

Hesketh Out Marsh West Realignment Scheme

SCOPING REPORT

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Environment Agency Internal Works and Activities
- Environmental Impact Assessment -

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Summary

Background

This document is based upon environmental scoping of the potential options for habitat creation and flood management.

The study area (Figure.1) lies at Hesketh Out Marsh on the southern boundary of the Ribble Estuary in Lancashire, approximately 7km to the west of Preston.

The Ribble Estuary is one of the most important estuaries for birds in the United Kingdom and is designated a Special Protection Area (SPA) for its over-wintering waterfowl and a Site of Special Scientific Interest (SSSI) for estuary habitats and birds.

The approximate grid reference for Hesketh Out Marsh West is SD 3415 4253.

The options considered at Hesketh Out Marsh West comprise do nothing (option 1), do minimum: maintain existing embankments (option 2) and the realignment of Hesketh Out Marsh West (option 3).

Consultation

Consultation has been undertaken with key stakeholders, and issues identified by consultees as being of concern include:

- potential adverse impacts on the Ribble Estuary SPA and Ramsar site, wildlife and protected species;
- changes in habitat;
- changes in visual amenity and landscape;
- potential adverse impacts on Public Rights of Way and recreational amenities;
- potential adverse impacts on traffic and transport;
- potential impacts on cultural heritage;
- potential impacts on hydrology and water quality; and
- potential effects on fisheries.

Potential Impacts

The aim of this scoping report is to identify the key environmental constraints and opportunities associated with options for the future management of Hesketh Out Marsh West.

The do nothing option is not considered to be socially/environmentally viable as the flood-risk to people and their properties would be uncontrolled.

The do minimum option (maintenance) is viable but would not realise the intended benefits of the scheme.

The construction of a flood embankment and associated works would alleviate the surface water flooding at Hesketh Out Marsh and provide an increased level of flood protection to the local community including properties, land, and recreational facilities. Option 3 would provide a future opportunity to create a new RSPB nature reserve, which would provide valuable habitat for wintering wildfowl and waders. The excavation of lagoons and changes in habitat types as a result of the realignment would provide improved habitat for breeding waders in the area. The Reserve would also have significant potential benefit to recreational amenity.

However, some temporary adverse impacts would be experienced during the construction of the embankment (Option 3) including locally elevated levels of dust, noise and vibration, changes in visual amenity and landscape character, closure or diversion of public rights of way and disruption to access into properties. There is also the potential for disturbance to flora and fauna including habitats within the internationally designated nature conservation site (the Ribble and Alt Estuary Special Protection Area) and shellfisheries within the Ribble Estuary. Issues relating to the potential reduction in water quality in standing water habitats and the Ribble as a result of accidental spillages and morphological change, and bathing water quality will be considered within the Environmental Statement.

The Way Forward

Option 3 has been selected as the preferred option from an environmental perspective. From consultation with English Nature, the Environment Agency and West Lancashire District Council, the requirement for a formal Environmental Impact Assessment and an Appropriate Assessment to accompany a planning application has been identified.

Section 1. Introduction

1.1 Purpose of the Document

This document is based upon environmental scoping of the potential options early in the feasibility study by the relevant environmental specialists within the Environment Agency (internal consultees).

The Environment Agency is responsible for managing the flood risk in many areas arising from rivers and the sea. The Environment Agency is currently investigating potential options for managing the flood risk at Hesketh Out Marsh in Lancashire (see Figure 1).

This document was prepared following the collection of baseline data for the study area through consultation with statutory bodies, site visits and desktop studies. The issues identified at this stage will be addressed during the subsequent design and implementation of the scheme, with relevant interested parties (including environmental specialists) consulted as the project progresses.

1.2 Location and Site Description

The study area (Figure 1) lies at Hesketh Out Marsh on the southern boundary of the Ribble Estuary in Lancashire, approximately 7km to the west of Preston.

The approximate grid reference for Hesketh Out Marsh West is SD 3415 4253.

The Ribble Estuary is one of the most important estuaries for birds in the United Kingdom and is designated a Special Protection Area (SPA) for its over-wintering waterfowl and a Site of Special Scientific Interest (SSSI) for estuary habitats and birds.

The study area is classified under the Countryside Agency's countryside character initiative (<http://www.countryside.gov.uk/cc/> accessed 19th April 2005) as lying within the Lancashire and Amounderness Plain character area.

1.3 Nature of and Background to the Project

Over the last century the shape of the Ribble Estuary has been vastly modified by a series of embankments enabling land use change to agriculture, land fill and other uses, particularly on the southern, wider side. The last of these embankments was completed in the early 1980s when subsequent agricultural improvement created 326 ha of Hesketh Out Marsh (HOM).

The RSPB is negotiating to purchase 168 ha, comprising the western half of Hesketh Out Marsh (Figure 2a), with the objective of recreating estuarine wetland managed primarily for breeding waders. The scheme is dependent on successful conclusion of land purchase negotiations. The Environment Agency is working in partnership with RSPB to deliver a scheme that meets flood defence and habitat creation objectives. Halcrow has been appointed by the Environment Agency to undertake design studies and an Environmental Impact Assessment for the proposed realignment.

Section 2. Objectives and Existing Environment

In order to identify potential options and evaluate the environmental impact of a flood management scheme at Hesketh Out Marsh, objectives were established in consultation with Environment Agency consultees and the key stakeholders outlined in Section 4.2. In formulating these objectives, account was taken of environmental regulations, good practice procedures and environmental constraints.

The overall objective of the study is to develop a scheme that meets flood defence and habitat creation objectives. The agreed objectives for the scheme are shown in Table 1.

Table 1 *Objectives for managed realignment at Hesketh Out Marsh West*

Category	No	Objectives
Flood Defence	1	To protect existing built assets and infrastructure on adjacent sites against flooding.
	2	To increase the standard of flood protection (to 1 in 200 year) to surrounding areas by carrying out improvements to the inner embankment.
	3	To help the estuary to adapt to the threat of sea level rise.
Natural Environment	4	To create intertidal habitat that can be utilised by a wide range of wintering and breeding waterfowl, to include saltmarsh, muddy creeks and saline lagoons.
	5	To avoid adverse impacts on estuary processes, including the ability of the estuary to respond to sea level rise.
	6	To ensure compliance with the Conservation Regulations by providing suitable and sufficient areas of intertidal habitat to act as compensation for 13 ha of intertidal habitat that will be affected by coastal defences to be constructed within the Morecambe Bay European Site.
	7	To create intertidal habitat that has unhindered tidal exchange, requires minimal management and has the capacity to respond to dynamic estuarine change.
	8	To contribute towards the EA high level target for BAP habitat creation i.e. coastal saltmarsh
	9	To ensure compliance with the Conservation Regulations by avoiding adverse effects on the Ribble Estuary SPA, Ramsar Site and SSSI.
	10	To avoid adverse effects on, and enhance where possible, Biodiversity Action Plan habitats and species
	11	To avoid adverse effects on water quality and especially on bathing beaches as a result of faecal coliforms deposited in new intertidal areas by grazing animals.

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Category	No	Objectives
	12	To facilitate the opportunity to expand the creation project to provide further compensatory and BAP habitat by expanding the scheme to the east.
Landscape	13	To maintain or enhance the existing landscape character, including features of historic, archaeological and environmental importance.
Built Environment	14	To maintain the Public Right of Way bordering the site
Economic	15	To promote a financially viable scheme

A detailed appraisal of technical, environmental and economic issues will be undertaken in order to meet the objectives whilst protecting environmental assets.

The results of this process will lead to the preparation of an Environmental Statement, which will provide justification for the preferred option and include an assessment of both positive and negative impacts.

Section 3. Alternative Options

A range of possible options have been proposed as shown below.

Options currently under consideration to manage the fluvial flooding problem at Hesketh Out Marsh and associated areas are outlined below.

Option 1: Do Nothing

The Do Nothing Option involves no intervention and would result in eventual failure of the sluice and/or embankment, so that Hesketh Out Marsh and the surrounding settlements would be subject to tidal flooding.

Option 2: Do Minimum: Maintain Embankments

This option would involve maintaining the existing embankments at Hesketh Out Marsh West.

Option 3: Realignment of Hesketh Out Marsh West

The proposed approach to realignment would increase the existing standard of flood protection (which is less than 1 in 200 years) to the desired 1 in 200 years and would comprise the following works; the layout of which is shown in Figure 2a:

- Construction of a new cross-wall embankment separating Hesketh Out Marsh West from Hesketh Out Marsh East (if the realignment scheme were later expanded to include Hesketh Out Marsh East this embankment would be removed).
- Upgrading the existing embankment between Hesketh Out Marsh West and Hesketh New Marsh, to act as the primary line of defence.
- Creation of four 100m wide breaches in the existing embankment.
- Excavation of creeks within the realignment area, to act as extensions to existing creeks in the present intertidal area.
- Excavation of creeks and former drainage channels within the realignment area, to act as extensions to existing creeks in the present intertidal area, and the creation of approximately 100ha of intertidal marsh and creeks. Creek depths will be excavated to a typical maximum 2.75m OD, graded down to the levels of the four breaches in the outer embankment which are at 2.07m OD, 2.52m OD, 2.60m OD and 2.75m OD.

It is envisaged that this would be achieved by a combination of initial excavation to reinstate the historic creek pattern (analysis of aerial photographs prior to the 1981

bank construction shows a pattern of high marsh and creeks similar to that still found on the adjacent Banks Marsh) and by enabling the passage of saline water through the sea wall and onto the marsh at high tides.

Approximately eight saline lagoons will be excavated on the site to provide wader feeding habitat, each about 1 ha in area. These will be excavated to a typical depth of 2.75m OD and will be fed by minor creek excavated to a depth of 3.25m OD. This arrangement is designed to retain water to a local depth of about 0.5m in the lagoons when the tide retreats. No islands suitable for nesting gulls will be created.

The extent of proposed habitats is shown in Table 2.1 and an indicative layout of the site is shown in Figure 2a.

Table 2.1 *Proposed Habitats at Hesketh Out Marsh West*

Habitat	Area (ha)	Maximum size of any water body (ha)	Approximate % open water
Upper saltmarsh (vegetated)	55	1.0	10
Lower saltmarsh (bare mud, creeks & pools)	44	0.25	10 – 15
Saline lagoons	7	1.0	100
Upper saltmarsh	43	0.25	10
Embankments etc	21	N/A	0

It is intended that the site will be managed with light summer grazing by cattle across the whole site to create a sward structure suitable for breeding waders (5-15cm high over winter and into spring), which is less likely to be favoured over the adjacent heavily grazed Banks Marsh by over wintering wildfowl. Stocking density would be approximately one cattle per 2 ha during five months of the year.

The current estimate of the amount of material that is estimated to be required to construct and raise embankments is 126,600m³. Investigations have been undertaken which demonstrate that this material can be won from within the site as a result of creek and lagoon excavation. Excavation is estimated to generate approximately 206,000m³ of fill, of which ditch infill is expected to use 30,000m³ and wastage (a combination of material lost through wind transport between excavation and placing, volume lost on compaction and a contingency for unsuitable excavated material) to

represent approximately 25%. On this basis there will be a surplus of about 10,000m³ of fill, to be used for either raising of the car park or removal from site.

- As a result of the change in land use of Hesketh Out Marsh West from agricultural to nature conservation use, the proposed planning application will include change of use of one nearby residential property (Ribble Hall, presently subject to an agricultural tie) and an adjacent barn (Ribble Hall Farm), together with extinguishing of a nearby public footpath leading to the site (for which alternative paths exist and to which a new access route is to be created). The locations of these changes are shown on Figure 2b.

Section 4. Consultation

A preliminary Communication Plan outlining key requirements for consultation during the scheme has been included in Annex 2. The Plan will be revised appropriately as the scheme progresses.

4.1 *Internal Consultation*

Consultation was carried out internally in 2004/05 within the Environment Agency. The following environmental specialists have been or will be contacted with initial details of the proposals:

Function	Contact	Summary of Response
Fluvial Geomorphologist	David Brown	To be consulted
Flood Defence Operations	Dave Ranson	To be consulted
Flood Warning	Sarah Robinson	To be consulted
Development Control	Dave Wilcox	To be consulted
Environmental Protection	Andy Coleman	To be consulted
Recreation	Martin James	To be consulted
Water Resources	Carl Sweeney	To be consulted
Contaminated Land	Jackie Harrison	To be consulted
Landscape Architect		To be consulted
Technical Fisheries	Andy Brown	To be consulted
Fisheries, Recreation and Biodiversity	Georgina Fellows	Comments provided on the scope of the EIA. The ability of estuary to respond to sea level rise could also be considered as flood defence benefit. Coastal saltmarsh is a Priority 1 habitat under the Environment Agency's NW Region Biodiversity Strategy; it also has a Habitat Action Plan under the UK BAP.
Archaeology	Phil Catherall	Geoarchaeological survey required

4.2 *External Consultation*

Consultation was carried out in 2004/2005 with external stakeholders in relation to the scope of the EIA. A number of these organisations provided formal responses or were able to supply baseline information as part of the impact assessment process. The outcome to date of this process is summarised below.

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Function	Further Consultation	Summary of Response
English Nature		Provision of information including common standards monitoring guidance for saltmarsh.
RSPB		Scope of environmental assessment agreed Wintering and breeding bird surveys being undertaken
West Lancashire District Council		Meeting held 8 March 2005

This scoping report will be used as a basis for further consultation with organisations listed in the Communications Plan (Halcrow, June 2005).

Section 5. Existing Environment

5.1 Human Beings

5.1.1 Settlements

The study area incorporates the villages of Hesketh Bank and Becconsall, which both lie to the south of Hesketh Out Marsh.

To the east of the study area is the city of Preston, whilst the tourist towns of Blackpool, Lytham and St Annes occupy a coastal location to the north-west of the study area.

5.1.2 Tourism and Recreation

The Lancashire Coastline and the Ribble Estuary dominate the area and provide a valued resource for water and land based recreation. The estuary attracts a diverse range of recreational users and the area is extensively used for boating, canoeing, kayaking and sailing.

The Ribble Estuary also supports a considerable number of wildfowl and waders and consequently both wildfowling (which is carefully regulated with large sanctuary areas) and bird watching are popular pursuits within the study area. Events are organised by the Royal Society for Protection of Birds (RSPB) at Fairhaven Discovery Centre and Marshside Nature Reserve.

The closest coastal beaches to the study area provide opportunities for swimming (particularly at the two designated bathing waters at Lytham St Annes), wind surfing and casual surfing.

Other informal recreational pursuits that take place within the study area include cycling, horse riding and walking. There are several Public Rights of Way within the study area as shown on Figure 2b.

Tourism in the region focuses on Blackpool, Lytham and St Annes, which lies to the north-west of the study area. Lytham and St Annes are well-established traditional seaside resorts attracting large numbers of visitors but offering gentler and more peaceful locations than Blackpool.

5.2 *Flora and Fauna*

5.2.1 *Nature Conservation Designations*

The existing nature conservation designations within or in close proximity to Hesketh Out Marsh (see Figure 3) are:

Statutory International Importance

- Ribble and Alt Estuaries Special Protection Area (SPA) – this 12,361ha site was designated for its internationally important populations of regularly occurring Annex I species (including wintering populations and breeding populations of non-qualifying Annex I species) and an internationally important assemblage of waterfowl. The assemblage of waterfowl supports at least 20,000 waterfowl, supports 301,449 individual waterfowl during the winter and also supports nationally important populations.
- Ribble and Alt Estuaries Phase 2 Ramsar site – this site has been designated for a nationally important population of natterjack toad, a wintering population of 186,709 waterfowl and winter populations of a range of bird species.

Statutory National Importance

- Ribble Estuary National Nature Reserve (NNR) – this reserve (formerly known as the Ribble Marshes and established in 1979); occupies over half of the Ribble Estuary and comprises extensive areas of sand and mudflats, and one of the largest single areas of salt marsh in England (which supports significant populations of waterfowl).
- Ribble Estuary Site of Special Scientific Interest (SSSI) - This site comprises 9,226 hectares of grazed marsh, extensive intertidal sand-silt flats and small areas of recently reclaimed salt marsh of significant ornithological and floral value.

Statutory Local Importance

- Hesketh Old and New Marsh Field Biological Heritage Site – This site comprises a series of fields of improved pasture hosting wintering flocks of Bewick's swans.
- Hesketh Out Marsh East Biological Heritage Site – This site comprises fields of improved pasture with brackish ditches with marginal stands of sea aster, sea couch, sea clubrush, creeping bent and marsh foxtail.
- Hesketh Old Marsh Embankment Biological Heritage Site – These embankments surround the western half of Hesketh Out Marsh and have ungrazed stands of species-poor false oat-grass coarse grassland with tall ruderal herbs such as nettles and thistles. There is one section of embankment with a more diverse sward with yellow vetching, tufted vetch, angelica and yarrow.

5.2.2 *Natural Area Profiles*

Natural Areas are tracts of countryside or coastline that are readily recognised by their characteristic land forms, wildlife and land use. They are intended to provide a framework to identify the priorities and objectives for nature conservation at a local level and have a key role in translation of national targets for habitats and species into action at the local level.

The site falls within the 'Lancashire Plain and Valleys' Natural Area based on English Nature's natural area profile description (<http://www.english-nature.org.uk/science/natural>, accessed 19 April 2005). This region is typified by intensively farmed areas with arable, horticultural and dairy farming, meadows, grazing marshes and ancient woodlands along a coastal plain.

5.2 *Air and Climate*

Air Quality and Noise

Activity within the study area is limited and as such noise and dust levels are likely to be typical for this rural location.

Climate

The climate in Lancashire is characterised by its average rainfall of less than 800mm annually (www.defra.gov.uk 2002).

Recently, there has been increasing concern that climatic change is accelerating with an overall trend towards higher temperatures and increased rainfall. It is now generally accepted that there is human-induced global warming with national average air temperatures having increased by 0.3 – 0.6⁰C during the 20th century.

This global warming trend is predicted to increase pressure on coastal flood defences due to increased storminess and rising sea levels. This will be exacerbated along the Ribble shoreline, which is dependent on maintenance of flood defences for the protection of land (previously claimed from intertidal habitat).

5.3 *Landscape and Visual Amenity*

5.3.1 *Landscape Designations*

There are no statutory international or national designated areas of landscape importance relating to the study area.

According to the Countryside Agency Character designations, the study area lies within the Lancashire and Amounderness character area.

The study area also lies within the Lancashire Plain and Valleys Natural Area, which is characterised arable fields and species rich hedgerows, coastal and floodplain grazing marsh and damp pasture, fragments of lowland raised bog, meres, lakes, ponds and rivers and semi-natural woodland.

Within Lancashire County Council's 'Landscape Strategy for Lancashire' (2001), the study area falls within two landscape character types: enclosed coastal marsh and open coastal marsh. A description of these landscape character types will be provided in the Environmental Statement.

5.3.2 *Local Landscape Character*

Hesketh Out Marsh West falls within a rural area comprising low-lying ploughed arable fields in a flat open coastal plain landscape, which has been intensively drained by a complex network of channels and ring drains, and subsequently farmed for arable, horticultural and dairy farming since 1981.

The site is bounded by the Ribble Estuary and associated saltmarshes, mudflats and sandflats to the north and west while the eastern and southern areas of the site are bounded by agricultural land; the latter of which is currently grazed by sheep. The site is bordered by flood embankments to the north, south and west and by a drainage ditch to the east.

Several brackish lagoons exist within the site, which are bordered by reeds.

5.4 **Water**

5.4.1. *Surface Water*

The study area lies within the floodplain of the Ribble Estuary, which is located approximately within the study area.

5.4.2 *Drainage*

The site is intersected by a number of significant drains which discharge to ring drains. These surface drains are fed by land drains underlying the site at a reported spacing of approximately 13m, thought to lie within the sand formations or at the sand/silt interface at an approximate depth of 0.6m below the soil surface. The drains are currently maintained by the landowner with the exception of those which have been adopted and are maintained by the Environment Agency. The surface is composed of clay rich soils to a depth of approximately 0.6m overlying sands. The soils are reportedly ploughed to a depth of 0.3m.

5.4.2 *Water Quality*

Information on water quality within and around the study area was obtained from the Environment Agency water quality database (2000 - 2002). According to the Environment Agency's General Quality Assessment (GQA) scheme (based on routine water quality monitoring undertaken between the estuary mouth and Preston), chemical river water quality in the River Ribble is classified as Grade D, water of 'Fair' quality.

5.6 **Land Use**

Hesketh Out Marsh encompasses a range of land use classifications, principally the estuary, farmland, coastal grazing marsh, saltmarsh, mudflats and isolated pockets of trees and shrubs.

Warton Aerodrome lies on the northern bank of the Ribble Estuary.

5.7 Cultural Heritage, Archaeology and Material Assets

5.7.1 Scheduled Monuments

English Heritage has confirmed that there are no Scheduled Monuments within the study area.

5.7.2 Listed Buildings

English Heritage has confirmed that there are no listed buildings within the study area.

5.7.3 Archaeological Records

There are no features identified on the Lancashire County Sites and Monuments Record (SMR) within Hesketh Out Marsh West.

The Ribble Estuary has however, been in use since prehistoric times. The wealth of historic buildings and archaeological remains identified within the region suggests that it is probable that there will be features and remains of all dates both adjacent to the Ribble and within the estuary deposits (Iles 'The Ribble and Ribble Estuary – a brief archaeological summary'). These features may range from palaeoenvironmental remains and the find spots of artefacts such as coins and prehistoric tools (e.g. spearheads) to buildings, structures and earthworks. The historic landscape is also of importance in providing their setting.

5.7 Traffic and Transport

The study area can be accessed from Guide Road or Dib Road via the secondary Shore Road, which links Marsh Road to Hesketh Bank.

5.8 Soil, Geology and Hydrogeology

5.9.1 Geology

The solid geology of the study area comprises eroded Triassic sedimentary rocks notably red mudstones, siltstones and sandstones ('New Red sandstone'). The low bedrock geology rarely emerges from the overlying surface deposits.

Surface deposits along most of the coast, particularly the Ribble Estuary, comprise a semi-continuous thick layer of hard, compact glacial till (boulder clay) that was deposited beneath glaciers during the last Ice Age and now forms the coastal cliffs. Post-glacial drift deposits such as glacial outwash sands and gravels and softer tills are locally present, which were laid down as the ice sheet retreated. The decay of ice also created badly drained hollows and the pervasive drift cover has infilled local irregularities in the bedrock surface. These hollows have since become filled with post-glacial peat, which has created fundamental conditions for the survival of mosses and meres. Variations in sea level and coastline positions during the Ice Age and following this climatic event resulted in the deposition of marine, estuarine and fluvial alluvium across different parts of the area.

5.9.2 Hydrogeology

The study area is dominated by a major aquifer of the Permo-Triassic Sandstones and includes the Fylde Aquifer, which extends from Heysham in the north to Leyland lying to the south-east of the study area. This aquifer is heavily exploited for both public and industrial abstraction.

5.9.3 Contamination

A Phase 1 Desk Study was undertaken by Halcrow in February 2005 to consider issues associated with land contamination at Hesketh Out Marsh and any impacts the issues may have on the proposed managed realignment scheme.

The study concluded that due to the historical use of the site for arable production, there is some potential that the ground underlying the site may be contaminated by pesticides and nutrients although it is considered that this presents a low risk. The risk is being further assessed through sampling of material from the site.

5.10 Use of Natural Resources

Material for the construction/raising of embankments at Hesketh Out Marsh associated with option 3 would be excavated from within the study area where possible.

Section 6. Potential Impacts and Mitigation Measures

Following scoping consultations with stakeholders, as listed above and baseline data collection the key environmental issues and potential impacts have been identified. Only the key issues are discussed in the following sections.

These key environmental issues are identified in the attached Scoping Impacts Matrix (Annex 1), which provides a list of potential environmental effects and recommendations. It is essential that consultation continues through feasibility, design and construction. Any design or implementation changes should be notified to the Environmental Impact Assessment Officer and appropriate specialists.

6.1 Human Beings

Key Impacts

Option 1 would result in eventual tidal flooding in the local community. Option 2 would maintain existing levels of flood protection whereas option 3 would provide a long-term positive benefit to the local community in areas within and around Hesketh Out Marsh through the increased level of flood protection.

Construction activities in the 'area of potential works' (options 3) would cause minor disruption and disturbance in terms of noise, vibration, dust and access, to local residents and recreational users due to the remote nature of the site.

Option 3 would impact on the Public Rights of Way that transect the site. In particular, the existing footpath along the western edge of Hesketh Old Marsh (between Shore Road and Hesketh New Marsh) would require closure and this would have a moderate adverse impact (see Figure 2b) on recreational users in the area.

There would also be a requirement to create new public footpaths (see Figure 2b) including a footpath between Shore Road and Hesketh Out Marsh. The new paths would have a major beneficial impact on recreational users in the area.

Potential Mitigation

Public consultation should be continued during the detailed appraisal and design stages of the scheme, as well as consideration of the nature, timing and duration of particular construction activities including the location of a site compound, traffic controls and reinstatement of land following completion of the scheme to minimise the impacts on the local community. In particular, the local community and users of access at the rear of properties to the 'proposed area of works', would be kept fully informed about the programme of construction activities, prior to implementation of any option.

Construction works should be carried out within normal working hours and be timetabled to reduce the potential for disturbance.

There is an opportunity associated with option 3 to create a new RSPB Reserve, which would have significant implications for recreational amenity.

6.2 *Flora and Fauna*

Key Impacts

(a) General

Construction works associated with options 2 and 3 would be undertaken adjacent to the Ribble and Alt Estuary SPA. Consequently, an Appropriate Assessment would be undertaken (for adoption by West Lancashire District Council) to determine whether these options would have an adverse effect on the integrity of the internationally designated site.

Option 3 would result in changes in existing habitat on Hesketh Out Marsh, including an area identified in the Local Plan as a Biological Heritage Site. A number of existing trees and freshwater features would be lost.

Flora and fauna, including those within the Biological Heritage Sites, could be affected by a change in drainage patterns that construction of a new embankment (option 3) might generate.

Option 3 would have an impact on adjacent existing saltmarsh habitat (and possibly on its use by birds) during both construction and operation of the scheme.

Option 3 is likely to result in changes to hydrodynamics, which would have indirect ecological implications for the estuary as a whole, including effects on populations of wintering birds, breeding birds and fish that may use the site. These will be considered during the preparation of the Environmental Statement.

There may be a potential impact on fisheries as a result of option 3, particularly shellfisheries in the estuary that may be sensitive to changes in currents, sedimentation or water quality.

(b) Predicted Bird Use

Breeding species expected to use the realigned Hesketh Out Marsh (option 3) include mute swan, ducks, avocet, black-tailed godwit, lapwing, redshank, snipe and oystercatcher. It is not expected that black-headed gulls would be attracted to breed on Hesketh Out Marsh, providing no suitable habitat (i.e. islands in pools) is created.

Monthly counts undertaken as part of the WeBS monitoring scheme over the last decade indicate that the Ribble is one of the most important estuaries in the UK for wintering waterfowl with an average 5-year peak mean total of 259,721 birds. However, comparatively few wildfowl occur in the WeBS count sectors adjacent to Hesketh Out Marsh, with greater numbers counted further along the estuary further to the southwest. This distribution of waterbirds in winter, particularly wildfowl, is closely correlated with grazing management. Highest densities of grazing geese and wigeon occur where sheep and cattle grazing have produced short swards. At Hesketh Out Marsh, the objective is to produce a longer and more tussocky sward designed to attract breeding waders. For this reason, it is

believed by RSPB to be unlikely that the acquisition and management of Hesketh Out Marsh West would result in a net increase in wintering waterfowl on the estuary, though there may be a redistribution of wildfowl between the adjacent saltmarsh on Banks Marsh and the re-created estuarine habitats.

(c) **Potential Mitigation**

Due to the potential for impacts, additional pre-construction surveys for rare and protected species were undertaken to provide further information and enable appropriate mitigation measures to be incorporated into the proposals. These included a Phase I habitat survey, survey of the aquatic ecology of the three ponds adjacent to the outer embankment, a ditch survey and protected species surveys (potential for water voles, badgers, breeding birds, amphibians and fish).

Any tree work which needs to be undertaken prior to the works commencing must be undertaken outside of the bird nesting period (March to September) by an Arboricultural Association Approved Contractor, in accordance with all legislation including BS 3998 'Tree Works'. To avoid root damage and soil compaction around retained trees, the trees will be fenced off as far from the trunk as is possible and protected in accordance with BS: 5837 'Trees in relation to Construction'.

The design of the proposed realignment incorporates a number of ecological enhancements, such as lagoons for feeding waders.

(d) **Further Studies**

A Phase 1 habitat survey of the site, most of which is in intensive arable use, will be conducted to help to assess the potential impacts of option 3.

Wintering and breeding bird survey of the existing site and adjacent areas are being conducted to assess the site's relative importance.

Modelling will be used to predict creek widening resulting from increased tidal prism, associated sediment and vegetation erosion, any effects on water levels in the estuary and indicative areas of sediment deposition.

6.3 Air and Climate

Key Impacts

Any construction activities would result in short-term impacts from localised changes in dust, noise and emissions associated with increased vehicle movements and the use of plant and equipment. This is unlikely to affect local residents due to the distance between the closest property and the site.

No long-term key impacts are anticipated.

Potential Mitigation

Local landowners would be kept fully informed about the nature and timing of construction activities prior to implementation of any option.

Appropriate working methodologies should be adopted to minimise the production of dust and the generation of noise.

6.4 Landscape and Visual Amenity

Key Impacts

Local residents and recreational users (notably footpath users) may experience some temporary loss of local landscape and visual amenity value, particularly during construction works as a result of the presence of construction plant and machinery on-site and on access roads to the site.

New structures associated with option 3 would result in a long-term change in landscape experienced by public footpath users.

In the long-term, option 3 may result in a change of view for residents at Ribble Bank Farm, Ribble Manor and Hesketh Lodge only; however views of the embankment would be distant.

The construction of option 3 is likely to result in the loss of some trees and shrubs that would indirectly impact on the landscape and visual amenity of the site (Section 6.2).

Potential Mitigation

If option 3 (flood embankment) is implemented, it should be sown with a wildflower/grass mix and designed to look relatively natural in form in order to blend it more effectively into the neighbouring landscape.

During the detailed appraisal stage, the potential landscape and visual impacts of all options will be assessed and recommendations made with regard to minimising or avoiding adverse effects, whilst maximising landscape and visual enhancement opportunities. The sympathetic design of any scheme should aim to minimise adverse visual impacts.

6.5 Water

Key Impacts

Where construction works are undertaken (options 2 and 3), adverse impacts could include reduced water quality in standing water habitats and the Ribble Estuary arising from sedimentation/turbidity and accidental spillages of vehicle/machine fuels, oil, cement or other construction materials.

The construction of a new embankment and managed realignment could have an impact on flood defences adjacent to the realigned area and elsewhere in the estuary.

The proposed introduction of freshwater from Hundred End Gutter to the southern end of the site (option 3) may have a potential impact on hydrology and/or hydrogeology (which might affect water resources).

Concern has previously been expressed that there may be an increase in faecal coliforms resulting from grazing animals (in addition to wildfowl and other birds) kept on the

realignment area (option 3), which could cause a deterioration in the quality of bathing beaches at Southport and Lytham St Anne's.

Mitigation

To protect water quality during construction, the contractor would implement best practice methods and work in accordance with all relevant UK legislation and Environment Agency/CIRIA Pollution Prevention Guidelines, including:

- The Water Resources Act 1991.
- The Environmental Protection Act 1994.
- The Environment Act 1995.
- PPG1 (General Guide to the Prevention of Water Pollution).
- PPG2 (Above ground oil storage tanks)
- PPG5 (Works In, Near or Liable to Affect Watercourses).
- PPG6 (Working at Construction and Demolition Sites).
- CIRIA C532 (Control of water pollution from construction sites – guidance for consultants and contractors).

All storage areas for fuel, oil, chemicals and other potentially contaminating liquids would be appropriately sited away from possible flooding and bunded in accordance with standard Environment Agency requirements.

6.6 Land Use

Key Impacts

Key land use impacts have been identified as the permanent land-take resulting from construction of an earth embankment (options 3) and associated access requirements, which would be confined to arable land.

There is the potential for adverse impacts on the nearby Warton Aerodrome such as the increased risk of bird strikes if the option implemented results in changes in bird distributions and numbers.

Mitigation

Reinstatement/re-turfing of all private and public areas affected by temporary construction works would be undertaken following completion of the scheme.

No islands will be constructed in the proposed lagoons, in order to mitigate the possibility of increased numbers of nesting gulls causing an increased risk of bird strikes at Warton Aerodrome.

6.7 Cultural Heritage, Archaeology and Material Assets

Key Impacts

Any proposed works will avoid known archaeological features, however, construction works and changes to the river, its banks, the immediate hinterland and estuary deposits have the potential to cause impacts on undiscovered archaeological remains and the historic environment.

Mitigation

Consultation will be undertaken with the Environment Agency archaeologist, English Heritage and the County Archaeologist during the detailed appraisal stage of the scheme to determine the requirement for an archaeological evaluation of the site.

If articles of interest are discovered during the works they will be recorded appropriately by a qualified archaeologist.

Further Studies

A desk study of known sites will be prepared to assess the site's history as a reclaimed former salt marsh, which is believed to make significant archaeological implications unlikely and there are no built assets on the site. A geoarchaeological study is proposed to evaluate this further. The possibility of remains of ships and boats, artefacts within former estuarine deposits and land reclamation activities will be considered.

6.8 Traffic and Transport

Key Impacts

There may be potential temporary adverse impacts on traffic, other road users and local transportation routes associated with options 2 and 3, as a result of a slight increase in vehicle movements to the site and the movement of construction vehicles including delivery and removal of construction plant and personnel. These impacts would be greater if imported fill material is used for the embankment construction. This impact will be assessed in detail during the detailed appraisal stage of the scheme and consideration given to the planning of haulage and temporary access routes.

If option 3 is implemented, an opportunity exists in the future to create a RSPB Reserve at the site with visitor access. The traffic volumes associated with this opportunity (which would not support extensive visitor facilities) could have a moderate adverse impact on local residents and recreational users. Any such development would be the subject of a separate consent process.

Mitigation

Once the scheme has been developed further, particularly in respect of timetable, vehicle numbers and vehicle types, agreement on control of vehicle routes and timing will be reached with Lancashire County Council Highways Department.

Materials for the construction of the embankment would be sourced from within the site, if possible.

6.9 Soil, Geology and Hydrogeology

Key Impacts

It is not anticipated that there are any contaminated land risks or other geological issues associated with the site, however these issues are being further investigated.

Any contamination that may be present in embankments or fields to be excavated or exposed as a result of implementing option 3 would be subject to seawater erosion. However, given the site's past history, the presence of significant contaminants is considered unlikely.

Potential Mitigation

No mitigation proposed as no adverse impacts have been identified at this stage.

Further Studies

A desk study has been prepared by Halcrow to identify the contamination risk posed by the site and samples have been tested from five trial pits within the existing arable fields and seven trial pits in the existing embankments.

6.10 Use of Natural Resources

Key Impacts

No key impacts have been raised at this stage. During the detailed appraisal stage of the scheme, the scheme will be considered against Environment Agency targets relating to use of natural resources, recycling and waste management, such as demonstrating best environmental practice, reducing waste that goes to landfill and reducing use of aggregates. The use of locally sourced materials on site for embankment construction means that few natural resources will be consumed and waste generation will be minimised.

6.11 Other Relevant Environmental Features and Impacts

Key Impacts

The scheme has the potential for impacts associated with interactions between two or more of the existing environmental features, or cumulative impacts associated with other proposals in the area. These may include the loss of or changes to valuable habitats and changes to the local landscape character.

Section 7. Next Steps in the EIA Procedures

Appropriate consultation in relation to the issues identified will continue through feasibility, design and construction. As the feasibility study progresses, the need for and scope of additional surveys can be refined.

The Environmental Impact Assessment Officer should facilitate internal consultation where required. The Project Manager, in consultation with the EIA Officer and Environment Agency's legal department, will need to confirm with the Local Planning Authority if planning permission is required for option 2. However, it has been confirmed that planning permission would be required for the construction of a new embankment (option 3).

To meet statutory requirements, external consultation will be maintained as the scheme progresses with external organisations identified in the Communications Plan.

Sufficient time must be given in the project programme to allow for appropriate internal and external consultation, as well as for undertaking any further baseline surveys and the preparation of environmental documentation.

The following steps outline the likely EIA requirements of the options.

- **Option 1 – Do Nothing**
No works will be undertaken and therefore no further steps are required.
- **Option 2 – Do Minimum: Maintain Embankments**
It is considered that this option would not fall under the Town and Country Planning Environmental Impact Assessment Regulations 1999 (SI 99/293) as the works would benefit from the Environment Agency's permitted development rights.
- **Option 3 – Construction of an earth embankment**
The works require planning permission and require a formal environmental assessment under the Town and Country Planning Environmental Impact Assessment Regulations 1999 (SI 99/293).

Option 3 has been selected as the preferred option. From consultation with English Nature, the Environment Agency and West Lancashire District Council, the requirement for an Environmental Impact Assessment and an Appropriate Assessment to accompany a planning application has been identified.

Environmental information to date

Available elevation data (covering 94% of the site area) show that 91% of the proposed realignment area is at height suitable for colonisation by saltmarsh vegetation (based on the elevation of existing saltmarsh elsewhere in the estuary).

Hydrodynamic modelling has shown that the most significant changes will occur in the vicinity of the breaches, where higher velocities will lead to the expansion of the current creeks until a new equilibrium form is reached. This will lead to the erosion of some existing saltmarsh vegetation around the breach locations, however this will be more than offset by saltmarsh creation within the realigned area.

Section 8. Further Information

This Scoping Report has been prepared on behalf of the Project Manager. Further information can be obtained from the Project Manager at the address below:

Dominic Nickson
Lutra House
Dodd Way
Walton Summit
Preston PR5 8BX

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Annex 1: EIA Scoping Impact Matrix

Project Title: Hesketh Out Marsh West Realignment Scheme
Project Ref: WCHESK

Receptors & Environmental Resources Affected	Cause of impact	Description of effect: Construction (C) or End-state (E)	Potential Significance of impacts	Baseline data requirements, Comments & Recommendations
Options 1: Do Nothing				
Human Beings	No action to alleviate flooding problem	Eventual tidal flooding in local community (E)	***	No comments/mitigation.
Options 2: Do Minimum – Maintain Embankment				
Human Beings	No action to alleviate flooding problem	Continued flood-risk to local community (E)	***	
Flora and Fauna	Maintaining embankment	Potential adverse impact on integrity of Ribble and Alt Estuary SPA (C & E)	Unknown	Potential requirement for Appropriate Assessment
Air and Climate	Maintaining embankment	Short-term localised changes in dust, noise and emissions (C)	*	
Landscape and Visual Amenity	Maintaining embankment	Temporary loss of local landscape and visual amenity (C)	*	
Water	Sedimentation/pollution incident during maintenance of embankment	Potential for reduced water quality in standing water habitats/Ribble Estuary (C and E)	Potentially ***	
Land Use	Maintaining embankment	Temporary access requirements (C)	*	No mitigation required
Traffic and Transport	Increase in vehicle movements to site and movement of construction vehicles	Temporary impacts on traffic, other road users and local transportation routes.		

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Option 3: Construct Earth Embankment				
Human Beings:	Construction of earth embankment and upgrading existing embankment	Increased level of flood protection to local community (E)	✓✓✓	No requirements/mitigation required.
	Construction of earth embankment	Opportunity to create new RSPB Reserve (E)	✓✓	This opportunity would have significant implications for recreational amenity.
	Construction activities	Dust, noise, vibration and disruption to access; disturbance to local residents and recreational users (C)	✗	Public consultation will be continued during the detailed appraisal and design stages of the project as well as consideration of the nature, timing and duration of particular construction activities, including compound location, traffic controls and reinstatement of land to minimise the impacts on the local community. Construction works should be carried out within normal working hours and be timetabled to reduce the potential for disturbance.
	Construction of earth embankment	Loss of a Public Right of Way (footpath) along the western edge of Hesketh Old Marsh (between Shore Road and Hesketh New Marsh). Impact on recreational users (C & E).	✗✗	Adequate signing/notices would be erected to explain the purpose of the closure and indicate the routes of the new paths being created.
	Construction of earth embankment and subsequent loss of a public footpath	Creation of new footpaths (see Figure 2b).	✓✓✓	
Flora and Fauna:	Construction of flood embankment	Potential adverse impact on integrity of Ribble and Alt Estuary SPA (C & E)	Unknown	Requirement for Appropriate Assessment for adoption by West Lancashire District Council.
	Construction of flood embankment	Changes in existing habitat on Hesketh Out	Unknown	

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		Marsh (E)		
	Potential change in drainage patterns resulting from embankment construction or realignment	Disturbance to flora/fauna (including Biological Heritage Sites)	✘	
	Construction of flood embankment	Change in existing saltmarsh habitat	Unknown at this stage	
	Change in hydrodynamics	Adverse effects on populations of wintering and breeding birds and fish	✘	Additional pre-construction surveys for rare and protected species have been undertaken and include Phase 1 Habitat Surveys, survey of the aquatic ecology of the three ponds adjacent to the outer embankment, a ditch survey and protected species surveys. Any tree work should be undertaken outside of the bird nesting period (March to September) by an Arboricultural Association Approved Contractor, in accordance with all legislation including BS3998 'Tree Works'. To avoid root damage and soil compaction around retained trees, the trees would be fenced off as far as is possible, protected in accordance with BS:5837 'Trees in relation to Construction'.
	Construction of flood embankment	Disturbance to shellfisheries	✘	
	Excavation of lagoons and changes in habitat as a result of the realignment	Improved habitat for breeding waders	✓✓✓	The design of the proposed realignment incorporates a number of ecological enhancements such as lagoons for feeding waders.
Air & Climate:	Construction activities: vehicle movements and the	Localised changes in dust, noise and emissions (C)	✘	The local community to be kept fully informed about nature and timing of

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	use of plant/equipment			<p>construction activities.</p> <p>Adoption of appropriate working methodologies to minimise the production of dust and the generation of noise.</p>
Landscape & Visual Amenity:	Construction works	Local residents and recreational users may experience some temporary loss of landscape and amenity value (C)	*	<p>The embankment should be sown with a wildflower/grass mix and designed to look relatively natural in form in order to blend it effectively into the neighbouring landscape.</p>
	Construction of embankment	Loss of some trees and shrubs that contribute towards the landscape character and visual amenity of the site (C and E)	**	
	Construction of embankment	Long-term change in landscape experienced by public footpath users (E)	***	<p>During the detailed appraisal stage, the potential landscape and visual impacts of all options will be assessed and recommendations made with regard to minimising or avoiding adverse effects, whilst maximising landscape/visual options.</p> <p>The sympathetic design of any scheme should aim to minimise adverse visual impacts.</p>
	Construction of embankment	Long-term change in view for residents at Ribble Bank Farm, Ribble Manor and Hesketh Lodge.	*	

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Water:	Sedimentation and accidental spillage/flooding of construction materials and potential contaminants	Reduction in water quality in standing water habitats and Ribble Estuary (C and E)	✘ to potentially ✘✘✘	Appropriate working methodologies should be adopted to minimise the potential for pollution incidents. Good practice for working in proximity to water bodies should be implemented, including all relevant legislation and Environment Agency PPG Guidelines (PPG1, PPG2, PPG5 and PPG6). All storage areas for fuel, oil, chemicals and other potentially contaminating liquids would be appropriately sited away from flooding and bunded in accordance with standard Environment Agency requirements.
	Introduction of freshwater from Hundred End Gutter to southern end of site	Potential impact on hydrology/hydrogeology	✘ to potentially ✘✘✘	
	Increased faecal coliforms from grazing animals on realignment area	Reduction in quality of bathing beaches at Southport and Lytham St Annes	✘	
Land use:	Construction of embankment	Potential adverse impacts on Warton Aerodrome as a result of increased risk of bird strikes if changes in bird distributions and numbers	✘	Reinstatement of all private and public areas affected by temporary construction works to be undertaken following completion of the scheme. No islands would be constructed in the proposed lagoons, in order to mitigate the possibility of increased numbers of nesting gulls causing an increased risk of bird strikes.
	Construction of embankment	Permanent arable land-take for embankment (E)	✘✘	
Cultural Heritage, Archaeology & Material Assets:	Construction activities	Potential damage to undiscovered archaeological remains (C)	✘✘✘	Any articles of interest discovered during the works will be recorded appropriately by a qualified archaeologist.

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				<p>Consultation will be undertaken with the Environment Agency archaeologist, English Heritage and the county archaeologist during the detailed appraisal stage of the scheme to determine the requirement for an archaeological evaluation of the site.</p> <p>A desk study of known sites will be prepared to assess the site's history as a reclaimed former saltmarsh, which is believed to make significant archaeological implications unlikely and there are no built assets on the site. A geoarchaeological study is proposed to evaluate this further.</p>
Traffic & Transport:	Increased traffic movements to site and movement of construction vehicles including delivery and removal of construction plant and personnel	Disruption and disturbance to traffic and local transportation routes (C)	✘	<p>Vehicle routes and timings will be agreed with Lancashire County Council Highways Department.</p> <p>Materials to be sourced from within the site where possible.</p>

Annex 2: Plans and Drawings