Annex D: Marine Aggregates and Port Maintenance Dredging
ANNEX D: MARINE AGGREGATES DREDGING AND PORT MAINTENANCE DREDGING
1 Introduction

This annex provides background information on the regulation of dredging within the UK and an overview of dredging activities in the area covered by the Lavernock Point to St Ann’s Head Shoreline Management Plan (SMP), through review of existing guidance and information.

Human intervention, in its many forms, has had a significant influence on how our coasts have changed over time. One such activity is the removal (or dredging) of sediments from the offshore zone, which has the potential to affect our shorelines, through either affecting the flow of tides and waves towards the coast or through the removal of sediment which may otherwise contribute to the natural development of beaches. For that reason, dredging around the coast of the UK is strictly controlled, with government control and licensing of marine aggregate dredging in Wales administered by the Welsh Assembly Government (WAG). Where dredging of seabed deposits of sand and gravel is proposed, the potential impacts of this activity on the shoreline are considered in a coastal impact study section of an Environmental Impact Assessment (EIA), which includes a consideration of possible changes in tidal flows, waves and sediment transport.

There are five existing licensed extraction sites that could potentially affect the coastline covered by this SMP: Holm Sands, Culver Sands, Nash Bank, Helwick Bank and Nobel Banks, as well as the Western Bristol Channel area which is currently at application stage.

The objective of the SMP is to set high-level sustainable policies which will inform future management of this coastline over the next 100 years. Although the implementation of these policies could be affected by offshore dredging activities, derivation of the policies themselves is not. In appraising coastal processes and shoreline evolution along the coast, the SMP will consider any potential link between these offshore banks and the shoreline, based upon existing information; however no new studies to determine any potential impacts from dredging activities will be undertaken. Any information included in the SMP is therefore based upon available information.

2 Licensed dredging in the UK

2.1 Introduction

Aggregate is sand, gravel and crushed rock used as raw materials by the construction industry. The majority of aggregate comes from land-based sources, but since the 1960s developers have been increasingly reliant on marine sources to supplement demand and meet the UK’s construction needs.

Today approximately 21% of the sand and gravel used in England and Wales is supplied by the marine aggregate industry. One of the main benefits of using marine sources is that ships can deliver aggregates directly to wharves in urban areas, which reduces transport by road, reducing congestion and pollution.

In addition to its use in the construction industry, marine dredged aggregate is recognised as a source of material for beach nourishment schemes forming part of the shoreline management process. Although there have been no such schemes in South Wales in recent years, material is available for such a purpose.

1 Extracted from www.thecrownestate.co.uk/marine_aggregates, unless otherwise stated.
Nearly all the sand and gravel used in South Wales is currently dredged from the Bristol Channel and WAG stated that there has been growing public concern about the possible effect of this dredging on coastal changes.

### 2.2 Obtaining permission for marine aggregate dredging

The Crown Estate owns the mineral rights to most of the seabed extending to the edge of the UK continental shelf and issues consents for non-exclusive sampling and licences for commercial aggregate extraction. The Crown Estate’s interest is that of a landowner. The planning and consenting process is the responsibility of the government, who, through a consultation process, determines whether an area can be used for aggregate extraction. Figure D.1 provides an overview of the application process.

![Figure D.1: Overview of the WAG Marine Consents Unit (MCU) application process (WAG, 2009)](image-url)
There are strict controls on where dredging can be carried out in UK waters, as discussed above, and the Government pursues a precautionary approach in the consideration of applications for marine minerals dredging. The Secretary of State will only grant permission for new areas for marine minerals extraction where he is satisfied that all environmental issues, including coastal impacts, have been satisfactorily resolved. Typically, licensed areas lie between 5km and 35km offshore at depths between 10m and 40m (BMAPA, 2000) and conditions are commonly enforced as part of the licence, including regular environmental monitoring.

To obtain a licence, companies who have been successful in a tender round run by The Crown Estate must obtain permission from the government, a procedure which includes the submission of Environmental Impact Assessments (EIA). If government permission is granted, The Crown Estate will issue the applicant with a production licence if it is their land.

Government control of marine aggregate dredging has historically been administered by a number of government departments, including the Marine and Fisheries Agency (MFA) (in England), and WAG (in Wales). With the introduction of Environmental Impact Assessment and Natural Habitats (Extraction of Minerals by Marine Dredging) Regulations 2007, applications for the extraction of marine minerals in Wales currently operate under statutory procedures administered by the Marine Consents Unit (MCU) of the Welsh Assembly Government (WAG).

The Centre for Environment, Fisheries and Aquaculture Science (Cefas) and its predecessor the Ministry of Agriculture, Fisheries and Food (MAFF) Directorate of Fisheries Research, has provided advice on the environmental and fisheries implications of proposed sand and gravel / marine mineral extraction operations to the government since 1968. Cefas recently signed an agreement with the Welsh Assembly Government (WAG) to provide advice on marine aggregate extraction in waters around the Welsh coastline, formalising this role.

### 2.3 Regulation and monitoring

The industry is closely regulated by WAG, the Marine and Fisheries Agency (MFA) and Defra.

As part of this process, each ship carries a sophisticated electronic monitoring system (EMS) to track and record its movements. It tracks the vessel every 30 seconds when it is actively dredging and this enables the regulating authorities to ensure that the vessel has remained within its allocated licensed area. It is important to note that often the amount of aggregate extracted is less than the maximum allowed on the licence and there is frequently a significant shortfall. This is due to extraction volumes being almost solely linked to market demand.

Environmental monitoring is also required under the licence conditions. In Wales, the monitoring results are submitted to WAG periodically, where they are independently reviewed by Cefas who provide advice and recommendations to WAG.

### 2.4 Interim Marine Aggregates Dredging Policy

The Interim Marine Aggregates Dredging Policy (IMADP), produced by the Welsh Assembly Government (WAG) in 2004, seeks to ensure sustainable, objective and transparent decision-making to meet society’s needs for aggregates dredged from the Bristol Channel, Severn Estuary and River Severn. The current recommended policy for each sediment environment in the Bristol Channel and Severn Estuary is shown in Figure D.2. A study (Symonds Group Limited, 2002) was undertaken to

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inform the development of the IMADP. The main conclusions of the 2002 study were outlined in a WAG press release (WAG, 2002a) and are summarised below.

The 2002 study indicated that the clearest increase in sustainability would be achieved by a gradual shift of dredging operations from inshore areas (particularly Nash Bank) to other areas further offshore and/or further west. This conclusion is subject to the findings of ongoing and future site-specific environmental assessments at the alternative dredging sites.

The 2002 study also concluded that there is evidence of sediment transport links between offshore sandbanks within some parts of the Bristol Channel and the beaches of South Wales. The links are generally weak, however, and do not imply that dredging will inevitably have impacts on the beaches. The exception is Nash Bank where WAG stated that “it is clear that dredging cannot continue indefinitely without eventually giving rise to localised impacts on the adjoining coast” (WAG, 2002a). Although the study stated that no such impacts have yet been detected, it was suggested that it would be prudent to phase out current operations over the next 5 to 10 years, through a staged reduction with dredging ceasing by February 2010.
Map 4 POLICY FOR EACH SEDIMENT ENVIRONMENT

Figure D.2: WAG Marine Aggregates Dredging Policy for each Sediment Environment in the Bristol Channel and Severn Estuary (taken from WAG, 2004)
3 Potential impacts of offshore dredging

There are frequent media articles regarding coastal erosion and beach losses. These changes can be large and can occur quite rapidly. Inevitably, these changes cause concern amongst local communities who fear:

- loss of land and property (or their devaluation);
- coastal flooding;
- damage to local business that rely on tourism;
- general damage to the environment in an amenity sense.

In parts of the country where marine aggregate dredging occurs close to (sometimes within sight of) areas experiencing coastal erosion, the media articles frequently quote dredging as the prime cause of the coastal changes.

Dredging of seabed deposits has a number of potential impacts, including:

- beach drawdown which may result if extraction takes place so close to a beach that, during storms, beach sediments are drawn down into the dredged depression.
- changes in wave refraction: this may result where depressions left by dredging alter the bathymetry sufficient to change the way in which waves refract as they approach a shoreline.
- alteration of tidal currents: this could be caused by the dredged depression, at least locally, with the possibility of altering natural sediment transport processes on the seabed or even along a nearby coast.
- reduction in onshore transport of sediment: this might arise if material extracted would otherwise have travelled to a coast, or if the depression in the seabed caused by dredging intercepted and trapped other sediments travelling through the area on route to the coast.
- reduction in shelter provided by a sandbank or similar seabed feature due to lower crest levels. This could conceivably occur either directly, i.e. by dredging on the bank itself, or indirectly by dredging too close to a bank provoking an equivalent drawdown.
- impact on natural sediment transport processes in and around the extraction area, due to dredging processes affecting sediment content of the seawater.

The Environmental Impact Assessment, which is required as part of any dredging licence application, has to include an assessment of the physical impact of aggregate extraction on the coastal processes and seabed environments and, through considering the above, determine the implications for coastal erosion. This is followed by consultation with appropriate bodies. Only once these various organisations have been satisfied by the conclusions of the assessment will a permission be granted by the government. The consents and licensing system has changed over the last 30 years to become more public and transparent, enabling other interest groups to become more involved, with greater opportunity for stakeholders to influence decisions (Gubbay, 2005).

In terms of coastal impacts, the Crown Estate’s position is that:

- It understands the concerns of stakeholders with respect to coastal erosion.
- It knows of no evidence that links licensed marine aggregate dredging to enhanced coastal erosion or loss of material from beaches. There is good evidence for the lack of impact.
- Approval of an application for dredging by the Regulator (WAG in Wales) includes a detailed examination of the potential impacts on the coast.
• Regulatory approval for a scheme of dredging is accompanied by strict conditions with regard to the area to be dredged and monitoring of changes to the marine environment. The results of the monitoring are submitted to the Regulator.

• The Crown Estate only grants a licence for aggregate dredging after a positive government view or permission for a particular scheme has been received from the Regulator.

• As the principal seabed mineral owner, the Crown Estate periodically examines available scientific evidence and funds studies to ensure that it is up to date with the latest available knowledge.

4 Dredging within the Shoreline Management Plan area

4.1 Introduction

In the Bristol Channel sediment is generally extracted from linear sandbanks which form in areas where there are strong tidal currents and significant quantities of mobile sands, see Figure D.3. Further discussion on coastal processes within the study is provided in Appendix C of the SMP (‘Baseline Processes Understanding’).

Dredging for aggregates within the SMP area has mainly taken place in the following areas (see Figure D.4):

• Holm Sands (Areas 377, 379 and 381), west of Flat Holm;
• Culver Sands (Areas 389 and 472), south of Barry;
• Nash Bank (Areas 376, 378 and 380), extends north-westward from Nash Point;
• Helwick Bank (Area 373), extends west from Port Eynon Point; and
• Nobel Banks (Area 476), south-west of Gower.

Dredging application, option and prospecting areas are shown in Figure D.5.

Table D.1 provides a summary of operational and application dredging sites in the Bristol Channel and Severn Estuary.

The majority of sand used in South Wales has historically come from three areas adjacent to the SMP coast: Holm Sands, Nash Bank and Helwick Bank. Sand extracted is mainly landed on the Welsh coast, and is generally used in the construction industry.

Maintenance dredging also takes place to maintain navigation approach channels to Barry Docks, the Port of Port Talbot, Swansea Docks and Milford Haven. The main areas for the disposal of this dredged spoil have been to the west of Nash Bank, at White Oyster Ledge, south of Mumbles Head and to the south of St Ann’s Head. These disposal sites are managed via licences issued by FEPA and administered by WAG.
Figure D.3: Bristol Channel and Severn Estuary Generalised Bathymetry (Pye, 2009)
Figure D.4: Licensed dredging areas for the south west region (current and historic – last 10 years). (The Crown Estate, 2009)
Figure D.5: Dredging application, option and prospecting areas for southwest region. (The Crown Estate, 2009)
Table D.1: Table showing summary dredging statistics in the Severn Estuary / Bristol Channel (correct as of 8 September 2009).

<table>
<thead>
<tr>
<th>Name &amp; Area number</th>
<th>Status</th>
<th>EA Area</th>
<th>Applicants / operators</th>
<th>Max. tonnage (pa)</th>
<th>Permission granted &amp; duration</th>
<th>Expiry date</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bedwyn Sands</td>
<td>production</td>
<td>SE Wales</td>
<td>Severn Sands Ltd</td>
<td>250,000</td>
<td>30.04.08</td>
<td>30.06.15</td>
<td>Planning permission (Mon. CC)</td>
</tr>
<tr>
<td>Bristol Deep Area 425</td>
<td>Closed / lapsed</td>
<td>SE Wales</td>
<td>Cardiff Bay Development Corporation</td>
<td>1.9m total</td>
<td>1993</td>
<td>1999</td>
<td>For Cardiff Bay Barrage Planning permission (BTL CC)</td>
</tr>
<tr>
<td>Culver Sands Area 472</td>
<td>production</td>
<td>Wessex</td>
<td>United Marine Dredging Ltd., Cemex and Hanson</td>
<td>1 million</td>
<td>May 2008 15 years</td>
<td>03.10.23</td>
<td>Total area = 3.8km² Pre-dredge report rec'd Mar. 09</td>
</tr>
<tr>
<td>Denny Shoal Area 391</td>
<td>production</td>
<td>Wessex</td>
<td>Hanson Aggregate Marine Ltd.</td>
<td>150,000</td>
<td>1991. No fixed term</td>
<td>n/a</td>
<td>Total area = 6.32 km²</td>
</tr>
<tr>
<td>Helwick Area 373</td>
<td>Production / dormant</td>
<td>SW Wales</td>
<td>Llanelli Sand Dredging Ltd.</td>
<td>150,000</td>
<td>Aug 2007 7 years</td>
<td>2014</td>
<td>Extension following 2006 Public Inquiry. Currently not dredged.</td>
</tr>
<tr>
<td>Holm Sands Area 377,379,381</td>
<td>production</td>
<td>SE Wales</td>
<td>Hanson, Cemex UK Marine Ltd &amp; United Marine.</td>
<td>1,150,000</td>
<td>1990</td>
<td>31.12.13*</td>
<td>* or possibly 'in perpetuity' Declining resource</td>
</tr>
<tr>
<td>Nash Bank Area 376, 378, 380</td>
<td>production</td>
<td>SW Wales</td>
<td>Hanson, Cemex UK Marine Ltd &amp; United Marine.</td>
<td>600,000</td>
<td>2003</td>
<td>Feb 2010</td>
<td>Staged reduction to present volume. Licence will cease in February 2010</td>
</tr>
<tr>
<td>Nobel Bank Area 476</td>
<td>Production application</td>
<td>SW Wales</td>
<td>Llanelli Sand Dredging Ltd.</td>
<td>300,000 500,000</td>
<td>March 06 10 yrs.</td>
<td>May 2016 same</td>
<td>Applicant advised by WAG of need for ES for proposed increase</td>
</tr>
<tr>
<td>North Bristol Deep Area 470A &amp; B</td>
<td>Application</td>
<td>SE Wales</td>
<td>Hanson Aggregates Marine Ltd and United Marine Dredging Ltd.</td>
<td>250,000</td>
<td>n/a 5 years</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>North Middle Grounds - Area 455 &amp; 459</td>
<td>application</td>
<td>SE Wales</td>
<td>Severn Sands Ltd</td>
<td>400,000</td>
<td>10</td>
<td>n/a</td>
<td>455 = 4.16 km² 459 = 6.38 km² Staged approach starting at 150,000 tonnes per year, then increasing by 50,000 tonnes per year to year 6, then 400,000 tonnes per year until year 10.</td>
</tr>
<tr>
<td>West Middle Grounds - Area 385</td>
<td>production</td>
<td>SE Wales</td>
<td>Cemex UK Marine Ltd.</td>
<td>250,000</td>
<td>1991</td>
<td>n/a</td>
<td>Total area = 5.89 km² No fixed term</td>
</tr>
<tr>
<td>Western Bristol Channel Area 486</td>
<td>application</td>
<td>SW Wales</td>
<td>Resource Mgt Association (RMA) (Hanson, United Marine &amp; Cemex)</td>
<td>1.8m</td>
<td>15 yrs.</td>
<td>n/a</td>
<td>2008 WAG permitted trial dredging</td>
</tr>
</tbody>
</table>

Area numbers allocated by The Crown Estate. Bedwyn Sands lies within the Swangrove Estate, hence no CE Area number.
A number of reports have been prepared discussing the impacts of dredging in the five licensed sites in the SMP area. A varying degree of analysis is available for the sites; indeed, one of the main observations of Deere-Jones (2001) is that there is a lack of baseline data and post-dredging data upon which to confidently establish historical trends.

### 4.2 Holm Sands

Holm Sands is west of Flat Holm and features predominantly medium sand. Analysis of bedforms suggests a clockwise circulation around the bank (NAW et al., 2000).

The largest licence in the Bristol Channel applies to Holm Sands, at least in terms of the annual upper tonnage limit. However, although the maximum annual ‘take’ from Holm Sands was set at 2,975,000 tonnes, the tonnage actually dredged has been well below the limit in recent years, at around 100,000 to 200,000 tonnes per year. This reflects the relative difficulties in obtaining high quality materials economically from this site (Symonds Group Limited, May 2002).

Pethick and Thompson (2002) suggested that Holm Sands (and Culver Sands) is away from any natural sources of replenishment. Its isolation from nearshore sand bodies would effectively preclude any consequential impacts on the local coastline.

### 4.3 Culver Sands

Culver Sands is approximately 13km south of Barry (and 12km north of Minehead); the bank rises to around 1mCD (metres above Chart Datum, the predicted level of lowest astronomical tide level, which is the datum used on UK bathymetric charts) and is flanked by deeper waters with depths greater than 10m. The bank does not appear to be related to a major geological control, unlike the other linear sand banks in the Bristol Channel. In recent decades, Culver Sands has undergone the most change of all the Bristol Channel linear banks in terms of morphology (NAW et al., 2000; Davies, 2003). The bank is located within a bedload parting zone, although evidence for bedload transport is constrained by the limited amount of sediment cover (NAW et al., 2000). Analysis of bedforms suggests a clockwise circulation around the bank (NAW et al., 2000).

The licensed area covers the bank next to Culver Sands and features predominantly medium sand. In 2008 the Secretary of State granted dredging permission for the extraction of a maximum of 15 million tonnes of marine sand and gravel from Culver Sands over a 15 year period, with a maximum of 1 million tonnes per annum. A condition of the permission is that five-yearly reviews are undertaken to inform whether to allow the continuation of dredging in the permitted area and, if so, under what conditions.

Pethick and Thompson (2002) suggested that Culver Sands (and Holm Sands) is away from any natural sources of replenishment. Its isolation from nearshore sand bodies would effectively preclude any consequential impacts on the local coastline.

### 4.4 Nash Bank

Nash Bank extends north-westward from Nash Point (south of Porthcawl) and features medium sands surrounded by sandy gravels. The Bank is composed of three elements, West Nash, Middle Nash and Nash Sands (East Nash), extending for 13km, with a maximum width of 1.5km at the 10mCD contour (NAW et al., 2000). The Bank may have originated as a coastal sand ridge during the early Holocene, which evolved as an offshore bank after the stabilisation of sea level and the hydrodynamic regime in the area (NAW et al., 2000). The south-eastern end of East Nash is only separated from the shoreline at Nash Point by a 300m wide, deep channel, known as Nash Passage.
The highest parts of the banks are over East Nash and Middle Nash and these are understood to act as offshore breakwaters; providing some protection to the coastline between Nash Point and Ogmore-on-Sea. HR Wallingford (1992) determined, from modelling, that although protection is afforded at low water, the protection provided by the bank at high water levels is negligible. The effectiveness of the Bank as a breakwater depends upon both the width and height of the Bank.

Various studies (reported in BMT, 1996) have investigated potential sediment linkages between Nash Bank, the adjacent coastline and Scarweather Sands. BMT (1996) and NAW et al (2000) concluded that Nash Bank appears to have a largely self-contained isolated sediment system, based upon appraisal of seabed sediments, bedforms and modelling of currents and waves. Evidence suggests that there is no direct sediment movement from the Bank to coastal areas or between the Bank and Scarweather Sands. The BMT (1996) report suggested that of the material that leaves the Bank, a small proportion may travel towards Helwick Bank, whilst the remainder enters the Bristol Channel. The Bristol Channel Marine Aggregates study (NAW et al, 2000) also concluded that during storms flood tides would transport sediments into the Inner Bristol Channel. It was also recognised that there was potential for sediment from the coast (to the north-west of Nash Point) to pass onto the bank, but it was observed that along this stretch mobile sediments are sparse or trapped in embayments. Pethick and Thompson (2002) have, however, questioned this hypothesis and suggest that Nash Bank is actually an open sediment system, which sits within a larger sediment system. The report did, however, suggest that long before dredging has any effect on any sediment flux to the beaches, there would be impacts associated with increased wave propagation, due to the reduction in height of the bank crest.

Dredging has been undertaken at Nash Bank since 1926, with almost licences typically awarded on a rolling basis since the 1970s. In recent years Nash Bank has been the primary contributor of marine-dredged sand, in particular builder’s sand, comprising 40% of sediment extracted from the Bristol Channel. The current licence was granted in 2003, with staged reduction until the licence expires in February 2010 when it is not expected to be renewed (WAG, 2004), see Figure D.2. The maximum annual tonnage granted in 2003 was 900,000 tonnes which reduced to 750,000 tonnes in 2006 and 600,000 tonnes in 2008. Over the last decade, evidence suggests that Nash Bank has been losing volume at a rate that is higher than can be accounted for by dredging alone and Symonds Group Ltd (2002) suggested that at current levels of volumetric loss, the Bank could be eliminated altogether within a period of 90 to 215 years. Long before that point, it has been concluded (WAG, 2002a) that the Bank could cease to function as an effective natural breakwater due to the reduction in crest height and crest width, and that impacts would then be felt on the adjacent shoreline.

4.5 Helwick Bank

Helwick Bank, a headland-associated bank extending for about 15km westwards from Port-Eynon Point, is the longest linear sandbank in the Bristol Channel. It comprises a submerged bank, separated into two shoals by a deeper central channel, the Helwick Swatch (HR Wallingford, 1997). The bank is approximately 12.75km long, and 0.75km wide (at the 10mCD contour), extruding up to 27m from the surrounding seabed in some places (NAW et al, 2000).

Between 1964 and 1990, 741,191 tonnes was extracted from East Helwick and dredging has been undertaken on the Helwick Swatch since 1993 (Davies, 2003). A licence was granted for the extraction of 200,000 tonnes of sand per year from Helwick Bank between 1998 and 2003. When this licence expired, Llanelli Sand Dredging Limited applied for a further licence for the maximum extraction of 300,000 tonnes per year, increasing in annual increments of 50,000 tonnes over 15 years, beginning at 150,000 tonnes and reaching the maximum in the fourth and subsequent years. This application was subsequently revised to extraction of 150,000 tonnes in the first year, increasing
in annual increments of 25,000 tonnes thus leading to extraction of the maximum 300,000 tonnes in the seventh and subsequent years (National Assembly for Wales, 2006).

There have been significant public concerns about the effects of dredging activities on both the seabed and the adjacent coastline, and groups such as the Gower Save Our Sands have been established to highlight these issues and campaign against dredging within certain distances of the shoreline. Given the strong public opinion regarding the possible impact of dredging on the adjacent shoreline, a number of reports and statements have been produced, regarding both changes in the bank and the perceived impact of dredging on the beaches of Gower. Many of these reports are available from the Gower Save Our Sands website (www.gowersos.keyframe.net). Most recently, however, an inquiry was held into the proposal by Llanelli Sand Dredging Limited for a further dredging licence, during which this evidence was reviewed and challenged.

Various parties objected to the application citing adverse effects of dredging upon:

- the conservation objectives and status of the Helwick Bank component of the Carmarthen Bay and Estuaries Special Area of Conservation (SAC);
- the physical condition of the Helwick Bank, based on volumetric analyses of historical bathymetric surveys;
- the anticipated change in the biology of the bank in a response to a change in the bank’s topography;
- the beaches along Gower, including variations in beach sediment levels and the potential resulting effects upon tourism;
- Unknown archaeology on sea bed.

Additionally, the need for the proposed volumes of dredged sediment was questioned as it was considered that they did not meet the (then) current market demand and would not be required to meet the aims of WAG policy for several years. It was argued that it was likely that more suitable sediment environments (offshore) would be licensed in the interim to meet WAG’s aims for a maintained licensed capacity of up to 2 million tonnes per annum (mtpa). The licensing of dredging areas further offshore forms part of the WAG Interim Marine Aggregates Dredging Policy (WAG, 2004).

As part of the inquiry, all available evidence was appraised and cases from various interested bodies presented. Following this, an Inspector’s Report was produced including the Inspector’s appraisal of the evidence, conclusions and recommendations. The Inspector’s conclusions (NAW, 2006) can be summarised as follows:

- Taking all the bathymetry evidence into account, the Inspector’s Report concluded that the data showed a sand bank that is subject to natural variation, but that there was no evidence that dredging operations have had any harmful effect on the topography of the bank. The inspector did, however, conclude that the impact on the topography of the bank of a significantly increased rate of dredging could not be predicted with any confidence.
- It is now acknowledged that there is a link, albeit fairly weak and involving small volumes of sediment, between East Helwick area (eastern part of Helwick Bank) and the adjacent beaches, such that sediment can be transported between the Bank and nearby beaches.
- In terms of impacts on the beaches of Gower, the Inspector was, however, satisfied that, with the exception of Port-Eynon beach, the beach surveys show no long-term deterioration of the beaches in terms of sand loss.
• At Port-Eynon and Horton it was considered that the long-term decline of the beaches is due to loss of sand to the dunes and the Inspector concluded that there is little evidence of harmful effects of dredging, despite the arguments of Gower Coalition that extraction offshore exacerbates the losses that occur as a result of natural forces. The report goes on to state that what evidence there is, supports the case for negligible effects.

• It was recognised that there may be a long term impact, i.e. after 50 years.

• In specific reference to the impacts upon the beaches of an increased rate of dredging, the Inspector’s Report (NAW 2006) stated:

  “I conclude that dredging at rates comparable with past operations would be unlikely to be detrimental to the retention of sand levels on the nearby beaches but that the absence of evidence on the effects of higher rates prevents me drawing any confident conclusions for that scenario. Consequently, and bearing in mind the importance of maintaining the high quality of the beaches, I consider it would be prudent to refuse dredging at significantly higher rates”.

• The proposal (appropriately limited in terms of the maximum extraction rate and subject to monitoring and control conditions) would be in accordance with the policy aims of WAG’s national policy on marine aggregates dredging.

The Inspector recommended that a favourable Government View be given in part (for a licence of limited extraction rate and period), subject to various conditions. In response, in August 2007, WAG confirmed a favourable Government View for a licence restricted to a maximum extraction rate of 150,000 tonnes per annum of marine aggregates for a period not exceeding seven years and subject to various conditions (WAG, 2007).

In compliance with the conditions of the licence agreement, WAG (2007) stated that Llanelli Sand Dredging Ltd must undertake the following monitoring, with data from these various activities analysed and interpreted prior to approval of dredging for the subsequent year:

• six monthly surveys of 10 beach profiles (three on Rhossili beach, one on Mewslade beach, three on Port-Eynon beach and three on Oxwich beach), usually carried out in March and September;

• baseline survey agreed with CCW (not yet done, so dredging has not recommenced);

• pre- and post-storm beach profiles once during the autumn/winter period and once in the spring/summer on selected beaches (previously Mewslade and Port-Eynon);

• beach surfaces are measured using airborne laser scanner survey (LiDAR), carried out either during February or August;

• annual bathymetric survey of Helwick Bank extending into Port Eynon Bay, usually carried out in June or July.

Llanelli Sand Dredging Limited is aware of the continued public concern regarding further dredging on Helwick Bank (Environmental Resource Management, 2009). In July 2009, Llanelli Sand Dredging Limited proposed a variation to the existing licence for Nobel Banks, which would mean an increase in the extraction volumes and also a licence for dredging 10km from the coastline in the Bristol Channel, whilst relinquishing the Helwick Bank licence. Early consultation on this application has suggested that dredging in deeper waters and further from the coast would be a preferred alternative.
4.6 Nobel Banks

Nobel Banks extends west and south from a point 12 miles south-west of Cefn Sidan and about 6 miles south-west from Worms Head, Gower (Carmarthenshire County Council, 2004) (Area 476, see Figure D.4). It is an area where numerous 2km to 5km long sand-waves, orientated north to south, merge to form the southern margin of Carmarthen Bay. These ridges are between 500m and 2,000m apart, ranging in height between 8m and 16m, and are largely immobile, with the exception of a surface layer of mobile sand (Environmental Resource Management, 2002). Llanelli Sand Dredging Ltd was granted a licence in March 2006, following a public inquiry, to extract 300,000 tonnes per year for 10 years. The Inspector recommended a favourable Government View be given, subject to conditions, permitting the extraction of 4.5 million tonnes at the rate of 300,000 tonnes per year for 15 years. The Minister agreed with nearly all the Inspector’s recommendations but instead permitted the extraction of 3 million tonnes over 10 years in favour of a relatively cautious approach to a marine area which has not previously been dredged (WAG, personal communication, 22nd October 2009).

Environmental Resources Ltd (2002) stated that there was no evidence to prove a sediment pathway between Nobel Banks and inshore banks and coastlines. Environmental Resources Ltd (2002) stated that since the banks are further offshore than other licensed dredge areas in the Bristol Channel, and thus in deeper water, the sand waves are considered to be deep enough not to affect wave conditions, and any slight changes in tidal currents resulting from dredging activities would not affect the coastline.

In June 2008, LSDL requested a ‘screening opinion’ from WAG on an increase in the maximum extraction at Nobel Banks from 300,000 tonnes per year to 500,000 tonnes per annum. A further request was then received in January 2009 for the same increase but limited to the original 3 million overall tonnage and 10-year period, whilst relinquishing the Helwick Bank licence. WAG’s screening opinion advised that the proposal would require an application supported by an Environmental Statement and an Appropriate Assessment would be required (WAG, personal communication, 22nd October 2009).

Pethick and Thompson (2002) suggested that dredging at the Nobel Banks could have localised effects on sediment transport but that these would be ‘barely detectable’ (if at all) at the coast and would also be buffered by the very large sediment storage capacity of Carmarthen Bay. The dredging application will therefore require further appraisal.
References


Crown Estate www.thecrownestate.co.uk/marine_aggregates [Accessed 10th June 2009].


