

PDZ 17. HOLY ISLAND AND WEST ANGLESEY:



Rhoscolyn

Twyn y Parc to Twyn Cliperau.

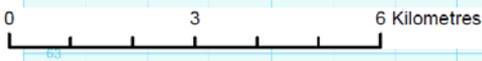
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**Shoreline Management Plan Sub Cell 10
Baseline Location Map
Policy Development Zone 17 - Holy Island and West Anglesey**



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Key			
	Existing Coastline and Chainage		Ramsar
	100 Year Recession Line with No Active Intervention		Scheduled Monument
	Policy Development Zone		EA Flood Zone 3
	Management Area		SPA
	Policy Unit		SSSI
			NNR



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Definitions of Scenarios Considered in Policy Development

This section defines the various scenarios that are used throughout the discussion of the Policy Development Zone.

Sea Level Rise

It is recognised that there is a continuing uncertainty with respect to Sea Level Rise (SLR). Taking different SLR scenarios may affect the scale of impact or the timing of some changes, either in terms of sustainable management or in terms of impacts. In the discussion below of the baseline and alternative management scenarios, the Defra guidance on SLR has been generally been used. Where, in any specific area, the impact of SLR is felt to be significant and may change the context of management this discussion is held within a separate box, relevant to that section of text.

Management scenarios;

Unconstrained Scenario

Under this scenario, the behaviour of the coast is considered as if there were no man made defences, effectively if they were suddenly not there. Although recognised to be a totally theoretical scenario it does provide a better understanding of how we are influencing the coastal behaviour and therefore the stresses and broader scale impact that are introduced. This assists in assessing first how the coast might wish to change, but also in defining the limits of interaction which the SMP should be considering.

Baseline Scenarios

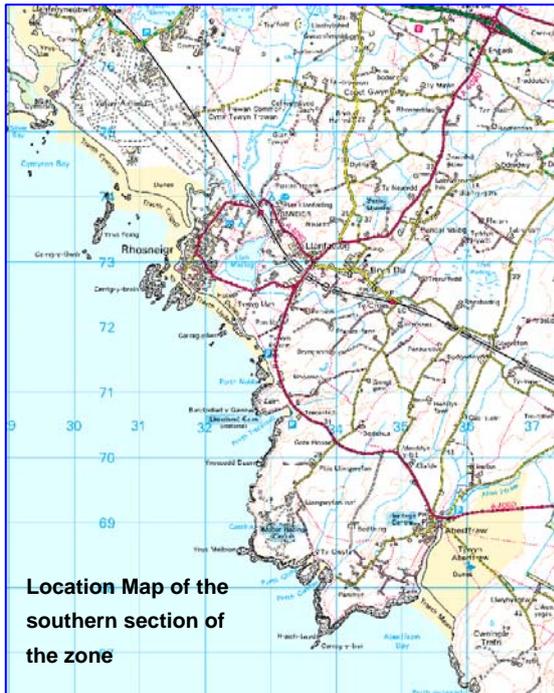
- **No Active Intervention (NAI) – Scenario 1**, where there would be no further work to maintain or replace defences. At the end of their residual life, structures would fail. There would be no raising of defences to improve standards of protection.
- **With Present Management (WPM)– Scenario 2**. This scenario applies the policies set in the SMP1 or, where relevant, takes updated or clarified policies, if subsequent work has been undertaken e.g. studies or strategies. In many locations, the approach to management defined by SMP1 only covers a 50 year period. Where this is so, the intent of how the coast is being managed has been assumed to apply into the future. It should be noted that WPM does not necessarily imply a Hold The Line approach throughout the zone, in many areas present management may be for a No Active Intervention approach or one of Managed Realignment.

The aim of the No Active Intervention is to identify what is at risk if defences were not maintained. In a similar way, With Present Management aims to examine how the coast may develop, identifying where there are benefits in this management approach or where there may be issues arising in the future.

At the end of this sub-section a brief summary and comparison of the economic risk for each of the baseline scenarios is provided, based on the MDSF (Modelling Decision Support Framework) analysis undertaken during the SMP (including other study findings where relevant). The baseline scenarios are also assessed in terms of how they address the overall objectives for the Zone. This comparison between the baseline scenarios sets the scene for discussing possible alternative management scenarios which better address all the issues. This discussion is provided in the subsequent sub-section.

1 Local Description

The zone covers the coast between Twyn y Parc the headland to the north of the Cefni Estuary and Twyn Cliperau, the headland at the south of Porth Tywyn-mawr, which in effect defines the extent of the inner part of Bae Caerdybi. The zone covers the majority of the west coast of Anglesey including Holy Island. The cliffs of the southern end of the unit are comprised of Gwna Melange, while the cliffs of Holy Island are mostly comprised of green schist of the New Harbour Group. Between these hard rock outcrops are the drowned valley of the Afon Ffraw, the low-lying land surrounding Rhosneigr extending north to Valley, the relatively low lying land around the Inner Sea between the mainland of Anglesey and Holy Island, and the clay cliffs of the southern area of Holyhead Bay and the valley of the Afon Alaw.



The cliffs north of Twyn y Parc descend to Traeth Mawr and the outlet of the Afon Ffraw. This river valley was drowned at the end of the last glaciation and has subsequently been filled by sediment to produce the extensive dune system that is present today. These dunes are internationally recognised for their environmental value and as such are designated as SAC, SPA and SSSI. The small village of Aberffraw sits at the side of the estuary on the A4080, the main road connecting the villages on the south western side of Anglesey. The properties are defended by a masonry wall and facilities in the village include a school, post office and a pub, as well as a heritage centre. There are several listed buildings within the village and Pont Aberffraw is designated a Scheduled Ancient Monument. It has been

suggested that the road and bridge in fixing the river channel to the northern side of the estuary significantly increased the estuary's tendency for accretion. However, the size and structure of this massive dune system, which rises well above even extreme water level seems to indicate that any such impact is a second order impact.

At Trwyn Du, the headland to the west of Traeth Mawr there is a SAM located on top of the cliffs; the Trwyn Du Round Cairn

Between Traeth Mawr and Porth Nolba the cliffs return, interrupted only by the small bays of Porth Cwyfan and Porth Trecastell. At Porth Cwyfan, the Church of St Cwfan is located on a small island in the bay accessible by a causeway; both the church and retaining wall are designated as listed buildings. The cliffs west of Porth Cwyfan are designated for their environmental value as part of the Ty Croes SSSI. Beyond this the cliffs descend to the small bay of Porth Trecastell which is backed by dunes on top of which there is a car park. The A4080 runs immediately behind the car park

There are two scheduled ancient monuments located on the cliffs between Porth Trecastell and the next bay north, Porth Nolba; the Barclodiad-y-Gawres Burial Chamber and the Mynydd Bach round cairn. At Porth Nolba the A4080 runs close to the back of the bay and on the other side of the road are a collection of properties, one of which is listed.

From Porth Nolba northward towards Rhosneigr there is a continuous sandy beach backed by sand dunes with intermittent areas rock outcrops on the foreshore. There are a cluster of properties at Cerrig y Defaid protected by a sea wall.



Rhosneigr is the most substantial settlement on the south western coast of Anglesey. Access is provided by a loop of the A4080 and there is a station on the mainline railway line from the mainline to Holyhead. There are numerous services provided to the wider community including a police station, fire station, school and library. The main area of the town sits upon an area of hard rock outcrop which shapes and controls the adjacent coast. The various sea front properties are protected from coastal erosion by seawalls along the crest of the beach and the properties form a near continuous development along the shoreline. Despite the importance of the town as a tourist destination, there is no formal seafront. The beach is the main focus of attraction and is important for traditional family beach use, surfing and small boat sailing. In many areas the upper section of the beach is used for general boat storage.



The main access road from the south runs across the relatively high dune barrier in front of the Llyn Maeiog (SSSI). To the north, the loop road runs across part of the flood plain of the Afon Crigyll. The Afon Crigyll outflows just north of Rhosneigr and separates the town from the southern extent of the RAF Valley airfield. The river is relatively narrow at its mouth where it cuts through an area of dunes and its flood plain then broadens further inland behind Rhosneigr. There are several assets located within this area including a caravan park, golf course, railway line and the periphery of RAF Valley.



RAF Valley is located to the north of the Afon Crigyll between the railway line and the coast. The foreshore consists of the wide sandy beach and dunes system of Traeth Crigyll running into Traeth Cymyran, which is backed by a narrower ridge of dune and shingle. The Ynys Feirig rock outcrop, which divides these two beaches, is designated SPA and SSSI.

Beyond Traeth Cymyran is the entrance to the Inland Sea which separates Holy Island from Anglesey. This strait is characterised by estuarine features with extensive areas of saltmarsh and mudflat in the more sheltered locations, with areas of hard rock outcrops fixing the main channel.

The southern entrance is between such areas of rock, with a wider sandy intertidal area within the immediate entrance. This gives way to a more muddy sandy intertidal area as

one moves north within the strait. There are a scattering of properties within this area but principally located on the higher areas of rock. There are also a collection of old tide mill sites identified in the southern section of the Inland Sea. The most significant settlement within this area is that around the Four Mile Bridge, where the B4545 provides a secondary crossing point between the mainland and Holy Island. North of Four Mile Bridge the nature of the strait changes. Over this area, the Inland Sea changes from being typically a sediment in filled tidal inlet, irregularly constrained by

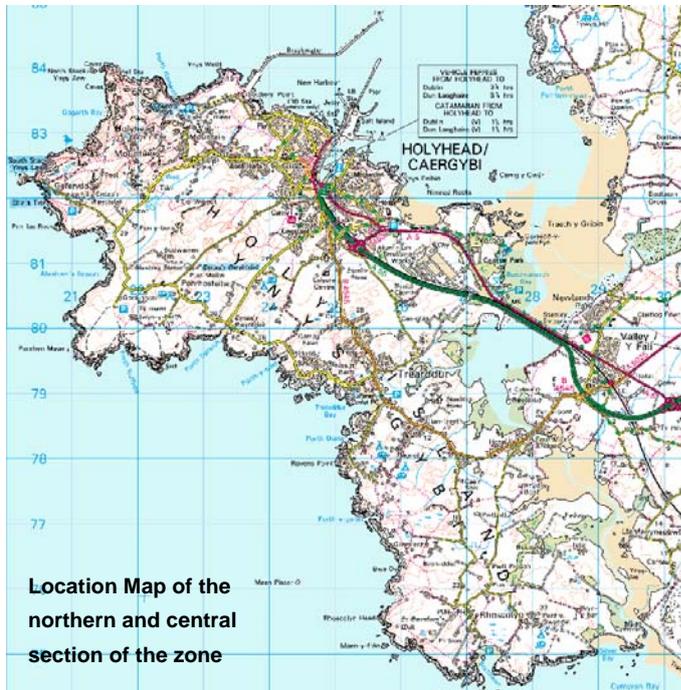


Inland Sea north of Four Mile Bridge

hard rock outcrops to being far more obviously the head of a classic funnel shaped estuary running out to the north (with the Stanley Embankment enclosing this area of the estuary). The intertidal area tends to be far muddier than the inlet estuary to the south.

There is the prehistoric Ynys Leurad Hut Circles (SAM) within the northern section of the Inland Sea.

There are several smaller creeks feeding into the main channel of the Inland Sea, potentially the most significant of these being that which runs through to Trearddur, creating a valley which almost creates another opening to the strait and that just to the south of Four Mile Bridge, which opens to a large flood plain taking in the route of the A55, the main railway line, the A5, the A5025 (the main road north of Anglesey) and a significant amount of property within the village of Valley.



Location Map of the northern and central section of the zone

The outer coast of Holy Island from Tywyn Bryn-y-bar, at the southern entrance to the Inland Sea, through to the Holyhead Breakwater, at the northern end of Holy Island, is predominantly hard rock cliffs that are recognised for their environmental value as part of the Holy Island Coast SPA. There are also numerous SSSIs. This section is also the start of the northern Area of Outstanding Natural Beauty, which extends over the whole northwest section of the Anglesey coastline.

Within the predominantly hard rock coastline, there are many small and important bays.

These are the site of much of the development in the area and to the head of many of these bays runs the local coastal road. Immediately west of the entrance to the straits is Traeth Llydan which is used by visitors to the caravan park at Pentre Gwyddel and as a location for launching boats

At Borthwen there is another small bay with a sand/shingle beach backed by sand dunes. There is a small car park behind the dunes in the western corner of the bay that is accessed via a narrow lane from Rhoscolyn. The properties at Ty Gwyn, Ynys Defaid and The Point are access by a track across the foreshore which is a public highway.



This is backed by a large concrete sea wall and several of these properties are protected by local seawalls.

On the cliffs between Borthwen and Porth Dina there is a substantial static caravan park above Porthygaran and properties at Ravens Point, which signal the start of collection of properties forming Trearddur. The Ravens Point Road runs from the caravan park behind these properties, and then behind the beaches at Porth

Castel and Porth Dina to Trearddur Bay providing an important access route. At Porth Dina there are numerous small boat moorings in the bay, a car park and associated slipway. The road is protected by a combination of rock revetment and seawall as it runs behind the beaches at Porth Dina and Porth Castell.

While the many small communities form an essential larger scattered community, Trearddur Bay forms the central focus of this collection of communities in this area of Holy Island. The frontage is the site of a recently constructed coast protection scheme, with new promenade and seawalls.



A considerable degree of consultation was undertaken that highlighted the importance of access to and use the beach to the local community. There is an inshore rescue boat station in the northern corner of the bay. The large car park, wide beach and location on the B4545, which links the southern part of Holy Island to Holyhead and the A55 at Valley via Four Mile Bridge make Trearddur Bay a main tourist destination for this part of Anglesey.

However due to its proximity to Holyhead there are few other services, there are no schools.



North of Trearddur the road continues along the coast, which comprises a series of rock platforms/low cliffs and several small bays where the road forms the back of the beach. The most significant of these bays are Porth yr Afon, Porth-y-post and Porth Dafarch. At Porth Dafarch is the prehistoric Porth Dafarch Hut Circles (SAM) located directly behind the coastal road, and the Old customs post is a listed building.

Beyond Port Dafarch there are only more local bays in the general hard rock coastline. This applies all the way through to the outer breakwater at Holyhead; the entire length is designated as part of the SAC, SPA and SSSI. The only other features of importance are the Dinas Porth Ruffydd hill fort (SAM) and several listed buildings including the South Stack Lighthouse which is still operational.

The Holyhead Breakwater marks the end of the natural coast and the beginning of the Holyhead conurbation. Just inside the breakwater are the marina and the offshore lifeboat station. Beyond this is the main development of Holyhead and the ferry terminals. Holyhead is the key economic centre for a large proportion of Anglesey and provides many of the key services including schools, police and the hospital. The port and associated operations is a significant employer of local people. In addition there are numerous listed buildings

Beyond Holyhead is Traeth Penrhos, a largely undeveloped bay with the A5 running a considerable distance behind the beach. Beyond this bay the coast is largely undeveloped across the entrance to the Holy Island Straits until the Stanley



The Stanley Embankment

Embankment. There are local areas of defence to properties close to the embankment.

The Stanley Embankment is the main link between Holy Island and Anglesey, carrying the A55, A5 and mainline railway line to Holyhead. The only other crossing is located to the south at Four Mile Bridge which comprises a small B-road. In addition to the significance of the embankment in terms of basic infrastructure, the bridge and

toll house are listed buildings, and the quay on the northern side is a SAM.

Adjacent to the Stanley Embankment is Newlands Park, a recently developed small housing estate. The houses are located on top of low lay cliffs that are showing signs of erosion. In some locations armour stone has been used to protect the toe of the cliffs. On the foreshore at the northern end of the properties the Newlands Fish Weir is designated a SAM.



Newlands Park Cliff

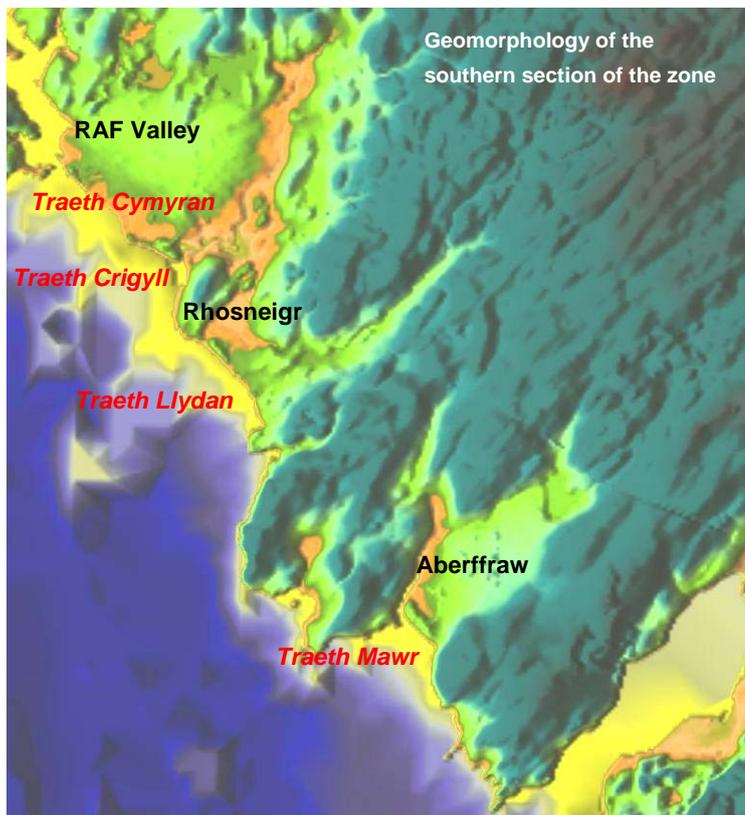
North of the cliffs, the land descends into the estuary of the Afon Alaw that is characterised by low lying agricultural land with isolated properties. To the north of the estuary the coast is similarly undeveloped,

consisting of a series of bays interrupted by outcropping rock platforms. A Caravan park is located on the headland of Twyn Cliperau, which, together with the end of the Holyhead Breakwater, marks the outer limit of the inner section of Bae Caergybi, and the end of this zone. Several sections of this northern length are low lying and will be vulnerable to sea level rise in the future.

Coastal Processes

This zone is predominantly west facing and as such is exposed to swell waves travelling up the Irish Sea from the southwest. Some shelter is afforded to the southern sections of the Zone by the Llŷn Peninsula, with the western coast of Holy Island being far more exposed to the dominant wave directions. Holy Island provides shelter from wave action to the Inland Sea and the bay behind and to estuary of the Afon Alaw.

Traeth Mawr marks the entrance to the drowned valley of the Afon Ffraw and the extensive dunes. It is suggested in SMP1 that the construction of the road across the estuary from Aberffraw fixed the point of discharge of the Afon Ffraw which encouraged further accumulation of sediment and stabilised the dune field. From the topographic data now available this seems less likely. The front face of the dunes seems to have developed as a barrier, with the natural inclination to build from the southwest. It seems more probable that the road and bridge were constructed through the developed dunes to cross the river where it was being naturally forced against the high ground to the north. The in fill of the valley has been the dominant influence. There is probably little new sediment supply within the back dune due to the development of the natural coastal barrier.

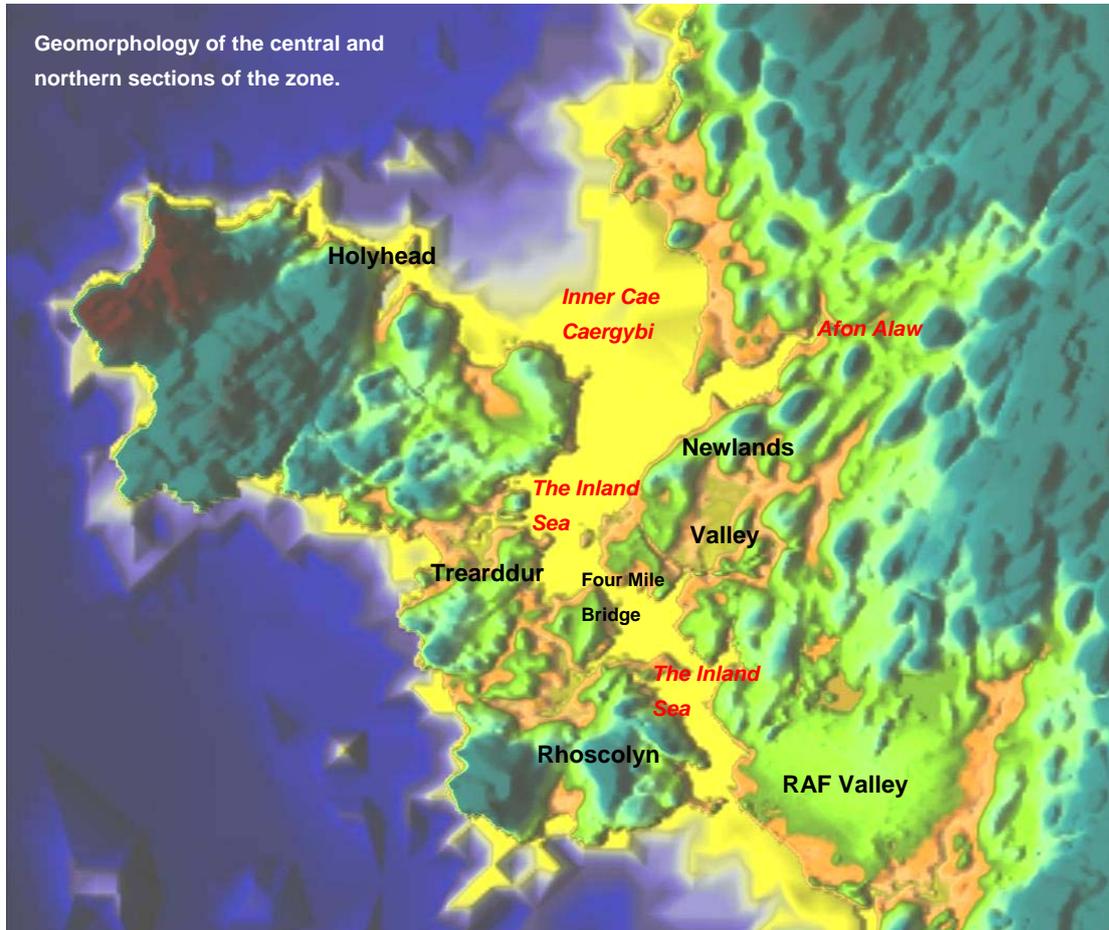


The long term process on this whole southern section has been for in fill of low lying sections of the coast, held by the rock cliffs and outcrops. This process is seen at Ty-Cwyfan, Porth Tre Castell and in the larger area of the Afon Crigyll valley behind Rhosneigr. This process is driven by the combined dominance of southwesterly waves and winds and made possible by the availability of sediment in the nearshore area. While nominally it is suggested that there is a weak net southerly drift, there is in reality very little evidence of this in the

geomorphology and the coastline is seen as being strongly swash aligned with the dominant process being that of rolling back of sediment within the constraints of the harder geology. Areas of the coast are subject to slow erosion and there would be increasing pressure for the soft frontages to roll back further with sea level rise.

The northern and central sections of the zone can be seen as this massively fragmented collection of rock outcrops and islands, overlain by the glacial deposition, subsequently worked upon by wind, waves and currents and further infilled by sand and mud. The processes along the western side of Holy Island are, as with the southern section of the

coast, constrained within the hard rock structure, cutting into the glacial infill and reworking surface deposits. There are local influences with each bay, such that the natural shape of the entrance influences the shape of the bays and the natural and manmade hard structures within the bay then influences the backshore shape. Where there is insufficient plan shape depth to bays, either because of the outcropping of rock or the construction of hard defences, this then dictates the way in which wave energy is able to dissipate and gives rise to the variation between the wide sandy bays and bays where there is exposed rock or clay foreshores.



This is most evident in comparing two bays such as Silver Bay, which is relatively open and backed by very naturally curved backshore of sand and shingle, and Borthwen Bay, where the natural development of the bay is constrained by the large concrete wall protecting the eroding clay cliff.



In the case of this second bay, the wall has created an increased energy environment where there will be increased wearing down of the foreshore and where the reflection from the wall is causing erosion of the dunes. This reduces the capacity of the bay to respond to sea level rise and increasing the vulnerability of areas behind to flood risk. This risk has been responded to by defence of the dunes by placement of rock, which further reduces the ability of the bay to respond to change.

In other bays the same basic underlying processes apply:

- At Ravenspoint bay the defence to the road was constructed at the crest of the natural beach but has been supplemented by rock armour to help dissipate wave energy to maintain the beach.
- At Trearddur, again, the defence is quite critically located along the crest of the natural bay and further work has been required to reduce critical squeeze of wave energy during more extreme conditions.



Porth Dafarch

- At Porth yr Afon there is a relatively natural but coarser beach on a slightly higher rock platform, with the road set sufficiently far back so that there is width to retain this beach as a natural defence.
- At Porth Dafarch the defence cuts across the natural alignment of the backshore such that there is limited natural back beach and resulting pressure on the toe of the defences.

To the northeast of Holy Island the shoreline gains significant natural protection from the island itself and from the large breakwater at Holyhead. This structure, together with the headland on the main island at Twyn Cliperau forms the mouth of the funnel shaped estuary running down to the Inland Sea. The western shoreline, from Holyhead through to the embankment is anchored by the rock headlands upon which Holyhead is built and the headland of Penrhos. Between these headlands the soft bay of Penrhos is shaped by the dominant north westerly waves entering the estuary. The narrow backshore beaches of this area and that to the eastern side of the estuary are indicative of the more limited sediment supply to the area as a whole. The general nature of the shoreline is that of the coast carved out of the glacial clays rather than one of the large infill seen on the south western shoreline.

This contrast of sediment supply carries through into the Inland Sea, with the predominantly muddy and saltmarsh shores of the area north of Four Mile Bridge and the more sandy nature of much of the southern inlet. This would suggest that the southern section of the Inland Sea tends to be flood dominant, while the northern section only now receives finer silts with the potential for sediment accumulation during high water slack periods.

There is little difference in tidal range between the north of the Inland Sea and the south (potentially some 0.2m) although the timing of the high water is of the order of 45 minutes later at Holyhead than to the south. This affect gives rise to a slight additional flow into the area from the south on the flood and a slightly increased stand over the high water at the northern end as the tide ebbs. This affect is further complicated by the presence of the Stanley Embankment that constrains tidal movement. This again would tend to support the concept of flood dominance of the southern section.

POTENTIAL BASELINE EROSION RATES

Base rates have been assessed from monitoring and historical data. The range of potential erosion is assessed in terms of variation from the base rate and sensitivity in potential sea level rise. Further detail on erosion rates together with erosion maps are provided in Appendix C. A distinction is made between basic erosion of the shoreline and cliff recession, affecting the crest of cliffs and coastal

slopes. This is noted in the table below together with other relevant factors. In assessing erosion and recession in the future allowance has been made for sea level rise and this is discussed in appendix C. This is also discussed briefly following the table.

Location	NAI Base Rate (m/yr)	Notes	100yr. Erosion range (m)
Hard rock frontages in general	0.05	Some local areas may be subject to local landslipage but due to the very hard rock platform there is little anticipated increase in erosion rate due to sea level rise.	5 to 10
Traeth Mawr	0.1	General roll back with sea level rise	20 to 40
Traeth Llydan	0.1	General roll back with sea level rise	20 to 40
Rhosneigr	0.1	Crest erosion following failure of defences	10 to 25
Traeth Crigyll	0.1	General roll back with sea level rise	20 to 40
Traeth Cymyran	0.1	General roll back with sea level rise	20 to 40
Typical rates for the western bay	0.1 to 0.3	Crest erosion and set back following failure of defences	10 to 50
Penrhos Bay	0.05	General roll back with sea level rise	10 to 30
Newlands	0.2	Erosion and coastal slippage	20 to 50
Porth Penrhyn Mawr	0.5	General roll back with sea level rise	20 to 30

While within local bays, sea level rise (SLR) will be a significant factor in future development of the shoreline, over much of the zone the very slow erosion of the main hard cliffs would be affected little. Where there are softer cliffs or shorelines, suffering erosion, the rate of erosion is likely to increase with SLR. This might be by a factor of 1.7 to 2.5 times the existing base erosion rate, over the 100 years. Where there are more stable features, such as fully developed storm beaches there would be a natural roll back of the beach potentially in the order of 10m to 40m, depending of the nature of beach and the coast behind. As beaches, protecting at present relatively stable coastal slopes, erode or roll back this could result in re-activating landslides and slope instability.

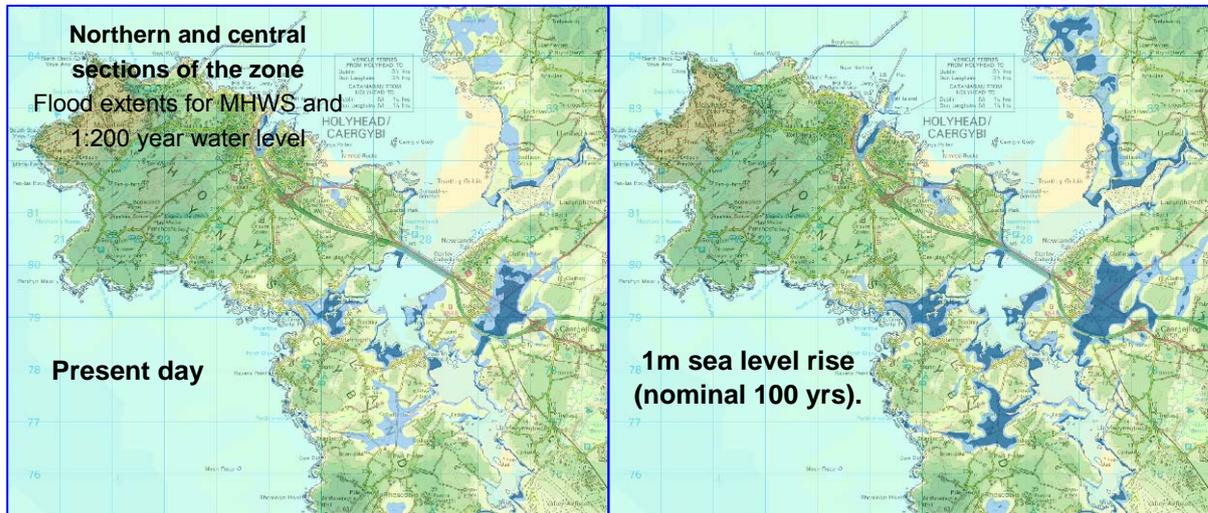
FLOODING

Over the southern area of the zone significant flood risk areas are limited locally around Aberffraw, impacting principally on the road and area of the bridge, and to the rear of Rhosneigr. In this latter area there is risk to the road and potentially the railway line.

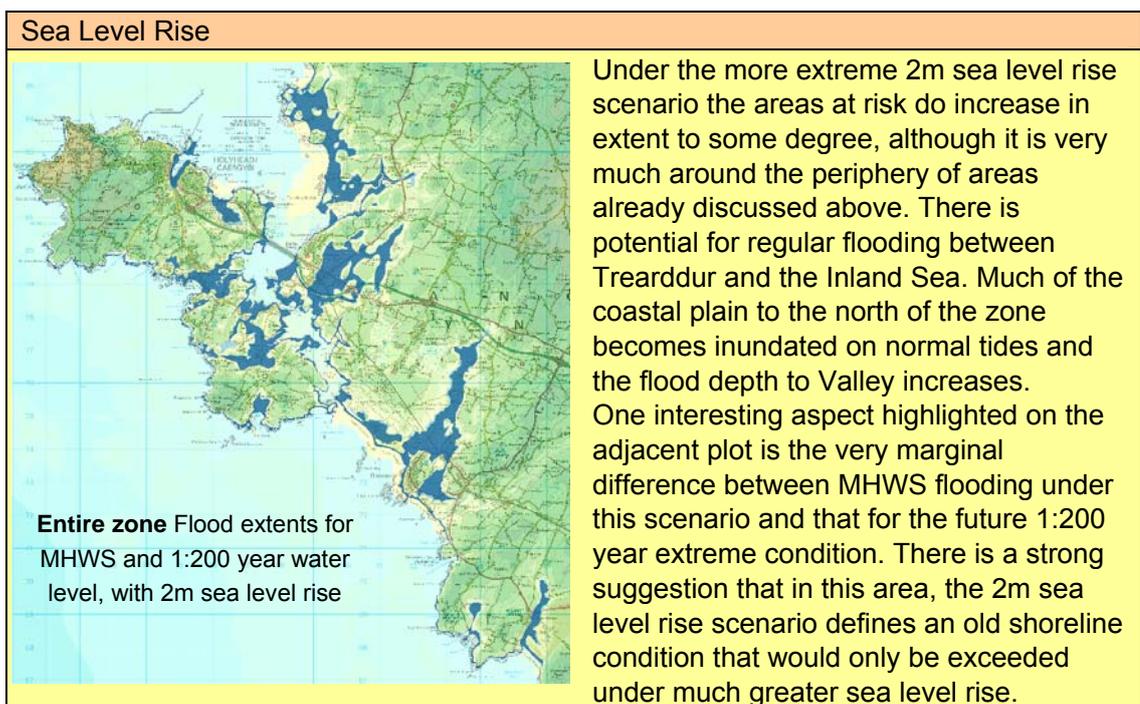


With anticipated sea level rise of 1m, these areas increase slightly, with some risk to lower lying areas of RAF Valley.

Over the northern central areas, flood risk is more significant. The main areas of concern are locally to the Old Harbour area of Holyhead, in the area of Trearddur and through the valley running north from the Inland Sea to the low lying areas of the village of Valley. This last area also places the old road and the main railway line at risk, but is defended at present by the causeway within the Inland Sea.



In the long term, with 1m sea level rise, the risk of flooding becomes significantly worse in the three areas identified above. Areas of the Old Harbour would be below normal spring high water. Much of the village behind the sea front at Trearddur would be at risk with extreme water levels. Much of the valley associated with the village of Valley would be below MHWS. New areas at risk would include the low lying land behind Penrhos Bay, together with areas on the main island to the north of the zone being below MHWS.



EXISTING DEFENCES

There are defences to Aberffraw, Rhosneigr, Four Mile Bridge, Trearddur and to many of the smaller bays, together with more major defence around much of Holyhead, including the main breakwater which provides shelter to a significant area of the coast. There is flood defence to the village of Valley and locally to other areas. More natural defence include those to RAF Valley, to Penrhos and along the dune frontage to the north. There are also local ad-hoc defence to the toe of the Newlands Cliff.

UNCONSTRAINED SCENARIO

As described earlier, over much of the frontages within the zone, the natural unconstrained processes are that of a shoreline rolling back, constrained in plan shape by the hard geology of the area. Obviously without defences and without the influence of the Holyhead main breakwater there would be increased exposure to many areas within the inner Holyhead Bay. Also without the influence of the Stanley Embankment there would be some change in behaviour of the northern end of the Inland Sea

In the longer term with the more extreme sea level rise there would be new tidally active areas and the southern section of Holy Island could revert to a series of inlets and islands.

KEY INTERACTION WITH DEFENCES

The main influence of defences is at two levels. Clearly at the large scale the main breakwater and the embankment have a substantial influence on the whole area. However, in this area it is really the more local defences which in some ways are more significant, at the local level. As discussed in the earlier section, it is where defences are interacting, or will in the future interact with the local development within the bays that there is a risk of loss of beaches with sea level rise or changes to the way in which waves interact with adjacent sections of the shoreline that could have most impact.

In terms of flood risk and the impact of flood defences, the most obvious location is defence to the village at Valley. Although opening this valley up to tidal inundation would have significant social and economic consequences, it is not seen as being that significant in terms of natural coastal processes. The areas to the north are naturally defended and again, significant tidal inundation would create habitat opportunity but would be not that influential on coastal processes. To harden these defences could on the other hand reduce important sediment supply and impact on the broader area.

3 Management Scenarios

3.1 No Active Intervention – Baseline Scenario 1.

The zone is sensibly considered in distinct areas, although the broader scale impact of the different baseline scenarios is also discussed.

Southwest Shoreline. The main defences along this section are at Rhosneigr. In other areas, there are local defences. The principal process under this scenario would be the general roll back of the softer sections of the coast, with flood risk increasing as discussed earlier.

In relation to Traeth Mawr the dune line would roll back with little impact apart from maintaining some additional wind blown sand to the dunes behind, maintaining an actively developing back dune system but with a slight reduction in overall area of the dunes. Within the Afon Ffraw estuary, increasing sea level would tend to be balanced by continued sediment supply. At Aberffraw, there would be increased flood risk to the

bridge and to the road, but only significant increased risk to lower lying properties under more extreme conditions. Under a 1m sea level rise scenario the road might be affected on normal tides. This could impact on the main coastal route.

At Porth Tre Castell and Porth Nobla, long term erosion could well present a problem in terms of the main road, although it seems unlikely that properties would be affected.

The dunes between Porth Nobla and Rhosneigr would tend to roll back and in doing so would create width necessary to maintain a competent dune system. At Cerrig Defaid the properties behind the rock outcrop would be at increased risk from erosion and may well be lost during the latter part of epoch 2 as the rock outcrop becomes less effective. This would result in significant but local loss. It is, however, the rock outcrop that generally influences the shape of the shoreline rather than any defences in the area.

At Rhosneigr, the impacts would be similar to that at Cerrig Defaid but at a larger and more regional scale. With the failure of existing defences, many of which are private, there would be loss of gardens and access roads and eventually properties over the second and third epochs. Without management this would impact on the general use of the shoreline and impact on the built landscape of the area. It would, however, provide width to sustain the beach.

The more significant community impact, under this scenario, would be the increased flood risk to the north of the town, with the potential tidal flooding to the valley disrupting road access and potentially impacting on the railway line. This in turn would impact on the planned opportunity for new development to the town and may also result in general loss of value to the area. The risk to the railway would have significant consequences to the broader economy of Ynys Mon.

Impact of different Sea Level Rise Scenarios

With 2m SLR there would be substantial increase in flood area including the road to the south of the town. This would, in effect, result in the town being situated on an island with no safe road access.

The overall impact on the natural environment would be to sustain the naturally functioning shoreline but there would be a significant change in terms of the Llyn Maeiog from fresh to saline conditions in the longer term. The significant increase in tidal flood plain to the Afon Crigyll could create new saltmarsh areas.

Low lying areas around RAF Valley would only be at significant increased flood risk under more extreme conditions. There would be a general roll back of the dune line which could threaten assets close to the back of the existing dune system. Although the function of these assets is not known, it seems realistic that they could be relocated without loss of the larger establishment.

Southwest Holy Island. As discussed earlier in the section on coastal processes, in general under this scenario, there would be a trend of roll back to the backshore of the various bays. Under this scenario, there would be a risk of loss due to erosion at: Borthwen, together with a long term loss of the foreshore highway and access to other properties, potentially at Ravenspoint and at Trearddur. There would also be the loss of the road at several locations resulting in significant disruption to the transport system. Along with the loss of the road, the Porth Dafarch Hut Circles could suffer damage.

The flood risk would be significant. Some 200 properties could potentially be at flood risk in the long term with sea level rise. Without management the impact on the whole area would be significant and as a consequence the overall integrity of the broader community put at risk.

In considering other areas within the zone under this scenario, no further maintenance would be undertaken to either the Stanley Embankment or the Main Breakwater at Holyhead. It would potentially be only with epoch three that these structures would fail to the point that they would no longer provide access and shelter, respectively to Holy Island. However, without these structures, most particularly the embankment, it would be difficult to sustain the economic importance of the island to Anglesey and to the Welsh economy.

Holyhead and Penrhos. More locally, under this scenario, there would be a loss of defence around the main harbour areas, with increasing flood risk. This in itself would severely damage the value of the area. There would be general roll back of the beach at Penrhos bay and there could be loss of individual properties situated close to the embankment.

Inland Sea. The main risk in this area would be that of flooding. As identified in the discussion above, the most significant area of damage would be to the area around Valley. This would have a severe impact on the main transport routes and would result eventually in the loss of a significant number of properties to the village due to regular tidal flooding. More generally within the area of the Inland Sea, there could be increased normal tidal flooding to lower lying properties at Four Mile Bridge and in other local areas. However, in terms of the broader communities, there would be no substantial increase in risk even with sea level rise. The bridge would eventually fail as defence to the abutments failed and this could have a serious consequence to the communities on the south west of Holy Island (which would themselves be at direct risk under this scenario). There is, however, a significant opportunity, under this scenario to allow further development of saltmarsh and fringe marsh to develop, compensating for loss due to sea level rise over the existing marsh areas of the Inland Sea.

Newlands and the Northern section of the coast. The erosion of the toe of the cliff below the new development at Newlands would continue and this has the potential to cause increased landslip affecting property at the crest of the cliff. With sea level rise this process would continue, with significant loss of property. Over the northern section, north of the Afon Alaw, the shoreline would tend to roll back, maintaining the narrow foreshore ridge as protection against normal flooding. As sea level rises, it seems probable that areas of farmland to the back of this natural defence would, however, be at increased risk. This would create opportunity for new habitat development with the potential development of saline lagoons. There are no properties at risk from flooding although some properties could be at risk from erosion.

Impact of different Sea Level Rise Scenarios

With 2m SLR there would be substantial increase in flood area This could result in regular tidal inundation to large areas of low lying agricultural land. However, because of the developing rolling back shoreline it seems probable that this would develop and potentially form saltmarsh.

3.2 With Present Management – Baseline Scenario 2.

The table below sets out current policy and management approach for the Zone.

SMP 1			Subsequent Management Approach
No.	Management Unit	Policy	
Anglesey			
2.3	Dinas Iwyd to Cwnigar Trefi	DN	
2.4	Tywyn Aberffraw	SHTL	
2.5	Tywyn Aberffraw to Porth Nobla	DN	
2.6	Porth Nobla to Rhosneigr	SHTL/MR	
2.7	Rhosneigr	SHTL	
2.8	RAF Valley	DN	
2.9	Plas Cymyran to Four Mile Bridge(both sides)	DN	
2.10	Plas Cymyran to Holyhead	DN	
2.10a	Silver Bay	DN	
2.10b	Borthwen	SHTL/MR	
2.10c	Porth Diana	HTL	
2.10d	Trearddur Bay	HTL	Recent strategy confirms HTL.
2.10e	Trearddur to Porth y Post	SHTL	
2.10f	Porth Dafarch	HTL	
2.11	Holyhead to A5 bridge	SHTL/MR	
2.12	Four Mile Bridge to A5 bridge (both sides)	DN	
2.13	Newlands Park	SHTL/MR	
2.14	Alaw Estuary	DN/MR	
2.15	Afon Alaw to Penrhyn	DN/MR	

The North West Wales Catchment Flood Management Draft Plan does not go into great detail for this area. The area is covered by one policy unit covering the whole of Anglesey and the policy assessment is summarised below.

Policy unit 1 Anglesey	This unit covers Anglesey including all the river catchments draining the island. Mostly rural catchment consisting of the Anglesey AONB and the towns of Llangefni Holyhead and Amlwch.
Problem/risk:	<p>Physical characteristics:</p> <p>People, property and infrastructure in a number of small towns and villages including Llangefni, Beaumaris and Menai Bridge.</p> <p>There are several scattered small villages and settlements situated upon gently undulating and low-lying land. Apart from the far south east corner where, slightly steeper land can be found.</p> <p>Predominantly moderate quality grade 3-4 agricultural land.</p> <p>The northern part of the island consists mainly of poorly draining seasonally waterlogged soils.</p> <p>Several rivers drain the island, including the Afon Cefni, Wygyr, Crigyll, Alaw, Goch, Lligwn and Braint.</p> <p>The entire policy unit is an Environmentally Sensitive Area with much of the coastline designated an Area of Outstanding Natural Beauty.</p> <p>Contains the Malltraeth Marsh Internal drainage District.</p> <p>Flood mechanism:</p> <p>Sewer flooding.</p> <p>Surface water flooding.</p> <p>Small localised river flooding as the river channel quickly fill and spill out over the banks. This usually occurs after long periods of rainfall and</p>

	<p>occurs in Llangefni and several small villages (e.g. Amlwch, Menai Bridge, Beaumaris etc.). The flood depths in this policy unit are shallow and the flood extents in the rural areas can be relatively wide owing to the wide floodplains.</p>
	<p>Receptor: People, property and infrastructure in a number of small towns and villages including Llangefni, Beaumaris and Menai Bridge. Regionally and locally important A roads including the A5 and A55. Moderate grade agricultural land (grade 3 and 4). Landscape designations - ESA and AONB. Environmental Designations – SPAs, SACs, Ramsars and SSSIs. Historical Designations – Listed buildings, Scheduled Monuments, Historical Landscape Areas and Registered Parks and Gardens.</p>
	<p>Future flood risk summary (in 100 years time)</p> <p>Climate change is unlikely to have a significant affect on the number of people and properties at risk of flooding in Anglesey. The broadscale model of Llangefni only shows an increase from two to five people at risk 100 years in the future. This is likely to be the case across most of the villages and settlements in Anglesey with only small increases in flood risk due to climate change.</p> <p>More people may be affected by increased surface water and sewer flooding. Wetter winters with more frequent and more severe storm events are expected to increase flow volumes.</p> <p>The broad scale modelling showed sea-level rise has very little effect on the flood risk in the policy unit.</p>
Policy selected	<p>Policy 3 - Continue with existing or alternative actions to manage flood risk at the current level.</p>
Justification and alternative policies considered	<p>The current flood risk in this policy unit is from a combination of surface water flooding and localised river flooding. Sewer flooding also presents a flood risk. 1% of the population in the policy unit is at risk from a 1% AEP flood event. The number of people at risk only increases by 0.2% in the future as a result of climate change. The flood risk is considered tolerable and therefore a policy 5 is not justified.</p> <p>There are a number of villages and small settlements where current flood risk management actions are carried out (e.g. Llangefni, Amlwch, Beaumaris, Llanfairpwll etc.). Policy 3 is the obvious policy choice for this policy unit. This will support the existing flood risk management activities, maintaining a relatively low flood risk across the whole island. Policy 3 will allow alternative flood risk management activities to be explored to maintain the current level of flood risk. There is likely to be an increase in the number of flood events as a result of climate change. However this flooding is unlikely to significantly increase the risk to people or disrupt community life considerably. We will continue to maintain the river channels and local flood defences to sustain the same level of flood risk across the all the locations at risk. There may be opportunities in some places to work with land owners and the local authorities to provide alternative and more sustainable options, such as increasing the area of woodland to reduce run-off and therefore maintain the same level of flood risk. However, increasing the frequency of flooding to reduce flood risk over the whole policy unit, i.e. selecting policy 6, is unlikely to meet the objectives of ensuring the harm to life caused by flooding does not increase across the whole of Anglesey. Therefore policy 6 is not the most appreciate policy choice.</p>

	<p>Although climate change does increase flood damages slightly in the future the number of people at risk only increases by 1.2%. Therefore, a policy 4 is not required.</p> <p>Stopping or reducing the existing flood risk management actions would allow existing flood defences to fall into a state of disrepair and would increase the number of people and property in the policy unit at a greater risk of flooding. There are likely to be more than 1,200 people at risk if the current flood risk management actions were discontinued or reduced. This does not meet the policy unit objectives and therefore policies 1 and 2 are unsuitable</p>
<p>Catchment-wide opportunities & constraints</p>	<p>Opportunities:</p> <p>Ensure no increase in run-off from the new developments proposed in the Wales Spatial Plan through development control.</p> <p>Reduce future flood risk by influencing and informing the planning process.</p> <p>Help meet national biodiversity action plan (BAP) targets through flood risk management activities.</p> <p>To improve water level management, meeting the needs of flood risk management as well as enhancing wetland habitats through development of Water Level Management Plans (WLMPs).</p> <p>To reduce flood risk and improve water quality by promoting and encouraging the appropriate use of SuDS in the proposed urban developments in the Wales Spatial Plan.</p> <p>To improve the sustainability of flood risk management along the coastline and estuaries through influencing the second generation of Shoreline Management Plans.</p> <p>Reduce flood risk throughout the CFMP area through initiatives and actions that will enhance the character of the landscape and increase amenity opportunities for recreation, tourism and leisure activities within the National Park and Areas of Outstanding Natural Beauty.</p> <p>Reduce run-off from upper catchments through working with the Forestry Commission Wales and their Better Woodlands for Wales project.</p> <p>Reduce peak discharge rates in rivers through restoration of watercourses to a good geomorphological river status (i.e. naturally functioning watercourse) in accordance with the Water Framework Directive.</p> <p>Reduce flood risk through improved flood warning and emergency response.</p> <p>Constraints:</p> <p>Government and international legislation, environmental management policies, plans and strategies for the catchment should be complied</p> <p>with, such as accommodating new hosing within the catchment as detailed in the Wales Spatial Plan and compliance with the Habitats Regulations.</p> <ul style="list-style-type: none"> - Some environmentally designated habitats are susceptible to changes in flood frequency, flood water chemistry, groundwater levels and drainage system maintenance. - Visual impact of flood risk management activities within the, AONBs and ESAs. - Presence of protected species with specific water level, water quality and habitat requirements, such as great-crested newt and reed bunting - Large number of river catchments operating individually. - Historic development and some heritage designation present permanent physical obstructions in floodplains. - No degradation of existing fish passage and habitats. - Some exposed and subsurface archaeological sites in the floodplain are

susceptible to changes in water level, flood frequency and water chemistry.
- Tourism, leisure and recreation amenities are vital to the economy of the area.

In general terms the policy derived by the CFMP is similar in nature to the more local assessment provided by SMP 1, in that it is for continued local management of specific areas at risk. From the CFMP perspective, there is no significant increase in risk as a result of climate change. However, the CFMP specifically does not consider the direct increase in risk due to sea level rise, this being deferred to the SMP2.

Under this With Present Management scenario, the basic policies set out in the SMP 1, although originally developed over a 50 year period are taken forward as continued management over the 100 years of SMP2. Over much of the frontage the policy is for No Active Intervention and would be the same as discussed above. The key areas of difference are discussed below.

Southwest Shoreline. At Aberffraw the policy is for selectively holding the line. It is implied from SMP1 that this would mean improved defence to the road and to the old quay to the village. This approach would be sustainable in terms of position but would start to impose further constraint of on the natural development of the system with sea level rise. Apart from maintaining the important transport route there would be little economic benefit to raise defences.

There is a similar policy for selectively holding the line between Porth Nobla and Rhosneigr, including Rhosneigr itself. This again is interpreted as an intent to maintain existing defences to properties and to the road. At Cerrig Defaid, maintaining defence to the small collection of new properties would be technically feasible over possibly all epochs. However, towards the end of epoch 3, such defence would not only have to defend against erosion but also against regular flooding. Under this increasing pressure and the need for higher and more substantial defences, the sustainability and long term economic justification for defence would be questionable. The change, from a situation where the natural rock outcrop influenced the shape of the coast, to one where hard defences acted as the principal control point, would mean that defences would have to be extended beyond the properties to avoid out flanking. This would have an increasing impact on the landscape of the area and may be contrary to the intent of designating this area as one of Outstanding Natural Beauty. The very value of the property at this location would be affected in the long term as the height increased.

At Rhosneigr, some areas gain significantly greater protection from the natural outcrop of rock than other areas. This would be accentuated with sea level rise. The current ad-hoc series of defence would all come under greater pressure and there would, under the present management approach of maintaining defence be a need for substantial improvements. Generally this would create a situation where there tended to be loss of beach as defences interacted more regularly with coastal processes. The trend over the long term would be for gradual loss of the upper beach and harder and higher defences. Technically this could be sustainable because of the underlying rock platform. As a wholesale approach along the entire frontage this might be difficult to justify economically over the third epoch and would significantly change the landscape of the area.

SMP1 does not give specific consideration to flood defence to the rear of the town. However, under the intent of this scenario to sustain the integrity of the town, it might be assumed that defence would be continued. This would only have minor impact on the developing flood area of the river and would not be considered to be significant.

The railway tends to be higher than the road and may not be at direct flood risk. Only at the viaduct would there be any significant pressure on the railway embankment and this is considered to be manageable.

Impact of different Sea Level Rise Scenarios

With 2m SLR there would be a more general risk of flooding as well as increased erosion pressure over the whole area. There would be a risk to the southern road and the potential for the Llyn Maelog to become a tidal inlet. Under this scenario the approach is taken that defence would be undertaken to maintain the road. This would have a very significant impact on the landscape values of the area and could result in significant loss of amenity along the northern beach area. Responding in such a manner would also start increasing the vulnerability of Rhosneigr to be cut off following a major storm event.

Along the RAF Valley dune frontage the present policy is for Do Nothing. This would place local assets at risk from erosion. However, to adopt any other approach would start to significantly impact on the natural development and integrity of the dune system and would result in a need for further increasing management of the frontage. This would have significant consequences in terms of the ability of the whole area to adjust to sea level rise, with potential consequences on Rhosneigr both in terms of sustainable defence and amenity.

Southwest Holy Island. SMP 1 policy is quite specific in terms of the main bays with the intent for continuing to hold the line at Porth Diana (Ravenspoint), Trearddur and Porth Dafarch. In other areas the policy is for selectively holding the line, which in the SMP text implies maintaining local lengths of defence along much of the frontage.

At Borthwen, this scenario is taken to have an intent to maintain the hard defences while allowing some natural change along the softer dune frontage. In recent years this approach has, almost by default meant an increasing need for defence along the dunes as the hard defence, behind the foreshore road increasingly increases pressure on the dunes. Maintaining this wall will continue to squeeze the foreshore area as sea level rises. Even though much of the road runs over rock, the window of use will decrease and soft areas of the foreshore will tend to be eroded. Far from protecting this important access maintaining the wall will lead to its loss. The wall also prevents important sediment supply to the bay and will increase wave action on the soft frontages to the east. Under present management this would tend to increase flood risk to the area behind the dunes.

The local defences towards the headlands tend to be founded to rock and to be in a more naturally sheltered area of the bay. While there would be the issue of funding, these defences are not seen as fundamentally impacting on the way in which the bay works as a whole.

In other areas, there are similar issues relating to the response to the beach in terms of wave interaction with defences. Under the sea level rise guidance of 1m over the next 100 years the approach to defence is sustainable technically and because of the importance in maintaining access and the significant economic damages that might arise (as demonstrated in the recent work done at Trearddur), this approach would be justified. However, towards the end of epoch 3 or earlier with higher rates of sea level rise, there will be increasing issues over beach loss and difficulty in maintaining the current approach without significant damage to landscape and amenity.

Holyhead and Penrhos. SMP 1 policy is for continued defence of Holyhead. This is technically feasible although there would need to be some adaptation of the harbour area to address issue of operation and defence with sea level rise. At Penrhos the intent of present management would be to allow the natural development of the bay, thereby providing flood defence behind. With increasing sea level rise there is the risk of flooding to the Aluminium works on extreme events. This present policy was based on there being no significant risk over the 50 year period. As such, slightly unusually, the With Present Management Policy may result in an unacceptable risk in the longer term. The underlying concept of allowing the natural behaviour at the shoreline is however sound. In other local areas the policy from the frontage is slightly vague. It is suggested that defence would be maintained to individual properties where they are at risk. This is unlikely to attract national funding. Private management of defences would become increasingly difficult but would not, substantially impact on the broader process.

Under this scenario it is taken that the outer breakwater and the embankment would be maintained. Given the significant impact of their loss this is considered technically feasible and beneficial to the area. There are always issues with management of a major structure such as the breakwater. If this structure could not be maintained the most significant impacts would be within the area of the harbour. Even then the policy for maintaining the harbour area would still be valid.

Inland Sea. The SMP 1 policy for the whole area is Do Nothing or No Active Intervention. Given the flood issues in relation particularly to Valley, this policy would result in very significant damage to property and to the transport infrastructure. In terms of the intent to sustain the economic viability of the region this policy is not considered viable. However, with respect to the larger area of the Inland Sea the policy for natural development of the strait in principle is considered generally appropriate. There are issues over the access at Four Mile Bridge and issues in terms of defence in the long term to some local but important transport routes and in terms of potential flooding through to Trearddur. As such, in detail, the current policy does not reflect the objectives for the wider area.

Newlands and the Northern section of the coast. The policy for the coast to the north is selectively holding the line at Newlands and for Do Nothing or local managed realignment further north. The policy at Newlands has been compromised to a degree by further development along the cliff top since SMP1. Under present management this imposes a greater need for defence in this area. This may be technically feasible but has the impact of potentially damaging the Area of Outstanding Natural Beauty and also impacting on features of the SSSI. This development runs counter to the intent to minimise the need for further defence and increases the reliance on defence in the future.

4 Summary Comparison and Assessment of Baseline scenarios.

Table 1 compares the economic damages that might arise under the two baseline scenarios. Table 2 provides a summary comparison in terms of the overall objectives based on the key issues identified in the introduction to this Coastal Area.

Erosion damages and those associated with flooding are identified separately in Table 1. The aim of this table is to demonstrate the potential economic damage that might arise from either flooding or erosion. As such properties that might be lost in the future due to erosion are not discounted from the assessment of flooding. Similarly, properties whose value may have been written off due to regular flood damage are still included within the assessment of erosion. Such an approach is clearly not strictly in line with normal economic appraisal at strategy or scheme level. It is however, considered appropriate at the higher level of the SMP assessment where the essential aim is in identifying potential different forms of risk in assessing different scenarios. Where this is felt to disproportionately distort the economic assessment then this is identified in appendix H and the economic case adjusted accordingly.

The assessment of economic damage is made using a simplified Modelling Decision Support Framework (MDSF). In the case of erosion, this GIS based tool takes the predicted erosion distance for any section of the coast based on the assessment of erosion by the end of each epoch. It is then taken that there would be a linear erosion rate between these timelines (e.g. a property located midway between the epoch 1 timeline (20 years) and that for epoch 2 (50 years) would be taken as being lost in 35 years). Each property is defined by a single point rather than by its full footprint. No account is taken in the assessment of loss of access or loss of services, although this is discussed in the text where critical. The MDSF method then draws information from a property data base, providing general information with respect to that property. The value of the property is discounted in terms of when that property may be lost.

In the case of flooding, the open coast water levels are assessed against threshold levels for individual properties based again on the property point source data base. No detailed modelling has been undertaken to assess flow paths and or possible increase in water levels due to estuary processes. It is taken that, when a flood defence fails or is overtopped, the whole flood area behind a defence is open to flooding and that flooding would occur to the full extent of the potential flood plain, over a single high water period. Damages are assessed in relation to the depth of flooding that would occur based on the type of property identified in the data base. From this assessment of potential flood damage for any specific water level condition, annual average flood damages are determined during each epoch. An average annual average damage value is taken between the present (2010) and 50 years time (2060) and between 2060 and 2110. This average value is taken in determining an estimate of discounted Present Value (PV) Damages over the period of the SMP. This simplified approach allows consideration of flood risk under different sea level rise predictions for different scenarios.

Table 1. Economic Assessment

The following table provides a brief summary of erosion damages determined by the SMP2 MDSF analysis for the whole PDZ. Further details are provided in Appendix H. Where further, more detailed information is provided by studies, this is highlighted. The table aims to provide an initial high level assessment of potential damages occurring under the two baseline scenarios.

ASSESSMENT OF EROSION DAMAGES

Epoch	0 -20 year		20 – 50 years			50 – 100 years			50 – 100 years (2m SLR)		PV Damages	
No Active Intervention	No. of properties:		Value x £k	No. of properties:		Value x £k	No. of properties:		Value x £k	No. of properties		PV Damages (£x1000)
Location	Res.	Com.		Res.	Com.		Res.	Com.		Res.	Com.	
Aberffraw area							1	186			13	
Rhosneigr		0	0	0	9	218	7	4	1529	14	15	230
Trearddur area		1	204	1	0	204	2	6	1250	4	8	298
Holyhead								1	204		1	10
In Land Sea								1	204		1	32
Newlands				1		204	5		572	18	3	140
Total for PDZ1											723	
With Present Management	No. of properties		Value x £k	No. of properties		Value x £k	No. of properties		Value x £k	No. of properties		PV Damages (£x1000)
Location	Res.	Com.		Res.	Com.		Res.	Com.		Res.	Com.	
Aberffraw area	0											
Rhosneigr							6	1	763	9	1	55
Trearddur area							1		204	1	204	13
Holyhead												
In Land Sea							1		240	1	1	32
Newlands							5		573	18		72
Total for PDZ1											172	
Notes: PVD determined for 1m SLR in 100 yrs.												
Other information:												

The following flood damages have been determined through use of MDSF. These figures are aimed to indicate the level and impact of flood risk rather than being a detailed economic appraisal. In many areas substantial numbers of properties would be liable to flooding on the more frequent events both under NAI and WPM, a nominal write off value has been allowed in the table for properties at frequent risk; this generally excludes values at risk at present on a 1:1 year event, in 50 years time for the 1:10 year event and in 100 year time the 1:50 year event.

ASSESSMENT OF POTENTIAL FLOOD RISK

No Active Intervention	Flood risk tidal 2010			Flood risk tidal 2060			Flood risk tidal 2110			tidal risk 2m SLR		PVD (£x1000)
	No. of properties		AAD x £k	No. of properties		AAD x £k	No. of properties		AAD x £k	No. of properties		
	<1:10 yr.	>1:10 yr		<1:10 yr.	>1:10 yr		<1:10 yr.	>1:10 yr		<1:10 yr.	>1:10 yr	
<i>Location</i>												
other	0	7	4	0	7	22	0	12	51	16	3	423
Aberffraw	0	0	0	0	0	0	0	6	0.64	8	5	2
Rhosneigr	0	14	3	0	25	29	0	43	138	58	36	729
South Holy Island	0	45	35	0	54	200	0	73	364	103	28	3518
Trearddur	0	82	14	0	110	45	0	138	448	0	188	2054
Holyhead	0	73	95	0	82	501	0	132	581	170	59	7888
Valley	0	156	112	0	171	619	0	207	849	233	25	10062
Penrhyn	0	2	0.26	0	6	2	0	8	24	9	1	95
Total for PDZ17											24772	
With Present Management	No. of properties		AAD x £k	No. of properties		AAD x £k	No. of properties		AAD x £k	No. of properties		PVD (£x1000)
<i>Location</i>	<1:10 yr.	>1:10 yr		<1:10 yr.	>1:10 yr		<1:10 yr.	>1:10 yr		<1:10 yr.	>1:10 yr	
other	0	7	1	0	7	3	0	12	11	0	19	85
Aberffraw	0	0	0	0	0	0	0	6	0.30	0	13	0.95
Rhosneigr	0	14	2	0	25	8	0	43	20	0	94	163
South Holy Island	0	45	18	0	54	25	0	73	42	0	131	679
Trearddur	0	82	8	0	110	26	0	138	59	0	188	544
Holyhead	0	73	46	0	82	50	0	132	118	0	229	1642
Valley	0	156	57	0	171	67	0	207	179	0	258	2169
Penrhyn	0	2	0.22	0	6	1	0	8	8	0	10	37
Total for PDZ17											5321	

Table 2. General Assessment of Objectives

The following table provides an overall assessment of how the two baseline scenarios impact upon the overall objectives. Specific objectives are set out in more detail within Appendix E. The table aims to provide an initial high level assessment of the two baseline scenarios, highlighting potential issues of conflict. These issues are discussed in the following section, examining alternative management scenarios from which SMP2 policy is then derived.

STAKEHOLDER OBJECTIVE	NAI			WPM		
	Fails	Neutral	Acceptable	Fails	Neutral	Acceptable
Reduce risk to life	Fails			Fails		
Protect properties from flood and erosion loss	Fails			Fails		
Minimise the need for increasing effort and management of coastal defences			Acceptable	Fails		
Avoid reliance on defence particularly where there is a risk of catastrophic failure			Acceptable			
Maintain access to local centres, villages and isolated properties	Fails					Acceptable
Maintain important local centres supporting the smaller communities		Neutral				Acceptable
Maintain recreational use of beaches and bays	Fails				Neutral	
Maintain access to the coast including car parking and facilities	Fails				Neutral	
Maintain access for boat use and associated water sport activity	Fails				Neutral	
To maintain Holyhead as a viable commercial centre and support opportunities for regeneration	Fails			Fails		
To maintain operation of RAF Valley			Acceptable			Acceptable
Maintain character and integrity of coastal communities	Fails				Neutral	
Maintain agricultural value of rural community		Neutral			Neutral	
Identify risk and reduce risk of loss of heritage features where possible	Fails					Acceptable
Maintain historic landscape	Fails					Acceptable
Prevent disturbance or deterioration to historic sites and their setting	Fails				Neutral	
Maintain or enhance the condition or integrity of the international (SAC, SPA) designated sites and interest features within the context of a dynamic coastal system.			Acceptable			Acceptable
Maintain or enhance the condition or integrity of the national (SSSI) designated sites and interest features within the context of a dynamic coastal system.		Neutral		Fails		
Maintain and enhance educational and scientific understanding of geology and geomorphology			Acceptable			Acceptable
Avoid damage to and enhance the natural landscape.			Acceptable	Fails		

STAKEHOLDER OBJECTIVE	NAI			WPM		
	Fails	Neutral	Acceptable	Fails	Neutral	Acceptable
Maintain the human landscape and character of communities						
Maintain the road and rail links to Holyhead and RAF Valley						
Maintain Holyhead as a functioning port						
Maintain access to larger settlements for smaller farming communities						

5 Discussion and Detailed Policy Development

There are significant issues with respect to either of the two baseline scenarios. The SMP 1 attempts to steer a course of management that allows the natural function of the coastline and in general achieves this. However at the more detailed level there are new risks identified, due largely to the impact of climate change and due to the difficulty of attempting to address specific local issues at policy level. This is an area where these local issues in reality can have quite significant impact on the general management of the area and upon that larger scale intent to maintain the character and values of the area.

At the broad scale, there are key drivers in terms of Holyhead, maintaining the regional transport system and maintaining the high quality environment and landscape. In addition to its inherent value the last of these key issues also underpins the vitally important attraction of the area for tourism and as a place to live.

In terms of the SMP 2 plan and overall policy, therefore, based on these key issues the following policies are developed:

The policy at Holyhead is for Hold the Line to support this important commercial Hub and to sustain the regional and national transport system. Equally the policy in relation to the Stanley Embankment is to hold the line or effectively maintain this embankment. In neither location is this seen as conflicting with the intent to minimise the need for defence or impact on the natural environment and landscape. These policies are seen as being technically and economically feasible.

In addition, in other areas where there are no significant management issues, the policy is to allow the coastal to develop in a natural way.

Within these specific and general policies, the plan for more detailed areas is discussed below.

Southwest Shoreline. The general policy for allowing natural development of the coast applies to this frontage applying recognising the specific issues at Aberffraw and Rhosneigr.

At Aberffraw, the intent is to allow the natural development of the environmentally important dune system and the natural hard rock shoreline. At the coast there would be no intent to intervene with natural processes. The main issue in terms of the built environment is in relation to the road network. This provides important access to and sustains local communities along the coast.

Within the estuary the road would be at risk from increased flooding with sea level rise. This may become critical within epoch three. Rather than raise defence to the road or raise the road, as the flood risk starts impacting on the function of the road, consideration should be given to adapting either its use as an intertidal causeway or extending the span of the bridged sections. This would maintain the opportunity to maintain a naturally functioning estuary. In association with this, the flood risk to the quay and to property is considered low and the focus for management of residual risk should be through adaptation of property and use. With a similar intent, at Porth Trecastell as the car park and road comes potentially at risk, the aim should be to relocate the car park, creating increased width in the natural system and, if necessary to limit erosion damage to the road, constructing defences that encourage rather than stop

over topping. In this way the natural form of the beach would be sustained over the period of the SMP, without creating a crest barrier that might lead to reduction of beach levels.

The general policy for the whole frontage between Porth Nobla and the entrance to the Inland Sea would be to encourage natural development of the shoreline, working as far as possible with the natural areas of rock outcrop and the natural function of the dunes as a flood defence.

There is seen as being no long term need to defend at Porth Nobla. At Cerrig y Defaid, it is not seen as being sustainable to defend this small headland in the long term. At present there are private defences to properties. Continued maintenance is acceptable over the short to medium term and private action would be supported in principle by the SMP plan. However, extending defences or substantially raising defence would start imposing significant impact on the broader intent of maintaining the function of the shoreline and on landscape and would be setting off along a longer term intent for defence which would not be seen as being sustainable. Making this distinction in terms of policy to deliver this plan, policy for the whole area would be for managed realignment with No Active Intervention in epoch 3.

Management of the Traeth Llydan dune system would encourage natural roll back with no active intervention. The road is at little risk from erosion and this would support the gradual adaptation of the frontage, sustaining important amenity use and the ability for the Llyn Maelog behind to adapt naturally towards possible transition from fresh to brackish conditions. As this occurs, and with the potential increasing flood risk or opening of a wider entrance channel, the intent would be to consider how the road could be maintained so as not to interfere with this naturally developing shoreline. Linked to management of this area is the management of the main Rhosneigr frontage.

At present, the range and generally uncoordinated defence approach adds little to the landscape and amenity of the area. However, these defences are not seen as being at immediate risk, if maintained. There is scope in the future, as defences come under greater pressure to integrate the natural defence with a more managed realignment of key points along the frontage. This would need to be considered in terms of the SSSI feature of the foreshore but with the intent of managing this as a semi natural headland into the future. It is considered practical to manage existing defences and erosion risk over epochs one and two. The intent for epoch three would be to realign the general frontage to make use of space both in front of and behind defences. Such an approach would need to be developed in conjunction with the community and based on monitoring of existing foreshore behaviour. Such an approach would allow transition into the long term No Active Intervention policy to the south and would be developed with the intent to retain better long term beach levels in face of sea level rise to the northern flank of the town. This realignment approach would need to be developed over epoch 2 and the intent at the northern end would be to work with the natural development of the dunes and estuary system to the north.

This is not wholesale change to the position of defences, but rather the need to identify those defences that will constrain the ability of the beach to adapt to sea level rise. This needs to be considered in terms of planning control of future development and proposals for management of private defences.

To the rear of Rhosneigr, the plan intent would be to maintain access to the town along the edge of the estuary. In principle this would be a policy of holding line. In practice this may involve some realignment of the access road to take advantage of higher ground.

Between the Crigyll estuary and the entrance to the Inland Sea the policy would remain as No Active intervention. This may require moving facilities and buildings within the RAF establishment to allow dune development. This would need local consultation.

Southwest Holy Island. Over this area and over the area of Holy island all the way through to Holyhead, the general SMP1 policy for No Active Intervention is confirmed. Within this broader intent there are local areas where there is a need for management.

At Borthwen, the aim of the plan would be to allow improved natural function of the bay. The legal issues with respect to maintaining the foreshore access road are recognised, but the current practice of sustaining the section of wall protecting the clay cliff are not seen as being compatible with long term management of this access route. As discussed previously, this wall is already causing erosion of the natural dunes and because of the fixed position of the wall; this has required works to artificially maintain the line of the dunes. Further more the wall is causing increased wave action over the foreshore immediately in front and this will result in accelerated lowering of the foreshore. In other areas around the bay local private defences are not seen as impacting on the bay as a whole and while there is unlikely to be funding in terms of flood and coastal protection grant there is seen as being no reason at present to preclude local private management of these defences. The policy for management of the bay would be for Managed Realignment with the long term policy for No Active intervention.

The recent project appraisal for Trearddur Bay examined the long term sustainability and justification for continued management of the frontage. There is a risk that with increasing sea level rise in the long term that further work will be required to sustain the defence and the potential for increased erosion and beach loss. While the current scheme looks to allowing more natural function of the dune system to sustain flood defence, there may also be the need to impose further control in retaining the important beach. The policy for this frontage would be to Hold the Line.

In other bays, there are or potentially will be similar problems in the future. The overall policy as with SMP 1 would be to continue to Hold the Line. However, the approach to doing so needs to recognise this long term risk of beach loss and squeeze. Where possible creating width at the backshore either through realignment of the road or through adapting defences to work better with the natural form of the beach would be recommended or alternatively looking to increase the influence of headlands to effectively reduce energy entering the bays. As such, while the specific policy for sections such as Porth Diana, Trearddur and Porth Dafarch are for Hold the Line, the more general policy for this whole frontage of small bays may best be described as one of Managed Realignment in epoch 3.

Holyhead and Penrhos. The policy for Holyhead around the harbour and town is for Hold the Line. Moving east of here the intent is to encourage natural function of the coastal system. Specifically in terms of Penrhos Bay, there is some long term risk of flooding to the developed areas behind. This needs to be examined in more detail. Even so the management of this is still to allow the natural behaviour of the shoreline system. At present the defences around Penrhos Bay consist of a natural beach that has developed to create a natural raised berm at the back of the beach. This does not provide a

complete defence against extreme flooding but does provide an important first line of defence. Allowing natural change would provide a sustainable front line defence system that might need to be supplemented in the future by retired defence to specific areas at risk. As such the plan is for managing future flood risk and the policy would be one of Managed Realignment.

With sea level rise, the natural beach will attempt to adjust such that the natural berm at the back of the beach will tend to build naturally. If a more active intervention were undertaken at the active beach front, this would prevent this natural response. Such action, for example constructing a formal revetment and embankment at the crest of the beach, would attempt to anchor the shoreline in its present position. As pressure increases with sea level rise, the typical natural response would be for loss of beach levels along the frontage. This in turn would lead to an intervention response of further reinforcing the defence at the crest of the beach, leading to a continuing cycle of beach loss and further investment in defence.

The SMP policy aims to avoid this scenario from developing in the first place. It is emphasised that the policy is for Managed Realignment not a policy of No Active Intervention. The flood risk to the hinterland is recognised and the intent of the plan would be to develop a flood defence back from the active shoreline area as required in the future or as a result of more detailed flood risk assessment. Any development to the area should take in to account the benefits in allowing the natural development of the shoreline and avoiding any need to provide increasingly onerous defence of the active beach face.

Inland Sea. The overall intent in this area would be to allow natural development of the strait, in particular allowing increased flooding within the creeks and inlets off the main channel.

At Four Mile Bridge, local maintenance of defences in this area would be seen as appropriate with the specific intent of maintain the access route to Holy Island. With this caveat this is not seen as being in conflict with the more general policy. In addition, under an absolute policy of No Active Intervention, there would be issues in terms of potential flooding to Trearddur and to important local roads within the Southwest area of Holy Island. It is realistic and beneficial to manage these specific areas of risk. Recognising these management issues the policy in general would be changed to one of Managed Realignment, but with the strong intent to allow natural function of the area.

The more major issue arising is in terms of defence to Valley. Without such defence important transport infrastructure would be at significant risk. This would fail to meet key objectives. According to the CFMP other sources of flooding in the area are manageable. Defence to the area would however require significant improvement to the existing embankment and sluice and in the longer term some pumping due to increased tidal locking. The policy specific to this area of defence of Hold the Line and improving defence in line with sea level rise is seen as being sustainable over all epochs of the SMP. However, considering beyond the 100 years there needs to be spatial planning intent to reduce risk through a policy of change.

Newlands and the Northern section of the coast. The new development along the cliff at Newlands imposes a significant constraint on the more appropriate plan for the whole section of coast to allow natural development of the shoreline. The cliffs provide a potentially important source of sediment feeding the generally depleted foreshore and estuary system. At present the erosion of this frontage is relatively slow and the higher

foreshore provides a degree of protection. With sea level rise, this rate of erosion will increase and properties would be at risk. There is a trend, even at present for increased levels of protection, this being undertaken in an ad hoc manner. In the future the danger is that there would need to be some major form of defence such as a full rock revetment along much of the cliff line. This would need to be upgraded with a general movement towards larger and larger defences. Given that there is new property now developed the plan would be to reduce rather than prevent erosion. This needs to be controlled and planned over the epochs of the SMP but with an intent for Managed Realignment rather than Hold the Line.

Further north, the management approach would be for Managed Realignment, allowing the natural development of the dunes to sustain a degree of flood protection to agricultural land but to also allow land use to adapt to a gradual change to new areas of saltmarsh in the long term. If managed this opens opportunity for continued agricultural use and development of significant areas of improved coastal habitat. There are local defence along the frontage to individual properties. It would not be the intent within the plan to maintain these defences. However, these areas of defence tend to be associated with the two headlands. As such private maintenance of protection would not substantially interfere with natural processes. As such the policy of Managed Realignment would not preclude local private management subject to normal approval procedures.

6 Management Summary.

The intent of the plan over the open coast is to allow as far as possible natural behaviour of the coast. Within this overall policy there would be the need for local management. The zone is divided into Management Areas reflecting this. The policy for each Management Area is summarised in the tables below.

ABERFFRAW AND COAST: From Twyn y Parc to Porth Trecastell.

Policy Unit		Policy Plan			
		2025	2055	2105	Comment
17.1	Twyn y Parc headland	NAI	NAI	NAI	
17.2	Traeth Mawr	NAI	NAI	NAI	Maintain natural function of dune system and estuary
17.3	Aberffraw	HTL	MR	MR	Adapt road and quay to support natural function of the estuary
17.4	Aberffraw cliffs	NAI	NAI	NAI	This might not preclude appropriate management of the road at Porth Trecastell

Key: HTL - Hold the Line, NAI – No Active Intervention MR – Managed Realignment

RHOSNEIGR: From Porth Trecastell to Traeth Cymyran.

Policy Unit		Policy Plan			
		2025	2055	2105	Comment
17.5	Porth Nobla to Rhosneigr	MR	MR	NAI	This would not preclude management of defences at Cerrig Defaid in the first two epochs.
17.6	Rhosneigr	HTL	HTL	MR	Develop long term realignment to a sustainable headland.
17.7	Crigyll valley south	HTL	HTL	HTL	Local defence to main access road
17.8	Traeth Crigyll and Traeth Cymyran	NAI	NAI	NAI	Relocation of facilities to RAF Valley

Key: HTL - Hold the Line, NAI – No Active Intervention MR – Managed Realignment

WEST HOLY ISLAND: From Traeth Cymyran to Holyhead.

Policy Unit		Policy Plan			
		2025	2055	2105	Comment
17.9	General policy for Southwest	MR	MR	MR	Management to local bays is defined below.
17.10	Borthwen	MR	MR	NAI	This would not preclude local private defence subject to normal approvals
17.11	Porth Diana	HTL	HTL	HTL	Adaptation of defence in the long term to sustain the beach
17.12	Trearddur	HTL	HTL	HTL	Adaptation of defence in the long term to sustain the beach
17.13	Porth Dafarch	HTL	HTL	HTL	Adaptation of defence in the long term to sustain the beach
17.14	Northwest coast	NAI	NAI	NAI	

Key: HTL - Hold the Line, , NAI – No Active Intervention MR – Managed Realignment

HOLYHEAD AND PENRHOS: From Holyhead to the Stanley Embankment.

Policy Unit		Policy Plan			
		2025	2055	2105	Comment
17.15	Holyhead	HTL	HTL	HTL	
17.16	Penrhos Bay	MR	MR	MR	Examination of potential flood risk
17.17	Penrhos Headland	NAI	NAI	NAI	This would not preclude local private defence subject to normal approvals
17.18	Stanley Embankment	HTL	HTL	HTL	
Key: HTL - Hold the Line, NAI – No Active Intervention MR – Managed Realignment					

INLAND SEA: From Traeth Cymyran to the Stanley Embankment.

Policy Unit		Policy Plan			
		2025	2055	2105	Comment
17.19	General policy for Inland Sea	MR	MR	MR	Local defence to sustain Four Mile Bridge and local defence against flood within hinterland
17.20	Valley	HTL	HTL	HTL	Long term planning to reduce residual flood risk
Key: HTL - Hold the Line, NAI – No Active Intervention MR – Managed Realignment					

NEWLANDS AND AFON ALAW: From the Stanley Embankment to Twyn Cliperau.

Policy Unit		Policy Plan			
		2025	2055	2105	Comment
17.21	Newlands	MR	MR	MR	Co-ordinated approach to slowing erosion
17.22	Afon Alaw	MR	MR	MR	Long term planning to reduce residual flood risk
17.23	Traeth Gribin to Twyn Cliperau	MR	MR	MR	This would not preclude local private defence subject to normal approvals
Key: HTL - Hold the Line, NAI – No Active Intervention MR – Managed Realignment					

PDZ17
Management Area Statements

MA 47 Aberffraw and Coast
Twyn y Parc to Porth Tre Castell

MA 48 Rhosneigr
Porth Tre Castell to Traeth Cymyran

MA 49 West Holy Island
Traeth Cymyran to Holyhead

MA 50 Holyhead and Penrhos
Holyhead to Stanley Embankment

MA 51 Inland Sea
Traeth Cymyran to Stanley Embankment

MA 52 Newlands and Afon Alaw
Stanley Embankment to Twyn Cliperau

Location reference:	Aberffraw and Coast
Management Area reference:	M.A. 47
Policy Development Zone:	PDZ17

* Note: Predicted shoreline mapping is based on a combination of monitoring data, analysis of historical maps and geomorphological assessment with allowance for sea level rise. Due to inherent uncertainties in predicting future change, these predictions are necessarily indicative. For use beyond the purpose of the shoreline management plan, reference should be made to the baseline data.

The following descriptions are provided to assist interpretation of the map shown overleaf.

100 year shoreline position:

The following maps aim to summarise the anticipated position of the shoreline in 100 years under the two scenarios of “With Present Management” and under the “Draft Preferred Policy” being put forward through the Shoreline Management Plan.

-  In some areas the preferred policy does not change from that under the existing management approach. In some areas where there are hard defences this can be accurately identified. In other areas there is greater uncertainty. Even so, where the shoreline is likely to be quite clearly defined by a change such as the crest of a cliff the estimated position is shown as a single line.
- Where there is a difference between With Present Management and the Draft Preferred Policy this distinction is made in showing two different lines:

-  With Present Management.
-  Draft Preferred Policy.

Flood Risk Zones



General Flood Risk Zones. The explanation of these zones is provided on the Environment Agency’s web site www.environment-agency.gov.uk. The maps within this Draft SMP document show where SMP policy might influence the management of flood risk.



Indicate areas where the intent of the SMP draft policy is to continue to manage this risk.

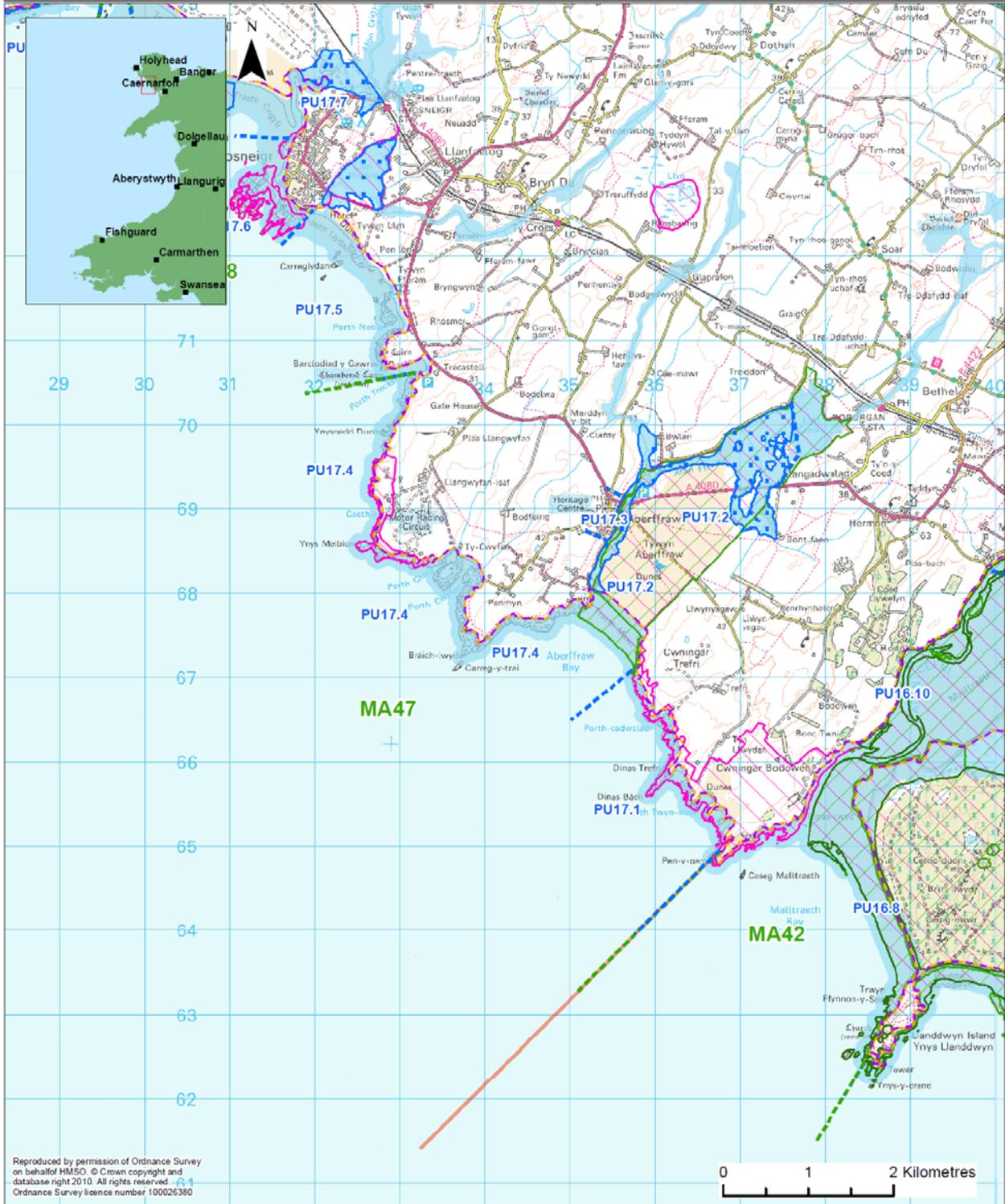


Indicate where over the 100 years the policy would allow increased risk of flooding.

The maps should be read in conjunction with the text within the Draft SMP document.

**Shoreline Management Plan Sub Cell 10
Baseline Location Map
Management Area 42 & 47**

- Management Area
- Policy Unit
- Scheduled Monument
- Policy Development Zone



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Key	
—	100 Year Shoreline Position:
—	Preferred Policy would be the same as With Present Management
—	With Present Management where this differs from the Preferred Policy
—	Preferred Policy where this differs from the With Present Management
 	Ramsar
 	SAC
 	SPA
 	SSSI
 	NNR
 	Existing Indicative EA Flood Zone 3
 	EA Flood Risk Zone 2 where under the SMP policy there would be increased probability of flooding



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SUMMARY OF PREFERRED PLAN RECOMMENDATIONS AND JUSTIFICATION

INTENT OF THE PLAN:

The area comprises generally a hard rock shoreline, with the dune filled valley of the Afon Ffraw and the smaller inlet of Porth Trecastell. While there are local management issues that need to be considered, the overall intent of the plan within this area is to allow the coast to behave naturally without intervention.

At Aberffraw, the intent would be to maintain existing defences initially but with adaptation in the longer term to rising sea levels. Consideration would need to be given to raising the road, potentially as a bridge, rather than increasing the defences to the road; constraining free exchange of water into the upper estuary. At the Quay, future flood risk protection would be provided through improving resilience measures to properties.

At Porth Trecastell, there may be the need to relocate the car park and provide protection to the road where overtopping is allowed.

The aim of the plan is specifically to support nature conservation and maintain the important landscape, while sustaining the communities and transport system.

KEY ISSUES/RISK AND UNCERTAINTY:

There are uncertainties in terms of timing of the proposed changes and increased risk. There will be a need for response to change to be planned in advance. It will be important to relate this to national monitoring of sea level rise and more general climate change.

Local management has a good economic benefit but there may need to be local contribution and funding for highways adaptation.

ACTIONS:

ACTION	PARTNERS
Low level shoreline monitoring	Ynys Mon Council
Adaption planning	Ynys Mon Council
▪ Aberffraw Quay ▪ Highways	Communities Highways
Assess in detail potential impact on historic environment	
Consider opportunities for habitat adaption within the Afon Ffraw valley	EA CCW

DELIVERY OF THE PLAN

SUMMARY OF SPECIFIC POLICIES

Policy Unit		Policy Plan			Comment
		2025	2055	2105	
17.1	Twyn y Parc headland	NAI	NAI	NAI	
17.2	Traeth Mawr	NAI	NAI	NAI	Maintain natural function of dune system and estuary.
17.3	Aberffraw	HTL	MR	MR	Adapt road and quay to support natural function of the estuary.
17.4	Aberffraw cliffs	NAI	NAI	NAI	This might not preclude appropriate management of the road at Porth Trecastell.
Key: HTL - Hold the Line, NAI – No Active Intervention MR – Managed Realignment					

PREFERRED POLICY TO IMPLEMENT PLAN:	
From present day	Maintain existing defences. Develop adaptation planning. Develop funding plan.
Medium term	Maintain defences while moving towards adaptive management.
Long term	Raise road and resilience to property at Aberffraw.

IMPLICATIONS OF THE PLAN

CHANGES FROM PRESENT MANAGEMENT

No substantial change in policy.

ECONOMIC SUMMARY

Economics (£k PV)	by 2025	by 2055	by 2105	Total £k PV
NAI Damages	47.1	145.7	245.5	438.3
Preferred Plan Damages	14.3	25.5	173.2	213.0
Benefits	32.8	120.2	72.3	225.3
Costs	0.0	0.0	49.6	49.6

FLOOD AND EROSION RISK MANAGEMENT

POTENTIAL LOSS

It seems unlikely that there would be actual loss of property, although there is increased flood risk.

BENEFITS OF THE PLAN

The plan aims to sustain the community at Aberffraw in a sustainable manner. There are six properties at long term risk of flooding. The plan makes provision to reduce the impact of this risk.

SUMMARY OF STRATEGIC ENVIRONMENTAL ASSESSMENT (INCLUDING HRA)

PDZ 17				
SEA Objective	Impact of Preferred Policy for each Epoch			
	1	2	3	Mitigation
Policy Units 17.1 to 17.23				
To support natural processes, maintain and enhance the integrity of internationally designated nature conservation sites. Maintain / achieve favourable condition of their interest features (habitats and species).				
To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition.				Habitat creation
To avoid adverse impacts on, conserve and where practical enhance national and local BAP habitats.				Habitat creation
To support natural processes and maintain geological exposures throughout nationally designated geological sites.				
To conserve and enhance nationally designated landscapes in relation to risks from coastal flooding and erosion and avoid conflict with AONB and National Park Management Plan Objectives.				Sensitive design of HTL and MR actions
To minimise coastal flood and erosion risk to scheduled and other internationally and nationally important cultural heritage assets, sites and their setting.				Excavation and recording
To minimise the impact of policies on marine operations and activities.				
To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.				
To minimise coastal flood and erosion risk to agricultural land and horticultural activities.				
To minimise coastal flood and erosion risk to people and residential property.				
To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.				
To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.				Relocation

Mitigation associated with the impacted features of the historic environment may include excavation and recording and monitoring of erosion rates.

This table provides a summary of the SEA (appendix E) and reference should be made to the Appendix for full details of the assessment.

These next two sections provide a headline summary of the findings of the HRA (Appendix G) and the WFA (Appendix H). Reference should be made as appropriate to these Appendices for full details.

HRA SUMMARY

The SMP policy in this PDZ provides a range of policies along the coastline including NAI, HTL and MR. PDZ 17 includes interest features of the Abermenai to Aberffraw Dunes SAC, Anglesey Coast: Saltmarsh SAC, Holy Island Coast SAC, Ynys Feurig, Cemlyn Bay and The Skerries SPA, and Holy Island Coast SPA.

Implications for the integrity of the Site: It is considered that adopting natural change along this area of coast (within the PUs that encompass the SACs and SPAs) will have **no adverse effect on the integrity** of the Abermenai to Aberffraw Dunes SAC, Anglesey Coast: Saltmarsh SAC, Holy Island Coast SAC, Ynys Feurig, Cemlyn Bay and The Skerries SPA, and Holy Island Coast SPA.

SUMMARY CONCLUSION FROM THE WATER FRAMEWORK ASSESSMENT

Water body (and relevant PDZ)	Environmental Objectives met?				WFD Summary Statement required?	Achievement of Any South East RBMP Mitigation Measures?	Details on how the specific South East RBMP Mitigation Measures have been attained (dark green = achieved; light green = partly achieved & red = not achieved)
	WFD 1	WFD2	WFD3	WFD4			
Ffraw (Transitional – T17) (PDZ part 17) (MAN 47)	N/A	✓	✓	✓	No - not necessary as delivery of the WFD Environmental Objectives will not be prevented by the SMP policies and in some cases will ensure they are of benefit.	There were no relevant measures to the SMP2 for this water body.	N/A

Location reference:	Rhosneigr
Management Area reference:	M.A. 48
Policy Development Zone:	PDZ17

* Note: Predicted shoreline mapping is based on a combination of monitoring data, analysis of historical maps and geomorphological assessment with allowance for sea level rise. Due to inherent uncertainties in predicting future change, these predictions are necessarily indicative. For use beyond the purpose of the shoreline management plan, reference should be made to the baseline data.

The following descriptions are provided to assist interpretation of the map shown overleaf.

100 year shoreline position:

The following maps aim to summarise the anticipated position of the shoreline in 100 years under the two scenarios of “With Present Management” and under the “Draft Preferred Policy” being put forward through the Shoreline Management Plan.

-  In some areas the preferred policy does not change from that under the existing management approach. In some areas where there are hard defences this can be accurately identified. In other areas there is greater uncertainty. Even so, where the shoreline is likely to be quite clearly defined by a change such as the crest of a cliff the estimated position is shown as a single line.
- Where there is a difference between With Present Management and the Draft Preferred Policy this distinction is made in showing two different lines:

-  With Present Management.
-  Draft Preferred Policy.

Flood Risk Zones



General Flood Risk Zones. The explanation of these zones is provided on the Environment Agency’s web site www.environment-agency.gov.uk. The maps within this Draft SMP document show where SMP policy might influence the management of flood risk.



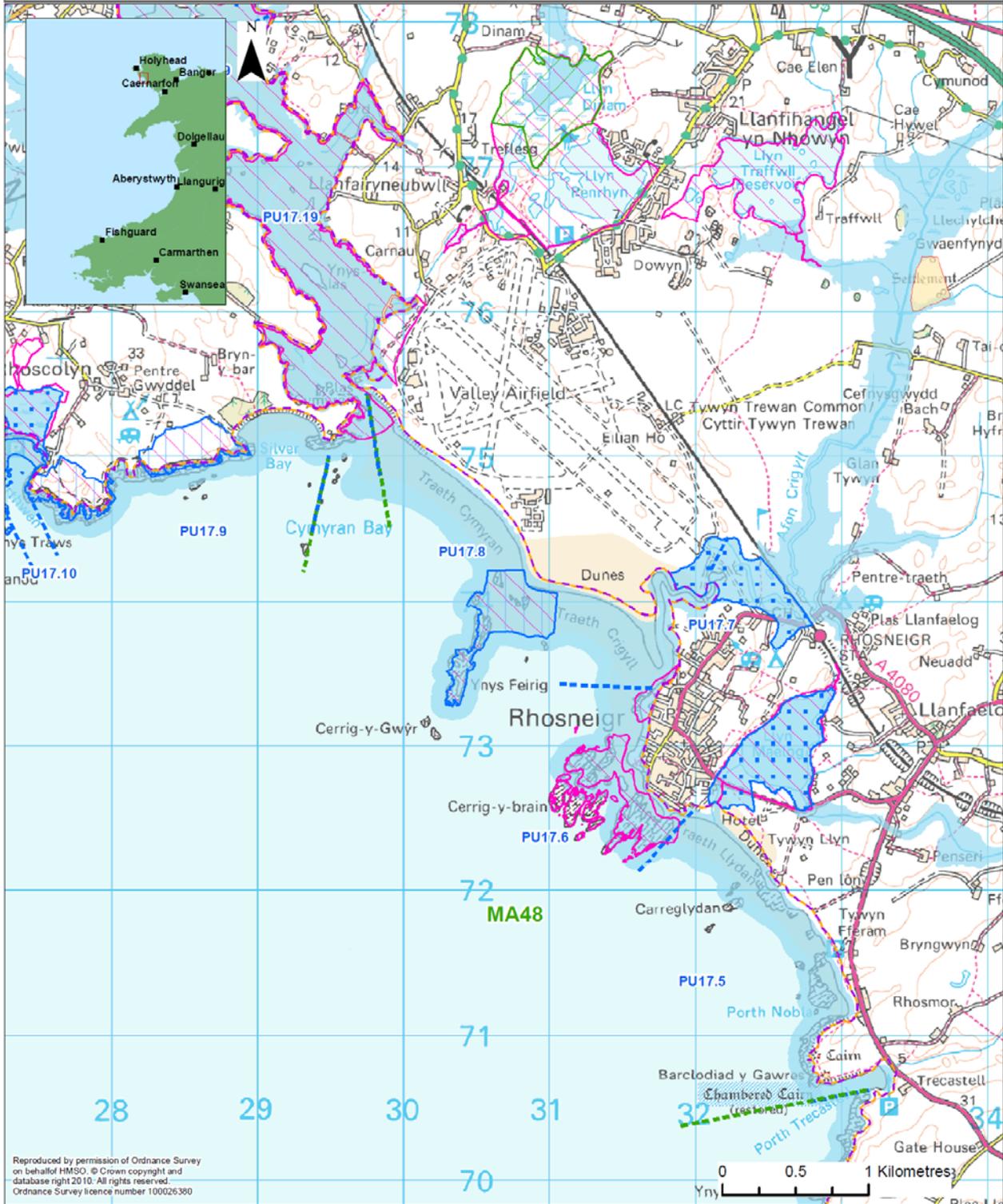
Indicate areas where the intent of the SMP draft policy is to continue to manage this risk.



Indicate where over the 100 years the policy would allow increased risk of flooding.

The maps should be read in conjunction with the text within the Draft SMP document.

**Shoreline Management Plan Sub Cell 10
Baseline Location Map
Management Area 48**



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Key	
	100 Year Shoreline Position:
	Preferred Policy would be the same as With Present Management
	With Present Management where this differs from the Preferred Policy
	Preferred Policy where this differs from the With Present Management
	Ramsar
	SAC
	SPA
	SSSI
	NNR
	Existing Indicative EA Flood Zone 3
	EA Flood Risk Zone 2 where under the SMP policy there would be increased probability of flooding



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SUMMARY OF PREFERRED PLAN RECOMMENDATIONS AND JUSTIFICATION

INTENT OF THE PLAN:

The main settlement in the area is Rhosneigr. The intent of the plan is that a more co-ordinated approach is taken to the continued defence of the town. Within this, consideration would be given to how, in the longer term defence may make use of natural features of the shoreline combined with realigning the back defence to ensure that the important amenity and defence function of the beach is retained under increased sea level rise. The intent of the plan is to maintain access to the town and maintaining the road network while allowing natural roll back of the dunes to the south and gradually increasing saline intrusion to Llyn Maelog.

In other areas, there is no significant economic justification for grant in aid support of private defences and the plan highlights that, with sea level rise, sustaining defences to Cerrig y Defaid would be increasingly difficult. While the plan would not preclude continued private defence, further extension of the defence would not be seen as sustainable and is likely to impact on the natural behaviour of the shoreline.

To the south of the town the intent would be to allow the natural roll back of the dunes. There is no indication that that this would result in significant risk to Valley but some facilities behind the dunes may need to be relocated.

KEY ISSUES/RISK AND UNCERTAINTY:

There are uncertainties in terms of timing of the impacts and change. There is a need for a detailed planned response to change. It will be important to relate this to national monitoring of sea level rise and more general climate change and to shoreline monitoring.

Long term defence measures at Rhosneigr will need to be developed with the community and sea front land owners, with the probable need for some defences to be moved back over private land.

ACTIONS:

ACTION	PARTNERS		
Shoreline monitoring	Ynys Mon Council		
Adaption planning	Ynys Mon Council		
<ul style="list-style-type: none"> ▪ Rhosneigr ▪ Cerrig y Defaid 	Communities	Highways	Landowners
Assess in detail potential impact on historic environment			
Examine opportunities for habitat adaptation	EA	CCW	
Examine in detail long term risk of flooding to landfill site.	Ynys Mon Council	EA	

DELIVERY OF THE PLAN

SUMMARY OF SPECIFIC POLICIES

Policy Unit		Policy Plan			Comment
		2025	2055	2105	
17.5	Porth Nobla to Rhosneigr	MR	MR	NAI	This would not preclude management of defences at Cerrig Defaid in the first two epochs.
17.6	Rhosneigr	HTL	HTL	MR	Develop long term realignment to a sustainable headland.
17.7	Crigyll valley south	HTL	HTL	HTL	Local defence to main access road.
17.8	Traeth Crigyll and Traeth Cymyran	NAI	NAI	NAI	Relocation of facilities to RAF Valley.
Key: HTL - Hold the Line, NAI – No Active Intervention MR – Managed Realignment					

PREFERRED POLICY TO IMPLEMENT PLAN:	
From present day	Support maintenance of existing defences and maintain defence to the roads.
Medium term	Support adaptation of existing defences, maintain defence to the roads and develop strategy for future defence at Rhosneigr.
Long term	Support relocation of property and implement defence strategy.

IMPLICATIONS OF THE PLAN

CHANGES FROM PRESENT MANAGEMENT

No substantial change in policy.

ECONOMIC SUMMARY

Economics (£k PV)	by 2025	by 2055	by 2105	Total £k PV
NAI Damages	32.9	264.0	664.8	961.7
Preferred Plan Damages	23.7	53.9	140.9	218.5
Benefits	9.3	210.1	523.9	743.2
Costs	0.0	519.1	344.5	863.6

FLOOD AND EROSION RISK MANAGEMENT

POTENTIAL LOSS

There is the potential loss of some seven properties during epoch 3 and continued residual flood risk to some 43 properties.

BENEFITS OF THE PLAN

The plan continues to provide protection to some 13 properties over all epochs and provides reduced flood risk to some 43 properties. The plan would maintain the town of the Rhosneigr and the transport network.

SUMMARY OF STRATEGIC ENVIRONMENTAL ASSESSMENT (INCLUDING HRA)

PDZ 17				
SEA Objective	Impact of Preferred Policy for each Epoch			
	1	2	3	Mitigation
Policy Units 17.1 to 17.23				
To support natural processes, maintain and enhance the integrity of internationally designated nature conservation sites. Maintain / achieve favourable condition of their interest features (habitats and species).				
To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition.				Habitat creation
To avoid adverse impacts on, conserve and where practical enhance national and local BAP habitats.				Habitat creation
To support natural processes and maintain geological exposures throughout nationally designated geological sites.				
To conserve and enhance nationally designated landscapes in relation to risks from coastal flooding and erosion and avoid conflict with AONB and National Park Management Plan Objectives.				Sensitive design of HTL and MR actions
To minimise coastal flood and erosion risk to scheduled and other internationally and nationally important cultural heritage assets, sites and their setting.				Excavation and recording
To minimise the impact of policies on marine operations and activities.				
To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.				
To minimise coastal flood and erosion risk to agricultural land and horticultural activities.				
To minimise coastal flood and erosion risk to people and residential property.				
To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.				
To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.				Relocation

Mitigation associated with the impacted features of the historic environment may include excavation and recording and monitoring of erosion rates.

This table provides a summary of the SEA (appendix E) and reference should be made to the Appendix for full details of the assessment.

These next two sections provide a headline summary of the findings of the HRA (Appendix G) and the WFA (Appendix H). Reference should be made as appropriate to these Appendices for full details.

HRA SUMMARY

The SMP policy in this PDZ provides a range of policies along the coastline including NAI, HTL and MR. PDZ 17 includes interest features of the Abermenai to Aberffraw Dunes SAC, Anglesey Coast: Saltmarsh SAC, Holy Island Coast SAC, Ynys Feurig, Cemlyn Bay and The Skerries SPA, and Holy Island Coast SPA.

Implications for the integrity of the Site: It is considered that adopting natural change along this area of coast (within the PUs that encompass the SACs and SPAs) will have **no adverse effect on the integrity** of the Abermenai to Aberffraw Dunes SAC, Anglesey Coast: Saltmarsh SAC, Holy Island Coast SAC, Ynys Feurig, Cemlyn Bay and The Skerries SPA, and Holy Island Coast SPA

SUMMARY CONCLUSION FROM THE WATER FRAMEWORK ASSESSMENT

Water body (and relevant PDZ)	Environmental Objectives met?				WFD Summary Statement required?	Achievement of Any South East RBMP Mitigation Measures?	Details on how the specific South East RBMP Mitigation Measures have been attained (dark green = achieved; light green = partly achieved & red = not achieved)
	WFD 1	WFD2	WFD3	WFD4			
Caernarfon Bay North (Coastal – C7) (PDZ part 16, part 17 and part 18) (MAN part 41, part 48, 49, part 50 and part 53)	N/A	✓	✓	✓	No - not necessary as delivery of the WFD Environmental Objectives will not be prevented by the SMP policies and in some cases will ensure they are of benefit.	There were no relevant measures to the SMP2 for this water body.	N/A
Cymyran Bay (Coastal – C9)	N/A	✓	✓	x (PDZ 17)	Yes – Environmental Objective WFD4 may not be met because of the SMPs policy in PDZ17 (MAN 48).	There were no relevant measures to the SMP2 for this water body.	N/A

Water body (including the PUs that affect it)	WFD Summary Statement checklist	A brief description of decision making and reference to further documentation within the SMP
Cymyran Bay (Coastal – C9) PU17.8 (WFD 4)	Mitigation measures: have all practicable mitigation measures been incorporated into the preferred SMP policies that affect this water body in order to mitigate the adverse impacts on the status of the	RBMP mitigation measures incorporated into SMP policies: <ul style="list-style-type: none"> There were no mitigation measures in the Western Wales RBMP for this Coastal Water Body. Other potential mitigation measures that could be required: <ul style="list-style-type: none"> The landfill site and local council to be aware of the future risk of tidal flooding to the landfill site to a 1 in 1000 year flood and the implications this could have on the GWB.

Water body (including the PUs that affect it)	WFD Summary Statement checklist	A brief description of decision making and reference to further documentation within the SMP
	water body? If not, then list mitigation measures that could be required.	
	Other issues: Can it be shown that there are no other over-riding issues that should be considered (e.g. designated sites, recommendations of the Appropriate Assessment)?	There are no Natural 2000 sites for this policy unit or within the adjacent policy units. The only area that is designated is the Traeth Cymyran headland, which is a SSSI (Ynys Feurig). The NAI policy will support this policy.

Location reference:	West Holy Island
Management Area reference:	M.A. 49
Policy Development Zone:	PDZ17

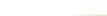
* Note: Predicted shoreline mapping is based on a combination of monitoring data, analysis of historical maps and geomorphological assessment with allowance for sea level rise. Due to inherent uncertainties in predicting future change, these predictions are necessarily indicative. For use beyond the purpose of the shoreline management plan, reference should be made to the baseline data.

The following descriptions are provided to assist interpretation of the map shown overleaf.

100 year shoreline position:

The following maps aim to summarise the anticipated position of the shoreline in 100 years under the two scenarios of “With Present Management” and under the “Draft Preferred Policy” being put forward through the Shoreline Management Plan.

-  In some areas the preferred policy does not change from that under the existing management approach. In some areas where there are hard defences this can be accurately identified. In other areas there is greater uncertainty. Even so, where the shoreline is likely to be quite clearly defined by a change such as the crest of a cliff the estimated position is shown as a single line.
- Where there is a difference between With Present Management and the Draft Preferred Policy this distinction is made in showing two different lines:

-  With Present Management.
-  Draft Preferred Policy.

Flood Risk Zones

-  General Flood Risk Zones. The explanation of these zones is provided on the Environment Agency’s web site www.environment-agency.gov.uk. The maps within this Draft SMP document show where SMP policy might influence the management of flood risk.
-  Indicate areas where the intent of the SMP draft policy is to continue to manage this risk.
-  Indicate where over the 100 years the policy would allow increased risk of flooding.

The maps should be read in conjunction with the text within the Draft SMP document.

**Shoreline Management Plan Sub Cell 10
Baseline Location Map
Management Area 49, 50, 51 & 52**

- Management Area
- Scheduled Monument
- Policy Unit
- Policy Development Zone



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<p>Key</p> <ul style="list-style-type: none"> — 100 Year Shoreline Position: — Preferred Policy would be the same as With Present Management — With Present Management where this differs from the Preferred Policy — Preferred Policy where this differs from the With Present Management 	<ul style="list-style-type: none"> Ramsar SAC SPA SSSI NNR 	<ul style="list-style-type: none"> Existing Indicative EA Flood Zone 3 EA Flood Risk Zone 2 where under the SMP policy there would be increased probability of flooding 	
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SUMMARY OF PREFERRED PLAN RECOMMENDATIONS AND JUSTIFICATION

INTENT OF THE PLAN:

The main focus for management is within the small bays, the communities and road network throughout the area. The intent of the plan is to allow the natural coast to continue to function naturally through ongoing erosion to support both the outstanding landscape and nature conservation.

Within the small bays and coves identified at risk within the plan, the intent would be to maintain local defences. The future defence approach is likely to need to change, to maintain the important function of beaches as part of the defence system. While the general approach would be to Hold the Line, locally this may require that sections of road are realigned or defences adapted to accept increased overtopping. Within Trearddur Bay, there may be a need for future work, in epoch 3, to help retain beach levels. This may require works to modify wave energy in the nearshore area.

At Borthwen, the existing wall is having a significant impact on the behaviour of the beach and dune. The intent here would be for local realignment to sustain use of the area.

KEY ISSUES/RISK AND UNCERTAINTY:

There are uncertainties in terms of timing of impacts and change in approach to defence. The response to change is will need to be planned in advance. It will be important to relate this to national monitoring of sea level rise and more general climate change and local monitoring of overtopping and beach behaviour.

There is generally a good economic benefit in support of local defence. Even so there will need to be discussion of adaptation with local communities.

ACTIONS:

ACTION	PARTNERS
Local shoreline monitoring and record of overtopping	Ynys Mon Council
Adaption planning of defence management	Ynys Mon Council Communities Highways
Local strategy for management at Borthwen	Ynys Mon Council Community
Assess in detail potential impact on historic environment	

DELIVERY OF THE PLAN

SUMMARY OF SPECIFIC POLICIES

Policy Unit		Policy Plan			Comment
		2025	2055	2105	
17.9	General policy for Southwest	MR	MR	MR	Management to local bays is defined below.
17.10	Borthwen	MR	MR	NAI	This would not preclude local private defence subject to normal approvals.
17.11	Porth Diana	HTL	HTL	HTL	Adaptation of defence in the long term to sustain the beach.
17.12	Trearddur	HTL	HTL	HTL	Adaptation of defence in the long term to sustain the beach.
17.13	Porth Dafarch	HTL	HTL	HTL	Adaptation of defence in the long term to sustain the beach.
17.14	Northwest coast	NAI	NAI	NAI	

Key: HTL - Hold the Line, , NAI – No Active Intervention MR – Managed Realignment

PREFERRED POLICY TO IMPLEMENT PLAN:	
From present day	Maintain existing defences. Develop local strategy at Borthwen.
Medium term	Maintain defences while moving towards adaptive management
Long term	Maintain defences while moving towards adaptive management.

IMPLICATIONS OF THE PLAN

CHANGES FROM PRESENT MANAGEMENT

In principle the approach to management remains the same, with the intent to sustain the local communities and the transport net work.

ECONOMIC SUMMARY

Economics (£k PV)	by 2025	by 2055	by 2105	Total £k PV
NAI Damages	872.1	1,745.7	3,415.6	6,033.4
Preferred Plan Damages	324.1	427.0	485.6	1,236.8
Benefits	548.0	1,318.7	2,930.0	4,796.6
Costs	0.0	53.7	95.0	148.7

FLOOD AND EROSION RISK MANAGEMENT

POTENTIAL LOSS

There is may be long term loss of property due to slow erosion of the general shoreline. There would also be continued residual risk of flooding to properties.

BENEFITS OF THE PLAN

The plan provides a longer term sustainable approach to defence of communities and the essential road network. The plan would continue to provide protection to some seven properties while also reducing flood risk to some 200 properties in the area.

SUMMARY OF STRATEGIC ENVIRONMENTAL ASSESSMENT (INCLUDING HRA)

PDZ 17				
SEA Objective	Impact of Preferred Policy for each Epoch			
	1	2	3	Mitigation
Policy Units 17.1 to 17.23				
To support natural processes, maintain and enhance the integrity of internationally designated nature conservation sites. Maintain / achieve favourable condition of their interest features (habitats and species).				
To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition.				Habitat creation
To avoid adverse impacts on, conserve and where practical enhance national and local BAP habitats.				Habitat creation
To support natural processes and maintain geological exposures throughout nationally designated geological sites.				
To conserve and enhance nationally designated landscapes in relation to risks from coastal flooding and erosion and avoid conflict with AONB and National Park Management Plan Objectives.				Sensitive design of HTL and MR actions
To minimise coastal flood and erosion risk to scheduled and other internationally and nationally important cultural heritage assets, sites and their setting.				Excavation and recording
To minimise the impact of policies on marine operations and activities.				
To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.				
To minimise coastal flood and erosion risk to agricultural land and horticultural activities.				
To minimise coastal flood and erosion risk to people and residential property.				
To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.				
To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.				Relocation

Mitigation associated with the impacted features of the historic environment may include excavation and recording and monitoring of erosion rates.

This table provides a summary of the SEA (appendix E) and reference should be made to the Appendix for full details of the assessment.

These next two sections provide a headline summary of the findings of the HRA (Appendix G) and the WFA (Appendix H). Reference should be made as appropriate to these Appendices for full details.

HRA SUMMARY

The SMP policy in this PDZ provides a range of policies along the coastline including NAI, HTL and MR. PDZ 17 includes interest features of the Abermenai to Aberffraw Dunes SAC, Anglesey Coast: Saltmarsh SAC, Holy Island Coast SAC, Ynys Feurig, Cemlyn Bay and The Skerries SPA, and Holy Island Coast SPA.

Implications for the integrity of the Site: It is considered that adopting natural change along this area of coast (within the PUs that encompass the SACs and SPAs) will have **no adverse effect on the integrity** of the Abermenai to Aberffraw Dunes SAC, Anglesey Coast: Saltmarsh SAC, Holy Island Coast SAC, Ynys Feurig, Cemlyn Bay and The Skerries SPA, and Holy Island Coast SPA.

SUMMARY CONCLUSION FROM THE WATER FRAMEWORK ASSESSMENT

Water body (and relevant PDZ)	Environmental Objectives met?				WFD Summary Statement required?	Achievement of Any South East RBMP Mitigation Measures?	Details on how the specific South East RBMP Mitigation Measures have been attained (dark green = achieved; light green = partly achieved & red = not achieved)
	WFD 1	WFD2	WFD3	WFD4			
Caernarfon Bay North (Coastal – C7) (PDZ part 16, part 17 and part 18) (MAN part 41, part 48, 49, part 50 and part 53)	N/A	✓	✓	✓	No - not necessary as delivery of the WFD Environmental Objectives will not be prevented by the SMP policies and in some cases will ensure they are of benefit.	There were no relevant measures to the SMP2 for this water body.	N/A

Location reference:	Holyhead and Penrhos
Management Area reference:	M.A. 50
Policy Development Zone:	PDZ17

* Note: Predicted shoreline mapping is based on a combination of monitoring data, analysis of historical maps and geomorphological assessment with allowance for sea level rise. Due to inherent uncertainties in predicting future change, these predictions are necessarily indicative. For use beyond the purpose of the shoreline management plan, reference should be made to the baseline data.

The following descriptions are provided to assist interpretation of the map shown overleaf.

100 year shoreline position:

The following maps aim to summarise the anticipated position of the shoreline in 100 years under the two scenarios of “With Present Management” and under the “Draft Preferred Policy” being put forward through the Shoreline Management Plan.

-  In some areas the preferred policy does not change from that under the existing management approach. In some areas where there are hard defences this can be accurately identified. In other areas there is greater uncertainty. Even so, where the shoreline is likely to be quite clearly defined by a change such as the crest of a cliff the estimated position is shown as a single line.
- Where there is a difference between With Present Management and the Draft Preferred Policy this distinction is made in showing two different lines:

-  With Present Management.
-  Draft Preferred Policy.

Flood Risk Zones

-  General Flood Risk Zones. The explanation of these zones is provided on the Environment Agency’s web site www.environment-agency.gov.uk. The maps within this Draft SMP document show where SMP policy might influence the management of flood risk.
-  Indicate areas where the intent of the SMP draft policy is to continue to manage this risk.
-  Indicate where over the 100 years the policy would allow increased risk of flooding.

The maps should be read in conjunction with the text within the Draft SMP document.

**Shoreline Management Plan Sub Cell 10
Baseline Location Map
Management Area 49, 50, 51 & 52**

- Management Area
- Scheduled Monument
- Policy Unit
- Policy Development Zone



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Key	100 Year Shoreline Position: Preferred Policy would be the same as With Present Management	Ramsar	Existing Indicative EA Flood Zone 3
With Present Management where this differs from the Preferred Policy	SAC	SPA	EA Flood Risk Zone 2 where under the SMP policy there would be increased probability of flooding
Preferred Policy where this differs from the With Present Management	SSSI	NNR	



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SUMMARY OF PREFERRED PLAN RECOMMENDATIONS AND JUSTIFICATION

INTENT OF THE PLAN:

The intent of the plan is to sustain the important economic and transport hub of Holyhead, together with the associated essential infrastructure and main industry. Where possible, opportunity to maintain the width within the natural defence system in areas such as Penrhos Bay, providing both a sustainable approach to defence and promoting the natural behaviour and function of the shoreline.

Defence would be maintained to the main port area of Holyhead and the town. At Penrhos Bay the intent would be to allow the backshore area to adapt to sea level rise, examining the need for a retired flood defence line. Locally, around Penrhos headland, the intent would be for no active intervention. This would not preclude private maintenance of local defences, subject to normal approvals. This would not include, however, extension of defence or improvement that would impact on the nature conservation value or the landscape.

The intent of the plan is to maintain the Stanley Embankment to sustain the important transport links.

KEY ISSUES/RISK AND UNCERTAINTY:

There are uncertainties in terms of timing of impacts and the necessary response to such change. There is, however, a need for a detailed planned response to change in advance. It will be important to relate this to national monitoring of sea level rise and more general climate change.

Defence at Holyhead is clearly linked to operation of the port and management of the main breakwater. As such defence in this area would need to be co-ordinated and would look towards a joint funding approach to management.

ACTIONS:

ACTION	PARTNERS
Shoreline monitoring	Ynys Mon Council
Planning approach to realignment at Penrhos Bay	EA Industry Highways Ynys Mon Council
Assess in detail potential impact on historic environment	

DELIVERY OF THE PLAN

SUMMARY OF SPECIFIC POLICIES

Policy Unit		Policy Plan			Comment
		2025	2055	2105	
17.15	Holyhead	HTL	HTL	HTL	
17.16	Penrhos Bay	MR	MR	MR	Examination of potential flood risk.
17.17	Penrhos Headland	NAI	NAI	NAI	This would not preclude local private defence subject to normal approvals.
17.18	Stanley Embankment	HTL	HTL	HTL	
Key: HTL - Hold the Line, NAI – No Active Intervention MR – Managed Realignment					

PREFERRED POLICY TO IMPLEMENT PLAN:	
From present day	Maintain existing defences. Develop realignment approach at Penrhos Bay.
Medium term	Maintain existing defences. Realignment at Penrhos Bay.
Long term	Maintain existing defences.

IMPLICATIONS OF THE PLAN

CHANGES FROM PRESENT MANAGEMENT

No substantial change in policy, but with more specific emphasis on realignment to Penrhos Bay.

ECONOMIC SUMMARY

Economics (£k PV)	by 2025	by 2055	by 2105	Total £k PV
NAI Damages	1,184.8	3,319.3	3,385.8	7,889.9
Preferred Plan Damages	579.9	535.9	526.4	1,642.3
Benefits	604.8	2,783.4	2,859.4	6,247.7
Costs	0.0	481.2	295.8	777.0

FLOOD AND EROSION RISK MANAGEMENT

POTENTIAL LOSS

There would be continued residual flood risk to properties in the Holyhead area.

BENEFITS OF THE PLAN

The plan continues to maintain the important economic and transport hub of Holyhead. Under the plan there would be reduced flood risk to 130 properties.

SUMMARY OF STRATEGIC ENVIRONMENTAL ASSESSMENT (INCLUDING HRA)

PDZ 17				
SEA Objective	Impact of Preferred Policy for each Epoch			
	1	2	3	Mitigation
Policy Units 17.1 to 17.23				
To support natural processes, maintain and enhance the integrity of internationally designated nature conservation sites. Maintain / achieve favourable condition of their interest features (habitats and species).				
To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition.				Habitat creation
To avoid adverse impacts on, conserve and where practical enhance national and local BAP habitats.				Habitat creation
To support natural processes and maintain geological exposures throughout nationally designated geological sites.				
To conserve and enhance nationally designated landscapes in relation to risks from coastal flooding and erosion and avoid conflict with AONB and National Park Management Plan Objectives.				Sensitive design of HTL and MR actions
To minimise coastal flood and erosion risk to scheduled and other internationally and nationally important cultural heritage assets, sites and their setting.				Excavation and recording
To minimise the impact of policies on marine operations and activities.				
To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.				
To minimise coastal flood and erosion risk to agricultural land and horticultural activities.				
To minimise coastal flood and erosion risk to people and residential property.				
To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.				
To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.				Relocation

Mitigation associated with the impacted features of the historic environment may include excavation and recording and monitoring of erosion rates.

This table provides a summary of the SEA (appendix E) and reference should be made to the Appendix for full details of the assessment.

These next two sections provide a headline summary of the findings of the HRA (Appendix G) and the WFA (Appendix H). Reference should be made as appropriate to these Appendices for full details.

HRA SUMMARY

The SMP policy in this PDZ provides a range of policies along the coastline including NAI, HTL and MR. PDZ 17 includes interest features of the Abermenai to Aberffraw Dunes SAC, Anglesey Coast: Saltmarsh SAC, Holy Island Coast SAC, Ynys Feurig, Cemlyn Bay and The Skerries SPA, and Holy Island Coast SPA.

Implications for the integrity of the Site: It is considered that adopting natural change along this area of coast (within the PUs that encompass the SACs and SPAs) will have **no adverse effect on the integrity** of the Abermenai to Aberffraw Dunes SAC, Anglesey Coast: Saltmarsh SAC, Holy Island Coast SAC, Ynys Feurig, Cemlyn Bay and The Skerries SPA, and Holy Island Coast SPA.

SUMMARY CONCLUSION FROM THE WATER FRAMEWORK ASSESSMENT

Water body (and relevant PDZ)	Environmental Objectives met?				WFD Summary Statement required?	Achievement of Any South East RBMP Mitigation Measures?	Details on how the specific South East RBMP Mitigation Measures have been attained (dark green = achieved; light green = partly achieved & red = not achieved)
	WFD 1	WFD2	WFD3	WFD4			
Caernarfon Bay North (Coastal – C7) (PDZ part 16, part 17 and part 18) (MAN part 41, part 48, 49, part 50 and part 53)	N/A	✓	✓	✓	No - not necessary as delivery of the WFD Environmental Objectives will not be prevented by the SMP policies and in some cases will ensure they are of benefit.	There were no relevant measures to the SMP2 for this water body.	N/A
Holyhead Bay (Coastal – C10) (PDZ part 17) (MAN part 50, part 52)	N/A	x (PDZ 17)	✓	✓	Yes – Environmental Objective WFD3 may not be met because of the SMPs policy in PDZ17 (MAN 50).	Yes (partly) – One of the six relevant mitigation measures for this water body has been implemented, which then provides potential for other measures to be put in place.	<ul style="list-style-type: none"> • Managed realignment of flood defence – MR of Penrhos Bay (PU 17.16) will allow the bay to roll back and create a deeper beach (with the exception of private defences e.g. aluminium works). • Bank rehabilitation / re-profiling – could be implemented as part of the MR. • Removal of hard bank reinforcement – if there are obsolete structures in place along the MR location these could be removed. • Modify structure or reclamation – this is likely to be referring to the Holyhead area and this has not been implemented.
Holyhead Strait (Coastal) (PDZ part 17)	N/A	✓	✓	✓	No - not necessary as delivery of the WFD Environmental Objectives will not be	There were no relevant measures to the SMP2 for this water body.	N/A

Water body (and relevant PDZ)	Environmental Objectives met?				WFD Summary Statement required?	Achievement of Any South East RBMP Mitigation Measures?	Details on how the specific South East RBMP Mitigation Measures have been attained (dark green = achieved; light green = partly achieved & red = not achieved)
	WFD 1	WFD2	WFD3	WFD4			
(MAN part 50, 51 and part 52)					prevented by the SMP policies and in some cases will ensure they are of benefit.		

Water body (including the PUs that affect it)	WFD Summary Statement checklist	A brief description of decision making and reference to further documentation within the SMP
Holyhead Bay (Coastal – C10) PU17.15 (WFD 2)	<p>Mitigation measures: have all practicable mitigation measures been incorporated into the preferred SMP policies that affect this water body in order to mitigate the adverse impacts on the status of the water body? If not, then list mitigation measures that could be required.</p>	<p>RBMP mitigation measures incorporated into SMP policies:</p> <ul style="list-style-type: none"> One of the mitigation measures in the Western Wales RBMP for this transitional water body is to be implemented through the SMP2 policies within PU 17.16 at Penrhos Bay, which will allow the bay to roll back and create a deeper beach. This will allow a more natural realignment of this part of the coast enabling adaptation in response to sea level rise, by eroding back and accreting sediments along the foreshore, and thus improve the benthic invertebrate communities. This policy also has the potential to achieve other mitigation measures, though this will depend on how the MR is determined, for example, bank rehabilitation / re-profiling and removal of hard bank reinforcement for any obsolete structures.
	<p>Other issues: Can it be shown that there are no other over-riding issues that should be considered (e.g. designated sites, recommendations of the Appropriate Assessment)?</p>	<p>There are no Natura 2000 sites or SSSIs adjacent to or within the vicinity of PU 17.15.</p>

Location reference:	Inland Sea
Management Area reference:	M.A. 51
Policy Development Zone:	PDZ17

* Note: Predicted shoreline mapping is based on a combination of monitoring data, analysis of historical maps and geomorphological assessment with allowance for sea level rise. Due to inherent uncertainties in predicting future change, these predictions are necessarily indicative. For use beyond the purpose of the shoreline management plan, reference should be made to the baseline data.

The following descriptions are provided to assist interpretation of the map shown overleaf.

100 year shoreline position:

The following maps aim to summarise the anticipated position of the shoreline in 100 years under the two scenarios of “With Present Management” and under the “Draft Preferred Policy” being put forward through the Shoreline Management Plan.

-  In some areas the preferred policy does not change from that under the existing management approach. In some areas where there are hard defences this can be accurately identified. In other areas there is greater uncertainty. Even so, where the shoreline is likely to be quite clearly defined by a change such as the crest of a cliff the estimated position is shown as a single line.
- Where there is a difference between With Present Management and the Draft Preferred Policy this distinction is made in showing two different lines:

-  With Present Management.
-  Draft Preferred Policy.

Flood Risk Zones

-  General Flood Risk Zones. The explanation of these zones is provided on the Environment Agency’s web site www.environment-agency.gov.uk. The maps within this Draft SMP document show where SMP policy might influence the management of flood risk.
-  Indicate areas where the intent of the SMP draft policy is to continue to manage this risk.
-  Indicate where over the 100 years the policy would allow increased risk of flooding.

The maps should be read in conjunction with the text within the Draft SMP document.

**Shoreline Management Plan Sub Cell 10
Baseline Location Map
Management Area 49, 50, 51 & 52**

- Management Area
- Scheduled Monument
- Policy Unit
- Policy Development Zone



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Key	100 Year Shoreline Position: <ul style="list-style-type: none"> — Preferred Policy would be the same as With Present Management — With Present Management where this differs from the Preferred Policy — Preferred Policy where this differs from the With Present Management 	<ul style="list-style-type: none"> Ramsar SAC SPA SSSI NNR 	<ul style="list-style-type: none"> Existing Indicative EA Flood Zone 3 EA Flood Risk Zone 2 where under the SMP policy there would be increased probability of flooding
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SUMMARY OF PREFERRED PLAN RECOMMENDATIONS AND JUSTIFICATION

INTENT OF THE PLAN:

The overall intent in this area would be to allow natural development of the strait, in particular increased flooding within the creeks and inlets off the main channel, allowing adaption of habitat within the area. This would not preclude local management at the Four Mile Bridge to sustain the road, nor would it preclude local defence, particularly to the back of Trearddur to reduce flood risk. This defence would be set back. The defence to the village of Valley would be maintained. However, there would need to be consideration in terms of long term planning as to how the development in this area needs to adapt in the future with increased sea level rise and climate change.

KEY ISSUES/RISK AND UNCERTAINTY:

There are uncertainties in terms of timing of impacts and increase in flood risk. There is also a need for a detailed planned response to change in flood risk to Valley. It will be important to relate this to national monitoring of sea level rise and more general climate change.

ACTIONS:

ACTION	PARTNERS	
Long term adaption planning for Valley	Ynys Mon Council	EA
Assess in detail potential impact on historic environment		
Examine opportunities for habitat creation and adaptation, alongside consideration of local flood defence.	EA	CCW

DELIVERY OF THE PLAN

SUMMARY OF SPECIFIC POLICIES

Policy Unit		Policy Plan			Comment
		2025	2055	2105	
17.19	General policy for Inland Sea	MR	MR	MR	Local defence to sustain Four Mile Bridge and local defence against flood within hinterland.
17.20	Valley	HTL	HTL	HTL	Long term planning to reduce residual flood risk.
Key: HTL - Hold the Line, NAI – No Active Intervention MR – Managed Realignment					

PREFERRED POLICY TO IMPLEMENT PLAN:	
From present day	Maintain existing defences. Develop habitat planning.
Medium term	Maintain defences while moving towards adaptive management.
Long term	Adaption planning for Valley.

IMPLICATIONS OF THE PLAN

CHANGES FROM PRESENT MANAGEMENT

Slight change in approach, allowing greater management of adaptation and opportunity for habitat creation.

ECONOMIC SUMMARY

Economics (£k PV)	by 2025	by 2055	by 2105	Total £k PV
NAI Damages	1,400.0	4,071.6	4,624.9	10,096.5
Preferred Plan Damages	712.4	689.1	768.0	2,169.4
Benefits	687.6	3,382.6	3,856.9	7,927.1
Costs	0.0	76.9	60.1	137.0

FLOOD AND EROSION RISK MANAGEMENT

POTENTIAL LOSS

There would be significant and increasing residual flood risk over the period of the plan to properties in Valley.

BENEFITS OF THE PLAN

The plan provides a longer term sustainable approach to local defence, while maintaining the overall natural function of the In Land Sea area. The plan reduces flood risk to some 200 properties, while accepting that there would still be increased residual risk in the future.

SUMMARY OF STRATEGIC ENVIRONMENTAL ASSESSMENT (INCLUDING HRA)

PDZ 17

SEA Objective	Impact of Preferred Policy for each Epoch			
	1	2	3	Mitigation
Policy Units 17.1 to 17.23				
To support natural processes, maintain and enhance the integrity of internationally designated nature conservation sites. Maintain / achieve favourable condition of their interest features (habitats and species).				
To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition.				Habitat creation
To avoid adverse impacts on, conserve and where practical enhance national and local BAP habitats.				Habitat creation
To support natural processes and maintain geological exposures throughout nationally designated geological sites.				
To conserve and enhance nationally designated landscapes in relation to risks from coastal flooding and erosion and avoid conflict with AONB and National Park Management Plan Objectives.				Sensitive design of HTL and MR actions
To minimise coastal flood and erosion risk to scheduled and other internationally and nationally important cultural heritage assets, sites and their setting.				Excavation and recording
To minimise the impact of policies on marine operations and activities.				
To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.				
To minimise coastal flood and erosion risk to agricultural land and horticultural activities.				
To minimise coastal flood and erosion risk to people and residential property.				
To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.				
To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.				Relocation

Mitigation associated with the impacted features of the historic environment may include excavation and recording and monitoring of erosion rates.

This table provides a summary of the SEA (appendix E) and reference should be made to the Appendix for full details of the assessment.

These next two sections provide a headline summary of the findings of the HRA (Appendix G) and the WFA (Appendix H). Reference should be made as appropriate to these Appendices for full details.

HRA SUMMARY

The SMP policy in this PDZ provides a range of policies along the coastline including NAI, HTL and MR. PDZ 17 includes interest features of the Abermenai to Aberffraw Dunes SAC, Anglesey Coast: Saltmarsh SAC, Holy Island Coast SAC, Ynys Feurig, Cemlyn Bay and The Skerries SPA, and Holy Island Coast SPA.

Implications for the integrity of the Site: It is considered that adopting natural change along this area of coast (within the PUs that encompass the SACs and SPAs) will have **no adverse effect on the integrity** of the Abermenai to Aberffraw Dunes SAC, Anglesey Coast: Saltmarsh SAC, Holy Island Coast SAC, Ynys Feurig, Cemlyn Bay and The Skerries SPA, and Holy Island Coast SPA.

SUMMARY CONCLUSION FROM THE WATER FRAMEWORK ASSESSMENT

Water body (and relevant PDZ)	Environmental Objectives met?				WFD Summary Statement required?	Achievement of Any South East RBMP Mitigation Measures?	Details on how the specific South East RBMP Mitigation Measures have been attained (dark green = achieved; light green = partly achieved & red = not achieved)
	WFD 1	WFD2	WFD3	WFD4			
Holyhead Strait (Coastal) (PDZ part 17) (MAN part 50, 51 and part 52)	N/A	✓	✓	✓	No - not necessary as delivery of the WFD Environmental Objectives will not be prevented by the SMP policies and in some cases will ensure they are of benefit.	There were no relevant measures to the SMP2 for this water body.	N/A

Location reference:	Newlands and Afon Alaw
Management Area reference:	M.A. 52
Policy Development Zone:	PDZ17

* Note: Predicted shoreline mapping is based on a combination of monitoring data, analysis of historical maps and geomorphological assessment with allowance for sea level rise. Due to inherent uncertainties in predicting future change, these predictions are necessarily indicative. For use beyond the purpose of the shoreline management plan, reference should be made to the baseline data.

The following descriptions are provided to assist interpretation of the map shown overleaf.

100 year shoreline position:

The following maps aim to summarise the anticipated position of the shoreline in 100 years under the two scenarios of "With Present Management" and under the "Draft Preferred Policy" being put forward through the Shoreline Management Plan.

-  In some areas the preferred policy does not change from that under the existing management approach. In some areas where there are hard defences this can be accurately identified. In other areas there is greater uncertainty. Even so, where the shoreline is likely to be quite clearly defined by a change such as the crest of a cliff the estimated position is shown as a single line.
- Where there is a difference between With Present Management and the Draft Preferred Policy this distinction is made in showing two different lines:

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Flood Risk Zones



General Flood Risk Zones. The explanation of these zones is provided on the Environment Agency's web site www.environment-agency.gov.uk. The maps within this Draft SMP document show where SMP policy might influence the management of flood risk.



Indicate areas where the intent of the SMP draft policy is to continue to manage this risk.



Indicate where over the 100 years the policy would allow increased risk of flooding.

The maps should be read in conjunction with the text within the Draft SMP document.

**Shoreline Management Plan Sub Cell 10
Baseline Location Map
Management Area 49, 50, 51 & 52**

- Management Area
- Scheduled Monument
- Policy Unit
- Policy Development Zone



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Key	100 Year Shoreline Position: <ul style="list-style-type: none"> — Preferred Policy would be the same as With Present Management — With Present Management where this differs from the Preferred Policy — Preferred Policy where this differs from the With Present Management 	<ul style="list-style-type: none"> Ramsar SAC SPA SSSI NNR 	<ul style="list-style-type: none"> Existing Indicative EA Flood Zone 3 EA Flood Risk Zone 2 where under the SMP policy there would be increased probability of flooding
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SUMMARY OF PREFERRED PLAN RECOMMENDATIONS AND JUSTIFICATION

INTENT OF THE PLAN:

The intent of the plan is to allow the natural development of the shoreline, while recognising the need to manage this change with respect to the new development at Newlands and the flood risk within the Afon Alaw valley.

The intent of the plan would be to control erosion of the Newlands Cliff to prolong the life of property without attempting to defend the whole frontage. Local existing defence elsewhere along the frontage could be maintained initially but the intent would be that such defence was not extended or significantly reinforced.

KEY ISSUES/RISK AND UNCERTAINTY:

There are uncertainties in terms of timing of the proposed change to the coast. There is also a need for a detailed planned response to change. It will be important to relate this to national monitoring of sea level rise and more general climate change and to monitoring of cliff behaviour and general foreshore monitoring.

The overall approach would be to support adaption of local defence and this is likely to require collaborative funding.

ACTIONS:

ACTION	PARTNERS
Shoreline monitoring	Ynys Mon Council
Adaption planning	Ynys Mon Council
▪ Newlands	Communities
▪ Porth Penrhyn-mawr.	EA
▪ Afon Alaw	Landowners
Examine opportunity for habitat creation.	EA CCW

DELIVERY OF THE PLAN

SUMMARY OF SPECIFIC POLICIES

Policy Unit		Policy Plan			Comment
		2025	2055	2105	
17.21	Newlands	MR	MR	MR	Co-ordinated approach to slowing erosion.
17.22	Afon Alaw	MR	MR	MR	Long term planning to reduce residual flood risk.
17.23	Traeth Gribin to Twyn Cliperau	MR	MR	MR	This would not preclude local private defence subject to normal approvals.
Key: HTL - Hold the Line, NAI – No Active Intervention MR – Managed Realignment					

PREFERRED POLICY TO IMPLEMENT PLAN:	
From present day	Adapt existing defences. Develop adaptation planning.
Medium term	Adapt existing defences. Develop adaptation planning.
Long term	Adapt existing defences. Develop adaptation planning.

IMPLICATIONS OF THE PLAN

CHANGES FROM PRESENT MANAGEMENT

No substantial change in policy.

ECONOMIC SUMMARY

Economics (£k PV)	by 2025	by 2055	by 2105	Total £k PV
NAI Damages	3.3	79.3	153.9	236.5
Preferred Plan Damages	2.8	7.4	99.3	109.4
Benefits	0.5	71.9	54.7	127.1
Costs	0.0	213.6	177.5	391.1

FLOOD AND EROSION RISK MANAGEMENT

POTENTIAL LOSS

There is likely to be loss of property and continued flood risk.

BENEFITS OF THE PLAN

The plan provides a longer term sustainable approach to defence, adapting defence to prolong life of some 6 properties. Through adaptive management flood risk would be reduced to some 8 properties.

SUMMARY OF STRATEGIC ENVIRONMENTAL ASSESSMENT (INCLUDING HRA)

PDZ 17				
SEA Objective	Impact of Preferred Policy for each Epoch			
	1	2	3	Mitigation
Policy Units 17.1 to 17.23				
To support natural processes, maintain and enhance the integrity of internationally designated nature conservation sites. Maintain / achieve favourable condition of their interest features (habitats and species).				
To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition.				Habitat creation
To avoid adverse impacts on, conserve and where practical enhance national and local BAP habitats.				Habitat creation
To support natural processes and maintain geological exposures throughout nationally designated geological sites.				
To conserve and enhance nationally designated landscapes in relation to risks from coastal flooding and erosion and avoid conflict with AONB and National Park Management Plan Objectives.				Sensitive design of HTL and MR actions
To minimise coastal flood and erosion risk to scheduled and other internationally and nationally important cultural heritage assets, sites and their setting.				Excavation and recording
To minimise the impact of policies on marine operations and activities.				
To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.				
To minimise coastal flood and erosion risk to agricultural land and horticultural activities.				
To minimise coastal flood and erosion risk to people and residential property.				
To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.				
To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.				Relocation

Mitigation associated with the impacted features of the historic environment may include excavation and recording and monitoring of erosion rates.

This table provides a summary of the SEA (appendix E) and reference should be made to the Appendix for full details of the assessment.

These next two sections provide a headline summary of the findings of the HRA (Appendix G) and the WFA (Appendix H). Reference should be made as appropriate to these Appendices for full details.

HRA SUMMARY

The SMP policy in this PDZ provides a range of policies along the coastline including NAI, HTL and MR. PDZ 17 includes interest features of the Abermenai to Aberffraw Dunes SAC, Anglesey Coast: Saltmarsh SAC, Holy Island Coast SAC, Ynys Feurig, Cemlyn Bay and The Skerries SPA, and Holy Island Coast SPA.

Implications for the integrity of the Site: It is considered that adopting natural change along this area of coast (within the PUs that encompass the SACs and SPAs) will have **no adverse effect on the integrity** of the Abermenai to Aberffraw Dunes SAC, Anglesey Coast: Saltmarsh SAC, Holy Island Coast SAC, Ynys Feurig, Cemlyn Bay and The Skerries SPA, and Holy Island Coast SPA.

SUMMARY CONCLUSION FROM THE WATER FRAMEWORK ASSESSMENT

Water body (and relevant PDZ)	Environmental Objectives met?				WFD Summary Statement required?	Achievement of Any South East RBMP Mitigation Measures?	Details on how the specific South East RBMP Mitigation Measures have been attained (dark green = achieved; light green = partly achieved & red = not achieved)
	WFD 1	WFD2	WFD3	WFD4			
Holyhead Bay (Coastal – C10) (PDZ part 17) (MAN part 50, part 52)	N/A	x (PDZ 17)	✓	✓	Yes – Environmental Objective WFD3 may not be met because of the SMPs policy in PDZ17 (MAN 50).	Yes (partly) – One of the six relevant mitigation measures for this water body has been implemented, which then provides potential for other measures to be put in place.	<ul style="list-style-type: none"> • Managed realignment of flood defence – MR of Penrhos Bay (PU 17.16) will allow the bay to roll back and create a deeper beach (with the exception of private defences e.g. aluminium works). • Bank rehabilitation / re-profiling – could be implemented as part of the MR. • Removal of hard bank reinforcement – if there are obsolete structures in place along the MR location these could be removed. • Modify structure or reclamation – this is likely to be referring to the Holyhead area and this has not been implemented.
Holyhead Strait (Coastal) (PDZ part 17) (MAN part 50, 51 and part 52)	N/A	✓	✓	✓	No - not necessary as delivery of the WFD Environmental Objectives will not be prevented by the SMP policies and in some cases will ensure they are of benefit.	There were no relevant measures to the SMP2 for this water body.	N/A
Alaw (Transitional) (PDZ part 17)	N/A	✓	✓	✓	No - not necessary as delivery of the WFD Environmental Objectives will not be	There were no relevant measures to the SMP2 for this water body.	N/A

Water body (and relevant PDZ)	Environmental Objectives met?				WFD Summary Statement required?	Achievement of Any South East RBMP Mitigation Measures?	Details on how the specific South East RBMP Mitigation Measures have been attained (dark green = achieved; light green = partly achieved & red = not achieved)
	WFD 1	WFD2	WFD3	WFD4			
(MAN part 52)					prevented by the SMP policies and in some cases will ensure they are of benefit.		