

Beyond Waste

Controlled Waters Risk Screening Review

Site: Roath Dock Cardiff

Produced for: Associated British Ports

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Beyond Waste

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Controlled Waters Risk Assessment

1. Introduction

This 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 regulatory H1 guidance for an assessment of the potential surface water risks.

This risk screening review document has been written with reference to :

1. Generic risk assessment for standard rules set number SR2011No4 Version 2.0 Environment Agency (June 2012)
2. Guide on assessing discharges to surface water discharges (H1 Annex D-Basic Surface water discharges v2.3) part of the Regulatory H1 Environmental Risk Assessment framework. Environment Agency (September 2014)
3. Pollution Prevention Guidelines 18: Managing Fire Water & Major Spillages Environment Agency (June 2010)
4. Fire Prevention Plan Guidance Version 2 Environment Agency (2015).
5. Reducing fire risk at waste management sites issue 1 WISH (October 2014)

Annex D of the H1 regulatory guidance has been used as it is aimed at waste operations with simple discharges to water. It states that those activities with "insignificant impacts upon the receiving environment may be screened from the need for a detailed assessment." It also states "You do not need to work through Annex D1 if your activity does not involve the discharge of hazardous pollutants to surface waters, or Annex D2 if your application does not include the discharge of substances described as sanitary or other pollutants." The H1 regulatory guidance also requires consideration of the impact of abnormal conditions or events.

2. Emission Sources, Release Points and Impacts

2.1. Overview

Wood chip storage operations has the potential to generate leachate which if not effectively controlled may be released into the surface water environment. If a release is of sufficient magnitude and within proximity of a sensitive receptor then it may adversely affect water quality in the vicinity of the site. The RDF bales being wrapped in impermeable plastic should not give rise to any potential polluting discharge.

This assessment identifies the potential sources of discharges, 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 discharge source is isolated from the receptor and no significant impact on the receptor would occur.

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2.2 Risk Screening: Emission 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 3000 tonnes. The composition of the material will be consistent with the listing used to generate the Generic Risk Assessment supporting Standard Rules Permit SR2011No4. RDF delivery will comprise between 20 tonnes per delivery bales over a campaign period of a fortnight. This will generate a typical stockpile of 3000-4000 tonnes to a maximum of 5000 tonnes, prior to loading onto ships for export.

Save for the acceptance of RDF the proposed operation will comply wholly with the Standard Rules Permit SR2011No4. This permit template is offered to Operators who can comply with the Generic Risk Assessment which amongst other matters determines the residual risk of emissions to surface water as being low for such operations. The relevant section is reproduced in [Appendix 1](#).

Operations likely to result in the uncontrolled release of emissions to surface water include the percolating of rainwater through the stockpile producing leachate; the failure of machine pipework resulting in release of hydraulic fluid and the release of water used to extinguish a fire. An assessment of the potential release points has been undertaken with an assessment of emission risk along with identification of inherent characteristics of the operation that serves to mitigate the risk. This is presented in Table 1.

Activity	Assessment Characteristic	Initial Emission Risk Class	Embedded mitigation	Adjusted Emission Risk Class
Storage	Rainwater can percolate through stockpile resulting in production of leachate	Moderate	<ul style="list-style-type: none"> Material is absorbent Stockpiles are inherently warm and therefore any rainwater likely to evaporate. Interceptors with isolation valve 	Low/ Moderate
Abnormal (Hydraulic fluid release)	Failure of pipework on machine	High	<ul style="list-style-type: none"> Machine subject to programme of preventative maintenance Spillages contained within interceptors with isolation valve 	Low
Abnormal Fire Water	Release of contaminated water used to extinguish fire	High	<ul style="list-style-type: none"> Specification to eliminate materials that may promote spontaneous combustion conditions Secure site through manned access to prevent unauthorised access and arson risk Adoption of no smoking/ignition sources and hot work exclusion areas within vicinity with supporting signage Interceptors with isolation valve 	Moderate

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

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3. Receptors

The Site Location Plan in [Appendix 2](#) shows the environmental setting of the site (ST 20312 74837). It is situated within the dock area and is isolated. It is bounded to the northwest and northeast by dock water and by surrounding port activities to the south, east and west. Hence receptors in the immediate vicinity of the proposal are primarily port related in nature.

As shown in the Site Drainage Plan in [Appendix 3](#) the site is laid to falls to a drainage system that discharges to the internal dock water of Roath Dock. Roath Dock is located at the end of a dock system with Roath Basin and Queen Alexandria Dock intervening between it and the Severn Estuary. There are a number of lock gates controlling flows into and out of the docks/basins. The lock gates are closed except where vessels are in transit. For any discharge to travel to the Severn Estuary it would need to first pass through the dock water and then the lock gates and onwards to the intervening docks and their lock gates so any such potentially polluting discharge would be isolated. It should also be noted, that surface water drainage will pass through an interceptor prior to discharging into the dock itself so there is no additional impact predicted. Therefore, it can be screened out under normal operating conditions.

The 'What's in My Backyard' function of the Environment Agency website shows the site is not located on Groundwater Source Protection Zone 1 or 2. The map is reproduced in [Appendix 4](#). Therefore, under standard rules permit conditions the woodchip may be stored on hard-standing instead of an impermeable surface with sealed drainage system. The RDF bales will be stored on an impermeable concrete surface on the dockside.

Use of an interceptor provides a controlled point of discharge as required by the definition of a Sealed Drainage System as "*a drainage system with impermeable components which does not leak and which will ensure that no liquids will run off a surfaced area other than via the system. Except where they are lawfully discharged, all liquids entering the system should be collected in a sealed sump.*" (How To Comply With Your Environmental Permit (Version 6 - June 2013)

Guidance states that, "*discharges of uncontaminated surface water do not need a permit*" and "*Discharge of surface water (from public roads and parking areas) is generally considered acceptable if it has passed through a well-designed and maintained oil separator*" *Environment Agency Water Discharge and Groundwater Activity Permits (EPR 7.01) v3 p13*. In view of its nature it is considered that the discharge to the dock water does not warrant specific consent under normal conditions. Where an abnormal discharge is predicted the interceptors will be isolated and the contents will be sampled. In the event that sampling indicates that direct discharge would be problematic, alternative arrangements will be made to dispose of the contents of the sealed drainage system.

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4. Mitigation

In view of the nature of the operation it is considered that the risk of impacts associated with the proposed operation occurring on controlled waters will be low under normal operating conditions. Under abnormal conditions it is considered to be moderate without additional controls.

In this case, the principal risk factor is the uncontrolled release of fire water utilised to douse a fire. A fire prevention risk assessment has been undertaken and associated Fire Prevention procedures (See Fire Prevention Plan) have been developed. These are consistent with the Agency's (NRW) Fire Prevention Plan guidance (2015) and WISH Guidance. In addition, advice from the local Fire & Rescue Service will be sought. Normal advice is that they would seek to deal with any fire in the stockpile by isolating and dragging out that part of the pile that is ignited. They would only seek to apply water as a last resort and then only to extinguish the fire if it was at risk of spreading. Otherwise it is preferred to apply a 'controlled burn' (as per Fire Prevention Plan guidance) for the section of the stockpile that has been isolated. Where it does prove necessary to douse the fire the site drainage system will be isolated. This approach to fire extinguishing minimises the risk of fire water discharge from the site.

All reasonable measures as set out in Table 2 will be taken to reduce the risk of uncontrolled discharge to surface waters to a low and therefore acceptable level.

Activity	Mitigation
Storage	<ul style="list-style-type: none">• Material stored for no longer than 3 month.
Abnormal (Hydraulic fluid release)	<ul style="list-style-type: none">• Not applicable
Abnormal Fire Water	<ul style="list-style-type: none">• Use of non water based extinguishing practices including isolation and controlled burn• Interceptors will isolate any potential pollutants from discharging into the dockwater via isolation valve
Monitoring	<ul style="list-style-type: none">• Ongoing temperature monitoring• Recording of elevated temperature events & corrective action taken• Liaison with local Fire & Rescue Service and Natural Resources Wales as necessary

Table 2: Discharge Mitigation Measures

The operation will comply wholly with the terms of the Standard Rules Permit and any additional controls required by a bespoke permit specifically addressing the baled RDF. Such a permit normally specifies that "Emissions of substances not controlled by emission limits (excluding odour) shall not cause pollution". Therefore all the operations will be subject to this overarching requirement.

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Conclusion

This risk assessment has demonstrated that the proposed operation will not give rise to discharges to water that cause unacceptable impacts providing the embedded and proposed operational controls are implemented effectively. The results following the format of the regulatory H1 guidance are presented in Table 3 overleaf.

For the purposes of validating the risk assessment findings for woodchip storage the generic risk assessment produced by the Environment Agency in relation to the Standard Rules permit is included 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?
Leachate from wood chip stockpile & RDF Bales	Severn Estuary SSSI & Ramsar	Discharge via surface water system and then via dock water	Following actions specified Surface water system isolated through interceptors with isolation valve Drainage system integrity inspected on annual basis	Unlikely as system isolated. If failure then discharge would be to dock water. Dock water is isolated from Severn Estuary by lock gates and intervening docks/basins.	Discharge of contaminants and particulate matter	Not significant
Firewater	As above	As above	As above plus non water based fire extinguishing practices adopted Surface water system isolated through interceptors with isolation valve	Unlikely as system will be isolated.	Discharge of contaminants and particulate matter	Not significant

Table 3: Concluding Residual Discharge Risk

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References

1. Generic risk assessment for standard rules set number SR2011No4 Version 2.0 Environment Agency (June 2012)
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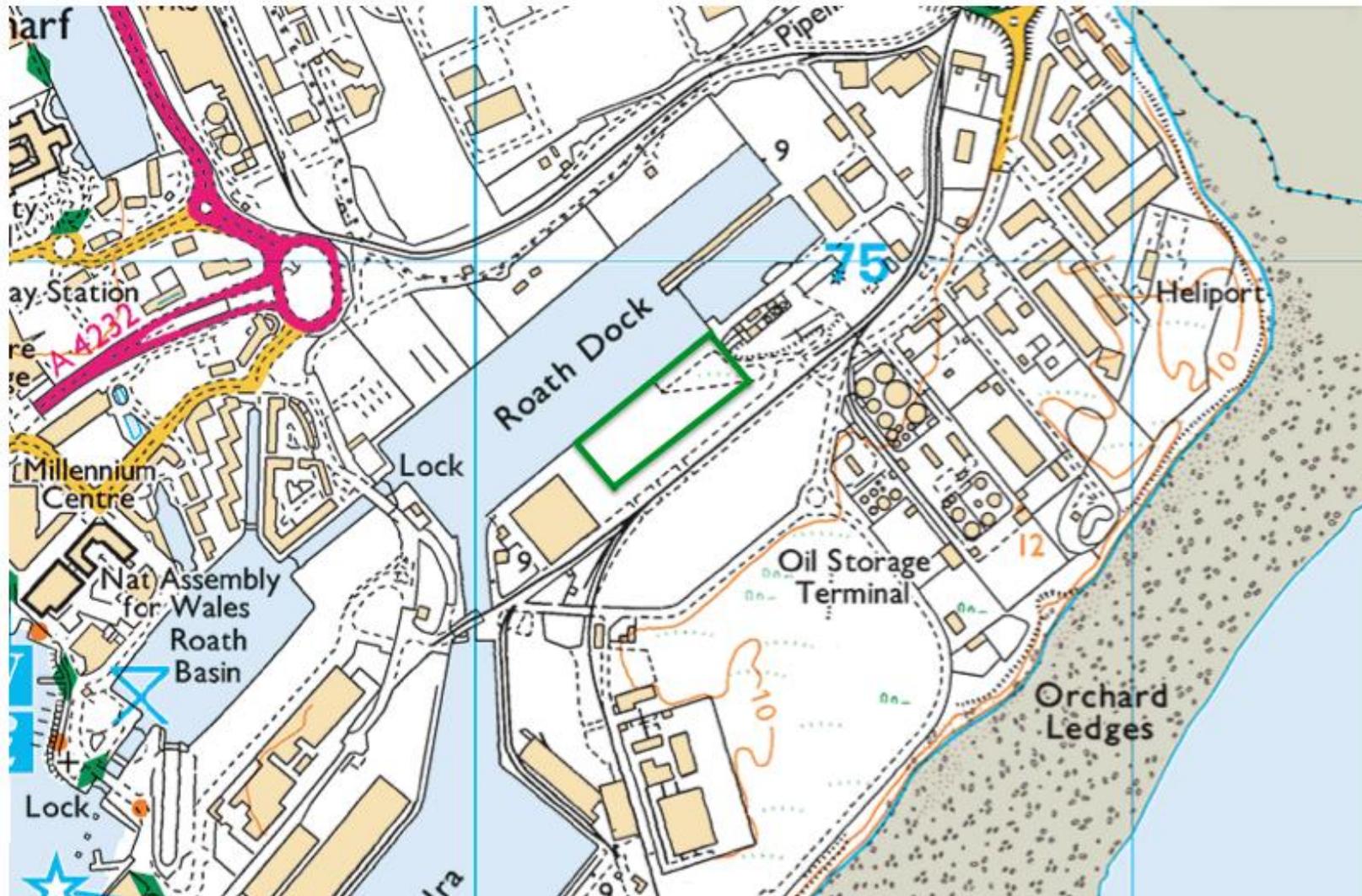
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Appendix 1: Generic Risk Assessment for Standard Rule Compliant Wood Export Sites SR2011No4 Version 2.0

Data and information				Judgement				Action (by permitting)	
Receptor	Source	Harm	Pathway	Probability of exposure	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).
All surface waters close to and downstream of site.	Spillage of liquids, leachate from waste, contaminated rainwater run-off from waste e.g. containing suspended solids.	Acute effects: oxygen depletion, fish kill and algal blooms	Direct run-off from site across ground surface, via surface water drains, ditches etc.	Low	Low	Low	Permitted waste types do not include sludges or liquids so only a medium magnitude risk is estimated. No point source emissions to water are permitted, but there is potential for contaminated rainwater run-off from wastes stored outside buildings especially during heavy rain.	SR - All liquids shall be provided with secondary containment.... (applies to non- wastes such as fuels). Run-off restricted by SR - Emissions of substances not controlled by emission limits , with appropriate measures.	Very low
All surface waters close to and downstream of site.	As above	Chronic effects: deterioration of water quality	As above. Indirect run-off via the soil layer	Low	Low	Low	Waste types are non-hazardous so harm is likely to be temporary and reversible.	As above	Very low
Groundwater	As above	Chronic effects: contamination of groundwater, requiring treatment of water or closure of borehole.	Transport through soil/groundwater then extraction at borehole.	Low	Low	Low	Permitted wastes unlikely to contaminate groundwater.	As above	Very low
Local human population	Contaminated waters used for recreational purposes	Harm to human health - skin damage or gastro-intestinal illness.	Direct contact or ingestion	Low	Medium	Low	Unlikely to occur, but might restrict recreational use.	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.	Very low
Protected sites - European sites and SSSIs	Any	Harm to protected site through toxic contamination, nutrient enrichment, smothering, disturbance, predation etc.	Any	Medium	Medium	Medium	Waste operations may cause harm to and deterioration of nature conservation sites.	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. At 500 metres or above, the potential hazards from the permitted activities pose a low risk to the broad sensitivity of species and habitats groups. The standard permit only applies at this distance or more. It is also a requirement of SR. The activities shall not be carried out	Low

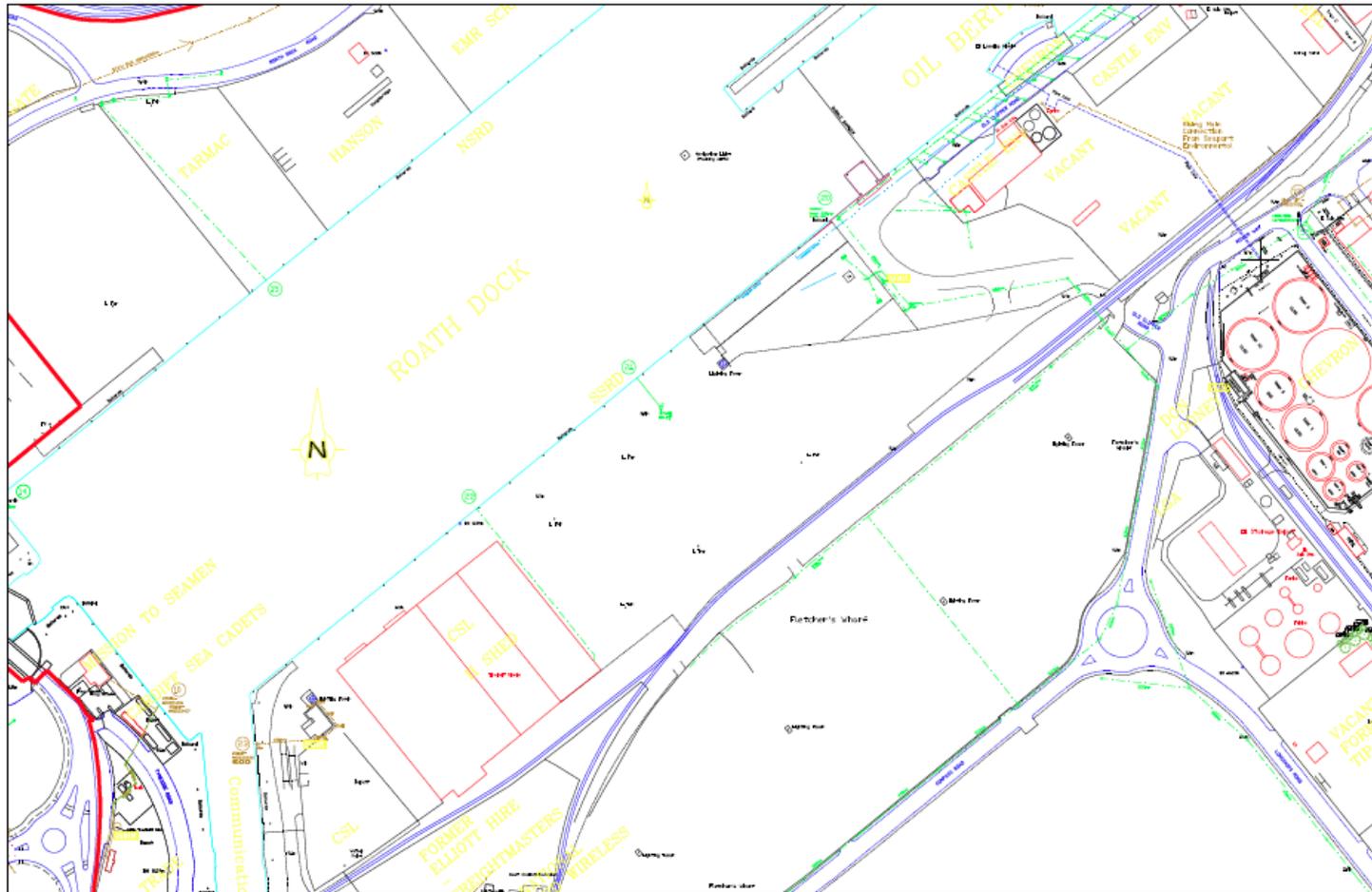
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Appendix 2: Site Location Plan (At Scale 1:25000)



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Appendix 3: Site Drainage Plan



Controlled Waters Risk Assessment

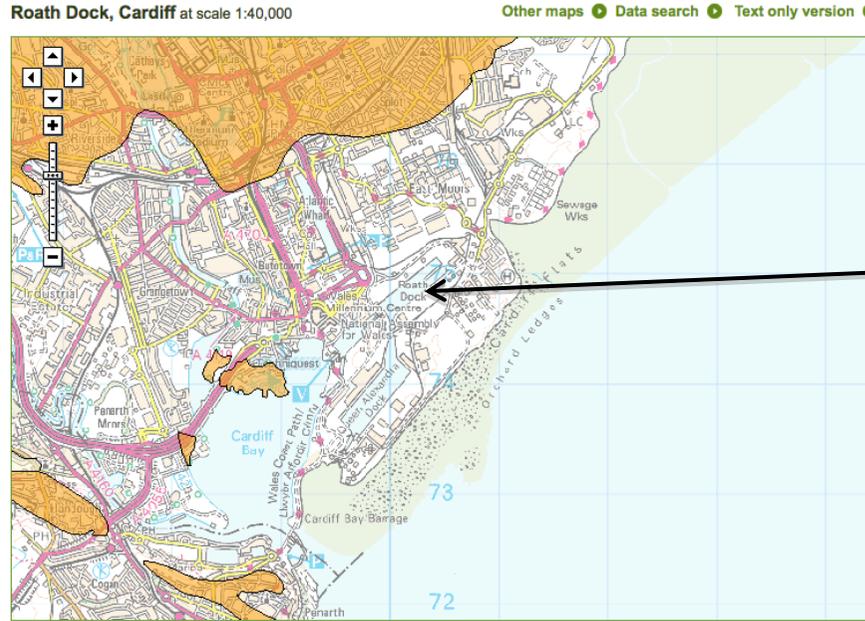
Appendix 4: Groundwater Map Extract

Enter a postcode or place name: Other topics for this area...

Groundwater

Map legend

- Groundwater source protection zones
- Inner zone (Zone 1)
- Inner zone - subsurface activity only (Zone 1c)
- Outer zone (Zone 2)
- Outer zone - subsurface activity only (Zone 2c)
- Total catchment (Zone 3)
- Total catchment - subsurface activity only (Zone 3c)
- Special interest (Zone 4)
- Aquifer Maps - Superficial Deposits Designation
- Aquifer Maps - Bedrock Designation
- Groundwater Vulnerability Zones
- Major Aquifer High
- Major Aquifer Intermediate
- Major Aquifer Low
- Minor Aquifer High
- Minor Aquifer Intermediate
- Minor Aquifer Low
- Other national environmental organisations



Site Location

Customers in Wales - From 1 April 2013 Natural Resources Wales (NRW) has taken over the responsibilities of the Environment Agency in Wales. © Environment Agency copyright and database rights 2015. © Ordnance Survey Crown copyright. All rights reserved. Environment Agency, 100026380. Contains Royal Mail data © Royal Mail copyright and database right 2015. This service is designed to inform members of the public, in line with our terms and conditions. For business or commercial use, please contact us.

More about Groundwater

Groundwater Source Protection Zones:

Groundwater provides a third of our drinking water. We ensure that your water is safe to drink defining Source Protection Zones. These zones help to monitor the risk of contamination from any activities that might cause pollution in the area.

The Source Protection Zones are not displayed at scales greater than 1:20,000 (Ordnance Survey 1:50,000 scale) as the data was only modelled to this level and is not accurate past this. They should not be compared against field