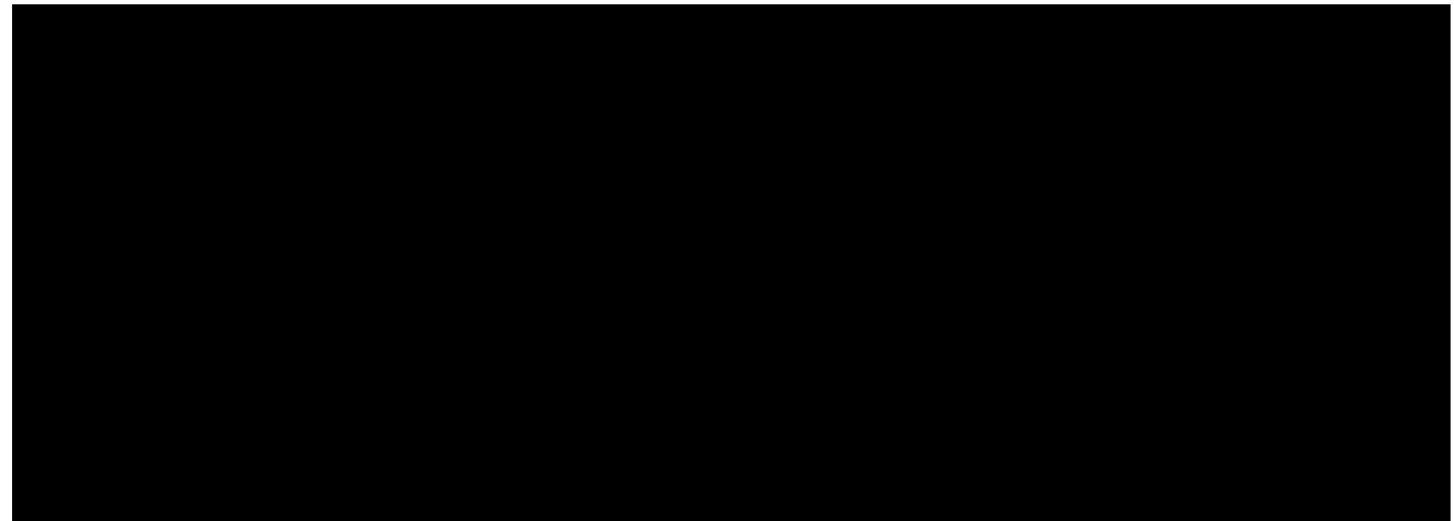




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**From:** Marlow, Angela (NE) [REDACTED]  
**Sent:** 23 August 2016 10:56  
**To:** Simon Davis  
**Cc:** Roger Spencer  
**Subject:** re:P/97/15/PL - Pagham Harbour managed breach

Dear Simon,

Please find attached an annotated version of the draft proposed conditions you sent yesterday. I have been through ABPmer's further information which was requested to ensure that all the mitigation measures and a principle for the compensation were clarified. I have lifted from this the relevant sections which I think can be translated into conditions and should cover all the mitigation required. The exact detail for the compensation still needs to be confirmed. I also lifted the mitigation measures required in the Appropriate Assessment which are the same but just to ensure this is covered.

This is very much draft but it should cover all the issues. I am happy to look at it again for you but thought I would send this over because of time and also in this format you can see what ABPmer have already agreed. I am still waiting to hear from other colleagues about the 20 years from MMO vs the 8 years that ABPmer suggest for the conditions. We have generally viewed this with regard to the geomorphology in terms of when the site starts to natural evolve again. ABPmer's approach is based on the premise that in 8-10 years the initial breach form will not be present as the severed material has been worked away by coastal processes but there are other aspects such as community wardening, the establishment of the vegetated shingle on Pagham frontage etc that also need to be managed over a timeframe.

However, we would consider regardless of the timeframe for the conditions any subsequent management of the spit in relation to this application to maintain a harbour opening should still require formal sign off by ADC/CDC who should consult with NE to ensure that it is appropriate, as this requirement is for conservation interest of the harbour only. We would also think that ADC as the coastal risk authority and EA would need to be informed of any coastal works. The stakeholder group are the body to implement some of the conditions after the initial construction but we

would suggest that any further coastal works beyond the initial breach works require written consent from the competent authorities involved in the site (as is required for all ADC works).

This is why I have copied in Roger and also because we will need his advice with regards to the depths around the proposed tern island

Also we think it is helpful to only refer to the proposed breach for the initial construction after that there is a requirement to ensure that a harbour inlet/outlet remains for nature conservation interest within the harbour to be under a tidal influence but this initial breach will evolve overtime under natural coastal processes and this is part of the application's main principle as ABPmer have proposed.

I hope this helps please come back to me if required I am happy to look at another draft of conditions.

Kind regards,

Angela

Angela Marlow BSc MSc DPhil

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**From:** Marlow, Angela (NE) [REDACTED]  
**Sent:** 23 August 2016 13:46  
**To:** Simon Davis  
**Cc:** Roger Spencer  
**Subject:** FW: Pagham - Conditions associated with unblocking the harbour mouth

Dear Simon,

Below is some further clarification on the future management of securing a tidal opening to Pagham Harbour, this was the clarification I was waiting for so these are all NE's comments on the conditions currently.

#### **Rationale**

The only acceptable reason and stated reason in the application for reopening the breach is if the harbour mouth blocks itself following the cutting of the artificial breach. This is to ensure a regular tidal inundation of the intertidal SPA \ SSSI \ MCZ. It is a condition associated with Habs Regs compliancy and this needs to be recognised. This rationale should be made clear in the associated planning conditions thus avoiding the risk of it being done for other purposes and keeping the channel fixed in situ which is not what the application proposed.

#### **Length of Condition**

The condition length of times should be consistent between Authorities. It also makes sense given the uncertainties involved in how the system will respond and the potential risk to the SPA interest and other nature conservation interest features of Pagham Harbour that the slightly longer 15 year period is used.

#### **Method for Unblocking the Channel**

From the geomorphology SSSI perspective natural development of the western spit following the proposed breach should be allowed to occur as the application's principle is to work with natural processes. This is likely to involve the gradual extension of the western spit and deflection of the channel eastwards through erosion of the remnant eastern spit. If the harbour mouth becomes blocked it will be best to undertake this work from the eastern side of the channel; thereby avoiding damage to the evolving new spit. In most circumstances this should be a relatively straight-forward operation involving opening up a small channel that will then cut down to become self-cleaning. Given the dynamic nature of the system it is hard to be prescriptive about the exact details so the condition should require that any such works are approved by NE and others who should be consulted on coastal works. A similar access methodology will also need to be applied as for the initial breach.

#### **Funding**

There are examples of developers being required to provide an upfront bond to cover any necessary costs, a satisfactory guarantee needs to be in place that will provide funding if it proves necessary (this was a requirement of AA and offered by the applicant).

#### **Who makes the decision about subsequent work?**

There is some logic in that NE has the final say in this as the rationale for doing any future works is a nature conservation one. The option of a small group of regulators and the developer i.e. the stakeholder group who agree to meet / or by telephone to manage and monitor this condition is acceptable -- however, the final decision may still be best left with the competent authorities and the statutory body for nature conservation.

The arrangements around the points below also need to be discussed as there scope for misinterpretation over such a long time-period:

- When is the harbour actually closed? Do we need to define this?
- How quickly does the developer need to be able to respond if the harbour does close?
- Who should notice be given to ADC/CDC/MMO consultation with EA and NE
- Who is the NE contact?

I hope this additional information is helpful.  
Kind regards,  
Angela

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Proposed planning conditions Pagham Harbour breach.

Summary

The main items that require mitigation /compensation are:

**SPA/Ramsar bird interest features**

**MCZ features**

SSSI features including geomorphology, SSSI birds and vegetated shingle

These are covered by the following elements:

Construction methodology, ongoing requirement to maintain a harbour inlet/outlet, mitigation measures of managing the site and monitoring requires

The table below captures the mitigation in the AA for the SPA/Ramsar birds also need to include the compensation.

|                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                              |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Increase in disturbance and predation [for little terns]                                                                                                              | This will be mitigated by construction being timed outside of the breeding season<br>Ensuring machinery only works within designated paths or within the active intertidal zone to ensure minimum impact on shingle ridges where little terns nest.<br>Fencing, wardening, and signage.<br>See section 1.5.3 of the 'Further information' report for details |
| The potential for the harbour to close as a result of the breach, thus removing the harbour from tidal influence, impacting on habitats that occur within the harbour | <b>Yes</b><br>Ongoing monitoring of the breach by the stakeholder group and re-opening of the breach if required                                                                                                                                                                                                                                             |
| Construction impacts that may reduce foraging habitat for, and disturb, overwintering birds                                                                           | <b>Yes</b><br>Access routes, Timing of works, Cold weather working restrictions. See section 1.5.2 of the 'Further Information' report for details.                                                                                                                                                                                                          |

Management Plan Condition. The following is a first draft which I have adapted from a SUDS Management condition. It is by no means final:

Within 3 months of the permission being granted, the applicant/developer shall submit for approval by the Local Planning Authority, a management plan for the ongoing monitoring and potential need for maintenance of a harbour opening including the possible reopening of the harbour. The plan is to include (a) details of the Stakeholder Group that will be set up to monitor the mitigation/compensation measures including membership and how the breach will be monitored and who this information will be reported to;

If the stakeholder group identifies a need to manage or reopen a harbour inlet/outlet this will be identified to the competent authority who will consult NE before any actions is taken. It is required that these organisations agree that the proposed actions are necessary for the nature conservation interests to remain un-impacted by any closure of the harbour.

#### Monitoring

The physical conditions along the spit and on Pagham Beach are surveyed regularly (and with a high degree of topographic resolution) under the continuing Channel Coastal Observatory (CCO) monitoring programme. These surveys are very valuable for understanding the changes taking place. Data from CCO surveys were reviewed in the ES for the period up to January 2015 (see Section 6.1.1 of the ES for full list of data sources used within the ES).

This proposed breach site and the New Tern Island compensation location will be subject to ongoing physical and ecological monitoring to ensure that the post-implementation developments, and interactions with the nature conservation interest of the protected SSSI/Ramsar site, are understood. The vast majority of such work will be carried out as part of established programmes of work, including especially the Southeast Strategic Regional Coastal Monitoring Programme which involves beach monitoring survey led by AWC and the Environment Agency Light Detection and Ranging (LiDAR) surveys.

Survey) programmes. The only notable gap in information relates to tidal behaviour in the middle of the harbour and as a result it is recommended that a tide gauge is deployed within the harbour for the purpose of monitoring and managing the project. The stakeholder group can advise on the need for this, the duration of its placement, and/or the location for its deployment.

(b) details of the financial management of the breach site including arrangements made in

**Comment [31]:** Stakeholder group has other duties such as community wardening etc see later

**Comment [32]:** It may be useful to just refer to the need to maintain a harbour inlet/outlet for conservation interest rather than referring to the 'breach' we do not want any confusion about the need to maintain a tidal exchange for conservation reasons which is what this condition is for vs holding the initial breach in a fixed position which is not what this application is for.

**Comment [33]:** There is a comment in Tom's marked copy SG to determine

the event that the Stakeholder Group (or any subsequent Stakeholder Group/Management Company) is no longer able to fulfil its duties; and (c) arrangements for any subsequent future reopening of a tidal inlet/outlet for the harbour. The stakeholder group/management company shall thereafter strictly adhere to and implement the recommendations contained within the ?manual to ensure that the harbour remains open. Any subsequent decision to re-open the harbour or implement management under the current licence should first be notified to the competent authority who should consult NE. No further changes shall be made to the approved management plan other than with the written consent of the Local Planning Authority.

Reason: To ensure that the Pagham Harbour remains open and connected to the sea to ensure no impact on the conservation interest of the site from loss of a tidal exchange in accordance with the National Planning Policy Framework and Arun District Local Plan policies AREA13 and AREA14.

The proposal is not to fix a channel but to reset the position of the inlet/outlet to remove the scour on the Pagham frontage and allow shingle to move onto the beach. The spit will then evolve under coastal process unhindered, subject to a tidal inlet/outlet being maintained for nature conservation interest of the harbour. (ABPmer have some wording in their application around this being the case can check this see below). If the inlet/outlet needs to be maintained/reopened any newly accreted shingle on the Church Norton side should be avoided as this is the re-establishing geomorphological feature.

of this 'feeding' effect is as yet uncertain. The breach has though started to illustrate how the proposed scheme is designed to function as 'a soft solution that works with natural processes at the coast, rather than fighting against them with hard engineering' (see Section 2.1.3 of the ES (ABPmer 2015a) and Section 2.5.3 of the DAS (ABPmer 2015d). However, the proposal is still required in order

A number of the interest features of Pagham Harbour require a tidal influence, therefore a tidal exchange should be maintained and the harbour should not close as a result of this project. The condition to reopen the harbour in this context is for nature conservation interest only and any requirement to reopen or maintain an opening is for this reason only. Any future activity to implement this should first be confirmed with the competent authority and subject to consultation with Natural England, this is in addition to the stakeholder group or in its absences if it is no longer in place. (may also need to serve notice to the coastal erosion authority and EA)

Our understanding was that prior to the commencement of any works a bond would be secured to allow for any future works to ensure that a harbour inlet/outlet can be maintained.

Below taken from the further information

**Comment [34]:** It is our understanding that a financial bond is to be secured prior to the breach to ensure future management can be carried out if required. See the appropriate assessment.

**Comment [35]:** Any subsequent re-opening should be notified to the competent authority who should consult NE. The spit once breached should be able to evolve naturally subject to a tidal exchange being maintained for the benefit of conservation interest.

**Comment [36]:** Which manual is this the construction manual to be drafted?

- the risk of breach closure is deemed to be low as set out in the application documents but further details about the measures to maintain the breach are presented in the form of an outline 'Traffic Light' system (or 'What If' matrix);
- this 'What If' matrix cannot be based on quantitative criteria but will need the inherent application of judgment from the stakeholder group;

The location for the placement of newly excavated shingle also warrants consideration under such circumstances. It is likely to be preferable to place shingle at a location alongside the breach which helps maintain the breach location and/or also provides an area which may become valuable for breeding Little Terns. With these issues, as with all aspects of this management plan, an element of judgement will be required.

RSPB  
to determine  
if re-opening  
needed?

**Comment [17]:** the location for the placement of any additional shingle will need to be identified through consultation with Natural England, we will consult with the RSPB and others but any works on SSSI needs consent from an appropriate body and future works should be confirmed through the LPAs in consultation with NE

#### 1.5.5 Managed breach - Ongoing monitoring

#### Fox Proof Fencing Condition:

#### EITHER

No development shall take place unless and until details of appropriate fencing designed to keep people and predatory animals off the Tern Island have been submitted to and approved by the Local Planning Authority. The approved fencing shall then be erected in accordance with the approved scheme and permanently retained and maintained in a satisfactory state thereafter.

plant

RSPB to  
implement  
but applicant  
to be legally  
responsible

Once the New Tern Island compensation site has been created then this will also be managed by the RSPB under their existing reserve site management plan. The range of different management options that are available were included in Appendix L of the ES and some or all of these will be used, as required, to maximise the value of the site and its attractiveness to Little Terns. To this list can be added the idea of using tape lures (recordings of bird calls), as suggested by Natural England, which could be used alongside decoys (creating decoys can also be a valuable community/school engagement activity).

Based on the RSPB's experience the key measures will include seasonal predator exclusion fencing (i.e. placed from April to August each year and not placed in the reactive way that is proposed for terns nesting on the separated spit end). It will also include raking the surface the shingle at regular intervals to keep the shingle bare and reduce lichen coverage and vegetation. See Appendix L of the ES for more of the available management measures.

#### Taken from the further information document

- the RSPB will continue to manage (in collaboration with the local community and stakeholder group) the Little Tern habitats;
- the methods used by the RSPB (including fencing and wardening) will be as per their ongoing work under their reserve management plan;
- there will be extra summer fencing and signage to limit human access to the remaining section of spit (for as long as it remains viable habitat for terns);

and channel closure. This aspect will be reviewed by the overseeing stakeholder group.

condition  
support  
of the  
mitigation  
a lot

On the spit itself the RSPB will continue with the placement of 'reactive' predator-control fences around specific areas where birds have settled down to nest. This is expected to be mainly Little Tern nests but may also include other species such as Oystercatcher and Ringed Plover depending upon the conditions. As requested by Natural England, these measures will continue for as long as the habitats on the remaining distal end of the spit continue to be suitable for nesting terns.

Once the New Tern Island compensation site has been created then this will also be managed by the

Reason: In the interests of the safety of wildlife in accordance with policies AREA13, AREA14, GEN7 and GEN29 of the Arun District Local Plan and the National Planning Policy Framework.

OR

Within X months of the permission being granted, details shall be submitted to and approved by the local planning authority concerning appropriate fencing / wardening designed to keep people and predatory animals off the newly severed spit area and the little Tern Island. The approved fencing shall then be erected in accordance with the approved scheme and permanently retained and maintained in a satisfactory state thereafter.

Reason: In the interests of the safety of wildlife in accordance with policies AREA13, AREA14, GEN7 and GEN29 of the Arun District Local Plan and the National Planning Policy Framework.

NB is the fencing just to deter predators or people also?

The compensation requirement is for the delivery of a little tern island that remains an island during all states of the tide. ADC engineer has identified current the depths are not sufficient. The success of this compensation requires this to be island to prevent disturbance and predation on what will a relatively small area and therefore is of high value. Predation fencing will also be erected during the breeding season by RSPB.

(ABPmer 2015d). They also include an extra plan (Figure 5) which describes the shape and design of the New Tern Island compensation site.

Further details about the ongoing management of the breach site and tern habitat are presented in Section 2.2.1 below in the context of response related to the AA. In summary though, this process will involve the setting up of a stakeholder group to oversee the project. The RSPB and PPC are expected to play lead roles in the group (jointly chairing) and RSPB staff will continue to manage the breach and spit area for Little Tern and other breeding birds.

The RSPB's work on the ground (to be done in collaboration with a local voluntary body) will include fencing and wardening work in the summer. This will incorporate installing reactive fencing around nesting sites on the spit areas to minimise the impacts of predator disturbance. This reactive fencing and wardening will follow the methods that the RSPB has adopted for its current work under the reserve management plan. In addition, there will be extra proactively-placed seasonal fencing and informative signage to limit human access to the remaining section of spit (for as long as it remains viable habitat for terns) during the summer breeding season). The group will not only advise on the efficacy of, and funding for, the fencing and wardening work, but will also have a remit to identify and develop community and schools engagement initiatives over the 8-year period of its operation.

It is proposed that the stakeholder group meets on a biannual basis for the first 2 years and then annually for a further 6 years<sup>10</sup>. It is not considered appropriate for commitments specifically related to this proposal to be extended much beyond this timeframe given that the process works with natural processes and that, over time, there will be an increasing inability to distinguish between the shoreline morphology that would have existed with and without the proposed intervention. However, this shoreline will require ongoing adaptive management (lead by ADC) over the longer-term.

**Comment [38]:** We will come back to you on this 8 years vs 20 years

#### Construction Management Plan Condition – to be drafted pending advice from NE

PPC will not however be able to provide a full and final construction methodology and schedule until a formal procurement process has been pursued. However, the key principles for work (e.g. construction working areas and timings etc.) that will need to be adhered to have been further defined in this report in response to the ADC letter (and Natural England's comments). Also, it is anticipated that provision of the final post-procurement method statement will be made a planning condition.

Therefore we would suggest a pre-commencement meeting and confirmation of the exact methodology to be used because of the continuous evolution of the site and when the contractors are appointed and the final method is confirmed.

- **Plant Routes:** The proposed plant route map shown in Appendix D of the ES is reproduced as Image 8. For this plan the routes were aligned along existing paths or along the un-vegetated sections of the spit below mean high water to ensure that there is minimum damage to areas with vegetation. Adopting this approach will also keep plant away from newly formed shingle ridges (except at the construction areas) which are of geological interest and will keep plant more than 10 m away from the Little Lagoon (see Image 8). This basic plan still applies following the recent physical changes on site. For instance it has been confirmed (following recent advice received from a second expert contractor) that plant access can still be from the distal end of the separated spit and then through the new breach at low water (over the ebb delta). Adoption of this route will avoid damaging vegetated shingle areas and locations of geological interest.

See figure page 12 in the further information document

- **Construction Plant and other details:** Following the selection of the preferred contractor, a finalised construction plan (including plant route map) will be forwarded to ADC, RSPB and Natural England for agreement and sign off. The plan will include:



- Type and number of vehicles;
- Access route maps for plant;
- Access route maps for personnel which will be predominantly confined to the compound, the area of the new infill and the breach location;

+ CDC

For now the number of plant is expected to be around 8 on site (2 teams each with 1 excavator, 1 dozer and 2 dump trucks plus 4-wheel drive support as described in Section 3.2.6 of the ES). For this Further Information Report, a second opinion on this issue was sought from another specialist contractor and they have confirmed that around this number of plant would be required.

In summary, during construction, the plant routes will be clearly defined (with vehicles travelling below the mean high water line as much as possible), and turning of vehicles restricted to clearly defined turning areas. It is proposed that these turning areas are to be agreed in advance with Natural England, see also Section 3.1.3. Also as noted in the ES the details of the temporary access routes and stockpile area would be agreed in advance with Natural England and RSPB to minimise the footprint of impact and any potential damage to vegetated shingle.

Vehicles should not access the Church Norton side of the spit and all works should be from the eastern side of the spit accessed by the Pagham Frontage. When working on the little tern compensation island the vehicles should track along the shingle intertidal area.

Compensation Measures (Tern Island) to be in accordance with submitted drawing or in accordance with plans to be submitted (?) – i.e. do we want further plans/details .....

Needs to be assurance that the proposed little tern island will be an island at all states of the tide. ADC coastal engineers should be consulted to ensure that the depths are sufficient. (a) works to be completed prior to commencement of the breach or (b) work to have at least commenced on it prior to the breaching of the spit? To be drafted pending advice from NE. The proposed little tern island will be constructed at the same time that the breach occurs as some material from the breach will be used to construct this island and the site needs to be ready for the breeding season (start of April – end of August). As this work is inside the harbour it should be prioritised to ensure that it is completed before the main over-wintering season.

The proposed compensation site enhancement work will be carried out at the same time as the breach excavation work. As requested by Natural England/RSPB, the design has been made as elongated and narrow as possible because that has been found to be the preferred shape for nesting Little Terns (as opposed to square/round islands for example).

Compensation Measures (any other mitigation measures) – to be drafted pending advice

from NE

### Compensation habitat

ADC requested further details on the design of the New Tern Island that would be created as compensation for losses of suitable habitat at the spit. This compensation was identified to account for the uncertainty about the effects on Little Terns and was described in Section 11.2.2 of the ES (ABPmer 2015a). Further evidence about the effectiveness and adaptability of such a measure was

The compensation is required as a result of the direct loss of the little tern habitat as a result of this proposal which may result in an adverse effect on the integrity of the site.

The proposed compensation site enhancement work will be carried out at the same time as the breach excavation work. As requested by Natural England/RSPB, the design has been made as elongated and narrow as possible because that has been found to be the preferred shape for nesting Little Terns (as opposed to square/round islands for example).

- All the landscaping material will be laid above the 1.9 m ODN level (Mean High Water (MHW)) raising a total area of 0.36 ha above this MHW level<sup>13</sup>;
- The top/crest of the island is set at around 3.8 m ODN (approximately 75 cm above the level of Highest Astronomical Tide covering the uppermost exposed concrete on site) and will cover an area of 0.15 ha;
- The side slope on the sheltered (northern) side would be set at 1 in 1 slope while it would be 1 in 5 on the exposed (southern) side; and

Roger Spencer ADC coastal engineer highlighted that the current dimensions would not ensure that the proposed little tern island remain an island during all states of the tide this needs to be conditioned to ensure that this is the case. This is to ensure no predators or disturbance from people, predator fencing will also be used.

No works during Bird Nesting Period (start of April to end of August) and no works to commence until the last Little Tern has fledged – to be drafted pending advice from NE

- Appreciation of judgement from the stakeholders group;
- Natural England's advice on timing of construction to avoid sensitive breeding seasons will be followed;

### Over-wintering bird conditions

- the RSPB will provide a watching brief for Little Terns to ensure that this species is unaffected by construction and no work is started on the site (outside of development compound at Pagham Car Park) until the last bird has fledged;
- the majority (possibly even all) of the work should be carried out before the overwintering bird period, but any work after 1 November will be accompanied by certain restrictions to minimise the risks of disturbance to overwintering birds;

- \* **Avoiding the Bird Breeding Season:** As proposed in the ES, construction work on the spit will be avoided during the breeding bird season but it is recognised that further details of the timings and nature of the activities are warranted to provide Natural England with greater assurances as to the absence of any effect on breeding birds. To provide this it can be confirmed that Natural England's advice on timing to avoid sensitive breeding seasons will be followed and that:

- o the mobilisation of plant will start in August but all such work will be confined to the works compound (which will be in the Pagham Harbour Road car park) and access roads;
- o no plant movements will occur outside of the car park until the last Little Tern (or other breeding bird species) on the spit has fledged. This is expected to be late August to early September. The timing of this last fledging and construction commencement will be agreed in consultation with the RSPB who will be providing the required watching brief. At that time Natural England and the contractors will be jointly notified;
- o as part of all phases of this work (i.e. during the procurement process and then when preferred contractor mobilises on site) construction staff will be briefed to ensure they are aware of the need to keep away from breeding bird sites during the summer (and also to avoid unnecessary activities (e.g. walking across the site) that may cause disturbance to overwintering birds during the winter and to adopt access routes/movements that minimise potential effects on vegetated shingle).

*— Jay Marchant*

- **Work during the Bird Overwintering Season:** Work at the breach will only start after the departure of breeding birds and then the majority (if not all) of the work is expected to be carried out before the overwintering bird period (start of November 2016). Where work extends into November it is likely to be for around three weeks. During this early part of the overwintering period, cold/freezing weather working restrictions for the work will apply<sup>9</sup> and personnel walking movement outside of the plant will be kept to a minimum and confined to areas of work at the breach and compensation site cut and infill areas (subject to issues of safety).

As set out in the ES (Section 3.2) the construction work will not take place over the summer (bird breeding period). The timescales for this and the way in which it will be assured, by having an ecological watching brief, were clarified in Section 1.5.2. The construction work is anticipated to have a 9 to 11-week construction window (it may be shorter at around 8 weeks if sheet-steel piling is deemed to be unnecessary) and therefore it may extend into the early phases of overwintering period (November to March).

Measures will be put in place to minimise any disturbance effects to birds after the 1 November and these measures are described in Section 1.5.2. This includes cold weather restrictions and minimising personnel movements. These are to provide further reassurances that there will be no significant disturbance effects in addition to the evidence presented and conclusion reached within the ES (see Section 8.2.6 and Appendix K).

Simon wrote -I also then went through the NE response re the SSSI/MCZ features dated 26 April 2016. At the end of that, there is a list of Possible Mitigation Measures:

Simon these were possible mitigation measure that we raised to ABPmer they did not accept all of them, further in this document I have copied the mitigation measures from the further information document that ABPmer have agreed.

i. Allow the position of the 'breach/mouth' to evolve without further intervention. If re-opening of the breach is required, this should seek to avoid fixing the harbour opening and should avoid the loss of shingle from system. It is appreciated that the requirement to intervene to re-open the harbour inlet should be limited as the proposed breach is being designed to be relatively self-sustaining.

ii. The construction plan being provided by the applicant should ensure protection of the surface geomorphology of shingle ridges and recurves. This plan should detail the routes to be taken by machinery and personnel to access the site and the construction locations. The general advice is to stick to existing paths/tracks and particularly on the spit to travel below the mean high water line where any disturbance to shingle would be re-distributed at next tide. In general vehicles and personal should keep off the shingle – particularly the newly formed ridges and recurve features.

**Comment [39]:** This wording can be used in the construction manual

iii. The lowering of the inner part of the wide existing crest of the 'historic' spit located updrift of the breach could also be considered (see figure 1). Presently, the crest here is artificially elevated as a result of historic engineering works, and will prevent the natural evolution of the spit via periodic overwashing of gravel. Lowering the crest to a more natural level would avoid this issue.

iv. Opportunities to remove relict hard engineering structures (e.g. remnants of historic training walls in the south west of the Harbour to the rear of the Church Norton end of the spit) could also be taken - see figure 2. These structures are likely to have a detrimental effect on the SSSI geomorphology interest by restricting the natural evolution.

v. Consideration would need to be given to impacts on other interest features that may be impacted by any mitigation works.

vi. We advise that it should be ensured that the regional monitoring programme will capture the post-breach evolution of the spit to allow interpretation of the evolution of its coastal geomorphological interest. This could be achieved through discussion with the local authorities and the Channel Coast Observatory.

Using the advice from Natural England and the information within the ES, this information is presented as a set of key construction principles. This is because it is not possible, at this stage, to provide a final detailed construction plan. This can only really be prepared once the procurement process has been progressed and a preferred contractor commissioned<sup>8</sup>. The key principles of any work that will have to feed into such a plan are as follows:

Need for a pre-commencement agreement to the methodology and site meeting to ensure that all the principles are in place in the working methodology

Management of little tern habitat

The considerations associated with the management of the breach itself were described in Section 1.5.4 but with respect to ongoing management of the distal end of the spit (the area separated off by the proposed breach but also joined to the shoreline by the infill) the RSPB has agreed that they will oversee this area. Their work on this site will be conducted in essentially the same manner as their current programme of works on the site. This will involve:

- regular wardening visits (with frequency at least as per current RSPB management measures but probably increased with voluntary support);
- seasonal visitor exclusion of the connected section between Pagham Beach and the infill area;
- seasonal placement and moving of reactive predator-exclusion fencing around nests;
- installing seasonal signage to explain to residents and visitors (and especially dog walkers) why this access exclusion fencing is in place and explain the need to be alert to the situation during the summer season (late April to the end of August); and
- monitoring nesting activities and breeding success (as well as feeding back results to the overseeing stakeholder group so that they can understand and review the effectiveness of the management measures).

and shingle closure. This aspect will be reviewed by the overseeing stakeholder group.

condition  
up part  
of 8 years  
inhabitation  
land

On the spit itself the RSPB will continue with the placement of 'reactive' predator-control fences around specific areas where birds have settled down to nest. This is expected to be mainly Little Tern nests but may also include other species such as Oystercatcher and Ringed Plover depending upon the conditions. As requested by Natural England, these measures will continue for as long as the habitats on the remaining distal end of the spit continue to be suitable for nesting terns.

Once the New Tern Island compensation site has been created then this will also be managed by the

land  
RSPB to  
implement  
but optional  
to be legally  
responsible

Once the New Tern Island compensation site has been created then this will also be managed by the RSPB under their existing reserve site management plan. The range of different management options that are available were included in Appendix L of the ES and some or all of these will be used, as required, to maximise the value of the site and its attractiveness to Little Terns. To this list can be added the idea of using tape lures (recordings of bird calls), as suggested by Natural England, which could be used alongside decoys (creating decoys can also be a valuable community/school engagement activity).

Based on the RSPB's experience the key measures will include seasonal predator exclusion fencing (i.e. placed from April to August each year and not placed in the reactive way that is proposed for terns nesting on the separated spit end). It will also include raking the surface the shingle at regular intervals to keep the shingle bare and reduce lichen coverage and vegetation. See Appendix L of the ES for more of the available management measures.

## SSSI Geomorphology

The intention of the original proposal had been to deliberately work with natural processes and ensure that the system continues to function and evolve naturally but simply from a revised configuration (i.e. with inlet position returned back to a historical position). Therefore the distinction between natural change and that imposed by the project was intended to be as small as possible with the latter mimicking the former. Since the natural breach has occurred, the distinction between the

England letter. Following conversations with Natural England they have confirmed that this report should highlight such conflicts and pursue measures which are suitable. Taking the list of measure presented by Natural England the following will be adopted:

- **Allow the managed breach to evolve naturally and minimise human intervention:** This is a key principle of the proposal and will be done according to the measures set out in Section 1.5.4. Where measures are required to maintain the tidal functioning of the harbour then these will be done as suggested in a way which avoids loss of shingle from the system;
- **Protect surface geomorphology and shingle re-curves during construction:** As set out in Section 1.5.2 the access routes and plant operation areas are designed to avoid and minimise any such effects; and
- **Progress regional monitoring to capture post-breach evolution.** The post-breach evolution of the spit will be subject to ongoing monitoring as described in Section 1.5.5.
- **Foreshore tidying around the area of the New Tern Island.** There will also be opportunities during the construction work to remove loose and accessible debris. In particular the area near the proposed compensation site has an old area of sheet steel piling with loose surface debris that could be removed.

## SSSI features

construction will largely avoid the overwintering period. Construction work will completely avoid the nesting period which, in response to advice from the RSPB, is understood to cover the period from April to August<sup>19</sup>. Thus, no impact from this temporary minor reduction in feeding habitat on

noted that the intended wardening and fencing measures targeted at Little Tern (see Section 1.5.3) would also benefit breeding Oystercatcher and Ringed Plover, and that these species might also use the New Tern Island compensation island.

## Mitigation with regard to new vegetated shingle forming on Pagham frontage

part of SG mitigation  
Some of the land will be disturbed by workers. As disturbance is a main inhibiting factor for the establishment of dense vegetated shingle vegetation, it is proposed that the community be further informed about the ecology of vegetated shingle, and that signage be erected to inform visitors and guide them away from sensitive areas. This can be done as part of the community engagement and habitat management actions described above (see also Section 1.5.3).

ditto  
It is furthermore possible that, alongside with bird wardening volunteer work which is to be initiated to help minimise disturbance to breeding birds on the spit (see Section 1.5.3), the community is also informed about techniques for aiding the establishment of vegetated shingle. The removal of invasive species by volunteers could, for example, be encouraged<sup>20</sup>. This could further help to mitigate for any damage to vegetated shingle habitat. Prior to commencement of such volunteering actions, the stakeholder group should be consulted.

## MCZ

- Consequences for all MCZ features from harbour closure; this was highlighted as 'the main risk to the MCZ features' due to their requirement for saline influence;
- Consequences on DeFolin's lagoon snail from:
  - Shingle compaction due to construction vehicle movement near Little Lagoon;
  - Smothering due to construction of New Tern Island.

**Comment [J10]:** Maintaining the harbour opening for the MCZ is the same as that required for the SPA.

**Comment [AA(11)]:** Construction of N.Tern Island would need to take existing Defolin habitat into account.

## Avoiding impacts on the Defolin snail in the little lagoon area

In order to mitigate this risk, in its further advice issued on 26 April 2016, Natural England specified that 'this impact could be avoided by having a construction buffer zone of between 5 m to 10 m around Little Lagoon (there is a fence line already in place) and using existing track ways and paths, not turning vehicles on the shingle but reversing back along existing tracks.' The Little Lagoon already has an access exclusion fence around it (some 10-15 m from the lagoon edge) and it can be confirmed that plant will remain at least 15 m way from the Little Lagoon. Image 13 below shows that a minimum 10 m buffer will automatically be observed as all the tracks around the lagoon are at least that distance from the lagoon.

**Image 13.** Existing exclusion fencing (right) and 10 m buffer zone around Little Lagoon (left)

It can also be confirmed, as set out in the ES and in Section 1.5.2 above, that plant will predominantly use existing trackways and areas below mean high water. Working in these areas will mitigate for any effects arising from the possible compaction of shingle. Turning of plant will also be avoided when they are moving along these established paths but will, instead, be confined to areas below mean high water, where tidal conditions permit. The turning points/areas will be agreed in advance with Natural

England. On any rare occasions when a plant moving along these routes needs to retreat and no suitable turning areas are available then this will be done by reversing along the agreed access track. It is advised that there should be no turning areas along the 160 m of track directly fronting Little Lagoon. The necessity of observing the minimum 10 m buffer, and not turning vehicles on the track fronting the Little Lagoon, will be set out in the construction plan.