Boskalis Eastham Aggregates Depot

Environmental Permit Application

Environmental Risk Assessment

November 2019

Prepared on behalf of Boskalis Westminster Limited

Boskalis
Westminster

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1.0 Introduction

1.1 Report Context

1.1.1 This section of the Environmental Permit application corresponds to Section 6 of Part B2 of the Environmental Permit application forms, and has been prepared on behalf of the operator, Boskalis Westminster Limited (Boskalis) by WYG.

1.1.2 Boskalis seek an Environmental Permit to authorise the processing of dredgings at the proposed site, which is located at Commercial Road, Bromborough, Wirral, CH62 3NL.

1.1.3 The proposal entails the physical treatment (via screening) of non-hazardous maintenance dredging spoil from the Mersey Estuary, together with the landing of virgin (non-waste) aggregates from offshore Crown Estate Licensed winning areas located in Liverpool Bay, together with the discharge of water (used for fluidising and pumping ashore the materials into the depot) back into the Mersey Estuary from where it came.

1.1.4 The proposed activity and waste types are detailed further in the Operating Techniques document (Appendix B of the Environmental Permit Application).

1.1.5 This Environmental Risk Assessment (ERA) is limited to a qualitative assessment of the potential risk to the environment and human health specifically related to the proposed activity. This report will identify any significant risk and demonstrate that the risk of pollution will be acceptable by taking the appropriate measures to manage the risk.

1.1.6 A Habitats Risk Assessment is provided in Appendix B of this report – this provides further details of nearby sites of statutory designation and assesses the risk to them specifically.

2.0 Environmental Risk Assessment

2.1 Methodology

2.1.1 This report has been prepared in accordance with the Environment Agency's Risk Assessment guidance. It specifically relates to the potential risk associated with the following risk types: -

- Odour;
- Noise and vibration;
- Fugitive emissions; and
- Accidents and incidents.

2.1.2 This risk assessment addresses the above, and is based on the following methodology: -

- Identification of potential sources of risk;
- Identification of all potential receptors to risk; and
- Risk assessment of each risk type.

2.1.3 The ERA is a tool used to identify the pollutant linkage i.e. source -pathway-receptor. For most risks, the atmosphere is the main pathway and will always exist. Therefore, the ERA deals primarily with the sources and receptors. The ERA provided in Appendix A is summarised below.

2.2 Sources

2.2.1 The potential sources of risks have been considered for each risk type, as shown in Appendix A. The sources of risk for this application have been identified as:-

<u>Noise</u>

- Plant and machinery;
- Vehicle movements to/from the site; and
- Vehicle movements within the site.

Fugitive emissions

- Odour;
- Particulate matter (dust);
- Mud and litter; and
- Scavenging birds, pests and vermin.

Accidents

- Leaks/spillages;
- Fire or failure to contain firewater;
- Flooding; and
- Vandalism

2.3 Pathways

2.3.1 The pathways have been identified for each risk type as shown below in Table 1:

Table 1: Potential Pathways

Risk Type	Pathway
Odour	Atmosphere
Noise	Atmosphere
Fugitive emissions	Atmosphere
Accidents	Atmosphere
	Surface water run-off
	Infiltration
	Percolation

2.4 Receptors

2.4.1 Receptors within 1km of the proposed application boundary, are shown on Drawing Number BWL/A113422/REC/01. The main pathway for the identified sources will be the atmosphere and as such, atmospheric conditions can affect dispersion rates and hence potential risk. As a result, the location of each receptor in relation to the site may influence the potential impact of the risk, as summarised in Table 2.

2.4.2 As part of this process, WYG, on behalf of Boskalis, sought pre-application advice (reference EPR/HB3308LW/A001) from the Environment Agency which included a habitats screen. The

results of the screen identified the following statutory ecological sites:-

- The New Ferry Site of Special Scientific Interest (SSSI); and
- The Mersey Estuary Special Protection Area (SPA) and Ramsar site. The Multi-Agency Geographic Information for the Countryside's (MAGIC) website notes that the Mersey Estuary is also a SSSI.

2.4.3 These sites have been included in Table 2 below and the ERA in Appendix A.

Table 2: Sensitive Receptors Located within 1km of the Proposed Operation

ID	Receptor	Direction from Operational Area	Minimum Distances from the Permit Application Boundary (approx. m)
Designated ecological habitats e.g. Ramsar, SAC, SPA, SSSI, LNR			
1	New Ferry (SSSI)	E	445
2	Mersey Estuary (SSSI, SPA and Ramsar site)	E	On site
Domestic Dwellings			
3	Dwellings on Magazine Road	W	500
Commercial and Industrial Premises			
4	McTay Marine	N	20
5	F M C Chemicals	S	70
6	Units on Riverwood Road/Bankfield Crescent	SW	160
7	Riverside Aggregates Ltd	W	<10
8	Tarmac Bromborough Asphalt Plant	W	160
Highways or Minor Roads			
9	Commercial Road	SW	20
10	Riverbank Road	W	<10
Priority Habitats			
11	Priority Habitat Inventory – Mudflats and Intertidal Substrate Foreshore	E	<10
12	Priority Habitat Inventory – Deciduous Woodland and National Forest Inventory Broadleaved Woodland	S	45
13	Priority Habitat Inventory – Deciduous Woodland and National Forest Inventory Broadleaved Woodland	W	10
Surface Water e.g. rivers and streams			
14	River Mersey	E	Adjacent
Groundwater			
According to the MAGIC website, the site is not located within a Groundwater Source Protection Zone. With regards to aquifers, the MAGIC website shows that the superficial deposits that underly the site is a Secondary (undifferentiated) aquifer and the bedrock geology is a Principal aquifer.			

2.5 Risk Assessment

2.5.1 The ERA (Appendix A) looks at each specific hazard identified and assesses the likelihood of

those hazards impacting on the receptors. This is achieved by fulfilling the following objectives:-

- Identify the location and nature of each hazard;
- Identify the specific receptors potentially at risk and assess the sensitivity of each receptor;
- Provide a qualitative assessment of the risk posed to each sensitive receptor;
- Identify management and monitoring techniques; and
- Provide recommendations for more detailed assessments where necessary.

2.6 Summary of ERA

2.6.1 The ERA (Appendix A) indicates that the proposed aggregates facility will have no significant impacts in terms of odour, noise and vibration, and fugitive emissions, and the likelihood of accidents is minimal.

Drawings

BWL/A113422/REC/01 - Receptor Plan

Appendices

Appendix A – Amenity and Accident Risk Assessment

Table A1: Odour Risk Assessment and Management Plan

What do you do that can harm and what could be harmed?			Managing the risk	Assessing the risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Probability of Exposure**	**Consequence**	**What is the overall risk?**
What has the potential to cause harm?	**What is at risk? What do I wish to protect?**	**How can the hazard get to the receptor?**	**What measures will you take to reduce the risk? If it occurs – who is responsible for what?**	**How likely is this contact?**	**What is the harm that can be caused?**	**What is the risk that still remains? The balance of probability and consequence.**
Acceptance and processing of dredgings spoil.	Workers at the site. Occupiers of domestic dwellings listed in Table 2 above. Workers at nearby industrial and commercial premises.	Atmosphere	The proposed waste types are not putrescible and therefore will not biodegrade to produce offensive odours. The risk of odorous, non-compliant wastes being accepted is very low as the dredgings will be pumped directly from the River Mersey. The nearest residential dwellings are over 500m from the site. It's considered that there are no significant odour sources to manage as part of the proposed activity and therefore the odour risk is extremely low. Nevertheless, it was advised by the Environment Agency during pre-application discussions that an Odour Management Plan should be prepared to address the risk of odour and how it will be managed on site. As such, an Odour Management Plan has been prepared and is provided as Appendix E of the environmental permit application. All site operatives will be vigilant regarding odour issues. All issues will be reported to the Site Manager.	Unlikely due to the nature of the proposed waste types and the measures in place.	Odour annoyance.	Not significant due to the low odour potential of the dredgings and the management techniques employed.

Table A2: Noise and Vibration Risk Assessment and Management Plan

What do you do that can harm and what could be harmed?			Managing the risk	Assessing the risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Probability of Exposure**	**Consequence**	**What is the overall risk?**
What has the potential to cause harm?	What is at risk? What do I wish to protect?	How can the hazard get to the receptor?	What measures will you take to reduce the risk? If it occurs – who is responsible for what?	How likely is this contact?	What is the harm that can be caused?	What is the risk that still remains? The balance of probability and consequence.
Vehicle movements.	Workers at the site. Workers at nearby premises. Occupiers of domestic dwellings listed in Table 2 above. Statutory Designated and Priority Habitats listed in Table 2.	Atmosphere	Whilst dredgings will be pumped from the River Mersey there will be some road vehicle movements associated with the onward transportation of processed material, which will require waste vehicle movements from and within the site. It is not considered that these vehicles will generate significant levels of noise. The transportation of processed dredgings will take place in a controlled manner to keep noise/vibration to a minimum. The site is within a commercial/ industrial area and would not rely on an uneven surface for e.g. a mud track/haul road. The site benefits from a hardstanding surface and vehicle speeds will be limited on site. Low level warning signals will be utilised. All vehicles when not in regular use shall be switched off. The site is within an industrialised area, which is not considered to be noise sensitive. The nearest dwellings are over 500m from the site. All noise and vibration generating activity will be monitored closely and site operatives will be vigilant and report any excessive noise or vibration issues to the Site Manager.	Intermittent during operating hours.	Intermittent noise and vibration disturbance.	Not significant due to site location and management techniques employed.

Noise and vibration from loading and unloading of wastes.	Workers at the site. Workers at nearby premises. Occupiers of domestic dwellings listed in Table 2 above. Statutory Designated and Priority Habitats listed in Table 2.	Atmosphere	All plant and machinery will have effective silencers where practicable and will be maintained in accordance with the manufacturer's requirements to minimise the generation of noise. The loading/unloading of wastes will be undertaken in a controlled manner to keep noise/vibration to a minimum. All drop heights will be minimised where possible. The site is within an industrialised area, which is not considered to be noise sensitive. The nearest dwellings are over 500m from the site. All noise and vibration generating activity will be monitored closely and site operatives will be vigilant and report any excessive noise or vibration issues to the Site Manager.	Intermittent during operating hours.	Intermittent noise and vibration disturbance.	Not significant due to site location and management techniques employed.
Noise and vibrations from processing operation.	Workers at the site. Workers at nearby premises. Occupiers of domestic dwellings listed in Table 2 above. Statutory Designated and Priority Habitats listed in Table 2.	Atmosphere	The screener will be positioned within the site accordingly to account for the generation of noise and vibration. All plant and machinery will have effective silencers where practicable and will be maintained in accordance with the manufacturer's requirements to minimise the generation of noise. All plant and equipment will be switched off when not in regular use. The site is within an industrialised area, which is not considered to be noise sensitive. The nearest dwellings are over 500m from the site. All noise and vibration generating activity will be monitored closely and site operatives will be vigilant and report any excessive noise or vibration issues to the Site Manager.	Intermittent during operating hours.	Intermittent noise and vibration disturbance.	Not significant due to site location and management techniques employed.

Table A3 – Fugitive Emissions Risk Assessment and Management Plan

What do you do that can harm and what could be harmed?			Managing the risk	Assessing the risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Probability of Exposure**	**Consequence**	**What is the overall risk?**
What has the potential to cause harm?	What is at risk? What do I wish to protect?	How can the hazard get to the receptor?	What measures will you take to reduce the risk? If it occurs – who is responsible for what?	How likely is this contact?	What is the harm that can be caused?	What is the risk that still remains? The balance of probability and consequence.
To Air						
Dust from vehicle movements.	Workers at the site. Workers at nearby premises. Occupiers of domestic dwellings listed in Table 2 above. Statutory Designated and Priority Habitats listed in Table 2.	Atmosphere	Whilst dredgings will be pumped from the River Mersey there will be some vehicle movements associated with the onward transportation of processed material. The site is within a commercial/industrial area and would not for e.g. rely on a mud track/haul road. The site benefits from a hardstanding surface. Any waste vehicles or site roads that gather significant amounts of dust will be washed as and when necessary. Processed dredgings being transported from the site will be covered or sheeted to prevent the generation of dust while the waste is in transit. Vehicle speeds will be limited on site and access road to prevent re-suspension and entrainment of dust. The Site Manager will undertake a daily visual assessment of dust levels and all site operatives will be vigilant and report any problems to the Site Manager.	Dust could potentially reach the nearby receptors when a strong wind blows in their direction. Management actions should prevent this happening.	Local nuisance – dust on cars, clothing, vegetation, etc. Smothering. Nutrient enrichment.	Not significant due to management techniques employed.
Dust emissions generated from storage of dredgings.	Workers at the site. Workers at nearby premises.	Atmosphere	The dredgings would be stored in managed stockpiles. The loading/unloading of dredgings will be undertaken in a controlled manner to keep dust emissions to a minimum.	Dust could potentially reach the nearby receptors when a strong wind	Local nuisance – dust on cars, clothing, vegetation, etc.	Not significant due to management techniques employed.

	Occupiers of domestic dwellings listed in Table 2 above. Statutory Designated and Priority Habitats listed in Table 2.		The site will be dampened down as and when necessary. Extra care will be taken with the deposit of waste during periods of prolonged dry weather or high winds. The Site Manager will undertake a daily visual assessment of dust levels and all site operatives will be vigilant and report any problems to the Site Manager.	blows in their direction. Management actions should prevent this happening.	Smothering. Nutrient enrichment.	
Dust emissions generated from processing operation.	Workers at the site. Workers at nearby premises. Occupiers of domestic dwellings listed in Table 2 above. Statutory Designated and Priority Habitats listed in Table 2.	Atmosphere	The screener will be positioned within the site accordingly to account for the potential of wind-blown dusts. The loading/unloading of dredgings will be undertaken in a controlled manner to keep dust emissions to a minimum. The site will be dampened down as and when necessary. Extra care will be taken with the deposit of waste during periods of prolonged dry weather or high winds. The Site Manager will undertake a daily visual assessment of dust levels and all site operatives will be vigilant and report any problems to the Site Manager.	Dust could potentially reach the nearby receptors when a strong wind blows in their direction. Management actions should prevent this happening.	Local nuisance – dust on cars, clothing, vegetation, etc. Smothering. Nutrient enrichment.	Not significant due to management techniques employed.
To Water						
Dredging carrier water discharge	Mersey Estuary (SSSI, SPA and Ramsar site). The River Mersey.	Direct discharge of water to river.	The proposed waste types are river dredgings from the River Mersey and therefore are considered to be non-hazardous. The water that will be used to pump the dredgings is taken from the River Mersey and returned back to the River Mersey. A sample point shall be provided so that representative samples may be obtained. All constituents of discharge shall pass through the sampling point at all times. Sampling of the discharge point for suspended solids shall be	Unlikely due to the nature of the proposed wastes types and the measures in place.	Contamination of surface water bodies.	Not significant due to management techniques employed and the nature of the waste types.

			undertaken on a monthly basis and the results will be submitted to the Environment Agency.			
Contaminated rainwater run-off.	Workers at the site. Groundwater. Surface water features listed in Table 2 above.	Direct surface water run-off from site. Infiltration. Percolation.	The proposed waste types are river dredgings and are non-hazardous. As such, the run off that is generated on site will simply be rainwater which has passed through spoils and therefore is not likely to be hazardous. Due to the nature of the proposed waste types and the method in which the dredgings will be brought into the site (pumped from the River Mersey) non-conforming wastes that could be contaminated are unlikely to be brought into the site.	Unlikely due to the nature of the proposed wastes types and the measures in place.	Contamination of surface water bodies and groundwater.	Not significant due to management techniques employed and the nature of the waste types.
Pests/Scavenging birds						
Birds and pests.	Workers at the site. Workers at nearby premises. Occupiers of domestic dwellings listed in Table 2 above. Statutory Designated and Priority Habitats identified in Table 2.	Air. Ground.	The proposed waste types are not putrescible and will not attract pests, vermin and/or scavenging birds. Due to the nature of the proposed waste types and the method in which the dredgings will be brought into the site (pumped from the River Mersey) non-conforming wastes that could attract birds and pests will not be brought into the site. The Site Manager will undertake regular reviews of pests and scavenging birds at the site. All site operatives will be vigilant and report any problems to the Site Manager.	Very unlikely.	Nuisance to local residents. Predation of species in Priority Habitats and designated ecological habitats.	Not significant due to management techniques employed and the nature of the waste types.
Mud/Litter						
Mud arising from vehicles movements	Highways identified in Table 2.	Tracked by vehicles.	The site is within a commercial/industrial area and would not for e.g. rely on a mud track/haul road. The site benefits from a hardstanding surface.	Unlikely due to measures in place.	Mud on roads is unsightly and can increase the risk of road traffic incidents.	Not significant due to management techniques employed.

			The amount of mud on local roads will monitored daily by site operatives. In the event that mud is deposited on the access road and/or highway then the road will be cleaned as necessary.			
Litter arising from vehicle movements and high winds.	All receptors identified in Table 2.	Air. Tracked by vehicles.	Due to the nature of the proposed waste types and the method in which the dredgings will be brought into the site (pumped from the River Mersey) litter will not be generated at the site. A vigilant watch for litter will be undertaken by site operatives. In the unlikely event that litter is generated by the activity, the Site Manager will implement a litter collection as necessary.	Very unlikely due to measures in place.	Local nuisance.	Not significant due to the nature of waste received and management techniques employed.

Table A4 – Accident Risk Assessment and Management Plan

What do you do that can harm and what could be harmed?			Managing the risk	Assessing the risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Probability of Exposure**	**Consequence**	**What is the overall risk?**
What has the potential to cause harm?	What is at risk? What do I wish to protect?	How can the hazard get to the receptor?	What measures will you take to reduce the risk? If it occurs – who is responsible for what?	How likely is this contact?	What is the harm that can be caused?	What is the risk that still remains? The balance of probability and consequence.
Fire or failure to contain firewater.	Workers at the site. Workers at nearby premises. Groundwater. Surface water bodies identified in Table 2. Statutory Designated and Priority Habitats identified in Table 2. Occupiers of domestic dwellings listed in Table 2.	Infiltration. Contaminated rainwater runoff.	The risk of fire is considered to be low as the proposed waste types are not flammable. The risk of non-compliant wastes being accepted is very low as the dredgings will be pumped directly from the River Mersey. The dredgings are not combustible in nature. The operator will undertake routine maintenance of all equipment in accordance with the manufacturer's guidance. This will minimise the risk of mechanical failure which may result in an increased risk of combustion. Site notices and training will be undertaken regarding fire hazards. The Site Manager will be responsible for actions undertaken in the event of a fire.	Very unlikely due to the nature of the waste types and the measures in place.	Contamination of local groundwater and/or surface water. Local nuisance from smoke.	Not significant due to the nature of waste types and likelihood of a fire on site.
Leaks/spillages of fuel/oil.	Groundwater. Surface waters identified in Table 2.	Surface run-off. Infiltration. Percolation	The operator will undertake regular maintenance of plant and equipment in accordance with the manufacturer's guidance. This will minimise the risk of mechanical failure which may result in leaks.	Unlikely due to measures in place.	Contamination of land and watercourses.	Not significant due to management techniques employed.

	Workers at the site.		All fuel, oil and lubricants will be contained within appropriate 110% bunded tanks. The tanks will be maintained and inspected in accordance with the manufacturer's recommendations. Daily vehicle/plant checks will be undertaken to ensure any fuel/oil leaks etc. are repaired as soon as possible. The Site Manager will be responsible for ensuring effective remediation and documenting any incident.			
Flooding.	Groundwater. Surface water bodies identified in Table 2.	Infiltration. Contaminated surface water runoff.	The site lies entirely within Flood Zone 1, which is land at the lowest risk of flooding. The site has previously operated as a dredgings processing facility and the EAWML (50397) required an engineered site containment and drainage system. The operations also utilised the construction of a lagoon. The same purpose-built drainage system will be used for this operation. The site also already comprises a hardstanding surface. It is not considered the use of the site for the processing of dredging spoils would increase the risk of flooding. In addition, the proposed waste types are river dredgings and therefore the risk of contamination from flooding is considered to be low.	Unlikely due to measures in place.	Disruption to works on site. Contamination of local groundwater and/or surface water.	Not significant due to the management techniques employed.

Vandalism (i.e. resulting in damage to site infrastructure or equipment).	Groundwater. Statutory Designated and Priority Habitats identified in Table 2. Occupiers of domestic dwellings listed in Table 2.	Unauthorised entry to the site.	The site has a gated access point from Commercial Road and security fencing extends along the sites western boundary with Riverbank Road. Unauthorised access is also difficult along the other site boundaries due to the location of adjoining industrial premises, established scrubland vegetation and the mudflats and estuary of the River Mersey to the east. The site entrance will be protected by lockable gates, which will be kept locked outside of operating hours. The security fencing and gates will be inspected on a regular basis. Any identified damage to the fence or gates that could compromise the site security will be recorded and temporarily repaired as necessary before the end of that working day. Permanent repair or replacement will be undertaken as soon as practicable. There will be procedures in place which will require all visitors to the site to sign in on arrival and sign out on departure.	Unlikely due to measures in place.	Release of polluting materials to air (smokes or fumes) water or land.	Not significant due to management techniques employed.

Appendix B – Habitats Assessment

Habitats Assessment

Purpose of Assessment

This risk assessment identifies the potential impacts of the proposed development on areas of ecological importance in the vicinity of the site. These receptors have been included in the ERA; however, this section provides more specific detail regarding the nature of these potential receptors.

Statutory Designations

Pre-application advice was sought from the Environment Agency (reference EPR/HB3308LW/A001) which included a habitats screen. The results of the screen identified the following statutory ecological sites:-

- The New Ferry Site of Special Scientific Interest (SSSI); and
- The Mersey Estuary Special Protection Area (SPA) and Ramsar site. The MAGIC website also shows that the Mersey Estuary is a SSSI.

Further information about these sites is provided below.

New Ferry – Site of Special Scientific Interest

Reason for notification

The site is notified for its large areas of intertidal sand, mudflats and other habitats, which support two nationally important species of wintering waterfowl, pintail *Anas acuta* and black-tailed godwit *Limosa limosa.*

Description

New Ferry is located within the Mersey Estuary, to the south of Birkenhead on the Wirral Peninsula. Tranmere Oil Terminal forms the northern boundary whilst to the south, the site is bordered by Bromborough Landfill site. New Ferry is a natural embayment comprising intertidal sand and mudflats interspersed with shingle and cobbles. Throughout the winter, New Ferry supports national important populations of both pintail and black-tailed godwit. These birds utilise the rich invertebrate fauna of the intertidal mudflats. These remain exposed for a significant part of the tidal cycle, which makes them particularly important in terms of feeding time available to the birds; as such New Ferry is primarily a low water feeding site.

Towards the southern end of the site, an area of pioneer saltmarsh dominated by common cord-grass *Spartina anglica* occurs. Glasswort *Salicornia* sp and sea aster *tripolium* are also present and on adjoining sandy shingle areas, sea milkworth *Glaux maritime* and sand couch *Elymus farctus.* New Ferry also supports a number of additional species of wintering waterfowl. Populations of redshank *Tringa tetanus* are particularly significant almost reaching nationally important levels. Other species of note include shelduck *Tadorna,* ringed plover *Charadrius hiaticula,* knot *Calidris canutus,* dunlin *Calidris alpina* and turnstone *Arenaria interpres.*

Additional interest is provided in some years by the utilisation of the site by migrating birds on passage, including redshank and black-tailed godwit.

The site contains New Ferry Shore Site of Biological Importance, as identified and declared by Wirral Metropolitan Borough Council.

Condition

It is considered of favourable condition.

Mersey Estuary – Special Protection Area, SSSI and Ramsar

The Mersey Estuary is an internationally important site for wildfowl and consists of large areas of intertidal sand and mudflats. The site also includes an area of reclaimed marshland, salt-marshes, brackish marshes and boulder clay cliffs with freshwater seepages. The Manchester Ship Canal forms part of the southern boundary of the site and separates a series of pools from the main estuary. These pools together with Hale Marsh are important roosting sites for wildfowl and waders at high tide.

Throughout the winter the estuary supports large numbers of wildfowl and waders. The birds feed on the rich invertebrate fauna of the intertidal sediments as well as plants and seeds from the salt-marsh and adjacent agricultural land. The estuary is also a valuable staging post for migrating birds in spring and autumn.

Description

In 1980–81 the estuary had the highest monthly count of wildfowl of any British site; 57,700 birds. The most important species over the period 1978–83 were pintail *Anas acuta* (17% of the total western European population), teal *Anas crecca* (12%), shelduck *Tadorna* (7%) and wigeon *Anas penelope* (2%). In 1982–83 the estuary had the 16th highest monthly count of waders of any British site: 26,593 birds. The most important species over the period 1978–83 was dunlin *Calidris alpina* (1%). However, nationally important numbers of curlew *Numenius arquata*, redshank *Tringa totanus* and golden plover

Pluvialis apricaria were also recorded. Several area of salt-marsh are present. These form important feeding and roosting sites for birds.

Glasswort *Salicornia* spp. is widespread on the outer margins whilst sea Poa *Puccinellia maritima* is dominant over the rest. Unlike the other salt-marshes in the estuary, Stanlow Banks has not been grazed by sheep or cattle, and consequently has a more diverse flora. Sea aster *tripolium* and hastate orache *Atriplex prostrata* are widespread throughout this area. Sea plantain *Plantago maritima*, annual seablite *Suaeda maritima* and scurvy-grass *Cochlearia* spp. also occur.

In a number of areas the salt-marsh grades into brackish marsh dominated by common reed *Phragmites australis* with sea arrow-grass *Triglochin maritima* and great reedmace *Typha latifolia* also present in some areas. On the sandy foreshore sea sandwort *Honkenya peploides* occurs with sea milkwort *Glaux maritima*. At the inner edge of the salt-marsh and along the strand line, mud rush *Juncus gerardi*, sand sedge *Carex arenaria* and curled dock *Rumex crispus* occur.

On the north side of the estuary, part of the coastline is formed by boulder clay cliffs. Portions of the cliff have become exposed by slumping, and in these areas a number of unusual species occur including yellow-wort *Blackstonia perfoliata* and bristly oxtongue *Picris echioides*, both of which are at the northern limits of their distribution.

Condition

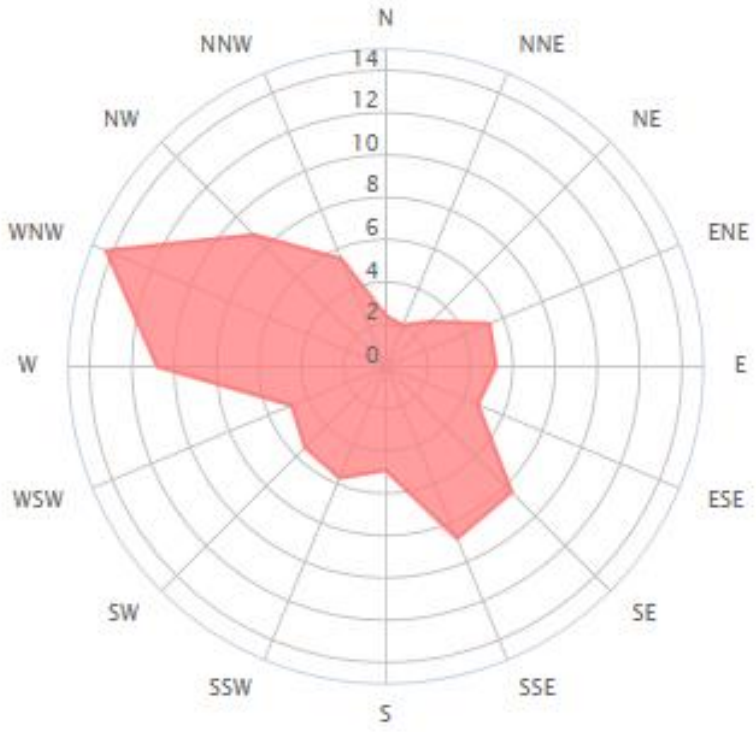
It is considered favourable/favourable-recovering.

Risk Assessments

The specific risk assessments completed for Odour, Noise and Fugitive Dust Emissions are detailed in the tables below. In many cases there is an interrelationship between these specific risk assessments and meteorological conditions, where relevant this has been identified. The pathway is determined by the location of the receptor relative to the site, the distance from the site boundary (m) and the frequency (likelihood) the prevailing wind will blow in the direction of the receptor as determined by historical windrose data available for Bebington/Birkenhead (www.windfinder.com) .

The prevailing winds in the local area are from the west-north-west. Therefore, it is considered that the area at risk of higher sensitivity will be situated to the east-south-east. This is shown in the extract below from windfinder.com, which shows the wind direction distribution for Bebington/ Birkenhead, which has been recorded between June 2009 and May 2019 between 7am and 7pm.

Figure 1 – Bebington/ Birkenhead Wind Direction Distribution % June 2009 - May 2019



The risk assessment tables represent the risk of exposure to a hazard before mitigating controls are put in place. The probability of exposure is therefore not necessarily a reflection of the severity of the impact on the receptor, which may not be sensitive to the hazard. The severity of the unmitigated consequence presumes the receptor has been exposed to the hazard. However, if the receptor is unlikely to be exposed, then the overall unmitigated risk is low and vice versa. The mitigated risk is the

residual risk presented by the hazard after control measures have been instigated. This is the most realistic representation of the risk as effective controls will be maintained under the requirements of the environmental permit and Boskalis' Environmental Management System (EMS).

What do you do that can harm and what could be harmed?						Managing the risk	Assessing the risk		
Hazard	**Receptor**				**Pathway**	**Risk Management**	**Probability of Exposure**	**Consequence**	**What is the overall risk?**
What has the potential to cause harm?	Receptor Name	Direction	Distance	Downwind Frequency %	How can the hazard get to the receptor?	What measures will you take to reduce the risk? If it occurs – who is responsible for what?	How likely is this contact?	What is the harm that can be caused?	What is the risk that still remains? The balance of probability and consequence.
Odour.	New Ferry (SSSI)	N	445	1%	Atmosphere.	The proposed waste types are not putrescible and therefore will not biodegrade to produce offensive odours. The prevailing wind direction is from the west-north-west. The River Mersey is situated to the east, east-south-east, and south east of the site, and it is not considered a sensitive receptor for odour. The risk of odorous, non-compliant wastes being accepted is very low as the dredgings will be pumped directly from the River Mersey. There are also several management techniques which are set out in Appendix A of the Environmental Risk Assessment and in the Odour Management Plan (Appendix E of the environmental permit application), which will be utilised at the site to prevent odour emissions.	Very unlikely.	Disturbance. Habitat loss. Toxic contamination.	Not significant.
	Mersey Estuary (SSSI, SPA and Ramsar site)	E	On site	8%					

What do you do that can harm and what could be harmed?						Managing the risk	Assessing the risk		
Hazard	**Receptor**				**Pathway**	**Risk Management**	**Probability of Exposure**	**Consequence**	**What is the overall risk?**
What has the potential to cause harm?	Receptor Name	Direction	Distance	Downwind Frequency %	How can the hazard get to the receptor?	What measures will you take to reduce the risk? If it occurs – who is responsible for what?	How likely is this contact?	What is the harm that can be caused?	What is the risk that still remains? The balance of probability and consequence.
Noise from dredgings processing.	New Ferry (SSSI)	N	445	1%	Atmosphere.	The site is located in area where there are other business and industrial uses nearby, and therefore there is already a level of background noise. The site was previously used for dredgings processing, the same as is proposed. The screener will be positioned within the site accordingly to account for the generation of noise and vibration. All plant and machinery will have effective silencers where practicable and will be maintained in accordance with the manufacturer's requirements to minimise the generation of noise. All plant and equipment will be switched off when not in regular use. There are also several management techniques which are set out in Appendix A of the Environmental Risk Assessment which will be utilised at the site to prevent noise emissions.	Unlikely.	Disturbance Habitat loss	Not significant.
	Mersey Estuary (SSSI, SPA and Ramsar site)	E	On site	8%					

What do you do that can harm and what could be harmed?						Managing the risk	Assessing the risk		
Hazard	**Receptor**				**Pathway**	**Risk Management**	**Probability of Exposure**	**Consequence**	**What is the overall risk?**
What has the potential to cause harm?	Receptor Name	Direction	Distance	Downwind Frequency %	How can the hazard get to the receptor?	What measures will you take to reduce the risk? If it occurs – who is responsible for what?	How likely is this contact?	What is the harm that can be caused?	What is the risk that still remains? The balance of probability and consequence.
To Air									
Fugitive dust emissions.	New Ferry (SSSI)	N	445	1%	Atmosphere.	The prevailing winds in the local area are from the west-north-west, therefore it is considered that the area at risk of higher sensitivity will be situated to the east-south-east. The New Ferry SSI is therefore likely to not have frequent exposure and is therefore unlikely to be impacted by dust. The Mersey Estuary is situated to the east of the site, and therefore may be more likely to be exposed to dust emissions, however control techniques will be in place to minimise the risk. The permitted waste types for the proposed new activity do not include dusts, powders or loose fibres. The screener will be positioned within the site accordingly to account for the potential of wind-blown dusts. The loading/unloading of dredgings will be undertaken in a controlled manner to keep dust emissions to a minimum.	Unlikely due to nature of waste type and internal treatment method.	Smothering Toxic Contamination Habitat Loss	Not significant.
	Mersey Estuary (SSSI, SPA and Ramsar site)	E	On site	8%					

						Extra care will be taken with the deposit of waste during periods of prolonged dry weather or high winds. A water bowser will be used to dampen site roads and stockpiles if deemed necessary and surface water runoff from clean areas of the site will be retained to facilitate general dust suppression. A road sweeper may also be used if necessary. Vehicle speeds will be limited to prevent re-suspension and entrainment of particulates. The Site Manager will be responsible for checking wind strength and direction and will be responsible for stopping operations if necessary.			
To Water									
Contaminated surface water runoff from waste storage and treatment areas.	New Ferry (SSSI)	N	445	N/A	Land Water	The site is in close proximity to the Mersey Estuary. The site benefits from an engineered drainage system, which is designed to segregate clean surface water from potentially contaminated water. Dredgings will be pumped into the site using water derived from the River Mersey and the resultant effluent discharge from the pump shore process, which would solely comprise dredging carrier water, shall be made into the Mersey Estuary at National Grid Reference (NGR) SJ 3570 8358, which is consistent with the Waste Management License 50397 for a dredgings processing facility at the site (W.Maher & Sons Ltd).	Unlikely due to measures in place and nature of the proposals.	Siltation Habitat loss Toxic contamination	Not significant.
	Mersey Estuary (SSSI, SPA and Ramsar site)	E	On site	N/A					

						There will be strict waste acceptance procedures in place at the site to prevent the acceptance of non-conforming waste types.			
Pests, vermin, and scavenging birds									
Pests and birds attracted by wastes.	New Ferry (SSSI)	N	445	1%	Land. Atmosphere.	The wastes to be processed on site are not putrescible and will not attract pests. The Site Manager and operatives will be vigilant and regular inspections of the site will be carried out, including for pests and scavenging birds. All site operatives will be vigilant and report any problems to the Site Manager.	Very unlikely due to nature of the wastes.	Predation Habitat loss	Not significant.
	Mersey Estuary (SSSI, SPA and Ramsar site)	E	On site	8%					

Conclusion

Eastham Dredgings Processing Facility will be operated by Boskalis Westminster Ltd and is located within 1km of the New Ferry SSSI and Mersey Estuary SSSI, SPA and Ramsar. This Habitats Risk Assessment has been prepared to assess the impact of the facility on these Statutory Habitats. The facility has been operated previously with the same activity, by a third party unconnected to Boskalis.

The risk assessments detailed in the tables above indicate that site activities are unlikely to cause any disturbance to the Statutory Designated Sites due to the site practices, operational procedures and management techniques employed by the applicant. The management techniques will ensure that any fugitive emissions will be adequately contained and managed.

The operator will employ mitigation measures where appropriate, to mitigate the risk of noise, dust and odour, and therefore it is considered that the designated sites are highly unlikely to be affected by the proposal.