

PEMBROKESHIRE COUNTY COUNCIL CYNGOR SIR PENFRO



Newgale Adaptation Plan



April 2015

Contents Amendment Record

This report has been issued and amended as follows:

Issue	Revision	Description	Date	Amended by
1	0	Consultation Draft	April 2015	Emyr Williams
1	1	Final Report amended following public consultation	May 2015	Emyr Williams

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Current Situation

Newgale is on the A487 between Haverfordwest and St. David's where the road crosses the valley of the Brandy Brook. It is defended from the sea by a shingle bank formed as a storm beach considered to be a relict feature of sea level rise following the end of the last ice age.

In 2001 an initial study was undertaken that highlighted the risk of failure of the bank as a consequence of both wave height and water level. With extreme wave heights, overtopping and bank failure can occur even on relatively frequent water levels. With more extreme water levels overtopping or ridge failure can occur on relatively low wave heights.

The West of Wales Shoreline Management Plan which received its final approval from the Welsh Minister in December 2014 following extensive public consultation, identified the area of Newgale as vulnerable. The Following is extracted from the relevant section:-

The road into the southern part of Newgale from the south would need to be protected, possibly during the second Epoch to stop erosion of the coastal slope. This would maintain access to the valley. Attempting to sufficiently stabilise the shingle bank, upon which the road runs across the valley, would require major intervention. This would destroy the natural feature, creating a narrow shingle backshore similar to that along the northern part of Broad Haven. The road running out to the north would need substantial protection works where it runs across the headland. This area already shows signs of interaction with the shingle bank, causing a degree of erosion.

Along the northern part of Newgale sands the bank is managed by reprofiling. This might be possible over the next 20 years, subject to Sea Level Rise. To continue a policy of Hold The Line along this frontage would ultimately require construction of a rock revetment over much, if not all, the frontage. This would be increasingly difficult to maintain and there would need to be works undertaken to reduce flooding from the tidally locked stream within the valley. This would maintain the access along the frontage, but all at significant cost to the natural environment.

At present, the situation is being managed as it has over at least the last 20 years, accepting that the shingle ridge will be overtopped on occasion and that when this occurs shingle is lost from the crest of the bank blocking the road. The Council responds to this overwash and failure of the bank by removing shingle from the road and hinterland and rebuilding the crest to a minimum crest height and width matching as near as possible, the original profile.

The events in January and February 2014 were a relatively extreme case where the road was closed as it was flooded and blocked by shingle. The coastal water level, based on tide records from Fishguard and Milford Haven, reached a level estimated to be in the order of a 1:20 to 1:25 year extreme water level event. However, the road is also closed during less extreme conditions more frequently either as a result of flooding from the Brandy Brook when the outfall blocks or shingle being washed from the back face of the bank by moderate overtopping that does not result in complete failure.

A recent report commissioned by Pembrokeshire County Council from Royal Haskoning DHV (December 2015) concludes that while the current approach does address the immediate problem and does restore the bank to a condition whereby it is capable of providing a defence against normal storm conditions, the standard and resilience of the shingle ridge is continuing to deteriorate. The report also indicates that the shingle bank will become increasingly unstable and vulnerable to failure. It is anticipated that it will be unsustainable in a timescale of 10-20 years.

Based on a natural section of coast, the typical rate of retreat is in the order of 0.25m/year. In undertaking works to restore the bank to a pre-storm position, the bank is prevented from adapting and its position and shape (coupled to the fact that sediment has not been naturally sorted) makes the bank increasingly vulnerable.

In detail the report concluded that:

- 1) The work undertaken following the 2014 storms has restored the bank to a condition that might reasonably be expected to resist the typical annual storm conditions without major failure. However, above this level of storm, particularly over the northern managed frontage, the bank is increasingly likely to fail fully, with significant deposition of shingle in the road and potential increased flood risk.
- 2) Depending obviously on the occurrence of storms in any particular year, it is considered that current management might still be capable of maintaining at least a 1:1 year standard of defence along the frontage over potentially the next ten years.
- 3) Within twenty years, it would be anticipated that substantial bank failure would be occurring several times a year, irrespective of on-going management.

It is considered that re-profiling the bank, to the currently used profiles is, at present sensible in maintaining a minimal standard of defence along the frontage. Even so there is an increased risk that a storm event of less severity than those experienced in 2014 would cause substantial bank failure. Whilst it is recommended that this management continues over the short term, future consequences must be addressed as it is thought that over quite possibly the next ten years this approach will no longer be sustainable.

Future Risks and Threats

The study confirms that without significant works to, for instance, strengthen the shingle bank, there would be increasing pressure for roll back and increased occurrence of overtopping and failure of the bank.

This increasing vulnerability of Newgale to storm damage poses a threat to the safety and security of the residents of the lower parts of the village as well as to the transport infrastructure of the St. David's peninsular and statutory undertakers' plan and equipment.

A further insidious threat is posed by sea level rise not only increasing the level of extreme event floods but making floods of a given level such as might be expected with a 1:10 probability for example, occur with an increased probability. Current extreme water levels for Newgale have been assessed by Natural Resources Wales as:-

	Extreme Water Levels m AOD			
Probability	1:10	1:50	1:100	1:200
Water Level	3.77	3.93	4.0	4.06

For comparison, the level of the road in the vicinity of the Duke of Edinburgh Public House is approximately 4.56m AOD. and mean high water spring tides 2.52m AOD. Sea level rise can be expected to increase these levels by a metre or more over the next century so that a currently 1:200 probability event becomes commonplace. Actual water levels will, of course be higher due to waves – the levels given being that of “still water”. This higher water level allows large waves

to get nearer inshore bringing more energy with them to increase the frequency of severe damage being caused to the shingle bank.

A significant event will lead to the closure of the main road to the St. David's peninsular from Haverfordwest causing significant disruption to transportation links such as buses and delivery of goods. This will impact upon local businesses, an effect which is likely to extend as far as St. David's, both in terms of difficulty of staff and customers getting to premises as well as deliveries of goods and supplies. Road closures may also have an impact on tourism.

Closure of the main road invokes the signing of a diversionary route. Whilst very heavy goods vehicles may be deterred by signage and diverted via Letterston or even Fishguard, lorries and vans continue to use the diversion route. This is a very significant increase in traffic on roads that are significantly substandard for such traffic. The result is noise, dust and disturbance to very rural properties, the potential for road traffic accidents and increased journey times. There could be consequences of this disruption if emergency vehicles – fire and ambulance services – are held up. The National Cycle Route NCN4 is also diverted during a closure which brings cyclists into direct conflict with motorised vehicles on narrow steep lanes.

Clearly those properties on the valley floor adjacent to the highway are impacted, which extends up the valley, probably as far as Roch Bridge.

Public Consultation

The implications of the report by Royal Haskoning about the stability of the shingle bank in Newgale are such as to need and require considerable publicity to raise awareness of those directly and indirectly affected.

This process commenced with a public meeting which was held at Solva Memorial Hall attended by over 130 people and a consultation exercise utilising the Pembrokeshire county Council website "Have your say" facility. This has an arbitrary deadline which can be extended as further information is uploaded. However as this is primarily a consultation tool for "one off" exercises, it is proposed to establish a separate, dedicated, web page for this project.

Adaptation Objectives

Objective 1

The largest financial impact will be upon the properties directly affected. It is imperative that the owners thereof understand the implications of the report on the long term future of their investment. The Council will endeavour to ensure that all affected property owners are fully aware of, and understand, the report. It will also offer what support and assistance it is able to give.

Objective 2

We need to adapt our current infrastructure to accommodate the anticipated changes. The most important public asset affected is the A487 which is the principal road to Brawdy, Solva, St. David's and the rest of the peninsular. It is the route of emergency services vehicles, particularly ambulances going to the Accident and Emergency department of Worthybush Hospital and the regional centres of clinical excellence further east. It is the main bus route serving the peninsular and a major route for tourist traffic. The Council will endeavour to ensure that transport links are maintained so as not to adversely impact upon the level of service provided by the emergency services or local transport companies. Any re-alignment of the A487 at Newgale would also

require a remodelling of the existing junction of the Welsh Road to Nolton Haven where it joins the A487 south of Newgale.

Objective 3

Newgale village and the surrounding area is within the Pembrokeshire Coast National Park whose purposes and duties are laid down by statute. There is a requirement under Section 62 of the Environment Act 1995 for the conservation and enhancement of the natural beauty, wildlife and cultural heritage of the Park and to provide opportunities for the understanding and enjoyment of its special qualities. Within the context of these purposes there is a duty to foster the economic and social well-being of local communities. However, where there is a conflict, the legislation requires that greater weight is attached to the primary purpose of conservation and enhancement. Any adaptation will need to be developed in conjunction with the National Park Authority as the planning authority for the area.

Objective 4

The St. David's peninsular is an important tourist area within the wider Pembrokeshire region. Concerns over accessibility might have an impact on tourism. The Council will endeavour to ensure that any communication regarding the issues surrounding the vulnerability of the shingle bank at Newgale are clearly identified with the specific location and that a positive message regarding the wider area is also disseminated.

Objective 5

Employment in Pembrokeshire is very dependent upon agriculture and tourism. It is important that a wider economic base be developed to provide other sources of skilled employment so increasing the prosperity and economic resilience of the area. The MoD site at Brawdy will be available for redevelopment within the next few years. Transport and communications infrastructure will be a significant part in any future usage of that site and, indeed, the rest of the peninsular. The Council will endeavour to ensure that any adaptation of transport and communication links will not adversely impact upon the economy of the St. David's peninsular or the future redevelopment of Brawdy.

Objective 6

Any significant change to the local infrastructure is inevitably going to have an impact upon the local community. The Council will endeavour to identify all the potential impacts upon the local and wider community and mitigate those that have an adverse impact.

Objective 7

The road through Newgale forms part of a wider network of minor routes and cycleways linking the coastal communities. The Council will endeavour to identify those links and mitigate any negative impacts in so far as is reasonably practical.

Action Plan

Meeting the objectives outlined will require numerous actions by several groups within the Council and in the wider community which should be co-ordinated to achieve the greatest benefit.

Action 1 – Identification of Properties at Risk

There are several properties at direct risk with others indirectly affected both in the immediate vicinity and in the wider area. This could be directly from flooding or erosion or from an increase in traffic nuisance for instance. The Council will endeavour to identify such property

and ensure that they are aware of the issues facing them and that they are taking the appropriate actions.

By whom:- Pembrokeshire County Council

By when:- June 2015

Action 2 – Preparation of Community Flood Risk Plan

Communities at risk fare significantly better when an adverse event takes place if they have a plan prepared to deal with it.

By whom:- the local community supported by Pembrokeshire County Council and Natural Resources Wales.

By when:- September 2015

Action 3 – Improvement of current Diversion Route

The current diversion route is a single track road only capable of carrying a few hundred vehicles per day. When the main road is closed, a significant proportion of the four thousand vehicles per day, including heavy good vehicles, will attempt to use the diversion leading to significant delays and minor collisions. The route effectively becomes impassable to cyclists due to this traffic density.

By whom:-The County Council will endeavour to identify any minor improvements such as passing places that can be created and improve the signage to deter heavy goods vehicles from travelling to the St. David's peninsular via this route.

By when:- Autumn 2015

Action 4 – Identification of Transport Adaptation Options

Highway schemes are required to be appraised using the WELTAG procedure. This is an extensive and expensive process which will look at the long term solution to the problem. It will include an identification of transport objectives, identifying all potential solutions. The process we have to follow includes a "do nothing" option which gives a baseline against which all other options are considered. We would then look at work to the shingle bank, building an embankment along the line of the current road, an embankment behind the pub, an embankment or viaduct further inland, upgrading the existing diversion route, and any others that we can think of.

These would then all be evaluated against criteria such as sustainability, efficacy, consequences, such as the effect on the pub of a large embankment on the line of the existing road, economic impacts, tourism impacts etc., with those options not screened out at this stage then being evaluated against cost benefit criteria which leads to the recommendation of a preferred approach.

By whom:- Pembrokeshire County Council will identify a source of funding which will allow consultants to be appointed.

By when:-Identification of funding by April 2016 leading to appointment of consultants in June 2016 to report by April 2018.

Action 5 – Ongoing Management of the Shingle Bank

The shingle bank is capable of providing an ongoing flood and erosion defence for several years provided it is maintained in response to any storm damage, which we would continue to undertake, until a permanent solution is completed and the existing road becomes unsustainable. In particular the southern end towards Nolton Haven, is considered more stable. However is it necessary for a proper understanding of the shingle bank that regular monitoring is undertaken over the complete length of bank and upper beach. This can be undertaken by traditional topographic survey methods or LiDAR if cost effective.

By whom:- Pembrokeshire County Council

By when:- Until such time as the full resilient adaptation scheme has been delivered.

Action 6 – Ongoing Community Engagement.

It is essential that the community is kept fully aware of issues arising and progress in the development of the possible mitigation options. This is probably best achieved by the maintenance of a dedicated web page with regularly updated information, meetings with the community council or groups as significant objectives are achieved and regular publicity in the local press. There should also be a named contact within the County Council as a “first point of call” for residents with any queries or concerns.

By whom:- Pembrokeshire County Council

By when:- End April 2015 initially for the website and nomination of specific contact and then ongoing.