Whitcher Wildlife Ltd.
Wildlife Consultants.

SWINEFLEET PEAT WORKS.

OS REF: SE 769 170.

HABITAT REGULATIONS ASSESSMENT.

Ref No: - **180620/HRA/2.**

Date: - **26th February 2019.**

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1. INTRODUCTION.

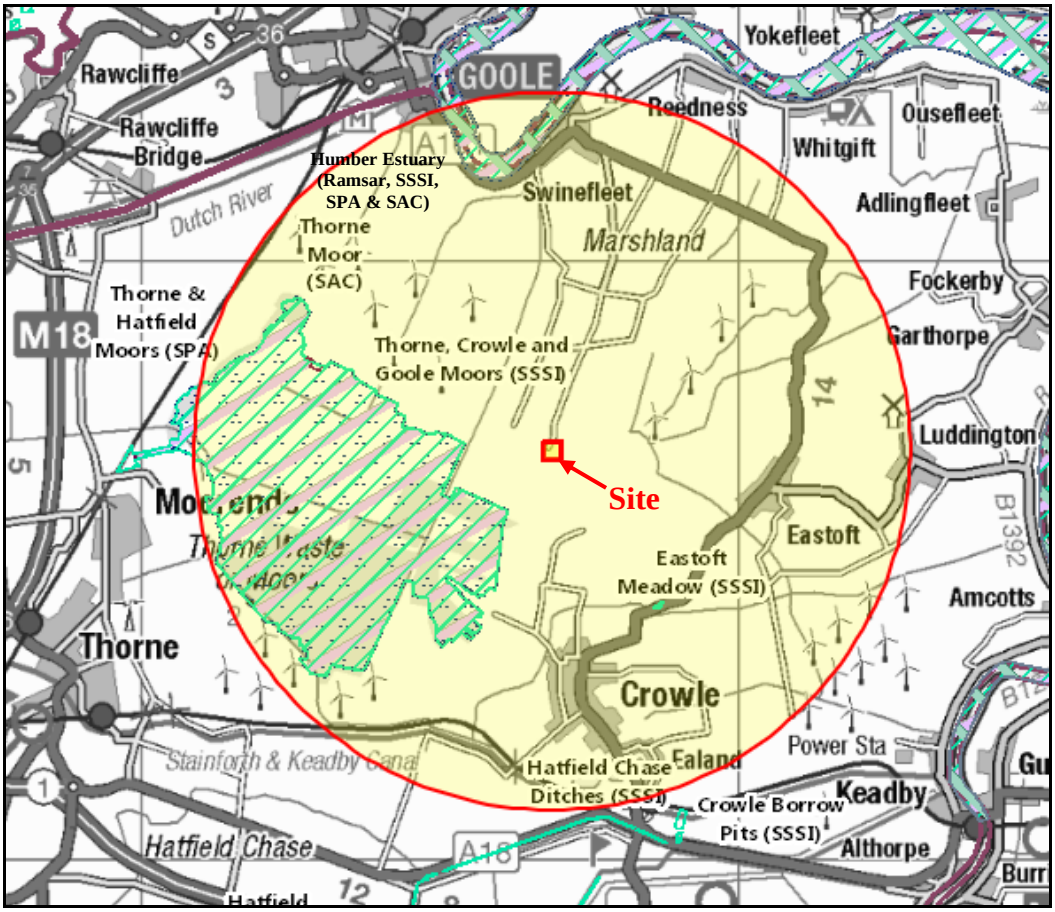
1.1. An application is being submitted for the change of use of the buildings at the former Swinefleet Peat Works. It is proposed to use the buildings as they currently stand as a recycling facility, as well as to erect some new agricultural tanks on the site.

1.2. Approximately 1.2km south west of the site there is a large site that has a number of designations. It is the largest raised bog in lowland Britain, that contains some flora of interest and the habitats attract some important bird and invertebrate species. For these reasons it is designated as Thorne, Crowle and Goole Moors Site of Special Scientific Interest (SSSI), Humberland Peat Lands National Nature Reserve (NNR) and Thorne Moor Special Area of Conservation (SAC). The site is also designated as a Special Protection Area (SPA) as it supports breeding nightjar that at times exceeds 1.9% of the breeding population in Britain.

1.3. Approximately 4.6km north of the site lies the River Humber, which is designated as the Humber Estuary Site of Special Scientific Interest (SSSI), Special Area of Conservation (SAC) and Ramsar and the Humber Flats, Marshes and Coast Special Protection Area (SPA).

1.4. Whitcher Wildlife Ltd has been commissioned to prepare a Habitats Regulations Assessment of the impact of the works on Thorne Moor SAC, Thorne and Hatfield Moors SPA, Humber Estuary SAC and Ramsar and Humber Flats, Marshes and Coast SPA.

1.5. The map below shows the location of the site in relation to the SAC's, SPA's and Ramsar sites with a 6km radius marked up around the site.


Rawcliffe
Rawcliffe Bridge
Dutch River
GOOLE
Yokefleet
Reedness
Whitgift
Ousefleet
Adlingfleet
Swinefleet
Marshland
Humber Estuary (Ramsar, SSSI, SPA & SAC)
Thorne Moor (SAC)
Thorne & Hatfield Moors (SPA)
M18
Thorne, Crowle and Goole Moors (SSSI)
Fockerby
Garthorpe
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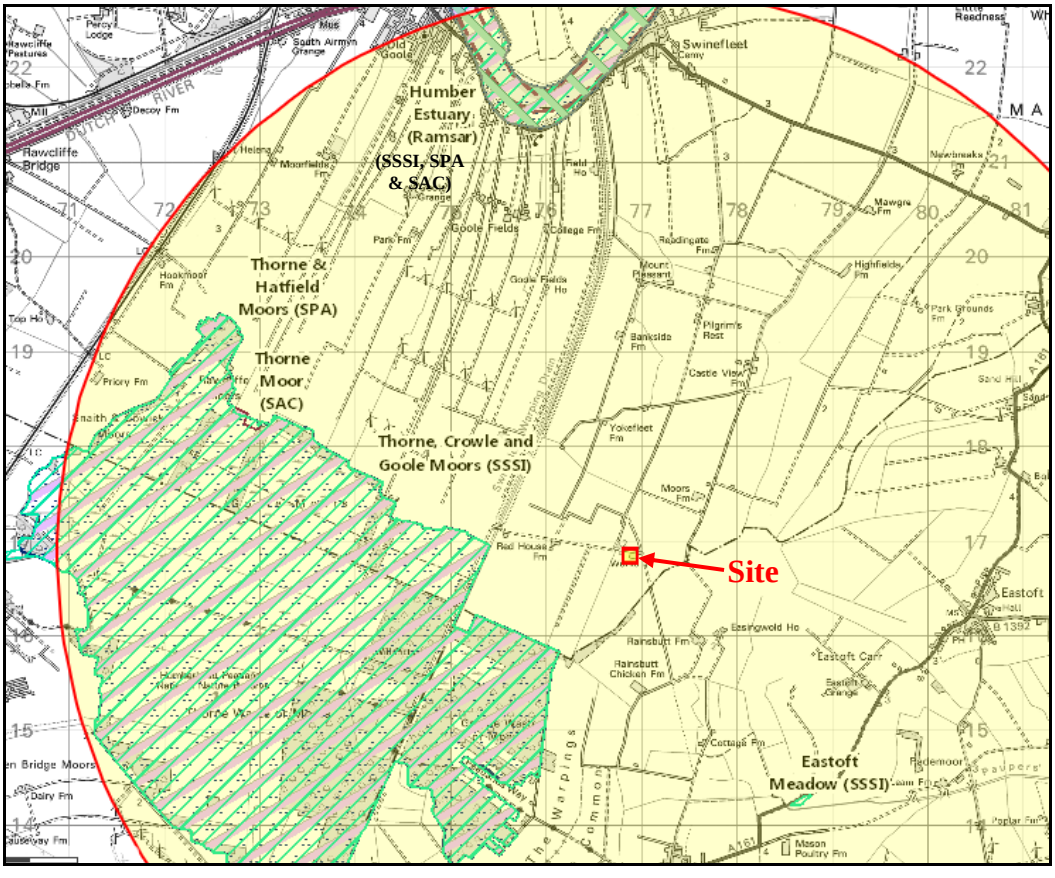
Site
Eastoft
Eastoft Meadow (SSSI)
Amcotts
Thorne
Crowle
Stainforth & Keadby Canal
Hatfield Chase Ditches (SSSI)
Ealand
Power Sta
Keadby
Crowle Borrow Pits (SSSI)
Althorpe
Hatfield Chase
A18
B1392


Humber Estuary (Ramsar) (SSSI, SPA & SAC)
Thorne & Hatfield Moors (SPA)
Thorne Moor (SAC)
Thorne, Crowle and Goole Moors (SSSI)
Site
Eastoft Meadow (SSSI)
Swinefleet
Reedness
Rawcliffe Bridge
Goole Fields
Yokefleet
Eastoft
B1392

2. ECOLOGICAL IMPLICATIONS WITH RESPECT TO THE HABITAT REGULATIONS ASSESSMENT.

2.1. The Habitats Directive applies the precautionary principle to relevant designated areas, in so much as plans and projects can only be permitted having ascertained that there will be no adverse affect on the integrity of Natura 2000 sites.

2.2. It is Government policy (as outlined in the National Policy Planning Framework for sites designated under the Convention on Wetlands of International Importance (RAMSAR sites)) to be treated as having equivalent status to the Natura 2000 sites.

2.3. In undertaking an assessment, competent authorities must have regard to both direct and indirect effects on an interest feature of the Natura site, as well as cumulative effects. This may include consideration of features and issues outside the boundary of the Natura site.

2.4. Department for Communities and Local Government guidance states that an assessment should be proportionate to the geographic scope of the plan or project and that it need not be done in any more detail, or using more resources, than is useful for its purpose.

2.5. Whilst it is the responsibility of the competent authority to determine whether it can be concluded there is no adverse effect, it is the responsibility of the applicants to submit sufficient information to enable such a determination to be made.

2.6. The key principles to be adopted during the collation and analysis of information are:

- **Use of best available information.** Best available information has been used to inform this assessment. This includes information gathered by Whitcher Wildlife Ltd, information made available by the developer on the proposed works and how they will be undertaken and information from other sources, including Natural England.
- **Proportionality.** It has been ensured that the level of detail provided in this assessment reflects the level of detail in the planning application, i.e. that the assessment is proportionate.
- **Consultation.** There has been consultation with Natural England and other relevant stakeholders during production of the assessment and their comments have been duly considered.

- **Transparency in the Assessment Process.** We have endeavoured to keep the process as open, transparent and as simple as possible while ensuring an objective and rigorous assessment in compliance with the Habitats Directive, Habitats Regulations and emerging best practice.
- **Audit Trail.** We have ensured that the process followed, and the conclusions reached, are clearly documented to ensure there is a clear audit trail.

2.7. The assessment process also needs to take into account the consideration of alternative approaches, in this case, alternative methods of undertaking the works and any in-combination effects that may occur when the effects of other plans and projects are considered.

2.8. In this case, the developer has undertaken a rigorous appraisal of alternative ways of working and the method of working here is as a result of that process.

2.9. A search has been undertaken through East Riding of Yorkshire Council of any other plans and projects that might act in combination with the effect of the proposed works to bring about a likely significant effect. None was found.

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3. PROPOSED WORKS.

4R Group comprises two operating companies, 4R Recycling Ltd and By Product Recovery Ltd.

3.1. Staff employed by the company are dedicated operations managers and field officers who look after multiple agricultural waste recycling contracts across the UK. Also employed are an in-house team of environmental consultants who are technically trained specialists in recycling wastes to land. They currently have 6 consultants who carry out all the technical work for the groups own activities and who also deliver a variety of specialist work relating to waste management, soil science and contaminated land for external clients.

3.2. All operational and technical teams are supported day to day by the group support team based at the company head office in Knottingley. These 10 members of staff manage and assist with key aspects of the business, including compliance, health and safety, HR, account management and transport. The group also has regional offices in Newent, Gloucestershire and Plymouth, Devon.

3.3. The core business of the company is recycling 'waste' materials that have a value to soil. The company recycles both organic (*i.e.* materials which naturally 'break down') and inorganic (*i.e.* materials which are more mineral-based) 'wastes'. Both are important in soil. Last year, the company diverted more than 750,000 tonnes of waste materials from landfill or incineration across England and Wales.

3.4. All the materials recycled have a value to soils. The value to soil is different for each type of waste although benefits are typically associated with plant nutrients (Nitrogen, Phosphorous, Potassium and trace nutrients), soil organic matter and/or liming benefits to help balance soil pH. Everything recycled to land, as agricultural fertiliser or for land restoration (*i.e.* restoring collieries, spoil tips or landfills) directly replaces use of chemical and synthetic fertilisers.

3.5. Materials recycled by 4R include:

● utility sludges (*e.g.* sludges created as by-products of potable water treatment and sewage treatment)

● composts

- gypsum
- liming materials
- food manufacturing wastes such as wash waters and effluent treatment
- anaerobic digestates

3.6. All materials will be delivered to site by lorry using the local network of roads previously used when the site was used to produce peat-based products. A maximum of 100,000 tonnes *per annum* of imported waste materials will be brought to the site in 4,000 vehicles. A maximum of 100,000 tonnes *per annum* of exported materials destined for land application will leave the site in 4,000 vehicles which, where possible, will be vehicles which have delivered to the site.

3.7. Materials will be transported to the site, stored and processed before being sold to replace manufactured synthetic fertilisers. The bulk of the proposed activities listed below will be carried out inside the existing, renovated sheds at the site. The sheds will be restored and repurposed to suit the new operations.

3.8. The following activities are proposed at the former peat works. All the activities will facilitate the recycling of beneficial wastes to land:

3.8.1. Liming of Biosolids.

3.8.1.1. Biosolids is a collective term used in the industry for the solid material which is produced as a by-product from waste water treatment at wastewater treatment works (*i.e.* sewage treatment). Biosolids have been applied to agricultural land for several decades and are applied on a regular basis across the UK and Europe.
Prior to any use on land, both the soils and the biosolids must be rigorously tested to ensure compliance with a range of chemical and biological parameters.

3.8.1.2. The utility companies treat the biosolids they produce using a process utilised across the industry known as HACCP- Hazard Analysis and Critical Control Points. HACCP defines a process and highlights the critical points required to ensure compliance. If any one of these points fails *i.e.* a certain temperature has not been met or a residence time is not achieved, then the batch is classed as failed. The batch may subsequently pass end of line testing but is still categorised as a failure due to the failure of the HACCP.

3.8.1.3. It is this type of biosolids that 4R Group would look to import and process via lime treatment. Utility companies sometimes lime treat their biosolids themselves, but often they may not have space or resources to do this in-house. All batches that are received and treated, will meet their regulated and audited HACCP process. Following lime treatment, the biosolids will have reached the enhanced (the highest) treatment standard. It will then be subsequently distributed to agricultural land under the Sludge Use in Agriculture Regulations and used across a range of growing crops. 4R will provide final treatment to biosolids from utility companies, following a rigorous process recognised by the water industry and regulators, to ensure materials meet the highest treatment and product quality standards, enabling the material's use on arable land to the benefit of soil. This is the same material, meeting the same standards and following the same rigorous processes as may already currently be used on land in the local area.

3.8.2. Physical treatment of waste and storage prior to spreading to agricultural land

3.8.2.1. Similar to the biosolids treatment activity described above, 4R Group are often asked by waste producers to assist them in removing and recycling off-specification batches of material from their production sites. These requests vary in terms of the type of waste output and/or the treatment process or the element of the quality assurance checks which have resulted in non-conformance.

3.8.2.2. As an example, sometimes green waste compost contains an element of physical contamination (such as glass or plastic or large woody fractions), so it requires further processing before it meets the specification and standards demanded by 4R Group, the regulators or customers before it can be applied to land.

3.8.2.3. Another example is waste lime derived from cement manufacturing which often requires conditioning with water to help make it more granular, so it can be spread using conventional agricultural equipment and minimises potential dust emissions generated when spreading to land. Often production sites cannot do this themselves due to time or space constraints so look to move materials on to give themselves more space to continue processing their standard incoming material streams. It is 4R Groups proposal to carry out physical treatments to wastes which require such treatment *i.e.* screening/size separation.

3.8.3. Storage of waste prior to land spreading

3.8.3.1. Land spreading of waste is a seasonal activity and it is common practice to use regulated, temporary field storage heaps to allow materials to be stored where they will be used. Access to these field stores requires consistent good weather and ground conditions to get material to the right place without causing damage to soils and farm tracks. These temporary field storage piles often do not have the benefit of hard standing or sealed drainage systems.

3.8.3.2. A storage facility such as the old peat works with hard standing or an impermeable surface, sealed drainage and weather protection is therefore the most environmentally sound way to temporarily store materials prior to their application to land. This will ensure that material is only delivered to the field in appropriate weather and ground conditions which safeguards the soils and the surrounding environment.

3.8.3.3. The proposed storage at the old peat works will either follow one of the two treatment processes outlined above or will simply be storage for materials suitable for land application when ground/crop conditions are favourable for delivery and when registration paperwork for its final use is in place. Some material (chicken litter) is already stored at the site, prior to being spread to land.

3.9. The buildings will be used in their current state, with some minor works to secure the buildings to prevent vandalism and ensure they are safe, and a small extension to one part of the building and converting small sections of the building into office and workshop space.

3.10. Some low-level development will be carried out across the remainder of the site including installation of storage tanks and containment bays and creation of a car park area.

3.11. All compound areas and welfare facilities during the development works will be confined to the site boundaries.

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4. DESIGNATIONS.

4.1. Consideration was given in the appraisal of the possible implications relative to a Habitats Regulations Assessment to the following sites;

- All Natura sites within the authority's boundary, and
- Other sites shown to be linked to the proposed works through a known pathway.

4.2. The proposed works will be carried out 1.2km from Thorne and Hatfield Moors SPA and the Thorne Moors SAC and 4.6km from the Humber Estuary SAC and Ramsar and Humber Flats, Marshes and Coast SPA.

4.3. Therefore, as Natura 2000 sites, these require consideration as to whether they could be adversely affected by the proposed works at the site.

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5. FEATURES OF THE THORNE AND HATFIELD MOORS SPA, THORNE MOORS SAC, HUMBER ESTUARY SAC AND RAMSAR AND HUMBER FLATS, MARSHES AND COAST SPA.

The conservation objectives for the Thorne and Hatfield Moors SPA, Thorne Moors SAC, Humber Estuary SAC and Ramsar and Humber Flats, Marshes and Coast SPA provide the basis for determining what is currently, or may cause, a significant effect and for informing the scope of an Appropriate Assessment. Natural England explains that whilst the assessment should focus on the conservation objectives, due regard should be shown to subsequent reviews of qualifying features available from the Joint Nature Conservation Committee (JNCC). In addition to qualifying interest features, it is necessary to explore the environmental features and conditions required to maintain the integrity of the Thorne and Hatfield Moors SPA, Thorne Moors SAC and Humber Estuary SPA, SAC and Ramsar, as well as both current conditions and trends in environmental processes.

5.1. THORNE AND HATFIELD MOORS SPA.

The Thorne and Hatfield Moors SPA is a Special Protection Area under the Habitats Directive (92/43/EEC) 1995, designation number UK9005171. Thorne and Hatfield Moors SPA is an extensive lowland raised mire system adjacent to the Humber estuary on the north-east coast of England and is the largest remaining lowland peatland in England. Despite a long history of extensive peat extraction since the late nineteenth century, the site retains substantial areas of *Sphagnum* bog, which has been changed by succession to wet scrub woodland dominated by Birch *Betula* sp., sallows and Alder *Alnus glutinosa*. Where the peat surface has been removed, subsequent restoration of active bog has depended upon shallow flooding to allow *Sphagnum* and other bog plants to re-colonise. The mire communities are dominated by Hare's-tail *Eriophorum vaginatum* and Common Cottongrass *E. angustifolium*, Cross-leaved Heath *Erica tetralix*, Soft-rush *Juncus effusus* and *Sphagnum* mosses, and include a variety of scarcer bog plants such as Bog-rosemary *Andromeda polifolia* and Cranberry *Vaccinium oxycoccos*. Drier heath is dominated by Heather *Calluna vulgaris*, Bracken *Pteridium aquilinum* and Purple Moor-grass *Molinia caerulea*. Birch *Betula* sp. scrub, some of it dense, occurs throughout both moors. The diverse mosaic of habitats contributes greatly to the ornithological interest, which comprises breeding species, notably Nightjar *Caprimulgus europaeus*.

5.1.1. Qualifying species:

This site qualifies under **Article 4.1** of the Directive (79/409/EEC) by supporting populations of European importance of the following species listed on Annex I of the Directive:

5.1.2. During the breeding season;

Nightjar *Caprimulgus europaeus*, 66 pairs representing at least 1.9% of the breeding population in Great Britain (5 count peak mean 1993, 1995-1998)

5.1.3. Non-qualifying species of interest:

There are no non-qualifying species of interest listed for the site.

5.2. THORNE MOORS SAC.

Thorn Moors SAC, UK0012915 is an area of 1911ha, designated as a Special Area of Conservation in East Yorkshire, North Lincolnshire and South Yorkshire.

5.4.1. Annex I habitats that are a primary reason for the selection of this site.

7120 Degraded raised bogs still capable of natural regeneration.

Thorn Moor is England's largest area of raised bog, lying a few kilometers from the smaller Hatfield Moors, both within the former floodplain of the rivers feeding the Humber Estuary (Humberhead Levels) and includes the sub-components Goole Moors and Crowle Moors.

Although recent management has increased the proportion of **7110 active raised bog** at Thorne Moors, the inclusion of Goole Moors, where peat-extraction has now ceased, means that the site is still predominantly **degraded raised bog**.

The restored secondary surface is rich in species of **7110 Active raised bogs** with bog-mosses (*Sphagnum* spp.), cottongrasses (*Eriophorum angustifolium* and *E. vaginatum),* heather (*Calluna vulgaris),* cross-leaved heath (*Erica tetralix),* round-leaved sundew (*Drosera rotundifolia),* cranberry (*Vaccinium oxycoccos)* and bog-rosemary (*Andromeda polifolia).*

5.4.2. Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site.

Not applicable.

5.4.3. Annex II species that are a primary reason for selection of this site.

Not applicable.

5.4.4. Annex II species present as a qualifying feature, but not a primary reason for site selection.

Not applicable.

5.3. HUMBER ESTUARY SAC.

Humber Estuary SAC, UK0030170 is an area of 36657.15 ha, designated as a Special Area of Conservation in East Yorkshire and Northern Lincolnshire, Extra-Reigo, Lincolnshire.

5.3.1. Annex I habitats that are a primary reason for selection of this site

1130 Estuaries

The Humber is the second-largest coastal plain estuary in the UK, and the largest coastal plain estuary on the east coast of Britain. It is a muddy, macro-tidal estuary, fed by the Rivers Ouse, Trent and Hull, Ancholme and Graveney. Suspended sediment concentrations are high, and are derived from a variety of sources, including marine sediments and eroding boulder clay along the Holderness coast. This is the northernmost of the English east coast estuaries whose structure and function is intimately linked with soft eroding shorelines. Habitats within the Humber Estuary include **1330 Atlantic salt meadows** and a range of sand dune types in the outer estuary, together with subtidal sandbanks **(H1110 Sandbanks which are slightly covered by sea water all the time**), extensive intertidal mudflats **(H1140 Mudflats and sandflats not covered by seawater at low tide**), glasswort beds (**H1310 Salicornia and other annuals colonising mud and sand**), and **1150 coastal lagoons**. As salinity declines upstream, reedbeds and brackish saltmarsh communities fringe the estuary. These are best-represented at the confluence of the Rivers Ouse and Trent at Blacktoft Sands. Upstream from the Humber Bridge, the navigation channel undergoes major shifts from north to south banks, for reasons that have yet to be fully explained. This section of the estuary is also noteworthy for extensive mud and sand bars, which in places form semi-permanent islands. Significant fish species include **1099 river lamprey Lampetra fluviatilis** and **1095 sea lamprey Petromyzon marinus** which breed in the River Derwent, a tributary of the River Ouse.

1140 Mudflats and sandflats not covered by seawater at low tide

The Humber Estuary includes extensive intertidal mudflats and sandflats not covered by seawater at low tide. Upstream from the Humber Bridge, extensive mud and sand bars in places form semi-permanent islands.

5.3.2. Annex I habitats present as a qualifying feature, but not a primaryreason for selection of this site

1110 Sandbanks which are slightly covered by sea water all the time
1150 Coastal lagoons * Priority feature
1310 Salicornia and other annuals colonizing mud and sand
1330 Atlantic salt meadows (Glauco-Puccinellietalia maritimae)
2110 Embryonic shifting dunes
2120 "Shifting dunes along the shoreline with Ammophila arenaria (""white dunes"")"
2130 "Fixed coastal dunes with herbaceous vegetation (""grey dunes"")" * Priority feature
2160 Dunes with Hippopha• rhamnoides

5.3.3. Annex II species that are a primary reason for selection of this site

Not applicable.

5.3.4. Annex II species present as a qualifying feature, but not a primary reason for site selection

1095 Sea lamprey Petromyzon marinus
1099 River lamprey Lampetra fluviatilis
1364 Grey seal Halichoerus grypus

5.4. HUMBER ESTUARY RAMSAR.

The following is extracted from the 'information Sheet on Ramsar Wetlands (RIS) for the Humber Estuary information sheet UK11031.

14. Justification for the application of each Criterion listed in 13 above:

Provide justification for each Criterion in turn, clearly identifying to which Criterion the justification applies (see Annex II for guidance on acceptable forms of justification).

Ramsar criterion 1

The site is a representative example of a near-natural estuary with the following component habitats: dune systems and humid dune slacks, estuarine waters, intertidal mud and sand flats, saltmarshes, and coastal brackish/saline lagoons.

It is a large macro-tidal coastal plain estuary with high suspended sediment loads, which feed a dynamic and rapidly changing system of accreting and eroding intertidal and subtidal mudflats, sandflats, saltmarsh and reedbeds. Examples of both strandline, foredune, mobile, semi-fixed dunes, fixed dunes and dune grassland occur on both banks of the estuary and along the coast. The estuary supports a full range of saline conditions from the open coast to the limit of saline intrusion on the tidal rivers of the Ouse and Trent. Wave exposed sandy shores are found in the outer/open coast areas of the estuary. These change to the more moderately exposed sandy shores and then to sheltered muddy shores within the main body of the estuary and up into the tidal rivers. The lower saltmarsh of the Humber is dominated by common cordgrass *Spartina anglica* and annual glasswort *Salicornia* communities. Low to mid marsh communities are mostly represented by sea aster *Aster tripolium*, common saltmarsh grass *Puccinellia maritima* and sea purslane *Atriplex portulacoides* communities. The upper portion of the saltmarsh community is atypical, dominated by sea couch *Elytrigia atherica* (*Elymus pycnanthus*) saltmarsh community. In the upper reaches of the estuary, the tidal marsh community is dominated by the common reed *Phragmites australis* fen and sea club rush *Bolboschoenus maritimus* swamp with the couch grass *Elytrigia repens (Elymus repens)* saltmarsh community. Within the Humber Estuary Ramsar site there are good examples of four of the five physiographic types of saline lagoon.

Ramsar criterion 3

The Humber Estuary Ramsar site supports a breeding colony of grey seals *Halichoerus grypus* at Donna Nook. It is the second largest grey seal colony in England and the furthest south regular breeding site on the east coast. The dune slacks at Saltfleetby-Theddlethorpe on the southern extremity of the Ramsar site are the most north-easterly breeding site in Great Britain of the natterjack toad *Bufo calamita*.

Ramsar criterion 5

Assemblages of international importance:

153,934 waterfowl, non-breeding season

(5 year peak mean 1996/97-2000/2001)

Ramsar criterion 6 – species/populations occurring at levels of international importance.

Eurasian golden plover, *Pluvialis apricaria*

altifrons subspecies – NW Europe, W Continental Europe, NW Africa population

17,996 individuals, passage, representing an average of 2.2% of the population

(5 year peak mean 1996-2000)

Red knot, *Calidris canutus*

islandica subspecies

18,500 individuals, passage, representing an average of 4.1% of the population

(5 year peak mean 1996-2000)

Dunlin, *Calidris alpina*
alpina subspecies – Western Europe (non-breeding) population
20,269 individuals, passage, representing an average of 1.5% of the population
(5 year peak mean 1996-2000)

Black-tailed godwit, *Limosa limosa*
islandica subspecies
915 individuals, passage, representing and average of 2.6% of the population
(5 year peak mean 1996-2000)

Common redshank, *Tringa totanus*
brittanica subspecies
7,462 individuals, passage, representing an average of 5.7% of the population
(5 year peak mean 1996-2000)

Common shelduck, *Tadorna tadorna*
Northwestern Europe (breeding) population
4,464 individuals, wintering, representing an average of 1.5% of the population
(5 year peak mean 1996/7-2000/1)

Eurasian golden plover, *Pluvialis apricaria*
altifrons subspecies – NW Europe, W Continental Europe, NW Africa population
30,709 individuals, wintering, representing an average of 3.8% of the population
(5 year peak mean 1996/7-2000/1)

Red knot, *Calidris canutus*
islandica subspecies
28,165 individuals, wintering, representing an average of 6.3% of the population
(5 year peak mean 1996/7-2000/1)

Dunlin, *Calidris alpina*
alpina subspecies – Western Europe (non-breeding) population
22,222 individuals, wintering, representing an average of 1.7% of the population
(5 year peak mean 1996/7-2000/1)

Black-tailed godwit, *Limosa limosa*
islandica subspecies
1,113 individuals, wintering, representing an average of 3.2% of the population
(5 year peak mean 1996/7-2000/1)

Bar-tailed godwit , *Limosa lapponica*
lapponica subspecies
2,752 individuals, wintering, representing an average of 2.3% of the population
(5 year peak mean 1996/7-2000/1)

Common redshank, *Tringa totanus*
brittanica subspecies
4,632 individuals, wintering, representing an average of 3.6% of the population
(5 year peak mean 1996/7-2000/1)

Ramsar criterion 8
The Humber Estuary acts as an important migration route for both river lamprey *Lampetra fluviatilis* and sea lamprey *Petromyzon marinus* between coastal waters and their spawning areas.

Ramsar criterion 5

Assemblages of international importance:

Species with peak counts in winter:
153934 waterfowl (5 year peak mean 1998/99-2002/2003)

Ramsar criterion 6 – species/populations occurring at levels of international importance.

Qualifying Species/populations (as identified at designation):
Species with peak counts in spring/autumn:

European golden plover , *Pluvialis apricaria apricaria*, P. a. altifrons Iceland & Faroes/E Atlantic	17996 individuals, representing an average of 2.2% of the population (1996-2000)
Red knot , *Calidris canutus islandica*, W & Southern Africa (wintering)	18500 individuals, representing an average of 4.1% of the population (1996-2000)
Dunlin , *Calidris alpina alpina*, W Siberia/W Europe	20269 individuals, representing an average of 1.5% of the population (1996-2000)
Black-tailed godwit , *Limosa limosa islandica*, Iceland/W Europe	915 individuals, representing an average of 2.6% of the population (1996-2000)
Common redshank , *Tringa totanus totanus*,	7462 individuals, representing an average of 5.7% of the population (1996-2000)

Species with peak counts in winter:

Common shelduck , *Tadorna tadorna*, NW Europe	4464 individuals, representing an average of 1.5% of the population (1996/7 to 2000/1)
European golden plover , *Pluvialis apricaria apricaria*, P. a. altifrons Iceland & Faroes/E Atlantic	30709 individuals, representing an average of 3.8% of the population (1996/7 to 2000/1)
Red knot , *Calidris canutus islandica*, W & Southern Africa (wintering)	28165 individuals, representing an average of 6.3% of the population (1996/7 to 2000/1)
Dunlin , *Calidris alpina alpina*, W Siberia/W Europe	22222 individuals, representing an average of 1.7% of the population (1996/7 to 2000/1)

Black-tailed godwit , *Limosa limosa islandica*, Iceland/W Europe	1113 individuals, representing an average of 3.2% of the population (1996/7 to 2000/1)
Bar-tailed godwit , *Limosa lapponica lapponica*, W Palearctic	2752 individuals, representing an average of 2.3% of the population (1996/7 to 2000/1)

5.5. HUMBER FLATS, MARSHES AND COAST SPA.

The Humber Flats, Marshes and Coast SPA is a Special Protection Area under the Habitats Directive (92/43/EEC) 1995, designation number UK9006111. Humber Flats, Marshes and Coast SPA is located on the east coast of England, and comprises extensive wetland and coastal habitats within the Humber Estuary. The estuary drains a catchment of some 24,240 square kilometres and provides the largest single input of freshwater from Britain into the North Sea. It has the second-highest tidal range in Britain (7.2 m) and approximately one-third of the estuary is exposed as mud- or sand-flats at low tide. The inner estuary supports extensive areas of reedbed with areas of mature and developing saltmarsh backed by grazing marsh in the middle and outer estuary. On the north Lincolnshire coast, the saltmarsh is backed by low sand dunes with marshy slacks and brackish pools. The estuary supports important numbers of waterbirds (especially geese, ducks and waders) during the migration periods and in winter. It also supports important breeding populations of terns and raptors in summer.

5.5.1. Qualifying species:

This site qualifies under **Article 4.1** of the Directive (79/409/EEC) by supporting populations of European importance of the following species listed on Annex I of the Directive:

5.5.2. During the breeding season;

Little Tern Sterna albifrons, 63 pairs representing at least 2.6% of the breeding population in Great Britain

Marsh Harrier Circus aeruginosus, 11 pairs representing at least 6.9% of the breeding population in Great Britain (Count as at 1995)

5.5.3. Over winter;

Bar-tailed Godwit Limosa lapponica, 1,593 individuals representing at least 3.0% of the wintering population in Great Britain (5 year peak mean 1991/2 - 1995/6)

Bittern Botaurus stellaris, 2 individuals representing at least 2.0% of the wintering population in Great Britain (5 year mean 91/2-95/6)

Golden Plover Pluvialis apricaria, 29,235 individuals representing at least 11.7% of the wintering population in Great Britain (5 year peak mean 1991/2 - 1995/6)

Hen Harrier Circus cyaneus, 20 individuals representing at least 2.7% of the wintering population in Great Britain (5 year peak mean 1984/5-1988/9)

This site also qualifies under Article 4.2 of the Directive (79/409/EEC) by supporting populations of European importance of the following migratory species:

5.5.4. On passage;

Redshank Tringa totanus, 5,212 individuals representing at least 2.9% of the Eastern Atlantic - wintering population (5 year peak mean 1991/2 - 1995/6)

Sanderling Calidris alba, 1,767 individuals representing at least 1.8% of the Eastern Atlantic/Western & Southern Africa - wintering population (2 year mean May 1993 - 1994)

5.5.5. Over winter;

Dunlin Calidris alpina alpina, 23,605 individuals representing at least 1.7% of the wintering Northern Siberia/Europe/Western Africa population (5 year peak mean 1991/2 - 1995/6)

Knot Calidris canutus, 33,848 individuals representing at least 9.7% of the wintering Northeastern Canada/Greenland/Iceland/Northwestern Europe population (5 year peak mean 1991/2 - 1995/6)

Redshank Tringa totanus, 4,452 individuals representing at least 3.0% of the wintering Eastern Atlantic - wintering population (5 year peak mean 1991/2 - 1995/6)

Shelduck Tadorna tadorna, 4,083 individuals representing at least 1.4% of the wintering Northwestern Europe population (5 year peak mean 1991/2 - 1995/6)

5.5.6. Assemblage qualification: A wetland of international importance.

The area qualifies under **Article 4.2** of the Directive (79/409/EEC) by regularly supporting at least 20,000 waterfowl

Over winter, the area regularly supports 187,617 individual waterfowl (5 year peak mean 1991/2 - 1995/6) including: Mallard Anas platyrhynchos, Golden Plover Pluvialis apricaria, Bar-tailed Godwit Limosa lapponica, Shelduck Tadorna tadorna, Knot Calidris canutus, Dunlin Calidris alpina alpina, Redshank Tringa totanus, Cormorant Phalacrocorax carbo, Dark-bellied Brent Goose Branta bernicla bernicla, Bittern Botaurus stellaris, Teal Anas crecca, Curlew Numenius arquata, Pochard Aythya ferina, Goldeneye Bucephala clangula, Oystercatcher Haematopus ostralegus, Ringed Plover Charadrius hiaticula, Grey Plover Pluvialis squatarola, Lapwing Vanellus vanellus, Sanderling Calidris alba, Black-tailed Godwit Limosa limosa islandica, Wigeon Anas penelope, Whimbrel Numenius phaeopus.

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6. APPRAISAL OF THE LIKELY SIGNIFICANT EFFECT.

6.1. Based on the conservation objectives of Thorne and Hatfield Moors SPA, Thorne Moors SAC, Humber Estuary SAC and Ramsar and Humber Flats SPA and other available information, including citations, the following is a useful generic list of impacts that could lead to a likely significant effect;

- Direct loss or damage of habitats within a designated site or of nearby areas used by interest species;
- Change in management regimes (e.g. grazing/mowing of marshland) of habitats within a designated site or of nearby places used by interest species;
- Urbanisation that results in reduction of sight lines or which hinders flight paths for birds;
- Air quality (construction dust and construction and operational traffic);
- Water quality;
- Hydrology;
- Disturbance (activity, recreation, noise and lighting); and
- Introduction or spread of non-native invasive species.

6.2. Direct loss or damage of habitats - Thorne and Hatfield Moors SPA and Thorne Moors SAC.

6.2.1. No works or access will be carried out on the designated site. All works on site will be carried out 1.2km from the SPA and SAC and therefore there will be no direct loss or damage of habitats within those sites.

6.2.2. In addition, there will be no loss or damage of habitats used by Nightjar, such as woodland or heathland that Nightjar use for breeding, or hedgerows or field margins that Nightjar use for foraging.

6.3. Direct loss or damage of habitats - Humber Estuary SAC and Ramsar and Humber Flats, Marshes and COast SPA.

6.3.1. No works or access will be carried out on the designated site. All works on site will be carried out 4.6km from the SPA, SAC and Ramsar and therefore there will be no direct loss or damage of habitats within those sites.

6.3.2. In addition, there will be no loss or damage of habitats used by any bird species listed in the citations for these sites.

6.4. Change in management regimes - Thorne and Hatfield Moors SPA and Thorne Moors SAC.

The proposals do not include any new or changed management regimes and therefore this effect can be screened out.

6.5. Change in management regimes - Humber Estuary SAC and Ramsar and Humber Flats, Marshes and Coast SPA.

The proposals do not include any new or changed management regimes and therefore this effect can be screened out.

6.6. Urbanisation - Thorne and Hatfield Moors SPA and Thorne Moors SAC.

6.6.1. This effect can be screened out on the grounds that the existing buildings will be utilised. A number of agricultural tanks and containment bays will be constructed on the site, but these will be in close proximity to the existing buildings, built on hard standing ground and will be built at a lower level than the existing buildings on the site.

6.6.2. These proposals will not reduce sight lines or hinder flight paths.

6.7. Urbanisation - Humber Estuary SAC and Ramsar and Humber Flats, Marshes and Coast SPA.

6.7.1. Again, this effect can be screened out on the grounds that the existing buildings will be utilised. A number of agricultural tanks and containment bays will be constructed on the site, but these will be in close proximity to the existing buildings, built on hard standing ground and will be built at a lower level than the existing buildings on the site.

6.7.2. These proposals will not reduce sight lines or hinder flight paths.

6.8. Air quality - Thorne and Hatfield Moors SPA and Thorne Moors SAC.

6.8.1. An assessment of operation impacts was undertaken by RSK using ADMS-5.2, an advanced atmospheric dispersion model developed for regulatory purposes, with the use of 2014-2018 meteorological data from Humberside Airport meteorological station.

6.8.2. The main potential emissions to the air from the proposed use of the site when in operation is considered to be ammonia emissions from the proposed storage and containment bays and to a lesser extent storage tanks on the site. There are also some ammonia emissions from the existing use of the site. Therefore, RSK modelled the ammonia concentrations for the existing use and proposed use of the site for comparison, at ten discrete ecological receptor locations along the edges of the Thorne and Hatfield Moors SPA and Thorne Moors SAC.

6.8.3. It is also proposed to use a generator on the proposed site, which will emit nitrogen oxide. Nitrogen oxide concentrations were therefore also modelled for the proposed use of the site, again at the same ten discrete ecological receptor locations along the edges of the Thorne and Hatfield Moors SPA and Thorne Moors SAC.

6.8.4. The findings of the assessment found that the maximum annual mean ammonia processed contributions for both existing and proposed uses of the site exceed the Environment Agency (EA) screening criteria by 1% at some of the discrete receptor sites. However, across the majority of these affected discrete receptor sites the processed contributions of ammonia arising from the proposed use of the site is predicted to be less than 1% of the EA lower target criteria. Additionally, the predicted mean annual ammonia processed contributions for the existing use of the site are higher than the predicted processed contributions for the proposed use of the site at all ecological receptor locations at the Thorne and Hatfield Moors SPA and Thorne Moors SAC. The impacts on air quality will therefore be lower.

6.8.5. The highest predicted impacts of nitrogen oxide omissions were compared to the relevant legislations. There were no predicted exceedances of annual mean or daily mean nitrogen oxide Predicted Environmental Concentrations at the modelled discrete receptor locations for the proposed use of the site. In fact, the predicted mean annual and mean daily emissions of nitrogen oxide are significantly lower than the relevant Environment Agency screening criteria.

6.8.3. For the reasons described above this effect can be screened out on the grounds of not likely to have a significant effect.

6.9. Air quality - Humber Estuary SAC and Ramsar and Humber Flats, Marshes and Coast SPA.

6.9.1. The same assessment undertaken by RSK described above also modelled the current and proposed ammonia concentrations and proposed nitrogen oxide concentrations at five discrete ecological receptor locations along the edge of the Humber Estuary SAC and Ramsar and Humber Flats, Marshes and Coast SPA.

6.9.2. The findings of the assessment found that the maximum annual mean ammonia processed contributions for both existing and proposed uses of the site did not exceed the Environment Agency (EA) screening criteria and overall the predicted mean annual ammonia processed contributions for the existing use of the site are higher than the predicted processed contributions for the proposed use of the site at all ecological receptor locations at the Humber Estuary SAC and Ramsar and Humber Flats, Marshes and Coast SPA. The impacts on air quality will therefore be lower.

6.9.5. The highest predicted impacts of nitrogen oxide omissions were compared to the relevant legislations. There were no predicted exceedances of annual mean or daily mean nitrogen oxide Predicted Environmental Concentrations at the modelled discrete receptor locations for the proposed use of the site. In fact, the predicted mean annual and mean daily emissions of nitrogen oxide are significantly lower than the relevant Environment Agency screening criteria.

6.9.3. For the reasons described above this effect can be screened out on the grounds of not likely to have a significant effect.

6.10. Water quality - Thorne and Hatfield Moors SPA, Thorne Moors SAC.

6.10.1. Only clean water will be discharged into the IDB’s drainage system. Clean water on the site will be collected as part of a rainwater harvesting system from the roofs and gutters of the buildings. This will be piped to the onsite pond that will have an overflow discharge point to the adjacent IDB drain at 10 l/s. This level of flow has been agreed with the IDB.

6.10.2. Quantities of clean water on the site have been determined using FEH rainfall data for a range of storm return periods up to 1 in 100 years and a duration of up to 60 hours. A 40% uplift for climate change has also been applied in accordance with the EA's latest guidelines.

6.10.3. Dirty water generated in the storage and processing area will be confined by the existing concrete hard standing, a perimeter drain and 300mm concrete kerbing. Access to and from this confined area will be via 200mm high 'sleeping policemen', which is calculated to be more than sufficient to contain rainwater from a 1 in 100 year storm of 60 hour duration. Wheel washing facilities will be provided within the confined area. The dirty water will be drained into a purpose-built lined lagoon/tank surrounded by a perimeter bund of not less than 1.5m in height. The dirty water will be drawn from this tank for off-site disposal.

6.10.4. The confined dirty water area covers 3,613m^2. The quantities of water that will be generated in this area by incident rainfall have also been determined using FEH rainfall data for a range of storm return periods of up to 1 in 100 years, a duration of up to 60 hours and a climate change uplift of 40%.

6.10.5. The required lagoon/tank capacity for a 1 in 5 year storm of 48 hour duration is 259m^3. For a 1 in 100 year storm up to 60 hours duration the required storage is 506m^3. This is equivalent to a water depth of 0.14m within the confined area. The 300mm high kerbing and sleeping policemen will easily provide this capacity. In addition the lagoon/tank will also provide greater security for this storm event.

6.10.6. Through the implementation of the above measures, this effect can be screened out on the grounds of not likely to have a significant effect.

6.11. Water quality - Humber Estuary SAC and Ramsar and Humber Flats, Marshes and Coast SPA.

6.11.1. Sections 6.10.1. to 6.10.5. above provide information that relates to this assessment.

6.11.2. Through the implementation of such appropriate measures, this effect can be screened out on the grounds of not likely to have a significant effect.

6.11. Hydrology - Thorne and Hatfield Moors SPA and Thorne Moors SAC.

6.11.1. All processing will be undertaken in bunded areas and on solid hard standing areas on the site. In this way, there will be no effect on the hydrology of the site or of the SPA and SAC 1.2km from the site.

6.11.2. This effect can be screened out on the grounds of not likely to have a significant effect.

6.12. ***Hydrology - Humber Estuary SAC and Ramsar and Humber Flats, Marshes and Coast SPA.***

6.12.1. As above all processing will be undertaken in bunded areas and on solid hard standing areas on the site. In this way, there will be no effect on the hydrology of the site or of the SPA, SAC and Ramsar 4.6km from the site.

6.12.2. This effect can be screened out on the grounds of not likely to have a significant effect.

6.13. Disturbance – Thorne and Hatfield Moors SPA and Thorne Moors SAC .

6.13.1. A maximum of 100,000 tonnes *per annum* of imported waste materials will be brought to the site in 4,000 vehicles. A maximum of 100,000 tonnes *per annum* of exported materials destined for land application will leave the site in 4,000 vehicles which, where possible, will be vehicles which have delivered to the site.

6.13.2. A significant proportion of the materials from the site will also be used in the local vicinity, reducing the number of vehicles passing down the A161 through Swinefleet village and old Goole.

6.13.3. Maximum total lorry movements therefore amount to 16,000 *per annum* (assuming a worst-case scenario where no lorries delivering wastes are re-loaded to remove product on their return journey). Imports will largely be carried out as a steady input throughout the year. Exports will be more seasonal (with some peaks shortly ahead of the spring and autumn spreading windows) but there will continue to be some export throughout the year.

6.13.4. Historic data from the former peat operation showed that there were 175,000m3 per annum of imported peat products. This will have been done in 2692 deliveries (65m3 per load). These lorries will then have returned empty. 300,000m3 per annum of peat products were exported (the balance coming from the adjacent moors). This would have been palletised, with 2.25 m3 per pallet (30 x 75L bags per pallet). A total of 22 pallets would have been taken per load, amounting to 6060 empty lorries arriving at the site, and subsequently leaving loaded. Total lorry movements therefore amount to 17,504 *per annum*. About 50% of the above activity (deliveries in and product sales out) would have taken place within a 3-month period.

6.13.5. Vehicles will only run through working hours of the day, there will be no night running of vehicles. Any noise disturbance from vehicles accessing to and from the site will be of equivalent disturbance levels to farming machinery working in the area, although more frequent.

6.13.6. Personnel using and working on the site will only use the site itself as part of their working day. The site or the surrounding area will not be used for recreational purposes therefore there will be very little impact from people using the area.

6.13.7. As part of the recycling process on the site there will be a requirement for the running of a generator, but this will be located inside the building, therefore reducing the noise levels outside the building.

6.13.8. The important issue is that none of the lorries in future will travel anywhere near the SPA and SAC.

6.13.9. This effect can be screened out on the grounds of not likely to have a significant effect.

6.14. Disturbance – Humber Estuary SAC and Ramsar and Humber Flats, Marshes and Coast SPA.

6.14.1. Sections 6.13.1. to 6.13.7. above provide information that relates to this assessment.

6.14.2. Any lorries accessing to and from the site via the M62 will inevitably use the A161 road at Swinefleet. A length of approximately 2km of the A161 road runs immediately along the outside of the southern boundary of the SAC, Ramsar and

SPA. This road is already a well-used main A-road. Worst case scenario, if all lorries accessing the site were to use this road this would be an average of 61 lorry movements on that road per day, although a significant proportion of the materials from the site will be used in the local vicinity, reducing the number of vehicles passing down the A161.

6.14.3. Based on the likely disturbance caused by the existing use of this road, it is assessed that this will not have a significant effect on the levels of disturbance to the SAC, Ramsar and SPA.

6.15. Introduction or spread of non-native invasive species – Thorne and Hatfield Moors SPA and Thorne Moors SAC.

6.15.1. The movement of people, plant and traffic, as well as the importation of materials can result in the introduction of non-native species. Any plant or tools brought onto site will be specified as clean from weeds and pests and will be checked.

6.15.2. The issue of introduction and spread of non-native species is therefore screened out on the grounds of not likely to have a significant effect.

6.16. Introduction or spread of non-native invasive species – Humber Estuary SAC and Ramsar and Humber Flats, Marshes and Coast SPA.

6.16.1. The movement of people, plant and traffic, as well as the importation of materials can result in the introduction of non-native species. Any plant or tools brought onto site will be specified as clean from weeds and pests and will be checked.

6.16.2. The issue of introduction and spread of non-native species is therefore screened out on the grounds of not likely to have a significant effect.

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7. CONCLUSIONS.

The conclusions are summarised in the table below.

Potential Impact.	**Screening Outcome.**
Direct loss or damage of habitats.	No likely significant effect.
Change in management regimes.	No likely significant effect.
Urbanisation.	No likely significant effect.
Air quality.	No likely significant effect.
Water quality.	No likely significant effect.
Hydrology.	No likely significant effect.
Disturbance.	No likely significant effect.
Introduction or spread of non-native invasive species.	No likely significant effect.

Overall it is concluded that the proposals for the former Swinefleet Peat Works can be screened out on the grounds of not having any impacts that could result in significant effects on the Thorne and Hatfield Moors SPA, Thorne Moors SAC, Humber Estuary SAC and Ramsar and Humber Flats, Marshes and Coast SPA.

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