

Little Orme to Great Orme (I1a I)



Recommendations:

Overview:

The long term plan is to manage coastal flooding and erosion risks to the town of Llandudno by continuing to maintain the present line of defences. The natural rocky headlands of the Great Orme and Little Orme will change little and so will continue to provide a natural sheltering effect to the Llandudno beach frontage.

By reducing flood risk to Llandudno whilst allowing natural processes to continue on the neighbouring headlands, the majority of objectives are met, however there remains the potential for coastal squeeze against the hard defences of Llandudno, although this impact can be mitigated against through the inclusion of beach recharge in the future management plan and the creation of intertidal habitats elsewhere in the Shoreline Management Plan region if necessary. The policy recommendations are robust due to the economic case for continued defence of Llandudno.

Location (Policy Unit)		Policy and Approach (from 2010)			Justification		
		0-20 years	20-50 years	50-100 years	Social	Environmental	Economic
I.1	Great Ormes Head	No Active Intervention – Allows designated cliffs to continue to erode naturally.	No Active Intervention – Allows designated cliffs to continue to erode naturally.	No Active Intervention – Allows designated cliffs to continue to erode naturally.	No assets at risk.	Allows natural processes to continue, supporting the features of the international and national designated sites. Only minor erosion of the resistant cliffs will be experienced.	No economic justification for defences.
I.2	Llandudno	Hold the Line – By maintaining the seawall, promenade and other defences. Improvements to cliff stabilisation works will be required. Beach recharge will be required to maintain the beach levels.	Hold the Line – By maintaining the seawall, promenade and other defences. Improvements to cliff stabilisation will be required. Beach recharge will be required to maintain the beach levels.	Hold the Line – By maintaining the seawall, promenade and other defences. Improvements to cliff stabilisation works will be required. Beach recharge will be required to maintain the beach levels.	Flood risk to Llandudno and associated residential, commercial, tourism assets and infrastructure will continue to be managed. Beach recharge will assist in maintaining the quality of the amenity beach in the future. Llandudno is also at risk from coastal flooding from Conwy Bay, outside the limits of this Shoreline Management Plan.	Flood risk to community facilities, heritage features and roads in Llandudno will be managed. No adverse impacts expected on the Y Fenai a Bae Conwy / Menai Strait and Conwy Bay SAC offshore. Land drainage issues should be considered in future management.	Policy is robustly economically viable due to the value of the residential & commercial property, and tourism and infrastructure at risk in Llandudno.
I.3	Little Ormes Head	No Active Intervention – Allows designated cliffs to continue to erode naturally.	No Active Intervention – Allows designated cliffs to continue to erode naturally.	No Active Intervention – Allows designated cliffs to continue to erode naturally.	No assets at risk.	Allows natural processes to continue, supporting the features of the international and national designated sites. Only minor erosion of the resistant cliffs will be experienced.	No economic justification for defences.

Key assumptions made during development

Beaches along the Llandudno frontage may narrow and steepen with coastal squeeze and predicted sea level rise. Hard defences are likely to become increasingly expensive to maintain and the risk of overtopping and flooding will increase. The expected sea level rise combined with higher / larger defences will result in the potential flooding from over-design standard storms becoming significantly worse in the long term epoch. The risk can be reduced, and the need for larger hard defences reduced by maintaining the wide beach fronting the defences with beach recharge or similar beach management techniques.

The issue of fluvial and pluvial drainage from behind coastal defences will become increasingly important in the future, and Llandudno is also at risk from coastal flooding from Conwy Bay. These uncertainties and others such as future changes in sea level rise as well as detailed modelling of flood routes and extents will be addressed in more detail at the risk management strategy stage.

The SMP policies will be subject to review if sea level rise predictions are changed.

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Predicted Implications of the Policies being Adopted in this Location:								
Time period from 2010	Property and population	Land use, infrastructure and material assets	Amenity and recreational use	Historic environment	Landscape character and visual amenity	Earth heritage soils, and geology	Water	Biodiversity, flora and fauna
0-20 years	<ul style="list-style-type: none"> + Beach recharge and beach management will provide beach stability and reduce risk to Llandudno. + Cliff stabilisation works will manage risk to cliff top properties. 	<ul style="list-style-type: none"> + No loss of infrastructure or material assets. 	<ul style="list-style-type: none"> + Manages risk to community facilities and tourist assets. + The integrity of the beach as a defence and amenity will be maintained. ● Potential risk of landslides to parts of North Wales Path but risk managed at Llandudno. 	<ul style="list-style-type: none"> + Manages risk to known heritage features in flood risk zone. 	<ul style="list-style-type: none"> ● No significant impacts on landscape character or visual amenity within Great Orme Heritage Coast. 	<ul style="list-style-type: none"> + The geological interest features will be maintained by allowing natural processes. 	<ul style="list-style-type: none"> ● No known impacts on chemical and biological water quality. + Potential changes to shellfish beds off the coast of Pen-trwyn and Llandudno due to changes in sediment patterns and increased areas for spawning. Impact uncertain. 	<ul style="list-style-type: none"> ● The inter-tidal area at Llandudno is not part of the SAC, consequently, no adverse impacts are anticipated on the qualifying features as a result of SMP2 policy. More detailed Appropriate Assessment (AA) and liaison with CCW will be required for this frontage at strategy / scheme stage to ensure no adverse effects on site integrity. ● Potential for displacement of qualifying waterbirds within Liverpool Bay pSPA as a result of coastal squeeze losses of non-designated intertidal habitat or sandbanks at Llandudno in the medium or long-term. However, based on the extent of supporting sandbank habitat for waterbirds, their exposure to a small loss of habitat is considered to be low and represents only a tiny proportion of the overall pSPA. ● Natural erosion and slumping will maintain cliff habitats (including those within Great Orme's Head SAC/SSSI and Little Ormes Head SSSI).
20-50 years	As above	As above	As above	As above	As above	As above	As above	As above
50-100 years	<ul style="list-style-type: none"> + Beach recharge and beach management (as an alternative to constructing higher defences) will provide beach stability and reduce risk to Llandudno as well as maintain the aesthetic and amenity value of the promenade. + Cliff stabilisation works will manage risk to cliff top properties. 	As above	<ul style="list-style-type: none"> ● Hard defences will restrict the natural roll-back of the upper beach under rising sea levels and therefore the beach will narrow and steepen under coastal squeeze. Further beach recharge will help reduce this loss. + Amenity value and defence role of the beach will be maintained if recharge continues. 	As above	As above	As above	As above	As above

Impact colour key	+ Positive	● Neutral	- Negative
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Little Orme to Great Orme (11a 1) 						
ACTION PLAN						
Action	Action Ref	Action Description (to be approved)	Potential source of funding (subject to approval)	Lead authority and key partners	To start by (subject to funding)	Outcome
1. Studies for policy area	1.1	Undertake a qualitative risk assessment to identify particularly vulnerable communities along the frontage.	WAG	EA	2011	Raise awareness of coastal risk.
2. Studies for Policy Units: PU 1.2	2.1	Develop coastal flood and erosion risk management strategy and beach management plan for the Llandudno flood cell in Policy Unit 11a 1.2, including management of risks from both western and northern shorelines and land drainage aspects, to confirm the approach to delivering the policy. The strategy will need to ensure that any defence works avoid adverse impact to landscape and nature conservation interests and maintains the recreational beach resource in the face of sea level rise.	WAG / CCBC	EA, CCBC , CCW	2015 - 2018	Strategic long term approach to management of defences agreed by WAG.
3. Strategy	3.1	Adopt the strategic approach developed in coastal flood and erosion risk management strategy for Llandudno and seek WAG agreement to schemes for management of defences and the beach.	WAG / CCBC	CCBC , EA, CCW	2018	Adoption of strategy as policy.
4. Scheme Work	4.1	To be defined by strategy study for Llandudno	WAG / CCBC	CCBC / EA	ongoing	Actions identified on Long Term Plan.
5. Monitoring (Data Collection)	5.1	Undertake beach and coastal defence asset monitoring in conjunction with Cell 11 Regional Monitoring Strategy to inform strategy and future SMP reviews	WAG / CCBC	CCBC	ongoing	Data provided to CERMS provides improved evidence base for future decision making.
	5.2	Environmental monitoring of designated sites to provide baseline data for future strategy and/or scheme level Habitat Regulations Assessments	CCW	CCW, EA	ongoing	
6. Asset Management	6.1	Maintenance of defences and beach including management of public access.	CCBC, LO	CCBC & EA	ongoing	Maintenance undertaken to required standards.
7. Communication	7.1	Undertake consultation with key stakeholders, including RNLI, and general public during strategy study to ensure an acceptable approach is developed.	WAG / CCBC	CCBC & EA	ongoing	Stakeholder agreement to strategy.
	7.2	Monitoring and management of Action Plans to ensure SMP policies are put into practice	n/a	NWNWCG	ongoing	NWNWCG reports on progress.
8. Interface with Planning and Land Management	8.1	Advise local Planning Authority about SMP policies and flood and erosion risks so they can be accounted for in the next revisions of land use plans in order to help manage residual risks from flooding and erosion, in accordance with WAG's "New Approaches" policy.	n/a	CCBC & EA	ongoing	Reduction of flood risk in line with WAG "New Approaches" policy.
	8.2	Advise local Planning Authority about SMP policies and flood and erosion risks so they can take due account in planning decisions and aim to reduce the need to manage flood risk in future.	n/a	EA & CCBC	ongoing	Reduction of flood risk in line with WAG "New Approaches" policy.
9. Emergency Response	9.1	Development, monitoring and review of emergency response plans to prepare for over design standard events.	n/a	CCBC, EA	ongoing	Coastal flood risks considered in emergency plans.
10. Adaptation/Resilience	10.1	Build in incremental adaptation to beach and defence management for Llandudno to manage risks from rising sea level in medium and long term in parallel with reduction of risks through development control and planning guidance to build in resilience.	N/A	CCBC , EA	2015	Long term risk reduction through implementation of WAG "New Approaches"
11. Flood Forecasting and Warning	11.1	Improve flood risk maps and inundation modelling and provide improve flood warning service.	EA / WAG	EA	ongoing	Reduction of flood risk in line with WAG "New Approaches" policy.
12. Habitat Creation and environmental mitigation	12.1	Undertake habitats regulations assessment for the Llandudno strategy to provide more detailed assessment of potential impacts on the international site, including development of plans for any required environmental mitigation or compensation. Include PU 11a1.2 in the annual RHCP review.	WAG / CCBC	EA , CCBC	2015	Strategy to comply with legal requirements.
NB. Activities from SMP will be carried forward into medium term plans and carried out on a priority basis, subject to funding and approval n/a = activity is part of authorities general duties, not funded through flood and erosion risk management routes. CCBC = Conwy County Borough Council; CCW = Countryside Council for Wales; EA = Environment Agency; LO = Land Owners; NWNWCG = North West and North Wales Coastal Group; RHCP = Regional Habitat Creation Programme; WAG = Welsh Assembly Government.						

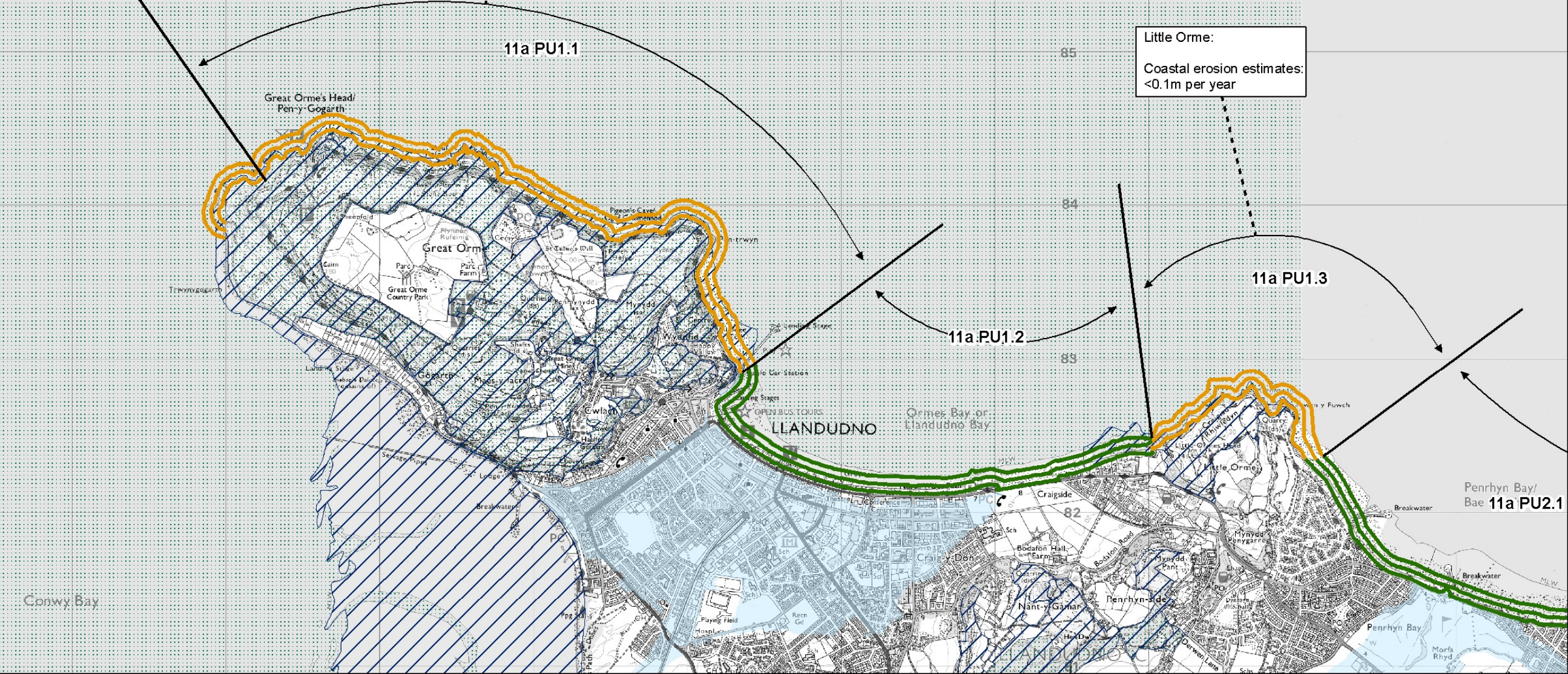
North West England and North Wales Shoreline Management Plan 2

Sub-Cell 11a: Area: 1 Map: 1



Great Orme:
Coastal erosion estimates:
<0.1m per year

Little Orme:
Coastal erosion estimates:
<0.1m per year



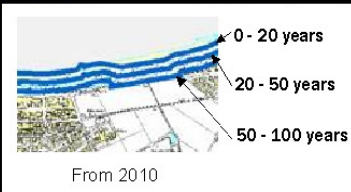
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- Legend**
- National Nature Conservation Designations
 - International Nature Conservation Designations
 - Scheduled Monuments

- Coastal flood risk area under extreme events, Environment Agency Flood Map, 2008
- Policy Unit Boundary
- Policy Unit Extent

- Shoreline Management Policies**
- Hold the Line (HTL)
 - Managed Realignment (MR)
 - No Active Intervention (NAI)



Note that the policy lines on the map show the preferred shoreline management policy for each period and do not represent either the shoreline or defence location



Boxes showing cumulative erosion estimates represent the expected minimum and maximum erosion distance from the shoreline position in 2010. They are only shown where there is a NAI policy and coastal erosion is the main risk

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