

**Able Marine Energy Park**  
**Environmental Management and Monitoring Plan**  
**Terrestrial Works**

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## **1. INTRODUCTION**

### **1.1 Background and Aims of the Terrestrial EMMP**

The development of the Able Marine Energy Park (AMEP) east of North Killingholme on the Lincolnshire Coast will partly affect the Humber Estuary Special Area of Conservation (SAC) and the Special Protection Area (SPA) / Ramsar site, as well as habitats (some of which is designated at a local level) and species inland from the new quay. Measures to mitigate for the effects of AMEP on these habitats and species have been identified, and are to be implemented in areas within the AMEP site boundary.

This document is an Ecological Management and Monitoring Plan (EMMP) for the terrestrial works and it has been drawn up taking account of guidance on management planning produced by the Conservation Management System (CMS) Consortium ([www.cmsconsortium.org](http://www.cmsconsortium.org)). It describes the mitigation measures that are required and lists specific objectives which are fundamental to their delivery. Further it includes targets and management actions which support the objectives and the monitoring which will be undertaken to confirm progress towards the objectives, and ultimately confirming that they have been achieved. Limits of acceptable change are defined and any necessary remedial actions which will be undertaken if the monitoring shows that these limits have not been met.

### **1.2 Process of Finalising Outstanding Targets**

The mitigation proposals for AMEP are complex, and the objectives and targets / management options included in this version of the EMMP have been subject to extensive discussions with stakeholders. Prior to the DCO being granted, the EMMP will be further refined through continued regular meetings with key stakeholders about targets / management actions and subsequent monitoring requirements which are yet to be agreed.

The EMMP is a live working document which will be in place for as long as it is deemed necessary to achieve the agreed objectives set out in it. Updates to it will be overseen by the Steering Group, whose role is explained below and includes undertaking a complete review of the EMMP every five years.

### **1.3 Steering Group**

AHPL will have overall responsibility for the implementation and delivery of the EMMP. However, the involvement of other stakeholders is essential for the effective working of the EMMP, and hence AHPL will establish a Steering Group whose role will include the following:

- 
- to monitor the progress of implementation of the EMMP to ensure that it is meeting the objectives;
  - to provide expert views, opinions and feedback to AHPL about key issues including through regular meetings and the making of formal recommendations;
  - to help direct and focus the EMMP and its development in an interactive way including through revisions to targets, monitoring requirements and if necessary the adoption of any remedial actions;
  - to undertake a comprehensive review of the EMMP at least every five years;
  - to co-opt members and working groups if necessary;
  - to ensure a transparent and open process to the implementation of the EMMP with an evident audit trail, and regular updates produced for dissemination to a wider audience (eg via AHPL / HINCA websites).

AHPL is seeking an inclusive approach and the Steering Group will comprise the following stakeholders in addition to AHPL:

- Natural England;
- Environment Agency (EA);
- The Royal Society for the Protection of Birds (RSPB);
- Marine Management Organisation(MMO);
- representatives from the local wildlife trusts;
- representatives from the local authorities;
- Humber Industry Nature Conservation Association (HINCA); and
- Two representatives, one from the local residents and one from local interest groups.

In addition to the above, the Steering Group can co-opt members and form working groups where appropriate to consider specific issues. The chair of the Steering Group will be HINCA, an organisation of some standing in the Humber area for over a decade, and one which the vast majority of other members of the Steering Group are already members ([www.humberinca.co.uk](http://www.humberinca.co.uk)).

An agenda will be drawn up in advance of each Steering Group meeting by AHPL and minutes will be produced after the meeting by them for agreement. The compensation proposals are complex and it is likely that there will be a requirement for frequent Steering Group meetings. Until 2018 EMMP meetings will be held at least every quarter, and then the frequency will be subject to the Steering Group review. The Steering Group will also be able to call special meetings in response to specific issues / concerns identified based on a majority decision amongst the Group.

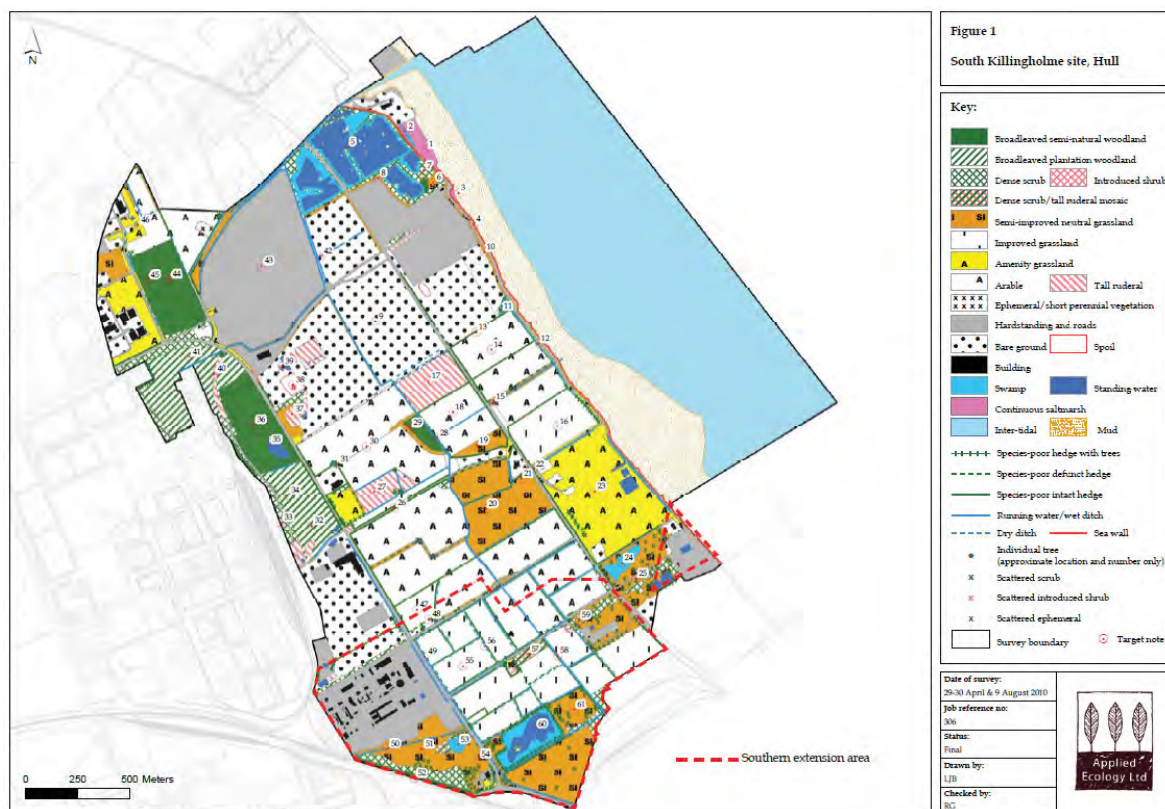
## 2. ENVIRONMENTAL BASELINE AND IDENTIFIED IMPACTS

### 2.1 Habitat

#### 2.1.1 BASELINE

An area of arable, pasture and farmland mosaic habitat will be lost as a direct result of the proposed AMEP development. The majority of the semi-naturalised habitat will be removed and replaced with gravel or hard standing. The main habitats are mapped in Figure 1 below.

Figure 1: Phase 1 Habitat Survey Map



#### 2.1.2 IMPACTS

Table 1 summarises the habitat that will be affected by AMEP.

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Table 1: Summary of Habitat Loss

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Habitat Type	Loss (ha)
Broadleaved semi-natural woodland	1.35
Dense scrub	2.47
Semi-improved natural grassland	22.11
Improved grassland	13.94
Tall ruderals	10.78
Swamp	1.15
Standing water	0.31
Arable fields	54.78
Amenity grassland	3.68
Ephemeral/ short perennial vegetation	0.96
Hard standing	54.22
Buildings	0.47
Bare ground	60.12
Hedgerow	1.136 (km)

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The losses of the terrestrial habitats outlined above do not constitute significant losses within the context of the local or regional areas although some of these habitats are either BAP or LBAP listed. The loss of habitats does have an effect on the species supported by those habitats and mitigation is required both for habitat loss and for the species affected by that loss.

The only habitat of local value to be lost is the Station Road Local Wildlife Site (LWS) which consists of a neutral grassland strip, associated elm hedge and field ponds supporting great crested newts. This habitat will require to be replaced and this will be achieved separately

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for the great crested newts and their ponds and terrestrial habitat (see Great Crested Newt objectives below) and will be delivered through Mitigation Area B.

The neutral grassland component of the Station Road LWS will be accommodated in the northern operational buffer zone of Mitigation Area A.

Where habitat loss leads to impacts on protected species these have been dealt with through species specific mitigation.

The loss of fields that support SPA birds requires mitigation and is dealt with separately under the heading SPA birds. This mitigation is provided in Mitigation Area A.

Construction and operation, particularly noise and visual impacts, have potential to increase disturbance to the roost site at North Killingholme Haven Pits that supports significant numbers (i.e. greater than 1%) of SPA bird populations. The control measures for this are presented under the Noise and Visual Impact objective.

## **2.2 Water Vole**

### **2.2.1 BASELINE**

Water vole surveys were conducted in 2006 and 2010. In 2006, five areas of the site were identified for their potential to support water voles during the Extended Phase 1 survey. Surveys conducted in 2010 identified a total of 82 breeding females of which 22 were within the development site and 60 were in ditches that included Mitigation Area A but extend to the south of the AMEP site (see EX11.26 – Water Vole Mitigation).

### **2.2.2 IMPACTS**

In total 2.5 km of drainage ditch will be removed as part of the AMEP development process. Of the drainage ditches to be removed, 1.82 km is currently unsuitable or of low value to water vole. The remaining 0.68 km of ditch to be replaced, is currently of moderate suitability for water vole.

## **2.3 Bats**

### **2.3.1 BASELINE**

Bat surveys as part of the AMEP application were undertaken in 2006, 2010 (July / August) and 2011 (May). Six species of bat (Common pipistrelle, *Nyctalus* sp., *Myotis* sp., Soprano pipistrelle, Brown long-eared and *Nathusius* pipistrelle) were identified foraging and commuting within the AMEP development site area. The commonest species recorded were common pipistrelles, and only at one location was the number of contacts regarded as frequent (near Killingholme pits). Other species were either occasional or rare, with contacts largely relating to occasional commuting passes. No evidence of occupied resting or

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roosting places was found within the development site (see EX 11.19 AMEP Bat Surveys Supplementary Note). As a result, no significant impacts to bats are predicted, however temporary loss of foraging habitat may occur (see EX 20.3 Additional Landscape Masterplan).

### **2.3.2 IMPACTS**

The AMEP development will result in the loss of habitat which is suitable for bat foraging and commuting including the small woodland at the Old Copse and hedgerows. Consequently mitigation objectives are proposed to replace hedges, ditches and foraging areas; allow safe access over roads to existing woodland at Burkinshaw's Covert, provide roost sites, and control light pollution (see Table 1 above for habitat loss).

## **2.4 Great Crested Newts**

### **2.4.1 BASELINE**

Surveys conducted in 2006, 2010 and 2011 identified 25 ponds within the AMEP development site boundary. A further four ponds with potential to support breeding populations of Great Crested Newts were identified within a radius of 500 m of the site boundary. Presence/ absence surveying of ponds within the development site confirmed a medium population of Great Crested Newts within two of the surveyed ponds, forming a meta-population. Twelve ponds within the development boundary could not be assessed due to accessibility difficulties.

Two of the surveyed ponds were found to accommodate a medium Great Crested Newt meta-population of approximately 19 individuals. The ponds are located centrally within the AMEP development site boundary, in an area of land currently in arable production.

### **2.4.2 IMPACTS**

Ten ponds within the AMEP development site are planned for removal; following a walk over survey in 2011 three of these were found to no longer exist. Both ponds where the meta-population of Great Crested Newts were identified will be removed as part of the development.



## 2.5 Breeding Birds

### 2.5.1 BASELINE

Two dedicated breeding bird surveys were undertaken at the AMEP site, a Breeding Bird Survey (BBS) in 2010 and a Common Bird Census (CBC) in 2011. Both these surveys were undertaken in addition to a previously collected Catley breeding bird survey undertaken for East Halton and Killingholme from a five visit Common Bird Census (CBC) undertaken between April – June 2007 (Catley, 2007) and data collected from 2006 across the site by Just Ecology (2006) (see Environmental Statement *Annex 11.5*). Lincolnshire Bird Club records (1998-2005 All Species Records) were also used to inform the breeding bird baseline.

### 2.5.1 IMPACTS

The AMEP development will cause the loss of dense scrub, standing water, ephemeral/ short perennial vegetation, species poor hedgerow, tall ruderal vegetation, semi-natural woodland and 100 ha of arable/ semi- improved grassland which provides breeding opportunities for birds present within the development site. The effects on birds are summarised in Table 2, which is taken from Percival, 2012. The third column, unmitigated impacts, assumes that there will be a complete loss of the bird populations within the existing industrial areas, within the current arable/grassland areas that will become industrial areas, and where coastal reclamation occurs. The final columns provide information on residual impacts once mitigation has been applied and an explanation of the mitigation that will be provided.

Table 2: Baseline Data and Impact of Breeding birds

Species	Total number of pairs in site footprint	Percival (2012) Predicted changes prior to mitigation	Predicted residual impact after mitigation applied	Predicted No. of pairs post mitigation	Explanation
Mute Swan		-1	0		The provision of ponds in Mitigation Area B will provide breeding opportunities and mitigate predicted losses.
Greylag Goose	1	0	0	1	Species is not present within the development site prior to construction; therefore no losses are predicted.
Shelduck	10	-10		3	The provision of shelduck nest boxes within



Ringed Plover	3	-3	0	3	losses. The provision of a gravel area on the northern area of the development site will provide breeding opportunity and mitigate predicted losses.
Lapwing	8	-7	(assuming 1 pair per 38ha)	2	The provision of wet grassland within Mitigation Area A will provide breeding opportunities and partially mitigate predicted losses.
Stock Dove	14	-12	(assuming 1 pair per ha)	5	The removal of woodland within the development site will limit breeding opportunity. However, hedgerow creation, farmland bird mixes, provision of nest boxes and enhancement will provide partial mitigation of predicted losses.
Woodpigeon	150	-75	(assuming 10 pairs a hectare)	105	The removal of woodland within the development site will limit breeding opportunity. However, hedgerow creation and enhancement will provide partial mitigation of predicted losses.
Collared Dove	0	0	-45	0	Species is not present within the development site prior to construction; therefore no losses are predicted.
Great Spotted Woodpecker	0	0	0	0	Species is not present within the development site prior to construction; therefore no losses are predicted.
Skylark	42	-28	(assuming 10 pairs based on 0.25 - 0.5 pairs per ha )	0	The removal of open arable land within the development site will limit breeding and foraging opportunity. The creation of wet grassland within Mitigation Area A will provide sub-optimal habitat which may assist mitigation of predicted losses.
Swallow	19	-17	-18	24	The construction of new buildings within the development site may provide new nesting opportunities. Cattle grazing, wet grassland, muddy scrapes and ponds within Mitigation Area B will provide improved feeding.
Meadow Pipit	19	-16	-13	19	Wet grassland with uncultivated margin and wetland edges will provide some mitigation for loss of farmland.
Yellow Wagtail	9	-6	0	6	Mitigation Area A with set scrapes and cattle grazing will provide optimal conditions sufficient to offset losses and potentially provide net gain. However, given low background population we have predicted no net loss on a precautionary basis rather than net gain.
Pied Wagtail	10	-10	-4	9	The provision of newly created and enhanced hedgerows within the development site will provide potential breeding opportunity and mitigate predicted losses.
Wren	22	-16	0	6	The creation and enhancement of hedgerows within the development site will provide breeding opportunities and mitigate predicted losses.
Dunnock	7	-5	55	22	The creation and enhancement of hedgerows within the development site will provide breeding opportunities and mitigate predicted losses.
Robin	6	-4	26	55	The creation and enhancement of hedgerows within the development site will provide
				26	

Blackbird	14	-10	23		breeding opportunities and mitigate predicted losses.
				23	The creation and enhancement of hedgerows within the development site will provide breeding opportunities and mitigate predicted losses.
Song Thrush	3	-2	13		The creation and enhancement of hedgerows within the development site will provide breeding opportunities and mitigate predicted losses.
				13	The creation and enhancement of hedgerows within the development site will provide breeding opportunities and mitigate predicted losses.
Mistle Thrush	5	-5	2		The creation and enhancement of hedgerows within the development site will provide breeding opportunities and mitigate predicted losses.
				2	Species is not present within the development site prior to construction; therefore no losses will be predicted.
Grasshopper Warbler	0	0	0		The creation and enhancement of ditches within the development area will provide breeding opportunities and mitigate predicted losses. Likely to colonise Mitigation Area B.
Sedge Warbler	28	-21	-9		As ponds mature in Mitigation Area B some colonisation possible. However, as this is uncertain given this species preference for larger stands of reed the worst case scenario has been reported.
				19	Provision of hedges, scrub, and rough grassland will reduce but not eliminate impacts on this species.
Reed Warbler	11	-9	-9		As for Blackcap, although this bird tends to prefer more parkland types of landscape which provision of standards within hedges may mimic. Requires dense scrub, preferably with bramble and this will take time to establish. Longer term some colonisation possible but due to uncertainty worst case scenario reported.
				2	A density of 50 pairs/ km <sup>2</sup> assumed for Mitigation Area A and 3 pairs/ km <sup>2</sup> for ditches and hedgerow in the industrial part of the site.
Blackcap	6	-5	-2		Provision of hedgerows with standards will produce some parkland type habitat.
				4	Prefers patchwork of scrub trees with understory of grass to breed. May respond to ditch and hedgerow provision but as this is uncertain worst case scenario reported.
Garden Warbler	4	-4	-1		Species is not present within the development site prior to construction; therefore no losses will be predicted.
				3	Improvements at Chase Hill, hedgerows and insect rich rough grazing will moderate losses. The provision of Tit nest boxes will provide breeding opportunities and mitigate predicted losses.
Lesser Whitethroat	9	-5	-5		The provision of Tit nest boxes will provide breeding opportunities and mitigate predicted losses.
				4	Species is not present within the development site prior to construction; therefore no losses are predicted.
Whitethroat	46	-36	-9		The removal of woodland within the development site will limit breeding opportunity. No planned mitigation measures will directly benefit the species. May be able to utilise
				35	
Chiffchaff	1	-1	0		
				1	
Willow Warbler	3	-3	-3		
				0	
Spotted Flycatcher	0	0	0		
				0	
Long-tailed Tit	6	-5	-3		
				3	
Blue Tit	17	-12	60		
				60	
Great Tit	12	-10	20		
				20	
Willow Tit	0	0	0		
				0	
Treecreeper	1	-1	-1		
				0	

Magpie		-8	0	11	hedgerow with standards to compensate for woodland losses but as some uncertainty worst case scenario reported. Provision of standard trees will provide nesting opportunities sufficient to offset losses.
Carrion Crow	11	-10	0	11	Provision of standard trees will provide nesting opportunities sufficient to offset losses.
Starling	11 0	0	0	11	Species is not present within the development site prior to construction; therefore no losses are predicted. Likely to benefit from wet grassland and cattle grazing, may colonise.
House Sparrow	1	0	1	1	Species only recorded in mitigation area; therefore no losses are predicted.
Tree Sparrow	24	-18	(assuming 2 pairs / 10 ha)	44	The combination of nest boxes, ditches and hedges and increased winter survival through the provision of winter bird crop indicates potentially optimal conditions leading to increased populations.
Chaffinch	34	-25	65	65	The creation and enhancement of hedgerows within the development site will provide breeding opportunities and is likely to increase population.
Greenfinch	0	0	0	0	Species is not present within the development site prior to construction; therefore no losses are predicted. Mitigation is likely to improve habitat for this species and colonisation possible.
Goldfinch	24	-19	-12	12	The provision of ponds within Mitigation Area B and the creation and enhancement of hedgerows within the development site will provide breeding opportunities and mitigate predicted losses.
Linnet	59	-54	(assuming 5 pairs per km <sup>2</sup> )	20	The provision of ponds within Mitigation Area B and the creation and enhancement of hedgerows within the development site will provide breeding opportunities and mitigate predicted losses.
Bullfinch	4	-4	0	4	The provision of ponds within Mitigation Area B and the creation and enhancement of hedgerows within the development site will provide breeding opportunities and mitigate predicted losses.
Yellowhammer	11	-7	3	3	Increase in hedgerows, uncultivated grass strips and winter bird cover will benefit this species and lead to a net gain.
Reed Bunting	18	-12	3	3	The provision of ponds within Mitigation Area B and newly created and enhanced hedgerows within the development site will provide breeding opportunities and mitigate predicted losses.

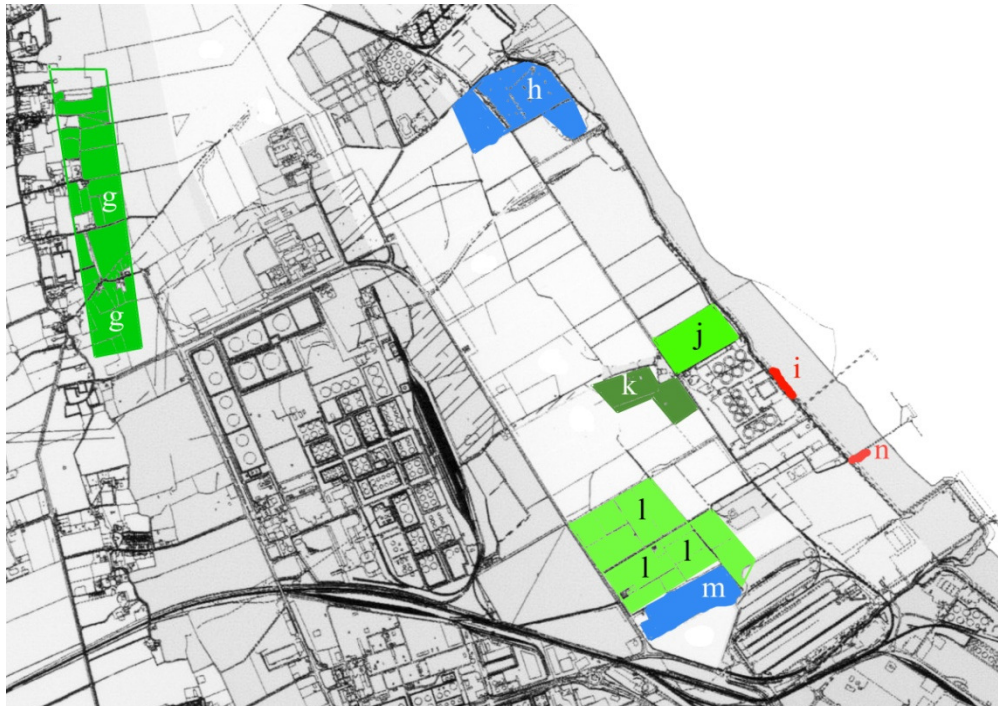
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## 2.6 SPA Birds

### 2.6.1 BASELINE

Six species were recorded using the fields on and around the AMEP site, (black-tailed godwit (*Limosa limosa*), lapwing (*Vallenus vallengus*), redshank (*Tringa totanus*), whimbrel (*Numenius phaeopusare*), shelduck (*Tadorna tadorna*) and curlew (*Numenius arquata*)) and the main areas are shown in *Figure 1*

**Figure 2 Key Inland Sites on South Humber Bank**



Curlew has been recorded in numbers  $\geq 1$  per cent of the Humber Estuary SPA population, however, the remaining species have been recorded but only either infrequently, or in very low numbers.

Only two of the main onshore areas used by curlew at Killingholme Fields lie within the AMEP site and will be lost. These are Fields J (approximately 8 ha) which is the most heavily used, and K (approximately 13 ha) totalling 21 ha. Fields L, which like J and K have been predominantly permanent pasture/hay crop will remain either unaffected (southern part of Fields L) or be part of the mitigation strategy for AMEP and be enhanced for waders such as curlew (northern part of Fields L).

Curlew can be present in any month between July to April on fields affected by AMEP although numbers are variable ranging from 0-123 (based on 2010/2011 winter data).

### 2.6.2 IMPACTS

100.3 ha of terrestrial fields will be lost to AMEP including 26.5ha of field regularly used by up to 2.8% of the Humber population of Curlew (max 123) based on 2010/2011 survey data.

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## **2.7 Noise and Visual Disturbance**

### **2.7.1 BASELINE**

See Annex F of sHRA-Details for this section to be provided

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### 3. OBJECTIVES

#### 3.1 Water Vole

##### 3.1.1 RATIONALE & OBJECTIVES

2.5 km of ditch will be lost due to site construction, thus resulting in loss of water vole habitat if left unmitigated.

**Objective WV1: The site will have sufficient suitable ditch habitat to sustain or enhance water vole populations.**

Target	<ul style="list-style-type: none"><li>• Create and enhance suitable water vole habitat throughout the development site, resulting in a net increase in suitable water vole habitat of approximately 2.03 km</li></ul>
Management	<ul style="list-style-type: none"><li>• Creation or realignment of 2.71 km of drainage ditch throughout the development site</li><li>• Design of ditch to provide a habitat of high suitability for water vole. This will include 2-5m swathes of vegetation on both banks, presence of aquatic and emergent macrophytes, gently sloping banks, permanent slow running water, and soils suitable for burrowing.</li><li>• Creation and realignment works will take place 3 months prior to the removal of any existing water vole habitat, to allow for the establishment of the new drainage ditches</li><li>• Incremental strimming of existing sites will be undertaken after this time to displace water voles into new habitat. If this is unsuccessful animals will be trapped and relocated under licence.</li><li>• Retention of the majority of drains with high or moderate water vole activity and enhancement of these through removal of excessive in-drain and overhanging vegetation</li></ul>
Monitoring	<ul style="list-style-type: none"><li>• Water vole survey to determine population size and distribution</li><li>• Survey of ditches to ensure continued suitability for water vole</li></ul>
Who	<ul style="list-style-type: none"><li>• Suitably qualified surveyor</li><li>• Responsibility of the Environmental Manger to commission surveys</li></ul>
When	<ul style="list-style-type: none"><li>• Monitoring Annually between April and October for up to five years</li></ul>



	<ul style="list-style-type: none"> <li>• If population remains with the Limits of Acceptable Change after three years, monitoring can cease if agreed by the Steering Group.</li> </ul>
Limits of Acceptable Change	<ul style="list-style-type: none"> <li>• Population of water voles is maintained at least 78 breeding females (ie does not decrease by &gt;5%)</li> </ul>
Remedial Action	<ul style="list-style-type: none"> <li>• Careful removal of excessive surrounding vegetation where it is resulting in overshadowing</li> <li>• Removal of excessive aquatic vegetation in drains</li> <li>• Control of mink</li> </ul>

## 3.2 Bats

### 3.2.1 RATIONALE & OBJECTIVES

Although the site currently provides sub-optimal habitat for bats, temporary loss of foraging habitat and disruption to commuting routes is predicted to occur as a result of the works. The objectives are designed to ensure mitigation is put in place and its effectiveness monitored. Targets relate to maintaining the species diversity of the baseline, although nathusius pipistrelle was recorded as a possible record only and is not included within the diversity target.

#### **Objective B1: The site will provide suitable foraging, commuting and roosting habitat for bats**

Target	<ul style="list-style-type: none"> <li>• Creation and enhancement of bat habitat including green corridors and roosting opportunities</li> <li>• Sustaining the diversity of species and levels of activity present in the baseline</li> <li>• During tree removal ensure all legal requirements are met</li> </ul>
Management	<ul style="list-style-type: none"> <li>• Pre tree removal all suitable trees will be checked by a licensed batworker either by climbing or emergence surveys to ensure no roosts are present.</li> <li>• If tree roosts are present a licence application accompanied by an appropriate method statement will be made to NE.</li> <li>• Enhancement of existing hedgerows and drains</li> <li>• Creation of new hedgerows</li> <li>• Planting of trees to provide future roosting opportunities</li> <li>• Installation of bat boxes in suitable trees</li> </ul>

	<ul style="list-style-type: none"> <li>• Creation of foraging areas linked to green corridors</li> <li>• Direction of site lighting away from green corridors and foraging areas to minimise disturbance</li> <li>• Creation of green bridge to allow safe access over road to Burkinshaw's covert and increase connectivity</li> </ul>
Monitoring	<ul style="list-style-type: none"> <li>• Bat activity surveys: Single walked transect undertaken during suitable conditions (light winds, dry, mild &gt;10°C) undertaken within the same two week period annually. Supplemented by passive detectors at fixed points (including green road crossing, NKHP foraging area, central hedge and ditch).</li> <li>• Bat boxes checks for signs of use</li> </ul>
Who	<ul style="list-style-type: none"> <li>• Suitably qualified and licensed surveyor</li> <li>• Responsibility of the Environmental Manger to commission surveys</li> </ul>
When	<ul style="list-style-type: none"> <li>• Transect surveys annually between May and September for up to five years repeated within same two week period each year</li> <li>• Bat box surveys September each year (when young can reasonably be expected to be Volant)</li> <li>• If five or more species are recorded each year, and activity levels and patterns remain equal to or greater than the original baseline monitoring can cease after three years</li> </ul>
Limits of Acceptable Change	<ul style="list-style-type: none"> <li>• If bat activity falls below baseline levels in two consecutive years.</li> <li>• If species diversity falls below four species per annum.</li> </ul>
Remedial Action	<ul style="list-style-type: none"> <li>• Review survey data to establish potential causes.</li> <li>• Relocation of unused bat boxes</li> <li>• Additional habitat enhancement</li> </ul>

### 3.3 Great Crested Newts

#### 3.3.1 RATIONALE & OBJECTIVES

The works will result in the loss of pond habitat from the site, including two confirmed breeding ponds and one pond which may be used for foraging. In addition, terrestrial habitat in the 250 m surrounding the development will be lost.

**Objective GCN1: Maintain breeding population by providing suitable alternative ponds and associated terrestrial habitat.**

Target	<ul style="list-style-type: none"> <li>• Creation of six replacement ponds, four measuring 100 m<sup>2</sup> and two measuring 400 m<sup>2</sup> to more than compensate for the loss of 114.5 m<sup>2</sup> of lost habitat</li> <li>• Maintain population of minimum 19 great crested newts including at least one breeding female.</li> <li>• Comply with licence</li> </ul>
Management	<ul style="list-style-type: none"> <li>• Construction of new ponds in Mitigation Area B between Chase Hill Wood and Rosper Road, approximately 1 km from existing breeding ponds in accordance with Natural England guidance</li> <li>• Replacement of the two existing breeding ponds with four new ponds</li> <li>• Replacement of the foraging pond with two new ponds</li> <li>• Design and planting specification of the replacement ponds to reflect those of the breeding ponds to be removed and agreed by Natural England</li> <li>• Pond creation will occur one year in advance of capture and translocation works to ensure establishment of suitable conditions</li> <li>• Location of new ponds at a site which has connectivity to 10 ha of established broadleaf wood, allowing a larger meta-population to be supported</li> <li>• Enhancement of surrounding terrestrial habitat through conversion of existing arable field surrounding the new ponds to permanent species-rich grassland</li> <li>• Enhancement of surrounding hedgerows and verges for wildlife</li> <li>• Creation of refugia within the core 50 m surrounding each pond</li> <li>• Installation of amphibian-proof barrier around woodland edge to minimise road mortality</li> </ul>
Monitoring	<ul style="list-style-type: none"> <li>• Monitoring of existing and new ponds to monitor metapopulation size and continued utilisation of new ponds</li> <li>• Recording of pond physical attributes including photographic records</li> </ul>

Who	<ul style="list-style-type: none"> <li>• Licensed GCN surveyor</li> <li>• Responsibility of the Environmental Manager to commission surveys</li> </ul>
When	<ul style="list-style-type: none"> <li>• Six visits annually between March and June for up to five years</li> <li>• If population remains above 20 animals including at least one gravid female for three consecutive years, monitoring can cease with agreement of Steering Group.</li> </ul>
Limits of Acceptable Change	<ul style="list-style-type: none"> <li>• A medium metapopulation of newts of not less than 15 animals continue to inhabit the area</li> <li>• At least one gravid female must be present</li> </ul>
Remedial Action	<ul style="list-style-type: none"> <li>• Review survey data</li> <li>• Maintenance of surrounding terrestrial habitat as permanent species-rich grassland</li> <li>• Removal of fish from ponds</li> <li>• Discouragement of water fowl from ponds</li> <li>• Clearance of overhanging vegetation to reduce shading</li> <li>• Clearing of excessive in-pond vegetation</li> </ul>

### 3.4 Breeding Birds

#### 3.4.1 RATIONALE & OBJECTIVES

Mitigation Areas A and B are provided, together with enhancement of boundary features, hedgerows, and ditches to offset the loss of breeding birds. The management objectives relate to specific areas, and habitat and management monitoring will be site specific. Monitoring of bird territories will be undertaken over the whole site as breeding birds are likely to rely on a range of features over the site; for example granivores may use hedges or bird boxes to breed in, insect rich grassland to find food for juveniles, but rely on farmland bird cover crops for winter survival. As a consequence bird targets are set across the whole site rather than split into individual sites. Breeding bird targets have been set for 3 years after mitigation has been implemented, to reflect the need for habitat to mature, whilst balancing a need for early intervention if mitigation is not succeeding.

The baseline and impact assessment indicated predicted changes in bird populations, Table 3 below presents targets based on those predictions. Generally the 3 year target is approximately 50% of the 5 year target. Targets are set on either existing population levels

or predicted populations, whichever is lower. Targets are subject to natural variability, and in assessing if a target has been reached or not external factors such as national population trends would need to be applied.

Table 3: Bird Targets for AMEP Site Post-construction.

<b>Species</b>	<b>Total number of pairs in site footprint</b>	<b>Predicted No. of pairs post mitigation</b>	<b>Pairs 3yrs</b>	<b>Pairs 5 yrs</b>
Mute Swan	1	1	1	1
Shelduck	10	3	1	3
Mallard	16	10	5	10
Shoveler	1	1	0	1
Red-legged Partridge	13	6	3	6
Pheasant	21	8	4	8
Sparrowhawk	2	1	0	1
Kestrel	1	1	0	1
Water Rail	1	1	0	1
Moorhen	6	6	3	6
Oystercatcher	4	2	2	2
Little Ringed Plover	2	2	2	2
Ringed Plover	3	3	3	3
Lapwing	8	2	1	2
Stock Dove	14	5	2	5
Woodpigeon	150	105	52	105
Skylark	42	24	12	24
Swallow	19	19	10	19
Meadow Pipit	19	6	3	6
Yellow Wagtail	9	9	4	9
Pied Wagtail	10	6	3	6
Wren	22	22	11	22
Duncock	7	55	7	7
Robin	6	26	6	6
Blackbird	14	23	14	14
Song Thrush	3	13	3	3
Mistle Thrush	5	2	1	2
Sedge Warbler	28	19	9	19
Reed Warbler	11	2	1	2
Blackcap	6	4	2	4
Garden Warbler	4	3	1	3

Lesser Whitethroat	9	4	2	4
Whitethroat	46	35	16	35
Chiffchaff	1	1	0	1
Long-tailed Tit	6	3	1	3
Blue Tit	17	60	17	17
Great Tit	12	20	12	12
Magpie	11	11	5	11
Carrion Crow	11	11	5	11
House Sparrow	1	1	0	1
Tree Sparrow	24	44	24	24
Chaffinch	34	65	34	34
Goldfinch	24	12	6	12
Linnet	59	20	10	20
Bullfinch	4	4	2	4
Yellowhammer	11	3	2	3
Reed Bunting	18	3	2	3

**Objective BB1: Manage Mitigation Area A to assist in reducing impacts on breeding birds arising from AMEP**

Target	<ul style="list-style-type: none"> <li>• Provide 16.7ha core wet grassland as part of a 47.8ha site bounded by hedgerow and grassland within the southern part of the AMEP site</li> </ul>
Management	<ul style="list-style-type: none"> <li>• Wet grassland detail design to be agreed but likely to include following: <ul style="list-style-type: none"> <li>○ Sowing with an appropriate seed mix and leaving uncut and ungrazed for 3 to 6 months, as appropriate</li> <li>○ 0.2 livestock units per hectare per year in April to June inclusive in Year 1 and 0.3 livestock units per hectare per year in April to June inclusive in all subsequent years, or</li> <li>○ Equivalent management by cutting the grassland</li> <li>○ No fertilisers to be used except if needed to boost earthworm biomass</li> <li>○ No herbicides to be used except if needed to control problem plant species</li> <li>○ Provision of wader scrape(s)</li> </ul> </li> <li>• Enhancement of hedgerows on boundary</li> <li>• Tree belt to screen highway traffic</li> <li>• Unmanaged field boundary strips 2-5 metres wide under and adjacent</li> </ul>

	<p>to hedges.</p> <ul style="list-style-type: none"> <li>• 150 m grassland buffer around the core area</li> <li>• Grassland to include 50 m operational buffer on the northern side-operational buffer to be managed as a species rich neutral grassland with grazing or cutting regime that allows sward of 5cm-20cm April-August and 5cm-15cm September-March.</li> </ul>
Monitoring	<ul style="list-style-type: none"> <li>• Common Bird Census (CBC) monitoring and mapping with six visits</li> </ul>
Who	<ul style="list-style-type: none"> <li>• Suitable ecological surveyor organised by the site Environmental Manager</li> </ul>
When	<ul style="list-style-type: none"> <li>• Bird Monitoring annually for five years. Option to cease surveying after this point if bird populations monitored within development have met minimum number of pairs target detailed in Table 3.</li> </ul>
Limits of Acceptable Change	<ul style="list-style-type: none"> <li>• 3 year targets not met and failure cannot be explained by national trends.</li> </ul>
Remedial Action	<ul style="list-style-type: none"> <li>• Review data to identify which species most at risk</li> <li>• Review management for those species</li> <li>• Supplementary winter feeding</li> </ul>

**Objective BB2. Manage Mitigation Area B to assist in reducing impacts on breeding birds arising from AMEP**

Target	<ul style="list-style-type: none"> <li>• Species rich grassland and six new ponds within the triangular shaped area of land between Chase Hill Wood and Rosper Road.</li> </ul>
Management	<ul style="list-style-type: none"> <li>• Conversion of existing arable field to species rich grassland</li> <li>• Enhancement of existing roadside and field drains</li> <li>• Enhancement of the existing hedgerows around Area B</li> <li>• Creation of six new ponds (two ponds of 400 m<sup>2</sup> and four ponds of 100 m<sup>2</sup>)</li> </ul>

Monitoring	<ul style="list-style-type: none"> <li>• Common Bird Census (CBC) monitoring and mapping with six visits annually.</li> </ul>
Who	<ul style="list-style-type: none"> <li>• Suitable ecological surveyor organised by the site Environmental Manager</li> </ul>
When	<ul style="list-style-type: none"> <li>• Annually for five years. Option to cease surveying after this point if bird populations monitored within development have met minimum number of pairs target detailed in table 3.</li> </ul>
Limits of Acceptable Change	<ul style="list-style-type: none"> <li>• 3 year targets not met and failure cannot be explained by national trends.</li> </ul>
Remedial Action	<ul style="list-style-type: none"> <li>• Review data to identify which species most at risk</li> <li>• Review management for those species</li> <li>• Control of sycamore</li> <li>• Supplementary winter feeding</li> </ul>

**Objective BB3: Enhancement of the AMEP development site out with Mitigation Area A and Mitigation Area B to assist in reducing impacts on breeding birds arising from AMEP.**

Target	<ul style="list-style-type: none"> <li>• Habitat Improvement throughout site.</li> </ul>
Management	<ul style="list-style-type: none"> <li>• Nest boxes erected on suitable mature trees in Chase Hills LNR</li> <li>• Autumn/winter food source from berry bearing plants</li> <li>• Wild flowers, herbs and legumes</li> <li>• Single, annual, late cut with vegetation removed</li> <li>• Plots of biannual farmland granivore seed mix, left unharvested to provide over winter food along edges of amenity areas and habitat corridors.</li> </ul>
Monitoring	<ul style="list-style-type: none"> <li>• Common Bird Census (CBC) monitoring and mapping with six visits annually.</li> </ul>
Who	<ul style="list-style-type: none"> <li>• Suitable ecological surveyor organised by the site Environmental Manager</li> </ul>



When	<ul style="list-style-type: none"> <li>Annually for five years. Option to cease surveying after this point if bird populations monitored within development have met minimum number of pairs target detailed in table 3.</li> </ul>
Limits of Acceptable Change	<ul style="list-style-type: none"> <li>3 year targets not met and failure cannot be explained by national trends.</li> </ul>
Remedial Action	<ul style="list-style-type: none"> <li>Review data to identify which species most at risk</li> <li>Review management for those species</li> <li>Supplementary winter feeding</li> </ul>

### 3.5 SPA Birds

#### 3.5.1 RATIONALE & OBJECTIVES

Ornithological surveys revealed within the AMEP development site >1 % of the Humber Estuary population of Curlew roost and feed within improved grassland fields. As Curlew is an SPA species the rationale for Mitigation Area A is to provide wet grassland habitat for wintering birds (particularly Curlew).

Worm biomass will be a principle component of the ability of the wet grassland to support curlew and other SPA species. Targets for worm biomass have yet to be agreed with Natural England and it is proposed that, subject to access being granted, a survey of the existing pasture fields used by curlew is undertaken to inform a reference target prior to construction.

#### Objective SPA1: Mitigation Area A supports SPA populations of Curlew

Target	<ul style="list-style-type: none"> <li>Support a peak count of 123 curlew at least once per annum subject to natural population variability</li> <li>Establishment of wet grassland within at least 16.7 ha core area.</li> </ul>
Management	<ul style="list-style-type: none"> <li>Wet Grassland Management</li> <li>Sowing with an appropriate seed mix and leaving uncut and</li> </ul>

	<p>ungrazed for 3 to 6 months, as appropriate</p> <ul style="list-style-type: none"> <li>• 0.2 livestock units per hectare per year in April to June inclusive in Year 1; AND</li> <li>• 0.3 livestock units per hectare per year in April to June inclusive in all subsequent years; OR</li> <li>• Equivalent management by cutting the grassland</li> <li>• No fertilisers to be used except if needed to boost earthworm biomass</li> <li>• No herbicides to be used except if needed to control problem plant species</li> <li>• Provision of Wader scrapes if required</li> <li>• Provision of agreed level of worm biomass (subject to agreement with Natural England)</li> <li>• Noise will not exceed 65dB LAmax anywhere in the core area of mitigation Area A as a result of AMEP, unless otherwise agreed with Natural England based on the findings of the monitoring programme and taking account of noise level duration.</li> <li>• No storage at a height greater than 10m from ground level within the 60m operational buffer strip adjacent to Mitigation Area 'A'</li> </ul>
Monitoring	<ul style="list-style-type: none"> <li>• Monthly Counts of birds using field at high tide. Counts to include details of any disturbance and disturbance response behaviour (especially alert and flushing distances).</li> <li>• Monitoring of invertebrate biomass &amp; probe resistance</li> <li>• Noise monitoring (details to be agreed with NE)</li> <li>• Monitoring of wet grassland <ul style="list-style-type: none"> <li>○ 60 permanent quadrats to be established measuring 1m x 1m within the wet grassland area</li> <li>○ Plant species and abundance to be recorded for each quadrat</li> <li>○ Mapping of the extent of wet or damp grassland; and species rich grassland including average sward heights</li> <li>○ Soil penetration resistance</li> </ul> </li> </ul>
Who	<ul style="list-style-type: none"> <li>• Suitable ecological surveyor organised by the site Environmental</li> </ul>

	Manager
When	<ul style="list-style-type: none"> <li>• Monthly counts August-April for minimum of five years. If site regularly supports over 2% of SPA curlew population after this time Steering group can agree cessation of counting or more infrequent intervals between years.</li> <li>• Soil resistance and sward height estimation monthly August-April.</li> <li>• Soil biomass surveys every August.</li> <li>• Monitoring of grassland to undertaken annually in June for the first five years</li> <li>• Monitoring of wet grassland can cease if the target is achieved for three consecutive years after the first five years of monitoring provided that the management regime remains unchanged and subject to the agreement of the steering group.</li> </ul>
Limits of Acceptable Change	<ul style="list-style-type: none"> <li>• Counts of <math>\geq 1</math> % Humber population of curlew occur in less than 3 months between August-April</li> <li>• Noise exceeds agreed limits as a consequence of AMEP</li> <li>• At least one species characteristic of wet or damp grasslands must be present in 50 of the 60 permanent quadrats</li> </ul>
Remedial Action	<ul style="list-style-type: none"> <li>• Review data and establish if any obvious causes of failure to reach target.</li> <li>• Review functioning of wet grassland and commission further biomass surveys</li> <li>• Consider inoculation with worms or worm rich turves if biomass low</li> <li>• Increase noise management controls.</li> </ul>

### 3.6 Noise and Visual Disturbance

#### 3.6.1 RATIONALE & OBJECTIVES

Noise and visual impacts are expected from the AMEP development upon nearby terrestrial noise and visually sensitive receptors. Consequently, consultations are underway with Natural England regarding restrictions for noise level and container storage height in relation to North Killingholme Haven Pits and Mitigation Area A.

**Objective 1: Reduce visual and noise disturbance to acceptable level in relation to North Killingholme Haven Pits.**

Target	<ul style="list-style-type: none"> <li>• No disturbance to SPA species roosting, feeding or breeding at NKHP</li> </ul>
Management	<ul style="list-style-type: none"> <li>• Will cover construction and operation</li> <li>• Include noise monitoring programme and protocol agreed with Natural England</li> <li>• Noise will not exceed 65dB LAmax at the boundary of NKHP as a result of AMEP, unless otherwise agreed with Natural England based on the findings of the monitoring programme and taking account of noise level duration.</li> <li>• Agree visibility splays and resultant height / distance restrictions on container storage adjacent to NKHP and Mitigation Area A with NE.</li> </ul>
Monitoring	<ul style="list-style-type: none"> <li>• A combined noise and bird monitoring programme is to be developed with Natural England, including agreed monitoring locations.</li> <li>• Collate monthly WeBS data.</li> </ul>
Who	<ul style="list-style-type: none"> <li>• Noise monitoring specialist</li> <li>• Competent and experienced bird surveyor / specialist</li> <li>• Landscape architect to produce visibility splays</li> <li>• Surveys and monitoring to be managed by Environmental Manager</li> </ul>
When	<ul style="list-style-type: none"> <li>• To be agreed with Natural England as part of the development of the monitoring approach</li> </ul>
Limits of Acceptable Change	<ul style="list-style-type: none"> <li>• Noise levels from AMEP exceed agreed levels and also are recorded to disturb birds</li> <li>• Any one year where decline of a single species is greater than natural variability, or any two years of consecutive decline in peak means.</li> </ul>
Remedial Action	<ul style="list-style-type: none"> <li>• Review AMEP activities and disturbance management approach</li> <li>• Check for external causes of decline in numbers</li> <li>• Increase management of NKHP e.g. supplementary feeding, improve roosting sites.</li> </ul>