Examining Authority's
Second Written Questions
Response by the
Royal Society for the Protection of Birds

7 September 2012

Planning Act 2008

In the matter of:

Planning Application for construction of the Able Marine Energy Park on the South Bank of the River Humber at Immingham, North Lincolnshire

Planning Inspectorate Ref:	**TR030001**
Registration Identification Ref:	**10015550**

Examining Authority's second written questions
Annex A – Pages 3-13 of PINS Letter 17th August 2012

Compensation requirements

For Natural England and RSPB:

Q1. The document by the Institute of Estuarine and Coastal Studies, Managed Realignment and Regulated Tidal Exchange: Humber Estuary Scenario Briefing Report 1st August 2012 (Reference No: WR21.1– page 388 of the Applicant's Comments on Written Representations), states that -

> **"...it is suggested that a more functional approach to seeking compensatory habitat is pursued, whereby, more basic criteria are followed in order to deliver an area that provides a functioning estuarine ecosystem.**
>
> **Furthermore, saltmarsh habitat has an intrinsic functional value which should be acknowledged, and is able to deliver a series of ecosystem services in its own right. Given that the Humber Estuary has lost a considerable area of such habitat historically, then development of such a habitat should not necessarily be treated as a disbenefit. Finally there needs to be a more realistic and integrated approach to the topic of habitat loss, compensation and realignment provision. There will not always be suitable habitat present to provide compensation in the vicinity of the areas of habitat loss, or if they are available, then direct like for like compensation may not be possible. This needs to be addressed, with either an acknowledgement that the provision of a functional if not identical estuarine ecosystem in the same part of the estuary is acceptable, or an acceptance that in order to provide like for like habitat, provision may have to occur elsewhere within the estuary, and as such, without the same structural community components that are associated with the area lost. This appears to be the approach adopted in the current proposals for the Bristol Port Compensation in the Severn Estuary."**

Do Natural England and RSPB agree with this?

The RSPB strongly disagrees with this. Any approach based on this approach would be a breach of the Conservation of Habitats and Species Regulations 2010 (as amended) (**the Habitats Regulations**) and the Habitats Directive[1]. The reliance on Bristol is misplaced.

The IECS Approach of "Functional if not identical estuarine ecosystem" (as set out in its report appended to the Applicant's Comments on Other Parties Written Representations. Appendix WR 21.1) is aiming for natural coastal process and estuary hydrodynamics and is a future academic view that does not address the immediate compensation requirements for this SPA in this location and clearly states it is not focused on the Habitats Regulations' compensation requirements (page 1 of the Appendix (page 393 of the document), para 1.1).

The area lost to the development, apart from being designated SPA, SAC and as a Ramsar site, is the most important feeding area for Black-tailed Godwits on the entire estuary (Annex B2 of the RSPB's Written Representations page 3, para 3.1). One of the three requirements of damaging an SPA/SAC and/or a Ramsar site is that compensation is provided to maintain the coherence of the network – here that necessarily means providing compensatory habitat for the displaced populations. That means suitable compensation for them to meet their needs. If suitable compensation cannot be provided then the development cannot proceed. We agree that saltmarsh is an important habitat

[1] EU Council Directive 92/43/EEC of 21st May 1992 on the conservation of natural habitats and of wild fauna and flora

with its own intrinsic value, but it will not help birds like Black-tailed Godwits at all. Provision of a different form of habitat is not compensation. The Applicant appears to contend that as long as functioning habitat is formed (of whatever type) it does not have to have the same "structural community components" as that lost. That is inconsistent with the language and purpose of, and practice under the Habitats Regulations and the Habitats Directive.

The RSPB would be satisfied with the compensation provided the function which is lost/impacted by the development is replaced. In this instance there are three functions that require to be compensated for in relation to the adverse impact on the SPA – they are:

1. the feeding area and feeding function of the total assemblage of estuarine birds
2. the feeding area and feeding function of the Black-tailed Godwits specifically in view of the internationally important numbers on the application site
3. the combined function of an adjacent safe roost and feeding grounds of Black-tailed Godwit during their late summer and autumn moulting period.

Like for like compensation is a prerequisite to prevent adverse effect on the European site through the species which depend on it. This is recognised by the EC in their guidance (EC, 2007, *Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC*) which also identifies that compensation should be as close as possible to the area adversely affected. This is necessary as the individuals adversely affected require to find the site and therefore it has to be within the same functioning area within climatic patterns, food supplies, migration routes etc.

The first critical approach is that the loss has to be identified and the ecological targeting of the required compensation defined. In the case of the Port of Bristol compensation, the species affected, the very small area of the SPA permanently lost (2ha, supporting a maximum of 34 birds), the 65ha of SPA assessed to be temporally adversely affected for a maximum of 5 years and the species of importance (principally Redshank and Dunlin) were considered in order to come up with the specific compensation requirements for that application and its affect on the SPA. The species' ecological requirements were then passed onto the re-alignment/regulated tidal exchange (**RTE**) designers as basic requirements for the realignment/RTE which had to be met through the design. The important difference with the current Application is that the requirements were defined before the compensation requirements were designed. The RSPB's Dr Prater, was on the ecological requirement assessment team and will be pleased to explain further if required.

If it is suggested that Black-tailed Godwit can (to the extent not catered for at the compensation site) simply be displaced from the application site and can find alternative habitats in the Estuary: (1) that is not a legally permissible approach – displacement to existing habitat in the SPA is not provision of "compensation"; (2) there is no evidence as to locations with carrying capacity; and (3) the only study of the before and after effects of the loss of bird feeding grounds (at Cardiff Bay for Redshank Burton *et al* 2006 – see Annex I, Tab B) showed that birds which were displaced by a development could not be accommodated elsewhere on the existing estuarine intertidal mudflats without adverse effect on their body condition and survival. So, it is not a scientifically credible option that displaced birds can find suitable sites elsewhere on intertidal mudflats unaffected by development and not be likely to be adversely affected – a new compensation area of intertidal mudflats is thus required.

Q2. On the basis of the statement made in paragraph 10 of Annex 1 to RSPB's Written Representation [The RSPB's Response submitted on 3rd August 2012]**, RSPB's view appears to be that compensation provision should be based on replacing the ecological function of habitat lost to development.**

(a) What would be the implications of such an approach for the AMEP proposals?

(b) In particular how might the nutritional requirements of Black Tailed Godwits be met during the Autumn moult?

(c) Would an approach specifically directed to meeting the needs of Black Tailed Godwits contribute to the overall aims of maintaining the integrity and coherence of the European sites more or less effectively than an approach based on restoring estuarial habitat at CCS?

(d) Is there evidence of any successful compensation schemes based on such an approach?

The RSPB's response to points (a) to (d).

(a) What would be the implications of such an approach for the AMEP proposals?

The RSPB's approach would require the Applicant to provide compensation proposals which would replicate or compensate for the three fundamental elements lost – see answer to Q1 above. This would require first a quantum of long term sustainable inter-tidal mudflat to deliver a food resource of equivalent value to that lost (assessed on a precautionary basis). For reasons clearly explained in European Commission's Document: *Guidelines on the Implementation of the Birds and Habitats Directives in Estuaries and Coastal Zones* (January 2011) the ratio of 1:1 is plainly not sufficient given: (1) the uncertainties; (2) the time lag; (3) the experience elsewhere; and (4) the available evidence as to density of birds that are supported on Paull Holme Strays (**PHS**). In addition, it would require the package to be replicated with freshwater roosting (and foraging) areas in close proximity or compelling evidence that the very substantial increase in distance between the intertidal mudflats used (North Killingholme Marshes versus the compensation site) and North Killingholme Haven Pits would not adversely impact the functional link between the two.

The managed realignment proposals of the Applicant are not adequate because they do not replicate or compensate for those elements lost for reasons explained in detail previously and largely accepted by the Applicant (please see answer to Q1 above). The Applicant's Comments on Other Parties Written Representations. Appendix WR9.1 - Black & Veatch – Cherry Cobb Sands Compensation Site Second interim report on detailed modelling August 2012, starts on page 334 (**the Second Interim Compensation Report**) RTE indicative potential approach would not work: see answer to Q22. They have not in any event been subject to Environmental Impact Assessment and the Development Consent Order cannot lawfully be granted on the basis of them. There are no other proposals before the Examining Authority which can be tested to see whether and to what extent they would work. It is not possible to leave this matter over to later consideration. This is not a current worked up proposal of a managed re-alignment site (contained within the Applicant's supplementary information, EX 28.1) cannot provide the sustainable mudflats which are a requisite for both supporting the SPA's Assemblage species and Black-tailed Godwits in particular (please see the RSPB's Response, 3rd August 2012, Annex III).

This is recognised in the Applicant's Second Interim Compensation Report at para 1.1.3 (p1), which states that:

> *'The comments by the* [RSPB] *expert on the risk of a simple managed realignment scheme accreting and forming saltmarsh are accepted...'*

Para 3.2.1 (p12) of the Second Interim Compensation Report states that it provides:

> '*…an initial design to demonstrate how RTE…could provide sustainable mudflat*'

and goes on to say:

'*….has not been optimised… to minimise the potential risks of future siltation but to show a variety of ways in which an RTE could be developed, so that future optimisation and detailed design studies can provide the most appropriate solutions for this site*.'

This later report thus does not provide a worked up proposal for a deliverable compensation scheme. It is the RSPB's view that a major RTE scheme could potentially provide part of a compensation package to deliver function if it takes on board and can deliver in the medium and long term an appropriate area and suitable design of sustainable mudflat. We have not reached the point where we can accept that functionality can be achieved through the current suggestions or that an adequate RTE can be delivered in this location. The sustainable mudflats are required for both the Assemblage and Black-tailed Godwits specifically. Please see the RSPB's answer to Question 22 below for further information on these issues.

In addition, we are strongly of the view that to deliver the roosting and additional feeding capacity during the key autumn period in order for sustainable mudflats created to support internationally important Black-tailed Godwit numbers, a permanent freshwater wet grassland area with lagoons and islands needs to be developed very close (adjacent) to the mudflats (please see the RSPB's Written Representations, Annex B2, page 9, Para 5.3 and page 16, Para 5.26 for further information on this issue).

(b) In particular how might the nutritional requirements of Black Tailed Godwits be met during the Autumn moult?

The nutritional requirements for Black-tailed Godwits are two fold. When on the mudflats, the principle feeding area for the species in autumn throughout their range in North West Europe, they require a large area of sustainable mudflats in which a sustainable population of key benthic invertebrates can develop. The main species are the Ragworm *Hediste diversicolor* and the Baltic Tellin *Macoma balthica* (although from the experience at PHS, some of the bivalve Mollusc *Abra tenuis* may additionally be utilised). These will develop naturally from larvae and adults reaching the mudflats either through an RTE or a re-alignment. It is the sustainability of the mudflats which is critical and the area over which they extend. There are no real practical ways of enhancing the populations of these invertebrate species which all research indicates that stable populations are likely to be reached in about three years (please see the RSPB's Written Representations, Annex B2 (pages 13-14, paras 5.18-5.20, and page 15, para 5.24).

In the case of PHS, the density of these key invertebrates was lower inside than outside the re-alignment. That means that a larger rather than smaller area of sustainable mud will be needed to sustain the same number of invertebrates, and hence feeding birds.

Secondly, Black-tailed Godwits will also feed on wet freshwater grasslands, particularly when tides cover the intertidal areas, or when intertidal food is scarce. On the freshwater grassland feeding areas, the critical aspect is the development of a sustainable, permanent wet grassland which can hold sufficient earthworms (primarily) and be easily penetrated by the delicate bills of Black-tailed Godwits. That means that it must not dry out prior to or at the key annual usage period. Over a period of time (several years, probably 3-5) the earthworm densities will develop as they adapt to the cycle of wetting and drying. There is no quick way of enhancing the biomass of the wet grassland and so it will be very difficult to develop this to a very good feeding resource in advance of the maturation of the sustainable mudflats. However, the permanency of the pasture very close to the mudflats will provide the conditions for it to develop a meaningful feeding resource for godwits. It is important to note that this pasture has to be, permanently, of freshwater as saline conditions will not allow the development of earthworm populations. Its proximity to the intertidal feeding areas and a safe roosting site is also important. The use of North Killingholme Haven Pits well illustrates

the importance of this proximity factor and is acknowledged in several places in the Applicant's Statement of Common Ground with NE and MMO for example in Table 3.1 box 6 (p10), Table 3.3 box 5 (p16) and Table 4.2 box 3 (p22).

The RSPB considers it highly unlikely that the functional link with North Killingholme Haven Pits could be maintained with these compensation proposals.

(c) Would an approach specifically directed to meeting the needs of Black Tailed Godwits contribute to the overall aims of maintaining the integrity and coherence of the European sites more or less effectively than an approach based on restoring estuarial habitat at CCS?

Estuarial habitat covers a wide range of habitats from sub-tidal to upper saltmarsh and the delivery of all but inter-tidal mudflats would contribute almost nothing to the delivery of function lost for both the SPA's Assemblage species and Black-tailed Godwits as a result of the Application. Thus certainly the Cherry Cobb Sands proposal set out in the Applicant's Supplementary information EX28.1, as said in (a) above, would fail to deliver the required function. It is not possible to reach any conclusion as to whether an RTE in this location would deliver the functionality (in combination with an adjacent freshwater grassland plus roosting lagoons with islands complex).

However, sustainable mudflats of a sufficient quantum would be the only way of delivering the required function for both the feeding Assemblage species and feeding Black-tailed Godwits. So, designing the site to support feeding Black-tailed Godwits is very likely to deliver for the displaced Assemblage species as well.

Of course, there will be a requirement for ongoing monitoring over the short, medium and long term at the compensation sites to ensure that they are providing the function that has been lost and also a requirement for any necessary modifications to be made or, in the last resort, additional compensation measures to be provided.

(d) Is there evidence of any successful compensation schemes based on such an approach?

There are no compensation schemes which have been developed specifically for the autumn function of Black-tailed Godwit. Also nearly all of the UK's re-alignment and/or RTE schemes have either not yet been constructed or have been undertaken within the last 5-10 years and so have not yet shown their deliverability over the long term. Additionally, most have not been for compensation requirements but for broader estuary or coastal defence and as such have different objectives to those which must be met here. Given these matters, a precautionary approach is required to RTE and there can be no confidence that, absent details, an appropriate scheme can be made to work here. The Humber, with its high sediment load, is not an estuary where RTEs are so tried and tested as to allow the Examining Authority or the Secretary of State to have any confidence based on simply a generic assumption that an RTE meeting the requirements can work here.

The experience in the Humber has been commented on by many parties and it is clear that the outcome of the re-alignments (PHS, Welwick and Chowder Ness) and the RTE component of the realignment at Alkborough, have been rather different from that anticipated. While some have supported Black-tailed Godwits, though relatively few feeding individuals, in their very early years, this function has generally decreased over time as the sites develop towards saltmarsh (please see the RSPB's Written Representations, Annex B2, pages 12-14, paras 5.13 to 5.20).

Killingholme Marshes

For Natural England:

Q12. The reference to the foreshore at Killingholme as providing "feeding grounds used by 66% of the internationally important population of Black-tailed Godwit that visit the Humber Estuary each year" is reflected in the table following para 6.13 of Natural England's written representations.

What is the origin of this figure and how reliable is it?

The 66% figure represents the 2,566 peak count of Black-tailed Godwits in the Through-the-tide count (TTTC) in October 2010 and is quoted in the Environmental Statement in para 11.6.15 and Table 11.8, and in the shadow Habitats Regulation Assessment in para 6.3.30 and Table 6.6 and is based on detailed counts by IECS. The RSPB does not question the reliability of this figure.

Q13. ***What modelling or other work has been carried out to establish what would happen over the long term to the inter-tidal mudflats at Killingholme in the absence of any further development?***

Regulation 66 of the Habitats Regulations require that compensation measures are provided to ensure that the protected sites (in this case the SPA, the SAC and the Ramsar site) affected are replicated.

EU Commission Guidance, Managing Natura 2000 Sites: the Provisions of Article 6 of the Habitats Directive 92/43/EEC, at the bottom of page 44 states:-

"The compensatory measures constitute measures specific to a project or plan... They aim to offset the negative impact of a project and to provide compensation corresponding precisely to the negative effects on the species or habitat concerned."

It is the loss now that needs to be considered not some theoretical predictions for the future.

Q14. ***When making counts of large flocks of Black Tailed Godwits, at roost and when feeding, what level of certainty is there in standard methodology that double counting is not taking place?***

Standard synchronised WeBS counts are undertaken during high tides when intertidal feeding birds are likely to be roosting. These counts take place at c2000 sites across the UK once per month on the same day to minimise double counting, or birds being missed.

WeBS counts are used by the Applicant in the Environmental Statement and shadow Habitats Regulations Assessment. The use of these counts is not a matter of dispute and is not cited as an area of disagreement in the relevant Statements of Common Ground.

The same methodology was used for the Applicant's Coastal Bird Survey (Environmental Statement Annex 11.6). Chapter 3.2 of this document, on field methods for low tide counts, notes that care should be taken when walking through a study area to avoid disturbance and the possibility of double counts.

Q15. Recorded numbers of Black Tailed Godwits making seasonal visits to the Humber have increased from a very low level 40 years ago.

Should this affect the view taken of the significance for the conservation objectives of the European sites of disturbance to feeding patterns of Black Tailed Godwits likely to result from development on the Killingholme foreshore?

In considering the historic population increase, Gill *et al.* (2007) identify changes on the Icelandic breeding grounds as the drivers (please see the RSPB's Written Representations, Annex B2, Appendix IV Tab 7, page 1, final para). In light of this, in order to maintain the integrity of the SPA network for the Icelandic breeding population, and therefore the population itself, it is vital that the Humber and other relevant SPAs maintain a complementary wintering/passage capacity. Failure to do so, and the associated declines in wintering/passage numbers, would result in consequential declines in the international breeding population.

It is also important to note that new Conservation Objectives have been released for the Humber Estuary SPA during the period in which the Application has been under consideration (NE Written Representation 29 June 2012, Annex B). Under the 2009 draft Conservation Objectives, the most relevant objective is, for aggregations of non-breeding birds (Table 2d),

'*to maintain the designated species in favourable condition, which is defined in part in relation to their population attributes'*.

One of these population attributes is '*Disturbance and displacement*' (B3), for which the target is '*No significant reduction in bird numbers either on the site, or from one part of the site to another attributable to anthropogenic factors*.' The measure for this target is '*The "bird population size" attribute will be used to inform this target – i.e. the WeBS counts for the site and for the individual WeBS sectors. A "significant" reduction will be determined on a case by case basis, however a decline of 1% or greater should be taken as a guide*.'

From the recent 2012 Conservation Objectives (NE Written Representation 29 June 2012, Annex B), the following can be considered relevant to this question: '*Subject to natural change, to maintain or restore:*

- *the populations of the qualifying features;*
- *the distribution of the qualifying features within the site*.'

No reference population is provided in the 2012 Conservation Objectives.

As reflected in the 2009 draft Conservation Objectives, it is the RSPB's view that the Conservation Objectives and therefore any Habitats Regulations Assessment should use the latest 5 year WeBS peak mean as the baseline population when considering impacts on any SPA Interest Feature. Therefore, the changes over the preceding 40 years should not affect the consideration of the Conservation Objectives, which should remain focused on the current population situation, as reflected in the WeBS 5 year peak mean.

As described in Paragraph 3.1 of Annex B2 of the RSPB's Written Representations, North Killingholme Marshes supports up to 2,566 foraging Black-tailed Godwit (according to HRA data (pages 6-11, para 6.3.30, pages 6-12, Table 66)), which represents 5.4% of the current international population of *L.l.islandica*. We refer again to Paragraphs 3.2 to 3.6 of Annex B2 of the RSPB's Written Representations, that outline the ecological importance of the Killingholme foreshore for Black-tailed Godwits, with regards to the relationship between the foraging and roost sites available in this area. Based on this information, we reiterate our view that disturbance of the feeding patterns of Black-tailed Godwit, particularly in this location, would be of significant concern to not only the Conservation Objectives of the Humber Estuary SPA, but the international status of this species.

Q16. The Panel notes the evidence from Dr Steve Percival submitted as part of AMEP's Comments on Written Representations (para 17.11 *et seq).*

(a) Is there more evidence on the extent to which Black Tailed Godwit flocks move around the estuary and display opportunistic behaviour as well as being loyal to particular sites?

Godwits are highly site faithful and small numbers use different sites at different times of the year (probably as food supplies become depleted); the main sites have been North Killingholme Marshes and Pyewipes with the latter used to some extent in autumn but principally in winter. There is no evidence that the managed realignment sites (Welwick, Chowder Ness, Alkborough) have been used by more than very small numbers of godwits; at PHS numbers roosting are fairly large at times but numbers feeding have declined from early years (see Appendix II of Annex B2 of the RSPB's Written Representations). Most of the mudflats around the estuary are not used by feeding godwits and there is no scientific reason to believe they would be. However, we believe that if new sustainable mudflats with appropriate benthic invertebrate populations and a permanent wet grassland with lagoons and islands adjacent, then there is a strong possibility that such a site could be utilized, because it replicates the three habitat needs (low tide feeding, high tide feeding, plus roosting) of the godwits all in close proximity.

(b) If so, does this increase or decrease confidence that Black Tailed Godwits will use the compensation site for roosting and foraging? Does it increase or decrease confidence that they will continue to use North Killingholme Haven Pits?

Because godwits are a migrant species, it is likely that they could find an alternative site alongside the estuary. The ability to do this has no direct relevance to them being able to exploit it as that critically depends on the right species and age class of invertebrate being present, in high enough densities and available to be obtained. Evidence from managed realigned sites to date does not give any confidence that godwits will utilise realigned sites on the Humber. The most important feeding site at present has the mudflats and a suitable roosting site in close proximity; without that functional approach, there is little prospect of use of the proposed compensation site at Cherry Cobb Sands. Creation of adjacent wet grassland would increase the likelihood of all sites being used by providing a full range of functional requirements.

The use of North Killingholme Haven Pits is very likely to decrease substantially when the link between it and North Killingholme Marshes is broken; while some birds may use it, the move of the feeding birds to a compensation site elsewhere is very likely to mean that that critical link during the autumn moulting will mean the site will decrease in value for godwits.

Adaptive behaviour and management

For Natural England:

This concept is a significant feature of EC Guidance on the implementation of the EU nature legislation in estuaries and coastal zones (see the January 2011 document providing sector specific guidance on the implementation of the Birds and Habitats Directives in estuaries and coastal zones.)[2]

Q17. *Is there currently sufficient evidence from observation of Black Tailed Godwits to make predictions about the likely adaptive behaviour to a loss of a favoured feeding ground located close to a particularly favoured roost during the autumn moult?*

[2] http://ec.europa.eu/environment/nature/natura2000/management/docs/guidance_doc.pdf It is described under the heading "Dealing with uncertainties

There has been no similar impact proposed nor implemented on godwits elsewhere and as such no specific evidence is available. The key point about godwits is that they are highly aggregated species and found in very small areas of estuaries often in large numbers. The roost and feeding ground proximity make North Killingholme Marshes a particularly favoured location in the autumn moult period. There is no scientific evidence to give rise to the belief that they could adapt and go elsewhere – the reference to the only study on this (for Redshank at Cardiff Bay (see Q1) provides no confidence that there would not be an adverse impact on the species.'

Q18. ***How much reliance can be placed on Adaptive Management for dealing with uncertainties relating to adaptive behaviour of Black Tailed Godwits?***

The adaptive ability of godwits to feed on rice fields has been frequently referred to by the Applicant (eg Lourenco and Piersma 2008 – see Annex I Tab D) but that reference has been misused as it does not have any relevance to the Icelandic Black-tailed Godwit (the bird we are dealing with here). There is little adaptive behaviour shown by the Icelandic Black-tailed Godwit save for its move to different food sources at different time of the year – particular to increasing use of grassland and especially in winter and spring.

Q19. ***Are there sufficient monitoring requirements in the current proposals to support an Adaptive Management approach?***[3]

Q20 ***Should reliance be placed on such measures to respond to specific uncertainties in relation to, e.g., future feeding patterns of Black Tailed Godwits currently feeding at Killingholme Marshes?***

The RSPB repeats that the key requirements are to ensure that the Black-tailed Godwits have sufficient feeding on intertidal mudflats and are able to use adjacent wetlands for roosting and loafing.

Q21 ***If there can be such reliance, should it be with or without the compensation habitat being proposed for Cherry Cobb Sands?***

A large area of sustainable fully functioning compensatory intertidal mudflat is required alongside the permanent wet grassland/lagoon/island complex.

Cherry Cobb Sands - Regulated Tidal Exchange

For Natural England:

Q22. The Morris Report and Natural England's Written Representation (29 June 2012, paragraph 8.6 to 8.9) are based on a review of the managed retreat design.

A new design based on a Regulated Tidal Exchange is now being put forward by Black & Veatch (August 2012), in line with recommendations from the RSPB and the EA.

Overview

The RTE is not being put forward "in line with recommendations of the RSPB". The RSPB considers that the managed realignment proposed clearly does not work and an RTE is an option that should be considered. The Second Interim Compensation Report proposals do not work, are not in line with any recommendations of the RSPB and are fundamentally flawed. It is impossible to approve a novel RTE in this location without detailed design and detailed assessment as to how it would work (and its

[3] Paragraph 3.4 of the EC Guidance

environmental implications). It is far too late in the process for RTE to be raised and impossible for a third iteration to be worked up and tested within the time lines. Legal submissions will be made as to the acceptability of leaving this issue over to a plan to be approved subsequent to the DCO.

Detail

The RSPB's position is that the originally proposed managed realignment plainly does not work. It considers RTE may have potential although this would have to be demonstrated by detailed design of an appropriate scheme (which would need to have inbuilt flexibility) and then by detailed provisions for monitoring, management and interventions for the long term. Certainly the Second Interim Compensation Report is not a remedy to the RSPB's previous concerns about the compensation proposals for this application as set out in it Written Representations and Response.

The compensation measures objectives are to replicate the ecological function on a precautionary basis. This means an adequate sized site which can deliver adequate food resource within the intertidal mudflat to support the population long term (not just 10 to 20 years) and adequate replication of the package upon which they rely.

First, 1:1 provision is not acceptable

The only available scientific evidence shows that created intertidal mudflat on the Humber do not support the same density of invertebrate food as natural intertidal mudflat so have less capacity for supporting estuarine birds. Franco and Mazik 2011 (see Annex I Tab C) present biomass data for *Hediste* at PHS and Appendix 6 shows biomass inside the realignment was 16.95gm^2 while outside it was 23.83gm^2; inside being 71% of biomass outside.

There is no evidence that only replicating that lost on a 1:1 basis can support the SPA's designation species and strong evidence that it cannot. On the facts here there is great uncertainty and an exceptionally important population in addition to problem with the timing of the compensation delivery. The RSPB expert, Dr Prater has now demonstrated, from a food resource point of view, based on PHS data, which has been relied on by the Applicant, the re-alignment will not be able to support the displaced Black-tailed Godwits. In addition, the Applicant's consultant on Black-tailed Godwits (ES Annex 35.6) has assessed that a ratio of 6.3 :1 would be required to achieve the same density of birds as are displaced from the Site, and by implication, to adequately compensate for the harm caused to the SPA and its species (Annex B2, page 10, para 5.8). This has not been rebutted by the Applicant.

In addition the RSPB's expert Dr Prater's opinion is that the Old Little Humber Farm proposals (Annex B2, pages 14-16, paras 5.21-5.26) will take a long time to develop, the amount of food in the soil is not going to be adequate to deliver for the number of birds and it is likely to dry out. No new information has been provided to rebut the RSPB's concerns over the Old Little Humber Farm drying out.

The Applicant appears to accept that it is appropriate to provide foraging on or around the Cherry Cobb Sands site but the RSPB's view is that it must be fresh water and needs to be permanent not a temporary site.

Second, the RTE in the Second Interim Compensation Report is seriously flawed and will not work.

RTE works by artificially increasing the period of inundation mainly by restricting the ebb flow the result is that the RTE acts as a settlement pond. The only way to avoid excessive settlement and thus rapid accretion to salt marsh to limit the volume of water and therefore amount of sediment. However, sediment will still settle out in a high sediment estuary such as the Humber.

This throws up two key issues:

1. The residual settlement (from that lower volume of water)
2. How to secure adjustments to levels over time to ensure the RTE continues to operate as intertidal mudflats

On issue 1 - The following very basic calculations - taking an average water depth of 200mm within the 41 ha of the RTE gives a water volume of 82k m3. At 200 parts per million of sediment in suspension this would give 16.4 m3 of sediment per tide or 32.8 m3 per day giving 10 years for the RTE to silt up. Allowing for compaction this may extend to a maximum 15 years - demonstrates that the proposals in the Second Interim Compensation Report will largely or totally silt up after about 10 to 15 years (very conservative basis) leading to salt marsh.

This then leads onto issue 2 – we know there will be accretion, it is unavoidable and will be substantial even with a lower volume of water and an RTE.

Therefore it is necessary to design a scheme that takes that accretion into account and has in built mechanisms for adjusting levels over time as monitoring shows it to be necessary. It is inevitable that such changes will be required.

The Second Interim Compensation Report does not make any attempt to grapple with these issues.

The inlet and outlet sluices as presented are at fixed levels and as simple sluices or culverts (p 15, Section 3.3. The inlet and outlet design is fundamental to the success of an RTE scheme and to achieve the objectives here there has to be an ability to adjust invert levels of the inlet and outlet. Also when deciding what design is required an appropriate location for the inlet and outlet is required based on a very careful iterative design process and analysis. The design also requires the ability to adjust water levels on both the intake and outflow structures to either correct any model errors or allow for seasonal weather variations to manage the site for its target species. This has not been done.

None of this essential detail is contained within the Second Interim Compensation Report. Without this iterative process there can be no confidence that: (1) this RTE design will work; (2) that an appropriate RTE could be designed at this location to meet the objectives; and/or (3) it will be possible to manage the RTE in the longer term within the fixed parameters (e.g. a total area of 100ha, the breach to occur in this location (WR9.1) so as to secure the compensation objectives.

It is not clear that the Applicant's Consultants have carried out any previous designs of RTE's and/or implemented any such schemes. The current scheme is seriously flawed. It is plain to the RSPB's expert, Mark Dixon, whose expertise in this area has led to the abandonment of the management realignment proposals and the move to the RTE, that the Second Interim Compensation Report is nowhere near sufficient to provide any confidence that the RTE will work. Mr Dixon is highly critical of the lack of detail at this late stage in the process.

In any event the design is misconceived on a number of bases:

1. The inlet from the creek is unsustainable because it will silt up so fast – we know already that the Humber side of the site is rapidly accreting;
2. the cell structure is unnecessary and appears to be driven by a modelling concept not practical understanding of how RTE's operate. Such an approach has not been tried or tested elsewhere and there is no scientific basis for confidence that it can work (p 12, Section 3.2**;**
3. the water flow system is complicated and dependent on each link in the chain working and all the limited modelling that has been undertaken being correct (paras 3.2.2-3.2.7) **If one link in the chain fails the whole concept fails**;

4. the limited modelling presented is based on a single point in the middle of each of the cells yet each cell will in reality over time create a stilling bowl (an area of still water with gentle concave sides, that is ideal for collecting sediments) effect exacerbated especially by the many sharp corners within the design which will encourage siltation – this invalidates the conclusions of the modelling;
5. the cell walls will also encourage not mitigate salt marsh by reducing potential eroding currents and internal wave energy;
6. the RTE will be dry for excessive periods; and
7. the RTE ebb flows are not maximised to flush the remainder of the Site.

As far as our expert is aware this design has not been suggested anywhere else in the UK and therefore in light of his concerns set out above there can be no confidence that it could work. This lack of confidence of success is all the more concerning given not only the Humber's high suspended sediment loading, but the complete lack of any design details submitted and the fact that what outline design has been done does not appear to have been comprehensively tested or that any aspects of the design have been targeted for the key objective of specific bird species.

Further, it appears that on a neap tide (1.9mAOD) there will be no inundations of the RTE (see 2nd Interim Compensation Report, p 17 table 5) the design is therefore envisaging substantial period of exposed mud which will dry out, warm up or freeze with very serious implications for the food resources. Of the key food species, *Macoma balthica* is very susceptible to heat induced mortality – one Dutch study (Bolam and Bremner 2008 – see Annex I Tab A) found 70-100% mortality at 25°C. Birds are affected by mortality of their food in high energy conditions (eg moulting and winter) with bird mortality rates increasing by up to 10 times in cold weather (Prater 1981 – see Annex I Tab E). Further intertidal mudflat for BTG requires wet mud and the water's edge for them to forage. There has been no attempt to consider this issue in the design of the RTE or the main objectives. Dried out mud is of no use for feeding Black-tailed Godwits.

Further, it is the RSPB's view that any design should also seek to use the RTE as a flush for excessive siltation/settlement on the adjoining mudflat (here inside the managed realignment area). This has not been done here and under this creek design could not be done. The creek and the managed realignment fails to use the energies from the RTE flushings to generate and maintain the intertidal mudflat in the managed realignment area by for example creation of islands.

In addition the design appears to only aim for about 41ha (3x 16ha less bunds) in the RTE. Given that we know the managed alignment will not work it is not understood why a higher proportion of the site is not dedicated to RTE.

It may be possible to work up an RTE within this site that delivers the objectives but in the absence of a detailed design and based on the Second Interim Compensation Report there is no scientific basis for any confidence that an appropriate RTE meeting the required objectives can be provided here within the fixed parameters.

The RSPB expert advice is that the Second Interim Compensation Report proposals should be abandoned as they are not fit for purpose and the process for investigating an appropriate RTE should start.

What level of certainty is there that this new design would deliver adequate compensation for –

(a) The foraging requirements and possibly roosting requirements of migratory birds?

(b) Other possible compensation requirements related to the SAC, SPA and Ramsar sites?

(c) ***What further assessment does Natural England consider necessary to prove or support this new proposal?***

(a) The first stage of the analysis should be whether the RTE will deliver adequate intertidal mudflats. The second stage is whether it will provide adequate compensation for the bird's foraging and roosting needs

Foraging

1. The RTE as designed will require mechanical interventions which will remove the invertebrate resource which will take time to re-establish (it is accepted that approximately 3 years is needed to develop both the species and the population structure needed for sustainable feeding opportunities) to re-establish;
2. The ground and water levels are such that the site will be dry for too long (WR9.1, Chapter 5) putting substantial strain on the invertebrate resource which would inevitable increase their mortality rates under a range of conditions and thereby reducing food resource which in turn will lead to the an increased mortality of SPA birds;
3. No assessment has been made as to the effectiveness of the cell design and mud profile contained within the Second Interim Compensation Report for foraging SPA birds. There is no evidence presented here that any design parameters have been included to specifically deliver SPA bird objectives. Regardless of that, there is no evidence presented that the invertebrate populations in the mud will be sufficiently greater than in the original re-alignment and therefore be of an equivalent value to support the very large numbers of Black-tailed Godwits and other Assemblage species which can currently find suitable autumn food at North Killingholme Marshes, particularly for Black-tailed Godwits; and

Roosting

Although the SPA's (and Ramsar site) Assemblage species may be fine with the roosting areas that will be available, Black-tailed Godwits prefer fresh water systems were they can bathe and loaf and potentially use adjacent grassland to provide supplementary feeding. It should be noted that North Killingholme Haven Pits is a freshwater site and is exceedingly important for the autumn roosting birds (see huge useage on North Killingholme Haven Pits. Saline pits next to the proposed breach location do not satisfy these requirements nor would islands within the RTE area due to it being saline.

There is therefore a need for further foraging and roosting opportunity. The package point is recognised in the Applicant's Statement of Common Ground with NE and the MMO on the Habitat Regulation Assessment (p10, Table 3.1, box 6, p16, Table 3.3, box 5, p 22, Table 4.2, box 3) and the importance of the proximity effect is conclusively demonstrated by the density of movements between North Killingholme Haven Pits and North Killingholme Marshes compared to apparently very low movements between North Killingholme Haven Pits and elsewhere (p55, untitled map, Applicant's Comments on Written Representations, 3 August 2012) (although of course once North Killingholme Marshes is exhausted the birds have to go further a field).

(b) Other possible compensation requirements related to the SAC, SPA and Ramsar sites?

Please see our answer to (a) above.

(c) ***What further assessment does Natural England consider necessary to prove or support this new proposal?***

Please see answer above. Put simply a properly thought through scheme inlet and outlet and long term management measures, demonstration of capacity over time.

Annex I: RSPB References

A. Bolam, S. and Bremner, J (2008) Review of existing literature on temperature sensitivity in the Baltic tellin, *Macoma balthica*. CEFAS Technical Report 134, Hinkley Point Power Station Inquiry.

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C. Franco, A. and Mazik, K. (2011) Paull Holme Strays Monitoring Programme 2010: Benthic Invertebrate Monitoring. IECS report to Halcrow Group

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E. Prater, A.J. (1981) Estuary Birds of Britain and Ireland. T & AD Poyser, Calton.