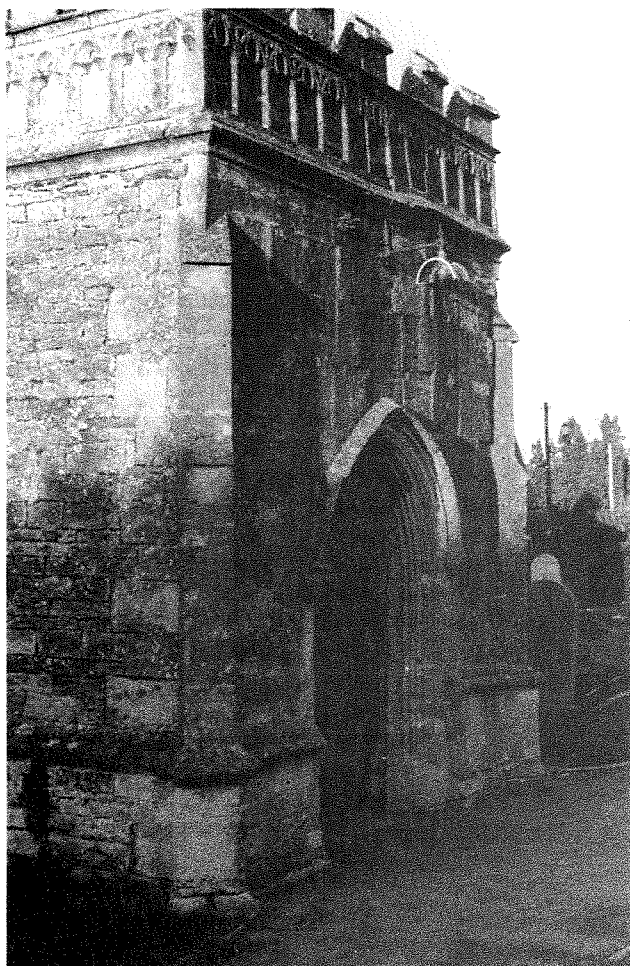


Plate 15 Redwick church porch, from south west, showing height of the plaque (plate 16) marking the water level during the 1606-7 flood.



Plate 16 Plaque of Redwick church porch (plate 15) marking the water level during the 1606-7 flood.

great flood. Much corn was destroyed, many houses ruined, and livestock killed. Around 2000 people may have been drowned. The flood is commemorated by plaques attached to the walls of churches at Goldcliff, Peterstone, Redwick (Plates 15 and 16), and St Brides, marking the height to which waters reached.

The long term impact of the flood is unclear. It no doubt hastened the general shift from arable to pasture, but it by no means extinguished all cultivation. Camden (1607, 107) described the Levels as 'a marshy tract', an impression conditioned by the fact that he was writing soon after the great flood of 1606-7. In 1684, Henry Duke of Beaufort said 'the sea coast where the Usk falls into the Severn river is low-lying and marshy and subject to drowning' (*Beaufort*, 368). Nevertheless, there certainly was some arable on the Levels in the 17th century; for example, a farm lease in Nash dated 1635 refers to seven acres of arable (GwRO Man/E/133/0054).

However, erosion and storm damage was continuing; for example, in 1626 the tenants of Rumney petitioned the Lord Treasurer of England, for him to bear the expense of repairing 'Poolmelyn and Poolmones Gouts', 'which had been ruined by a spring tide' (NLW Corn.D. P12). In 1636, part of 'Kinges Wharf' in St Woolos [Level of Mendalgief] was wasted by the sea' (NLW Tred. 36/3).

Early post-medieval economic specialisation

The 15th century onwards saw people living on the Levels specialize in pastoralism, the products being traded around the Severn Estuary. This economic trend had its origins in the demographic and climatic decline which led to a national move away from arable cultivation; this suited the Levels. The growing port of Bristol provided a vital market, and a trend towards the enclosure of open fields and common lands would also have increased efficiency. The early post-medieval period was also one of marked population increase. Detailed figures are not available for the Gwent Levels, but just up the Severn Estuary in western Gloucestershire, the late 16th to early 17th centuries saw the greatest increase in population (Newman 1988, 4-5).

Landuse

Our evidence for medieval agriculture on the Levels is very limited, but suggests mixed agriculture with a significant amount of arable. This continued into the post-medieval period, but with an increasing emphasis on pastoralism. Leland (1543; cited in WALSC 1954, 8), described how 'the soil by south towards the Severn is somewhat low and full of dikes to drain it. There is lately great plenty of beans, and in divers places it berith al [bears all] other manner of corn'.

From the mid 16th century, probate records

allow us to make more quantified statements. For the period 1404–1560, thirteen wills proved at Canterbury relate to parishes wholly on the Levels or fen-edge villis where the particular farm is specified as being on the moors. All thirteen are on the Caldicot Level and are dated to the period 1531–52 (Hunt 1985). Eight of these itemize livestock using a multiplicity of terms (see Table 3).

Table 3: Livestock in wills of 1531–52 relating to parishes wholly on the Levels

Kine (cattle)	44
Heffers (heifer; female calf)	3
Oxen (work animals)	3
Calves	11 + unspecified number
Cows	8
Bulls	2
Milk Kine	30
Horses	1
Mares (female)	3
Colts (young male)	12
Wethers (one year old sheep)	60
Hogs	1

Cattle clearly dominated the animal husbandry, but the importance of arable is difficult to determine. Five wills refer to arable land, though there is little quantification and we have no indications of the relative importance of arable and pasture. The will of John Ap Richard of Nash, dated 1531, refers to 'all my corn except the little acre of wheat', 8½ bushels of beans, 3½ of oats, and 1 bushel of wheat (Hunt 1985, No 47). John Waters of Redwick left 'two acres of beans, and all my corn and grain' (1545; Hunt 1985, No 72). Richard Adye of Redwick (1543) and Jeyne Tanner of Redwick (1545) also refer to 'all their corn' (Hunt 1985, Nos 62–63). An incomplete will dated 1544 of Edmund Martyn's land in Goldcliff refers to a bushel of wheat and two of malt (Hunt 1985, No 78).

There are other documentary references to arable on the Levels. For example, in 1542–3, an acre of corn is recorded at Monkscroft in (Bradney 1932, 283). Lower Grange in Magor also had an unspecified area of arable in 1535 (Williams DH 1965, 17). A point of interest is that Ap Richard also left 13s 4d to 'the new church of Goldcliff'; the will was dated 1531, showing that a hundred years after the construction of the church it was still referred to as 'new'.

The period 1560–1601 is less well represented by wills relating to parishes wholly on the Levels, though that of John Walter of St Arvan's (Jones JM 1990, No 93) refers to 'one kinderkind of butter and twenty cheeses made at my dairy at the moor'; Jones assumes this relates to a dairy on the Levels in Nash, though no evidence is given. Taking the settlements which lie on the fen-edge though, a marked specialization in dairying becomes apparent (see below; Jones 1990, 83).

Reclamation and enclosure

In the 16th century, Britain saw a general upsurge in the enclosure of common fields, common pastures/meadows and waste. In Wales generally, there is some evidence for increased drainage activity in the period c 1625–40 (Jones TIJ 1931, 230–6), though there is little evidence for this on the Levels.

However, there is evidence for some reclamation of saltmarshes, areas known as 'wharfs'. In Somerset, the term 'wharf' refers solely to the reclamation of coastal or riverside saltmarshes (Rippon 1993a, 168). It does occur as early as the 13th century, but its main use appears to be from the late 15th century (Nash 1972–3, 101; Rippon 1993a, 169). However, the Rumney Custumal refers to 'land without the sea-wall called warth, which in summer is meadow and in winter is drowned' (*Rumney Custumal*, 300). As the Moneywarth was being eroded, no entry fine was due (Reeves 1979, 168; *Rumney Custumal*, 300).

Thus, simply because an area is called wharf, it need not imply reclamation. In 1314 there is a reference to a pasture in Rumney called 'wharf' (*CIPM V*, 336). In 1400 (Reeves 1979, 177) and 1447–8 (Pugh 1963, 184–90) there is reference to a 'Maylokeswarthe'. Another wharf called 'Lordes-tones' is referred to in 1445; part of the lease specified that the tenant must maintain at his own cost the sea-wall (Reeves 1979, 179). In 1700 there is evidence of former intercommoning of the wharfs, as tenants in Marshfield held part of Moneywharf (GwRO Man 110–17).

The Tudor and Stuart periods also saw considerable enclosure of common fields, and the Levels and fen-edge communities did appear to have shared in this trend, at least to a limited extent (eg Caldicot: Jones TIJ 1931, 252). However, quite extensive parts of the common fields on the uplands, for example Caldicot and Magor, as well as those on the Levels, such as Redwick, were only enclosed in the late 18th/early 19th century.

The enclosure of common pastures is also recorded in the south east part of Monmouthshire during this period; for example, in the early 16th century there was a riot at Mathern after the common was enclosed, resulting in hedges being thrown down and 100 sheep driven off the land at 'Monksmead' (Courtney 1983, 288; Jones TIJ 1931, 361). Judging from legal cases in Wales generally, the enclosure of commons and waste increased in the late 16th and early 17th centuries.

Regional specialism and the role of Bristol

For a region to specialize in one particular type of landuse requires a suitable consumer and a system of marketing. Monmouthshire in the medieval period, and indeed up until the late 18th century,

lacked large urban populations; for example, around 1550 Cardiff had just over a thousand inhabitants (Griffiths 1989, 229). However, Bristol was rapidly expanding as a major port, providing a market for agricultural surplus. This affected the whole of the Severn Estuary region, including Gloucestershire (Newman 1988) and Somerset (Rippon 1993a). In addition to the soils being ideal for pasture, the Levels benefited from access to water transport; elsewhere in Monmouthshire, only areas close to turnpike roads were able to trade with Bristol (Young 1769, cited in Chapman 1973, 56).

There may have been cross-Severn trade before the Norman Conquest, as numerous landing-places are referred to in Dark Age charters (Caldicot, Mathern, Pwllmeurig, and Bishton/Redwick; see Chapter 3). Pottery manufactured in Bristol was reaching Chepstow from the late 11th century (Vince 1991, 94). In the late 12th century, Goldcliff Priory was granted freedom from tolls of all kinds 'that they might buy and sell' in Bristol, Newport, and Cardiff (Williams 1970–1, 49). Barrie Stopgate (pers comm) has noted another interesting indicator of cross-Severn contact: several farmhouses on the Gwent Levels and in fen-edge villages are of a type not found elsewhere in Wales (though a variant of Smith P 1975, type B), but are closely paralleled in Gloucestershire.

However, the main evidence for cross-Severn trade comes in the post-medieval period. In 1578 a survey was undertaken to determine all the havens and creeks in the County of Newport (Dawson 1932, 13; Lewis 1927, ix). Those on the Levels included Pill Merrick, St Pierre, Mathern, Sudbrook, Caldicot, Collister, Aberwythels, Goldcliff, Traston, Peterstone, and Rumney. There are several places which cannot be located; 'West Howick', 'Ebothy', 'East Howick', 'Gyllam Howes Creek' (possibly Spitty Pill in Christchurch since it is listed with Traston), 'Jenkyn Lewys Creek', and 'Wentlandes'.

Many of these small landing-places declined as the major ports at Cardiff, Chepstow, and Newport grew. Few appear to have survived into the 18th century, though St Pierre Pill was still regarded as a landing-place for 'ships, barges, boats, and water vessels' in 1711 (*Brad IV*, 83). A warehouse and wharf existed at St Pierre in 1781 (*Brad IV*, 84).

The Welsh Port Books describe the major exports from Newport and Chepstow during the 16th and 17th centuries (Dawson 1932, 16–18; Lewis 1927). These included iron, millstones, oatmeal, wheat, beans, peas, butter, and cheese. Obviously, this produce would have come from anywhere in the hinterland of these towns, but production on the Levels certainly played a major part.

Some of this produce returned to South Wales after processing. For example, in 1580 a vessel with tanned hides arrived at Newport (Jones JM 1990, 101). The Bristol Port Books record some of the other exports to the Gwent ports. The 'Ann and

Mary' of Newport, sailing from Bristol to Newport, carried 152 tanned hides, 42 bundles of pales, 45 packs of trusses, 12 boxes of linen and wool cloth, 6 bags of hops, 1 cwt of hemp, 3 empty trunks, 1 ton of soap, 1 ton of groceries, 2 cwt of pitch, and 7 packs of tobacco (PRO E.190 1143/2).

In the 18th and 19th centuries, Monmouthshire continued to export a range of produce, including coal and iron (Coxe 1801, 46), but also wheat; in 1725, Defoe observed that 'this county furnishes great quantities of corn for exportation, and the Bristol merchants frequently load ships here with wheat' (Defoe 1724–6, 52). The county also exported apples for the important Bristol cider trade (Woodland 1988). In 1794, Fox (1794, 15) mentions oxen being sent to Bristol, while in 1815, Hassall (1815, 134) notes that fish were exported from the Gwent Levels to Bristol.

However, the major specialism was in live cattle and dairy produce. In 1561 Magor Pill was described as a great landing of small boats carrying butter and cheese; Goldcliff was described as 'another pill for small vessels, where there was much landing of things to convey to the ships of Bristol' (*Phaer*, 493). Rumney and Peterstone were also noted as ports for small boats.

There was also a significant trade in livestock, notably cattle and pigs, between South Wales and North Devon/Somerset. Store cattle, ready to be fattened, were driven from Wales into England from at least the 14th century (Skeel 1926). When the shipping of cattle started is not clear, though there was a flourishing trade in livestock with Bridgwater in Somerset during the post-medieval period (Dowdell & Thomas 1980, 10). For example, there are 27 wills surviving for farmers in Peterstone between 1650 and 1769 (Thomas V 1987, 57). Most had large herds of cattle, though many also had some arable and sheep. A recent project surveyed the now silted up pill at Magor, a documented landing place, as it crosses the intertidal zone (Allen & Rippon 1994). A large assemblage of animal bone was recovered, predominantly of unbutchered cattle, which may represent fatalities from this trade.

The trade with Somerset is also reflected in pottery distributions, as a number of fabrics from the 16th century derived from North Devon are found along the South Wales seaboard (Allen & Rippon 1994; Dowdell & Thomas 1980, 7). The small ports of the Monmouthshire coast were a vital part of the redistributive network. North Devon wares were widely exported from ports at Bideford and Barnstaple, 'but the frequency of their finds in South Wales diminishes rapidly away from the coast and navigable rivers' (Courtney 1994, 62).

One of the major ports was New Passage at Sudbrook; in 1723, the Duke of Beaufort tried to prevent the Lewis family of St Pierre from exporting cattle via the New Passage ferry, because of the detrimental impact it was having on his ferry at Aust (Cook 1991, 9). In 1739, the influx of cattle

from South Wales was causing concern amongst Somerset farmers, finally resulting in an embargo being placed upon the carriage of cattle and pigs from Sully (between Cardiff and Barry) to Uphill (near Weston-Super-Mare) (Cook 1991, 77). In 1816, the New Passage ferry handled 28,673 pigs, 6377 cattle and 3160 sheep (Cook 1991, 9; GwRO D.501/690).

Early post-medieval population trends

There is little direct evidence for population trends in South East Wales during the early post-medieval period, though detailed studies in western Gloucestershire give a general impression for this region (Newman 1988, 4–5). The early 16th century saw an acceleration in growth, which gained momentum in the second half of that century. In the early 17th century the rate slowed, and by c 1750 it was stagnant or even falling again. From the early 18th century there was slow growth, though increasing rapidly by the end of the century.

An impression of population distribution on the Gwent Levels can be obtained from two tax records studied for this area (Webb 1987): the Lay Subsidy of 1543 and the 'Free and Voluntary Gift' of 1661–2. These taxes were assessed in different ways and evasion was widespread, but if we assume that the latter was relatively uniform, then by comparing

the relative distribution of taxpayers at the two dates, a general impression can be gained as to any changes that occurred over time and space. The parishes listed in Table 4 below can be divided into those where settlement was wholly upland or fen-edge, those wholly on the Levels, and those where settlement occurred in both landscapes. The 1801 population figure is included for comparison. The overall picture suggests either that the Levels saw a population increase and the uplands a decrease, or that evasion was greatest on the uplands. The former seems more likely, once again indicating that communities on the Levels were able to adapt to wider economic problems quite well.

It is worth stressing the extent of population contraction that certain areas must have suffered. The figures for 1543–4 and 1661–2 are the numbers of taxpayers; to calculate the actual population a multiplier of around four or five must be applied. However, in places such as Llanvihangel and Llanwern even just the taxpayers in 1543–4 outnumbered the whole population in 1801 (see final column of Table 4). There is also evidence of a general settlement contraction in the hinterland of the Levels during the 17th century, indicated by the number of references to ruinous cottages.¹

The same trend is also seen in Glamorgan, for example with the abandonment of Wrinstone, near Cardiff, in the 17th and 18th centuries (Vyner and Wrathmell 1978).

Table 4: Taxpayers in 1543–4 and 1661–2 and population in 1801

Fen-edge	1543–4	1661–2	% (1661–2/1543–4)	1801	1801/1543
Caldicot	62	16	26 %	465	7.5
Llanvihangel	76	6	8 %	47	0.6
Llanwern	46	2	4 %	32	0.7
Coedkernew	17	12	71 %	129	7.6
Marshfield	74	16	22 %	395	5.3
St Mellons	69	3	4 %	451	6.5
			ave = 22 %		
			(13 % excl Coedkernew)		
Fen-edge and Levels					
Christchurch	108	11	10 %	481	4.4
Magor	56	20	36 %	268	4.7
Rumney	59	5	9 %	235	4.0
			ave = 18 %		
Wholly on Levels					
Goldcliff	114	16	14 %	179	1.6
Nash	87	19	22 %	183	2.1
Redwick	93	37	40 %	171	1.8
Peterstone	73	10	14 %	85	1.2
St Brides	80	38	48 %	134	1.7
			ave = 28 %		
			overall ave = 23 %		

The later post-medieval period

The Industrial Revolution did not affect the Levels directly, but did have a gradual impact upon their agriculture, as well as leading to the expansion of Cardiff and Newport docks. The major landscape-related themes of landuse, the enclosure of common land and open fields, the expansion of settlement, and continued coastal erosion will be examined here.

Later post-medieval landuse

The late medieval environmental and socio-economic changes, described above, started the process by which the pastoral landscape so characteristic of the Levels today, came into being. This regional specialization became more intense in the 16th and 17th centuries, and continued into the later post-medieval period, when a traditional rural tardiness in adopting new ideas only served to strengthen the pattern (Chapman 1973, 17; Emery 1984, 410). By the mid 18th century, the Gwent Levels could be regarded as one of the most prosperous farming regions in Wales, based on 'cattle with substantial dairying' (Emery 1984, 409). Documents continue to suggest that farms had a mixed economy, with some arable, but this was largely for subsistence needs only. For example, a survey of Windmill Tump in Nash, dated 1704, includes a messuage, 1 back-house, 1 barn, 1 garden, 1 curtilage, 1 acre of woody ground, and 7 acres of arable (GwRO Man/E/133/0054).

Young (1769) does not specifically mention the Levels, but describes 'a great quantity of very good meadow', 'around Chepstow for some miles'; this may relate to the Levels. This meadow was let at one to two guineas (21–42 shillings) per acre, whereas arable on the adjacent uplands was worth just 12 shillings per acre. Dairying appears to have predominated, but with some fattening of cattle.

The first Board of Agriculture Report was published in 1794 (Fox 1794). The Levels were described as 'large tracts of moor or marsh lands containing in some parts a great depth of rich loamy soil, in others a vast body of black peaty earth' (p 11). Drainage was neglected, 'much of the moorland being wet and rushy' (p 27). The predominant landuses were meadow and pasture, but 'when broken up and sown with grain [the soils] are amazingly productive' (p 13).

William Coxe (1801, 42) described the Levels as in 'a high state of cultivation'. He continued:

The ground is cut into parallel ditches in some of which water stagnates, in others it runs in perpetual streams called reens which fall into the sea through flood-gates or gouts. The roads leading through the flat marshes are straight, narrow and pitched, which exhausts the patience of the traveller ... the marshes are inhabited

only by farmers and labourers and contain very few houses and cottages
(Coxe 1801, 72).

The 1801 crop returns give the quantitative assessment of landuse (Williams 1950–2, 144–6). Table 5 below gives details for those parishes wholly on the Levels for which returns survive.

Hassall (1815) gives a more detailed description of the Levels, stressing their distinctive character. The soils are described as 'loamy', which is rather misleading; their very heavy nature is betrayed by the comment that they are 'invariably too wet or too dry' (p 7). Agriculture consisted predominantly of mixed animal husbandry, though there was a little ploughing in Wentlooge. On Caldicot dairying predominated, though there was some fattening of calves, while on Wentlooge most of the pasture was used for the latter.

Hassall emphasizes that the productivity of the land was heavily dependent upon maintenance of the drainage system, and he criticizes landowners for not keeping the ditches scoured. The area between Llanwern and Whitson suffered from particularly defective drainage 'as the rushy and coarse state of the land clearly demonstrates' (1815, 74). The failure to enclose and drain the last remaining common moors is criticized: 'the advantage of occupying a few acres in severalty being far beyond anything that can be gained in promiscuously depasturing the motley herds [on Caldicot Moor]' (1815, 68).

The Tithe surveys of c 1840 have only been published in summary form (see Tables 6 and 7). They show once again that Wentlooge had a much greater proportion of arable compared to Caldicot. The pattern seen nationally of post-Napoleonic slump, boom and further slump in the 1870s is seen in Monmouthshire, but as arable areas were affected the most, the county escaped the worst (Chapman 1973, 127). However, even on the Levels the 19th century did see a slight increase in arable and improvements in agricultural practice, such as the use of lime and bone-dust (Bowstead 1872, 314).

Like Hassall, Fothergill stresses the productivity of the Levels and their vulnerability to the neglect of drainage works. The best land is noted as being in Nash, Goldcliff, and Redwick. Grazing predominated, both for fattening, dairy production, and the cropping of hay. Very small portions were cultivated, simply enough for the farmers, and to produce straw for use as litter. In no instance is any regular course of husbandry adopted with these arable crops (Fothergill 1870, 283). By the 1880s, the Levels had effectively ceased to have significant arable use, apart from in periods of national emergency such as the World Wars (Chapman 1973, 195, 217).

In 1870, the agricultural returns show the Levels had a relatively high proportion of dairy cattle; 16 to 20 per 100 acres in Peterstone and Whitson, but generally 11 to 15 per 100 acres

Table 5: 1801 Crop Returns

	Crops (acres)								Total (% arable) ²
	Wheat	Rye	Barley	Oats	Potatoes	Peas	Beans	Turnip/Rape	
Goldcliff	37	0		3	2	0	14	0	56 (2.5 %)
Nash ¹	39	0	3	6	6	0	17	0	71 (2.6 %)
Whitson	15	0			4	0	6	0	25 (2.3 %)
Peterstone	61	0	6	110	1	0	6	0	184 (8.6 %)

1 Nash was described as a 'chiefly grazing parish'; the proportion of arable in 1801 was noted as quite high in that year.

2 Based on area of parish given in 1801 census.

Table 6: Percentage arable in parishes wholly on the Levels

	Peterstone	St Brides	Nash	Goldcliff	Whitson	Redwick
1801	8.6	—	2.6	2.5	2.3	—
*c1840	31–40	11–20	0–5	0–5	0–5	0–5
1870	21–30	21–30	0.5	6–10	6–10	6–10
1881	11–20	6–10	6–10	0–5	6–10	0–5
1891	6–10	0–5	0–5	0–5	0–5	6–10
1901	6–10	0–5	0–5	0–5	0–5	6–10
1911	6–10	0–5	0–5	0–5	0–5	0–5
1921	6–10	6–10	0–5	0–5	0–5	6–10
1931	0–5	6–10	0–5	0–5	0–5	0–5

* arable as percentage of improved land. Source: Chapman 1973; Williams 1950–2

Table 7: Dominant crops in parishes wholly on the Levels
(Crops listed in order of importance)

Date	Peterstone	St Brides	Nash	Goldcliff	Whitson	Redwick
1801	Oats	—	Wheat	Wheat	Wheat	—
	Wheat		Peas + Beans	Beans	Beans	—
1870	Oats	Wheat	Wheat	Wheat	Oats	Wheat
	Wheat	Oats	Barley	Beans	Wheat	Beans
	Beans		Cabbage + Potatoes	Potatoes	Potatoes	Potatoes

Source: Chapman 1973; Williams 1950–2

(Chapman 1973, map 92). The cheese industry in particular subsequently declined due to competition, for example from Somerset (Phillips 1990, 238). By 1961, most of the Levels had 16–20 dairy cattle per 100 acres, which was average for the county (Chapman 1973, map 101). Both in 1870 and 1961, the Levels had below average densities of sheep, generally less than 50 per 100 acres in 1870, and 50–100 in 1961 (Chapman 1973, maps 102 and 111).

The Land Utilization Survey of 1933–4 (Clarke 1943) and 1941 Grassland Survey (Williams and

Davies 1946) give a detailed account of agriculture on the Levels. Clarke identifies this area as the most important for the farming economy in Monmouthshire and probably one of the most distinctive landuse regions. Once again, productivity was heavily dependent on the quality of drainage, and the Llanwern moors were particularly poor. There was no arable at all, the whole being permanent pasture except for a thin strip of saltings used for grazing young cattle in the summer.

Caldicot was used predominantly for store

cattle, while Wentlooge saw some dairying, especially from the early part of the 20th century. This, along with the lack of fattening calves, is a reverse of the situation in Hassall's time. Hay was also exported from the Levels, especially for pit ponies in the coalfields, though over-cutting caused a deterioration of the quality of pasture (Williams & Davies 1946, 98). Clarke (1943) essentially paints a static picture, though interestingly, other writers note that the already poor quality grazing in the back-fen between Bishton and Magor had deteriorated in recent years (WALSC 1954, 9; Williams & Davies 1946, 102). Clarke also stresses the importance of orchards and cider production, especially in St Brides, Broadstreet Common, Whitson, and Redwick.

There was a brief upsurge in arable during the Second World War. This was much resented by farmers and destroyed many areas of grips, causing the drainage to deteriorate. After the War the Levels reverted to an almost totally pastoral land-use, with arable fields being reseeded for grass (WALSC 1954, 13; Williams & Davies 1946). The inter-war trend towards dairying continued, so that by 1954, 52% of farms had either dairy or mixed herds, though hay production decreased (WALSC 1954, 13). There was little market gardening though most farms continued to have an orchard (WALSC 1954, 1213). Several writers in the early 1950s painted a rather gloomy picture, with hedges untrimmed, grips blocked, and some fields 'waving seas of rushes' (Morgan 1954, 18; WALSC 1954, 14).

The Welsh Agricultural Land Sub-Commission made a series of recommendations, one of the most important being the upgrading of sea defences. This led to an added sense of security, allowing further urban and industrial development on the Levels, and the under-draining of fields. Under-drainage was not regarded as economically viable in the 19th century (Bowstead 1872, 314; Chapman 1973, 163), but following improvements to the sea-wall it gained in popularity. By 1974, c 13% (883 ha) of the Levels were under-drained, most of which occurred after 1955 when rebuilding of the sea-wall began (Scotter *et al* 1977, 82). Productivity on the Levels increased by c 50%, though this applied to relatively few landowners who occupied c 20% of the land (*ibid*).

The results of the second Land Utilisation survey are available for most of Wentlooge and western Caldicot (Gough *et al* 1965). This shows once again that the Levels were entirely pasture and, though orchards were still abundant, some decline can be detected. Since then many orchards have disappeared, and a little arable has appeared. Crops depend on European Union subsidies and in recent years there has been a marked trend towards maize. In 1981, 7% of the agricultural land on the Levels was arable (NCC 1982, 7); now the figure is probably slightly higher, especially in Wentlooge.

The enclosure movement

The enclosure of common land had been going on throughout the medieval period. By the mid 18th century, when the first detailed maps of the Levels were drawn, the major commons were all well delineated. There were four main unenclosed areas of pasture on Caldicot: Caldicot/Ifton Moors, Green Moor (including Rottenlands), the other smaller back-fen commons (Liswerry, Barlands, Stutwall, and Undy) and the funnel-shaped street commons (Broadstreet, Clifton, and Whitson) (Fig 18).

Attempts to enclose Caldicot Moor began in the 17th century. Charles I granted the manor of Caldicot a licence to enclose and improve a certain 'Great Moore Waste', though nothing appears to have been carried out (Bradney 1929, 114). A large 'lobe-shaped' chunk of moor was enclosed during the late 18th century in Ifton; an undated map of c 1800 refers to this enclosure as Ifton Moor (NLW Tredegar 933). Its eastern edge was a common and 'Summerway' recorded in 1677 (*Brad IV*, 124). Its western boundary was Middle Pill, also recorded in 1677. The area was enclosed after 1770 (PRO map 2881), and was presumably part of the 1776 Ifton Enclosure Act for 'dividing and enclosing open or common fields, common moors, common meadows, common pastures, and other commonable lands in Ifton' (NLW Tred. 34/61).

Caldicot Moor was an important economic resource for the communities with grazing rights there, but in the age of enclosure it outlived its usefulness, being described by Hassall (1815, 69) as 'promiscuously depasturing the motley herds of six parishes'. The remaining part of Caldicot Moor was enclosed following a Parliamentary act of 1850 (GwRO Encl. AW. 5, 6, 7). The existing natural watercourses were straightened (eg West Pill Reen) or filled in (eg Hardmoor Stream) and replaced by an extremely rectilinear pattern of large fields laid out within a grid of lanes. A sea-wall was also constructed c 1858 across the seaward face of the moor, from Great Temple/Westward Pill to Collister Pill.

Open fields also survived very late on the Levels, for a number of reasons (Strong 1991, 26). Firstly, there was only a weak tradition of Parliamentary enclosure in the region. Secondly, hay was an important fodder crop, and so there was no need for an alternative, such as turnips, that encouraged enclosure elsewhere. Thirdly, the area was fairly isolated from the boom and bust agricultural economics of the 18th and 19th centuries; though the Napoleonic War did lead to some increase in arable, it was not as great as elsewhere. Fourthly, there remained a very strong tradition of communal action on the Levels, notably in maintaining the drainage system. Finally, the Morgan family of Tredegar House were major landowners on the Levels, but paternalistic in nature and not great agricultural improvers.

However, by the mid 19th century, pressure to enclose increased, as the enclosure movement grew

in Monmouthshire generally (Strong 1991, 29–35). The Tithe Commutation Act and subsequent surveys (mostly carried out in the 1840s; Evans 1960) meant that it was cheaper to draw up an enclosure map. The construction of the railway led to compulsory purchase and the loss of some common land; this ‘broke the ice’ that had suppressed changing the old landscape for so long. Finally, the problems of over-pasturing on the common moors was increasingly recognized. The end of the open fields and common moors came quickly; most Parliamentary enclosures were in the 1850s; Whitson was last, with the Act passed in 1867, and enclosure in 1870.

Population

Accurate population figures are first available from the census of 1801. Nash, Goldcliff, and Redwick all had c 180 inhabitants; St Brides had 134, Peterstone 85, and Whitson just 73. Everywhere experienced a steady rise until the mid 19th century, with a peak in the decades either side of 1850. Nash, Goldcliff, Redwick, and St Brides all had 250 to 300 occupants, with only 108 in Whitson.

There followed a pronounced decline reaching its worst around 1870–80. Goldcliff, Nash, and Whitson then showed a marked recovery, though the decline continued in Redwick, St Brides, and Peterstone. The picture in the 20th century has been one of notable divergence, with Nash, St Brides, and Peterstone showing clear increases, while Goldcliff, Redwick, and Whitson showed a decline. In 1971, Nash had 595 inhabitants, St Brides 320, Peterstone 242, Goldcliff 238, Redwick 170, and Whitson 66.

Settlement

The mid 19th century generally witnessed an expansion of rural settlement, illustrated by comparing the 1831 and 1886 maps. The greatest increase was, not surprisingly, in Christchurch, Goldcliff, Nash, Redwick and St Brides, mostly in the form of scattered roadside cottages; this was closely tied to the enclosure of common land, and in particular roadside waste. However, some cottage sites were deserted during this period. Cartographic sources show that some were abandoned between 1831 and 1881–2 (eg along the Straits, north of Tatton, south west of Ty-Portra, and south east of Burnt House, all in Nash), while others were deserted after 1881–2 (eg Tyd-Love Farm, Arch Cottage near Burnt House, and another cottage south of Great House, all in Nash).

Apart from Newport and Cardiff, which were already towns, only Caldicot witnessed urban growth. Caldicot Pill has a long history of use by shipping; a charter of c 895 refers to ‘free landing rights for ships at the mouth of the Troggy’ (Li 235b). Caldicot was one of a series of small 16th-century ports along the Gwent coast (Dawson 1932, 13; Lewis 1927, ix), and in 1613 a survey records

that some tenants paid ‘chence money’, also called pill money, in respect of boats moored there (Bradney 1929, 111). In the late 18th century a shipyard was established at Caldicot Pill. A number of small ocean-going vessels were constructed there from c 1785 to c 1814 (Birbeck 1977, 13). The dock still existed in 1829 but may have been disused (GwRO D.2282/3; Parkhouse and Lawler 1990, 48). By 1831 (GwRO D.1332/1) it was deserted and the area described as a wharf. By 1842, a new sea-wall had been constructed downstream (Parkhouse and Lawler 1990, 48).

With the advent of the railways Caldicot grew into a semi-industrial village, having a population of c 1700 just after the last war. The construction of the Sudbrook paper mill and Llanwern Steelworks in 1958–9 meant that there was a need for major new housing, and since the 1960s Caldicot has developed as a new town with a population of c 14,000 (Birbeck 1977).

Continued coastal erosion and saltmarsh reclamation

The later post-medieval period saw a continued pattern of erosion and depositional cycles along the open coasts, with deposition and reclamation the predominant processes in the tidal rivers. Accurate cartographic sources mean that for the first time we can calculate the rate of coastal erosion (see Table 8). However, the sediments being eroded are not necessarily the areas of land abandoned during the late medieval sea-wall retreat. After a period of sustained late medieval to early post-medieval erosion which took the coast back almost as far as the new sea-wall, there was a period of deposition resulting in saltmarshes of the ‘Rumney Formation’ (Allen 1987; Allen and Rae 1988). It is the erosion of these sediments that the cartographic sources record.

Table 8: Distance between the sea-wall and front of saltmarsh in feet

	Peterstone	Caldicot	Sudbrook Pill
1777	–	–	750
1844	670	–	–
1851	–	630	–
1882	500	475	450
1900	450	360	510
1919	390	360	400
1951	330	0	200

(Based on WALSC 1954, 41–42).

Despite this erosion, there were still some areas of saltmarsh accretion giving the opportunity for further reclamation. Close to the River Usk, there are a series of parallel curving boundaries that are potentially the lines of earlier sea-walls; in one case this is confirmed by cartographic sources (NLW

Tredegar 1011). Thus, the sea-wall along the river Usk in Christchurch has been moved forward several times, steadily reclaiming areas of salt-marsh (Figs 4A–C, 5 and 23).

The earliest reference to 'wharfs' in Christchurch is 1598 (NLW Tred. 84/41), and the 17th century in particular has many references to wharfs, including meadow in Traston Wharf (1615: NLW Bad.D.153) and 'a parcel of meadow called warth lands lying outside the sea-walls' (NLW Tred. 62/64). Cartographic sources show that the first major intake had occurred by 1752 (NLW Tred. 1011), while the second major reclamation, of Traston Wharf, took place between 1758 (map: NRL xM000.912) and 1788 (map: NLW Lockwood vol 1). The final intake was shortly before 1831 (GwRO 1355/1).

In Undy, the earliest reference to a wharf is 1521 (NLW Ply. 647). A 'Common Wharf' is referred to in 1541 (GwRO D.43/5675). There are subsequently several references from 1556 to 1711 (eg 1680: NLW Tred. MSS/97). These may relate to a wharf reclamation (shown on the Commissioners of Sewers map of 1831) in the south east corner of Undy.

The form of Coldharbour Pill also underwent

radical changes in the 18th century. It used to be embanked upstream for *c* 600 m from the coast, the tidal sluice-gate lying that distance inland. By 1774, a 'New Sea-wall' had been constructed across the mouth of the pill (map: NRL M.436.3/912).

Notes

- 1 Ruinous cottages are recorded in:
 Bishton: 1716/17 (NLW Tred. 7/14); 1764 (NLW Tred. 86/75).
 Caldicot: 1697 (GwRO D.668/25); 1723 (GwRO D.668/5577); 1754 (GwRO D.25/466).
 Llanvihangel: 1680 (NLW Tred. MSS/97); 1701 (NLW Tred. 87/796); 1712 (two cottages, NLW Tred. 87/69).
 Magor: 1632 (GwRO D.25/227); 1659 (GwRO D.25/228).
 Portskewett: 1721/2 (two cottages, GwRO D.501/93940).
 Redwick: 1655 (GwRO D.2200/38); 1680 (NLW Tred. MSS/97); 1687 (*Brad. IV*, 240); 1712 (GwRO D.43/542).
 Rogiet: 1710 (NLW Tred. 149/24).

7 The future

The extent of landscape loss

Figs 38–39

Until modern times, the evolution of the Gwent Levels landscape has been controlled by the pattern of drainage, leading to a largely agricultural pattern of landuse. However, the Levels are a large area of flat land adjacent to the conurbations of Newport and Cardiff, with good road and rail links. Improved drainage methods, and greatly increased pressure for building land in South East Wales generally, mean that new developments no longer respect the old pattern. An additional problem on the Levels is that because of the area's flat relief, the visual character of a much wider area is affected by any developments. Even areas that remain in agricultural use are being damaged, through agricultural 'improvement'. Many features of the historic landscape are so ephemeral (eg grips, ridge and furrow) that only one or two episodes of ploughing can destroy them.

Figures 38–39 chart the extent of this loss by showing the pattern of fields on five occasions. The 1830–1, 1880–1 and 1991 maps can be regarded as 'snapshots' of the landscape, representing a fairly complete picture. By contrast, those of 1964–5 and 1973–89 are based upon editions of Ordnance Survey maps that are amalgams of only partially updated data; the basic survey and even the last major revisions can vary considerably between sheets, and are significantly earlier than the date of publication.

Development pressures

Figs 38–9, and 40

The most obvious threat to the Levels is that of urban, industrial, and road development, which has already caused the loss of large parts of this distinctive landscape. The 19th century industrial and transport revolution saw the rapid expansion of Cardiff and Newport. The creation of their docks in the 19th century covered large areas around the mouths of the rivers Usk and Rhymney/Taff/Ely (Dawson 1932, 63–84). After the Second World War, there was rapid industrial development around the river mouths, particularly to the east of the Usk (including the Uskmouth power stations, Spencer (now Llanwern) Steelworks, and the Monsanto chemical and aluminium plants). Industrial processes at the Steelworks and Power Stations create huge amounts of ash, and this is dumped on the

Levels adjacent to these sites. The whole landscape has been lost in these areas, including a number of very fine farmhouses.

The 1960s saw substantial urban and light industrial/commercial expansion onto the Levels south east of Newport (around Liswerry), and recently to the south west (around Duffryn). At the western end of Wentlooge, development spread from the outskirts of Cardiff (around Rumney and St Mellons) over the fen-edge and onto the Levels. The recent rate of change on the Levels is such that all published Ordnance Survey maps are out of date. The Geonex Air Photographic Survey shows the state of development in the summer of 1991 (Figs 38–40), though even since then further development has taken place (eg north of Pye Corner in Nash, east of the Steelworks on Llandeveyn Moor, and in western Wentlooge).

The pressure to create jobs around the two conurbations has not relented, though the need to balance socio-economic need and conservation issues is increasingly apparent in development plans. For example, in 1981 the Gwent Structure Plan gave the highest priority to job opportunities (GwCC 1993, 3); by contrast, in 1991 'The most significant issue in Gwent to be addressed over the next few years is the *balance* between continued economic growth and conservation of the environment' (italics added; GwCC 1993, 3). In South Glamorgan, 'The aim of the replacement structure plan is to produce a plan covering the period 1991–2011 which *balances* environmental protection with sustainable development and transport strategies which enhance the quality of life within the County' (italics added; SGCC 1992, 1). This will not be easy, for as the Monmouth Local Plan states for example, 'South East Gwent ... exhibits the starkest conflict between development pressures and environmental incapacity' (MBC 1993, 26).

Proposed developments

On the Caldicot Level, Newport Borough has designated two substantial areas for commercial development (NBC 1993): 62 ha between Llanwern Steelworks and Broadstreet Common, and 77 ha to the east of the Steelworks on Llandeveyn Moor where work on the 'Gwent Europark' has already begun. The situation in Monmouth Borough is somewhat better, with only a little land for the Gwent Europark and several small housing/light industrial schemes proposed along the fen-edge east of Caldicot Pill (MBC 1993).

On Wentlooge, there are a wider range of



Fig 38 The erosion of the historic landscape: Caldicot Level.

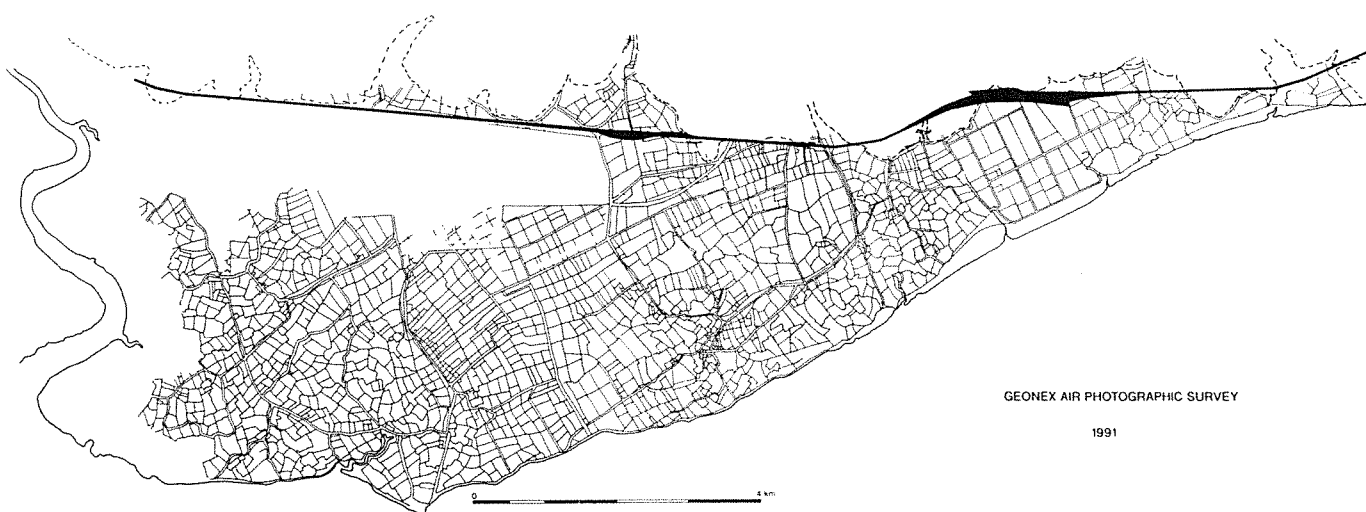
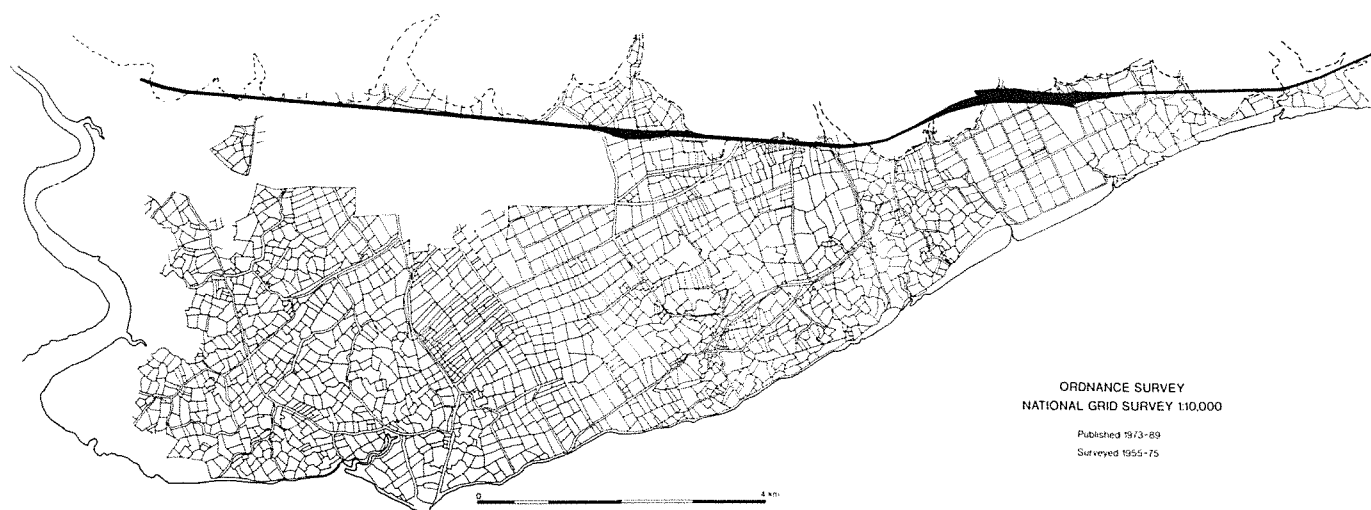


Fig 38 (cont)

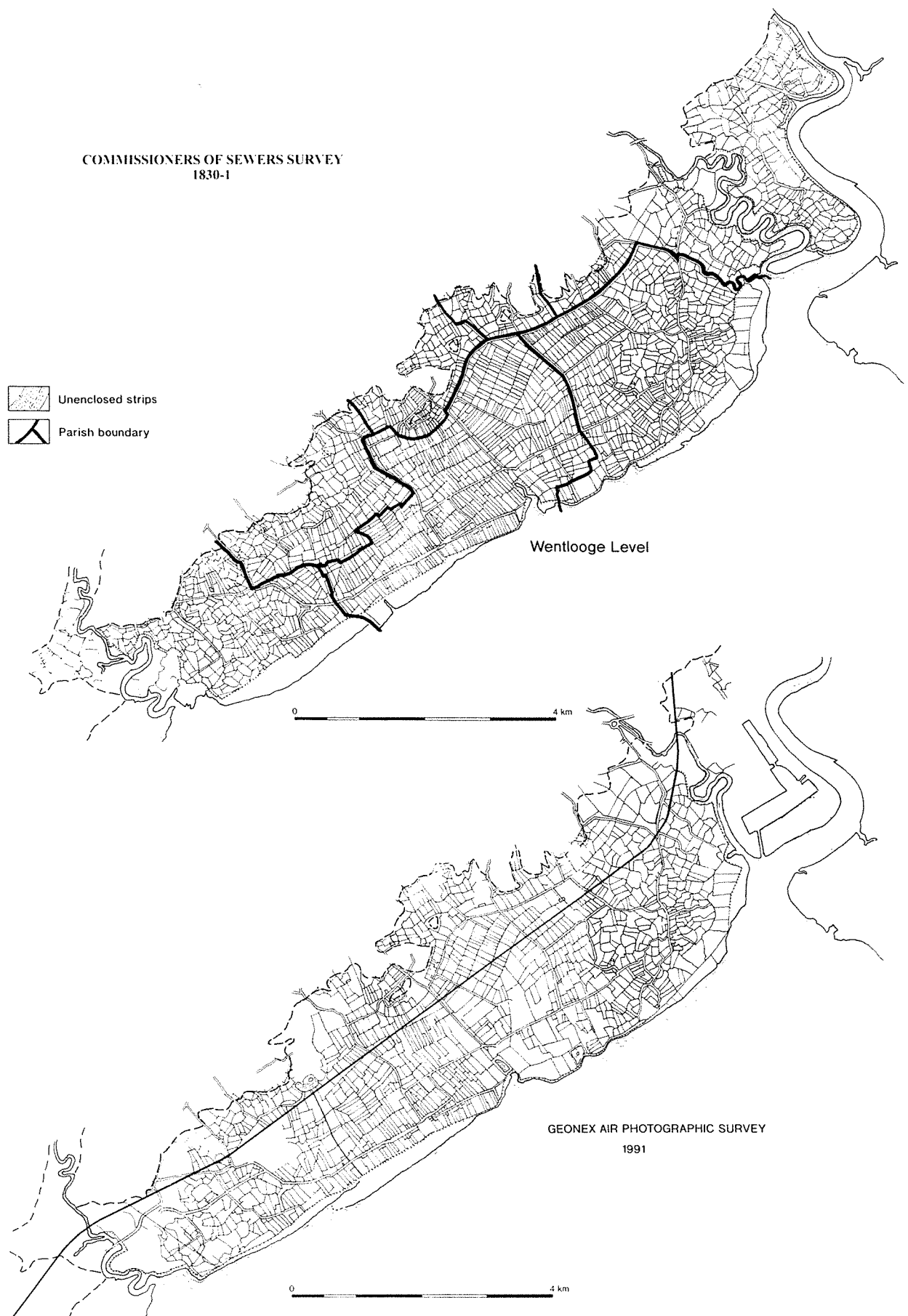


Fig 39 The erosion of the historic landscape: Wentlooge Level.

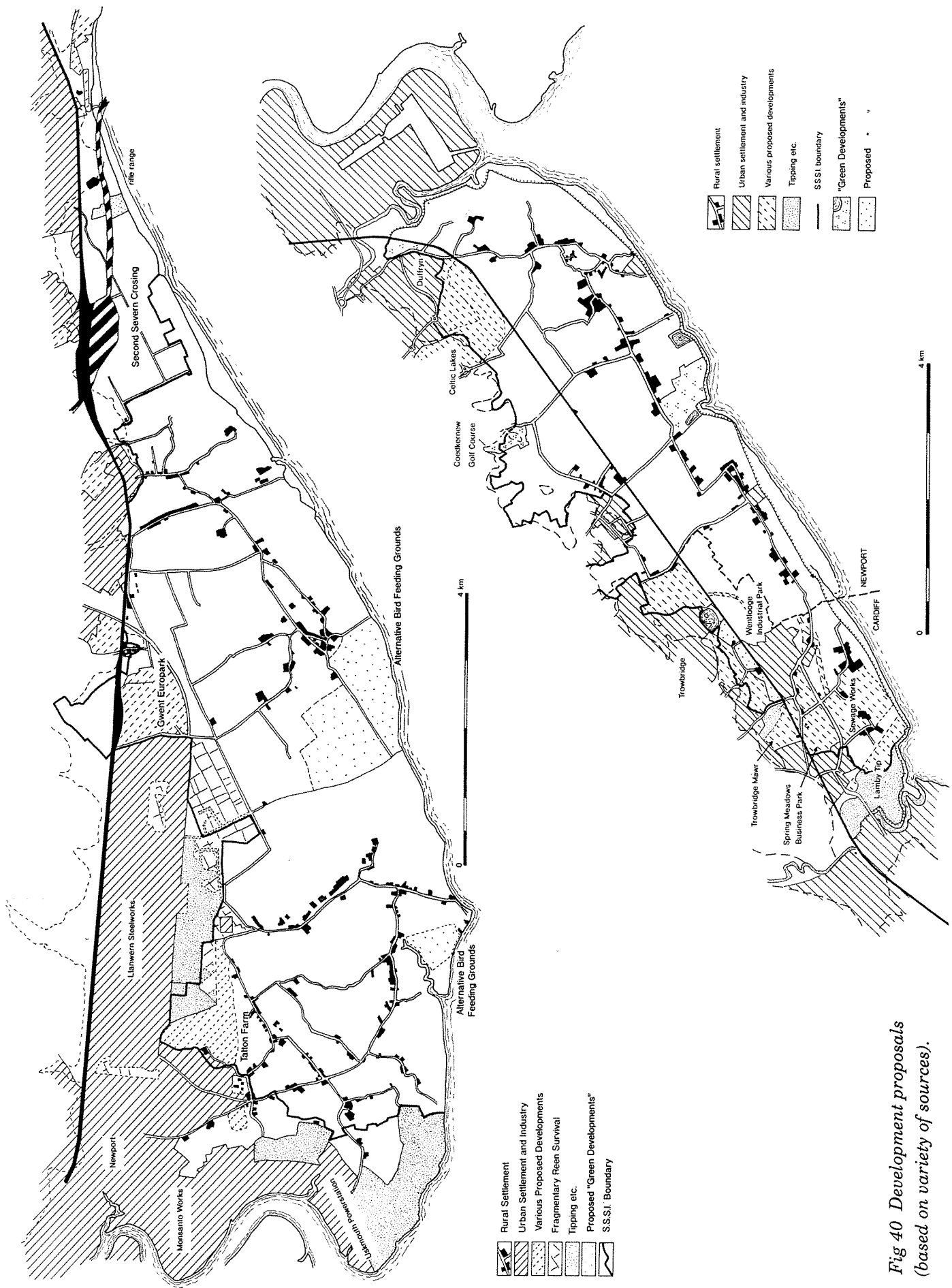


Fig 40 Development proposals
(based on variety of sources).

threats. Around Duffryn approximately 20 ha are committed to development, with a further 18 ha proposed (NBC 1993). The South Glamorgan County Council Draft Replacement Structure Plan (SGCC 1994) includes employment and housing sites on the western part of the Wentlooge Level. The Cardiff City Local Plan proposes designation of large areas for housing and industry, though the public enquiry inspector recommends against several of these, but not the most damaging areas south of the railway (CCC 1994, 6.2, 7.2).

Two major road schemes, the Second Severn Crossing (under construction; Figs 40) and proposed M4 Relief Road south of Newport, will have a considerable impact on the Levels, in terms of the direct land take and areas of earthworks destroyed by the temporary work camps and spoil heaps. An even wider area will be affected visually and in terms of noise; the Second Severn Crossing can be seen over 1 km away. These roads may increase pressure to release land for further industrial development, especially if the M4 Relief Road has a junction south of Newport. The motorway will also detach small areas of the Levels from the rest; these areas will then lose their integrity as a 'historic' landscape since they will no longer be part of the wide coastal plain. Agriculturally, such small detached areas can become unsustainable.

The South Glamorgan Structure Plan includes provision for further roads, 'improving strategic road access to Cardiff Bay and the city centre from the east, to link with the proposed duplicate M4 around Newport and the Second Severn Crossing' (SGCC 1994, 34). The Cardiff City Local Plan includes two new access roads across the Levels (CCC 1992, 63-6), though the public inquiry inspector has recommended the rejection of both (CCC 1994, 5.4).

The most devastating proposal is for an international airport in Redwick parish. Around a third of the development is proposed to lie in the intertidal zone. This is an SSSI, proposed SPA, and proposed Ramsar site, while the well preserved prehistoric remains are unique in Britain. The remaining part of the airport development will lie landward of the sea-wall, where a huge area of 'historic' landscape and SSSI will be destroyed, along with an as yet unknown archaeological resource. The Redwick village 'conservation area' would inevitably be devastated.

Gwent County Council supports the proposal in principle 'because of its overriding economic benefits' (GwCC 1993, 50), despite its impact on the Levels which they claim to value so highly: 'Policy C6 recognises the particular value of landscapes which are of historic importance. ... such as parts of the Levels ... It is intended that sites on the [Cadw] register [of Parks, Gardens and Landscapes of Special Historic Importance] ... will be afforded special protection': GwCC 1993, 32). Newport and Monmouth Borough Councils have a far more consistent approach, expressing opposition to the airport scheme as it is 'unsubstantiated regarding

economic, environmental, and other key concerns' (MBC 1993, 80).

Green developments

A number of 'green' developments such as golf courses, trout lakes, and wildlife habitat creation, are also having a detrimental impact on the Levels. While they are not visible from a great distance, the resulting infilling of drainage ditches and removal of field boundaries is a major threat to the integrity of the 'historic' landscape. For example, the planting of several fields north of Whitson church with deciduous trees is not in keeping with the landscape's character; this was never a wooded landscape, and the only extensive areas of trees would have been willow and alder carr in the low-lying back-fen.

There have been a number of schemes to dig large ponds and lakes on the Levels, some of which have gone ahead (eg the Peterstone trout farm); these too are totally out of keeping with the nature of the 'historic' landscape. The damage done to archaeological sites through digging 'amenity lakes' was graphically demonstrated at Caldicot Castle Country Park (Nayling 1992).

The proposed creation of 'Alternative Bird Feeding Grounds', to compensate for tidal mudflats lost through the construction of the Cardiff Bay Barrage, will potentially change a significant and important part of the 'historic' landscape through the digging of lagoons and earthen banks in order to flood fields (Fig 40). The landscapes thus created have no historical precedent, will destroy several areas of important earthworks, and threaten buried archaeological sites.

Table 9 below assesses the extent to which the 'historic' landscape has been lost to all developments up to October 1994.

Finally, erosion affects much of the Gwent coast. An unknown area has been lost since the Roman period, and medieval and later sea defences have only slowed down this process (see below; Allen & Fulford 1986; Allen & Rippon 1994; Fulford *et al* 1994). In the past, when protective saltmarshes were lost, allowing the sea to eat away at the base of sea-walls, the solution was to move the sea-wall inland as happened at Rumney Great Wharf (see above). This tradition has now been broken, and the modern solution is simply to reinforce the sea-wall with concrete. The National Rivers Authority is about to begin a ten-year programme of raising and improving the sea-wall between Cardiff and Sudbrook Point, which could have a detrimental impact on the traditional character of the littoral zone. To allow the sea-wall to be widened and heightened, it is proposed to fill in the back ditch, destroying an important historic feature and a number of fine bridges. Proposals to dig a new back ditch will threaten buried archaeological sites. Managed retreat, such as is being tried in Essex, does not appear to be an option in Gwent.

Table 9: Extent of development on the Gwent Levels

Level	Area (1886)	Developed (1991)	Remaining (1991)	Proposed Developments
Cardiff West Moors ¹	6.4 km ²	6.4 km ²	0 (0%)	–
Cardiff East Moors ²	6.0 km ²	6.0 km ²	0 (0%)	–
Wentlooge ³	32.1 km ²	5.0 km ²	27.1 km ² (84%)	3.5 km ² (11 %)
Mendalgief ⁴	4.6 km ²	4.6 km ²	0 (0%)	–
<i>Sub Total (Wentlooge)</i>	<i>49.1 km²</i>	<i>22.0 km²</i>	<i>27.1 km² (55 %)</i>	<i>3.5 km² (7 %)</i>
Caldicot ⁵	58.8 km ²	21.4 km ²	37.4 km ² (64%)	4.63 km ² (8%)
Mathern/St Pierre ⁶	3.3 km ²	0.25 km ²	3.05 km ² (92%)	0.25 km ² (8%)
<i>Total</i>	<i>111.2 km²</i>	<i>43.65 km² (39%)</i>	<i>67.55 km² (61%)</i>	<i>8.38 km² (8%)</i>

1: between rivers Ely and Taff, including Leckwith and Grangetown Moors.

2: between rivers Taff and Rhymney, including Roath and Pengam Moors.

3: between rivers Rhymney and Ebbw.

4: between rivers Ebbw and Usk.

5: between river Usk and Sudbrook.

6: between Sudbrook and the river Wye.

Protective measures

All the local authority development plans are currently under review (CCC 1992; 1994; GwCC 1993; MBC 1993; 1994; NBC 1993; SGCC 1992; 1994). Another factor adding to the uncertainty of planning policy is that at the time of writing (February 1995) the period of transition, between the old two-tiered system of local government and the new unitary authorities, has just begun.

All the proposed development plans contain measures to protect the countryside in general and the Levels in particular. There are, however, wide differences in policy between the authorities with Monmouth Borough appearing to have the strongest commitment to conservation (perhaps to be expected in an essentially rural authority).

Neither Gwent nor South Glamorgan has a statutory 'Green Belt', though Gwent's 'Green Space/Zone' is designed to serve this function (GwCC 1993, policies C1–2). This covers much of the Wentlooge Level (NBC 1993, policy EV1), but to the east of the Usk it does not extend south of the fen-edge, being restricted to the belt of villages between Newport and Chepstow (MBC 1993, policy C4; NBC 1993, policy EV1). Newport Council have designated Redwick, Goldcliff, Nash, St Brides, and Peterstone as 'village areas', protecting them from urban expansion (NBC 1993, policy H7). Redwick is also a 'conservation area'.

All of the Levels west of Caldicot Pill in the county of Gwent are designated as 'Special Landscape Areas', 'in order to protect and enhance landscapes of regional or county importance' (GwCC 1993, policy C5; also NBC 1993, policy EV10; MBC 1993, policy C3). The St Pierre and Mathern Levels are excluded. In South Glamorgan/

Cardiff City, those parts of the Wentlooge Level that have not been identified for development were proposed to be designated as 'Open Countryside' areas, where 'there will be a presumption against development ... , unless such development is in the interests of agriculture, forestry, or informal recreational activities and would not adversely affect the character, visual amenities, and nature conservation value of the area' (CCC 1992, proposal 3). However, the public inquiry inspector has recommended the deleting of this proposal, after objections from, amongst others, the Welsh Office (CCC 1994, 3.2).

There are other examples of the erosion of planning policy protection for the environment in Wales. The Gwent Structure Plan states that 'development which has a significant adverse effect on landscapes of historic importance will not normally be permitted, and the enhancement or restoration of such landscapes will be encouraged' (GwCC 1993, policy C6). The Monmouth Local Plan states 'For landscapes, parks and gardens designated in the Cadw Register of Historic Landscapes development will not normally be permitted that will adversely affect their character, appearance or setting' (MBC 1993, policy C5). However, after Welsh Office objections once again, it is proposed that this be changed to 'For landscapes, parks and gardens designated in the Cadw Register of Historic Landscapes development proposals that do not destroy or detrimentally affect the qualities that justified designation, either directly or indirectly, will be permitted' (MBC 1994, 31). This marks a clear change in emphasis, shifting the balance towards allowing development unless a strong case can be put against it. This begs the question, why must conservation always be relegated to a position of opposition?

With regard to the natural environment, the value of the Levels is clearly recognized in a number of development plans. The Gwent Structure Plan states that 'development which has a significant adverse effect on sites where the nature conservation interest is of international, national, regional or county importance will not normally be permitted. Wetlands and ancient meadow will be given particular protection' (GwCC 1993, policy C8). The Monmouth Plan also includes the Caldicot, St Pierre, and Mathern Levels in its proposed 'Coastal Protection Zone', where 'development proposals that do not destroy or detrimentally affect the qualities that justify the designation of the CPZ, either directly or indirectly, will be permitted' (MBC 1994, policy C21).

The South Glamorgan Structure Plan aims to 'protect important heritage features, both natural and man made' (SGCC 1994, 12). Even a 'green belt' is proposed (SGCC 1994, policy EV3). However, their policies for the Levels, including further commercial/industrial and housing development, hardly seem compatible with this (SGCC 1994, policies E1 and H1; key map), and their lead is followed by Cardiff City Council. The Cardiff Local Plan and South East Cardiff Infrastructure Study includes large areas of land scheduled for light industrial, commercial, and urban development. Indeed, the majority of the Levels within Cardiff City Council's boundaries are either developed or are scheduled to be so (CCC 1992, proposals 14 and 25).

The sorry conclusion to be drawn from this review of planning policy is that the Levels are still seen by certain local authorities as an ideal area for development. There is also very little that can be done to legally protect areas of 'historic' landscape, since at present, statutory protection of our cultural heritage is entirely 'site-based'. Standing buildings can be listed, and small areas of the built environment designated as conservation areas. Individual archaeological sites can be scheduled, but important earthworks such as the canalized raised watercourses (eg Monksditch), under threat from roads and other developments, cannot be scheduled as they are still in use. The same applies to well-preserved areas of ridging in fields.

National statutory designations that cover whole landscapes are presently based solely upon the areas' visual or nature conservation interest; for example, the Levels are a Site of Special Scientific Interest. However, although management agreements can be established with farmers in order to protect areas of grips, as they are part of the water management system (the basis of the ecological interest), this mechanism cannot be used to explicitly protect them as 'historic' features of the landscape.

Cadw and the Countryside Council for Wales have co-operated in producing a 'Register of Landscapes, Parks and Gardens of Special Historic Interest in Wales' (Kelly 1994; forthcoming; Whittle

1992). The development plans discussed above do recognize this register as a consideration in the planning process, but it is currently non-statutory. Ultimately, therefore, the future protection of historic landscapes requires national legislation.

Agricultural improvement

In those areas that retain their agricultural land-use, there are also a wide variety of threats resulting from improvement. The traditional farming regime on the Levels relies upon careful control of the water system, balancing the needs for drainage, irrigation, and watering stock (Rippon 1995b; Scotter *et al* 1977, 83; WALSC 1954, 18–19). Ditches also provide 'wet fencing' to control the movement of stock, as well as performing a storage function, holding water at times of high tide when sluice-gates are closed.

Recent agricultural improvements have had a significant effect on the landscape. If fields are under-drained and drinking troughs are installed, the water level in reens can be allowed to drop. On the Levels most stock has to be kept inside over the winter. Thus, if under-draining allows stock out into the fields even a few weeks earlier, it is of great benefit by saving on winter fodder costs. Clearly, some arable land is required on the Levels in order to provide winter fodder for livestock; however, the large-scale cultivation of cereals for commercial sale is not a necessity.

By improving drainage, the traditional system based on a network of shallow furrows or 'grips' is made redundant, allowing them to be ploughed out. Other grips have been infilled with material cleaned from drainage ditches. The water level in reens then drops (to the detriment of the ecology) eventually allowing many field ditches to be filled in (Scotter *et al* 1977, 84). Between 1952 and 1975, 126 km of reens were destroyed, mostly between 1960 and 1975 (Wade & Edwards 1980, 309).

Agricultural dereliction provides another threat. For example, some areas adjacent to the industrial works have gone out of agricultural use; they have simply lost their viability due to the fragmentation of landholding and become overgrown with scrub. The Common Agricultural Policy is not serving the countryside any better. Any landscape needs management and maintenance, and 'set-aside' will not necessarily maintain the character of this agricultural landscape; while taking land out of arable cultivation, the scheme does not allow it to be put to a more traditional use, such as pastoralism, which would be more in keeping with the 'historic' landscape and does not damage the archaeological and ecological interest. At present (summer 1994), 'set-aside' land on the Levels simply turns into weed-covered waste ground.

Table 10 below sets out the extent of landscape loss for a series of landscape 'character areas', defined on the basis of their historical evolution (eg areas of 'irregular', 'intermediate', and 'planned'

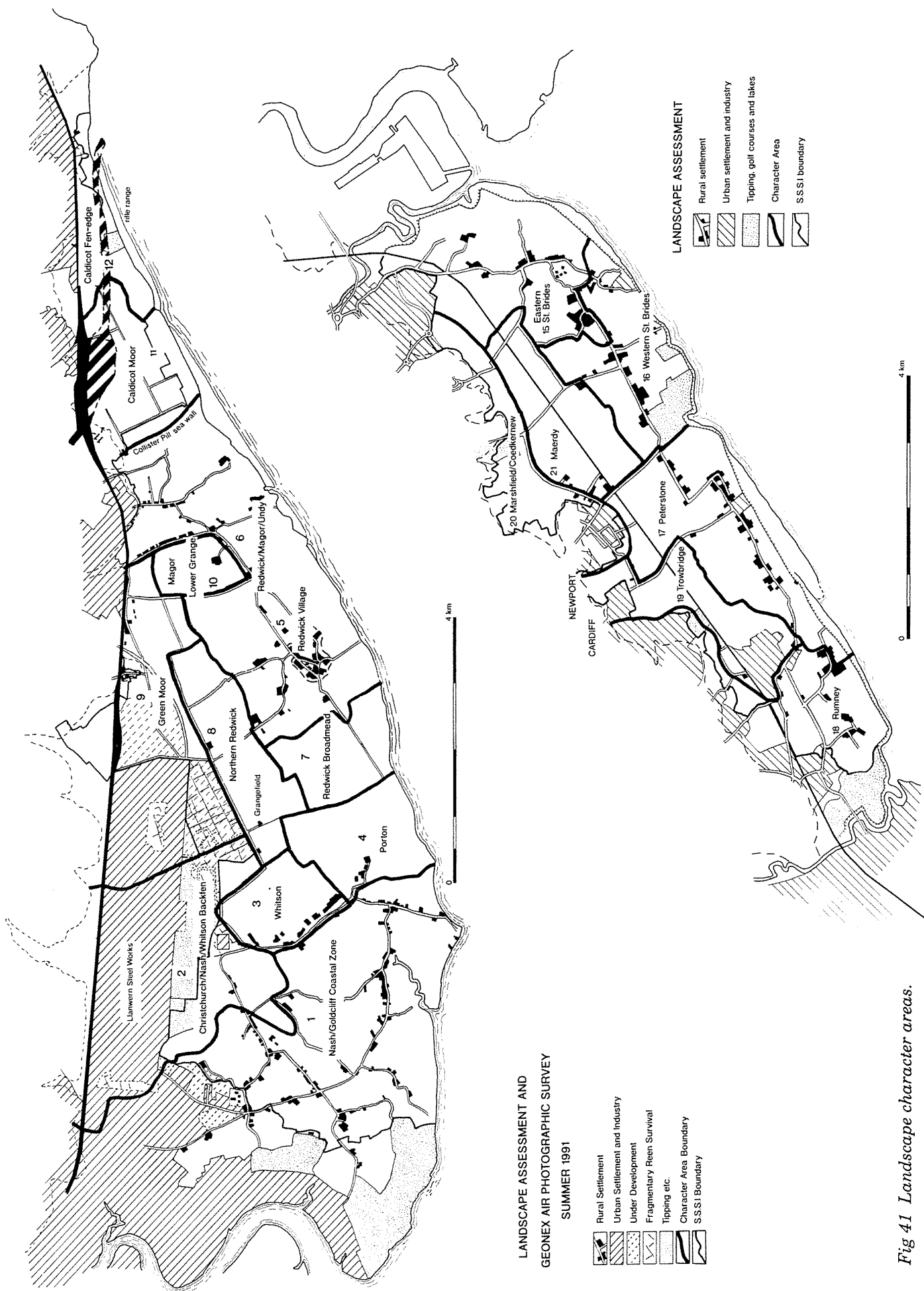


Fig 41 Landscape character areas.

Table 10: Landscape loss in each character area

Character Areas		1881-2	Extent (km ²)		Field Boundaries		
			1991	% loss	1881-2	1991	% survival
1	coastal Nash/Goldcliff	20.8	11.3	54.1%	1310	1235	94.3%
2	inland Nash/Goldcliff	7.1	1.6	22.5%	171	140	81.9%
3	Whitson	1.8	1.7	94.5%	197	81	41.1%
4	Porton	2.3	2.3	100%	282	247	87.6%
5	Redwick village	(0.25)	(0.32)	—	—	—	—
6	coastal Redwick/Undy	8.9	8.5	95.5%	978	808	82.6%
7	Redwick Broadmead	2.0	2.0	100%	161	155	96.3%
8	northern Redwick	2.6	2.6	100%	309	209	67.6%
9	Green Moor	7.0	2.2	31.4%	233	166	71.2%
10	Magor Lower Grange	1.0	1.0	100%	98	60	61.2%
11	Caldicot Moor	2.8	2.3	82.1%	153	98	64.1%
12	Caldicot fen-edge	2.3	1.6	69.6%	38	15	39.5%
<i>Sub-Total</i>		<i>58.8</i>	<i>37.4</i>	<i>63.5%</i>	<i>3930</i>	<i>3214</i>	<i>81.8%</i>
13	St Pierre	1.4	1.4	100%	94	82	87.2%
14	Mathern	1.9	1.6	84.2%	127	19	15.0%
15	Eastern St Brides	6.1	6.1	100%	718	559	77.9%
16	Western St Brides	3.7	2.1	56.8%	643	383	59.6%
17	Peterstone	5.0	4.9	98.0%	888	638	71.9%
18	Rumney	5.8	3.3	56.9%	493	273	55.4%
20	Marshf'd/Coedkernew	3.4	2.6	95.5%	409	272	66.5%
21	Maerdy	3.3	3.1	93.9%	566	340	60.0%
Level of Mendalgief		4.6	0	0			
Cardiff Moors		12.4	0	0			
<i>Total</i>		<i>106.4</i>	<i>62.5</i>	<i>58.7%</i>	<i>7868¹</i>	<i>5780¹</i>	<i>73.5%¹</i>

1 Excludes the Level of Mendalgief and Cardiff Moors

landscape; see below, Fig 41). The former extent of each character area is given, along with the amount that survived in 1991; this allows the impact of development to be assessed. For those areas which survive, the number of field boundaries in 1881-2 and 1991 are compared, indicating the damage caused by agricultural 'improvement'. The sources used are the First Edition Ordnance Survey Six Inch map, surveyed in 1881-2, and the 1991 Geonex Air Photographic Survey.

Assessment of the 'historic' landscape

Introduction

Britain has had several decades of legislation protecting the countryside, starting with the Town and Country Planning Act of 1947. However, while the Department of the Environment and its predecessors have been attempting to prevent urban and industrial sprawl, the Ministry of Agriculture and

European Community have embarked on a destructive policy of subsidizing farmers to tear up hedgerows, drain wetlands, and convert arable to pasture.

The move to protect the countryside has been led by conservationists whose main interests have been visual amenity and ecology. However, in recent years the Countryside Commission has been adopting an increasingly holistic approach to landscape, stressing four groups of attributes: physical (geology, soils, land-forms, drainage), human (archaeology, history, land-use, standing buildings), aesthetic, and cultural associations (CC 1993, 4). While the historic dimension's increased profile is to be welcomed, the visual appearance of the landscape still seems to be central to the English Countryside Commission's thinking (eg CC 1991b; 1993, 4). However, the Countryside Council for Wales takes a more enlightened view, having collaborated with Cadw in the compilation of the Register of Historic Landscapes in Wales (Kelly 1994; forthcoming).

Though conservationists increasingly under-

stand that many modern landscapes have important historical dimensions, archaeologists have shown less of an interest in the 'historic' landscape. This is despite the fact that what lies above ground is simply part of the same body of evidence for human exploitation of the environment as that lying beneath the ground. This problem can be traced back to the formative years of the discipline when 'monuments', such as burial mounds and settlements, were the focus of attention. The idea of studying these sites in relation to the countryside that surrounded them started to emerge in the 1960s with the birth of 'landscape archaeology' (eg Aston and Rowley 1974). Hopefully, English Heritage's current work on 'historic' landscapes (Darvill *et al* 1993) should continue to raise their profile.

Methodology (see Rippon 1995a)

Having identified an area as having an important 'historic' landscape, the next step is to clearly define its qualities. The methodologies being developed both in England and Wales for assessing 'historic' landscapes are based upon the criteria for scheduling ancient monuments (Darvill *et al* 1993; Lambrick 1992; Kelly 1994). These criteria are: survival/condition, period, rarity, fragility, vulnerability, diversity, documentation, group value, potential, amenity, and conservation value. The methodology used in this study has developed out of that used by Lambrick and Kelly, but with some amendment in order to suit the distinctive landscape of the Levels.

The first stage is to define the extent of the study area, and why it is important. This has been outlined above, but to summarize, one of the main character-defining features of the landscape is the extensive flat area of alluvium drained by reens. Its importance is in terms of the land-form, ecology, buried archaeology, and the 'historic' landscape. The boundary is taken as that laid down by the Commissioners of Sewers, who traditionally managed the drainage system.

The second stage is categorising the nature of the landscape. Kelly identifies five landscape types (Kelly 1994, table 4). Firstly, there are intensively developed/extensively remodelled areas, where there have been substantial alterations to the natural (land-form) and semi-natural (vegetation/landcover) landscapes. The examples given are urban/industrial areas and large-scale civil engineering projects; landscapes showing 'human endeavour on a grand scale'. However, the Gwent Levels have also been dramatically remodelled, transformed from tidally inundated saltmarshes into drained arable and freshwater meadow. Certainly this is a significant change in both land-form and landcover, and a major human achievement.

The second of Kelly's landscapes are those in which change has been arrested at one or more stages of development. These 'date/period' or 'relict'

fossil' landscapes have been abandoned for the purpose for which they were intended. The Gwent Levels certainly have areas that are essentially of one period, such as the 19th century Parliamentary enclosures, and in that sense are 'date/period' landscapes, but they remain in use and so are not 'relict'.

The third of Kelly's landscapes are those of 'historic diversity'. These are areas where development or change continues and into which past evidence becomes integrated. Particular regard is given for those areas where evolution over time and historic integrity and/or coherence are shown by a range of features of particular importance. The Levels certainly fall into this category, with a range of drainage systems and related landscapes of different dates.

Kelly's fourth landscape type is the 'buried or subsumed' landscape. Prehistoric and Roman landscapes on the Gwent Levels certainly fall into this category.

The fifth category comprises landscapes of cultural merit, for example areas with historic, artistic, literary, architectural, technological or religious associations. Though not strong, certain parts of the Levels do have such associations, notably with the monks of Goldcliff and Tintern.

Therefore, the Gwent Levels contain attributes of each of these 'historic' landscape types. The Register of Historic Landscapes in Wales (Kelly 1994; forthcoming) develops slightly different evaluation criteria for each landscape type, but all are based upon those used for Scheduled Ancient Monuments, increasingly accepted as the basis for landscape assessment (eg Lambrick 1992).

The third stage of landscape characterisation/assessment is the description and analysis of the landscape, based on a desk-top study, the examination of air photographs, and fieldwork. Data on the physical landscape (relief, soils, etc), historical evolution, changing patterns of landuse, and current condition of the landscape can all be combined in order to define a number of character areas. Initially a limited number of 'landscape types' may be defined: 'irregular', 'intermediate', and 'planned' landscapes (eg Figs 8, and 14-16). By refining these, the study area is subsequently broken down into a series of 'character areas': individual blocks with a certain degree of coherence (Fig 41).

Finally, there is assessment, and the presentation of information in such a way that it can inform the planning process (Rippon 1995a). An important distinction to make at this stage is that between characterisation and evaluation. The former simply involves understanding what the landscape consists of, and must precede the latter, which places some relative value upon it. Characterisation is relatively straightforward and forms the first part of this study: the history of how the Levels evolved has been determined, centred around the theme of reclamation. The landscape has been broken down into a number of areas that possess a certain

GWENT LEVELS HISTORIC LANDSCAPE STUDY: LANDSCAPE CHARACTERISATION

4. PORTON

4.1. Location – Bounded by Whitson (area 3) to the north, Elver Pill Reen and Broadmead (area 7) to the east, Mireland Pill (area 1) to the west and the coast to the south.

4.2. Period – This landscape appears to have been planned out in a single episode. Porton is documented from the mid 13th century.

4.3. Components – The field pattern consists of rectangular fields set within a planned grid of roads. The axial east–west road may be an enclosed street common. The two north–south roads lack any waste and survive as unmetalled ‘green lanes’. The hamlet of Porton lies adjacent to Whitson church and includes a fine collection of 17th to 18th century buildings. The only other settlement is an isolated farmstead by the coast. It is known as ‘The Fisheries’, and the remains of a ‘putcher rank’ can be seen in the intertidal zone.

The sea-wall clearly cuts across the grain of this landscape, leading to a number of triangular shaped fields. Elver Pill (formerly Earl’s) Reen lies to the east; though documented from the 16th century, it is certainly much older. The sea-wall has stone rubble facing and a wave return wall. Some well-preserved grips, especially to the south. Some pollards.

4.4. Existing designations

- 100% of character area designated as SSSI.
- 1 listed building.
- 100% Special Landscape Area.

4.5. Condition

- Originally 2.3 km²
- 100% (2.3 km²) survives.
- 12% of field-boundaries in remaining agricultural areas have been lost since 1886.
- 35% of fields are unimproved/semi-improved with ridging/surface drainage.
- To the south, hedges are mainly scrubby with occasional mature willows. To the north, some boundaries have been lost, and many of the remaining hedges are well cut.

4.6. Documentation and associations

Land in Porton was held by Goldcliff Priory and Tintern Abbey, though little documentation survives. There is a local legend that the original village has been eroded away; some claim the ghostly bells of Whitson church can still be heard!

4.7. Current proposed developments

- Proposed Severnside airport.
- Proposed sea-wall reconstruction.

4.8. Significance and value – It is unusual to find such a ‘regular’ landscape so close to the coast, and it is probably another example of medieval planning. It is a well preserved, very coherent landscape having a high group value, with a relatively intact field-boundary pattern, grip system and network of green lanes, all cut by the set-back sea-wall.

There are few visual intrusions, apart from the British Steel pipeline down Elver Pill Reen (though this is largely screened by hedges). The small hamlet at Porton is particularly pleasant.

Overall, this is an extremely coherent landscape with a very high integrity; the wide range of landscape elements articulate well.

AREA 4

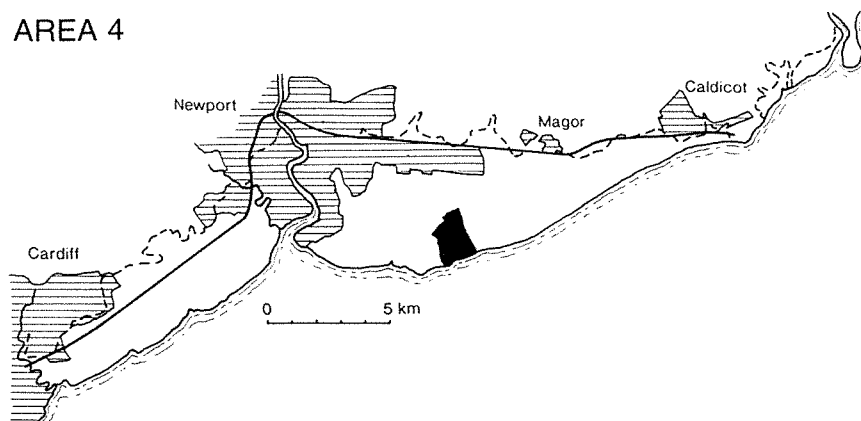
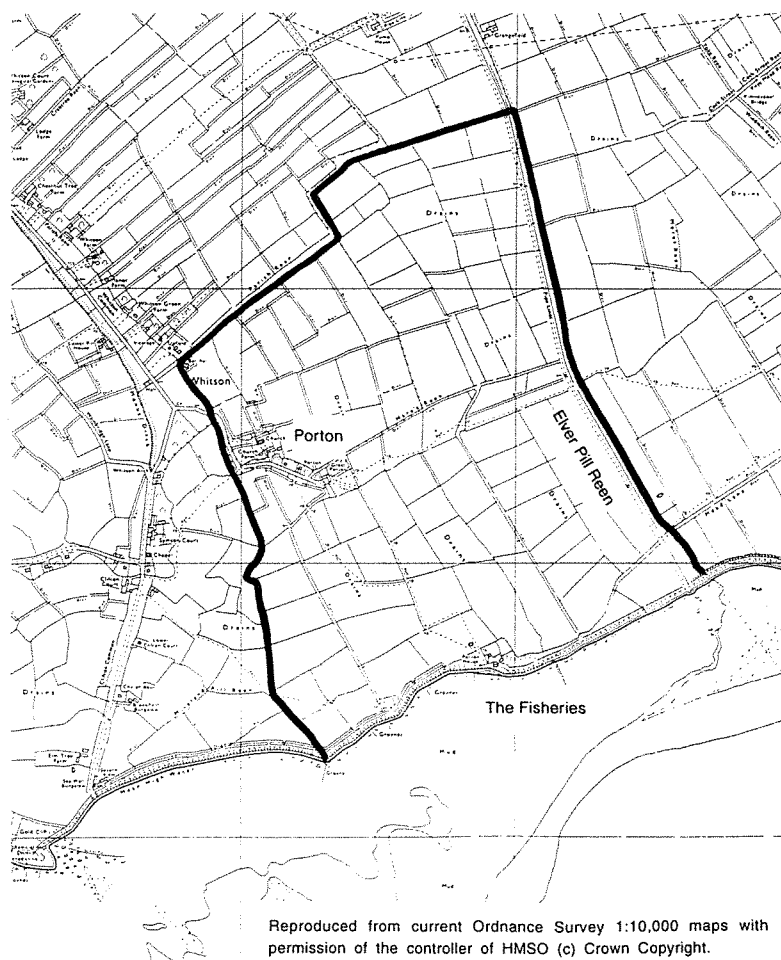


Figure 11



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THE EFFECT OF LATE MEDIEVAL COASTAL EROSION

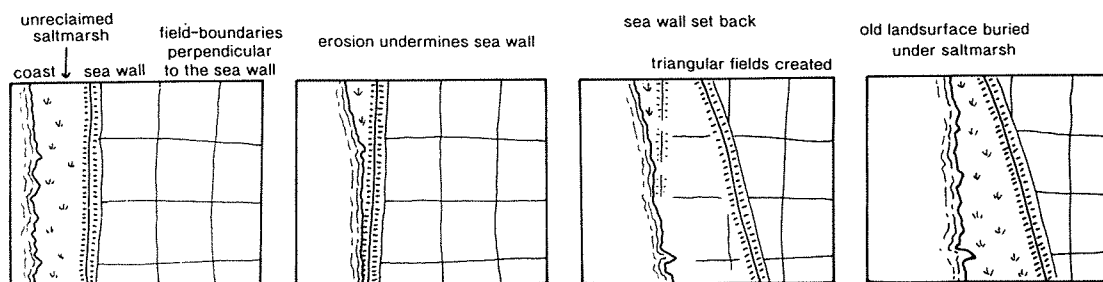


Fig 42 (cont)

coherence based upon their history and/or present physical character. Evaluation is clearly derived to a considerable extent from characterisation. Thus, aspects such as period, composition, condition, and rarity can be determined in terms of a factual statement.

Attributing value is more complex, and controversial. Some aspects, such as period, cannot be scored or ranked. Even rarity is not a simple matter, as some areas may be good representative examples of common landscape types. There is also the problem that in any region subject to development pressure, if one area is described as being of less value than another, it gives the impression that the area is not important. Most significantly, some of the Level's greatest assets are its complexity, diversity, and sheer extent; the whole landscape is important, even if certain areas have suffered greater damage than others. Thus, it was decided that each character area should not be scored. Rather, a standard description is given of each area, and a range of criteria considered. It will become apparent that some areas are regarded more highly than others, but this is not quantified; this is termed 'assessment', and should avoid planners or developers gaining the impression that certain areas are expendable. An example of a character area assessment is given in Figure 42.

The visual appearance of a landscape is in part a product of the vegetation cover (or landcover), particularly in lowland areas (cf uplands where land-form is more dominant; CC 1991a, 7-9). For example, hedges that are cut to 1 m or so above the ground lead to a landscape with a very open feel, and visual intrusions such as pylons can be seen from a great distance. If the hedges are not cut, and grow to a height of 3-4 m or more, then the landscape has a very closed feel.

Assessments based upon simply upon visual qualities, with little attention paid to its origins, are not new (eg CC 1992; 1993). In contrast, this study stressed the historic importance of the landscape, and the different processes behind its creation. Criteria such as present landcover were considered, and found to be very important in the initial impression of a landscape, but when an area was investigated in depth, the condition of hedges was found to be rather transient; quite simply, management practices can change, and hedges can be restored. Therefore, the characterisation of the landscape adopted here is firmly based upon the historical processes that led to the creation of the landscape, rather than the present landcover.

8 Conclusions

One of the central themes in this study has been to stress the great depth of time preserved in the 'historic' landscape of this alluvial coastal wetland. It is a key character-defining feature of the Gwent Levels, that they are totally hand-crafted by mankind. The considerable ecological interest results from the conversion of intertidal saltmarshes into freshwater pasture. The drainage ditches and sea-walls that protect and maintain this artificial landscape are vital to its integrity and coherence. This remarkable landscape has been created over the past *c* 9000 years, with its present appearance (the focus of this study) representing just 20% (1700 years).

The creation of the Gwent Levels

Wetlands are dynamic places, with a very high biodiversity and extremely fertile soils. People have exploited the rich resources that this landscape offered throughout the post-glacial period, though there were certain times, particularly when marine flooding was reduced, when the intensity of human activity increased. Mesolithic, late Bronze Age, Iron Age, and Roman landscapes are all known to be buried within this alluvial sequence, occasionally glimpsed in the intertidal zone, and at the bottom of builders' trenches.

The excellent preservation of palaeoenvironmental indicators is such that we can reconstruct the evolving nature of the Levels in great detail. There have been various periods when freshwater vegetation came to dominate, usually through natural variation in relative sea level (marine regression). However, during the Roman period man changed from being a landscape exploiter, to a landscape modifier. The construction of sea-walls and drainage ditches radically altered the whole character of the Levels, and with the exception of a brief period of partial inundation during the post-Roman period, this laid the foundations of the present landscape.

There is evidence of Roman reclamation elsewhere in Britain, notably in Somerset. One such area lies in the 'central Somerset Levels', around Brent Knoll (Fig 1; Rippon 1991b; 1993a, 106–13; forthcoming a). However, the landscape here is buried under *c* 0.5 m of alluvium and we know little of its character. On the North Somerset Levels, between Weston-Super-Mare and Clevedon, the Roman landscape was abandoned during the Saxon period, but not completely buried. In places, remains of settlements and field systems survive as earthworks, but these suggest a very different landscape to Wentlooge (Rippon 1992; 1993a, 219–26; 1994b). There is no evidence for the mas-

sive planned drainage systems of Wentlooge, but rather a scatter of farmsteads each surrounded by its own field system. The picture is not dissimilar to the English Fenland (Phillips 1970). Therefore, not only is the very nature of the Wentlooge landscape unusual, but the survival of a Roman drainage system still in use is quite unique in Britain, if not North West Europe.

Though the landscapes of Caldicot and Wentlooge are superficially quite similar, there are important differences. One is the absence of post-Roman alluviation over much of Wentlooge, allowing the remarkable survival of the Roman drainage system. In contrast, Caldicot appears to have suffered extensive flooding in the post-Roman period, and even those parts of the Roman landscape on Wentlooge that survived were probably not settled during that period. All the Levels saw a period of recolonization, probably from the late 11th century, in the context of English settlement by the Marcher lords. It was in this period that many of the marked differences between the two areas emerged.

The medieval landscape which was subsequently established throughout the Levels was produced through a wide range of processes. In the early years, the new or refurbished sea-walls made a vast area of land available. Settlements were established in the most favourable locations, on the higher coastal land, and small areas were enclosed and drained as required (Fig 4.1–6). Over the centuries, rising population and increased demand for resources led to a gradual move into the lower-lying back-fen. The process of reclamation became more organized and larger chunks of land were enclosed, resulting in landscapes with a more 'regular'/'planned' layout.

Perhaps the clearest difference over the Gwent Levels is in fact between eastern Caldicot and western Caldicot/Wentlooge. In the east, the most Anglicized area, there were nucleated villages and common fields. English field- and place-names, notably '-ton', predominated, while several settlements were even laid out around small greens. Western Caldicot was a zone of transition; this was part of the Caerleon lordship, in which the nucleated villages of Redwick and Whitson were quite untypical. Rather, settlement was more dispersed and common fields were rare.

On Wentlooge, the landscape of St Brides exhibits and accentuates the trends evident in western Caldicot; this was a landscape where the Welsh would have been much more at home. By the surveys of *c* 1700, Wentlooge had far less common land. Many of the Wentlooge roads did have wide

strips of roadside waste, which in the case of Broadstreet (Peterstone) and Broadway were of sizeable proportions. However, there were no common moors, the latest blocks to be enclosed lying around Maerdy and north of Hawse Farm. There were no small back-fen commons, equivalent to Liswerry, Pulpen, and Undy. Perhaps the 'waste' of good agricultural land in commons was an English habit?

Curiously, the system of surface drainage is also different on Wentlooge. There are very distinct systems of grips, with typically just one or two large gullies running longitudinally down the long narrow fields. However, there appears to be very little ridge and vurnow, and that which can be detected is concentrated in the eastern area of 'irregular' landscape in St Brides.

Themes in the landscape

The present landscape of the Gwent Levels is the product of many qualities that make the area of such interest. The area's importance in terms of land-form, ecology, archaeology, and landscape has been stressed in Chapter 1, and the way in which various components of the landscape articulate is considered in Chapter 4. A broadly chronological approach has been adopted, since the best way to understand the Levels is as a series of layers that must be 'peeled off' (Chapters 2, 3, 5, and 6). One of the remarkable qualities of the Levels is the great diversity of landscapes of different periods that this process of analysis reveals.

However, there are a number of cross-period themes that need to be brought out. One of these is the sheer economic and resource potential of the Levels, whether reclaimed or not; this is one of the major reasons why communities over the centuries have invested so much in this difficult environment.

The greatest investment has been in the sea-walls and a complex hierarchy of drainage channels. Closely spaced ditches remove water from the fields, while special drains collect run-off from the uplands. All this water is channelled into major reens, which discharge it under the sea-wall through tidal doors. Until very recently, the movement of water was solely through the action of gravity. It is remarkable that the methods of drainage developed by the Romans did not change until the introduction of mechanical pumping in this century.

While forming a very distinct type of landscape, which formed the focus of this study, it should be apparent that the Levels cannot be considered in isolation. By the medieval period, we can see how the Levels had been carved up, with large areas exploited by communities settled on the fen-edge, who managed territories that included fertile arable on the upland fringe, rougher pasture and woodland on the higher slopes, and rich meadows on the Levels (eg Magor, Fig 36). Farmsteads some distance away also held 'accommodation land'

there. Even in the Roman period, the concentration of fen-edge settlement is apparent, and Caerleon may be a classic example of a distant landlord.

Not surprisingly, the Levels were never totally divorced from the estuary out of which they were born. Despite the constant threat of floods, the Severn provided resources and opportunity. One of the most abundant resources was fish, though wildfowl and saltmarsh grazing were also important. Zones of interaction were particularly favoured: the fen-edge where the Levels met the uplands, and the coast where the Levels met the estuary (eg Fig 7). Tidal pills were important, providing sheltered waters for small landing places.

The greatest opportunity afforded by the estuary was communication; the Severn should not be thought of as a barrier, but as an artery. Bronze Age boat fragments from Caldicot Castle Lake and Goldcliff testify to the early importance of water transport. The Iron Age buildings at Goldcliff appear most closely paralleled on the continent, possibly suggesting some direct contact. The Roman boat beside a stone/timber structure from Barlands Farm is clear evidence of vessels plying the Estuary. A quay has been excavated beside the legionary fortress at Caerleon (Boon 1978), while another port may have existed at Magor Pill; certainly, there must have been a major landing-place somewhere along this coast to serve the London to South Wales traffic.

This same broad corridor has remained an important one ever since. The early references to Portskewett may be rather exaggerated, but Dark Age charters do refer to a number of landing-places along the coast of the Caldicot Levels. Magor Pill re-emerged as a port in the medieval period, and a boat recently discovered in its sediments has been dated to c 1200 (Nigel Nayling pers comm). A slightly earlier vessel was uncovered during the construction of Newport Docks, though only a fragment survived (Hutchinson 1984). By the 16th century, there is once again evidence for a multiplicity of minor landing-places along the Gwent coast. Cardiff, Newport, and Chepstow dealt with most of the trade, while a passenger ferry sailed from Sudbrook, the same point chosen for the Severn railway tunnel in the 19th century. The construction of the Severn Bridge led to a shift in focus slightly upstream, but the new Second Severn Crossing returns the main transport axis to Sudbrook.

With this area being a major crossing point of the Estuary, it is not surprising that the Levels have seen waves of newcomers, and resulting defences. The hillforts at Wilcrick and Sudbrook represent the earliest fortifications. The Romans had a strong and long-lasting military presence, with forts at Caerleon and Cardiff. However, the south eastern part of Wales was for most of the Roman period a peaceful area, reflected by the growth of the town at Caerwent and a number of nearby villas.

The actual impact of the Vikings is not clear, but

the effect of the Normans cannot be in doubt. The construction of castles at Chepstow, Caldicot, Newport, Caerleon, Rumney, and Cardiff amongst others stamped their authority on the region, laying claim to its rich resources. The Normans transformed the landscape, at least in the eastern part of the Caldicot Level, but did not have matters all their own way. The Welsh soon regained the lordship of Caerleon, holding it until the mid 13th century, and west of Goldcliff the English impact on the physical landscape greatly diminished.

Understanding a landscape

In this review of landscape evolution, a highly holistic approach has been adopted. A wide range of source material has been examined; place- and field-names, documentary, cartographic, air photographic, earthwork, archaeological, geological, and palaeoenvironmental evidence. This has been integrated within an overall analytical framework: the history of reclamation and subsequent changes in land use. A definitive landscape history has not been attempted; rather, the central theme has been the process of landscape change.

The Levels can easily be thought of in terms of a series of layers, since episodes of human activity are interspersed with sterile alluvium (Rippon forthcoming b). However, even the fields and roads that make up the present countryside have stratigraphic relationships: the early 'infields', the later fields around them, the expansion of settlement, the retreat of sea-walls, and the superimposition of railways and roads. The landscape is a palimpsest, confusing at first, but containing within it the history of its creation. In order to understand that history, the relative sequence of events must be established, dates attributed, and contexts sought for the various changes that have taken place. As such, the approach adopted here could be applied to any area of rural countryside.

One of the fundamental tools in the research presented here has been the analysis of form; the patterns of roads, fields, settlements, and other landscape features such as commons. 'Doubts about morphogenesis' have been expressed in the past by Austin (1985), and that paper provides a rigorous framework within which to assess critically the use of landscape morphology. Hopefully, this study has gone some way towards addressing these arguments.

Austin's first doubt was that 'it is easy to reconstruct simple, convincing patterns from complex, but it is impossible to reconstruct complex ones' (Austin 1985, 203). The former is certainly true, but the latter is not. There is no need to postulate simple linear progressions; episodes of flooding and coastal retreat on the Gwent Levels are examples of set backs.

The role of lordship in planning is a complex one (eg Austin 1985, 204) and requires much further debate (Rippon forthcoming b). This author feels

that 'regular' landscapes such as Roman Peterstone and medieval Whitson were the result of a single landowning authority reorganizing their landed resources. There are numerous examples of 'planned' landscapes on the Levels resulting from central authority direction; the Parliamentary enclosure of open fields and common moors are good examples, while the landscapes on Tintern's estates at Lower Grange and Grangefield also display a considerable regularity. However, conformity in the layout of a landscape might result from community initiative, and the possibility of a non-seigneurial origin for planned landscapes cannot be ruled out. This is one area where we need to investigate further the processes of landscape change.

Austin's second doubt was that 'the processes of change themselves are seldom explored methodologically and critically' (Austin 1985, 203). The way in which the Gwent Levels landscape evolved has been modelled, both for general evolution (eg Fig 4.1-6) and specific events (eg Figs 4. A-C, I-III; 25). This understanding of how coastal wetland landscapes are created is strongly based upon empirical deduction, especially through field observation, documentary descriptions, and comparison with recent periods.

A third perceived problem with morphogenesis is that 'dating is difficult to achieve, since it cannot be applied from the particular to the general on the grounds of morphological similarity and it cannot be sustained by typology alone' (Austin 1985, 203). Dating is a huge problem, though a relative chronology can be established in many cases; for example, the gradual advance of reclamations into the back-fen led to a demonstrable regularization of landscape patterns. The impact on field-boundary patterns of the superimposition of a railway or other linear feature can be illustrated using modern examples. This can then be applied to older situations, such as the retreat of the Gwent Levels sea-wall; once again a relative sequence can be established. Applying absolute dates to this sequence is difficult, since the laying-out of features in the landscape is rarely documented. However, there are occasional examples (eg the Rumney Great Wharf sea-wall) and in many cases we can at least say that a certain feature existed by a certain date. Archaeological data can also be used (eg the timber revetment at Rumney).

Part of the explanation why the Gwent Levels' landscape has its present form is found in the pattern of relief; constant reference has been made to the higher coastal lands being settled first, with lower-lying back-fen only drained later. The landscape has always had some form of framework, whether natural features such as tidal pills, or man-made features such as the pattern of drove-ways. There is a strong degree of continuity in these features; once incorporated into the landscape, they became fossilized and affected the pattern of things to come for centuries afterwards.

A major recurrent explanation for why change

took place is the desire of major institutions to gain a greater reward from their resources. The Roman legionaries required grazing for their cavalry horses; the Norman lords required a return on their investment in conquest, and achieved this through the feudal system of controlling men and land; the great monastic houses required income to support the lavish extravagance of their churches; the 19th century coal barons required an export facility for their coal, and hay for their pit ponies; post-war industrialists required large areas of flat land for their steelworks, power stations and chemical works; and modern local authorities need commercial, housing, industrial, and road developments to generate jobs. Thus, a shift in perspective has occurred; the Levels are now seen by many not as an agricultural resource, but as an ideal location for development.

Until this recent trend, activity on the Levels was closely controlled by the drainage problem. However, the old constraints need no longer be respected; improved sea-walls and gouts, mechanical pumping, under-drainage, and the introduction of piped water troughs mean that fewer reens are required, and the risk of flooding is diminished. Thus, housing and industry can spread onto the Levels, and farmers can do what has not been done for many centuries and return to arable farming. Unfortunately, modern farming finds the 'historic' landscape inconvenient (the fields are too small) and can sweep it away, as has happened in parts of both Caldicot and Wentlooge. Thus, up to 1700 years of heritage are destroyed in order to supplement the European grain mountain for a few decades.

This is a clear example of how we must understand the broader context of changes on the Levels, as they represent the interplay between the natural environment and changing technologies that offer possibilities, and social/economic/political trends that place demands. For example, the Roman period may represent a brief easing of the relative rise in sea level, making reclamation a more attractive proposition than during the Iron Age transgression. The technological expertise of the Roman authorities, and their ability to organize human/ material resources, made reclamation possible. The demand factor was the need for good quality pasture to support the military machine then based in South Wales.

The Future

Chapter 7 described how the 20th century has seen an unparalleled degree of destruction on the Levels, due to urban/industrial development and agricultural 'improvement'. A factor underlying all the more recent developments is improvements made to the sea-walls and drainage system, following the Welsh Agricultural Land Sub-Commission report (1954). Once the threat of flooding was removed, a major barrier to development and agricultural intensification was lifted. Thus the fundamental

long-term management issue with regard to the Levels is maintaining this area as a wetland.

There are three broad groups of threats that need to be addressed. Firstly, development for housing, industrial, and commercial uses must be curbed. Secondly, in areas that remain in agricultural use, there is a need to develop an integrated management strategy. It could also be argued that we need to take a fundamental look at our agricultural economy; if we are to retain subsidies, these should be tailored to the specific needs of a region. For example, instead of paying subsidies to farmers on the Levels to grow corn, why not remove these grants and increase the subsidy for livestock husbandry?

Thirdly, there is transport. The Levels are unfortunate in lying beside one of the major transport corridors in Britain. Major improvements that are either underway (the Second Severn Crossing) or proposed (the M4 Relief Motorway south of Newport) will have a profound consequence in terms of direct land take and visual/noise impact over as much wider area. However, there is also the indirect effect of increasing pressure to release further land for development, particularly retail distribution (as has already been seen at the 'Gwent Europark'). Plans for a Eurotunnel rail freight terminal have also been suggested near Cardiff (eg SGCC 1994, 35-6).

The planning system's current policies to protect the Levels will be under great pressure, and politicians' commitments to the environment tested. It is perhaps significant that despite all the statements in recently revised Structure and Local Plans, at least one local planning authority supports 'in principle' the proposed Severnside Airport, which will totally destroy the integrity of the Caldicot Level.

Planning is about balancing socio-economic need and environmental/heritage protection; with 40% of the Levels lost already, has that balance not been reached? Or does the definition of a 'balance' mean that the environment is to be *considered* when a development is proposed, but will rarely be able to match the lure of a few hundred jobs? It is time for the politicians and planners to show how much they really value the environment in general, and the Levels specifically. Instead of development, a sustainable agriculture-based economy must be established, and management agreements reached with farmers to protect the historic and nature conservation interests.

Overall, archaeological, landscape, and ecological aspects of the area all need to be considered together. This requires a far more integrated approach to the management of our countryside. The Levels are important as a landscape: the land-form, ecology, archaeology, and cultural heritage. There is no point in preserving one or two small pieces; to preserve a landscape you must protect the whole landscape.

Present statutory protection for archaeology is

restricted to individual monuments, and large areas of countryside cannot be scheduled; this is a problem in Britain as a whole, not just on coastal wetlands. Broad landscape designations that do exist at present only cover ecological qualities and the amenity/aesthetic value. However, there are very few areas of the British countryside that were not created by mankind; the landscape is not 'natural', but a cultural artefact. Indeed, the present ecology of most areas is only there because of human influence; the freshwater reed flora on the Levels, derived from a former saltmarsh, is a fine example. Therefore, any planning designation aiming to protect either the nature conservation value of an area or its natural beauty should consider the historical processes that led to that area's creation.

Despite the considerable amount of archaeological, palaeoenvironmental, and documentary research that has now been carried out on the Levels, there is more to be done. Much of the intertidal zone is yet to be surveyed in detail. The pattern of palaeochannels is clearly vital to our understanding of how mankind exploited this landscape, yet these are ill-understood. A programme of work combining observations in the intertidal zone, and remote sensing in the reclaimed areas is required.

We know very little as yet of the Roman landscape; several more sites need to be excavated, particularly in order to understand the nature of wetland exploitation at that time. Several potentially early features in the 'historic' landscape might also repay investigation, notably the boundary cut by Goldcliff Pill. On Wentlooge, fieldwork is required in order to confirm or refute the hypothesis of a limited post-Roman transgression.

For the medieval period, there has not been a single excavation on a settlement site. Continuous occupation in many locations probably makes preservation poor, though investigation of areas such as the 'infields' would be useful. Excavations at Grangefield could add to our understanding of how monastic houses exploited their estates.

Above all, the various conservation agencies need to work together to secure the future of this remarkable landscape. Archaeology, nature conservation, visual amenity, and historic landscape value are all interwoven, but with a common thread: human exploitation of this environment. The Gwent Levels, and indeed all our wetlands, 'historic' landscapes, and areas of open countryside, are under threat and the worst excesses of modern development can only be avoided if all the interested groups achieve a greater understanding of each other, in order to fight for the common cause.

Glossary

- aber** (Welsh): river mouth.
- assart**: the clearance and enclosure of areas of waste or wooded ground.
- bach** (Welsh): little.
- back-fen**: low-lying basin close to the fen-edge (landward edge of the Levels).
- Bronze Age** (c 2500–c 900 BC): period characterized by the use of bronze tools.
- Cae** (Welsh): field, fence or hedge.
- character area**: subdivision of the Levels' landscape based on its distinctive qualities.
- coherence**: the degree to which a landscape has retained its functional completeness.
- Commissioners of Sewers**: predecessors of the IDB and NRA with responsibility for drainage.
- dol** (Welsh): meadow.
- erw** (Welsh): acre.
- fen-bank**: earthen bank constructed to prevent flooding of reclaimed land from freshwater run-off.
- fen carr**: wet woodland, often dominated by alder.
- gout**: sluice-gate for controlling the flow of water. Formerly controlled water levels within reens (see stanks). Use now restricted to where reens discharge their water under sea-walls into the estuary.
- green lane**: road that has not been metalled (Plate 12).
- grips**: shallow spade-dug gullies in the surface of a field to aid drainage (Plates 4–5).
- gwaun** (Welsh): meadow or moor.
- heriot**: payment, often of an animal, to a lord after the death of a tenant.
- high medieval** (c AD 1070–c 1350): period between the Norman Conquest and the 'Black Death'.
- integrity**: the degree to which a landscape has retained the character of its main historic period(s).
- IDB**: Caldicot and Wentlooge Levels Internal Drainage Board.
- Iron Age** (c 900 BC–c AD 50): period characterized by the use of iron tools.
- 'intermediate' landscape**: a landscape whose regularity is mid-way between 'irregular' and 'regular'.
- 'irregular' landscape**: a landscape dominated by small irregularly shaped fields and broad lanes.
- late medieval** (c AD 1350–c 1536): period between the 'Black Death' and start of the post-medieval period.
- kine**: cow
- maes** (Welsh): field.
- mawr** (Welsh): great.
- Marches/Marcher lordships**: territories in South Wales, defined after the Norman Conquest.
- Mesolithic** (c 10,000–c 3800 BC): period after the last Ice Age, when people gathered plants and hunted animals for subsistence.
- moor**: local name for the Levels; specifically applied to areas of open/common pasture.
- nant** (Welsh): brook.
- Neolithic** (c 3000–c 2500 BC): first appearance of agriculture.
- newydd** (Welsh): new.
- NRA**: National Rivers Authority.
- open field**: field in which land was divided into strips by low earthen banks rather than ditches or hedges.
- palaeochannel**: silted-up watercourse.
- pay**: area of countryside with a particularly distinctive set of characteristics.
- pill**: tidal creek.
- post-medieval** (c AD 1500–present day): period after Monmouthshire was brought into England.
- post-Roman** (c AD 410–c 1070): period between the collapse of Roman authority and Norman Conquest.
- prehistoric**: pre-Roman (ie pre-c AD 50); see Mesolithic, Neolithic, Bronze Age and Iron Age.
- putcher**: wooden frame constructed in the intertidal zone to hold baskets which caught fish.
- pwll** (Welsh): pool, pit or pond; came to mean 'pill'.
- Ramsar**: Convention on Wetlands of International Importance Especially as Wildfowl Habitat, 1976.
- 'regular' landscape**: a landscape dominated by rectilinear fields and long straight roads.
- reen**: major watercourse maintained by the IDB or NRA.
- relict sea-wall**: sea-wall which has gone out of use, because a new one has been constructed in front.
- ridge and furrow**: rounded corrugations in the surface of a field resulting from ploughing for arable (Plate 3).
- ridge and vurrow**: flatter-topped corrugations in the surface of a field, also created through ploughing, but simply to aid the drainage of pasture or meadow (Plate 2).
- roadside waste**: areas of common land found either side of early roads.
- Roman** (c AD 50–c 410): period of when Britain was part of the Roman Empire.
- saltern**: site for producing salt through the boiling of sea water.
- SPA**: European Communities Council Directive on the Conservation of Wild Birds.
- spane**: relatively flat area between two grips.
- SSSI**: Site of Special Scientific Interest.
- stank**: series of boards placed in a reen in order to restrict the flow of water (Plate 8).
- street common**: long narrow strip of common land. Often formed the focus for settlements.
- stuck**: see stank.
- vurrow**: shallow furrow cut into the surface of a field to aid drainage (Plate 2).
- yoke**: stile.

Sources

Unpublished Primary Sources

Air Photographs

(all Welsh Office Air Photographic Library)

RAF	1946	1:10,000	CPE/UK/1885/ 3002–3025; 3049–3066
	1946	1:10,000	CPE/UK/2081/ 3435–3459; 4435–4459
	1946	1:10,000	CPE/UK/2293/ 5001–5044; 5062–5073
	1950	1:10,000	RAF/451/527/ 3025–3070; 3142–3148; 4021–4045; 4114–4122
OS	1966/7	1:10,000	OS/66/043/182–208 OS/66/144/002–015; 018–033 OS/66/145/001–015; 035–075; 083–115 OS/67/89/025–032; 081–087; 133–144; 169–176
	1991	1:5,000	88/91/144–161; 211–228; 246–268 118/91/186–213; 268–273 113/91/001–014 2881/813; 100–110; 189–193
Geonex	1992	1:5,000	167/92/130–168

Cartographic Sources

General

Small-scale county maps from the 16th century published in Michael 1985

Ordnance Survey: Surveyors Drawings (2 inch) for the First Edition One Inch Series; 1812 (NLW)

First Edition One Inch (published in Harley 1986; Harley and Oliver 1992)

First Edition Six Inch (1:10,560): surveyed 1880–1; published 1886–7

Third (Provisional) Edition Six Inch: revised for minor changes 1915–20; revised for major changes 1949–56; published 1964–5

National Grid Survey (1:10,000): surveyed 1955–75; published 1973–89

Commissioners of Sewers

1756	Caldicot Level NRL (M.430/912)
1756	Wentlooge Level NRL (x.M000/912)
1830	each parish on the Wentlooge Level GwRO D.1365/1
1831	each parish on the Caldicot Level GwRO D.1365/2

Estate Maps

Most maps dated before 1800 for parishes on the Levels were examined in the Glamorgan Records Office (GLRO), Gwent Records Office (GwRO), National Library of Wales (NLW), and Newport Reference Library (NRL). On Caldicot all maps were examined. For Wentlooge, the vast collection at the National Library was partly examined, concentrating on the earliest maps for each estate.

Bassaleg

c 1760	[part of] 'Bassaleg'; folio 1 in NLW Tredegar volume 8.
c 1760	[part of] 'Bassaleg'; folio 2 in NLW Tredegar volume 8.

Bishton

1751	'A plan of the lower part of Biston Farm and two pieces belonging to Lanmartin...'; folio 6 in NLW Lockwood volume 1.
1758	'Biston: Lands by the church'; folio 24 in 1758 Van volume by John Arram (NRL x.M00/912).
1758	'Biston: Lands adjoining the village'; folio 25 in 1758 Van volume by John Arram (NRL x.M00/912).
1758	'Moor Land' [Rottenlands]; folio 26 in 1758 Van volume by John Arram (NRL x.M00/912).
1785	'A Survey of Lands Lying in the Parish of Bishton...'; folio 4, in fragment of book of maps by Samuel Minshull; in 1758 Van volume (NRL x.M00/912).

Caldicot

1759	Capel Hanbury estate lands (GwRO D.1670/0069).
1771	Caldicot Lordship (PRO 2281).
1777	Morgan Lewis estate lands; folio 11 of Morgan Lewis volume (GwRO D.501.1332).

Cardiff

(various parishes including St Marys and Roath)

- c 1760 'Ketchcroft and Pengam Moors'; folio XV in NLW Tredegar volume 10.
- 1766 'Splott Farm in the parish of Roath'; folio XIV in NLW Tredegar volume 10.
- 1824 'Cardiff Moors'; folio 4 of Bute volume (GLRO D/D BE/1).
- 1824 'Adamsdown'; folio 5 of Bute volume (GLRO D/D BE/1).
- 1824 'Cardiff Moors'; folio 6 of Bute volume (GLRO D/D BE/1).
- 1824 'Deans Farm, Pengham Moors'; folio 8 of Bute volume (GLRO D/D BE/1).
- 1824 'Lequith Moors'; folio 16 of Bute volume (GLRO D/D BE/1).

Christchurch

- 1752 'Lands belonging to the Earl of Powis'; (NLW Tredegar 1011; NRL pxM160.912)
- 1758 'Pill House Farm'; folio 8 in 1758 Van volume by John Arram (NRL x.M00/912).
- 1758 'Spitty Farm'; folio 9 in 1758 Van volume by John Arram (NRL x.M00/912).
- 1758 'Traston Farm'; folio 10 in 1758 Van volume by John Arram (NRL x.M00/912).
- 1758+ 'Map of farm purchased off William Jones'; folio 37 in 1758 Van volume by John Arram (NRL x.M00/912).
- 1759 'Traston Farm with an additional purchase'; in 1758 Van volume by John Arram (NRL x.M00/912).
- 1784 'Lands in the parish of Christchurch belonging to Robert Salusbury of Llanwern' by Samuel Minshull (NRL M160.912).
- 1785 'Fair Oak Farm'; folio 12, in fragment of book of maps by Samuel Minshull; in 1758 Van volume (NRL x.M00/912).
- 1785 'Aves-Well Farm'; folio 13, in fragment of book of maps by Samuel Minshull; in 1758 Van volume (NRL x.M00/912).
- 1785 'Red-House Farm'; folio 14, in fragment of book of maps by Samuel Minshull; in 1758 Van volume (NRL x.M00/912).
- 1787 'Fair Oak Estate' (GwRO D.337/0005).
- 1788 'A plan of the farms of Pill and Traston' (NLW Lockwood volume, folio 36).
- 1788 'Summerton Farm' (GwRO D.43/81).

Coedkernew

- c 1760 [part of] 'Coedkernew'; folio 15 of NLW Tredegar volume 9.
- c 1760 [part of] 'Coedkernew'; folio 17 of NLW Tredegar volume 9.
- 1764 'Church Farm'; folio XVI of NLW Tredegar volume 4.

Goldcliff

- 1758 'Newrah Farm'; folio 21 in 1758 Van volume by John Arram (NRL x.M00/912).
- 1758 'Several scattered parcels of land'; folio 22 in 1758 Van volume by John Arram (NRL x.M00/912).
- 1773 'A plan of the estates in the parish of Goldcliff ... belonging to Miss Blewitt', in Blewitt volume by John Arram (NRL xM00/912).
- 1777 Morgan Lewis estate lands; folio 11 of Morgan Lewis volume by John Arram (GwRO D.501.1332).
- 1785 'The Pill Farm'; folio 2, in fragment of book of maps by Samuel Minshull; in 1758 Van volume (NRL x.M00/912).
- 1791 'Rough plan of Porton Lands ...' (GwRO Man/D/102/007).

Ifton

- 1770 'Caldicot Lordship'; (PRO 2281).
- c 1800 'Plan of the lands between Ifton and Rogiat' (NLW Tredegar 933).

Llandevenny

- 1751 'An exact plan of parts of Llandevenny Farm'; folio 9 in NLW Lockwood Volume 1.
- 1751 'An exact plan of several pieces of marsh below Landavenny'; folio 10 in NLW Lockwood volume 1.
- 1793 [scattered parcels] (GwRO Misc. MSS 433-4).

Llanvihangel

- 1766 [Lands of Baker, Lewis and Hodges] (NLW Tredegar 961).
- 1770 Caldicot Lordship (PRO 2281).

Llanwern

- 1758 'Llanwern Level'; folio 2 in 1758 Van volume, by John Arram (NRL x.M00/912).
- 1782 'The Level'; in 1758 Van volume by John Arram (NRL x.M00/912).
- 1785 'The Level'; in fragment of book of maps by Samuel Minshull; in 1758 Van volume (NRL x.M00/912).

Magor

- 1751 'An exact plan of the several scattered pieces on the marsh below Landavenny'; folio 10 in NLW Lockwood volume 1.
- 1751 '... an exact survey of West End Farm'; folio 11 in NLW Lockwood volume 1.
- 1751 '... an exact survey of West End Farm'; folio 12 in NLW Lockwood volume 1.
- 1765 [Nichols Estate; scattered parcels] (GwRO D.43/2635).
- 1777 [Morgan Lewis estate lands] in Morgan Lewis volume by John Arram (GwRO D.501/1332).
- 1793 [scattered parcels] (GwRO D.43/2635).

Marshfield

- c 1760 [part of] 'Marshfield'; folio 19 of NLW Tredegar volume 9.
 c 1760 [part of] 'Marshfield'; folio 21 of NLW Tredegar volume 9.
 c 1760 [part of] 'Marshfield'; folio 23 of NLW Tredegar volume 9.
 1764 'Ty-N-Y-Brwyn Farm in Marshfield and Peterstone'; folio XV of NLW Tredegar volume 4.
 1765 'Land in St Mellons, Peterstone and Marshfield'; folio X of NLW Tredegar volume 4.
 1766 'Church and Court Farms'; folio XX of NLW Tredegar Volume 4.

Mathern and St Pierre

- 1669 'Moynes Court ...' (GwRO Misc. MSS 896).
 1763 'Plan of Clay Pitt Farm in the parishes of Chepstow and Mathern'; folio 2 in NLW Badminton volume 1.
 1777 [Morgan Lewis estate lands]; folio 9 in Morgan Lewis volume by John Arram (GwRO D.501/1332).

Nash

- 1757 'A description of a parcel of land in the parish of Nash on the mouth of the river Usk'; (NLW Tredegar 980).
 1758 'Pye Corner Farm'; folio 18 in 1758 Van volume, by John Arram (NRL x.M00/912).
 c 1760 [part of] 'Nash'; folio 84 of NLW Tredegar volume 8.
 1773 'Map of several scattered lands ...'; folio 5 in Blewitt volume by John Arram (NRL xM000.912).
 1774 'Land in the parishes of Nash and Christchurch' [Coldharbour Farm]; (NRL 912.M.436/3).
 1785 'Norben Farm' [rough sketch for map of 1875]; loose map at rear of 1758 Van volume (NRL x.M00/912).
 1785 'Norben Farm'; folio 1, in fragment of book of maps by Samuel Minshall; in 1758 Van volume (NRL x.M00/912).
 1788 Road Improvement (GwRO W.&T. 1272).
 1790 'Small parcel of land in the parish of Nash'; loose map at rear of 1758 Van volume (NRL x.M00/912).
 1785 'Norben Farm'; loose map at rear of 1758 Van volume (NRL x.M00/912).

Newport (St Woolos parish)

- c 1760 [part of] 'St Woolos Level'; folio 53 of NLW Tredegar volume 8.
 c 1760 [part of] 'St Woolos Level'; folio 55 of NLW Tredegar volume 8.
 c 1760 [part of] 'St Woolos Level'; folio 57 of NLW Tredegar Volume 8.
 c 1760 [part of] 'St Woolos Level'; folio 59 of NLW Tredegar volume 8.

Peterstone

- c 1760 [part of] 'Peterstone'; folio 9 of NLW Tredegar volume 9.
 c 1760 [part of] 'Peterstone'; folio 11 of NLW Tredegar volume 9.
 c 1760 [part of] 'Peterstone'; folio 13 of NLW Tredegar volume 9.
 1764 'Ty-N-Y-Brwyn Farm in Marshfield and Peterstone'; folio XV of NLW Tredegar volume 4.
 1765 'Land in St Mellons, Peterstone and Marshfield'; folio X of NLW Tredegar volume 4.
 1765 'A Map of the estate belonging to the Dean and Chapter of Bristol'; (NLW Tredegar 981).

Portskewett

- 1777 [Morgan Lewis estate land]; folio 10 in Morgan Lewis volume by John Arram (GwRO D.501/1332).
 1777 [Morgan Lewis estate lands]; folio 11 in Morgan Lewis volume by John Arram (GwRO D.501/1332).

Redwick

- c 1760 [part of] 'Redwick'; folio 98 of NLW Tredegar volume 8.
 1765 'Several farms in the parishes of Tredunog, Magor and Redwick belonging to William Nichols'; (GwRO D.43/2635).
 1777 [Morgan Lewis estate lands]; in Morgan Lewis volume by John Arram (GwRO D.501/1332).
 1793 'Part of the Salisbury Estate belonging to William Phillips'; (GwRO Misc. MSS.433).

Rogiet

- c 1760 [part of] 'Rogiate'; folio 90 of NLW Tredegar volume 8.
 1770 'Caldicot Lordship' (PRO 2281).
 c 1800 'Plan of the lands between Ifton and Rogiat'; (NLW Tredegar 933).

Rumney

- c 1760 [part of] 'Rumney'; folio 25 of NLW Tredegar volume 9.
 c 1760 [part of] 'Rumney'; folio 27 of NLW Tredegar volume 9.
 c 1760 'Land in the parish of Rumney'; folio X of NLW Tredegar volume 10.
 1764 'Poolmoor'; folio VI of NLW Tredegar volume 4.
 1764 'Several Parcels of land in the parish of Rumney'; folio VII of NLW Tredegar volume 4.

St Brides

- c 1760 [part of] 'Saint Brides'; folio 1 of NLW Tredegar volume 9.
 c 1760 [part of] 'Saint Brides'; folio 3 of NLW Tredegar volume 9.

Published primary sources and other abbreviations used in the text

Beaufort: 'The account of the official progress of His Grace the Duke of Beaufort through Wales, 1684' (Banks 1888)
Brad IV: 'History of Monmouthshire' vol. 4, parts I (Bradney 1929) and II (Bradney 1932)
CAP: Calendar of Ancient Petitions Relating to Wales (Rees 1975)
CAT: Cotswold Archaeological Trust
CC: Countryside Commission.
CCC: Cardiff City Council.
CCR: Calendars of Close Rolls (Public Records Office, London)
CChR: Calendars of Charter Rolls (Public Records Office, London)
CCW: Countryside Council for Wales
CFR: Calendar of Fine Rolls (Public Records Office, London)
Chanc Proc: 'Early Chancery Proceedings' (Lewis 1937)
Court Aug.: 'Records of the Court of Augmentation Relating to Wales and the Marches' (Lewis and Davies 1954)
CIPM: Calendars of Inquisitions Post Mortem (Public Records Office, London)
CLP: Calendars of Letters and Papers, Foreign and Domestic (Public Records Office, London)
CPR: Calendars of Patent Rolls (Public Records Office, London)
C&T: 'Three Goldcliff Charters' (Crouch and Thomas 1985)
DB: Domesday Book, Gloucestershire (Moore 1982)
D of L: Records of the Duchy of Lancaster (Rees 1953)
ECR: Eton College Records
GGAT: Glamorgan Gwent Archaeological Trust
GLRO: Glamorgan Records Office
GwRO: Gwent Records Office
Hunt 1985: 'Monmouthshire Wills 1404–1560' (Hunt 1985)
ICOMOS: International Council on Monuments and Sites.
IDB: Internal Drainage Board
Ll.: *Liber Llandavensis* (Davies 1979)
Llan Dav: 'The Book of Llan Dav' (Evans 1893)
MBC: Monmouth Borough Council
MHWST: Mean High Water Spring Tide
NAR: National Archaeological Record, maintained by the Royal Commission on Ancient and Historical Monuments in Wales. Aberystwyth.
NBC: Newport Borough Council
NCC: Nature Conservancy Council
Nennius: *Historium Brittonum* (Morris 1980)
NLW: National Library of Wales
NM: Newport Museum
NRA: National Rivers Authority
NRL: Newport Reference Library
Phaer: 'Dr. Phaer's report on his perambulations

around the coast of Wales' (Robinson 1970)
PRO: Public Records Office
RIB: 'Roman Inscriptions in Britain' (Collingwood and Wright 1965)
Rumney Custumal: 'The Custumal of Rumney Manor, 1532' (Reeves 1977)
SELRC: Severn Estuary Levels Research Committee
SGCC: South Glamorgan County Council
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