

Section 17





FLOOD RISK ASSESSMENT

SAR Metals Ltd

3 Manby Road

South Killingholme

Immingham

DN40 3DX

FLOOD RISK ASSESSMENT

Issue and Revision Record

Revision	Date	Originator	Description of Change
V1	03/12/2025	Olive Compliance Ltd	New - produced as a requirement for permit application
V2			
V3			



BASIS OF REPORT

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FLOOD RISK ASSESSMENT

1.Scope

This report has been produced on the behalf of SAR Metals Ltd in support of a Bespoke Installation Permit Application under The Environmental Permitting (England and Wales) Regulations 2018 (as amended) for their facility at 3 Manby Road, South Killingholme, Immingham, DN40 3DX.

The Environment Agency's guidance for FRA and associated flood risk standing advice based on the level of flood risk and the vulnerability of the proposed site to flooding.

A three-stage approach has been taken to assess these risks and the impacts that could have an impact on the businesses directly. Planning for this will help to:

- remain in compliance with the environmental permit, other obligations and regulations
- minimise the sites impact on the environment during an extreme weather event and the event's impact on operations, either through accidental release or abnormal operation
- improve resilience and business continuity by avoiding unplanned start-ups, shutdowns and other business interruptions

2. Site Location & Requirement for a Site-Specific FRA

The site is located at 3 Manby Road, South Killingholme, Immingham, DN40 3DX.

The site is principally bounded as detailed in Table 1 below and shown in Image 1.

Image 1 – Site Setting



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Table 1 – Site Setting

Direction	Use
North	Road Link
South	Industrial
East	Road Link
West	Rural (Woodland)

Image 2 - Hydrological Site Setting

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3. Ground Conditions

3.1 Geology, Hydrogeology & Hydrology

Superficial geological deposits at 1:10,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

3.2 Superficial Deposit

Till, Devensian - Diamicton. Sedimentary superficial deposit formed between 116 and 11.8 thousand years ago during the Quaternary period.

3.3 Bedrock

Burnham Chalk Formation - Chalk. Sedimentary bedrock formed between 93.9 and 83.6 million years ago during the Cretaceous period.

Summary Classification: Secondary superficial aquifer

High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer

Vulnerability: Low Aquifer type: Principal Flow mechanism: Well-connected fractures

3.4 Surface Water

There is one identified active surface water abstraction recorded within 2 km of the site.

The site is not located within a Nitrate Vulnerable Zone (NVZ).

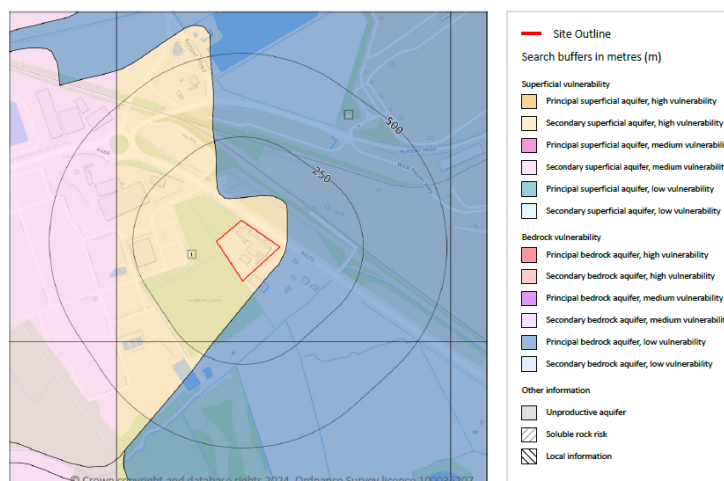
3.5 Ground Water

Groundwater Vulnerability Map (England) - Medium – High

High: areas that can easily transmit pollution to groundwater. They are characterised by high-leaching soils and the absence of low-permeability superficial deposits.

Medium: areas that offer some groundwater protection. Intermediate between high and low vulnerability.

Image 3 – Groundwater Vulnerability



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3.6 Source Protection Zones

Source Protection Zones define the sensitivity of an area around a potable abstraction site to contamination.

The site is located within a Source Protection Zone (merged (England)) – 3

EA guidance states that a Source Protection Zone 3 is classed the area around a supply source within which all the groundwater ends up at the abstraction point. SPZ3s cover the total catchment area of any groundwater source, regardless of travel time but is still protected but classed as a lower risk.

The risk to pollution in Groundwater Source Protection Zone (GPZ) 3 is assessed based on the proximity of potential pollution sources to the groundwater source. In GPZ 3, the risk is considered to be lower compared to higher risk zones like SPZ 1 and SPZ 2.

4. Site Drainage Features

A full drainage survey was completed in November 2025. The full drainage plan is included within this document.

The site has limited external drainage, with drainage systems in place for clean and uncontaminated rainwater from building roofs and car parking areas. This water enters the surface water drainage system and discharges externally. Foul water from welfare systems is also in place.

All surface water and foul drainage features are shown, with only two open gulleys (foul only) located on the northern perimeter of the facility. These gulleys are located externally of any waste storage or treatment activities and enter the septic tank not the drainage system.

As each building is fully sealed and grouted to prevent the escape of any water or pollutants there is no risk proposed to the current drainage system or site surfaces.

All external storage is controlled by waste being stored in secure stockpiles (clean bulk metals) or containerised (limited storage).

Plans by SAR management, is to install additional drainage features, an oil interceptor with a penstock valve is planned as the site develops in 2026/2027 to prevent the risk to site water systems through vehicle movements and leaks.

Pre application advice is currently with Anglian Water in relation to a surface water discharge consent (Jan 2026).



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Image 4 – Site Drainage Plan

5. FLOOD RISK ASSESSMENT

Sources of Information

In addition to the site setting and flood risk planning policy and guidance outlined in Section 1, the following sources of information have been consulted during the preparation of this FRA:

- Environment Agency online flood maps for planning and long-term flood risk service – for information regarding surface water, groundwater, reservoir and fluvial/tidal flood risk.
- Groundsure

The Environment Agency has been consulted for site-specific flood model data and their response, will be updated within this document when received.

All potential sources of flooding to the site are considered within this section of the report.

The application site is coastal and in the vicinity of a tidal watercourse.

The flood zone mapping does take account of flood defences and climate change.

Table 2 – Flood Risk Assessment (Flood Source)



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Potential Source	Flood Risk at Application Site	Reasoning
Fluvial Flooding	Medium	The application site lies within medium probability Flood Zone 3, associated with the River Humber.
Tidal Flooding	Low	The site is coastal and vicinity of a tidal watercourse.
Flooding from High Groundwater	Low	The Environment Agency's online Long-Term Flood Risk Service states groundwater flooding is 'unlikely' within the area. There is no below-ground (basement) development within the site; therefore, the risk of groundwater flooding to the development is assessed as low and acceptable.
Surface Water Flooding	Very Low to High	The Environment Agency's online mapping indicates the risk of surface water flooding within the site ranges from very low to high; this is discussed further below.
Flooding from Artificial Drainage Systems	Low	The application site is within an industrial setting and there is no information to identify sewer flooding as a significant regional issue localised incidents are inevitable. The site is bordered by local highways surface water drainage ditches which are assumed to benefit from dedicated drainage systems and would act as preferential flow routes in the event of local drainage exceedance. Therefore, the risk of flooding to the site from sewers and other artificial drainage systems in the local area is considered low and acceptable.

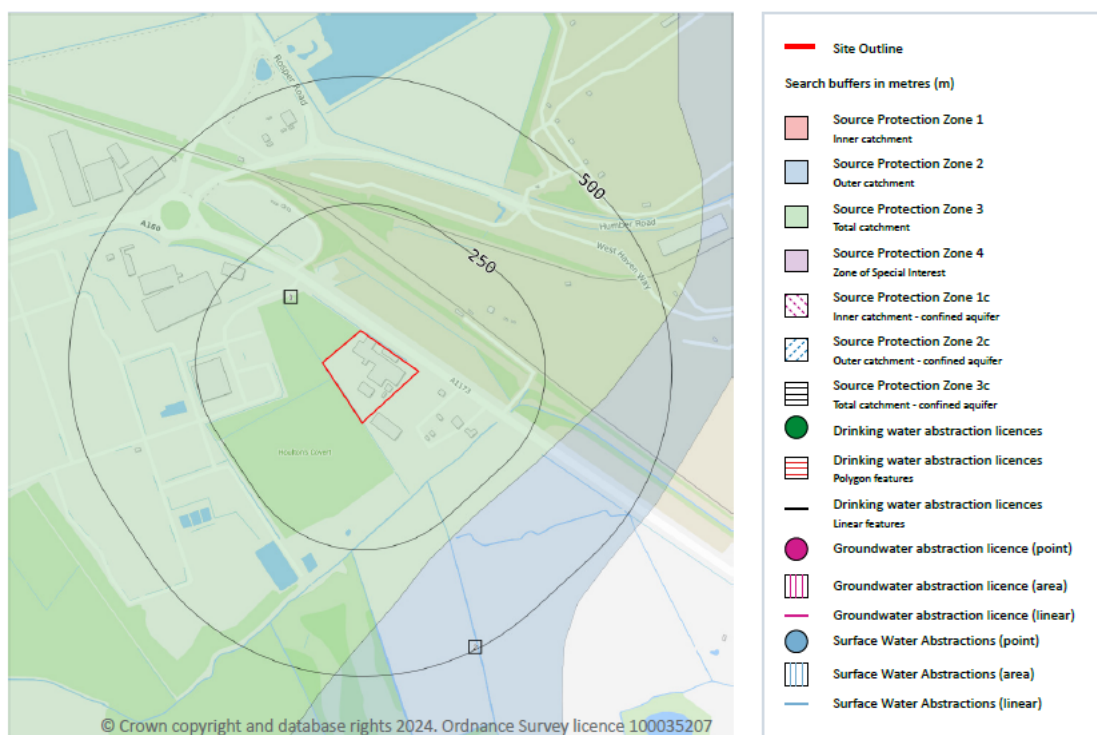


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Flooding due to Infrastructure Failure	Very Low	Review of the Environment Agency's online mapping indicates that the site is within the predicted flood extent of local reservoir(s), in the unlikely event of reservoir failure. In England, reservoirs that are capable of holding 25,000m³ or more of water are regulated under the Reservoirs Act 1975, as amended by the Flood and Water Management Act, 2010. These reservoirs are registered with the Environment Agency and subject to inspection and supervision by reservoir engineers. Therefore, due to the tight regulations on periodic inspections and maintenance, the probability of reservoir failure is very low and the risk of flooding to the site from reservoirs is considered very low and acceptable.
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Groundsure and the EA Flood Risk for Planning tool evidence that the site is in Flood Risk 3 zone.

Image 5 - Flood Risk Zone Map



Using the flood risk for planning tool [Get flood risk information for planning in England - Flood map for planning - GOV.UK](https://get.floodriskinformationforplanning.gov.uk/). The below Flood Risk Maps with data is provided.

Image 6 - Surface Water Flood Risk Map



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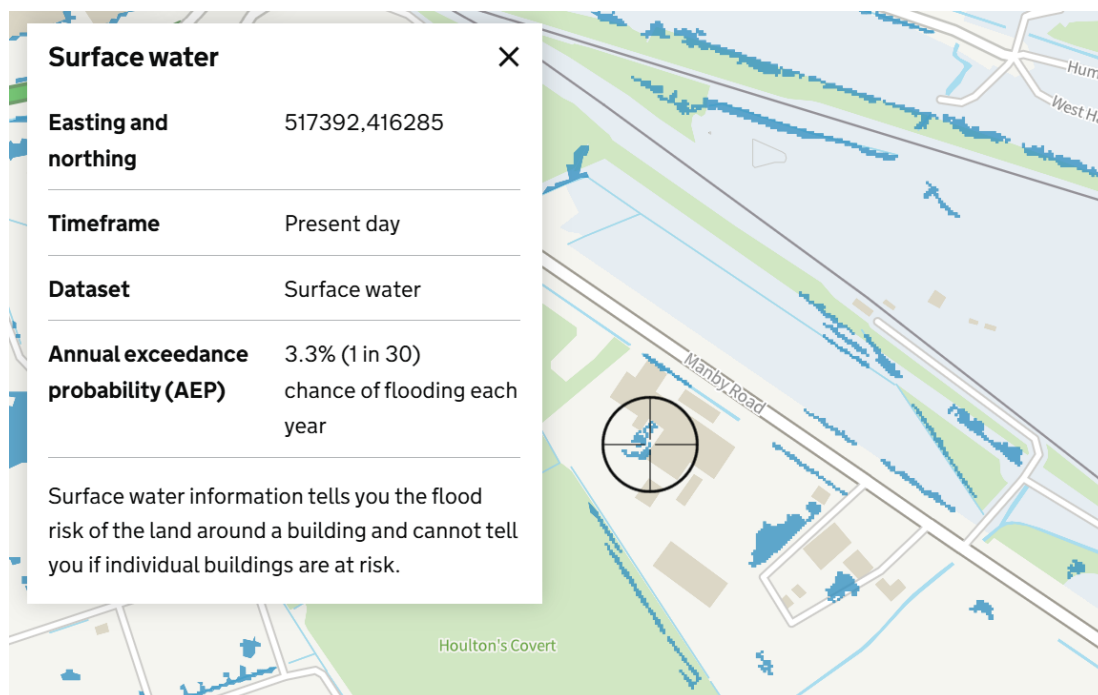


Image 7 - Sea Flood Risk Map

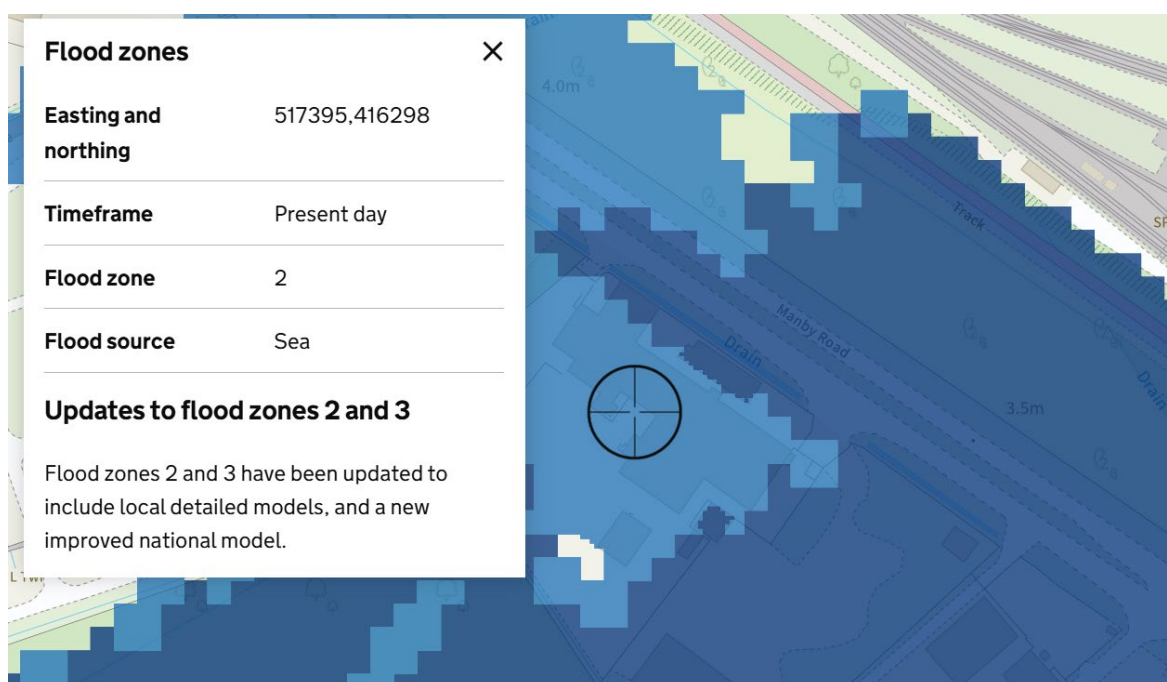
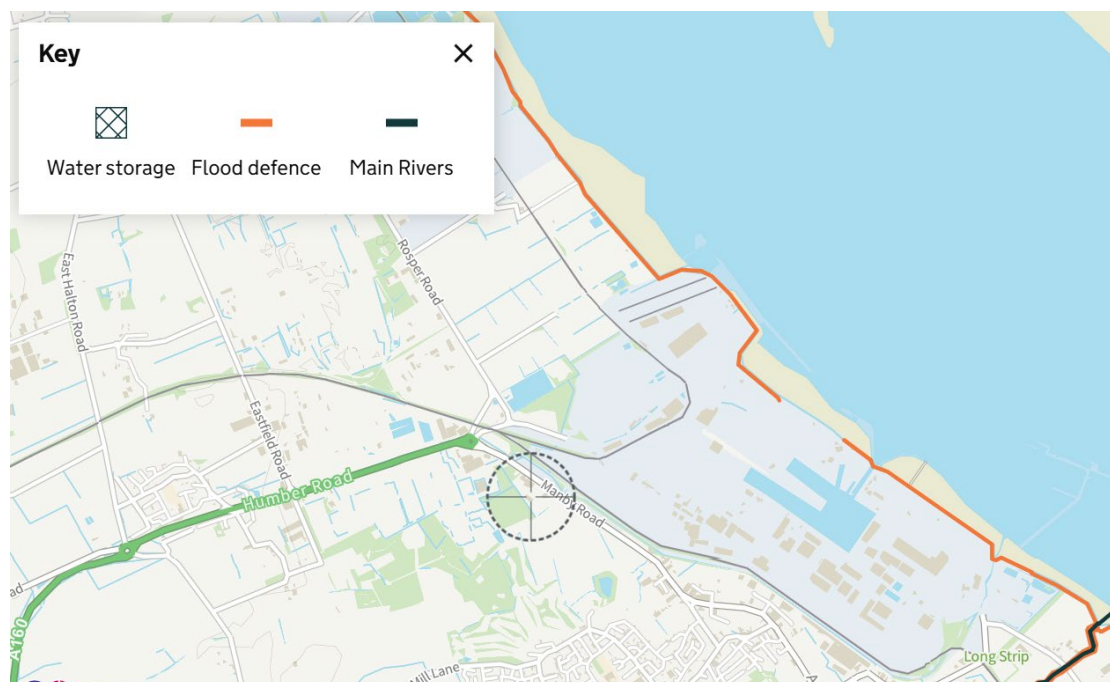


Image 8 – Flood Defences and River Map



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**Flood Risk – Long Term Data**

According to the Flood Map ([Your long term flood risk assessment - Check your long term flood risk - GOV.UK \(check-long-term-flood-risk.service.gov.uk\)](https://check-long-term-flood-risk.service.gov.uk) accessed Dec2025, the site has a very low risk of flooding from Rivers and Seas and surface waters.

Flooding from groundwater and reservoirs is also a classed as a very low risk.

Image 9 – EA Flood Risk Information Surface Water

Surface water
[More about your surface water flood risk](#)

Yearly chance of flooding

Very low

Low

Medium

High

Yearly chance of flooding between 2040 and 2060

Very low

Low

Medium

High

What surface water is

Surface water flooding is sometimes known as flash flooding. It happens when rainwater cannot drain away through normal drainage systems.

Image 9 – EA Flood Risk Information Rivers and Seas

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Rivers and the sea[More about your rivers and sea flood risk](#)**Yearly chance of flooding**

Very low

Low

Medium

High

Yearly chance of flooding between 2036 and 2069

Very low

Low

Medium

High

What makes rivers and sea flooding more likely

Low-lying areas that are close to rivers or the sea are more likely to flood when water levels rise.

This information takes into account any flood defences.

Historic Flooding & Flood Warning Areas

Upon receipt a review of the Environment Agency's online dataset of recorded flooding in this area will outline previous recorded flooding events on the site.

Climate Change

The Environment Agency's climate change allowances guidance confirms that rainfall, river flows and sea levels are predicted to increase as a result of climate change, which must be considered throughout the lifetime of the proposed development.

The Environment Agency's guidance confirms that the central climate change allowance (28%) is appropriate for less vulnerable and more vulnerable development within Flood Zone 2 or 3a. This has been considered within the assessment of fluvial flood risk.

SAR have a Climate Change Procedure in place with is reviewed annually.

Flood Risk Mitigation Measures

This site-specific FRA has reviewed all potential sources of flooding to the development and the only significant sources of flood risk identified are surface water flooding and fluvial flooding from the adjacent River Humber. The following flood risk mitigation measures are recommended.

6. Controls and Procedures

Control and mitigation measures in the risk assessment below, are managed within the company Environmental Management System (EMS). These include the reporting and recording of incidents on site.

Procedures referenced below support this risk assessment.

- Daily inspections and monitoring
- Emergency Plan
- Contingency Planning
- PPM Maintenance Procedure



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- Fire Prevention Plan
- Drainage Plans

All internal areas of the site are fully concreted, providing an impermeable surface with sealed walls/bunding.

The external yard is made up of hard standing, concrete or tarmac in various locations of the yard.

In the event of a potential flood or flood event dammit mats will be used to cover the two foul gully drains located in the yard to prevent the overwhelming of the septic tank and sandbags will be used to block both the site entrance and exit.

All buildings have been constructed with bunding in place. In the event of a flood, temporary bunds would be implemented using hydrosnakes to cover the doorways, thereby creating a complete bund and ensuring that all wastes would be protected from flood water within each building.

Hydrosnakes are a highly effective flood prevention. They can absorb up to 20 litres of water and expands up to 40x its own weight. Versatile design allows them to fit into openings and door wells. These are eco-friendly, easy to dispose pulp and super absorbent polymer. Simply slit the sack and disperse the contents into the earth. They are also suitable for landfill and incineration.

The hydrosnakes can act as a flood defence, diverting water from buildings including waste and critical plant.

Regular maintenance of building drainage features (guttering/pipework) and site surfacing are carried out by the Operator to ensure the effectiveness of the above systems in the event of a flood event.

Image 10 - Hydro snakes size and example of use



General Emergency Management



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SAR Metals Ltd will keep supplies on hand to be prepared for emergency situations such as first aid equipment, paper-based information and recording forms, batteries and torches. The site has emergency contact information available in the site office eg: Electric/Power suppliers, contractors (eg: flood water management, tree surgeons).

Cyber security and IT software is important with the company protecting files and back up data systems. Extreme weather events can disrupt power supply. Paper based documentation are available in the site office to allow for operations to continue in the event of a flood and loss of power.

Extreme Rainfall

Upon notification of an extreme weather event, SAR Metals Ltd will alert employees and customers to prepare for any interruptions to customer service or operational impacts in advance. This will assist with planning for staff resilience and safe access to site. SAR Metals Ltd will be proactive by alerting employees and clients about potential delays in receipt or the supply of wastes off site where it is unsafe to operate plant and equipment.

Planning for extreme rainfall

SAR Metals Ltd may consider measures such as the below (not exhaustive).

- Heavy rainfall and pooling water can make car parks, pedestrian walkways and operational areas dangerous for employees and customers. SAR Metals Ltd will ensure that a risk assessment is conducted to prevent risk or injury to staff while on site;
- Maintaining site infrastructure such as drainage systems to ensure there is sufficient capacity for effective storage, prevent pollution from over topped drainage systems;
- Discuss the management of incoming and outgoing loads over these periods, with consideration for site closure in the event of dangerous working conditions when handling wastes, vehicle movements or accessing operational areas; and
- Communicate who can commute to work to understand if their journeys are likely to be impacted by winter weather. Discussions around working from home if the role allows or ensure staff can travel to and from the workplace safely during severe weather conditions.

Storms

Upon notification of a potential storm or active storm warning, SAR Metals Ltd will alert employees and customers to prepare for any interruptions to customer service or operational impacts because of a storm in advance. This will assist with planning for staff resilience and safe access to site. SAR Metals Ltd will be proactive by alerting employees and clients about potential delays in relation to waste management where it is unsafe to operate.

Planning for storm conditions

High winds can make car parks, pedestrian walkways and operational areas dangerous for employees and customers. SAR Metals Ltd will ensure that a risk assessment is conducted to prevent risk or injury to staff while on site.

They will;

- Maintaining site infrastructure and awareness of external factors such as wastes along site boundaries that may escape and cause accidents or injury to the public or road users;



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- Pre-planning with employees who commute to work to understand if their journeys are likely to be impacted by winter weather. Discussions around working from home if the role allows or ensure staff can travel to and from the workplace safely during severe weather incidents.; and
- Discuss the management of incoming and outgoing loads over these periods, with consideration for site closure in the event of dangerous working conditions when handling or accessing operational areas.

Staff will be trained to deal with such issues to ensure the site are fully prepared should a problem arise.

Flood Warning & Evacuation Plan

The application site lies within the Environment Agency's Flood Alert Areas for the River Humber. The site is also within the Environment Agency's Flood Warning Area.

Therefore, it is recommended that a Flood Warning and Evacuation Plan be prepared for the development. The Operations Manager should sign up for the Environment Agency's free Flood Warning Service.

The Flood Warning and Evacuation Plan would set out the appropriate actions to be taken in the event of a Flood Alert or Flood Warning being issued or in the event of a red weather warning being issued by the Met Office. In the event of a severe Flood Warning or red weather warning, the site should be closed and evacuated.

7. SUMMARY AND CONCLUSIONS

This report represents a site-specific Flood Risk Assessment to support the application for an installation metals recycling facility. The site was previously used as a manufacturing facility.

The Environment Agency flood map for planning indicates that the application site extends into Flood 3 therefore, a detailed site-specific FRA is required.

A review of all potential sources of flooding to the site has been undertaken and the Environment Agency has been consulted to obtain up-to-date flood model data.

The only significant potential sources of flooding identified within the site are fluvial flooding from the adjacent River Humber, and surface water flood risk.

The site lies within North Lincolnshire County Council The Local Flood Risk Management Strategy .

All hazardous waste will be contained in appropriate, sealed, water resistant storage.

All buildings are sealed and fully bunded to ensure the secure storage of hazardous waste would reduce the risk of mobilisation of the waste and the risk of water and land contamination during a flood event.

It is recommended that a Flood Warning and Evacuation Plan be prepared for the development. SAR will sign up to the Environment Agency's free Flood Warning Service. The Flood Warning and Evacuation Plan would set out the appropriate actions to be taken in the event of a Flood Alert or Flood Warning being issued or in the event of a red weather warning being issued by the Met Office.



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In the event of a severe Flood Warning or red weather warning, the site should be closed and evacuated.

In summary, this FRA concludes that with the proposed mitigation, use of the site as an Installation is appropriate and sustainable with regards to flood risk.



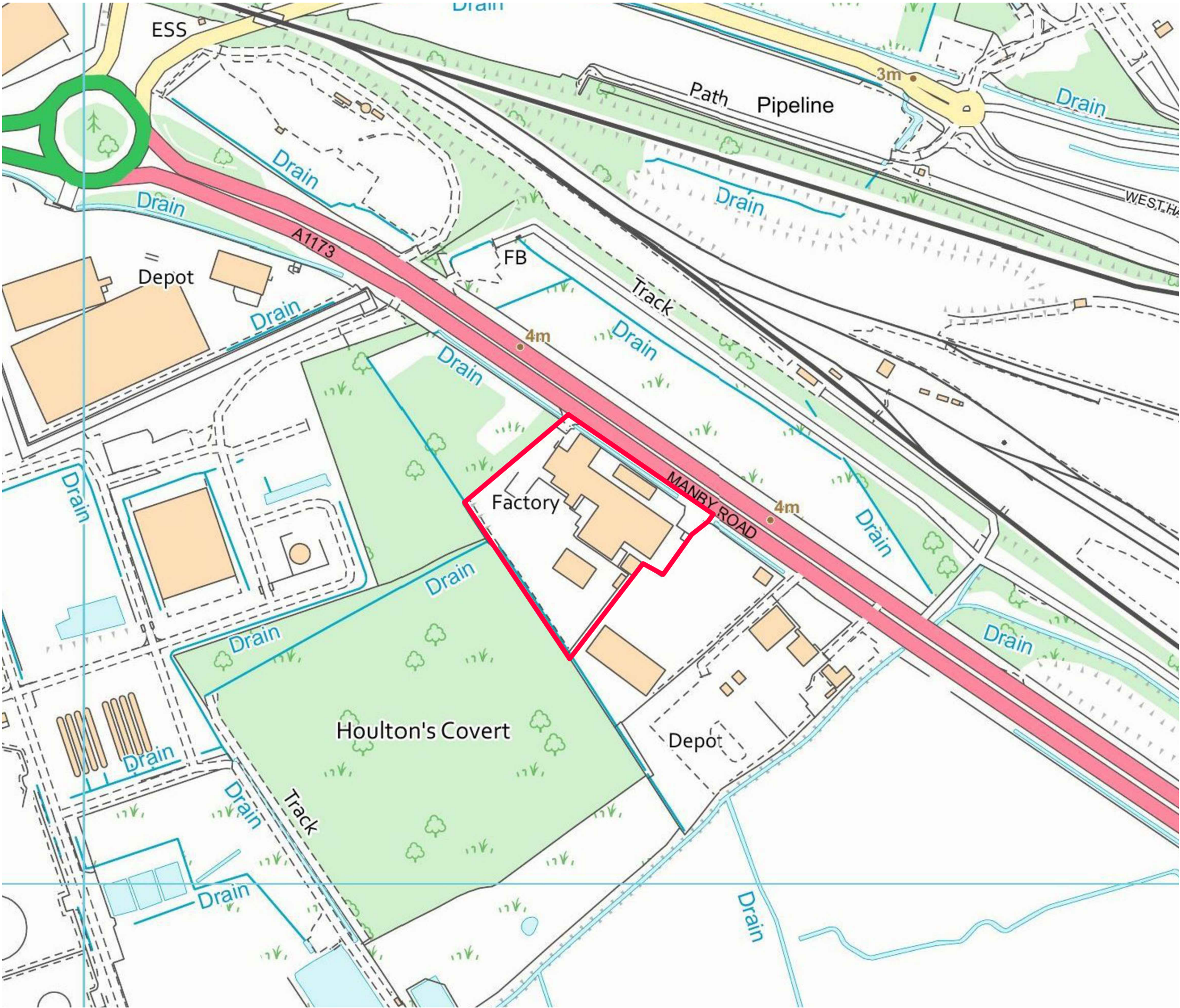
APPENDICIES

Site Location Plan

Flood Tool Box Talk

EA Flood Data





NOTES

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LEGEND

THE SITE

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E

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SITE
SAR

UNIT 3 MANBY ROAD SOUTH KILLINGHOLME IMMINGHAM DN40 3DX

PROJECT

EA Permit Application

DRAWING TITLE

LOCATION PLAN

DRAWING NUMBER

001

REVISION

0

SCALE

1:5000 @ A3

DATE

14.11.24

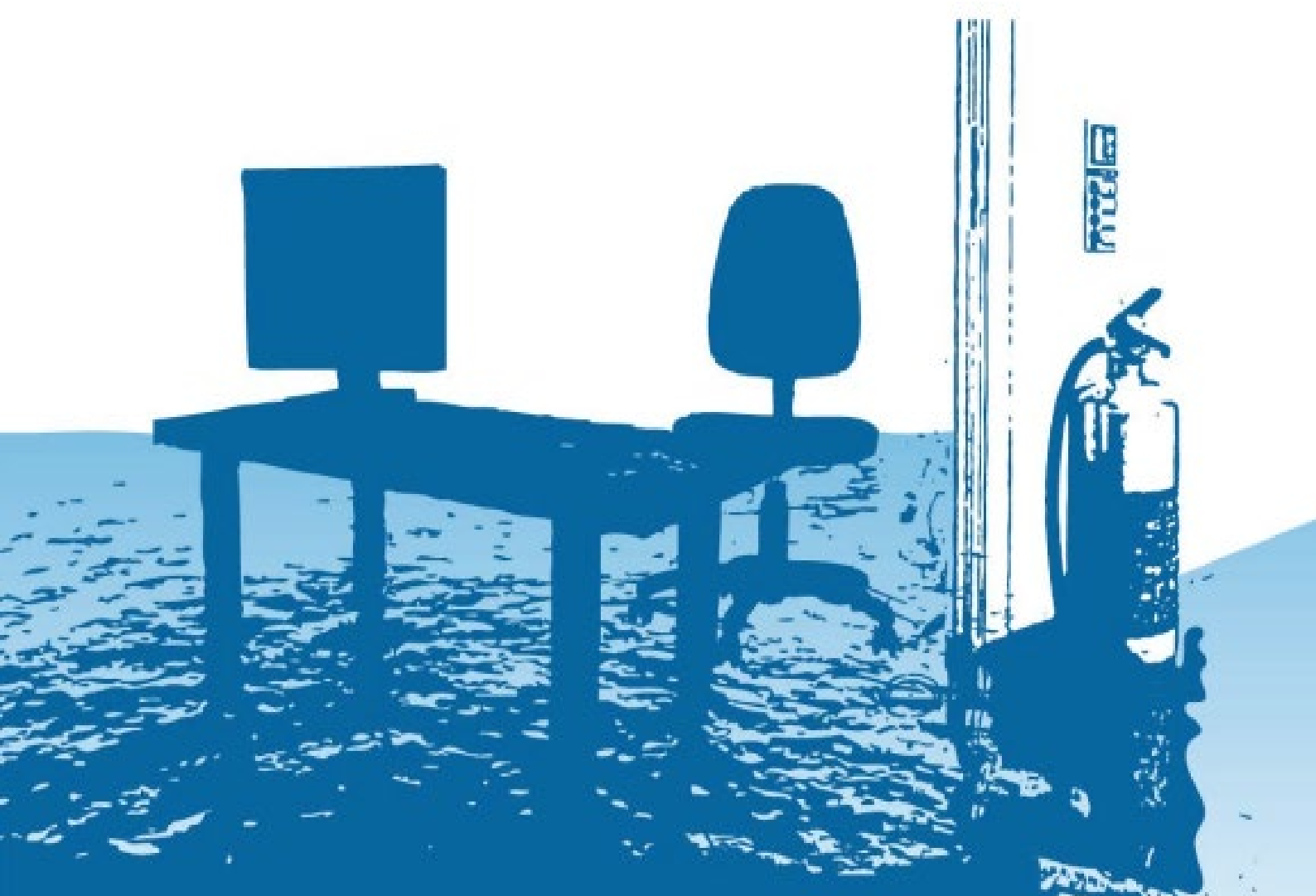
OLIVE

Compliance

Flood awareness Toolbox talk. Evacuation procedure

What is a flood?

An overflow of water onto normally dry land. The inundation of a normally dry area is caused by rising water in an existing waterway, such as a river, stream, or drainage ditch. Ponding of water at or near the point where the rain fell. Flooding is a longer-term event than flash flooding: it may last days or weeks.



SAR Metals is signed up for flood warnings, to receive notifications of flood risk at our site area – this will help management and staff prepare for flooding and take necessary actions. The account is held by the QHSE department. You will be informed how to act.

The warning service has three types of warnings -

1. Flood Alert



FLOOD ALERT

What it means

Flooding is possible.
Be prepared.

When it's used

Two hours to two days
in advance of flooding.

What to do

- QHSE department (Viktorij S.) will notify staff and management of the warning.
- Be prepared to act (all staff)
- Do not panic.

2. Flood Warning



FLOOD WARNING

What it means

Flooding is expected.
Immediate action required.

When it's used

Half an hour to one day
in advance of flooding.

What to do

- QHSE department (Viktorija S.) will notify staff and management of the warning.
- Office Staff will be asked to move valuable items (paper files, computers, and personal staff to the first floor. And warehouse staff raise warehouse materials by placing them in cages, pallets, and containers.
- Appointed person - Tomas D.and/or Tadas G. to turn off the gas, electricity, and water supplies if it's safe to do so. Move and/or cover all chemicals present on site.
- Be prepared for emergency evacuation.

3. Severe Flood Warning



What it means

Severe flooding.
Danger to life.

When it's used

When flooding poses a
significant risk to life.

What to do

- QHSE department (Viktorija S.) will notify staff of the warning.
- Appointed people Tomas will organise the emergency evacuation of all employees.
- Appointed people (Viktorija S.) must contact 24/7 flood line service for further assistance.
- 999 - will be contacted if immediate danger by an appointed person.

WARNING NO LONGER IN FORCE

What it means

No further flooding is
currently expected in
you area.

When it's used

When river or sea
conditions begin to
return to normal.

What to do

- Be careful. Flood water may still be around for several days.

Remember, floods can happen at any time and on any day.

Appointed people.

Name	Job Title	Phone number	Actions
Tomas Drovosekovas	WEE warehouse team leader	07835 307719	Receive warnings. Inform all employees. Organise movement of valuable items and evacuation. Contact flood services.
Donald Smith	WEEE warehouse manager	07903 487935	Contact HR and emergency services if needed.
Joanne Thomas	HR	07843238678	Contact insurance company
Tomas Drovosekovas	WEE warehouse team leader	07835 307719	Organise of movement/cover warehouse materials
Donald Smith	WEEE warehouse manager	07903 487935	Raise, move and cover the valuable products in the warehouse. Assist people where necessary.
Tomas Drovosekovas	Warehouse team leader (WEEE)	07835307719	
Tadas Griuckaitis	Maintenance technician	07463 451415	Move/over chemicals (warehouse/office) Turn off/ isolate electrical equipment, electricity, gas and water supplies.
Tomas Drovosekovas	Warehouse team leader (WEEE)	07835307719	Move/over chemicals (warehouse/office) Turn off/ isolate electrical equipment, electricity, gas and water supplies.