

Beyond Waste

Dust Risk Screening Review

Site: Roath Dock Cardiff

Produced for: Associated British Ports

Re-Submission Version 1.2 06.10.2015



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Author: Alan Potter

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Title	Dust Risk Screening Review
Status	reSubmission Version 1.2
For Attn of	Natural Resources Wales

	Name	Signature	Date
Author	Alan Potter CEnv. MCIWM UKELA IEMA qualified auditor		06.10.15

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Dust Risk Assessment

1. Introduction

This dust risk screening review has been prepared to support a permit application to operate a biomass & RDF export facility at Roath Dock, Cardiff. It is intended to satisfy the requirement of the H1 regulatory guidance for an assessment of the potential dust risks presented by the proposed activity. The focus of this assessment is on fugitive dust emissions, given the nature of the waste material and handling operations at the site.

2. Dust Sources, Release Points and Impacts

2.1. Overview

Wood chip handling operations can generate dust which if not effectively controlled may be released into the environment. If a release is of sufficient magnitude and within proximity of a sensitive receptor then it may adversely affect air quality in the vicinity of the site.

This assessment identifies the potential sources of dust, sensitive receptors and the pathways between the source and the receptors. It then considers how any potential linkages identified can be broken by specifying mitigation measures. In this way the dust source is isolated from the receptor and no significant impact on the receptor should occur.

2.2. Risk Screening: Dust Source Characterisation and Release Points

2.2.1. The Proposed Operation

The proposed operation comprises wood chip and RDF bale delivery, storage, handling and loading onto ships. With regards to woodchip a delivery will comprise between 20-25 tonnes of wood chip. This will generate a maximum wood stockpile of 5,000 tonnes. The composition of the material will be consistent with the listing in the [Appendix 1](#). RDF bales will comprise of 20 tonnes per lorry load and will typically be stored in stockpiles of 3,000-4,000 tonnes to a maximum of 5,000 tonnes prior to loading onto ships.

Save for storage of RDF which is considered not to give rise to dust risk, the proposed operation will operate in compliance with the terms of Standard Rules Permit SR2011No4. This permit template is offered to Operators who can comply with the Generic Risk Assessment ([Appendix 1](#)) which determines the residual risk of dust emissions as being low for such operations. The relevant section is reproduced in [Appendix 1](#).

Operations likely to result in the uncontrolled release of dusts include the delivery of wood chip, the handling of woodchip and the loading of wood chip. An assessment of the potential release points has been undertaken along with an assessment of dust risk along with identification of inherent characteristics of the operation that serves to mitigate the risk. This is presented in Table 1.

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Table 1: Potential Dust Sources, Release Points and Embedded Mitigation

Activity	Assessment Characteristic	Initial Emission Risk Class	Embedded mitigation	Adjusted Dust Emission Risk Class
Delivery	Wood chip can release dust in transport and when being tipped on site	Moderate/High	Minimum particle size specification to suppliers i.e. loads refused if too dusty Sheeting of delivery vehicles Delivery using Roll on, Roll offs Mobile dust suppression (fine water spray)	Moderate
Storage	Dried chips and associated dust can be prone to windblow and surfaces may be dusty	High	Minimum particle size specification to suppliers Mobile dust suppression (fine water spray)	Moderate
Loading	Loading of chips in open jawed equipment and dropping from height	High	Use of suitable equipment to load Mobile dust suppression (fine water spray)	Moderate
Track out	Carriage of dust on vehicle wheels	Moderate	Site surface and access road tarmaced and concrete and regularly swept	Low

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3. Potential Receptors

Receptor	Sensitive Characteristics & Reasons for Designation	Sensitivity Level	Sensitivity Assessment Through Embedded Mitigation	Residual Risk
Severn Estuary	<ul style="list-style-type: none"> Severn Estuary Special Areas of Conservation (SAC) Code: UK0013030 Council Directive 92/43/EEC of 21st May 1992 on the conservation of natural habitats and of wild fauna and flora, (Annex 1 Habitats and Annex II Species) Habitat Classes: Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins) 99.0% & Salt marshes, Salt pastures, Salt steppers 1.0%. Resident <i>Alosa Alosa</i> species is very rare. The area suffers from natural erosion of habitats and the presence of high sediment loads. Vulnerable to large-scale interference, mainly as a result of human actions. Several management mechanisms that seek to secure sustainable management of the Severn Estuary. Proximity 638 metres South-East 	Moderate/High	<p>The residual impact on the Estuary associated with the proposed operation would be nominal, based on the following conclusions:</p> <ul style="list-style-type: none"> Effective Operational Procedures, Dust Management Plan Onsite controls ensure that the potential for any emissions to reach the Estuary is low The particulates are non-toxic The Estuary would take any settling particulates and wash them out to sea as the estuary is tidal Any such emissions would not adversely impact the Ecological (Moderate) and Chemical Quality (Good) of the Severn Estuary. (EMS Core Schedules Document Appendix 2) <p>NB: The Monitoring points identified through the EA's <i>What's in my backyard</i> website tool do not provide any additional information as shown in EMS Core Schedules Document Appendix 3</p>	Low
Severn Estuary	<ul style="list-style-type: none"> Birds Directive Site (site contributes to achieving the aims of this Directive) These birds visit outside of the breeding season. Council Directive 92/43/EEC of 21st May 1992 on the conservation of natural habitats and of wild fauna and flora, (Annex 1 Habitats and Annex II Species) Special Protection Area (SPA) Code: UK9015022 Importance during spring and autumn migration periods for waders moving up the west coast of Britain, as well as in the winter for large numbers of waterbirds, specially swans, ducks and waders. Proximity 635 Metres South-East 	Moderate/High		Low
Severn Estuary	<ul style="list-style-type: none"> Ramsar Site Code: UK11081 Qualifying features consist of Ramsar Criterion 1,3,4,5,6,8 The site has 9 Conservation objectives and 6 vulnerabilities Council Directive 92/43/EEC of 21st May 1992 on the conservation of natural habitats and of wild fauna and flora, (Annex 1 Habitats and Annex II Species) Proximity 626 metres South-East 	Moderate/High		Low
Severn Estuary	<ul style="list-style-type: none"> Site of Special Scientific Interest (SSSI) Code: 33WGX Internationally important for <i>Dunlin Calidris alpine</i> and supports about 7.5% of the British wintering population of this species. Overall, it supports 10.5% of the British wintering population. Important numbers of <i>Shelduck Tadorna tadorna</i> and <i>Wigeon Anas Penelope</i>. Migratory routes Overall interest depends on its large size and on the processes and interrelationships between the intertidal and marine habitats and its fauna. Council Directive 92/43/EEC of 21st May 1992 on the conservation of natural habitats and of wild fauna and flora, (Annex 1 Habitats and Annex II Species) Proximity 636 metres South-East 	Moderate/High		Low
Queen Alexandra Dock Monument	<ul style="list-style-type: none"> Scheduled Ancient Monument (SAMs) Number: GM618 Queen Alexandra Dock Harbour Defence Gun Emplacement Amenity Enjoyment Proximity 1.6 kilometres South-West 	Low		<p>The residual impact on the SAMs associated with the proposed operation would be nominal, based on the following conclusions:</p> <ul style="list-style-type: none"> Effective Operational Procedures, Dust Management Plan & Environmental Incident Response Plan Onsite controls ensure that the potential for any emissions to

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			reach the SAMs is low Due to the substantial distance from the proposed operation to the SAMs any dust would be of such a diluted concentration to pose no impact	
Local Wildlife Sites	<ul style="list-style-type: none"> Local Wildlife Sites (also known as Sites of Importance for Nature Conservation, or SINCs) are wildlife rich areas, identified and selected for their local biodiversity value. Proximity within 500 metres 		<ul style="list-style-type: none"> As the identity of the LWS has not been disclosed it has not been possible to assess this potential receptor. 	
Great Water-Parsnip	<ul style="list-style-type: none"> General protection under the Wildlife and Countryside Act 1981 Protected Species Uk Biodiversity Action Plan Species (Management Needs of the plant) Proximity within 500 metres North 	N/A	<ul style="list-style-type: none"> LRC Wales Data Access Tool shows the species to be of historical interest only as the last date recorded was 1886 (see screenshot in EMS Core Schedules Document Appendix 4) 	N/A

Table 2: Potential Sensitive Receptors, Sensitivity and Assessment

The Site Location Plan in [Appendix 2](#) shows the site (ST 20342 74877) is situated within the dock area and is isolated. It is bound to the northwest and northeast by dock water and by surrounding port activities to the south, east and west. The nearest receptors that might be considered sensitive beyond the port activities are with 500m of the site operation. Table 2 identifies sensitive receptors within the vicinity of the site as specified in the Nature and Heritage Conservation Report provided by Natural Resources Wales (07/04/2015).

The location is therefore significantly separated from receptors that might be affected through the transfer of airborne dust from the site. This separation is a major factor in reducing the risk.

The adjacent water body itself is not considered to be at risk of contamination from the wood dust due to its essentially non toxic nature.

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4. Mitigation

All reasonable measures will be taken to avoid the proposed operations creating dust and for the transfer of dust offsite. Implementation of the measures set out in Table 3 will reduce the risk to a low and therefore acceptable level.

Activity	Mitigation
Delivery & Track Out	<ul style="list-style-type: none">• Speed limits adhered to for all vehicular movements.• All vehicles carrying loose material sheeted.• Use of wheel washing of vehicles leaving site if necessary.• Site roads swept on a regular basis to ensure the access road remains clear of dust.• Site roads damped down as necessary.
Storage	<ul style="list-style-type: none">• Any stockpiles damped down as necessary .• Double handling avoided• All material stored will be removed per campaign
Loading	<ul style="list-style-type: none">• Drop heights to boat minimised at all times
Monitoring	<ul style="list-style-type: none">• Ongoing visual monitoring undertaken by site personnel to ensure no offsite escape of dust.• Recording of dust events• Monitoring of wind conditions to avoid loading under high risk conditions• Liaison with, EHO and Natural Resources Wales as necessary

Table 3: Dust Mitigation Measures

The operation will comply as if it were operating within the terms of the Standard Rules Permit plus any additional controls required by a bespoke permit to cover the RDF storage activity. Such a permit normally specifies that "fugitive emissions of substances shall not cause pollution". Therefore all the operations will be subject to this overarching requirement. In order to suppress dust from site operations a mobile dust suppression system will be deployed.

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Conclusion

This risk assessment has demonstrated that the proposed operation will not give rise to unacceptable impacts providing the embedded and proposed operational controls are implemented effectively. The results following the format of the H1 regulatory guidance are presented in Table 4 overleaf. This conclusion is also reached on the basis that residential flats are more than 500 metres away from the site across open water in a north westerly direction (while the prevailing wind direction is from the south west). The Severn Estuary is over 600 m from the site and in any event is not considered vulnerable to wood dust deposition.

For the purposes of validating the risk assessment findings we cite the generic risk assessment produced by the Environment Agency in relation to the Standard Rules permit in [Appendix 1](#).

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Hazard	Receptor	Pathway	Risk management	Probability of exposure	Consequence	What is the residual 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 be taken to reduce the risk? If it occurs who is responsible	How likely is the contact?	What is the harm that might be caused?	What is the risk that still remains?
Light wood chip	People	Windblown wood chip	Following actions specified Visual monitoring Manager responsible for checking wind strength and direction and stopping operations if needed	Wood chip could reach surrounding premises when strong wind blows in that direction for a limited number of days a year. The management actions identified should prevent this from happening	Nuisance- dust on cars etc	Not significant
Light wood chip	Severn Estuary SSSI, SAC, SPA, Ramsar SAM	Windblown dust	As above	Wood chip could be deposited into the water	Settling on surface	Not significant

Table 4: Concluding Residual Dust Risk

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References

1. Generic risk assessment for standard rules set number SR2011No4 Environment Agency Version 2.0.
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3. H1 Annex A – Amenity & accident risk from installations and waste activities v 2.1 December 2011.
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7. Natural England. June 2014. European Site Conservation Objectives for Severn Estuary Special Protection Area Site Code: UK9015022. Version 2.0.
8. Notified to the Secretary of State on 2 February 1989. Severn Estuary Site of Special Scientific Interest (SSSI_ notified under Section 28 of the Wildlife and Countryside Act 1981 (as amended).
9. HRA Report. March 2014. European Site Characterisations.
10. JNCC. 2008. Information Sheet on Ramsar Wetlands (RIS). Version 3.0
11. EU. Natura 2000 Network Viewer. <http://natura2000.eea.europa.eu/#>
12. JNCC. 2011. Natura 2000 Standard Data Form for Special Protection Areas (SPA), For Sites Eligible For Identification As Sites Of Community Importance (SCI) And For Special Areas Of Conservations (SAC).
13. Council Directive 2009/147/EC Of The European Parliament And Of The Council Of 30 November 2009 on The Conservation Of Wild Birds.

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Appendix 1: Generic Risk Assessment for Standard Rule Compliant Wood Processing/Storage Sites (SR2011 No4)

Location of environmentally sensitive sites (km / m):		Greater than 500m (see below)							
Risk assessment carried out by:		Environment Agency							
Date:		25-Jun-12							
The scope of the permit and associated rules is defined by the following risk criteria:									
Parameter 1	Permitted activities - The storage of waste (R13) treatment of waste wood for recovery (R3).								
Parameter 2	Permitted waste types - Non Hazardous as listed in rules other than waste consisting solely or mainly of dusts, powders or loose fibres or waste in liquid form								
Parameter 3	Quantity of waste accepted at the facility: < 75,000 tonnes per annum.								
Parameter 4	Waste shall be stored and treated on an impermeable surface with sealed drainage system when located within groundwater source protection zones 1 or 2. Outside groundwater source protection zones 1 and 2 wastes shall be stored and treated on an impermeable surface with sealed drainage system or hardstanding.								
Parameter 5	The only point source discharges to controlled waters or groundwater, are surface water from the roofs of buildings and from areas of the facility not used for the storage or treatment of wastes.								
Parameter 6	The activities shall not be carried out within 500m of a European Site (candidate or Special Area of Conservation, proposed or Special Protection Area or Ramsar site) or a Site of Special Scientific Interest (SSSI).								
Parameter 7	The activities must be 10 metres from any watercourse and must not be within 50 metres of any well, spring or borehole used for the supply of water for human consumption. This must include private water supplies;								
Parameter 8	The activities shall not be carried out within 250 metres of the presence of great crested newts, where it is linked to the breeding ponds of the newts by good habitat; 50 metres of a site that has relevant species or habitats protected under the Biodiversity Action Plan that the Environment Agency considers at risk to this activity or 50 metres of a National Nature Reserve (NNR), Local Nature Reserves(LNR), Local Wildlife Site (LWS), Ancient woodland or Scheduled Ancient Monument.								
Abbreviations:	SR - Standard Rule								
Data and information				Judgement				Action (by permitting)	
Receptor	Source	Harm	Pathway	Probability of	Consequence	Magnitude of risk	Justification for magnitude	Risk management	Residual risk
What is at risk? What do I wish to protect?	What is the agent or process with potential to cause harm?	What are the harmful consequences if things go wrong?	How might the receptor come into contact with the source?	How likely is this contact?	How severe will the consequences be if this occurs?	What is the overall magnitude of the risk?	On what did I base my judgement?	How can I best manage the risk to reduce the magnitude?	What is the magnitude of the risk after management? (This residual risk will be controlled by Compliance Assessment).
Local human population	Releases of particulate matter (dusts) and micro-organisms (bioaerosols).	Harm to human health - respiratory irritation and illness.	Air transport then inhalation.	Medium	Medium	Medium	Permitted waste types are non hazardous and do not include dusts, powders or loose fibres (with the exception of saw dust) and have a low potential to produce bioaerosols, but the treatment activities will produce particulate matter so a medium magnitude risk is estimated. The permitted level of throughput and potential size of the facility means there is potential for exposure if anyone is living or working close to the site (apart from the operator and employees).	SR - Emissions of substances not controlled by emission limits (excluding odour and noise) shall not cause pollution. The operator shall not be taken to have breached this rule if appropriate measures, including, but not limited to, those specified in any approved emissions management plan, have been taken to prevent or where that is not practicable, to minimise, those emissions. SR (if required) - emissions management plan.	Low
Local human population	As above	Nuisance - dust on cars, clothing etc.	Air transport then deposition	High	Low	Medium	As above. Local residents often sensitive to dust.	As above	Low

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Appendix 2: Site Location Plan

Red circle indicates 500 metre radius from the centre of proposed operation (MAGIC)

