

APPLICATION FOR AN ENVIRONMENTAL PERMIT

Environmental Risk Assessment

Permal Gloucester Limited



JER9222

1

3

24 February 2023

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1 INTRODUCTION

- 1.1.1 This environmental risk assessment (ERA) has been carried out in support of an application for an Environmental Permit for the Permali production facility in Gloucester.
- 1.1.2 It includes an assessment of the risk to the environment and human health from the proposed activities at the site. As there is no specific guidance for producing an ERA for part A2 environmental permit applications, the Environment Agency's (EA's) Risk Assessments for your environmental permit¹ guidance has been used as a best practice and covers a range of environmental risks. Those aspects relevant to the production activities at the Permali facility are covered within this ERA.
- 1.1.3 This document provides the nearby sensitive receptors at the site and relevant risk assessments covering the following aspects:
- Amenity and Accidents; and
 - Emissions to Air.

¹ <https://www.gov.uk/guidance/risk-assessments-for-your-environmental-permit>

2 SITE DETAILS

2.1 The Site

2.1.1 The site is located in Gloucester at the following address:

Permal Gloucester Limited
Bristol Road
Gloucester
Gloucestershire
GL1 5TT

2.1.2 The centre of the site is at National Grid Reference (NGR) SO 82313 17107.

2.1.3 Site layout plans can be found in Appendix A.

2.2 Sensitive Receptors

2.2.1 A 2km radius screening of designated ecological receptors has identified two local nature reserves (LNR) as follows:

- Alney Island LNR (to the north)
- Robinswood Hill LNR (to the southeast)

2.2.2 There are no identified Ramsar, Special Areas of Conservation (SAC), Special Protection Areas (SPA) or Sites of Special Scientific Interest (SSSI) within 2km.

2.2.3 A 10km radius screening of designated ecological receptors has identified the following sites:

Local Nature Reserves

- Alney Island
- Barnwood Arboretum
- Coopers Hill, Gloucester
- Hucclecote Meadows
- Robinswood Hill
- Green Farm Orchard
- Quedgeley Arboretum
- Saintbridge Balancing Pond

National Nature Reserve

- Cotswold Commons and Beechwoods

Ramsar Sites

- Walmore Common

Sites of Special Scientific Interest

- Badgeworth SSSI
- Coombe Hill Canal SSSI
- Robin's Wood Hill Quarry SSSI

-
- Cotswold Commons and Beechwoods SSSI
 - Edge Common SSSI
 - Range Farm Fields SSSI
 - Crickley Hill and Barrow Wake SSSI
 - Haresfield Beacon SSSI
 - Hucclecote Meadows SSSI
 - Wainlode Cliff SSSI
 - Innsworth Meadow SSSI
 - Walmore Common SSSI
 - Ashleworth Ham SSSI

Special Areas of Conservation

- Cotswold Beechwoods

Special Protection Areas

- Walmore Common

- 2.2.4 The closest residential properties are located on the eastern boundary of the site with the Bristol Road. There are further residential properties approximately 0.07km to the west of the site located at Mainsail Lane on the opposite side of the Gloucester and Sharpness Canal.
- 2.2.5 The site is located adjacent to the Gloucester and Sharpness Canal which runs along the western boundary of the facility.
- 2.2.6 The site is not situated in an air quality management area (AQMA)².
- 2.2.7 The nearest Nitrate Vulnerable Zone (NVZ) is the North and South Streams in the Lydden Valley which is located approximately 100 metres to the south.
- 2.2.8 The site is not situated in a source protection zone.
- 2.2.9 The site is located on a Secondary (undifferentiated) aquifer (bedrock) and Secondary (undifferentiated) aquifer (superficial deposit). The groundwater vulnerability classification for the site is Medium.
- 2.2.10 The British Geological Survey Geology of Britain Viewer³ has been reviewed and it shows that the site is located on the following geology:
- Bedrock geology: Blue Lias Formation and Charmouth Mudstone Formation - Mudstone. Sedimentary bedrock formed between 209.5 and 182.7 million years ago during the Triassic and Jurassic periods.
 - Superficial deposits: Tidal Flat Deposits - Clay, silt and sand. Sedimentary superficial deposit formed between 11.8 thousand years ago and the present during the Quaternary period.
- 2.2.11 Site plans are included as Appendix A.

² <https://uk-air.defra.gov.uk/aqma/maps/>

³ <http://mapapps.bgs.ac.uk/geologyofbritain/home.html>

2.3 Surrounding Area

2.3.1 The site is located within an area of mixed use which includes residential, commercial and industrial properties. The immediate surrounding area is as follows:

- **North** – Manufacturing/commercial and industrial units
- **South** - Manufacturing/commercial and industrial units
- **East** – Residential properties on the Bristol Road. There are further residential properties across the Bristol Road located on Linden Road, Cecil Road and Granville Street
- **West** – The Gloucester and Sharpness Canal is located on the boundary of the site, across the canal there are residential properties on Quayside Way, Mainsail Lane and Canal Court.

3 ENVIRONMENTAL RISKS AND EFFECTS: AMENITY AND ACCIDENTS

- 3.1.1 This section provides an assessment of risks to environmental amenity and from potential accidents/incidents that could arise from the production activities. The assessment has been completed in accordance with the EA's "Risk Assessments for your environmental permit".
- 3.1.2 The scope of the assessment has covered the following aspects:
- odour;
 - noise and vibration;
 - fugitive emissions;
 - visible emissions; and
 - accidents.
- 3.1.3 Point source emissions are considered separately.
- 3.1.4 For each of the above, the approach to the assessment has followed the following six stage process:
- a. identify and consider the risks for the site;
 - b. identify the receptors at risk;
 - c. identify the possible pathways from the sources of the risks to the receptors;
 - d. assess the risks and check they're acceptable and can be screened out;
 - e. state appropriate control measures if the risks are too high; and
 - f. present the assessment of overall risk.
- 3.1.5 Results of the assessment are provided in the following tables.
- Table 3-2 Assessment of odour risks
 - Table 3-3 Assessment of noise and vibration risks
 - Table 3-4 Assessment of fugitive emission risks
 - Table 3-5 Accidents risk assessment and management plan
- 3.1.6 The risk assessment methodology has used a scoring mechanism whereby scores are assigned to:
- the likelihood of the hazard occurring; and
 - the consequence of the hazard to the environment or human health.
- 3.1.7 Scores are assigned as low, medium or high.
- 3.1.8 The risk assessment has been completed by scoring the hazard areas outlined above using a risk matrix as shown in Table 3-1 below:

Table 3-1: Risk Matrix

Consequence	Probability			
	High	Medium	Low	Very Low
High	High	Medium	Low	Low
Medium	Medium	Medium	Low	Very Low
Low	Low	Low	Low	Very Low
Very Low	Low	Very Low	Very Low	Very Low

- 3.1.9 In completing the assessment, prevention and control measures proposed by Permali are assumed to be in place. Where relevant, details of these measures are identified within the assessment.
- 3.1.10 The environmental risk assessment for the site is set out below:

Table 3-2: Odour risk assessment and management plan

Hazard	Receptor	Pathway to Receptor	Risk management techniques	Probability of exposure	Consequence	Overall risk
Odorous emissions from the permitted activities (storage, delivery and use of chemicals)	The closest residential properties are located on the eastern boundary of the site with the Bristol Road. There are further residential properties approximately 0.07km to the west of the site located at Mainsail Lane on the opposite side of the Gloucester and Sharpness Canal.	Air	<p>Solvents by their nature may have some odour potential, however, they will be delivered in sealed containers, stored and used within the process building with doors kept shut where possible. There is some external storage of solvents in bunded containers.</p> <p>Thermal oxidiser/scrubber abatement systems are used to minimise risk of odour from the process.</p> <p>The following procedures are incorporated into the site management system to manage the risk from the facility:</p> <p>Inspection, pre-planned maintenance and management procedures reduce the likelihood of leaks and incidents from handling and internal transport of raw materials.</p> <p>Emergency response and shutdown procedures minimise the impact of incidents and ensure that emergencies are dealt with swiftly and safely,</p> <p>Complaints procedure will log any contact with the site from local residents, businesses or the regulator and ensure that an immediate investigation is undertaken.</p> <p>A review of raw materials will be routinely undertaken to identify alternative materials with a lower pollution / odour potential.</p>	Medium - There is the potential for abatement failure. Leaks and spills are possible	Low - Temporary odour annoyance due to low volume of potentially odorous materials used at any one time in the process.	Low – subject to correct management systems being used.

Table 3-3: Noise and vibration risk assessment and management plan

Hazard	Receptor	Pathway to Receptor	Risk management techniques	Probability of exposure	Consequence	Overall risk
Operational activities giving rise to noise and or vibration	The closest residential properties are located on the eastern boundary of the site with the Bristol Road. There are further residential properties approximately 0.07km to the west of the site located at Mainsail Lane on the opposite side of the Gloucester and Sharpness Canal.	Land, air	<p>A Noise Management Plan will be developed as part of the EMS to ensure:</p> <p>Mitigation of noise from the plant identified in the Noise Assessment Report will be implemented to reduce noise emissions and avoid adverse impacts on residential amenity.</p> <p>All new items of plant are subject to a noise assessment</p> <p>All items of plant and equipment are serviced and maintained following manufacturers recommendations.</p> <p>The complaints procedure is followed in the event that noise or vibration complaints are received.</p> <p>The noise management plan will be regularly reviewed, and the noise assessment repeated periodically and following any major change to the noise profile of the site.</p>	Low (with noise mitigation measures)	High for some residents without noise mitigation measures Noise or Vibration Nuisance	Low

Table 3-4: Fugitive emissions risk assessment and management plan

Hazard	Receptor	Pathway to Receptor	Risk management techniques	Probability of exposure	Consequence	Overall risk
External storage, handling and use of chemicals – leaks and spillages	The closest residential properties are located on the eastern boundary of the site with the Bristol Road. There are further residential properties approximately 0.07km to the west of the site located at Mainsail Lane on the opposite side of the Gloucester and Sharpness Canal. The site is located adjacent to the Gloucester and Sharpness Canal which runs along the western boundary of the facility.	Air, land, water course. Surface Water Drainage system (release to Canal)	All hazardous substances stored externally are stored within bunded containers. Externally there are IBCs of waste oil/water stored. As part of the site management systems, emergency response procedures are in place with staff being trained in spillage response. Storage and delivery areas are located on impermeable surfacing with sealed drainage systems. Spillage kits are located nearby to storage areas for use should a spillage occur.	Low	Medium - Release of hazardous liquids, vapours, dust etc, contamination of water course or land	Low– subject to correct management systems being used.
Internal storage, handling and use of chemicals – leaks and spillages	Immediate internal area / internal sealed drainage system (below presses)	Air via uncontrolled release from building, land, water course (internal drainage), Surface Water Drainage system (release to Canal)	All hazardous substances stored internally are kept in dedicated bunded storage areas. All internal surfaces are impermeable. Resin mixing area is internally bunded with impermeable surfacing and sealed drainage. All dispensing of raw materials shall be carried out by trained staff or using automatic systems. Spillage kits are available within the storage and dispensing areas. As part of the site management systems, emergency response procedures will be in place with staff being trained in spillage response.	Low	Low - Release of hazardous vapours, dust etc.	Low – subject to correct management systems being used

Table 3-5: Accidents risk assessment and management plan

Hazard	Receptor	Pathway to Receptor	Risk management techniques	Probability of exposure	Consequence	Overall risk
Operator error	Air/land/ groundwater	Various – dependent on nature of error	<p>All operational staff will be fully trained and experienced in the key processes for which they are responsible. This includes undertaking activities in line with the standard operating procedures (SOP's) and site environmental management system (EMS).</p> <p>Training will include hazard and fault awareness, and the potential implications of failure to control the associated impact on the environment, as well actions to take in the event of an issue.</p>	Low	Low however could be variable depending upon nature of incident.	Low - provided operating procedures are followed.
External - Loss / spillage of raw materials / waste during delivery, storage or removal	The closest residential properties are located on the eastern boundary of the site with the Bristol Road. There are further residential properties approximately 0.07km to the west of the site located at Mainsail Lane on the opposite side of the Gloucester and Sharpness Canal. The site is located adjacent to the Gloucester and	Air, surface run off, land, water course	<p>Generally, solvents and chemicals are stored internally in bunded areas. Some solvents are stored externally in dedicated bunded chemical stores. Spillage kits are located nearby to storage areas for use should a spillage occur.</p> <p>As part of the site management systems, emergency response procedures will be in place with staff being trained in spillage response.</p>	Medium	Low - Release of hazardous vapours, dust etc, contamination of water course or land	Low– subject to correct management systems being used.

Hazard	Receptor	Pathway to Receptor	Risk management techniques	Probability of exposure	Consequence	Overall risk
	Sharpness Canal which runs along the western boundary of the facility.		Storage and delivery areas are located on impermeable surfacing with sealed drainage systems.			
Internal - Loss / spillage of raw materials / waste during delivery, storage or removal	Immediate internal area / internal sealed drainage system (below presses)	Air via uncontrolled release from building, land, water course (internal drainage)	<p>All hazardous substances are kept in dedicated internally bunded storage areas. All internal surfaces are impermeable.</p> <p>All dispensing of raw materials shall be carried out by trained staff or using automatic systems. Spillage kits are available within the storage and dispensing areas.</p> <p>Internal areas (resin mixing area) are bunded and have impermeable surfaces and sealed drain.</p> <p>As part of the site management systems, emergency response procedures will be in place with staff being trained in spillage response.</p>	Low	Low - Release of hazardous vapours, dust etc.	Low – subject to correct management systems being used
Failure of thermal oxidiser / scrubber abatement system for the point source emission	The closest residential properties are located on the eastern boundary of the site with the Bristol Road. There are further residential properties approximately 0.07km	Air	<p>Emergency response and shutdown procedures will be in place should an issue be detected.</p> <p>Thermal oxidiser and Scrubber systems will be subject to regular</p>	Low - There is a potential for failure of the thermal oxidiser / scrubber system to fail leading to an abatement failure	Low - Release of hazardous vapours, gases to the environment	Low – subject to correct management systems being used.

Hazard	Receptor	Pathway to Receptor	Risk management techniques	Probability of exposure	Consequence	Overall risk
	to the west of the site located at Mainsail Lane on the opposite side of the Gloucester and Sharpness Canal. The site is located adjacent to the Gloucester and Sharpness Canal which runs along the western boundary of the facility.		inspections, pre-planned maintenance and management procedures Failure alarm system with local and remote alert systems			
Chemical reaction from storage of incompatible chemicals, potential for fire, explosion etc	Internal area and immediate area – other businesses and users within Discovery Park adjacent to the facility.	Air, land, water	All chemicals/solvents have been assessed to ensure no incompatible chemicals/solvents are stored in proximity. All chemicals/solvents are stored in dedicated bunded storage areas internally and externally with sealed drainage / impermeable surfaces. Should an incompatible chemical reaction occur, the emergency response procedure will be followed which will be produced as part of the site EMS.	Low	Low - Release of hazardous vapours, dust etc, contamination of water course or land	Low – subject to correct management systems being used.
Fire involving stored flammable solvents	Internal area and immediate area – other businesses and users	Air	All solvents are stored in dedicated storage areas to minimise risk of fire.	Low	High - Release of hazardous vapours, dust etc,	Low – subject to correct management systems being used.

Hazard	Receptor	Pathway to Receptor	Risk management techniques	Probability of exposure	Consequence	Overall risk
	within Discovery Park adjacent to the facility.		Only minimum volumes stored as required. Staff will be trained in emergency fire procedures and actions to take in the event of a fire at the site.		contamination of water course or land	
Breach of site security, vandalism etc	Variable - dependent on nature of the theft/vandalism	Air, land, water	Site is enclosed with securing fencing and dedicated access systems. Site has secure controlled entry for pedestrians and vehicles.	Low	Low - Release of hazardous vapours, dust etc, contamination of water course or land	Low – subject to correct management systems being used.
Flooding	Surface Water	Surface Water Drainage System	The installation is in flood zone 2. This means it has a medium probability of flooding. (the extent of a flood from rivers or from the sea with up to a 0.1% (1 in 1000) chance of happening in any given year.)	Medium	Low - Release of hazardous materials, contamination of water course or land etc. unlikely due to hazardous materials being stored within building or sealed containers so protected from flood waters	Low

4 EMISSIONS TO WATER

4.1 Surface Water Runoff

4.1.1 There are no point source emissions to surface water of wastewaters from the production activities. Clean uncontaminated surface water from outside areas and roof drainage is discharged to the adjacent canal.

4.2 Discharge to Sewer

4.2.1 There are no point source emissions to sewer from the production activities. Waste waters from the presses are collected and oils separated and reused on site. Wastewater from this process is collected in IBC's and sent for processing at permitted facility off site.

5 EMISSIONS TO AIR

5.1 Introduction

5.1.1 This section provides an overview of the air quality modelling assessment of point source emissions to air from the installation. The full report is provided in Appendix E of the main application document.

5.1.2 The scope of the assessment has covered the following aspects:

- Emission sources - release point characteristics.
- Emissions screening for further assessment.

5.2 Emission Sources

5.2.1 There are eleven emission points to air from the facility, these are as follows:

- thermal oxidiser – VOCs, NO_x, CO
- scrubber – odour
- dust abatement (x3) – Particulates
- spray booths (x2) – VOCs and Particulates
- gas boilers (x4) – NO_x and CO

The boilers do not require a permit until 01 January 2029 when the two existing 1.16 MWth boilers fall under the Medium Combustion Plant Directive (MCPD). Two new 700 kWth boilers are below the thresholds for control under either the EP Regulations 2016 or the MCPD).

5.3 Emissions Screening

5.3.1 Emissions have been screened for significance against appropriate environmental standards for long-term and short-term exposure in the Air Quality Assessment, included in the application as Appendix E to the main application document. Emissions standards are based on statutory air quality limits where available, and upon human health protection environmental assessment levels (EALs).

5.3.2 For each pollutant considered the Process Environmental Contribution (PEC) is not considered significant at receptors.

5.3.3 Odour from the wet scrubber emissions is not expected to cause any disamenity to residential receptors.

6 CONCLUSIONS

- 6.1.1 The ERA report has been undertaken to assess the likelihood of risk to amenity and sensitive environmental receptors from accidents, incidents and emissions resulting from the activities at the Permali facility.
- 6.1.2 The results of the ERA show that the risk of harm or impact upon amenity from odour, noise and vibration, fugitive emissions, visible plumes, and accidents is “Low”, provided that the current and recommended control measures are implemented, maintained and regularly reviewed.
- 6.1.3 The AQ assessment concludes that the predicted concentrations associated with operations at the site are below the relevant air quality standards at sensitive receptors and the effects of the impacts are not considered to be significant. The resulting air quality effect of the proposed activities is considered to be “not significant” overall.

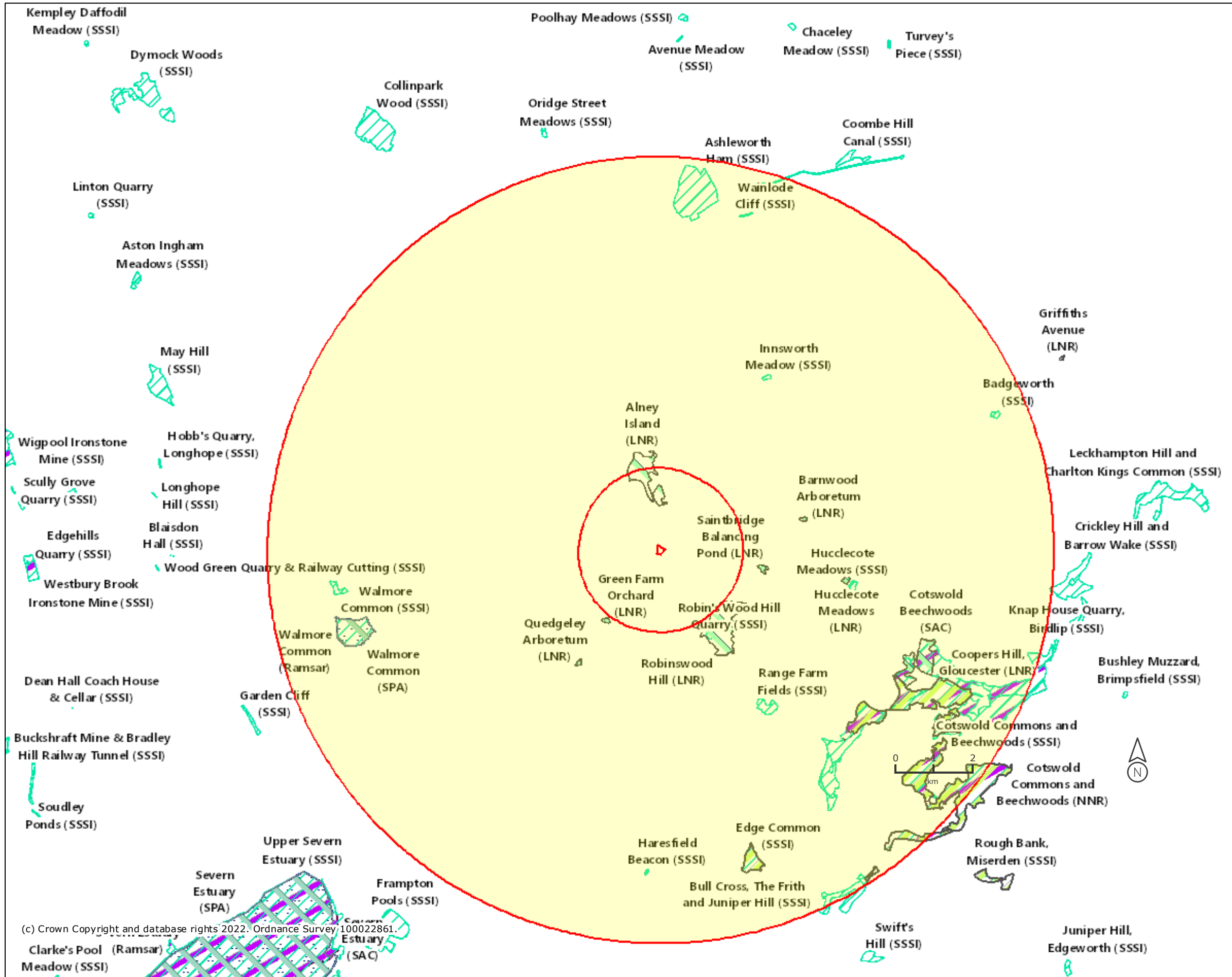
REFERENCES

1. Environment Agency's (EA's) Risk Assessments for your environmental permit - <https://www.gov.uk/guidance/risk-assessments-for-your-environmental-permit>
1. DEFRA Air Quality Management Area Maps - <https://uk-air.defra.gov.uk/aqma/maps/>
2. British Geological Survey Geology of Britain Viewer - <http://mapapps.bgs.ac.uk/geologyofbritain/home.html>

Appendix A MAPS



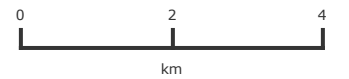
Permalite 10km Designated Sites Screening



Legend

-  Local Nature Reserves (England)
-  National Nature Reserves (England)
-  Ramsar Sites (England)
-  Sites of Special Scientific Interest (England)
-  Special Areas of Conservation (England)
-  Special Protection Areas (England)

Projection = OSGB36
 xmin = 356000
 ymin = 206200
 xmax = 406800
 ymax = 231000



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Flood map for planning

Your reference	Location (easting/northing)	Created
Permal Flood Map	382328/217128	12 Sep 2022 17:18

Your selected location is in flood zone 2, an area with a medium probability of flooding.

This means:

- you must complete a flood risk assessment for development in this area
- you should follow the Environment Agency's standing advice for carrying out a flood risk assessment (see www.gov.uk/guidance/flood-risk-assessment-standing-advice)

Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

Flood risk data is covered by the Open Government Licence which sets out the terms and conditions for using government data. <https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/>

Use of the address and mapping data is subject to Ordnance Survey public viewing terms under Crown copyright and database rights 2021 OS 100024198. <https://flood-map-for-planning.service.gov.uk/os-terms>

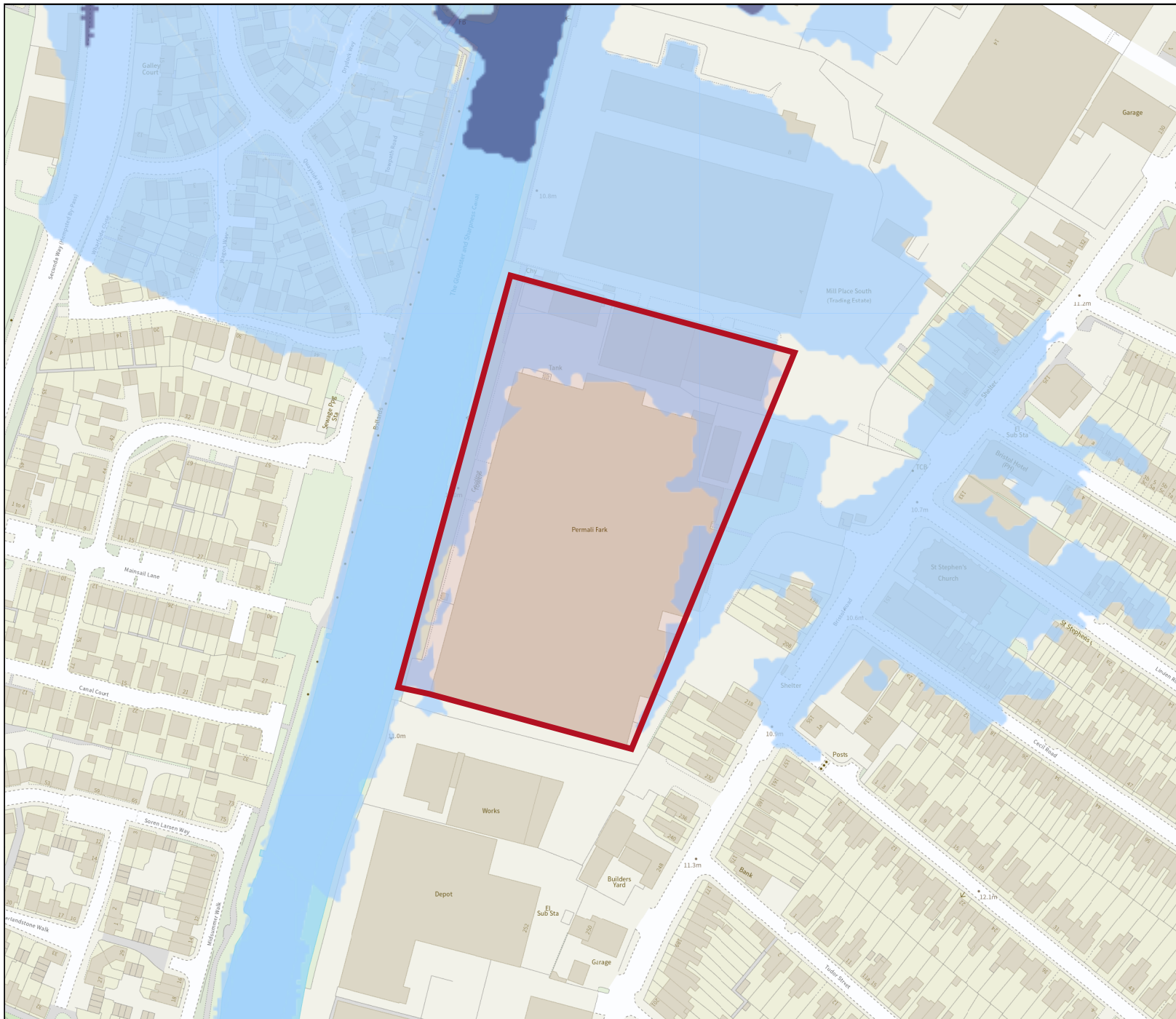
Flood map for planning









Your reference
Permal Flood Map

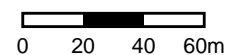
Location (easting/northing)
382328/217128

Scale
1:2500

Created
12 Sep 2022 17:18



-  Selected area
-  Flood zone 3
-  Flood zone 3: areas benefiting from flood defences
-  Flood zone 2
-  Flood zone 1
-  Flood defence
-  Main river
-  Water storage area



APPLICATION FOR AN ENVIRONMENTAL PERMIT

Permal Gloucester

Environmental Risk Assessment (ERA) 2023-02-24

JER9222

1

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