LANDMAP Summary Report

LDP Evidence Base

Development Plans

January 2009

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1.0 Introduction

1.1 Pembrokeshire is located on the south western most part of Wales. It spans a total area of 1650 square kilometres and in 2001 had a total population of 114,138 (Census data). The County has a population density of 71 people per square kilometre (about half of the Welsh average), demonstrating its primarily rural nature. Pembrokeshires physical landscape can generally be described as low lying, with some upland areas surrounding the Preseli Hills. The County is surrounded on three sides by the sea and this, together with the geological history, glacial history, and human history of the County have greatly influenced the landscape both physically and culturally. In terms of cultural assets Pembrokeshire (excluding the National Park) has 1632 listed buildings, 236 Scheduled Ancient Monuments, 20 Historic Parks and Gardens, 24 Conservation Areas, 2 country parks and 8.64km^2 of village green and common land. Furthermore the area is both internationally and nationally important for a large range of habitats, including river, marine, lowland heaths and semi-natural oak woodland and some coastal and estuarine areas, with 3.4% of the land area being formally designated for its biodiversity value. Such landscape assets need to be carefully managed for both their local and national benefit, safeguarding Pembrokeshires unique natural and built environments.

1.2 Wales has, through its National Assembly, a responsibility to manage its land in a sustainable way. LANDMAP is the national information system, devised by the Countryside Council for Wales, for taking landscape into account in decision-making. It is a partnership programme between the Countryside Council for Wales (CCW) and the Unitary and National Park Authorities throughout Wales. LANDMAP stands for *Landscape Assessment and Decision Making Process*, and is designed to assist with sustainable landscape decision making over a range of disciplines, including development planning and development control, environmental enhancement, biodiversity, forestry and rural development, to name but a few. It is a unique system, allowing information about landscape (cultural, natural, physical and symbolic elements and features on land) to be gathered, organised and evaluated, following a formally adopted methodology, to create a nationally consistent data set (CCW November 2008). Planning Policy Wales states "*CCW's LANDMAP information system methodology is an important information resource upon which local planning authorities can draw in making the landscape assessments needed to inform local policy, guidance and decision making in this field. LANDMAP describes and evaluates aspects of the landscape and provides the basis of a consistent Wales-wide approach to landscape assessment. LANDMAP assessments should be published. They can help to inform supplementary planning guidance on landscape assessment (covering, for example, local distinctiveness, special landscape areas and design)*" Para 5.3.13 (Welsh Assembly Government March 2002).

1.3 There are five 'Evaluated Aspects', which comprise the full set of LANDMAP Information; these are Visual & Sensory, Cultural Landscape, Landscape Habitats, Historic Landscape and Geological Landscape. For each

Evaluated Aspect, specialists surveyed, defined and recorded the landscape character, qualities and features, recording management recommendations and giving an overall evaluation of value, condition and predicted trends, defining specific geographical units known as 'Aspect Areas' within defined Evaluated Aspect layers. The LANDMAP database contains both relatively objective information – such as rock type and historical information – and more subjective information, such as sensory responses and cultural interpretation, recognising the value of landscapes that are not necessarily subject to statutory designations.

1.4 The tables below detail the evaluation criterion that underpins each of the LANDMAP Evaluated Aspect layers and the overall evaluation classification used by the aspect specialists. The classification of this information is recorded as an all-Wales GIS[1] based landscape resource, at various levels of detail – ranging from the broadest landscape classification at Level 1 to the finest, most detailed landscape classification at Level 4. Where appropriate, an assessment of an Aspect Area's tolerance to certain changes was also assessed.

Visual & Sensory	Cultural Landscape	Landscape Habitat	Historic Landscape	Geological Landscape
Scenic quality Integrity Character Rarity	Recognition/ transparency Period Rarity Documentation Group Value Survival Vulnerability Diversity Potential	Priority habitats Significance Opportunity Decline rate Threat Fragmentation Importance for key species	Integrity Survival Condition Rarity Potential	Research value Educational value Historic value Rarity/ Uniqueness Classic example

LANDMAP Evaluated Aspects Evaluation Criteria
[CCW LANDMAP Information Guidance Note 3 November 2008]

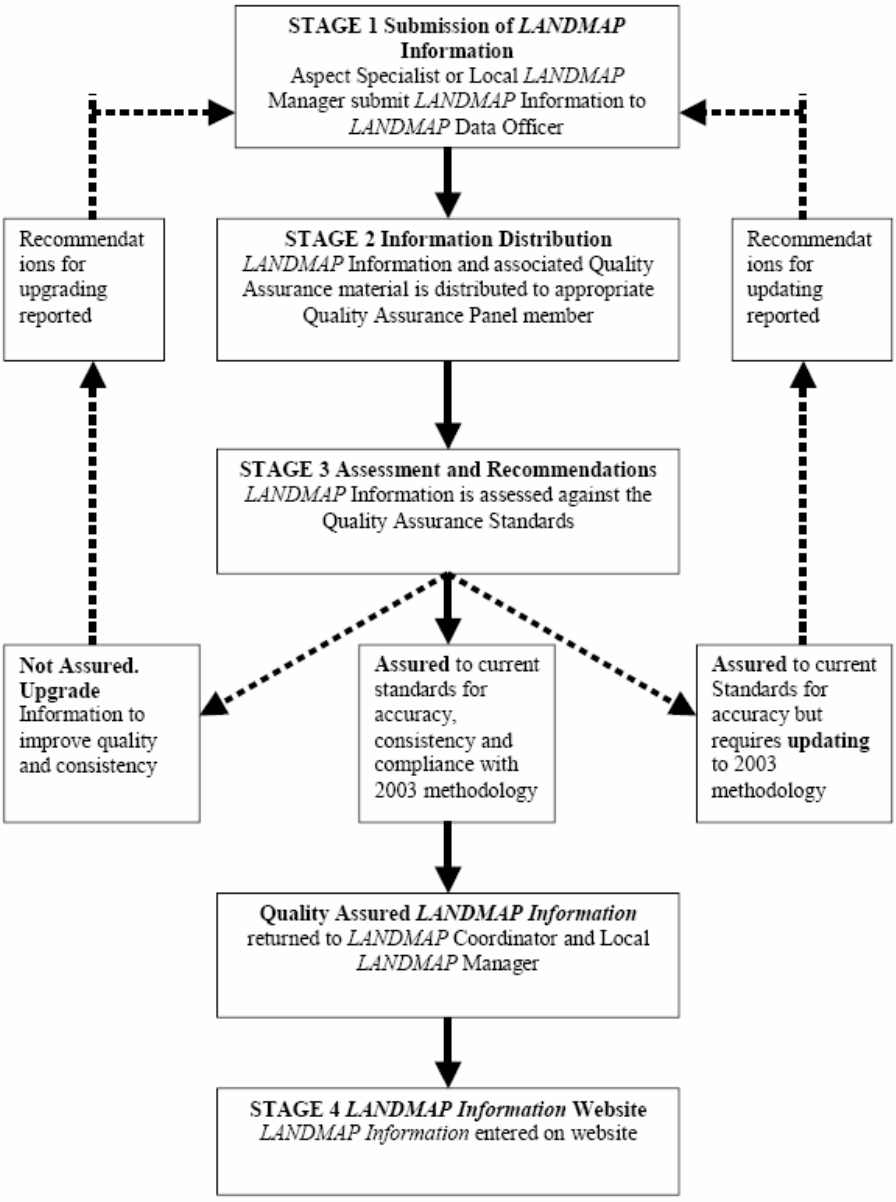
Overall evaluation score	Definition of importance to the evaluated aspect…
Outstanding	International or national
High	Regional or county
Moderate	Local
Low	Little or no importance

Overall Evaluation Score [CCW LANDMAP Information Guidance Note 3 November 2008]

1.5 Once data had been collected and recorded for each of the five Evaluated Aspect layers they were then subject to a rigorous 'Quality Assurance'

[1] Geographic Information System; combining economic and social data with environmental, cultural and heritage data, in this instance illustrated principly by electronic mapping.

assessment by a specialist panel of advisors from CCW. The 'Quality Assurance' process ensures a consistently high standard of accurate information is achieved across Wales. The table below summarises the overall LANDMAP process.



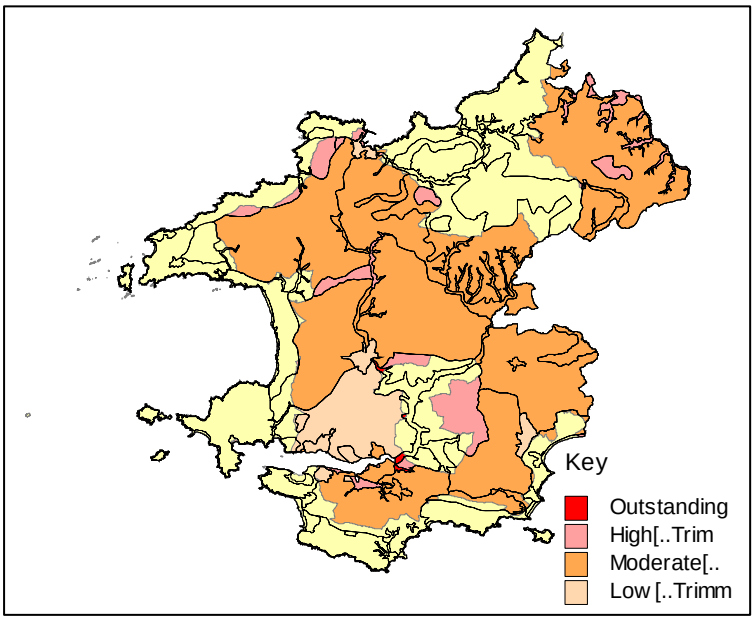
1.5 The following document briefly explains what information each of the Evaluated Aspect layers holds and summarises the conclusions of the aspect specialist who collected and compiled the information. All of the LANDMAP information recorded for Pembrokeshire, and much of the 'Quality Assured' LANDMAP information for many other Counties in Wales, is publicly available from CCW's website http://landmap.ccw.gov.uk/.

1.6 For Information the County boundary between Pembrokeshire and Ceredigion, and Pembrokeshire and Carmarthenshire has changed in recent years and these changes are not reflected in the LANDMAP Aspect layers. For LANDMAP information on areas of land surrounding the Clunderwen and St. Dogmaels areas the appropriate bordering County Council's LANDMAP layers should be consulted.

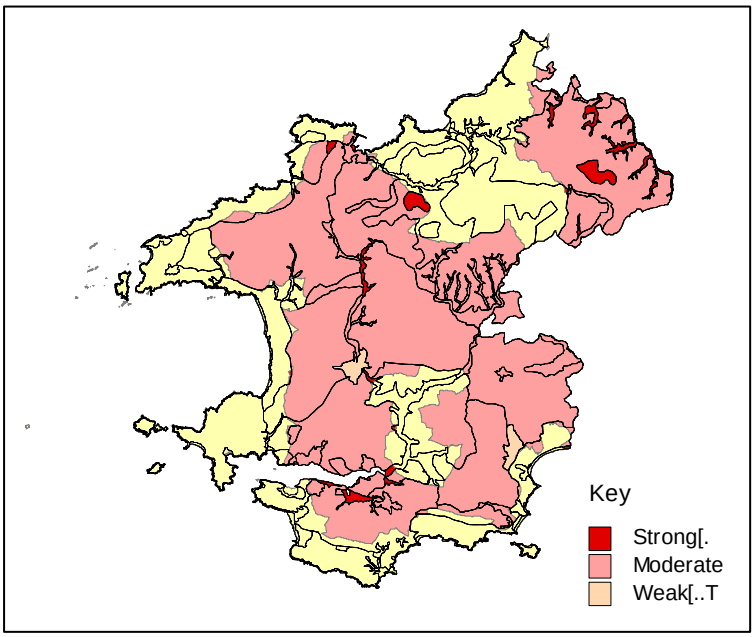
2.0 Visual & Sensory

2.1 This Aspect layer identifies those landscape qualities that are perceived through the senses. It deals with the individual physical attributes of landform and land cover, as well as their visual patterns of distribution and sensory characteristics, and the relationships between these in a particular area.

2.2 TACP Consultants undertook the evaluation of the Visual and Sensory Aspect layer from November 2005 to January 2006. From the Level 3 assessment (OS Landline data 1:10,000) it may generally be concluded that the majority of Pembrokeshire is open rolling lowland which is insignificantly wooded, with the northeast of the County being characterised by hillside and scarp slopes and grazing land. Land within eastern mid Pembrokeshire and parts of south Pembrokeshire may be classified as mosaic rolling lowland which are predominantly, rhythmically, gently sloped and insignificantly wooded.



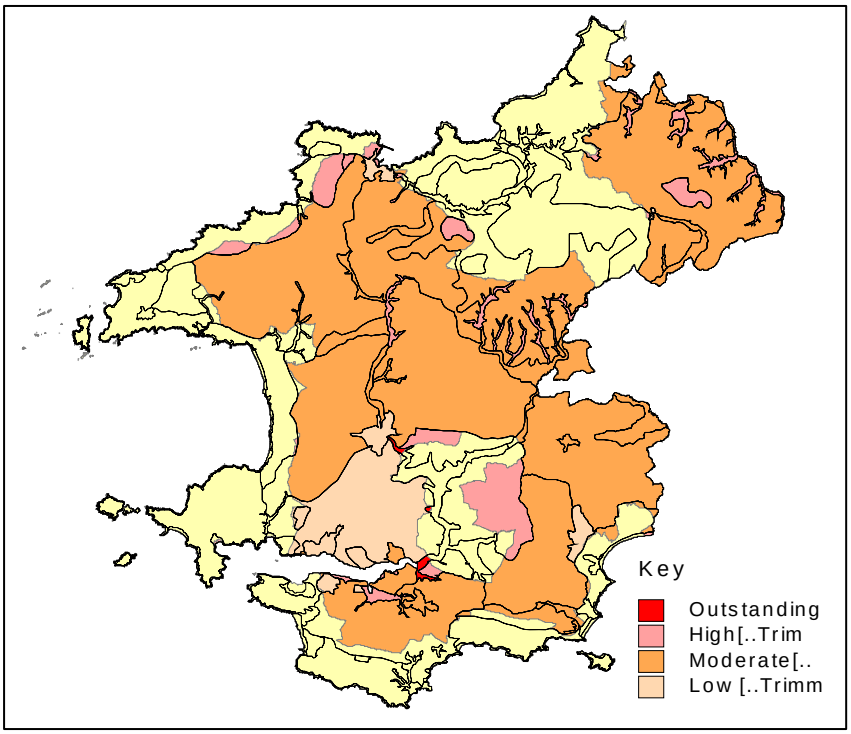
2.3 The map (left) illustrates that in the evaluation of **scenic quality** using the 2003 LANDMAP methodology the majority of Pembrokeshire, with the exclusion of Pembrokeshire Coast National Park (coloured yellow on the map) is classified as moderately important, with areas of high regional importance east of the Cleddau river, and in coastal areas, and on the Preseli Mountains. The area southwest of Haverfordwest is classified as low in terms of scenic quality.



2.4 The map opposite (below left) illustrates that the majority of Pembrokeshire, with the exclusion of Pembrokeshire Coast National Park (coloured yellow) is classified as moderate in terms of **sense of place and local distinctiveness,** such characteristics are

repeated throughout the locality. Stronger, more distinctive characteristics are exhibited in coastal areas, along the Cleddau River and also in areas surrounding the Preseli Hills.

The overall evaluation of the Visual & Sensory Aspect layer



2.5 The map (left) indicates that the majority of Pembrokeshire is classified as moderate, and hence of local importance, in terms of value, based on LANDMAP criteria such as scenic quality, integrity, character and rarity. Land south of Haverfordwest is classified as having low value, whilst coastal areas, mainly within Pembrokeshire Coast National Park Authority (coloured yellow above), and most of the Cleddau Estuary is classified as outstanding and hence of international or national importance in LANDMAP terms.

Conclusions from the Visual & Sensory study.

2.6 The key findings from the TACP Technical Report state "*the inland part of the study area is typically made up of a farmland landscape interspersed with small settlements and farmsteads within an undulating landscape that contains wooded valleys, occasional woodland blocks and hedgerows which area often overgrown. There is a significant degree of quarrying within the study area, leading to several sites where current or future disused quarries offer opportunities for attractive restoration as at PB/VS/35 'Middle Mill'. The attractive coastal nature of Pembrokeshire has a strong tourist industry, leading to a high presence of caravan parks such as at Aspect Areas 'Narberth' PB/VS/48 and 'Treswyny Moor' PB/VS/28; this often creates a visual detractor within the landscape. Some notable exceptions to the typical landscapes of the area include The 'Stackpole Court' Aspect Area (PB/VS/62) which contains an attractive landscape of flooded lagoons within wooded valleys created by artificially damming estuarine areas in the past. Another notable area is 'The Ritec' (PB/VS/57) an attractive wetland area with scrub that is partly designated as Ritec Fen SSSI. Lowland areas contain some attractive naturalistic landscapes including marshy grassland and scrub at PB/VS/30 'Dowrog Common', whilst attractive upland areas show open rough grazing, exposed rock and moorland such as at PB/VS/37 'Great Treffgarne'.*

Settlements within the aspect area include some very attractive small villages such as PB/VS/34 'Solva' and larger settlements which have retained some traditional features including PB/VS/56 'Tenby'. Less traditional and larger settlements which have undergone recent growth include PB/VS/70 'Haverfordwest'. The extensive coastal zone of the study area predominantly takes the form of is a landscape of coastal cliffs. These tend to be of a more rugged and sharply indented form on the northern coast of Pembrokeshire , such as at Aspect Area PB/VS/17 'Cemaes Head' and more rounded on the southern coast, for example at Aspect Area PB/VS/83 'Giltar Point'. These cliffs are interspersed by small shingle bays and occasionally open out into larger sandy beaches, some of which are particularly long and open such as at PB/VS/32 'Newgale Sands'. Attractive dune systems such as 'Brownslade Burrows' at Aspect Area PB/VS/79 are also present. The area of coastline around The Haven has a different nature with some cliffs present on the western, seaward edge as shown at Aspect Area PB/VS/77 'Great Castle Head'. These tend to be less dramatic than cliffs on other parts of the coast and are interspersed with some other relatively sheltered beaches, such as at PB/VS/82 'Freshwater East' and PB/VS/78 'Angle Bay'. Further inwards and to the east, The Haven becomes more estuarine in character with areas of intertidal mud at PB/VS/98 'Estuarine Mud'. Areas of the southern coast and the cliff area within The Haven have some small estuaries present such as at Solva river PB/VS/97 'Estuarine Sand'. The Haven itself is the outflow of a series of rivers incorporating the Eastern and Western Cleddau which form a very attractive and naturalistic estuarine river network at PB/VS/51 'Daugleddau' and creates a range of sensory impressions through sights, sounds, smells etc. of the mudflats, water, saltmarsh and wooded margins within which is almost unique to the study area. The hinterland of Milford Haven contains a high degree of very large scale industry including oil refineries associated with the shipping access to The Haven in several separate sites at PB/VS/90 'Industry/ Milford Haven'. Island landscapes around the coast include the uspoilt and very attractive wilderness location of Skomer Island (PB/VS/94) as well as the settled and less dramatic area of Caldey Island (PB/VS/95) which has contrasting small scale farmland landscapes and attractive traditional buildings. The 'Eastern Cleddau Tributaries' Aspect Area consists of a series of densely wooded upland valleys, with the valley to the west of this series dammed to form the contrasting 'Llys-y-fran' reservoir (VS728." (TACP 24th March 2006).

2.7 TACP conclude their Technical Report by stating "*many of the recommendations of the Visual & Sensory Aspect Areas are concerned with preserving the distinctive rural character of the coastal and agricultural landscapes.*" An example of such a recommendation is that the Daugleddau Estuary is classified as 'outstanding' in terms of visual and sensory evaluation and the aspect specialist perceives the existing management of the Estuary as being "*relatively unmanaged in the case of the estuarine water body and its vegetated margins, this is appropriate for such naturalistic areas. Parts of the shoreline are under active management for nature/ landscape conservation by the National Trust / Wildlife Trust of South and West Wales*." With principle management recommendations that we should "*conserve the unspoilt esturine character of the area*" (TACP 24th March 2006).

3.0 Cultural Landscape

3.1 This Aspect considers the relationship that exists between people and places; how people have given meaning to places, how the landscape has shaped their actions and how their actions have shaped the landscape. The cultural landscape also manifests itself in immaterial ways, in the way people think about the landscape and respond to it, the 'sense of place' it creates, and so forth.

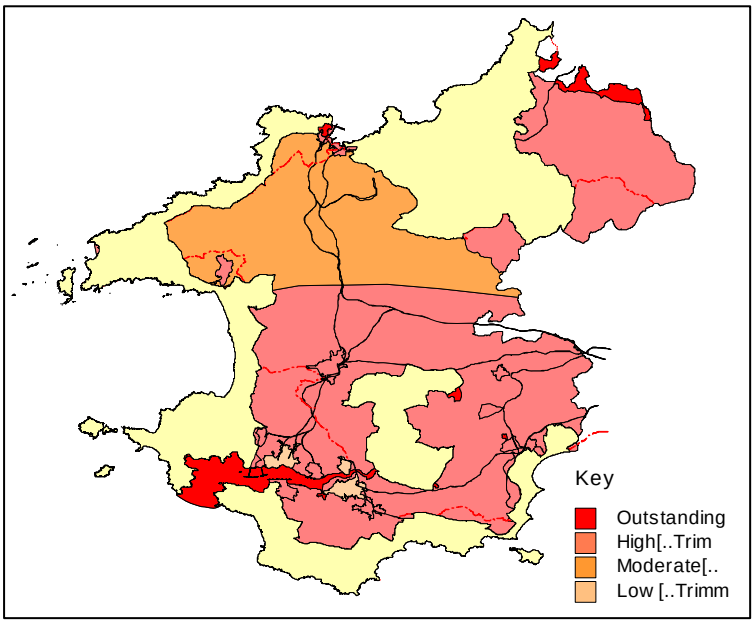
3.2 The original work for this Aspect layer (pre Quality Assurance) was undertaken by Richard Keen Associates in 2003 and 2004, who found "*In very broad terms Pembrokeshire has long been divided topographically and culturally. In the south the generally richer farmland, larger settlements and larger farms were occupied by predominantly English-speaking communities. To the north, where the land reaches into the upland zone, settlements were smaller and more scattered. On the higher hills the soil cover is thin, and the land harsher. This was, and to a large extent remains, the domain of the Welsh-speaking community"* (Richard Keen Associates May 2005). The Aspect specialist reports on several factors that influence culture including geology, topography, administrative boundary changes, historic events, religious influences, invasions, the development of industry, employment patterns and also music, singing, literature and art, and organisations such as the Women's Institute, Merched-y-Wawr, SPARC, PLANED, etc. Specifically the aspect specialist recognises "*Pembrokeshire's agricultural and woodland sectors make vital contributions to the county's economy, landscape and environment. Traditional operational methods may be declining in response to changing trends such as globalisation of the economy, but new sustainable employment opportunities are being created, taking advantage of the man made and natural features of the rural environment*" (Richard Keen Associates May 2005). Finally the Aspect specialist identifies several strong influences that are bringing about social and cultural change in Pembrokeshire, including agricultural diversification, gentrification of traditional Welsh settlements, escalating property prices, tourism, caravan and holiday parks, retirement into the area, and changes in national industry, defence, retail parks, and so forth.

3.3 CCW revised the LANDMAP methodology in June 2003, as part of a continuing process of up-grading and in light of changing circumstances, which lead to a review of all Aspect layers. The review and update of the Cultural Landscape was undertaken by Dr. David Gwyn of Govannon Consultancy from August to September 2006. The information received was then subject to a Quality Assurance assessment by CCW, in order to achieve a nationally consistent standard for each LANDMAP data-set, before being approved as verified LANDMAP Information.

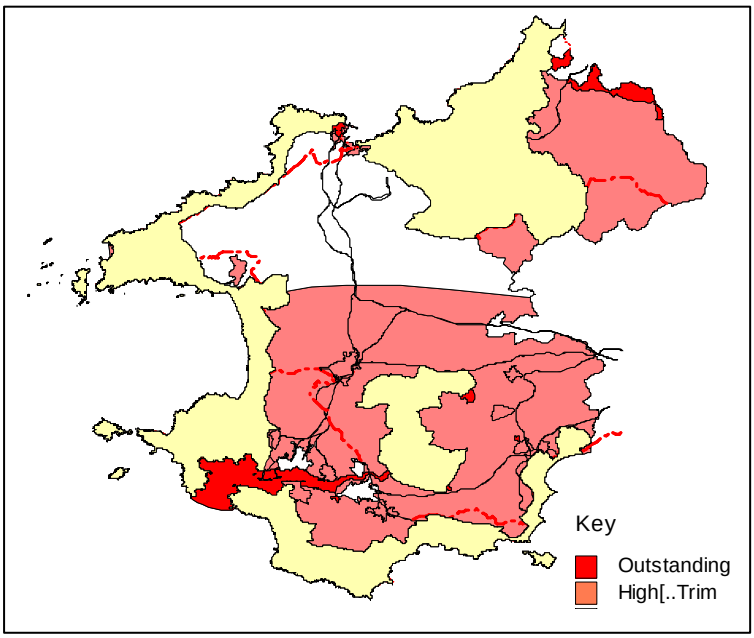
3.4 Dr. Gwyn defines culture, for the purpose of LANDMAP, as "*the consequence of various factors. These include the largely conscious articulation of aesthetic values – these might be environmental values in parks and gardens, and in the modern practice of protecting sensitive, vulnerable significant natural areas, creative values in the writing, printing and distribution*

of literature, or painting, sculpting and public display of works of art. Related to these issues is the articulation of spiritual values, specifically in places of worship, more generally in landscapes considered to be scenic, 'sublime' or recreational. Equally powerful, or perhaps the more powerful for being largely unspoken and un-analysed, are the indirect cultural consequences of economic activity, of environmental challenges and opportunities, of historic forces, of work and of the 'daily round'. These have profoundly influenced the first category and in truth these two types can rarely be distinguished – politics, for instance, reflects economic and social realities, often directly related to the nature of work and environment, and can be reflected in literature, in patronage of the arts, in public statuary" (Dr. D. Gwyn Technical Annex October 2006). The majority of the revised Cultural Landscape Report concurs with the findings of the earlier report by Richard Keen Associates; however the revised report does update these findings as follows:

<u>The overall evaluation of the Cultural Landscape layer</u>



3.5 The map opposite (above left) indicates the majority of Pembrokeshire, excluding Pembrokeshire Coast National Park (coloured yellow) is classified as moderate or outstanding in terms of overall cultural evaluation therefore meaning that the landscape is of local, national and in some cases international importance to the cultural aspect.



3.6 The map opposite (below left) illustrates in more detail the areas of high or outstanding importance within Pembrokeshire County Councils planning area. The areas classified as outstanding in terms of overall cultural landscape evaluation are concentrated along the Daugleddau estuary, the coastal land around Fishguard and Goodwick and also in the far north

of the County along the banks of the River Teifi. In addition areas of land bordering the Pembrokeshire Coast National Park Authority are also classified as outstanding, such as New Hedges, Carew, and tourist destinations such as Oakwood and Folly Farm. For information most of the National Park area is classified as outstanding in terms of value and hence is of high importance in terms of cultural diversity.

Conclusions from the Cultural Landscape study.

3.7 Richard Keen Associates, pre Quality Assurance, found "*the rate of cultural change accelerated rapidly in the latter half of the 20th century as a result of factors such as changing socio-economics, the growth of the tourist industry, agricultural diversification, increasing wealth, an influx of affluent middle class people and gentrification. As disposable time and money for leisure has increased, and employment in industrial and rural occupations has decreased, the landscape has changed from one where physical work – on the land or in mines and works - was the dominant cultural activity to one where tourism and leisure increasingly provide the basis for economic activity. Many farmers have diversified into tourism, some former industrial and mining settlements are now tourist hot spots, fishing boats in the small harbours are being replaced by leisure craft – but all still contribute valuably to the unique and evolving cultural landscape that is Pembrokeshire. The dominant cultural influences of Pembrokeshire currently lie with the widely held perceptions of the county as a place of great beauty, peace, tranquility and a highly sought after area to live and to enjoy as a visitor. The sea and the natural and human historic landscapes have special meaning and the sense of history pervades so many aspects of the area. Those born in the county and many incomers develop a very strong sense of place and identify with both the county as a whole and often at a micro level with particular places or localities. There is a fascinating mixture of insulation and outwardness in the Study Area. The sea has long provided access to a wider world and all the influences that contacts with overseas lend and cultures provide. Yet co-incidentally the sea surrounding the Study Area to give an 'island' quality has also given a sense of insularity as well and its situation in the far west gives a sense of being 'apart' from the rest of south Wales. Pembrokeshire is one of the most fascinating areas of Wales in human terms and this is reflected in its culture, which in turn has a direct relationship with the landscape. 'Little England beyond Wales' has its origins immediately post Norman invasion when the best quality lands were occupied by the successful invaders and their successors. The indigenous Welsh communities were relegated to the most hostile – in agriculture terms – upland areas. Thus creating a frontier or zone of difference that is still apparent culturally to this day. However, the recent influx of new people in the second half of the 20th century is affecting further cultural change. Although there are cultural distinctions within localities and certainly on a north and south basis Pembrokeshire has a unique identity and place within Wales. The dominant cultural influences that define Pembrokeshire are its people and the landscape. People for their diversity of background and enduring sense of history that is both conscious and unconscious and the landscape for its richness and variety and wide*

acknowledgment as a very special and rare place" (Richard Keen Associates May 2005).

Key Recommendations

3.8 Key reccommendations made by Dr. David Gwyn of Govannon Consultancy, post Quality Assurance, state:

"Agriculture

- *PCC and PCNPA support appropriate agricultural diversification*
- *PCC and PCNPA monitor the agricultural sector for long-term change to inform strategic planning.*

Historic Landscape

- *PCC and PCNPA authority support CCW initiatives to make the Register of Historic Landscapes a statutory document*
- *Landscapes and townscape management promote an holistic approach to the built heritage, recognising the importance of non-listed structures and of historic village and town patterns.*

Transport

- *PCC and PCNPA support coastal shuttle buses such as the Poppet Rocket and the Celtic Coaster.*
- *PCC and PCNPA support retention and long-term development of rail links within the area.*
- *PCC and PCNPA give consideration to existing proposals to develop the Trecwn depot branch line as an inter-modal terminus for containerised traffic.*

Tourism

- *Any major proposed tourism initiative should be accompanied by an independently-commissioned 'cultural impact assessment' as well as an EIA.*
- *PCC and PCNPA continue to explore tourism links with Ireland.*
- *PCC and PCNPA should support and monitor marine tourism initiatives e.g. 'tall ships'*
- *PCC and PCNPA should liaise closely with energy distribution companies to anticipate long-term changes and to inform strategic decision making.*

Community

- *PCC and PCNPA continue to support community initiatives such as Menter Iaith and Menter Ogam.*
- *PCC and PCNPA continue to support community business initiatives including SPARC/PLANED.*
- *PCC and PCNPA encourage wherever possible the viability of village schools, shops, pubs.*
- *PCC and PCNPA encourage Pembrokeshire residents to value the linguistic diversity of the county.*
- *PCC monitor population change and movement to ensure social inclusion of potentially disadvantaged communities, sectors and interest groups.*"

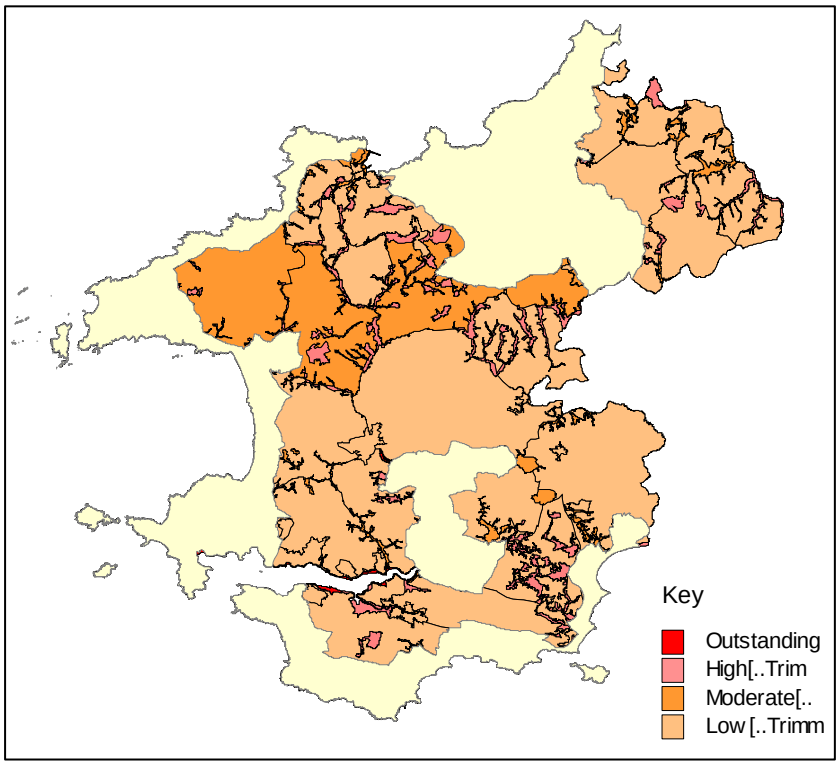
(Dr. D Gwyn Technical Annex October 2006).

4.0 Landscape Habitats

4.1 This aspect layer evaluates landscape ecology; the distribution and changes to vegetation and semi-natural habitats which influence landscape diversity, biological prosperity, land cover, and the utilisation and enjoyment of rural areas. Detailed, localised information is not included in this aspect area analysis and should be accessed through alternative data sets such as the digitised National Phase 1 Habitat Survey (Nature Conservancy Council 1990).

4.2 TACP Consultants undertook the evaluation of the Landscape Habitat Aspect layer from November 2005 to March 2006. The key Landscape Habitat Aspect areas identified by TACP were coastal areas, grassland, woodland, heath, watercourses and water bodies, and built-up areas. The conclusions to this section of the LANDMAP paper detail the findings of TACPs study.

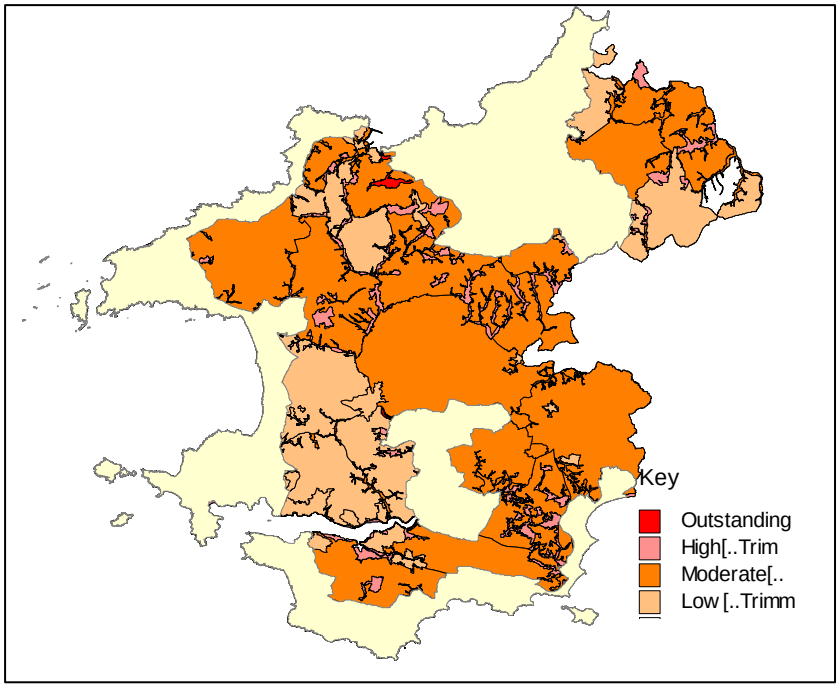
The overall evaluation of the Landscape Habitat layer

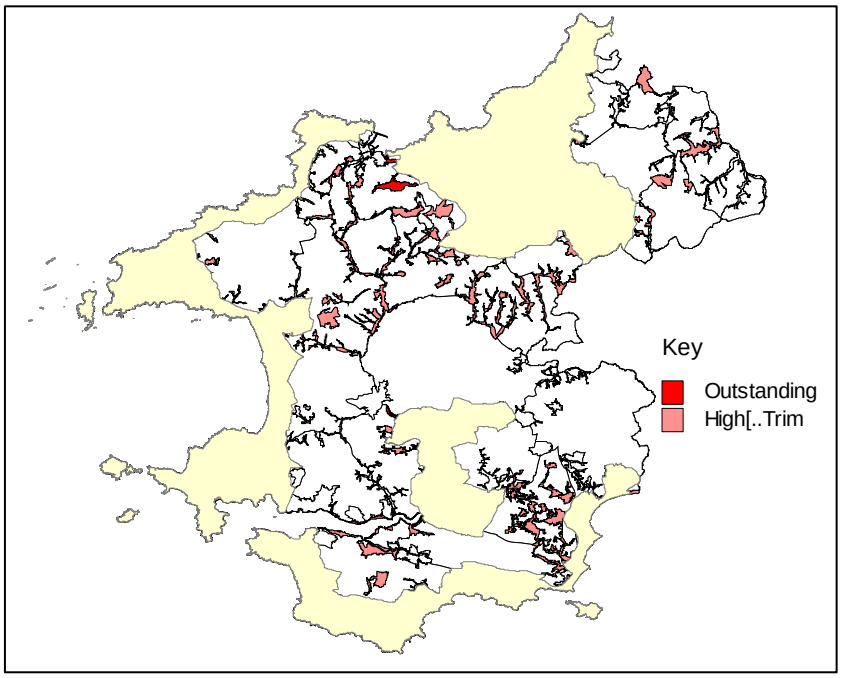


4.3 The map opposite indicates that the majority of Pembrokeshire, with the exclusion of Pembrokeshire Coast National Park (coloured yellow) is classified as low in terms of an overall evaluation of habitat, therefore being of little or no importance to the Aspect area, with the exception of the north west which is generally classified as moderate and of local importance to the Aspect area.

4.4 As demonstrated there are few areas of high or outstanding importance in terms of habitat evaluation within the jurisdiction of Pembrokeshire County Council. The areas of outstanding value are concentrated along the Daugleddau shores and the Western Cleddau River, which incidentally are designated as Special Areas of Conservation (SAC), including the Pembrokeshire Marine SAC and Cleddau River SAC, and also as Sites of Special Scientific Interest (SSSIs), including the Milford Haven Waterway SSSI and the Western Cleddau SSSI.

4.5 The map below illustrates that the majority of Pembrokeshire, excluding Pembrokeshire Coast National Park Authority (coloured yellow), is classified as being of local and/or moderate importance in terms of habitat and species, with the exception of western mid Pembrokeshire which is generally evaluated as being of low importance.

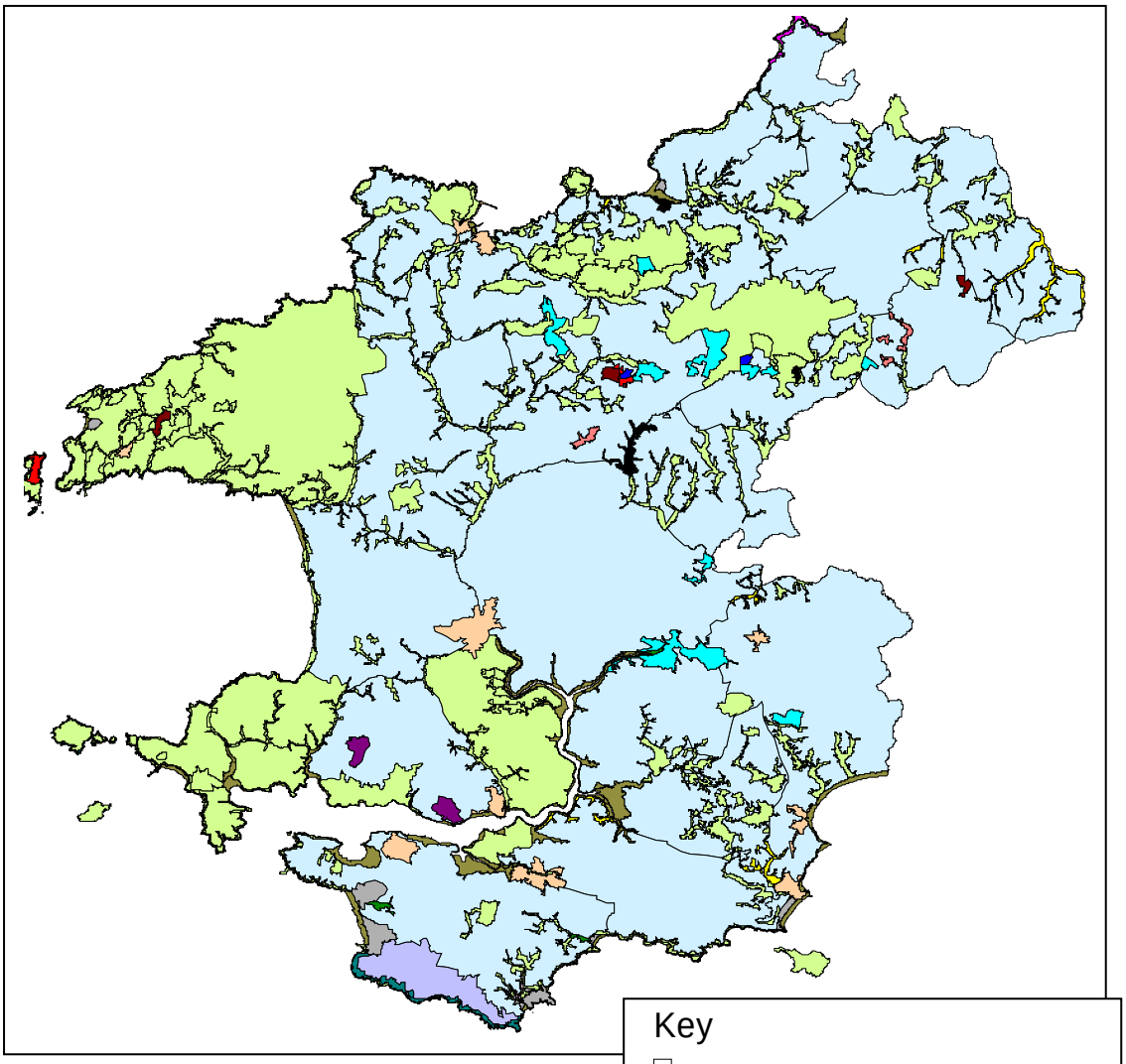




4.6 The map (below left) highlights the fact there are few areas evaluated as being of high or outstanding importance in terms of habitat and species evaluation within the jurisdiction of Pembrokeshire County Council. The areas of outstanding value are concentrated in the north of the County at Lower Town Fishguard and Cwm Gwaun, between Scleddau and Llanychaer and along the Western Cleddau River. For information parts of the coastal region and also the Preseli Hills, mainly found within Pembrokeshire Coast National Park Authority (coloured yellow on the above map), are classified as high or outstanding in terms of an overall evaluation of landscape habitat and species, hence being of county, regional, national or international importance.

Conclusions from the Landscape Habitat study.

4.7 TACP Consultants in their overview of the Landscape Habitats layer identified 237 separate Landscape Habitat Aspect areas, and then combined these into six key landscape habitat Aspect areas. The map and text below summarise the main findings of TACPs report.



4.8 **Coastal Areas** – The majority of the Aspect areas identified as being coastal were found in the Pembrokeshire Coast National Park Authority, with the exception of sheltered muddy estuaries. TACP conclude that the principle habitat areas within the County classified as sheltered muddy estuaries occur within "*the Milford Haven Waterway where large stretches of muddy/sandy intertidal habitat flank the edges of the main waterway and also the numerous inlets and pills that branch of main waterway.*

Also associated with these areas is saltmarsh habitat which further adds to the value of these areas. These muddy/sandy shores and saltmarshes are extremely valuable habitats that provide refuge for numerous key species, particularly fish (with a number of European protected fish species being present as well as providing important feeding and nursery grounds for commoner fish species) and bird species (particularly waders and wildfowl that winter in the area and use it as a valuable staging point to feed during migration). The value of these habitats is reflected in the Pembrokeshire Marine SAC and Milford Haven Waterways SSSI designations that cover these areas. These areas are very vulnerable to pollution incidents and great care needs to be taken to avoid incidents such as oil spillages to ensure the long term survival of these important habitats" (TACP 20th March 2006).

4.9 Other Coastal Aspect areas identified in TACPs Technical Report included sandy beaches, rocky coast and cliffs and dunes.

4.10 **Grassland** – TACP conclude that "*As is the case with much of Wales grassland dominates much of the study area. … Improved grassland is the commonest habitat type within the Pembrokeshire study area. It covers much of the land area away from the coast, the narrow agriculturally unimproved strip immediately inland from the coast, the Preseli Hills, developed areas, the wooded areas that follow the watercourses that crisscross Pembrokeshire and built up areas. Improved grassland covers large continuous areas particularly within the centre of Pembrokeshire. It is generally a fairly low ecological value habitat as agricultural improvement (ploughing, herbicides, pesticides, grazing) reduce the biodiversity of plants and invertebrates present within the grassland and therefore the value of the grassland to species that feed upon these plants and animals. Despite the relatively low ecological value of these areas the network of hedgerows that border the fields of improved grassland can be very valuable habitats and act as wildlife corridors for many species. Many bird species including Priority BAP species such as Bullfinch and declining summer migrants such as Whitethroat fair well in the hedgerows of Pembrokeshire and more valuable plant species such as orchids and Bluebells can be found at the base of these hedgerows immediately bordering improved grassland. The hedgerows are also particularly valuable as they provide flightlines for bats. One of the U.Ks rarest bat species, the Greater Horseshoe Bat has particular stronghold in Pembrokeshire. The improved grassland habitat itself can be of great value to this species as the dung beetles associated with improved grassland grazed by cattle are a very valuable food source to this species. Improved grassland is also a valuable foraging habitat for Badgers provided there are nearby wooded areas for them to form their setts"* (TACP 20th March 2006). The map on the previous page illustrates the dominance of improved grassland in Pembrokeshire.

4.11 The Aspect layer also identifies several other grassland habitats including semi improved and unimproved neutral grassland, explaining *"this habitat is scattered throughout much of Pembrokeshire within the wider landscape of improved grassland. This habitat can be of very high ecological value supporting diverse floras with valuable species such as orchids abounding if the grassland has not been agriculturally "improved" and suitable*

grazing/cutting regimes are practiced. These habitats are much declined and are vulnerable to being lost to agricultural intensification" (TACP 20th March 2006). TACP found semi-improved and unimproved acid grassland habitat is mainly found in upland areas of Pembrokeshire, in areas such as the Preseli Hills "*it is generally less species diverse than neutral or calcareous semi-improved/unimproved grassland but still forms a valuble habitat*" (TACP 20th March 2006). Semi-improved and unimproved calcareous grassland is also found in Pembrokeshire, particularly near to the south coast and Castlemartin, this land is particularly important because of its great floral diversity and consequent rare and protected species.

4.12 TACP found marshy grassland is found throughout Pembrokeshire, generally associated with areas of poorly draining soil. "*Within Pembrokeshire some of the most valuable areas of marshy grassland are the Purple Moorgrass rich areas, these form both Priority BAP habitat and internationally valuable habitat and under suitable levels of grazing can provide habitat for the European protected butterfly species the Marsh Fritillary (a species that Wales has significant populations of in an international context)*" (TACP 20th March 2006). Other grassland areas include coastal grassland and amenity grassland.

4.13 **Woodland** – There are two main types of woodland found in Pembrokeshire, semi-natural broadleaved and planted coniferous woodland, illustrated by the map on page 16 of this report. TACP claim broadleaved woodland is mainly confined to linear strips following watercourses and valley bottoms in Pembrokeshire, "*Oak, Ash, Alder and Sycamore are all common constituents of woodlands in Pembrokeshire. The woods provide valuable habitat for a number of key species including Badger, Dormice, various bat species, a selection of bird species and flora such as carpets of Bluebells. Most of the broadleaved woodland in Pembrokeshire is semi-natural although some areas of planted broadleaved woodland are present… Of particular note within Pembrokeshire are certain areas of woodland within the Milford Haven waterway and on the cliffs on the south side of St. Brides bay as they extend almost to the edge of the estuary/sea which is a very unusual for woodland. The most valuable areas of broadleaved woodland are in the north of the county, many of these wooded areas support species such as Dormice or the very rare Barbastelle bat and as such are covered by SSSI and SAC designation"* (TACP 20th March 2006). In terms of coniferous plantations these are more scarse in Pembrokeshire, with a number existing next to areas of dense scrub and broadleaved woodland, forming a mosaic which enhances their ordinarily low ecological value.

4.14 In addition to the woodland areas TACP identifies small patches of dense scrub occur throughout terrestrial Pembrokeshire (with the exception of the Preseli Hills) to create a mosaic of habitats and hence increasing diversity, connectivity and providing valuable breeding habitats for many birds.

4.15 **Heath** – heather dominated heath is generally confined to the upland areas of Pembrokeshire, including the Preseli Hills, St. Davids Peninsula and coastal cliffs. TACP conclude "*Wet, Dry and coastal heath habitats are all*

present and each of these is considered to be of great ecological value with areas of lowland heath being Priority BAP habitats and heath in general being regarded as an internationally important habitat. These heath areas in Pembrokeshire support a vast array of scarce/rare floral species and associated invertebrate fauna. Associated heathland pools and flushes add to the diversity and value of these areas and European protected species such as the Southern Damselfly. Many of the heathland areas within Pembrokeshire have had their value recognised and been offered protection through the designation of these areas as SSSI's and SAC's" (TACP 20th March 2006).

4.16 **Watercourses and water bodies** – There are numerous watercourses found throughout Pembrokeshire, the principle ones being the Eastern and Western Cleddau and Afon Teifi and their tributaries. These watercourse are of great ecological value as they hold a number of habitats and European protected species, including Atlantic Salmon, Brook Lamprey, Sea Lamprey, River Lamprey, Twaite Shad, Allis Shad and Bullhead, Otter (for which the watercourses of Pembrokeshire are some of the most valuable in the UK) and many other species such as dragon/damselflies and protected birds such as the Kingfisher. TACP highlight that "*parts of these watercourses form internationally important Water Crowfoot dominated river habitats. The presence of these species and habitat is a reflection of the good condition of much of Pembrokeshire watercourses and has resulted in these watercourses being worthy of both SSSI and SAC designation*" (TACP 20th March 2006).

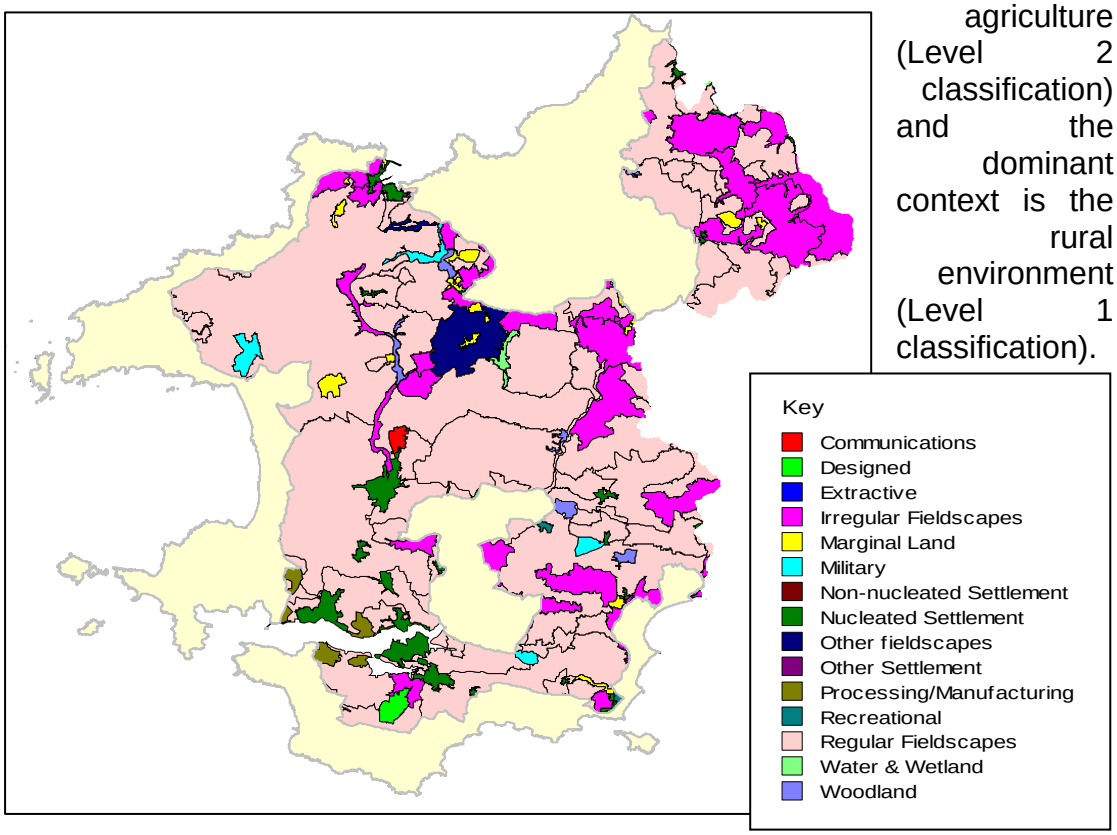
4.17 Finally, TACP conclude their Landscape Habitats Technical Report by briefly assessing the **built-up areas** of the County, stating that although these areas are generally of low ecological value they can play an important role as habitats for many species and act as green corridors "*with the network of gardens providing valuable habitat for many species and houses providing nesting sites for a number of bird species and certain bat species"* (TACP 20th March 2006). It is vital therefore that any future plans impacting upon the environment in Pembrokeshire consider landscape habitat issues and act accordingly.

5.0 Historic Landscape

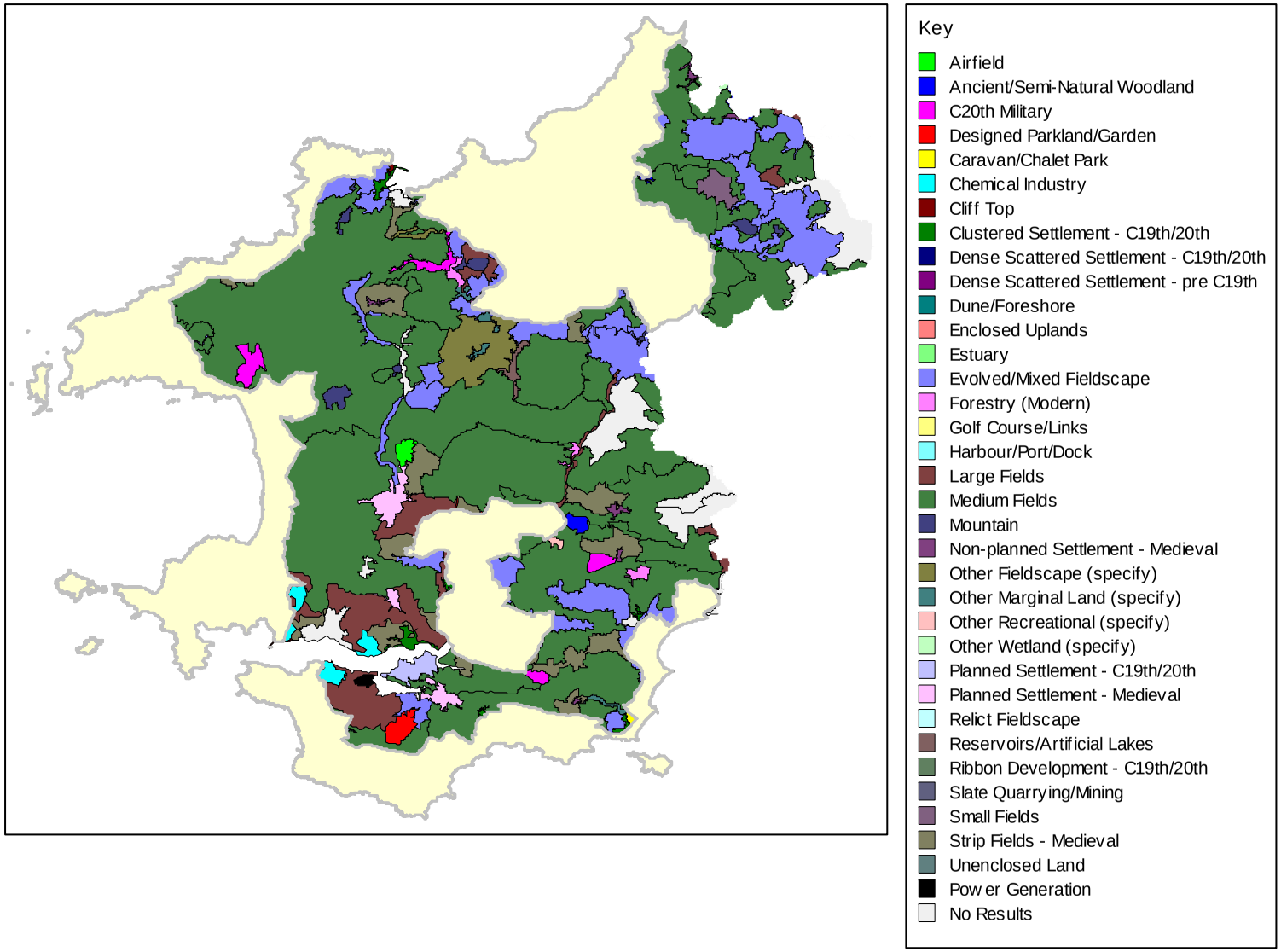
5.1 This Aspect layer focuses on how archaeological and historical sites relate to each other and to the surrounding landscape, identifying landscape qualities that depend upon key historic land uses, patterns and features and are structurally prominent and contribute to the overall historic character of the present landscape. They reflect the beliefs, attitudes, traditions and values of the past, which include the physical remains of all aspects of human activities (above and below ground) and our interpretation and understanding of them.

5.2 The Historic landscapes Aspect layer can provide a large amount of information on many aspects of the historic environment, including the prevailing building and architectural types of an area, what traditional walling materials prevail, which traditional boundaries prevail, and so forth. It records areas registered as historic parks and gardens, schedule ancient monuments and conservation areas, their rarity, survival/preservation potential, coherence and amenity value in terms of tourism and education. The Historic Landscape layer also gives a value to the overall integrity of the historic environment, its condition, commenting on any management improvements, and giving an overall evaluation of the area.

5.3 Cambria Archaeology undertook the evaluation of the Historic Landscape Aspect layer, which was Quality Assured in December 2007. From a Level 3 assessment (OS Landline data 1:10,000) it may generally be concluded that the dominant historic landscape pattern of Pembrokeshire, with the exclusion of Pembrokeshire Coast National Park (coloured yellow on the map below) is 'Regular Fieldscapes', in a landscape where the dominant landscape use is agriculture (Level 2 classification) and the dominant context is the rural environment (Level 1 classification).

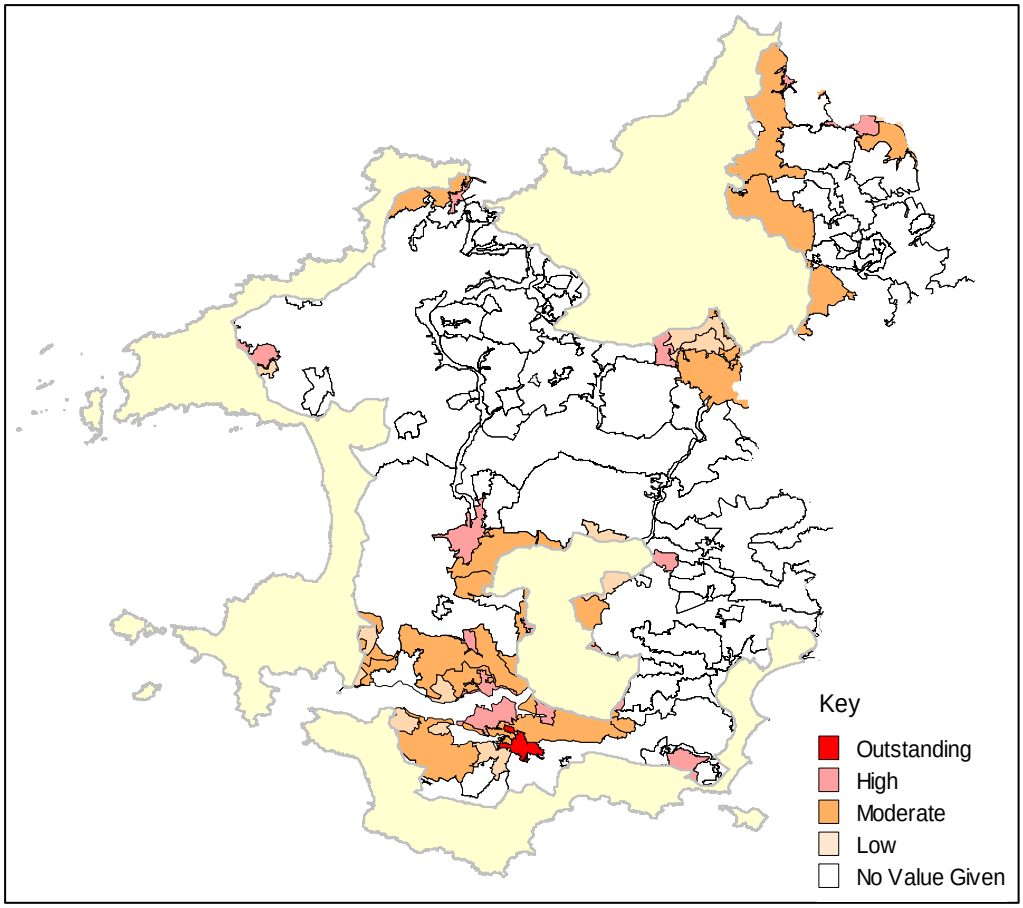


A Historic Landscape assessment at Level 4 hierarchy, describing the historic landscape details.



5.4 The map opposite illustrates that when classifying the historic landscape patterns of Pembrokeshire in detail at a level 4 classification, with the exclusion of Pembrokeshire Coast National Park (coloured yellow) that the majority of the County is classified as 'medium fields' (mainly post medieval) which form part of the 'Regular Fieldscapes' dominant landscape classification at Level 3. The classification of 'other' recorded here indicates a more complex relationship influencing the historic landscape character, where more than one landscape pattern exists.

The overall evaluation of the Historic Landscape layer



5.5 The above map clearly summarises the overall historic landscape value for Pembrokeshire, with the exclusion of Pembrokeshire Coast National Park (coloured yellow), illustrating that the majority of area surveyed was moderate or high, hence being of local or regional importance in the opinion of the aspect specialist. Pembroke Town is the only area within Pembrokeshire County Councils Planning area to be classified as being of outstanding historic value, hence of international or national importance.

Conclusions from the Historic Landscape study.

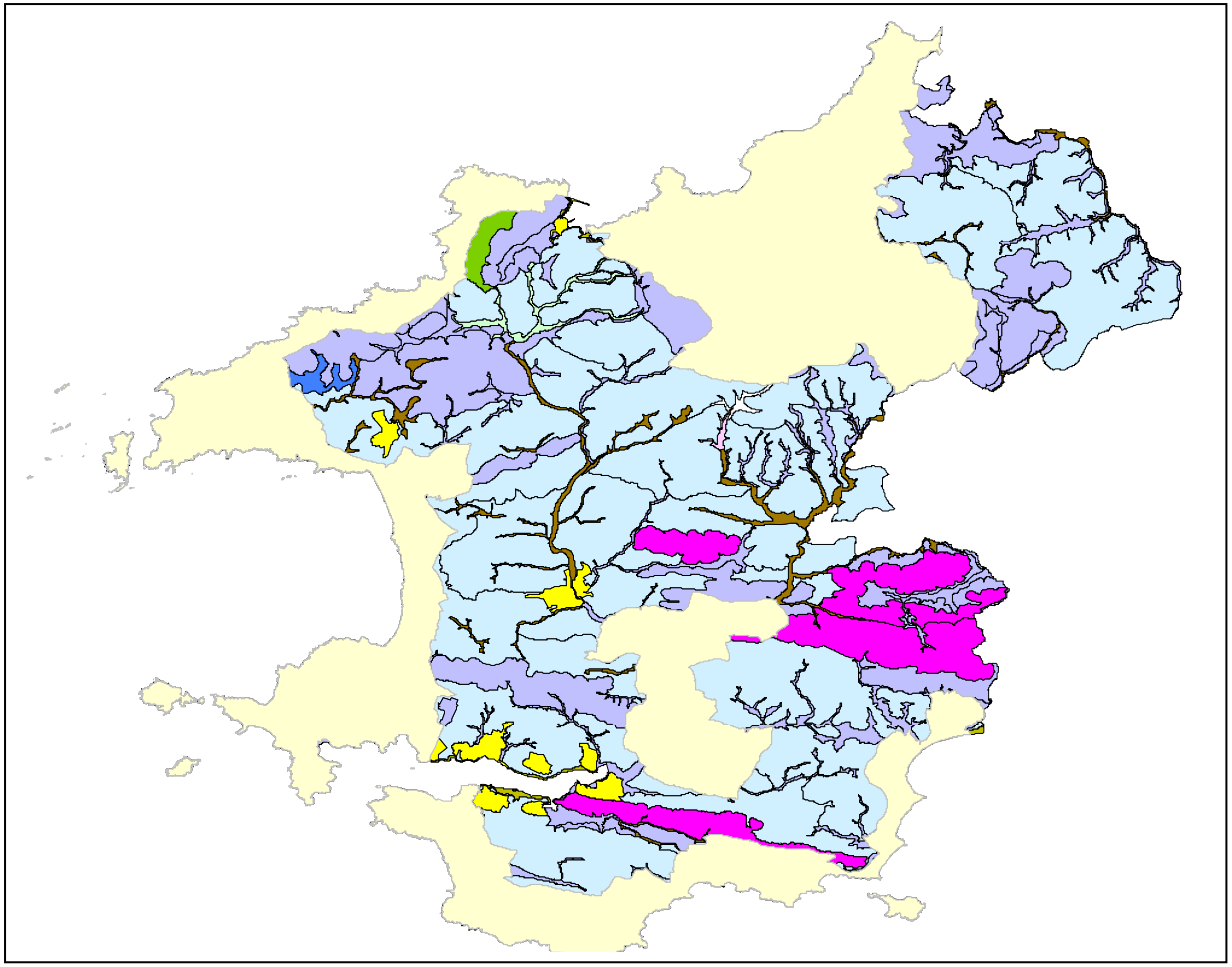
5.6 Cambria Archaeology has not completed a Technical Report into the Historic landscape and therefore there is no formal documentation to conclude. However, it maybe concluded that the above layer clearly identifies that 'medium fields' (mainly post medieval) which form part of a 'regular fieldscape' are the dominant land use, pattern and features that are structurally prominent in Pembrokeshire, and contribute to the overall historic character of the present landscape. For information much of the historic data on buildings, including listed buildings and those in conservation areas, and also data on Scheduled Ancient Monuments, historic parks and gardens and historic landscapes are already widely acknowledged in planning terms, and form an important consideration in planning decisions.

6.0 Geological Landscape

6.1 This Aspect layer studies the geology, geomorphology and hydrology of Pembrokeshire, which collectively act as one of the strongest influences on the landscape. The introduction to the Geological Landscape methodology highlights that "*Geology frequently controls or it the strongest influence in the landscape, often profoundly affecting drainage patterns, vegetational cover and the human environment. Such geological qualities are those which have had the strongest influence on the historical development of settlements, and which have determined the possibilities for agriculture, water resources, mineral extraction and transport networks. The hardness or softness of bedrock, or their juxtaposition, creates hills and ridges or low ground; faults may bring up hard rocks to form cliffs and waterfalls; fault lines may become focuses for erosion and create valleys; and the tilted bedding of alternating hard and soft rock types may be read in many landscapes, the development of which they have influenced. Add to this the sculpting of the bedrock by wind, water and ice, and the deposits these elements produce and there are possibilities for great diversity, at all scales: from the smallest sea cave to a large, rocky, glaciated mountain massif*" (CCW Geological Landscape Methodology version 2 2006). Therefore this Aspect layer assessment is based on the physical elements of the landscape, generated by underlying geology and surface processes – both ancient and contemporary.

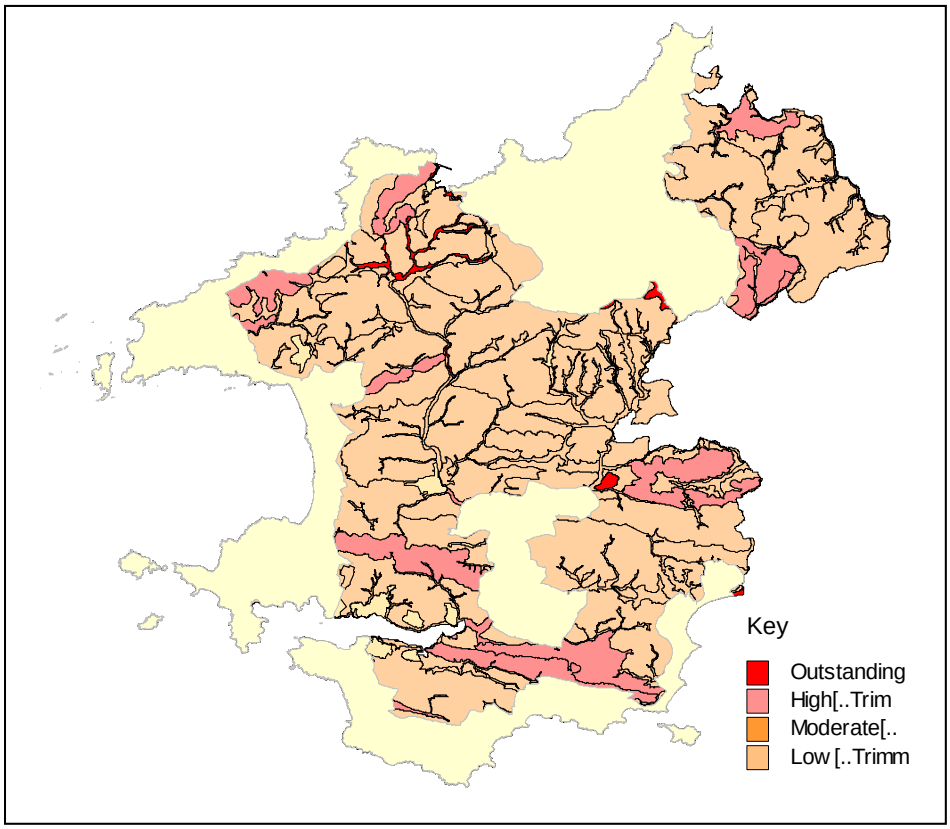
6.2 Dr. Kevin Page undertook the Geological Landscape Aspect assessment for this layer, publishing his final report in February 2007. Overall Dr. Page describes Pembrokeshire as being primarily "*lowland hills and valleys and coastal… although mountain and upland valley and man-made categories are also represented*" (Dr. K. Page February 2007). The Technical Report into the Geological Landscape goes into considerable detail on the geological history of Pembrokeshire, covering the Precambrian, Cambrian, Ordovician, Silurian, Devonian, Carboniferous, and Palaeogene – Quaternary periods, and gives information on the significance of specific areas of Pembrokeshire in each of these time periods. In particular Dr. Page focuses on the impact of the dramatic climatic fluctuations, glacial and inter-glacial periods of the Quaternary, and the impact this had on the present day landscape and its geomorphological features.

A Geological Landscape assessment at Level 3 hierarchy



6.3 The map opposite illustrates medium-scale elements which make up larger terrains and include smaller-scale individual landforms and features (Level 4 classification). The map clearly indicates that most of Pembrokeshire is classified as 'undulating lowland hill terrain' which is defined as a "*general category for lowland landscapes in which the topography has no well-developed grain or platform. Although such areas will contain drainage systems, no significant river systems separable within category (i) should be included*" (category (i) classification is lowland river and drainage systems) (CCW Geological Landscape Methodology version 2 2006).

The overall evaluation of the Geological Landscape layer



6.4 The above map clearly illustrates that the majority of Pembrokeshire is classified as moderate, of local importance, in terms of overall evaluation of the Geological Landscape, hence "*not known to include any exceptional or notable features, although it may still be 'representative' of its underlying geology or surface geology*" (Dr. K. Page February 2007). There are parts of the County assessed as being of high importance, these aspect areas "*contain features (including sites) of high regional significance for scientific studies, typically linked to a high educational potential. Some of these sites may also have some historical value or demonstrate well-developed geological or geomorphological features. Other Aspect Areas evaluated as high, for the major landscape features in district, such as prominent escarpments and upland tracts*" (Dr. K. Page February 2007). Small parts of the County are also classified as being outstanding in terms of earth heritage importance, including national and/or internationally important geological sites; these are mainly found within the jurisdiction of the Pembrokeshire Coast National Park Authority. Those areas classified as low have generally been damaged by development or other human activities.

6.5 The Technical Report on the Geological Landscape Aspect layer gives further detail on site specific classifications as well as general descriptions of each aspect area. A summary of the areas classified as 'high' or 'outstanding' in Geological landscape terms may be found in section 6.10.

Conclusions from the Geological Landscape study.

6.6 Dr. Page describes the overall condition of this Aspect Area as 'good', showing no significant potentially damaging activities because of the County's predominantly rural nature. Despite this Dr. Page observes "*there are areas of intensive industrial activity, as around Milford Haven, an assessment of 'Poor' is frequently unavoidable, for instance where development, has significant modified the landscape and consequently damaged the geological or geomorphological features of an Aspect Area. An assessment of 'Poor', however, should always be balanced against any cultural or ecological value that such areas may have in terms of other Evaluated Aspects within LANDMAP for Pembrokeshire*" (Dr. K. Page February 2007).

6.7 In the assessment of the existing management of Pembrokeshire, Dr. Page asserts "*in rural areas potential threats are usually limited and an assessment of 'generally appropriate' can be made*" of management techniques. However he goes on to say "*in areas significantly affected by development, however, an assessment of 'Generally inappropriate' in a geological and geomorphological sense is unavoidable"* (Dr. K. Page February 2007).

6.8 The complete absence of any network of Regionally Important Geological sites (RIGS also known as geological 'SINC's or Sites of (local) Interest for Nature Conservation) is a major issue identified by Dr. Page. Although there are several geological sites legally designated and protected as SSSI (Sites of Special Scientific Interest) within Pembrokeshire the lack of RIGS sites is "*considered sufficiently important that the majority of Aspect Areas include a recommendation that a survey and selection of such sites takes place within the County*" (Dr. K. Page February 2007). Dr. Page concludes his recommendations by stating "*this is clearly a major challenge for the future and without such a network, aspects of Pembrokeshire's unique geological heritage remain vulnerable to damage and loss*" (Dr. K. Page February 2007).

6.9 Dr. Page makes several key recommendations including that *"where an Aspect Area is underlain by geological formations of high scientific value, the recording of temporary excavations to ensure that no information of geological importance is lost may also be recommended – such activities can be included as planning conditions attached to significant developments*" (Dr. K. Page February 2007).

6.10 Areas classified as being of High or Outstanding Value:

Aspect Area	Level 3 class-ification	General description	Geology	GCR sites/ geological SSSIs	Evalu-ation
7: Pen-y-Bryn	Alluvial basin/ former lake	Broad basin below escarpment of soild geology to S and W with distinctly irregular floor dominated by glacial lake deposits (Quaternary: Pleistocene). Includes infilled bases of adjacent steep sided	Dominated by glacial lake deposits with minor areas of other glacial deposits and periglacial head at the base of valley slopes [Quaternary: Pleistocene].		High

		valleys. NE marked by the Teifi River but includes low bank of Ordovician slates of the Forest – Brynsiriol area.			
13: Cemaes Head - Newport	Rock-cliff and shore	Steep, dominantly rocky cliffs and minor shore areas between Poppit Sands and Newport Sands dominated by Ordovician sandstones with some slates. Cliffs locally rise to over 150m. Interglacial raised beach and associated deposits present locally (Quaternary: Pleistocene).	Dinas Island Formation dominates [Ordovician: Caradoc: clingani-linearis zone] with very minor Nantmel Mudstones Formation [Ordovician: Ashgill]. Landslip and integlacial deposits locally present [Quaternary: Pleistocene-?Holocene].	Poppit Sands GCR site (Quaternary of Wales).	Out-standing
16: Cwm-yr-Eglwys	Incised river/ stream valley/ ravine	Remnant of steep sided valley separating the Dinas Island from 'mainland' Pembrokeshire. Former glacial meltwater channel (Quaternary: Pleistocene).	Cwm-yr-Eglwys Formation to S [Ordovician: Caradoc] dominates.	Cwm yr Eglwys and Esgyrn Bottom GCR site (Quaternary of Wales)	Out-standing
35: Afon Glandy – Gors Fawr	Periglacial uplands and slopes	Broad sloping depression on the S side of the Preseli Mountains and surrounded by solid geology massifs to SW and E. Upper, northern part relatively steep, forming cwms in the southern slopes of the mountains, below a steeper escarpment. Slopes become gentler to the S into the Gors Fawr – Waun Isaf area where a broad basin is developed. Connected via two channels to the upper part of the Cleddau river system to the S, the Aspect Area including the drift dominated, sloping valley floor of the Glandyr area. Upper slopes with many surface blocks. Bedrock includes Ordovician slates with dolerite intrusions although surface geology is likely to be dominated by a range of glacial and periglacial deposits and features.	Periglacial deposits including head significant; glacial deposits (including till, etc.) also likely to be present) (Quaternary: Pleistocene (Devensian)). Bedrock dominated by Penmaen Dewi Shale Formation [Ordovician: Arenig (Whitlandian)].	Mynydd Preseli SSSI (part) [Quaternary of Wales]	Out-standing
38:Merrion Bosher-ston	Coastal platform	Distinctive coastal platform averaging 50m above sea-level and developed on Carboniferous limestones. Some shallow valley systems present and karstic features significan, including dolines. Extensive areas modified by military ranges. Bounded by coast to the S and Old Red Sandstone escarpment to the N, both with a WNW-ESE orientation.	Pembroke Group ('Carboniferous Limestone'), 'South Crop' sucession, including Lower Limestone Shale [Lower Carboniferous (Missisipian): Courceyan], Blucks Pool Limestone [Lower Carboniferous (Missisipian): Courceyan], Berry Slade Formation [Lower Carboniferous (Missisipian): Chadian], Linney Head Beds [Lower Carboniferous (Missisipian): Chadian], Hobbyhorse Bay Limestone [Lower Carboniferous (Missisipian): Chadian], Pen-y-Holt Limestone [Lower Carboniferous (Missisipian): Arundian- lower Holkerian], Stackpole Limestone [Lower	Adjacent to Castlemartin Cliffs and Dunes SSSI [Dinantian of South England and South Wales; Variscan Structures; Coastal Geomorphology of Wales].	High

			Carboniferous (Missisipian): Holkerian], Crickmail Limestone [Lower Carboniferous (Missisipian): Asbian], Bullslaughter Limestone [Lower Carboniferous (Missisipian): lower Brigantian], Upper Limestone Shale [Lower Carboniferous (Missisipian): upper Brigantian]. Minor Tenby Group ('Millstone Grit') to N [Upper Carboniferous /Pensylvanian: 'Namurian Series', E1 zone – 'Westphalian Series', lower Langsettian Regional Stage] (formations not specified). Minor Flimston Clay (Palaeogene).		
39: Mynydd Dinas – Mynydd Carningli	Periglacial uplands and slopes	Prominent massif NW of the Preseli Mountains and rising to 337m. Forms a broadly E-W ridge of coalescing knolls with rocky peaks or tors surrounded by rock-strewn slopes. Slopes away rapidly northwards towards the coast forming an escarpment. To S of ridge slopes more gently towards Cwm Gwaun, but locally with steeper upmost section around tors. Common blocks on slopes often concentrated in broad runs. Bedrock geology includes Ordovician volcanic rocks and slates with some igneous intrusions, the latter as in the Preseli Mountains. Surface features are dominantly periglacial, however (Quaternary, Pleistocene).	Dominated by major belt of doleritic intrusions with some Fishguard Volcanic Group [Ordovician: Llanvirn (Abereiddian)] to N and Aber Mawr Shale Formation [Ordovician: Llanvirn (Abereiddian) to S. Periglacial head and block slopes probably widespread [Quaternary, Pleistocene].		High
40: Mynydd Preseli	Periglacial upland and slopes	Conspicuous and famous upland ridge rising to 536m and crested by a line of rocky crags / tors with associated block-littered slopes. Sides of ridge steep sided, especially to the N. Includes NE orientated continuation of the ridge, but dropping to lower altitudes in the Gilgwyn Mawrt area. Bedrock dominated by Ordovician slates with igneous intrusions (dolerite) capping peaks. Surface features are dominantly periglacial, however (Quaternary, Pleistocene).	Bedrock dominated by Aber Mawr Shale Formation [Ordovician: Llanvirn (Abereiddian)] with dolerite intrusions. Some minor Penmaen Dewi Shale Formation to NW and S [Ordovician: Arenig (Whitlandian)]. Periglacial head and block slopes probably widespread [Quaternary, Pleistocene].	Mynydd Preseli SSSI (part) [Quaternary of Wales]	Out-standing
43: Dinas Head (Fishguard – Newport coast)	Rock-cliff and shore	Rock cliffs with limited narrow foreshore and small coves formed of varied Ordovician rocks including slates, sandstones and volcanic rocks. Rises to around 125m and is steepest and highest around Dinas Head. Includes the beach at Fishguard and	Dominated by Ordovician rocks including Fishguard Volcanic Group [Ordovician: Llanvirn (Abereiddian)], Cwm-yr-Eglwys Formation [Ordovician: Caradoc], Dinas Island Formation [Ordovician: Caradoc: clingani-linearis zone] and Penyraber Mudstone Formation; minor	Cregiau Abergwaun (Fishguard Cliffs) SSSI [Ordovician: Arenig-Llanvirn].	Out-standing

		cliffs around the headland adjacent to the town.	dolerite [Ordovician: Caradoc].		
44: Cwm Gwaun (N)	Incised river/ stream valley/ ravine	Steep, northern slopes of Cwm Gwaun and minor incised side cwms cut into the s side of the Mynydd Dinas – Mynydd Carningli massif. Bedrock dominated by Ordovician slates. Forms part of major glacial meltwater channel (Quaternary, Pleistocene).	Dominated by Aber Mawr Shale Formation [Ordovician: Llanvirn (Abereiddian)]) with some minor Penmaen Dewi Shale Formation [Ordovician: Arenig (Whitlandian)]. Some drift including periglacial head probably present (Quaternary, Pleistocene).		High
45: Cwm Gwaun (s)	Incised river/ stream valley/ ravine	Steep, southern slopes of Cwm Gwaun valley and associated minor incised side cwms. Includes a minor lower area where a side stream joins in the Llanychaer area and the steep N side of the Crinei Brook valley near Criney Bridge. Bedrock dominated by Ordovician slates. Forms part of major glacial meltwater channel (Quaternary, Pleistocene).	Dominated by Aber Mawr Shale Formation [Ordovician: Llanvirn (Abereiddian)]) with minor Penmaen Dewi Shale Formation [Ordovician: Arenig (Whitlandian)]. Some drift including periglacial head probably present (Quaternary, Pleistocene).		High
46:Afon Gwaun	Active lowland river – flood plain system	Level to gently sloping floor of Cwm Gwaun including course and floodplain of Afon Gwaun. Includes a broad area SW of Llanerch which curves round to a narrower NNW, incised section leading to the coast at Fishguard. To the NE of Llanerch flow is now north-eastwards towards Cwm Clydach and Afon Nyfer incised course. Forms the floor of a major glacial meltwater channel with a minor modern stream/ river system now in place (Quaternary, Pleistocene-Holocene).	Probably includes fluvial, glacial and periglacial deposits (alluvium, head, etc) [Quaternary: Pleistocene-Holocene).		High
50: Caer-meini	Upland valley slope	Lower slopes of the western part of the Preseli – Foel Dyrch massif, and linking the two areas. Slopes are moderate but steeper than presumed drift-dominated depressions below and gentler than solid geology massifs above. Some stony scatter locally on surface. Includes the eastern margins of the Gors Fawr basin and an area on the N side of the Glandyr valley. Bedrock dominated by Ordovician slates, although likely to included significant glacial/ periglacial deposits [Quaternary: Pleistocene].	Bedrock dominated by Ordovician slaty mudrocks including Aber Mawr Shale Formation [Ordovician: Llanvirn (Abereiddian)]). Significant glacial/ periglacial deposits (head, etc.) likely to be present [Quaternary: Pleistocene].		High?
70: Rhos-y-Bryn	Periglacial uplands and slopes	Broad, concave slopes on the N side of the Preseli Mountains, developed below a steep upper escarpment. Stlye is upland although altitude is below 250m. Characteristised by fan-like groupings of coalescing streams which feed	Bedrock includes Fishguard Volcanic Group [Ordovician: Llanvirn (Abereiddian)] with some Aber Mawr Shale Formation in W [Ordovician: Llanvirn (Abereiddian)]. Dolerite present. Periglacial head, block slopes, etc, widespread	Mynydd Preseli SSSI (part)	Outstanding

		funnel-like features projecting into undulating farmland areas below. Surface scatters of blocks widespread are typical.	[Quaternary: Pleistocene].		
74: Llanwnda	Lowland ridge	Ridge of coalesing steep sided knolls, typically with rocky tops, including tors. Forms a composite, sinusoidal ridge between Fishguard and Harmony reflecting bedrock folding and faulting. Latter is dominated by Prdovicain volcanic rocks with igneous intrusions (dolerite) controlling the location of several knolls.	Dominated by Fishguard Volcanic Group [Ordovician: Llanvirn (Abereiddian)] with very minor Penmaen Dewi Shale Formation [Ordovician: Arenig (Whitlandian)] and Aber Mawr Shale Formation [Ordovician: Llanvirn (Abereiddian)]. Some minor glacial, periglacial deposits also present (including till) [Quaternary: Pleistocene].		High
80: Pen Caer	Glacio-depositional topography/ veneer	Coastal platform and slopes on the north side of the Llanwna massif. Dominated by an apron of glacial clays to the S (Quaternary: Pleistocene)which thins northwards revealing exposures of Ordovician volcanic bedrock in a belt adjacent to cliffs including in shallow valley-forms.	Fishguard Volcanic Group [Ordovician: Llanvirn (Abereiddian)] dominates in N with till in S [Quaternary: Pleistocene].	Strumble Head-Llechafad Cliffs SSSI [Caledonian Igneous] (part).	High
84: Ramsey Island	Coastal platform	Terrestrial surface of Ramsey island including a gently sloping coastal platform dominating the eastern part of the island and rising to around 60m, and the distinctive rocky knolls of Carnysgubor and Carnllundain. The latter steeply rise to 101 and 128m respectively. Island is dominated by Ordovician volcanic rocks with slaty mudrocks and sandstone to the NE.	Ogof Velvet Formation ('Lingula Flags') [Upper Cambrian, Merioneth Series], Ogof Hen Formation [Ordovician: Arenig (Moridunian)], Road Uchaf Formation [Ordovician: Arenig (early Fennian)], Aber Mawr Formation [Ordovician: Arenig (Fennian) – Llanvirn (Abereiddian)], Porth Llanog Formation [Ordovician: Llanvirn (Abereiddian)], Carn Llundrain Formation [Ordovician: ?Arenig-Llanvirn].	Ramsey / Yns Dewi SSSI [Ordovician Igneous; Ordovician: Arenig-Llanvirn]	Out-standing
85: Ramsey Island (coast)	Rock-cliff and shore	Rocky cliffs of Ramsey island andlocal areas of foreshore and beach. Dominated by Ordovician volcanic rocks with slaty mudrocks and sandstone to the NE.	Ogof Velvet Formation ('Lingula Flags') [Upper Cambrian, Merioneth Series], Ogof Hen Formation [Ordovician: Arenig (Moridunian)], Road Uchaf Formation [Ordovician: Arenig (early Fennian)], Aber Mawr Formation [Ordovician: Arenig (Fennian) – Llanvirn (Abereiddian)], Porth Llanog Formation [Ordovician: Llanvirn (Abereiddian)], Carn Llundrain Formation [Ordovician: ?Arenig-Llanvirn].	Ramsey / Yns Dewi SSSI [Ordovician Igneous; Ordovician: Arenig-Llanvirn]	Out-standing
87: Carn Lidi (St. Davids Head)	Lowland ridge	Coastal area with SofW – NofE orientation and the two distinctive, steep sided rocky knolls of Carn Llidi and Carn Perfedd/ Carnedd lleithr. Includes a narrow valley separating the latter form the rocky ridge forming St. David's Head itself. Slopes to E and S more gentle. Crags are formed of intrusive igneous rocks (dolerite-gabbro) with Ordovician slates between.	Penmaen Dewi Shale Formation [Ordovician: Arenig (Whitlandian)], Aber Mawr Shale Formation [Ordovician: Llanvirn (Abereiddian)]. Basic intrusive igneous rocks including dolerite and gabbro.	St David's Peninsula Coast SSSI (part) [Caledonian Igneous; ?Quaternary of Wales].	Out-standing

89: Clegyr-Boia	Coastal platform	Coastal platform forming the terrestrial part of the southern headland of the St. David's peninsula. Dominated by a flat surface up to around 50-60m above sea-level with some local, broad and low mounds. Geology dominated by Precambrian volcanic rocks with glacial clays to the NE.	Cymru terrane: Pebidian Supergroup dominates (including 'Lower Pebidian', Caerbwdy Group, Ramsey Sound Group, Rhosson Group and Ogofgolchfa Group) [Precambrian, Neoproterozoic III, Adelaidian]. Caerfai Group (including [Lower Cambrian, Comley Series] and Solva Group [Middle Cambrian, St. David's Series] also present.	Adjacent to St David's Peninsula Coast SSSI (part) [Precambrian of England and Wales, etc].	High
90: St. Davids Head – Aber Mawr coast	Rock-cliff and shore	Rocky cliffs of the N side of the St. David's peninsula between St. David's Head and Abermawr. Rocky foreshore very limited and developed mainly around a few small coves, the most significant of which is Abereiddi Bay. Coast has a general WSW-ENE orientation.	Dominated by Penmaen Dewi Shale Formation [Ordovician: Arenig (Whitlandian)], Aber Mawr Shale Formation [Ordovician: Llanvirn (Abereiddian)] and Llanrian Volcanic Formation [Ordovician: Llanvirn (Abereiddian)] with minor Ogof HenFormation [Ordovician: Arenig (?Moridunian)] and Ogof Velvet Formation ('Lingula Flags') [Upper Cambrian, Merioneth Series].	St David's Peninsula Coast SSSI (part) [including Ordovician: Arenig-Llanvirn, Caledonian Igneous; ?Quaternary of Wales;] and Arfordir Abereiddi SSSI [Ordovician: Arenig-Llanvirn; Caledonian Igneous].	Out-standing
91: Strumble Head (Abernach-Goodwick coast)	Rock-cliff and shore	Rocky coastline between Goodwick and Aber bach, including the Strumble Head peninsula. Cliffs rise to around120m W of Harmony, but are lower in the Goodwick area where shore areas have been developed as a harbour. Rocky foreshore generally very narrow or absent, even in coves. Dominated by Ordovician slates and volcanic rocks.	Ogof Hen Formation [Ordovician: Arenig (including Moridunian)], Penmaen Dewi Shale Formation [Ordovician: Arenig (Whitlandian)], Aber Mawr Shale Formation [Ordovician: Llanvirn (Abereiddian)] and Fishguard Volcanic Group [Ordovician: Llanvirn (Abereiddian)]; minor Ogof Velvet Formation ('Lingula Flags') [Upper Cambrian, Merioneth Series].	Strumble Head-Llechafad Cliffs SSSI [Caledonian Igneous].	Out-standing
92: White-sands Bay – Newgale Sands	Rock-cliff and shore	Famous coastal section including important exposures of Cambrian and Ordovician rocks. Dominated by cliffs with typically no or very limited areas of rocky foreshore. Locally coves have sandy beaches and the mouths of several small rias also present.	Cymru terrane: Pebidian Supergroup (including 'Lower Pebidian', Caerbwdy Group, Ramsey Sound Group, Rhosson Group and Ogofgolchfa Group) [Precambrian, Neoproterozoic III, Adelaidian] and the St. David's Head Granophyre [Precambrian, Neoproterozoic]. Caerfai Group [Lower Cambrian, Comley Series], Solva Group [Middle Cambrian, St. David's Series], Menevian Group [Middle Cambrian, St. David's Series] and Ogof Velvet Formation ('Lingula Flags') [Upper Cambrian, Merioneth Series].	St David's Peninsula Coast SSSI [including Precambrian of England and Wales; Cambrian; ?Quaternary of Wales; Coastal Geomorphology of Wales GCR sites]	Out-standing
97: Solva	Undulating lowland hill terrain	Gently undulating terrain W of the Solva river and rising to around 90m. Dominated by Cambrian slates and	Solva Group [Middle Cambrian, St. David's Series], dominates in W, with Cymru terrane, Pebidian Supergroup in NE (including	Dwrhyd Pit SSSI [Cambrian]	High

		sandstones with Precanbrian to the NE. Gently slopes towards coast and rises to a slight ridge in the N.	Caerbwdy Group and Ramsey Sound Group) [Precambrian, Neoproterozoic III, Adelaidian]. Minor Caerfai Group [Lower Cambrian, Comley Series], Menevian Group [Middle Cambrian, St. David's Series] and Ogof Velvet Formation ('Lingula Flags') [Upper Cambrian, Merioneth Series] also present.		
101: Lower Solva	Ria	Incised, steep-sided lower section of the Solva Valley, excluding intertidal area. Locally flat base indicates infill, probably including estuarine alluvium. Includes the lower part of the adjacent Talybont valley. Bedrock Cambrian.	Solva Group [Middle Cambrian, St. David's Series] dominates. Minor igneous intrusions.	St David's Peninsula Coast SSSI [including Cambrian and Coastal Geomorphology of Wales GCR sites]	Out-standing
105: Aber Mawr	Ria	Incised, steep sided coastal valley occupied by marsh/ wetland and separated from coast by barrier beach. Includes adjacent, smaller but similar coastal valley at Aberbach.	Bedrock includes Ogof Velvet Formation ('Lingula Flags') [Upper Cambrian, Merioneth Series] and Ogof HenFormation [Ordovician: Arenig (?Moridunian)]. Alluvium, including estuarine fill with minor glacial sand and gravel present in higher part of valley [Quaternary: Pleistocene-Holocene].	Aber Mawr SSSI [Quaternary of Wales].	Out-standing
107: Croes-goch	Lowland ridge	Long, low ridge with rounded crests and broadly WSW-ENE orientation. Rised to around 130m, falling to the N towards a coastal platform and also to the S, towards the drift filled basin of Tretio Common. Includes the distinct craggy knoll of Carn Penbeny. Dominated by Ordovician slates.	Penmaen Dewi Shale Formation [Ordovician: Arenig (Whitlandian)] dominates with minor dolerite (including forming Carn Penbeny. Also minor Ogof HenFormation [Ordovician: Arenig (?Moridunian)] and Aber Mawr Shale Formation [Ordovician: Llanvirn (Abereiddian)].	St David's Peninsula Coast SSSI (part)	High
110: Upper Western Cleddau – Esgyrn Bottom	Ancient lowland river – flood plain systems	Complex of broad drift filled river valleys in the upper reaches of the Western Cleddau river system, now occupied by small 'misfit' streams. Interpreted as major glacial meltwater channels, locally including the sites of former lakes. Valley sides above steep and incised only to E in the Esgyrn Bottoms – Trecwn areas.	Alluvium, lacustrine deposits, peat, etc present [Quaternary: ?Pleistocene-Holocene].	Esgyrn Bottom SSSI [Quaternary of Wales].	Out-standing
119: Nolton Haven to Little Haven coast	Rock-cliff and shore	Rock cliffs – up to c.80m - and associated beaches of the central and southern part of St. Bride's Bay, between Nolton Haven and Little Haven. Includes some areas of rocky foreshore and short lengths of barrier beach (with incised valleys behind). Dominated by Carboniferous 'Coal Measures' sandstones and shales.	Tenby Group ('Millstone Grit'), including Basal Grit Formation [Upper Carboniferous /Pensylvanian: 'Namurian Series', E1-R2 zones], Middle Shales Formation [Upper Carboniferous /Pennsylvanian: 'Namurian Series', Marsdenian-Yeadonian regional stages] and Upper Sandstone Formation (= 'Farewell Rock' in some studies) [Upper Carboniferous	Arfordir Niwgwl – Aber Bach / Newgale – Little Haven Coast [Carboniferous: Westphalian, Quaternary of Wales, Variscan	Out-standing

			/Pensylvannian: 'Westphalian Series', lower Langsettian Regional Stage]. 'Coal Measures', including Productive Coal Formation [Upper Carboniferous /Pensylvanian: 'Westphalian' Regional Series, Langsettian to Bolsovian regional stages] and South Wales Pennant Formation [Upper Carboniferous /Pensylvanian: 'Westphalian' Regional Series, Bolsovian to upper Westphalian D regional stages]. Sand, etc [Quaternary: Holocene].	Structures]; De Porth Sain Ffraid / St Bride's Bay South SSSI (part) (Variscan Structures).	
121: Cuffern-Great Treffgarne Mountains	Lowland ridge	WSW-ENE orientated and relatively narrow,steep sided ridge rising to arpond 178m. Dominated by hard Ordovician volcanic rocks which were once exploited in many small quarries. Eastern end includes two important rocky tor features (Quaternary: Pleistocene).	Trefgarn Volcanic Group [Ordovician: Tremadoc] dominates (including rhyolite lavas). Periglacial head probably present [Quaternary: Pleistocene].	Ceunant a Thyrrau Trefgarn / Treffgarne Gorge and Tors (part) [Quaternary of Wales].	High
133: Skomer Island	Coastal platform	Planned surface of Skomer Island, averaging at around 50-60 m but rising locally to just under 80m. Surface crags typical. Includes The Neck, a smaller island to the E and linked by a narrow ridge. Dominated by Silurian volcanic rocks.	Dominated by Skomer Volcanic Group [Lower Silurian: Llandovery, including Aeronian]. Minor peat [Quaternary: Holocene].	Skomer Island and Middleholm SSSI [Caledonian Igneous]	Out-standing
134: Skomer Island coast	Rock-cliff and shore	Rocky coast of Skomer Island. Dominantly cliffs with virtually no foreshore, excepting a small beach in the Haven area. Includes Midland Island.	Dominated by Skomer Volcanic Group [Lower Silurian: Llandovery, including Aeronian]. Some beach deposits (boulder, etc.) [Quaternary: Holocene].	Skomer Island and Middleholm SSSI [Caledonian Igneous]	Out-standing
147: St. Ann's Head coast	Rock-cliff and shore	Rock cliffs and narrow rocky foreshore around St. Ann's head promontary. Dominated by'Old Red Sandstone' siltstones and sandstones (Silurian-Devonian).	Lower Old Red Sandstone 'Supergroup', Millford Haven Group (including Red Cliff Formation [Upper Silurian: Ludlow Series] and probably also Albion Sands Formation/ Lindsway Bay Formation [Upper Silurian: Pridoli], Sandy Haven Formation [Upper Silurian: late Pridoli]. Sandy Haven Formation [Upper Silurian (Pridoli)-Lower Devonian (Lochkovian)] and Gelliswick Bay Formation [Lower Devonian: Lochkovian]).	Dale and South Marloes Coast (part) [including Non-marine Devonian and Variscan Structures GCR sites).	Out-standing
148: Muselwick Sands to Marloes Sands coast	Rock-cliff and shore	Rocky cliffs and marginal sandy beaches and rocky foreshore of the Marloes promontary. Dominated by Silurian volcanic rocks with some sandstones.	Skomer Volcanic Group dominates [Lower Silurian: Llandovery, including Aeronian], with Coralliferous Group [Lower-Middle Silurian: Llandovery (Upper Aeronian or Telychian) - Wenlock (Sheinwoodian or lower Homerian)], Grey Sandstone Group [Middle Silurian: Wenlock (Sheinwoodian-Homerian)] and Lower Old Red Sandstone 'Supergroup', Millford Haven	Dale and South Marloes Coast (including Silurian: Wenlock; Silurian: Llandovery; Caledonian Igneous; Non-marine	Out-standing

			Group (including Red Cliff Formation [Upper Silurian: Ludlow Series], Albion Sands Formation/ Lindsway Bay Formation [Upper Silurian: Pridoli], etc. Minor)], 'Narberth Group' [Ordovician: Llanvirn (Llandellian)-Caradoc (Aurelucian: Costonian)] also? Beach sand, boulder, etc [Quaternary: Holocene].	Devonian; and Variscan Structures GCR sites).	
150: Borough Head coast	Rock-cliff and shore	High and very steep north facing cliffs up to at least 85m. Minor foreshore only in extreme W. Dominated by dolerite (intrusive igneous rock) with Carboniferous shales, etc. below.	Dolerite dominates, thrust over Pembroke Group ('Carboniferous Limestone') [Lower Carboniferous (Missisipian)] and 'Coal Measures' (including Productive Coal Formation [Upper Carboniferous /Pensylvanian: 'Westphalian' Regional Series, Langsettian to Bolsovian regional stages]. Johnston Thrust.	De Porth Sain Ffraid / St Bride's Bay South SSSI (part) (Variscan Structures).	Out-standing
153: Great Castle Head coast	Incised river/ stream valley/ ravine	Rock cliff and shore with small sandy embayments between Musselwick Point and Little Castle Head. Dominated by 'Old Red Sandstone' siltstones and sandstones (Silurian-Devonian).	Lower Old Red Sandstone 'Supergroup', Millford Haven Group dominates (probably including Red Cliff Formation [Upper Silurian: Ludlow Series], Albion Sands Formation/ Lindsway Bay Formation [Upper Silurian: Pridoli], Sandy Haven Formation [Upper Silurian: late Pridoli]. Sandy Haven Formation [Upper Silurian (Pridoli)-Lower Devonian (Lochkovian)] and Gelliswick Bay Formation [Lower Devonian: Lochkovian]). Minor Coralliferous Group [Lower-Middle Silurian: Llandovery (Upper Aeronian or Telychian) - Wenlock (Sheinwoodian or lower Homerian)], Grey Sandstone Group [Middle Silurian: Wenlock (Sheinwoodian-Homerian)]. Beach sand, etc [Quaternary: Holocene].	Milford Haven Waterway: Musselwick Point to Littlewick Point SSSI (part) [Non-marine Devonian].	Out-standing
155: Sandy Haven Pill	Ria	'Drowned' incised coastal river valley with marginal rock cliffs and sand and rock foreshore in lower part and saltmarsh and steep incised sides in upper part [Quaternary: Holocene].	Saltmarsh, sand etc present [Quaternary: Holocene]. Bedrock dominated by Lower Old Red Sandstone 'Supergroup', Millford Haven Group dominates (probably including Sandy Haven Formation [Upper Silurian: late Pridoli]).	Milford Haven Waterway: Musselwick Point to Littlewick Point SSSI (part) [Non-marine Devonian].	High
164: Gelliswick Bay	Rock-cliff and shore	Rocky cliff and some areas of narrow forshore and small sandy bay between Sandy Haven and Milford Haven. Significantly affected locally by adjacent industrial development.	Lower Old Red Sandstone 'Supergroup', Millford Haven Group (probably including Sandy Haven Formation [Upper Silurian: late Pridoli] and Gelliswick Bay Formation [Lower Devonian: Lochkovian]). Sand and shingle [Quaternary: Holocene].	Milford Haven Waterway: Musselwick Point to Littlewick Point SSSI (part) [Non-marine Devonian].	High

168: Treffgarne Gorge	Incised river/ stream valley/ ravine	Steep river vally slope / gorge-like feature on the E side of the Western Cleddau S of Wolf's Castle. Includes tor like features. Bedrock includes Ordovician volcanic rocks with periglcail surface features (Quaternary: Pleistocene).	Trefgarn Volcanic Group [Ordovician: Tremadoc], Ogof Hen Formation [Ordovician: Arenig (Moridunian)] also present. Periglacial deposits including head also probably present [Quaternary: Pleistocene].	Ceunant a Thyrrau Trefgarn / Treffgarne Gorge and Tors [Quaternary of Wales].	High
191: Lampeter Velfrey	Lowland escarpment	Scarp-like feature of Ordovician slates with volcanic rocks on the S side of Lampeter Vale, rising above the low drift-filled depression to the N. Top of escarpment forms a slight platform at around 100m below a higher escarpment of Devonian 'Old Red Sandstone'. Cut by several cwms.	Aber Mawr Shale Formation ('Didymograptus Shales') [Ordovician: Llanvirn (Abereiddian)] with tuff bands.	Chwarel Bryn Banc SSSI (Bryn Bank Quarry) (Ordovician: 'Llandeilo']	High
192: Robeston Wathen	Lowland hill/ knoll	Discrete, sub-triangular hill within the fork of the Eastern Cleddau valley system and the Narberth stream valley. Steep-sided NW face and moderately steep SE and NE slopes. Rises to nearly 100m.	Robeston Wathen Limestone (and Sholeshook Limestone Formation?) [Ordovician: Ashgill (Cautleyan-Rawtheyan)], Slade and Redhill Formation [Ordovician: Ashgill (Rawtheyan-Hirnantian)]. 'Basement Beds' (including Cethings Sandstone) [Ordovician: Ashgill (Hirnantian) - Lower Silurian: Llandovery (Rhuddanian)] caps hill.	Robeston Wathen Quarries SSSI [Ordovician: Ashgill]	Out-standing
217: Saunder-sfoot – Tenby coast	Rock-cliff and shore	Area with broad sandy beaches with significant areas of rock platform and cliffs behind with associated steep coastal slope. Includes a shingle ridge at Amroth and sea defences at Saundersfoot and Tenby. Coal Measures' (Carboniferous) shales and sandstones dominate.	'Coal Measures', Productive Coal Formation dominates [Upper Carboniferous /Pensylvanian: 'Namurian'-'Westphalian' regional series, Yeadonian to Bolsovian regional stages]. With minor Tenby Group ('Millstone Grit'), probably including Bishopston Formation [Upper Carboniferous /Pensylvanian: 'Namurian Series', Arnsbergian/Pendleian - Yeadonian regional stages] and Upper Sandstone Formation [Upper Carboniferous /Pensylvanian: 'Namurian Series', Yeadonian Regional Stage].	Arfordir Saundersfoot – Telpyn / Saundersfoot – Telpyn Coast SSSI [including Carboniferous: Westphalian]; Tenby Cliffs and St. Catherine's Island SSSI [Dinantian of South England and South Wales; Carboniferous: Namurian]; Waterwynch Bay to Saundersfoot Harbour SSSI [Carboniferous: Westphalian].	Out-standing
221: Giltar Point – Skrinkle Haven coast	Rock-cliff and shore	Rock cliff and shore between Giltar Point and Shrinkle Haven. Shore generally very narrow except in havens where sandy beaches are developed. Dominated by	Pembroke Group ('Carboniferous Limestone'), [Lower Carboniferous (Missisipian): Courceyan-Brigantian] (formations not specified). Minor Tenby Group ('Millstone Grit')		High

		Carboniferous limestones.	[Upper Carboniferous /Pensylvanian: 'Namurian Series', E1 zone - ?'Westphalian Series', lower Langsettian Regional Stage] in Lydstep Haven.		
222: Manorbier – Stackpole coast	Rock-cliff and shore	Rock cliff and shore between Skrinkle Haven and Freshwater East. Above cliff, steep grassy coastal slope often present. rocky forshore well developed along the Manorbier coast, with areas of sand. Includes the sandy bay of Freshwater East with dunes behind. Dominated by by 'Old Red Sandstone' siltstones and sandstones (Silurian-Devonian).	Lower Old Red Sandstone 'Supergroup' / Millford Haven Group dominates (including Freshwater East Formation [Upper Silurian (Pridoli)], Moors Cliff Formation [Upper Silurian (Pridoli) -?Lower Devonian (Lochkovian)] and probably also the Freshwater West Formation [Lower Devonian: Lochkovian]). Minor Grey Sandstone Group [Middle Silurian: Wenlock (Sheinwoodian)]. Minor Pembroke Group ('Carboniferous Limestone') [Lower Carboniferous (Missisipian): Courceyan-Brigantian] (formations not specified).	Freshwater East to Skrinkle Haven SSSI? ['Non-marine Devonian', Palaeozoic Palaeobotany]; Stackpole Quay-Trewent Point SSSI [Silurian: Wenlock; Variscan Structures].	Out-standing
235: Broom-hill – Brown-slade Burrows	Sand dune	Extensive sand dune system which rises from beach level over fromer cliff areas (Quaternary: Holocene). In part stablised and with sand pits. Includes sand beach and extensive area of rocky foreshore in centre of Bay with adjacent cliff.	Sand dune dominates [Quaternary: Holocene]. Foreshore sections include Lower Old Red Sandstone 'Supergroup' / Millford Haven Group, Middle Old Red Sandstone 'Supergroup', Ridgeway Conglomerate Formation [Middle Devonian: ?Eifelian-Givettian] and Upper Old Red Sandstone 'Supergroup', Shrinkle Sandstone Group [Upper Devonian (Fammenian) -Lower Carboniferous (Tournaisian)].	Broomhill Burrows SSSI [Variscan Structures, Non-marine Devonian?]; Castlemartin Cliffs and Dunes SSSI [Dinantian of South England and South Wales; Variscan Structures; Coastal Geomorphology of Wales]	High
237: West Angle Bay – Fresh-water West coast	Rock-cliff and shore	Cliff, steep coastal slope and rocky foreshore around the Angle headland. Dominated by 'Old Red Sandstone' siltstones and sandstones (Silurian-Devonian) with some Carboniferous limestone in N. Includes important raised beach features (Quaternary: Pleistocene).	Lower Old Red Sandstone 'Supergroup' / Millford Haven Group (probably including Freshwater East Formation [Upper Silurian (Pridoli)], Moors Cliff Formation [Upper Silurian (Pridoli) -?Lower Devonian (Lochkovian)] and Freshwater West Formation [Lower Devonian: Lochkovian]). Middle Old Red Sandstone 'Supergroup' (Ridgeway Conglomerate Formation [Middle Devonian: ?Eifelian-Givettian]. Upper Old Red Sandstone 'Supergroup', Shrinkle Sandstone Group (including Gupton Formation [Upper Devonian: Fammenian] and West Angle Formation Group [Upper Devonian (Fammenian) -Lower	Arfordir Penrhyn Angle / Angle Peninsula Coast [Quaternary of Wales, Non-Marine Devonian].	Out-standing

			Carboniferous (Tournaisian)]. Pembroke Group ('Carboniferous Limestone') (including Lower Limestone Shale Group [Lower Carboniferous (Missisipian): Courceyan] – higher formations not specified). Raised beach and till recorded [Quaternary: Pleistocene].		
238: St. Govan's head – Linney Head coast	Rock-cliff and shore	High limestone cliffs are characteristic (up to around 40m) and include a range of classic geomorphological features including caves, stacks, arches, etc. Very little forshoer area. Cliff line has characteristic WNW-ENE orientation.	Pembroke Group ('Carboniferous Limestone'), probably including Lower Limestone Shale [Lower Carboniferous (Missisipian): Courceyan], Blucks Pool Limestone [Lower Carboniferous (Missisipian): Courceyan], Berry Slade Formation [Lower Carboniferous (Missisipian): Chadian], Linney Head Beds [Lower Carboniferous (Missisipian): Chadian], Hobbyhorse Bay Limestone [Lower Carboniferous (Missisipian): Chadian], Pen-y-Holt Limestone [Lower Carboniferous (Missisipian): Arundian- lower Holkerian], Stackpole Limestone [Lower Carboniferous (Missisipian): Holkerian], Crickmail Limestone [Lower Carboniferous (Missisipian): Asbian], Bullslaughter Limestone [Lower Carboniferous (Missisipian): lower Brigantian], Upper Limestone Shale [Lower Carboniferous (Missisipian): upper Brigantian].	Castlemartin Cliffs and Dunes SSSI [Dinantian of South England and South Wales; Variscan Structures; Coastal Geomorphology of Wales]	Out-standing
239: Castle-martin Corse	Alluvial basin/ former lake	WNW-ENE orientated valley with moderately steep slopes on either side and a broad floor. Latter includes a lower, flat area which is marshy to theW and a slightly higher very gently sloping terrace-like features on the S side of the valley. Seaward end of valley to W blocked by dunes of Broomhill Burrows. Includes minor side valley to N with narrow floodplain. (Quaternary: ?Pleistocene-Holocene).	Dominated by alluvium, with possibly terrace-type deposits [Quaternary: ?Pleistocene-Holocene]. Bedrock includes Aber Mawr Shale Formation or equivalent ('Didymograptus Shales') [Ordovician: Llanvirn (Abereiddian)].		High

7.0 Overall LANDMAP Landscape Evaluation for all Five Aspect Areas: Visual & Sensory Landscape, Cultural Landscape, Landscape Habitat, Historic Landscape & Geological Landscape

The maps for this Chapter cannot be read by adobe reader. Please contact the Development Plans Team for a Microsoft Word version of the relevant maps.

A Landscape Classification of areas of "**outstanding**" overall evaluation.

7.1 The map opposite illustrates the areas of Pembrokeshire, excluding adjoining local authorities (coloured grey), evaluated as 'outstanding' in terms of the overall classification of the cultural landscape, visual and sensory landscape, landscape habitat, geological landscape and the historic landscape Aspect layers. The map clearly illustrates that the areas of greatest significance in terms of the LANDMAP Aspect areas largely surround the Cleddau Estuary, Cwm Gwaun, the Preseli hills, the Teifi Estuary, and also the area surrounding Pembroke Town. These areas are identified because of the international or national importance in term of the LANDMAP methodology classification and hence should be valued as such (CCW November 2008).

A Landscape Classification of areas of "**high**" overall evaluation.

7.2 This map illustrates large areas of Pembrokeshire, excluding adjoining local authorities (coloured grey), are evaluated as 'high' in terms of the combined cultural landscape, visual and sensory landscape, landscape habitat, geological landscape and the historic landscape Aspect layers. These areas are evaluated as such because they are of regional or county importance in term of the LANDMAP methodology classification (CCW November 2008). However it is important to recognise that areas that are of high importance in one Aspect classification may be outstanding, moderate or low in another (see section 7.1 above, and sections 7.3 and 7.4 below).

A Landscape Classification of areas of "**moderate**" overall evaluation.

7.3 This map opposite illustrates the majority of Pembrokeshire, excluding adjoining local authorities (coloured grey), may be evaluated as 'moderate' when combining the cultural landscape, visual and sensory landscape, landscape habitat, geological landscape and the historic landscape Aspect layers. An overall classification as moderate means that the area is of local importance in term of the LANDMAP methodology classification (CCW November 2008), however it is important to recognise that areas that are of moderate importance in one Aspect classification may be of outstanding or high importance in another (see sections 7.1 and 7.2 above) or of low importance in another (see section 7.4).

A Landscape Classification of areas of "**low**" overall evaluation.

7.4 This map illustrates the areas of Pembrokeshire, excluding adjoining local authorities (coloured grey), that are evaluated as 'low' in terms of the overall classification of the cultural landscape, visual and sensory landscape, landscape habitat, geological landscape and the historic landscape combined. An overall classification of low means that the area is of little or no importance in term of the LANDMAP methodology classification (CCW November 2008), however it is important to recognise that areas that are of low importance in one Aspect classification may be evaluated as being of much greater importance in another (see sections 7.1, 7.2 and 7.3).

8.0 Conclusions

8.1 Pembrokeshire's landscape is integral to the sustainable social, economic and environmental well-being of the County and to its successful enhancement and development in the future. The above report details various aspects of this landscape, and evaluates the influence they may have through the assessment of the cultural landscape, visual and sensory landscape, landscape habitat, geological landscape and the historic landscape.

8.2 The five evaluated LANDMAP Aspect layers provide a wealth of landscape information that may be utilised to make sustainable landscape decisions over various disciplines, including development planning. In terms of the Local Development Plan (LDP), LANDMAP may be used in decision making on many areas of the plan, including in the assessment of candidate sites, in assessing the landscape for various land-use allocations, (including housing, employment, and energy development), in decision making on any large scale developments, when making decisions about the use and/or conservation of resources, and also when developing policies to protect and enhance Pembrokeshire as a whole. Furthermore, each of the Evaluated Aspect layers gives key recommendations for the management of each of the Aspect areas and also assesses an areas tolerance to change; this information should be considered when making decisions that impact upon any aspect of Pembrokeshires landscape.

9.0 References

CCW (28 November 2008) *LANDMAP Information Guidance Note 3 – LANDMAP, Landscape and Visual Impact Assessment.* Contact Jill Bullen, LANDMAP Wales Coordinator.

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