CROW METALS LTD

ENVIRONMENTAL RISK ASSESSMENT MARCH 2025

CROW/ERA/01

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Contents

Introduction

This Environmental Risk Assessment has been prepared for the proposed waste operations at Crow Metals Limited at their site on Ferry Lane in Rainham. The operators are submitting a new bespoke permit application for the operation of a Metal Recycling Site, accepting 75,000 tonnes per annum of waste metals which includes a small amount of hazardous wastes (batteries, catalytic convertors and cable) approximately 5,000 tonnes per annum.

The Environmental Risk Assessment has been carried out in accordance with the Environment Agency's Horizontal Guidance Note H1[1] and associated annexes[2].

Site Description

The site is both accessed and exited from Ferry Lane on the western site boundary via a single access area and is situated within the south Ferry Lane Industrial Area in Rainham. The site is bordered to the north, south and west by industrial areas and to the east is the Inner Thames SSSI and Rainham Marshes, Local Nature Reserve and Protected Habitat for Coastal and Floodplain Grazing Marsh.

The River Ingrebourne (to the west) and Thames River (to the south) are also designated protected waterbodies for migratory routes for European Eels.

The site currently comprises an office, various workshops and waste storage areas. The site is shared but operates entirely separately from a paper recycling company, Keeble Recycling who have their own separate yard area and access area.

Proposed Bespoke Permitted Activities

Crow Metals Ltd require a Bespoke Waste Permit to operate a Metal Recycling Site at 71 Ferry Lane, Rainham, Essex, RM13 9DB. The permit is required for the storage and treatment of metals prior to removal off site and the storage of a minimal amount of hazardous wastes.

Waste treatment processes which can be carried out on site will include the following:

- Sorting (using a material handler and by hand)
- Separation (by using a material handler and by hand)
- Shredding (by using mechanical shredder)

All incoming vehicles will be required to report to office weighbridge where their credentials can be checked prior to tipping. The details of the load will be recorded and the duty of care note/company documentation will be further checked by the operator to ensure that the load is acceptable at the site, including a visual check prior to the vehicle proceeding to the relevant tipping area.

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[1] Environment Agency, Horizontal Guidance Note H1, Overview Document, December 2011

[2] Environment Agency, H1 Annex A – Amenity and accident risks from installations and waste operations, December 2011, Annex F – Air, Emissions, December 2011, Annex G – Disposal or recovery of waste produced onsite, December 2011.

Any deviation from the procedures or problems with any loads will result in tipping facilities being suspended for the offending company. Loads which are not acceptable within the above terms will be rejected and returned to the producer.

Once a load has been accepted the driver will be asked to unsheet the vehicle (if it is sheeted) and a visual inspection of the contents will be carried out to ensure that the material complies with the EP. If non- compliant waste is discovered before deposit, the load will not be accepted, the driver will be informed to leave the site and dispose of the material at alternative facility.

The nature of bulk loads makes full inspection difficult until the load is deposited. If the load is considered acceptable the driver will be instructed to deposit it to the appropriate area on site. If the load is unacceptable following deposit, it will be reloaded and removed from the site or quarantined and removed as soon as practicably possible.

During the process of discharging waste materials the contents will be continuously visually inspected by trained personnel. If it is noticed that loads contain non-conforming wastes before discharge takes place, the driver is told not to discharge the load and to report to the site office to receive further instructions from site management. Any misdescribed waste subsequently identified will be recorded in the site diary and advice sought from the TCP/TCP and/or Environment Agency, if appropriate.

Waste Storage, Types and Quantities

The locations of the operational and storage areas are shown on Site Plan CROWSP01. The nature of operations at metal recycling site means that certain operational areas may change depending on quantities and processing requirements.

The main waste types handled on site will consist of ferrous and non-ferrous metals.

The site will accept 75,000 tonnes of waste into the site per annum, with a maximum site storage of 760 tonnes at any one time. The main wastes types which will be accepted and stored at the site are as follows: ferrous and non-ferrous metals, cable, batteries and catalytic convertors.

Assessment Methodology

A qualitative environmental risk assessment has been undertaken in accordance with the Environment Agency' s Horizontal Guidance Note H1[3] in order to identify and assess the potential hazards and risks associated with the proposed activities.

The risk assessment follows a tiered, four staged approach:

1. Identification of the potential hazards and risks associated with the proposed activity;
2. Assessment of the risks to check they are acceptable;
3. Identification of suitable remedial measures to control the risks, if necessary;
4. Presentation of the assessment findings.

Each stage has been completed in turn, with the findings detailed below.

Identification of Hazards and Risks

The following hazards and risks are considered relevant to the proposed activities and permit application:

- Fugitive emissions to land (e.g. leachate / surface runoff);
- Fugitive emissions to controlled waters (e.g. leachate / surface runoff);
- Fugitive emissions to air (e.g. dust, windblown litter);
- Waste;
- Odour;
- Noise;
- Pests
- Accidents / Spills.

The following hazards and risks are not considered relevant to the proposed activities and permit application and as such have not been assessed further:

- Global warming potential;
- Controlled releases to air;
- Controlled discharges to surface water;
- Controlled discharges to groundwater.

3 Environment Agency, Horizontal Guidance Note H1, Overview Document, December 2011

Receptors

The following receptors have been identified at the site, as shown in the Sensitive Receptors Map below (further information on receptors can be found in the Fire Prevention Plan CROWFPP01:

- Land (e.g. shallow soils underlying the site);
- Shallow Groundwater within the Alluvium superficial deposits;
- Surface water (River Thames 298m SW and River Ingrebourne 148m W);
- Air;
- Future site users;
- Surrounding site users within the wider industrial area;
- Local Wildlife (only where viable potential pollutant pathways are present) and ecologically sensitive receptors including Rainham Marshes Local Wildlife Site adjacent to the east; Inner Thames Marshes SSSI adjacent to the east;
- Risks to migratory European Eels (only where viable potential pollutant pathways are present).

Other sensitive receptors including groundwater abstractions and ancient woodland are not located within close proximity of the site and have therefore not been considered further.

Deep groundwater has not been considered further as a sensitive receptor as the bedrock geology comprises low permeability London Clay Formation. The London Clay Formation is a low permeability clay geology, with a very low porosity and permeability. As such this stratum is not anticipated to be a viable groundwater aquifer or capable of storing or transmitting significant quantities of groundwater. Any groundwater present will likely be held within discontinuous more granular lenses and be of limited value and low significance. The potential for significant mobilisation of contamination within this stratum is therefore very low. As such, the vertical mixing of shallow groundwater to deeper groundwater (Lambeth Group) can be discounted.

Assessment of Risks

The risk assessment is summarised in the Table below, focusing on the potential hazard, identified receptor and pathway. The purpose of the risk assessment is to assess these source – pathway – receptor linkages. The potential for a pollution event to occur is evaluated by determining how likely a problem is to occur (e.g. likelihood) and how serious the harm might be (e.g. consequence). The consequence is essentially a measure of the severity of a hazard and sensitivity of the receptor (e.g. aquifer type or end user). The risk assessment also takes into account the proposed risk management / control measure, thereby resulting in a residual risk. See Risk Assessment Table below.

TABLE 1 RISK ASSESMENT

Hazard	Receptor	Pathway	Risk Management	Probability of Exposure	Consequence	Residual Risk
ODOUR						
Smells from metal wastes stockpiles.	Site users and surrounding site users (industrial and dwellings) and ecologically sensitive sites	Air	It is highly unlikely that metal waste will omit any odour, although there is the possibility of non-permitted wastes being within loads that come to site. As per the Environmental Management System these will be rejected.	Unlikely	Odour annoyance may have more impact in summer months when temperatures are higher and people are outdoors.	Not significant if management techniques are followed as laid out in the EMS.
NOISE AND VIBRATION						
Engine noise and reverse warnings from site vehicles during deliveries and loading and engine noise associated with vehicles travelling to and from the site for waste deliveries and collections.	Site users and surrounding site users (industrial and dwellings) and ecologically sensitive sites	Surrounding sites are close enough for noise to be audible, however surrounding sites are noted to comprise a mixture of industrial and commercial activities only	Plant and machinery shall be serviced and maintained to ensure the acceptable noise levels at the nearest sensitive receptor are adhered to. Operations that generate noise will only take place between 0700 hrs and 1700 hrs Monday to Friday to minimise disturbance. Site users will wear appropriate personal protective equipment (PPE) such as ear defenders and ear plugs as necessary. Any complaints will be investigated, recorded and appropriate action taken. Regulators will be informed.	Noise sources will be introduced as a result of activity, however predominantly limited to specified working hours and likely to be intermittent (during deliveries and loading)	Nuisance resulting from potential complaints, however surrounding land uses are predominately industrial with similar noise sources	Not significant as per the Noise Impact Assessment. See NIA PC-25-0024-RPI and Noise Management Plan NMP PC-25-0024-RP2
Noise associated with waste tipping and processing - tipping of metal.	Site users and surrounding site users (industrial and dwellings) and ecologically sensitive sites	Surrounding sites are close enough for noise to be audible, however surrounding sites are noted to comprise a mixture of industrial and commercial activities only	Plant and machinery shall be serviced and maintained to ensure the acceptable noise levels at the nearest sensitive receptor are adhered to. Operations that generate noise will only take place between 0700 hrs and 1700 hrs Monday to Friday to minimise disturbance. Site users will wear appropriate personal protective equipment (PPE) such as ear defenders and ear plugs as necessary. Any complaints will be investigated, recorded and appropriate action taken. Regulators will be informed. Waste drop heights will be kept low in order to minimize noise and vehicle speed limits will be capped at 5 mph when moving empty skips around the site.	Noise sources will be introduced as a result of activity, however predominantly limited to specified working hours. Noise is likely to be continuous during operational hours.	Nuisance resulting from potential complaints, however surrounding land uses are predominately industrial with similar noise sources.	Not significant if management techniques are effective as stated in the Noise Impact Assessment. See NIA PC-25-0024-RPI and Noise Management Plan NMP PC-25-0024-RP2.

Hazard	Receptor	Pathway	Risk Management	Probability of Exposure	Consequence	Residual Risk
Noise associated with mobile plant material handler and shredder	Site users and surrounding site users (industrial and dwellings) and ecologically sensitive sites	Surrounding sites are close enough for noise to be audible, however surrounding sites are noted to comprise a mixture of industrial and commercial activities only	Plant and machinery shall be serviced and maintained to ensure the acceptable noise levels at the nearest sensitive receptor are adhered to. Operations that generate noise will only take place between 0700 hrs and 1700 hrs Monday to Friday in order to minimise disturbance. Site users will wear appropriate personal protective equipment (PPE) such as ear defenders and ear plugs as necessary. Any complaints will be investigated, recorded and appropriate action taken. Regulators will be informed. Waste drop heights will be kept low in order to minimize noise and vehicle speed limits will be capped at 5 mph when moving empty skips around the site.	Noise sources will be introduced as a result of activity, however predominantly limited to specified working hours and likely to be intermittent – mobile plant will only be operational when required to sorted large bulky items or move waste streams once a suitable amount has been accumulated)	Nuisance resulting from potential complaints, however surrounding land uses are predominately industrial with similar noise sources	Not significant if management techniques are effective as stated in the Noise Impact Assessment. See NIA PC-25-0024-RPI and Noise Management Plan NMP PC-25-0024-RP2.

Hazard	Receptor	Pathway	Risk Management	Probability of Exposure	Consequence	Residual Risk
FUGITIVE EMISSIONS TO AIR						
Dust generated from waste loading, unloading, processing and general operational areas.	Site users and surrounding site users (industrial and dwellings)	Windblown dust	The following technical guidance actions will be taken to reduce dust: Handheld hoses are present to dampen any potential dust that maybe generated when loading or unloading material. Any dust settled by the handheld hoses will be swept to ensure there will be no deposits of residue on the site surface or access roads. All external and internal roads will be swept as necessary by a forklift mounted brush. . Daily litter picking and dust level inspections will be undertaken by appropriately trained site operatives. All site boundaries will be inspected daily for windblown litter.	Dust could be generated onsite and potentially reach the surrounding site users	Nuisance – dust on cars, clothing etc however the surrounding land uses are predominantly industrial.	Low if management techniques are implemented as detailed in the EMS
	Ecologically sensitive sites			Dust could be generated onsite and potentially impact local wildlife and ecologically sensitive sites	Damage to habitat.	Low if management techniques are implemented as detailed in the EMS
	Migratory European Eels			Dust could be generated onsite and potentially impact migratory European Eels habitats.	Damage to habitat.	Low if management techniques are implemented as detailed in the EMS

Hazard	Receptor	Pathway	Risk Management	Probability of Exposure	Consequence	Residual Risk
FUGITIVE EMISSIONS TO WATER						
Leachate / surface run – off from the waste storage areas.	Groundwater (Secondary Undifferentiated Aquifer)	Infiltration through shallow soils	All storage and operational areas will be located on impervious concrete hardstanding. Site drainage system designed to prevent infiltration into shallow soils and potential mobilisation of contaminants.	Unlikely given the presence of impermeable surface across the site and design of the site drainage system (acting as a suitable barrier)	Pollution of shallow aquifer.	Not significant
	Surface Water (River Ingrebourne and Thames)	Infiltration through shallow soils and migration via baseflow	All storage and operational areas will be located on impervious concrete hardstanding. Site drainage system designed to prevent infiltration into shallow soils and potential mobilisation of contaminants.	Unlikely given the presence of impermeable surface across the site and design of the site drainage system (acting as a suitable barrier)	Pollution of controlled surface waters	Not significant
	Ecologically Sensitive Sites	Infiltration through shallow soils and migration via baseflow	All storage and operational areas will be located on impervious concrete hardstanding. Site drainage system designed to prevent infiltration into shallow soils and potential mobilisation of contaminants.	Unlikely given the presence of impermeable surface across the site and design of the site drainage system (acting as a suitable barrier)	Pollution of ecologically sensitive sites, habitat loss and damage	Not significant
	Migratory European Eels	Infiltration through shallow soils and migration via baseflow to surface water habitats for eels, uptake via food chains.	All storage and operational areas will be located on impervious concrete hardstanding. Site drainage system designed to prevent infiltration into shallow soils and potential mobilisation of contaminants.	Unlikely given the presence of impermeable surface across the site and design of the site drainage system (acting as a suitable barrier)	Loss of eels and pollution of eels habitat.	Not significant

Hazard	Receptor	Pathway	Risk Management	Probability of Exposure	Consequence	Residual Risk
Spills and leakages from the onsite fuel storage tanks	Groundwater (Secondary Undifferentiated Aquifer)	Infiltrations through shallow soils	The diesel tanks will be located on impervious concrete hardstanding and will be suitably bunded with integrated fill point.	Unlikely given the presence of impermeable surface across the site and design of the site drainage system (acting as a suitable barrier)	Pollution of shallow aquifer	Not significant if fuel storage is compliant with current technical guidance.
	Surface Water (River Ingrebourne and Thames)	Infiltration through shallow soils and migration via baseflow	The diesel tanks will be located on impervious concrete hardstanding and will be suitably bunded with integrated fill point.	Unlikely given the presence of impermeable surface across the site and design of the site drainage system (acting as a suitable barrier)	Pollution of controlled surface waters	Not significant if fuel storage is compliant with current technical guidance.
	Ecologically Sensitive Sites	Infiltration through shallow soils and migration via baseflow	The diesel tanks will be located on impervious concrete hardstanding and will be suitably bunded with integrated fill point.	Unlikely given the presence of impermeable surface across the site and design of the site drainage system (acting as a suitable barrier)	Pollution of ecologically sensitive sites, habitat loss and damage	Not significant
	Migratory European Eels	Infiltration through shallow soils and migration via baseflow to surface water habitats for eels, uptake via food chains.	The diesel tanks will be located on impervious concrete hardstanding and will be suitably bunded with integrated fill point.	Unlikely given the presence of impermeable surface across the site and design of the site drainage system (acting as a suitable barrier)	Loss of eels and pollution of eels habitat.	Not significant

Hazard	Receptor	Pathway	Risk Management	Probability of Exposure	Consequence	Residual Risk
FUGITIIVE EMISSIONS TO LAND						
Leachate / surface run – off from the off from the waste storage areas	Shallow soils	Infiltration through shallow soils	All storage and operational areas are to be situated on impervious concrete which will be regularly inspected and maintained throughout the lifetime of the permit. The surface water drainage system runs to a sealed holding pit which is maintained and emptied regularly.	Unlikely given the presence of impermeable surface across the site and design of the site drainage system (acting as a suitable barrier)	Pollution of shallow soils	Not significant
	Ecologically Sensitive Sites			Unlikely given the presence of impermeable surface across the site and design of the site drainage system (acting as a suitable barrier)	Damage to habitat	Not significant
	Migratory European Eels	Infiltration through shallow soils and migration to surface water habitats for eels, uptake via food chains.		Unlikely given the presence of impermeable surface across the site and design of the site drainage system (acting as a suitable barrier)	Loss of eels and pollution of eels habitat.	Not significant

Hazard	Receptor	Pathway	Risk Management	Probability of Exposure	Consequence	Residual Risk
Spills and leakages from the onsite fuel storage tank	Shallow soils	Infiltration through shallow soils	The diesel tanks will be situated on impervious concrete and will be compliant with current technical guidance including the presence of a double bund with 110% storage capacity. All surface water run - off will be channeled via gulleys to a sealed holding tank.	Unlikely given the presence of impermeable surface across the site and design of the site drainage system (acting as a suitable barrier)	Pollution of shallow soils	Not significant if fuel storage is compliant with current technical guidance
	Ecologically Sensitive Sites			Unlikely given the presence of impermeable surface across the site and design of the site drainage system (acting as a suitable barrier)	Damage to habitat	Not significant
	Migratory European Eels	Infiltration through shallow soils and migration via baseflow to surface water habitats for eels, uptake via food chains.		Unlikely given the presence of impermeable surface across the site and design of the site drainage system (acting as a suitable barrier)	Loss of eels and pollution of eels habitat.	Not significant
PESTS						
Flies maybe present associated with the storage of certain wastes. These may migrate off site to surrounding industrial sites and dwellings.	Surrounding site users (industrial and dwellings)	Airborne Transportation	Metal wastes are unlikely to attract pests any non-permitted wastes are taken off site as soon as possible. Regular inspections for vermin and flies will be carried out regularly by nominated personnel.	Unlikely to impact surrounding sites as the wastes will not attract pests.	Potential to spread disease and adverse impact on human health.	Very low if management techniques are implemented.

Hazard	Receptor	Pathway	Risk Management	Probability of Exposure	Consequence	Residual Risk
ACCIDENTS						
Leaks from the above ground fuel storage tank escaping the containment.	Shallow soils	Infiltration via drainage system and cracks in surface cover.	Fuel spillage kit will be located nearby. Site workers will be trained in its use. All storage and operational areas will be situated on hardstanding which will be regularly inspected and maintained throughout the life of the permit.	Very unlikely if appropriate containment measures are used.	Pollution of shallow soils	Not significant
	Groundwater (Secondary Undifferentiated Aquifer)	Infiltrations through shallow soils	Fuel spillage kit will be located nearby. Site workers will be trained in its use. The tank will be situated on impermeable surface which will be regularly inspected and maintained	Very unlikely if appropriate containment measures are used.	Pollution of shallow aquifer	Not significant
	Surface Water (River Ingrebourne and Thames)	Infiltration through shallow soils and migration via baseflow	Fuel spillage kit will be located nearby. Site workers will be trained in its use. The tank will be situated on an impermeable surface which will be regularly inspected and maintained throughout the life of the permit. Tank will be bunded in line with current technical guidance	Very unlikely if appropriate containment measures are used.	Pollution of controlled surface waters	Not significant
	Ecologically Sensitive Sites	Infiltration through shallow soils and migration via baseflow	Fuel spillage kit will be located nearby. Site workers will be trained in its use. The tank will be situated on an impermeable surface which will be regularly inspected and maintained throughout the life of the permit. Tank will be bunded in line with current technical guidance	Very unlikely if appropriate containment measures are used.	Damage to habitat and wildlife	Not significant
	Migratory European Eels	Infiltration through shallow soils and migration via baseflow to surface water habitats for eels, uptake via food chains.	Fuel spillage kit will be located nearby. Site workers will be trained in its use. The tank will be situated on an impermeable surface which will be regularly inspected and maintained throughout the life of the permit. Tank will be bunded in line with current technical guidance.	Very unlikely if appropriate containment measures are used.	Loss of eels and pollution of eels habitat.	Not significant

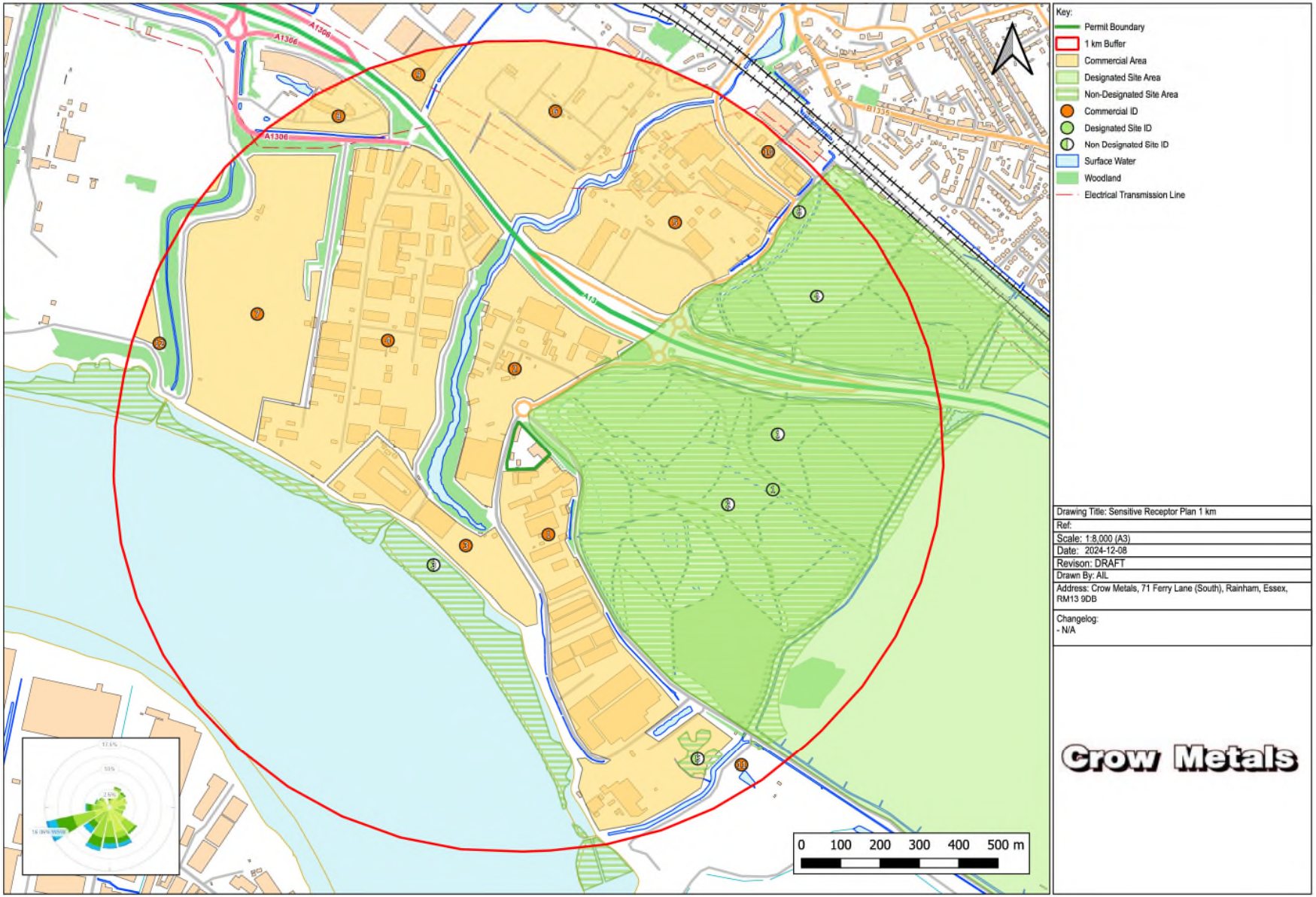
Hazard	Receptor	Pathway	Risk Management	Probability of Exposure	Consequence	Residual Risk
			Refueling will take place away from any combustible waste and a no smoking policy will be operated onsite. Fire extinguishers will be kept onsite in case of a small fire. A fire assembly point will be outside of the main site entrance. The site manager will be responsible for actions in the event of a fire and all staff will be trained on emergency and fire procedures as part of induction / safety training. The presence of impermeable surface and the positive drainage will contain firewater and testing can be carried out if necessary prior to removal from site.			
Spills, leakages from plant / machinery within the operational area.	Shallow soils	Infiltration through shallow soils	All storage and operational areas will be situated on impervious concrete with appropriate containment. Site surface will be regularly inspected and maintained throughout the lifetime of the permit. All staff and plant operators to be appropriately trained and qualified. Plant and machinery will be maintained to manufacturer's standards to ensure emission levels are maintained and to minimise any leakages / spillages. In the event of breakdowns of machinery, it will be appropriately stored on hardstanding and recovery and repair arranged. A back up machine will be hired in. Emergency plan and spill kits will be available at all times.	Unlikely given the presence of impermeable surface across the operational areas of the site (acting as a suitable barrier) and management actions.	Pollution of shallow soils	Not significant.
	Groundwater (Secondary Undifferentiated Aquifer)	Infiltration via shallow soils	All storage and operational areas will be located on impervious concrete surface. Site surface will be regularly inspected and maintained throughout the lifetime of the permit. All staff and plant operators to be appropriately trained and qualified. Plant and machinery will be maintained to manufacturer's standards to ensure emission levels are maintained and to minimise any leakages / spillages.	Unlikely given the presence of impermeable surface across the operational areas of the site (acting as a suitable barrier) and management actions.	Pollution of shallow aquifer	Not significant

Hazard	Receptor	Pathway	Risk Management	Probability of Exposure	Consequence	Residual Risk
			In the event of breakdowns of machinery, it will be appropriately stored on impermeable surface and repair arranged. A back up machine will be hired in if necessary. Emergency plan and spill kits will be available at all times.			
	Surface Water (River Ingrebourne and Thames)	Infiltration through shallow soils and migration via baseflow	All storage and operational areas will be located internally and on impermeable concrete surface. The site surface will be regularly inspected and maintained throughout the lifetime of the permit. All staff and plant operators to be appropriately trained and qualified. Plant and machinery will be maintained to manufacturer's standards to ensure emission levels are maintained and to minimise any leakages / spillages. In the event of breakdowns of machinery, it will be appropriately stored on impermeable surface and repair arranged. A back up machine will be hired in if necessary. Emergency plan and spill kits will be available at all times.	Unlikely given the presence of impermeable surface across the operational areas of the site (acting as a suitable barrier) and management actions.	Pollution of controlled waters	Not significant
	Ecologically Sensitive Sites	Infiltration through shallow soils and migration via baseflow	All storage and operational areas will be located internally and on impermeable concrete surface. Site surface will be regularly inspected and maintained throughout the lifetime of the permit. All staff and plant operators to be appropriately trained and qualified. Plant and machinery will be maintained to manufacturer's standards to ensure emission levels are maintained and to minimise any leakages / spillages. In the event of breakdowns of machinery, it will be appropriately stored on impermeable ground and repair arranged. A back up machine will be hired in if necessary. Emergency plan and spill kits will be available at all times.	Unlikely given the presence of impermeable surface across the operational areas of the site (acting as a suitable barrier) and management actions.	Damage to habitat and wildlife	Not significant
	Migratory European Eels	Infiltration through shallow soils and migration	All storage and operational areas will be located internally and on impermeable concrete surface.	Unlikely given the presence of impermeable surface across	Loss of eels and pollution of eels habitat.	Not significant

Hazard	Receptor	Pathway	Risk Management	Probability of Exposure	Consequence	Residual Risk
		via baseflow to surface water habitats for eels, uptake via food chains.	Site surface will be regularly inspected and maintained throughout the lifetime of the permit. All staff and plant operators to be appropriately trained and qualified. Plant and machinery will be maintained to manufacturer's standards to ensure emission levels are maintained and to minimise any leakages / spillages. In the event of breakdowns of machinery, it will be appropriately stored on impermeable surface and repair arranged. A back up machine will be hired in if necessary. Emergency plan and spill kits will be available at all times.	operational areas of the site (acting as a suitable barrier) and management actions.		
Vandalism resulting in damage to plant and machinery and potential leaks / spillages of fuels, within waste transfer station.	Shallow soils, Groundwater (Secondary Undifferentiated Aquifer), surface water, ecologically sensitive sites and migratory European Eels.	Infiltration via drainage system and cracks in surface cover.	Site will be appropriately secured. The gates are locked outside of operating hours to prevent out of hours access. All plant and machinery to be stored in designated, secure areas at the end of each working day. All storage and operational areas will be situated on impermeable surface which will be regularly inspected and maintained throughout the life of the permit.	Unlikely given security	Pollution of shallow soils, damage to habitats and local wildlife, loss of European eels.	Not significant
Arson resulting in damage to plant and machinery and fire, within waste transfer station.	Site users, surrounding site users and air, shallow soils, Groundwater (Secondary Undifferentiated Aquifer), surface water, ecologically sensitive sites and migratory European Eels.	Direct contact, windblown ash, leaching of freshwater discharge.	Site will be appropriately secured. The gates are locked outside of operating hours to prevent out of hours access. All plant and machinery to be stored in designated, secure areas at the end of each working day. All storage and operational areas will be situated on impermeable surface which will be regularly inspected and maintained throughout the life of the permit. Site will comply with the permitted Fire Prevention Plan, prepared in line with current EA guidance. Flammable wastes will be stored appropriately, and are unlikely to be stored in very large quantities due to permit storage limits.	Fire unlikely to be a significant hazard given the low flammability nature of the waste materials stored onsite	Fatalities, injury, pollution incidents, loss of habitat and wildlife, loss of European eels.	Low if management measures are adhered to.
Blockages in site drainage system	Shallow soils, Groundwater (Secondary Undifferentiated Aquifer),	Infiltration via drainage system	The surface water management system will be maintained and checked daily to record levels and clear any debris that may impede the flow of water in the gulley drains.	Unlikely	Pollution of the shallow soils, loss of habitat and wildlife, loss of European eels.	Not significant given the proposed management procedures.

Hazard	Receptor	Pathway	Risk Management	Probability of Exposure	Consequence	Residual Risk
	surface water, ecologically sensitive sites and European eels.		The site will be continuously monitored by site management and a technically component person for compliance with visual inspection and daily records kept within the site log. Any necessary remedial action will be taken to ensure that the gullies within the site drainage system are kept clear.			
Flooding from off-site watercourses and heavy rainfall events (generating excess surface water runoff)	Shallow soils, Groundwater (Secondary Undifferentiated Aquifer), surface water and ecologically sensitive sites and European eels.	Wastes enter flood waters and are mobilised off-site.	Environment Agency mapping indicates that the site is in an area of low flood risk. Development Is also shown to be in an area benefitting from flood defences, namely the Thames Tidal Defences, and is therefore considered to be at low risk of tidal flooding. The Environment Agency's fluvial modelled flood levels indicate that the area would remain free of flooding up to the present day 1 in 100 year event. Localised surface water flooding is unlikely to impact waste storage. Site may have to close for waste acceptance if significant flooding occurs, but this is considered to be of low likelihood and will cause minimal disruption. Surface water runoff will drain to the sealed holding pit as there is no surface water drainage from the site.	Unlikely	Pollution of the shallow soils and shallow groundwater loss of habitat and wildlife, loss of European eels.	Not significant based on Flood risk modelling
WASTE						
Introduction or production of unauthorised waste streams containing potentially contaminative materials	Land and groundwater within the Secondary Undifferentiated Aquifer, surface waters, ecologically sensitive sites and European eels.	Infiltration through shallow soils and run off	Only waste accompanied by the correct documentation in accordance with waste acceptance criteria and permit conditions shall be accepted onto site (see permitted activities). All loads entering the site shall be inspected prior to offloading. All unauthorised wastes will be rejected by the site and the regulator contacted. Any waste rejected will be recorded in the site diary.	Unchecked, unauthorised waste streams could be delivered to the site but management actions should prevent this happening	Pollution of the shallow soils and groundwater. Damage to habitat and wildlife.	Low if management techniques are implemented.

Appendix 1 Sensitive Receptors Map



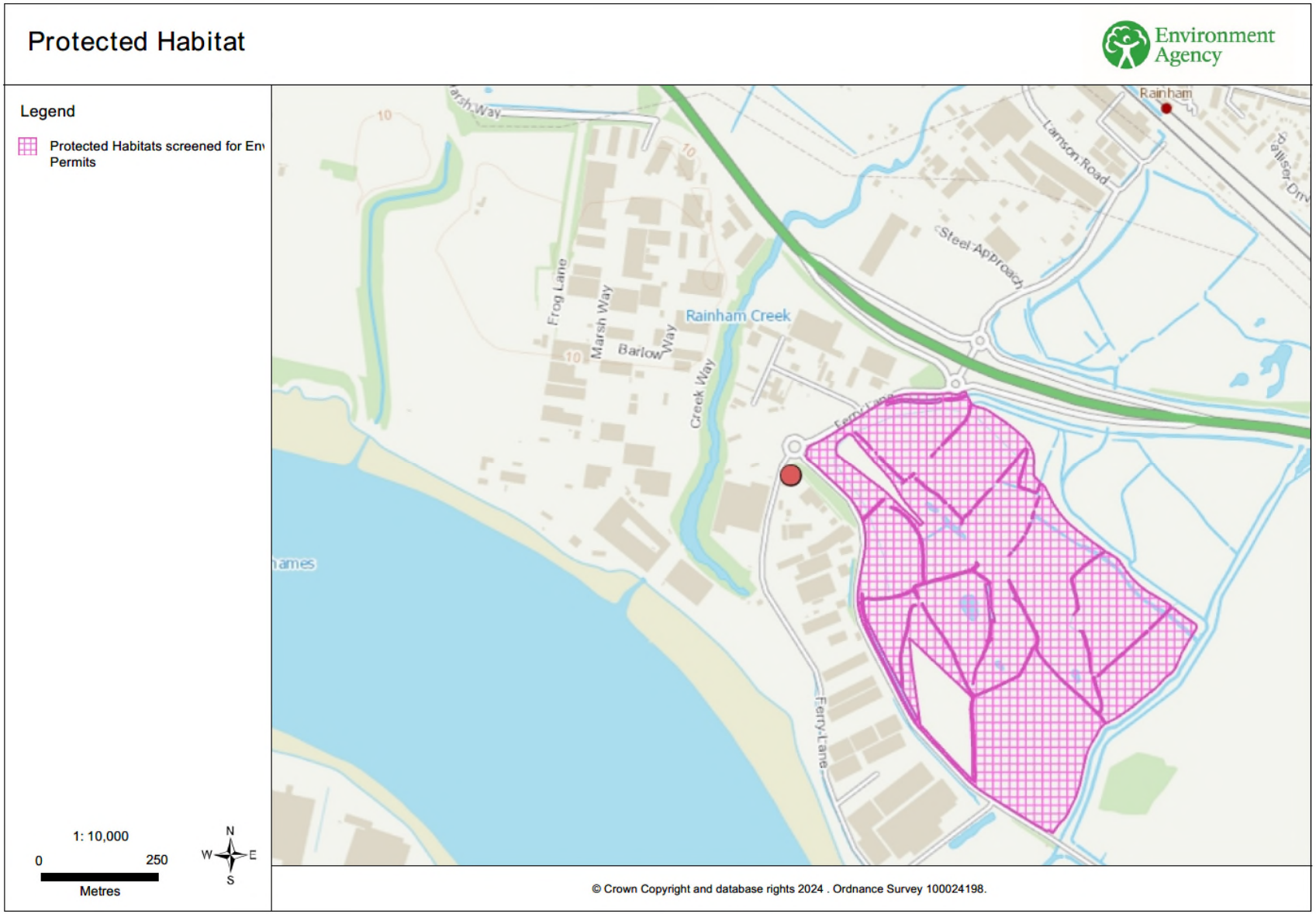
Appendix 2 River Thames Flood Barriers red dot indicates Crow Metals Site.

The Environment Agency Flood Risk Service indicates the following information:-

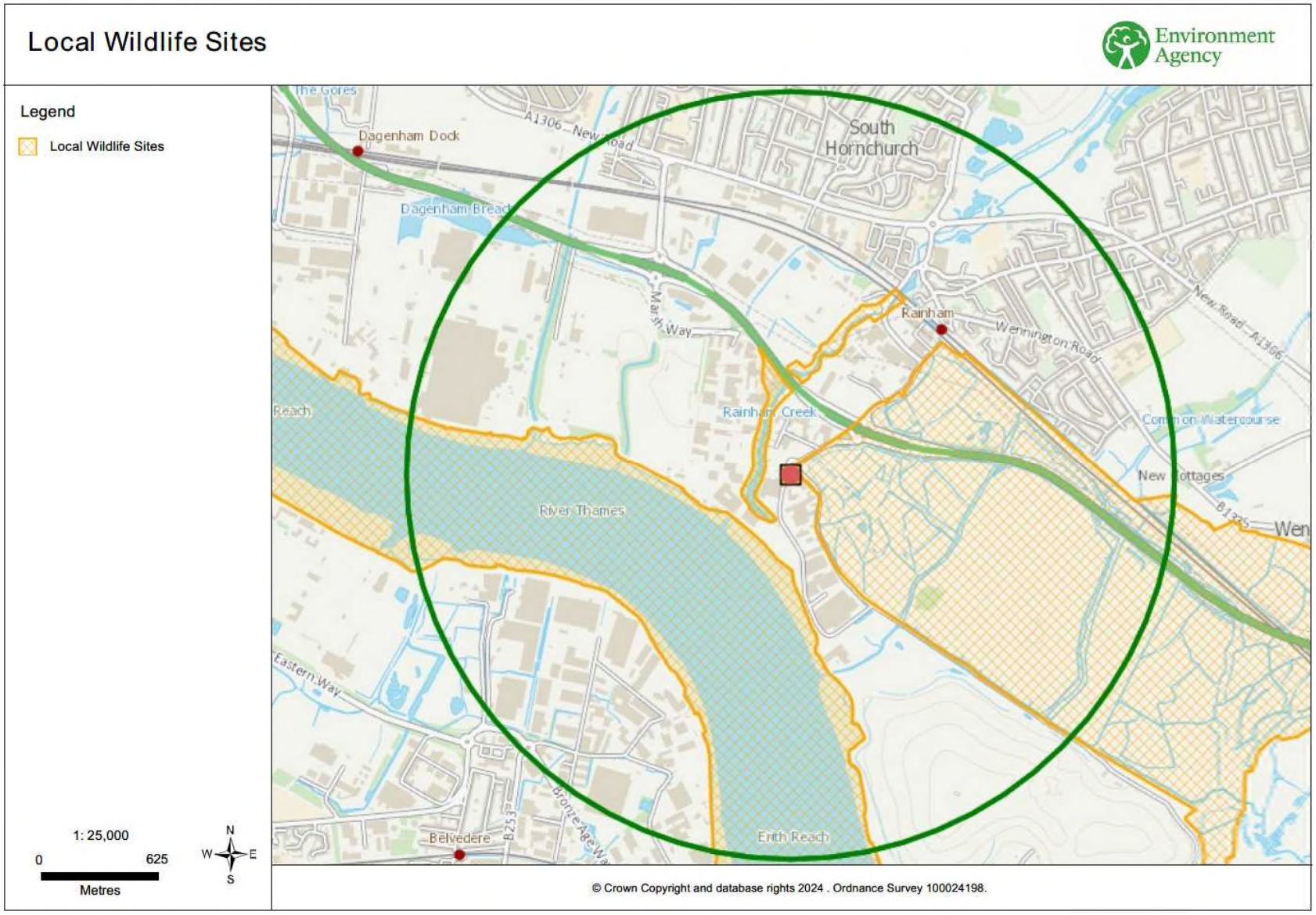
Surface water flood risk is very low now and in the future to 2060
River and Sea flood risk is very low now and in the future to 2069
Groundwater and reservoir flooding is unlikely in this area.

Check the long term flood risk for an area in England - GOV.UK

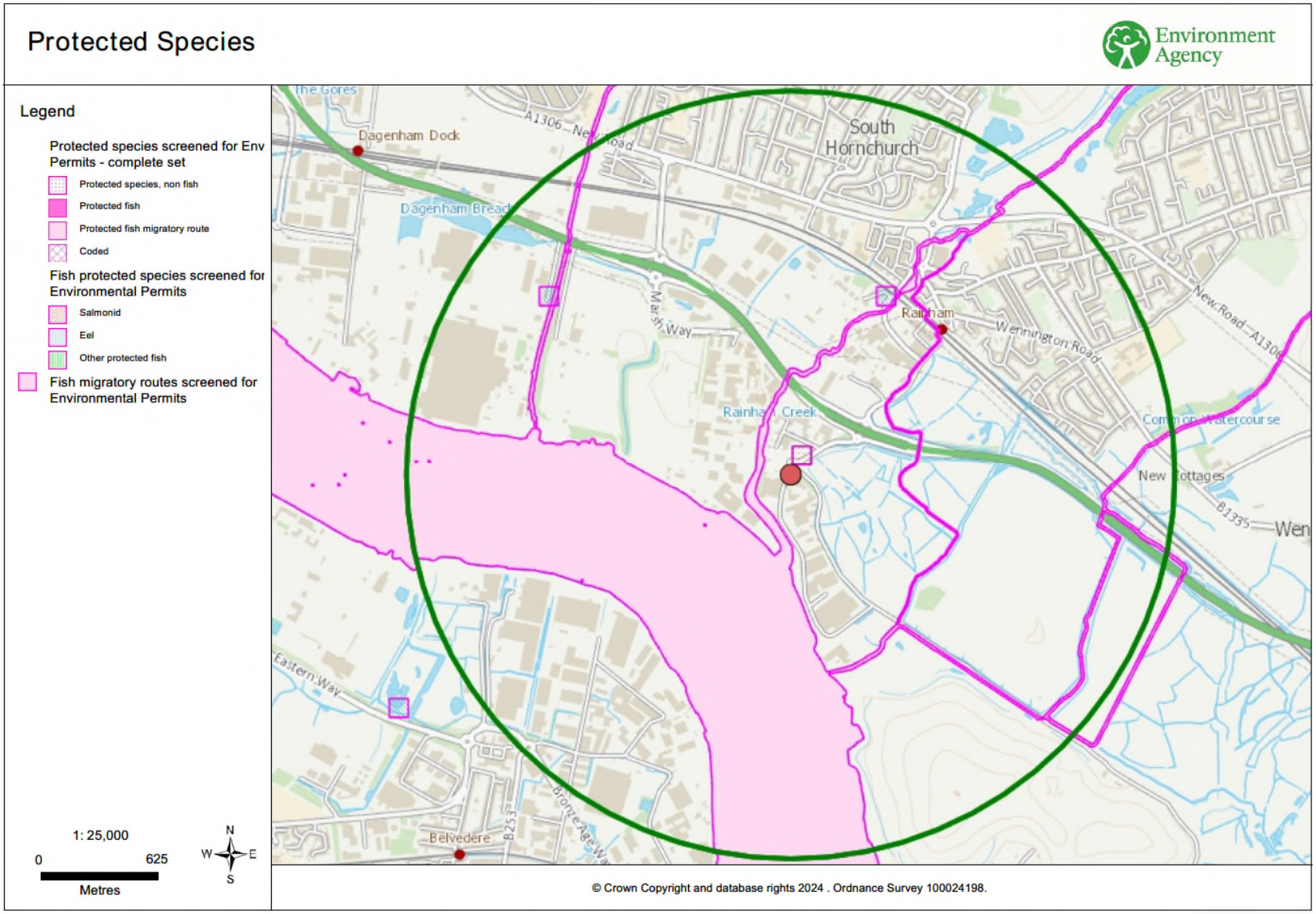
Appendix 3 Protected Habitat



Appendix 4 Local Wildlife Sites



Appendix 5 Protected Species



Appendix 6 Climate Change Risk Assessment

Risk is the probability of an individual being exposed to an work place hazard and the impact of such exposure. The Primary risk is assessed with no mitigation in place such as managerial procedures and Personal Protective Equipment (PPE).

Probability

Probability of exposure
HIGH – exposure is probable: direct exposure likely with no / few barriers between hazard, source and receptor.
MEDIUM – exposure is fairly probable: feasible exposure possible, barriers to exposure less controllable.
LOW – exposure is unlikely: several barriers between hazards source & receptors to mitigate exposure.
VERY LOW – exposure is very unlikely; effective, multiple barriers in place to mitigate against exposure.

Consequence

Consequences of Exposure
HIGH – the consequences are severe: sufficient evidence that short or long term exposure may result in serious damage.
MEDIUM – consequences are significant; sufficient evidence that exposure to hazard may result in damage that is not severe in nature and reversible once exposure ceases (e.g. irritant).
LOW – consequences are minor; damage not apparent though reversible adverse changes may occur.
VERY LOW – consequences are negligible; no evidence of adverse changes following exposure.

Risk Matrix

		Consequences			
		Very Low	Low	Medium	High
Likelihood	High	Low	Medium	High	High
	Medium	Low	Medium	Medium	High
	Low	Low	Low	Medium	Medium
	Very Low	Very Low	Low	Low	Low

For all hazards identified either procedures or PPE have been developed. Residual risk will remain and are detailed in the tables below.

	Impacts	Risk Level (Likelihood X Consequence= Risk)			Mitigation Consideration	Retained Risk
Summer daily maximum temperature This may be around 7°C higher compared to average summer temperatures now.	**Impact 1** Potential for increased waste reactions or fires involving heat sensitive or combustible waste.	**L**	**L**	**L**	• Metals are not particularly heat sensitive wastes. • Low combustible wastes are stored within fire resistant bays. • Combustible wastes such as batteries are stored inside a building and taken off site within a few days. • There is suitable segregation and separation distances of stockpiled wastes. • There are hoses to dampen the wastes.	**Low**
	Impact 2 Dry vegetation in and around hot cutting areas presents an increased fire risk.	**VL**	**VL**	**VL**	• No dry vegetation on site. • Visual inspections for fire, site monitored by CCTV cameras.	**Very Low**

	Impact 3 Potential for fire if the temperature exceeds the heat rating of components in electrical equipment or components are subjected to intense and direct sunlight.	**L**	**L**	**L**	• Electrical equipment is shaded.	**Low**
	Impact 4 Potential increase in high temperature expansion and stress of plant, pipework and fittings.	**L**	**L**	**L**	• Regular inspection and maintenance of equipment and site infrastructure.	**Low**
	Impact 5 Potential increased dust emissions from processing areas and site roads.	**L**	**L**	**L**	• Metal is not usually a dusty waste. • Processing and storage areas can be covered with adequate localised dust suppression. • Regular housekeeping is carried out on site.	**Low**
	Impact 6 Potential increased risk of pests and scavengers from stockpiled waste such as food and drink containers, food contaminated wastes and 'black bag' type wastes.	**VL**	**VL**	**VL**	• Waste stream not accepted.	**Very Low**

	Impact 7 Long periods of hot and dry weather could lead to a drought and may have an impact on water supplies.	**L**	**L**	**L**	• Minimal dust from metal processing. • Good housekeeping.	**Low**
Winter daily maximum temperature This could be 4°C more than the current average with the potential for more extreme temperatures, both warmer and colder than present	**Impact 1** Slightly higher winter maximums could generate regular odour complaints and pest infestations.	**VL**	**VL**	**VL**	• Waste stream does not cause odour or attract pests. • No odorous waste accepted under waste acceptance procedure.	**Very Low**
	Impact 2 Lower winter temperatures could result in an increased risk of pipes (or similar) freezing.	**L**	**L**	**L**	• Regular inspection and maintenance of equipment.	**Low**
Daily extreme rainfall Daily rainfall intensity could increase by up to 20% on today's values.	**Impact 1** Potential for increased site surface water and flooding.	**L**	**L**	**L**	• There is a 60,000 litre underground tank which is emptied by tanker.	**Low**

	Impact 2 There is potential for drainage systems and interceptors to be overwhelmed.	**L**	**L**	**L**	• Drainage systems are inspected and maintained regularly.	**Low**
Average winter rainfall Average winter rainfall may increase by over 40% on today's averages.	**Impact 1** Potential for increased site surface water and flooding.	**L**	**L**	**L**	• Site has a 60,000 litre underground tank which is emptied by tanker.	**Low**
	Impact 2 Potential for drainage systems and interceptors to be overwhelmed.	L	L	L	• Drainage systems are inspected and maintained.	**Low**
Sea level rise Sea level rise which could be as much as 0.6m higher compared to today's level.	**Impact 1** If a site is located near the coast there is potential increased risk of flooding.	**L**	**L**	**L**	• The area is protected by flood defence	**Low**

Drier summers Summers could see potentially up to 40% less rain than now	**Impact 1** Potential increased use and reliance on mains water for dust suppression, cleaning and fire water.	**L**	**M**	**M**	• Mains water supply is adequate. • Rain water harvesting tank on site. • Review fire suppression plans including water, and consider what alternative means of firefighting when water is scarce.	**Medium**
	Impact 2 There is potential increased impact of discharge to watercourse from on-site drainage systems where connected to water courses.	**N/A**	**N/A**	**N/A**	• Site does not discharge to a watercourse.	**N/A**
River flow The flow in the watercourses could be 50% more than now at its peak, and 80% less than now at its lowest.	**Impact 1** Increased impact from on-site drainage systems where they are connected to watercourses. Increased risk of water course flows being too high to allow discharge and drainage backs up on site.	**N/A**	**N/A**	**N/A**	Site drainage system is not connected to a watercourse.	**N/A**

(https://www.gov.uk/government/publications/adapting-to-climate-change-industry-sector-examples-for-your-risk-assessment/non-hazardous-and-inert-waste-treatment-examples-for-your-adapting-to-climate-change-risk-assessment)

Conclusions

This Environmental Risk Assessment has identified a number of potential hazards and sensitive receptors associated with the proposed activity and permit application. However, the qualitative risk assessment set out in Table 1, shows all risks to be negligible (i.e. assessed as not significant) or low, particularly when site operations are managed in line with mitigation measures detailed within the site's Environmental Management Plan (ref: CROWEMS01), Fire Prevention Plan (ref: CROWFPP01). This reflects the nature of the proposed activities, the limited potential for emissions, the presence of impermeable concrete across the site, controlled drainage measures and the management measures that will be in place.

Based on these findings, it is our opinion that further assessment, options appraisal or cost benefit analysis to justify the choice of risk management measures is not required.

We trust the Environmental Risk Assessment is satisfactory and provides the necessary level of information to support the application to apply for the a new bespoke permit.