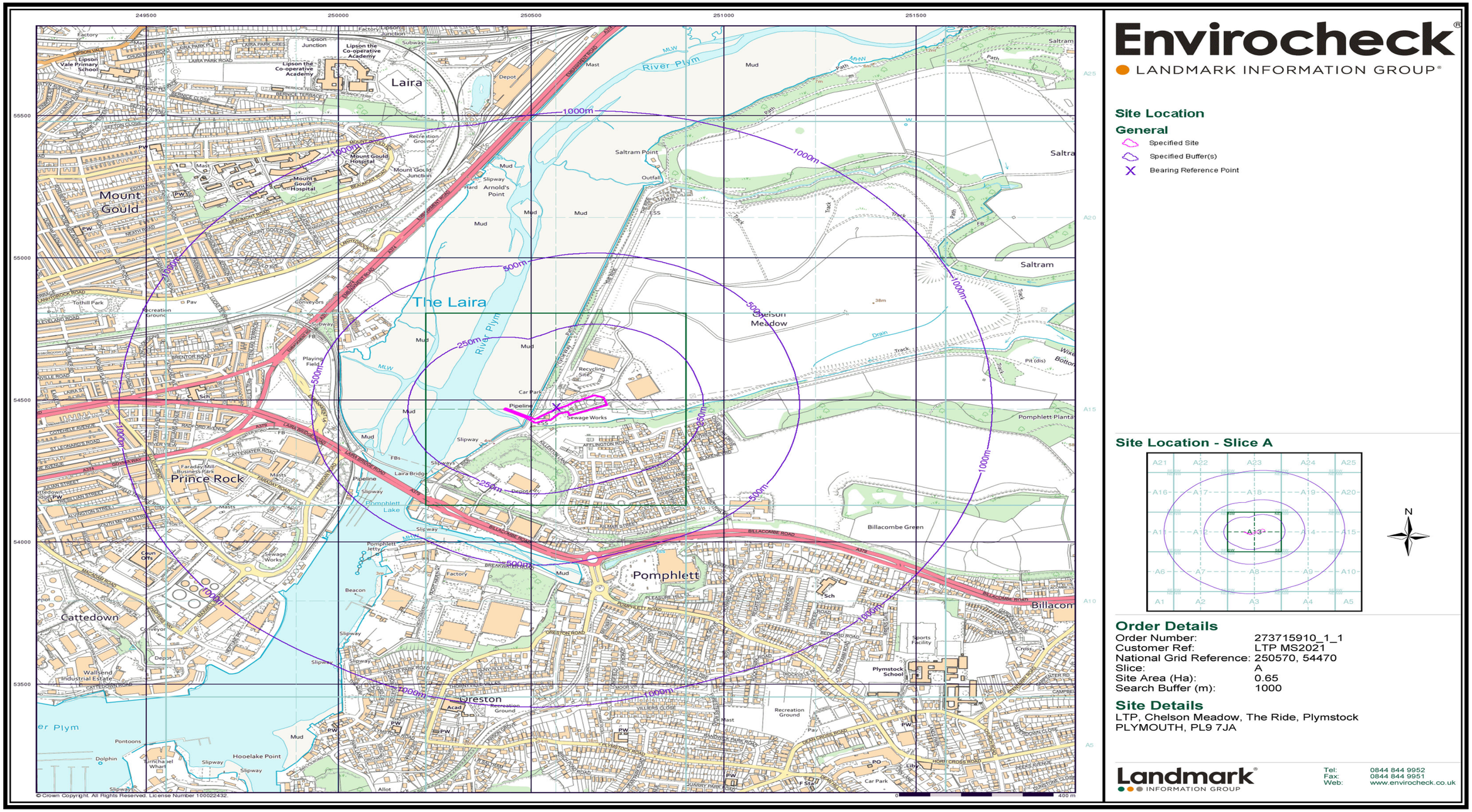

Figure 1: Location of LTP showing sensitive receptors at 250m, 500m & 1000m from the permit boundary, 2021

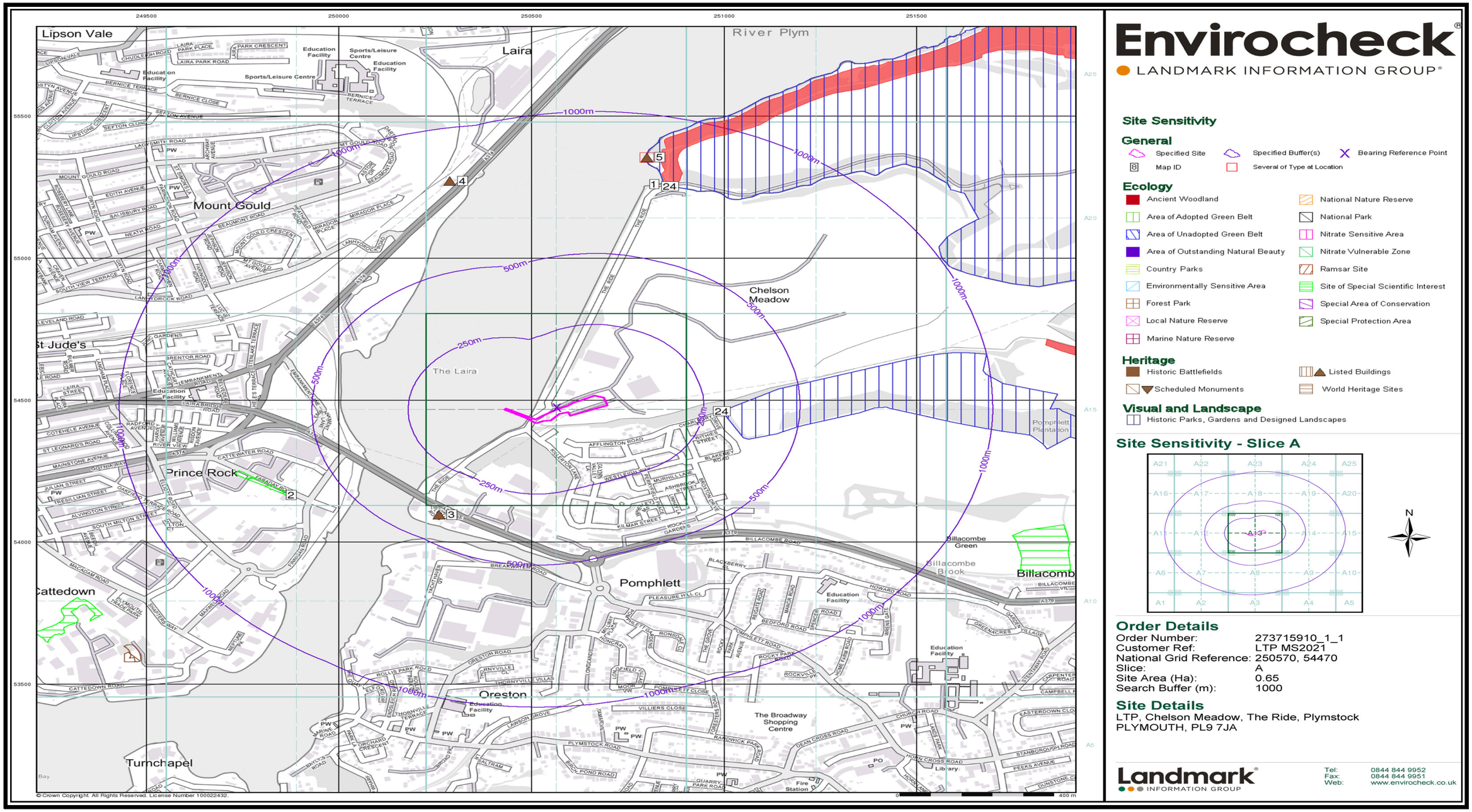

Figure 2: LTP permit boundary (purple line) in relation to sensitive receptors (see key) at 250m, 500m and 1000km from permit boundary

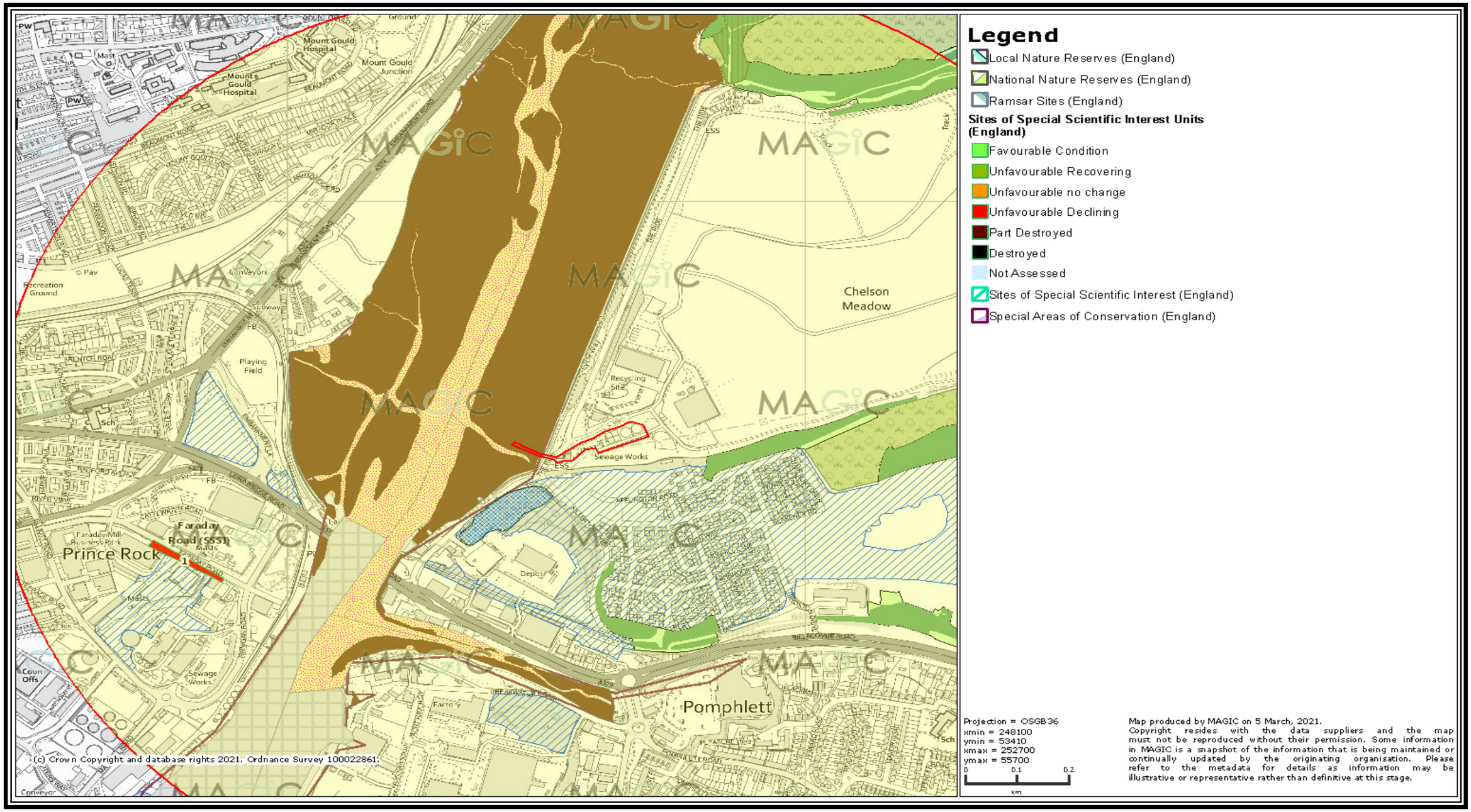

Figure 3: Sites of ecological interest within 1000m distance of the LTP permit boundary, magic.gov.uk. 2021

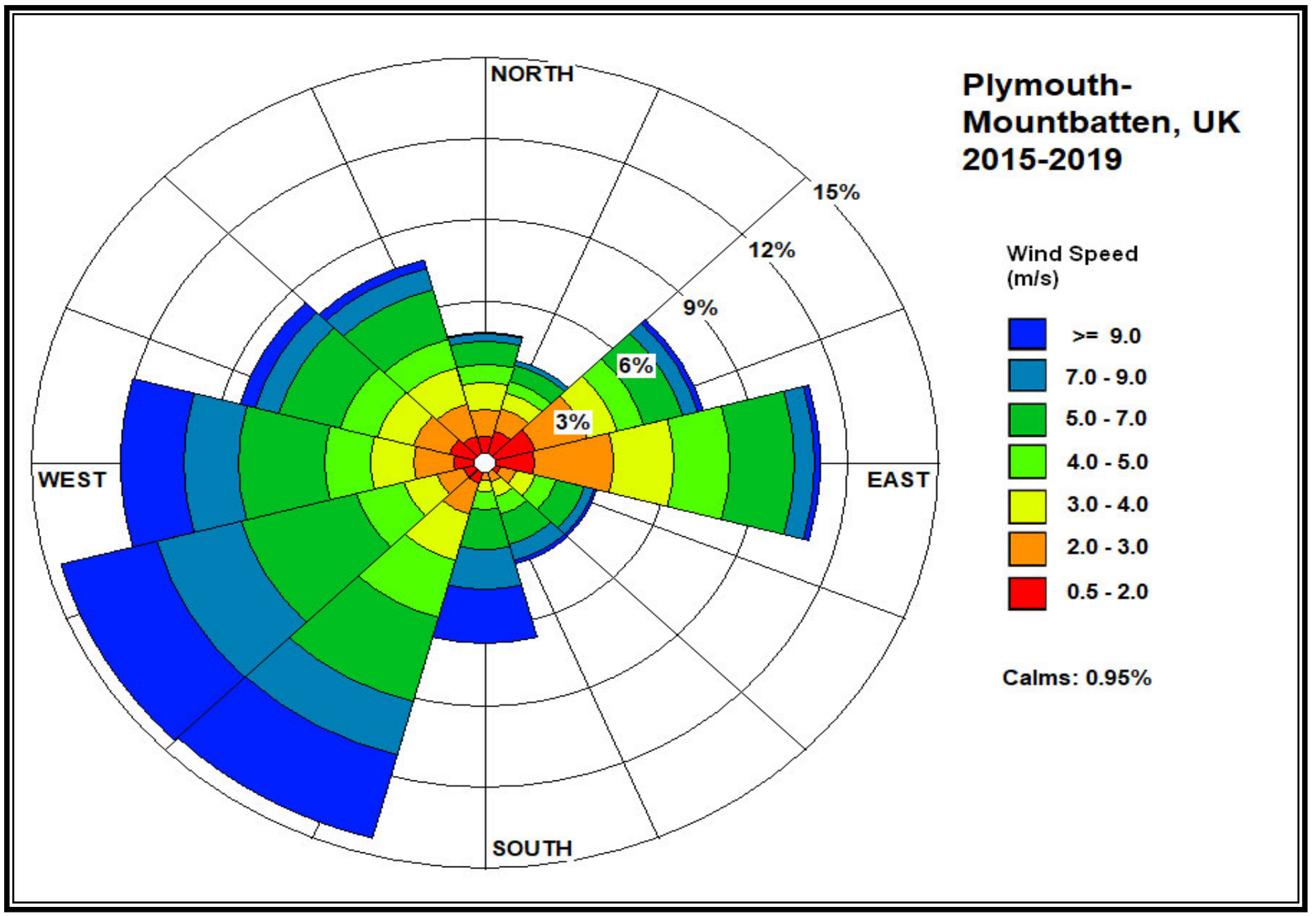

Figure 4: Wind rose for Plymouth 2015-2019. Prevailing winds are in the sector between west and south west. Winds in the sectors north to north-north-east and south to east-south-east are least frequent. Over the period 2015-2019, easterly winds occurred ca. 10% of the time.

ENVIRONMENTAL RISK ASSESSMENT - WASTE OPERATIONS

LOCATION: Chelson Meadow Leachate Treatment Plant | **DATE:** 11.05.2021 | **ASSESSOR:** Leppitt Associates

OPERATION: Biological Treatment of Non Hazardous Landfill Leachate | **WASTE CATEGORY:** Landfill Leachate

ITEM	HAZARD/*SOURCE*	PATHWAY	RISK/HARM	RECEPTOR	SEVERITY (H/M/L)	PROBABILITY (H/M/L)	RISK (H/M/L)	JUSTIFICATION OF RISK	GENERIC CONTROLS/PRECAUTIONS	OVERALL RESIDUAL RISK
1	**Litter** *Non-hazardous (plastics & man-made fibres) windblown material moving off site* *Vandalism of containers leading to escape of loose waste*	Airborne material derived from waste transfer operations	Visual & physical impact Ingestion Physical impact Smothering	People: *On site* *Off site* Property: *Waste Facility* *Residential Area* Ecosystems: *River Plym* *Mud Flats Priority Habitat (PH)* *Woodland PH* *Saltram estate* *Restored landfill* *South Leat*	 L L M M H H H H H H	 L L L L L L L L L L	 L L M M M M M M M M	Liquid waste (landfill leachate) derived from landfill drainage system. Large waste facility immediately adjacent . Proximity and direction of receptor: waste facility immediately adjacent; residential and South Leat 70m S; capped landfill, River Plym & mud flats at permit boundary; PH woodland 125m ESE; Saltram estate ca. 750m NNE. Prevailing wind from SW to W, plus some E	Boundary fence to intercept litter. TCM on site and inspecting regularly. 24 hour CCTV Closed waste bins provided outside control room Litter removal as required and transfer to residual container.	L
2	**Noise & Vibration** *Vehicle movements on & off site* *Mechanical and electrical infrastructure operating 24/7*	Airborne noise Ground vibration	Unacceptable noise pollution Structural damage to buildings Noise levels damaging to human health & disruptive to animal/bird behaviour	People: *On site* *Off site* Property: *Waste Facility* *Residential Area* Ecosystems: *River Plym* *Mud Flats Priority Habitat (PH)* *Woodland PH* *Saltram estate* *Restored landfill*	 H H H H H H H H H	 H H M H H H H M H	 H H H H H H H H H	Small numbers of vehicles visiting regularly. Tanker movements occasional Treatment operations 24/7 Aging blowers inherently noisy and close to residential area Proximity and direction of receptor: waste facility immediately adjacent; residential 70m S; capped landfill, River Plym & mud flats at permit boundary; PH woodland 125m ESE; Saltram estate ca. 750m NNE. Prevailing wind from SW to W, plus some E	24hr repeating treatment Regular servicing of all infrastructure. Blowers to be replaced 2021, to conform to requirements of noise risk assessment TCM on site PPE for site operatives Complaints procedure	L

GUIDANCE NOTES

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SEVERITY * PROBABILITY = RISK

H * H = H
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ENVIRONMENTAL RISK ASSESSMENT - WASTE OPERATIONS

LOCATION: Chelson Meadow Leachate Treatment Plant	**DATE:** 11.05.2021	**ASSESSOR:** Leppitt Associates
OPERATION: Biological Treatment of Non Hazardous Landfill Leachate		**WASTE CATEGORY:** Landfill Leachate

ITEM	HAZARD/*SOURCE*	PATHWAY	RISK/HARM	RECEPTOR	SEVERITY (H/M/L)	PROBABILITY (H/M/L)	RISK (H/M/L)	JUSTIFICATION OF RISK	GENERIC CONTROLS/PRECAUTIONS	OVERALL RESIDUAL RISK
3	**Dust & Particulate matter** *Vehicle movements*	Airborne	Smothering Eutrophication/ contamination Inhalation	People: *on site* *off site* Property: *Waste Facility* *Residential Area* Ecosystems: *River Plym* *Mud Flats* *Priority Habitat (PH)* *Woodland PH* *Saltram estate* *Restored landfill* *South Leat*	 H H H H H H H H	 L L L L L L L L	 M M M M M M M M	Small numbers of vehicles visiting regularly. Tanker movements occasional Treatment process does not generate dust/particles South Leat has seasonal water flow Proximity and direction of receptor: waste facility immediately adjacent; residential and South Leat ca. 70m S; capped landfill, River Plym & mud flats at permit boundary; PH woodland 125m ESE; Saltram estate ca. 750m NNE. Prevailing wind from SW to W, plus some E	Access route and site base engineered. Dampening down of engineered surfaces as required TCM on site and inspecting regularly including regular infrastructure checks. Management System and Emergency Procedure in place.	L

GUIDANCE NOTES	SEVERITY * PROBABILITY = RISK	
H = HIGH **M = MEDIUM** **L = LOW**	**H * H = H** **H * M = H** **M * M = M** **L * H = M**	**L * M = M** **L * L = L**

ENVIRONMENTAL RISK ASSESSMENT - WASTE OPERATIONS

LOCATION: Chelson Meadow Leachate Treatment Plant	**DATE:** 11.05.2021	**ASSESSOR:** Leppitt Associates
OPERATION: Biological Treatment of Non Hazardous Landfill Leachate	**WASTE CATEGORY:** Landfill Leachate	

ITEM	HAZARD/*SOURCE*	PATHWAY	RISK/HARM	RECEPTOR	SEVERITY (H/M/L)	PROBABILITY (H/M/L)	RISK (H/M/L)	JUSTIFICATION OF RISK	GENERIC CONTROLS/PRECAUTIONS	OVERALL RESIDUAL RISK
4	**Odours** *Malodorous waste* *Vehicle emissions*	Airborne	Inhalation of emissions	People: *On site* *Off site*	 H H	 L L	 H H	Landfill leachate generated from anaerobic decomposition of waste with potential for odour. Leachate received is highly diluted and has minimal odour. No odorous additives during treatment process Storage tanks and SBR tanks open-topped Proximity and direction of receptor: waste facility immediately adjacent; residential 70m S; capped landfill, River Plym & mud flats at permit boundary; PH woodland 125m ESE; Saltram estate ca. 750m NNE. Prevailing wind from SW to W, plus some E	Odour monitoring as outlined in Management System. Odour Emergency Procedure and Complaints Procedure in place. TCM on site and inspecting regularly.	L

GUIDANCE NOTES

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ENVIRONMENTAL RISK ASSESSMENT - WASTE OPERATIONS

LOCATION: Chelson Meadow Leachate Treatment Plant	**DATE:** 11.05.2021	**ASSESSOR:** Leppitt Associates
OPERATION: Biological Treatment of Non Hazardous Landfill Leachate		**WASTE CATEGORY:** Landfill Leachate

ITEM	HAZARD/*SOURCE*	PATHWAY	RISK/HARM	RECEPTOR	SEVERITY (H/M/L)	PROBABILITY (H/M/L)	RISK (H/M/L)	JUSTIFICATION OF RISK	GENERIC CONTROLS/PRECAUTIONS	OVERALL RESIDUAL RISK
5	**Mud on roads** *Vehicle movements*	Surface water bodies Highway	Oxygen depletion in surface water bodies Contamination of water accessed by domestic livestock Generation of dust on drying (see 3 above) Slippery road	Property: *Highway* Ecosystems: *River Plym* *Mud Flats* *Priority Habitat (PH)* *Woodland PH* *Saltram estate* *Restored landfill* *South Leat*	 H M M M M M H	 L L L L L L L	 M M M M M M M	Approach road and site base of engineered construction No soils etc. accepted South Leat has seasonal water flow Proximity and direction of receptor: waste facility immediately adjacent; residential and South Leat ca. 70m S; capped landfill, River Plym & mud flats at permit boundary; PH woodland 125m ESE; Saltram estate ca. 750m NNE.	Good housekeeping policy. TCM on site and inspecting regularly. Cleaning of engineered site base and adjacent highway as required.	L
6	**Noxious Weeds & Pests (Birds, Vermin & Insects)** *Perching points & open tank with liquor*	Airborne	Spread of disease	People: *On site* *Off site*	 H H	 L L	 M M	Liquid waste (landfill leachate) derived from landfill drainage system. Large waste facility immediately adjacent Storage tanks utilised for roosting and bathing Proximity and direction of receptor: waste facility immediately adjacent; residential ca. 70m S; Saltram estate ca. 750m NNE connected by Ride adjacent to River Plym.	Pest inspection and control if required. Waste bins provided, secure and emptied regularly TCM on site undertaking regular site inspection. Management System in place	L

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ENVIRONMENTAL RISK ASSESSMENT - WASTE OPERATIONS

LOCATION: Chelson Meadow Leachate Treatment Plant	**DATE:** 11.05.2021	**ASSESSOR:** Leppitt Associates
OPERATION: Biological Treatment of Non Hazardous Landfill Leachate	**WASTE CATEGORY:** Landfill Leachate	

ITEM	HAZARD/*SOURCE*	PATHWAY	RISK/HARM	RECEPTOR	SEVERITY (H/M/L)	PROBABILITY (H/M/L)	RISK (H/M/L)	JUSTIFICATION OF RISK	GENERIC CONTROLS/PRECAUTIONS	OVERALL RESIDUAL RISK
7	**Non-conforming Waste** *Additional external inputs to leachate drainage system via surface water drainage system to waste facility*	Surface water Airborne	Toxic Hazardous Explosive	People: *On site* *Off site* Property: *Waste Facility* *Residential Area* Ecosystems: *River Plym* *Mud Flats* *Priority Habitat (PH)* *LTP Biomass*	 H H H H H H H	 L L L L L L M	 M M M M M M H	Part of drainage system serving adjacent waste facility enters the leachate drainage system via oil interceptors Most outfall discharge is at high tide Emergency discharge can be outside tidal window Biological treatment process can be inhibited by uncontrolled inputs Leachate of known composition monitored annually for permit compliance Proximity and direction of receptor: River Plym & mud flats at permit boundary.	Drainage can be isolated from the tanks for known incident Oil interceptors with maintenance programme Long term plan to redirect surface water Regular chemical monitoring of incoming leachate Outfall monitored weekly Permit compliance includes toxicity testing Non-conforming liquor transferred to permitted facility as a priority. TCM on site and inspecting regularly Site operated under Environmental Permit and with Management System and Emergency Procedure in place.	L

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ENVIRONMENTAL RISK ASSESSMENT - WASTE OPERATIONS

LOCATION: Chelson Meadow Leachate Treatment Plant | **DATE:** 11.05.2021 | **ASSESSOR:** Leppitt Associates

OPERATION: Biological Treatment of Non Hazardous Landfill Leachate | **WASTE CATEGORY:** Landfill Leachate

ITEM	HAZARD/*SOURCE*	PATHWAY	RISK/HARM	RECEPTOR	SEVERITY (H/M/L)	PROBABILITY (H/M/L)	RISK (H/M/L)	JUSTIFICATION OF RISK	GENERIC CONTROLS/PRECAUTIONS	OVERALL RESIDUAL RISK
8	**Fire** *Vehicle fires* *Equipment/ Process fire* *Fire Water* *Smoke* *Arson - Waste/Plant* *Dissolved methane gas explosion (DSEAR)*	Convection Radiation Conduction	Loss of property Damage to human health Loss of vegetation Asphyxiation Contamination of treatment process	People: *On site* *Off site* Property: *Waste Facility* *Residential Area* Ecosystems: *River Plym* *Mud Flats* *Priority Habitat (PH)* *Woodland PH* *Saltram estate* *Restored landfill* *South Leat* *Groundwater* *LTP Bacterial biomass*	 H H H H H H H H H H H H	 L L L L L L L L L L L M	 *M* *M* *M* *M* *M* *M* *M* *M* *M* *M* *M* *H*	Site drainage connected to treatment system, composed of bacterial biomass vulnerable to environmental variation Proximity and direction of receptor: waste facility immediately adjacent; residential and South Leat ca. 70m S; capped landfill, River Plym & mud flats at permit boundary; PH woodland 125m ESE; Saltram estate ca. 750m NNE. Prevailing wind from SW to W, plus some E	Engineered site base with site drainage Gas and fire detection systems in control room and pump lifting station DSEAR RA for LTP Confined spaces defined Chemical cabinet storage Regular monitoring of mixed liquor and bacterial health Fire extinguishers Fire water can be isolated from incoming leachate storage tank Oils spills contained and cleaned immediately 24 hour CCTV Fire prohibition & no smoking policy Mains water on site Site mechanical and electrical infrastructure serviced to manufacturers specification. TCM on site and inspecting regularly.	L

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ENVIRONMENTAL RISK ASSESSMENT - WASTE OPERATIONS

LOCATION: Chelson Meadow Leachate Treatment Plant	**DATE:** 11.05.2021	**ASSESSOR:** Leppitt Associates
OPERATION: Biological Treatment of Non Hazardous Landfill Leachate		**WASTE CATEGORY:** Landfill Leachate

ITEM	HAZARD/*SOURCE*	PATHWAY	RISK/HARM	RECEPTOR	SEVERITY (H/M/L)	PROBABILITY (H/M/L)	RISK (H/M/L)	JUSTIFICATION OF RISK	GENERIC CONTROLS/PRECAUTIONS	OVERALL RESIDUAL RISK
9	**Surface and ground water pollution** *Noxious liquid emanating from:* *- leaks of hydraulic fluids & fuel* *-uncontrolled emission of leachate* *- fire water*	Direct run-off from site Percolation into ground water	Contamination of ground and surface water	People: *Off site* Ecosystems: *River Plym* *Mud Flats* *Priority Habitat (PH* *South Leat* *Groundwater*	 H H H H H	 L M M M M	 M H H H H	Small numbers of vehicles visiting regularly. Tanker movements occasional LTP constructed on historic landfill (contaminated land) Proximity and direction of receptor: waste facility immediately adjacent; residential and South Leat ca. 70m S; capped landfill, River Plym & mud flats at permit boundary; PH woodland 125m ESE; Saltram estate ca. 750m NNE. Prevailing wind from SW to W, plus some E	Hydraulic fluids etc. stored in locked container/store Site base of engineered construction with site drainage Periodic infrastructure monitoring and maintenance Incoming leachate volume measured by flow meter - unusual decline should trigger investigation Monitoring of South Leat water composition All spillages contained, see Emergency Procedure. TCM on site and inspecting regularly Site operated under Environmental Permit with Management System in place. Site mechanical and electrical infrastructure serviced to manufacturers specification.	L

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ENVIRONMENTAL RISK ASSESSMENT - WASTE OPERATIONS

LOCATION: Chelson Meadow Leachate Treatment Plant	**DATE:** 11.05.2021	**ASSESSOR:** Leppitt Associates
OPERATION: Biological Treatment of Non Hazardous Landfill Leachate		**WASTE CATEGORY:** Landfill Leachate

ITEM	HAZARD/*SOURCE*	PATHWAY	RISK/HARM	RECEPTOR	SEVERITY (H/M/L)	PROBABILITY (H/M/L)	RISK (H/M/L)	JUSTIFICATION OF RISK	GENERIC CONTROLS/PRECAUTIONS	OVERALL RESIDUAL RISK
10	**Vandalism of Plant or Fuel & Hydraulic Oil Storage leading to leaks** *Noxious liquid emanating from:* *- leaks of hydraulic fluids & fuel from damaged site plant or fuel store*	Direct run-off from site Percolation into ground water	Contamination of ground and surface water Contamination of treatment process	People: *Off site* *On Site* Property: *LTP Infrastructure* Ecosystems: *River Plym* *Mud Flats* *Priority Habitat (PH* *South Leat* *Groundwater* *LTP Bacterial biomass*	 H H H H H H H H	 L L L L L L L M	 M M M M M M M H	Site drainage connected to treatment system, composed of bacterial biomass vulnerable to environmental variation Small numbers of vehicles visiting regularly. Tanker movements occasional Treatment operations 24/7 Proximity and direction of receptor: waste facility immediately adjacent; residential and South Leat ca. 70m S; capped landfill, River Plym & mud flats at permit boundary; PH woodland 125m ESE; Saltram estate ca. 750m NNE. Prevailing wind from SW to W, plus some E	Site secured by fencing and gates locked out of hours Compound is part of a larger facility with security measures Intruder alarms on key infrastructure with telemetric output Hydraulic fluids etc. stored in locked container/store Site plant maintained regularly and with daily checks CCTV Regular monitoring of mixed liquor and bacterial health Site base of engineered construction with site drainage All spillages contained, see Emergency Procedure. TCM on site and inspecting regularly, including regular infrastructure checks Site operated under Environmental Permit with Management System in place. Site mechanical and electrical infrastructure serviced to manufacturers specification.	L

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ENVIRONMENTAL RISK ASSESSMENT - WASTE OPERATIONS

LOCATION: Chelson Meadow Leachate Treatment Plant	**DATE:** 11.05.2021	**ASSESSOR:** Leppitt Associates
OPERATION: Biological Treatment of Non Hazardous Landfill Leachate		**WASTE CATEGORY:** Landfill Leachate

ITEM	HAZARD/*SOURCE*	PATHWAY	RISK/HARM	RECEPTOR	SEVERITY (H/M/L)	PROBABILITY (H/M/L)	RISK (H/M/L)	JUSTIFICATION OF RISK	GENERIC CONTROLS/PRECAUTIONS	OVERALL RESIDUAL RISK
11	**Discharge to River Plym** *Permit non-compliance in one or more parameters*	Direct emission to River Plym direct bio-uptake by mud flat ecosystem	Contamination of surface water (River Plym) and mud flats	People: *Off site* Ecosystems: *River Plym* *Mud Flats* *Priority Habitat (PH)*	H H H	L L L	M M M	River Plym used for leisure activities Treatment operations 24/7 Proximity and direction of receptor: River Plym & mud flats receive discharge	Permit specifies point source emission trigger levels Regular chemical monitoring of incoming leachate allowing treatment adjustment Outfall monitored weekly for discharge parameters SBR Biomass monitored weekly Site mechanical and electrical infrastructure serviced to manufacturers specification. LTP Operator or equivalent on site during the working week. LTP can be managed remotely TCM on site and inspecting regularly. Management System and Emergency Procedure in place.	L

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ENVIRONMENTAL RISK ASSESSMENT - WASTE OPERATIONS

LOCATION: Chelson Meadow Leachate Treatment Plant	**DATE:** 11.05.2021	**ASSESSOR:** Leppitt Associates
OPERATION: Biological Treatment of Non Hazardous Landfill Leachate		**WASTE CATEGORY:** Landfill Leachate

ITEM	HAZARD/*SOURCE*	PATHWAY	RISK/HARM	RECEPTOR	SEVERITY (H/M/L)	PROBABILITY (H/M/L)	RISK (H/M/L)	JUSTIFICATION OF RISK	GENERIC CONTROLS/PRECAUTIONS	OVERALL RESIDUAL RISK
12	**Flooding** *Damage to key infrastructure and treatment capability*	Direct flow from River Plym direct flow from South Leat Catastrophic rainfall generating surface water	Failure of LTP	Property: *LTP infrastructure* Ecosystems: *LTP Bacterial biomass*	H H	L L	M M	Site drainage connected to treatment system Part of LTP within 1 in 100 year flood risk zone	TCM on site and inspecting regularly. Management System and Emergency Procedure in place. LTP Operator or equivalent on site during the working week. LTP managed remotely Telemetric alarm Long term plan to raise engineered site base where required CCTV	M

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ENVIRONMENTAL RISK ASSESSMENT - WASTE OPERATIONS

LOCATION: Chelson Meadow Leachate Treatment Plant	**DATE:** 11.05.2021	**ASSESSOR:** Leppitt Associates
OPERATION: Biological Treatment of Non Hazardous Landfill Leachate		**WASTE CATEGORY:** Landfill Leachate

ITEM	HAZARD/*SOURCE*	PATHWAY	RISK/HARM	RECEPTOR	SEVERITY (H/M/L)	PROBABILITY (H/M/L)	RISK (H/M/L)	JUSTIFICATION OF RISK	GENERIC CONTROLS/PRECAUTIONS	OVERALL RESIDUAL RISK
13	**SBR Foam** *Permit non-compliance*	Direct emission from SBRs direct bio-uptake or percolation into soil and surface/ ground water	Contamination of soils, ground and surface water Imperceptible contact with skin	People: *Off site* *On site* Ecosystems: *R Plym* *Mud Flats* *Priority Habitat* *South Leat*	 H H H H H	 M M L L L	 H H M M M	Storage tanks and SBR tanks open-topped Biofoam generated by aeration process Treatment operations 24/7 Proximity and direction of receptor: waste facility immediately adjacent - and specifically weighbridge and haul road; residential and South Leat ca. 70m S; River Plym & mudflats at permit boundary. Prevailing wind from SW to W, plus some E	Automated release of anti-foam at critical wind speed - system subject to regular servicing (monthly) TCM on site and inspecting regularly. Management System and Emergency Procedure in place. CCTV LTP Operator or equivalent on site during the working week. LTP managed remotely Telemetric alarm	L

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https://www.gov.uk/guidance/adapting-to-climate-change-risk-assessment-for-your-environmental-permit

You must do a climate change risk assessment for any new bespoke waste and installation environmental permit application if you expect to operate for more than 5 years. If you get a screening **score of 5 or more**, you will need to **complete your climate change risk assessment** and submit it with your application form.

CATEGORY	SCREENING QUESTIONS	SCORE	YOUR SCORE
1 TIMESCALES	*How long will a permit be required for this site/activity?* 5 years or less of operation. No need to fill in the rest of the screening. You do not need to fill in a risk assessment. Less than 20 years of operation Until between 2040 and 2060 (between 20 and 40 years from now) Until 2060 or beyond (more than 40 years from now)	0 1 3 5	**5**
2 FLOODING	*What is your site's risk of flooding from rivers or the sea?* Not in a flood risk zone Very low or Low Medium High	0 1 2 5	**1**
3 WATER USE	*source of your water?* Water not required Mains water Surface water or groundwater abstraction	0 1 5	**1**
		TOTAL SCREENING SCORE	**7**

https://environment.data.gov.uk/catchment-planning/data-download/#/

South west England river basin district: climate change risk assessment worksheet

Name (as on your part A application form): Chelson Meadow Leachate Treatment Plant

Our permit reference number (if you have one): EPR/CP3731LZ/V004

Your document reference number: Environmental Risk Assessment

Risk assessment worksheet for the 2050s

South west England river basin district

You must carry out a climate change risk assessment for any new bespoke waste and installations permit applications if you expect to operate for more than 5 years. Use the user guide to complete the table. You can add in extra pages if necessary.

Consider how your operations will be affected by the changes in weather and climate described in the table. Consider any changes to average climate conditions that may impact on your operations, for example extreme rainfall.

Also consider:

- critical thresholds - where a 'tipping point' is reached, for example a specific temperature where site processes cannot operate safely
- changes to averages - for example an entire summer of higher than expected rainfall causing waterlogging
- where hazards may combine to cause more impacts

You can add in other climate variables if you wish.

If you have stated on your application form that you do not expect to be operational in 2050, you must still consider climate change risks for the time you do intend to operate. Whilst the variables are for the 2050s, this is an estimated date and you may experience these conditions before then.

Risk scoring matrix

Assess the impact(s) from each of the weather and climate change scenarios and calculate your risk score using the risk scoring matrix.

Your risk score is the likelihood of something happening multiplied by the severity of its impact.

	Severe impact (score = 4)	Medium impact (score = 3)	Mild impact (score = 2)	Minor impact (score = 1)
Highly likely (score = 4)	16	12	8	4
Likely (score = 3)	12	9	6	3
Low likelihood (score = 2)	8	6	4	2
Unlikely (score = 1)	4	3	2	1

This worksheet will sit in your management system. It must appear on the management system summary you submit with your application, even if you do not need to submit the whole risk assessment with your application.

If your pre-mitigation risk score (column D) is 5 or higher, you must complete columns E to H.

LOCATION: Chelson Meadow Leachate Treatment Plant	**DATE:** 12.05.2021	**ASSESSOR:** Leppitt Associates
OPERATION: Biological Treatment of Non Hazardous Landfill Leachate	**LOCATION:** Landfill Leachate	

Potential changing climate variable	**A** **Impact**	**B** **Likelihood**	**C** **Severity**	**D** **Risk** **(B x C)**	**E** **Mitigation** **(what will you do to mitigate this risk**	**F** **Likelihood** (after mitigation)	**G** **Severity** (after mitigation)	**H** **Residual risk** **(F x G)**
1. Summer daily maximum temperature may be around 7°C higher compared to average summer temperatures now.	Summer leachate production will decline Treatment efficiency will increase	1	1	1	None required			
2. Winter daily maximum temperature could be 4°C more than the current average, with the potential for more extreme temperatures, both warmer and colder than present.	Incoming leachate temperature buffered by ground temperature Treatment volume is large and aeration will buffer lower temperatures to some degree Treatment efficiency will increase with temperature increase Treatment efficiency vulnerable to prolonged extreme cold	1	1	1	None required			
3. The biggest rainfall events are up to 20% more intense than current extremes (peak rainfall intensity)*.	Large increase in incoming leachate	3	3	9	Leachate very dilute so treatment more rapid Ensure no surface water drainage enters the treatment system Maintain integrity of landfill cap Investigate and prevent other sources of water ingress	2	2	4
4. Average winter rainfall may increase by 41% on today's averages.	Large increase in incoming leachate	3	3	9	Leachate very dilute so treatment more rapid Ensure no surface water drainage enters the treatment system Maintain integrity of landfill cap Investigate and prevent other sources of water ingress	2	2	4
5. Sea level could be as much as 0.6m higher compared to today's level *.	Flood risk to LTP compound increased	3	4	12	Ensure no surface water drainage enters the treatment system Raise the level of wet well outer wall raise the level of the engineered base in the vulnerable section of the compound Design flood protection for electrical substation and pump lifting station	2	2	4
6. Drier summers, potentially up to 45% less rain than now.	Summer leachate production will decline	1	1	1	Treatment process adjusted to stronger leachate	1	1	1
7. At its peak, the flow in watercourses could be 40% more than now, and at its lowest it could be 80% less than now.	Tidal river - see No. 5 Increased flow in South Leat but unlikely to be sufficient to breach cut-off wall	1	1	1	Maintain integrity of cut-off wall	1	1	1

*Indicates data has come from climate change allowances as part of the spatial planning process. Evidence from your planning submission is acceptable evidence for this worksheet.
https://www.gov.uk/guidance/select-a-waste-recovery-or-disposal-method-for-your-environmental-permit

To operate under an environmental permit, you must do a risk assessment predicting the environmental impact that different ways of disposing of waste will have.

In your risk assessment you must compare the different options you have for recovering or disposing of the waste you produce. You need to do this when you're:

- choosing between recovery or disposal options for the waste you produce
- doing a derogation options appraisal because you cannot operate within the Best Available Technique (BAT) associated emissions levels

Nature of Waste: Use the following hazard rating scores:

hazardous waste - score 10	stable non-reactive hazardous waste - score 8	biodegradable non-hazardous waste - score 4	other non-hazardous waste - score 2	inert waste - score 1

D or R Code: Choose from the following list:

composting - R3 - score 2	recycling of wood, metal, plastic or glass - R3, R4, R5, R11, R12 - score 3	chemical recovery - R2 to R9 - score 4	land-spreading - R10 - score 4	using waste as fuel - R1 - score 6	biological treatment (with energy recovery) - D8 - score 8
incineration (with energy recovery) - D10 - score 10	biological and physico-chemical treatment - D8, D9 - score 12	releasing waste into rivers and lagoons - D6, D7 - score 15	permanent storage - D3, D12 - score 17	incineration without energy recovery - D10 - score 20	landfill - D1 or D5 - score 30

DISPOSAL OPERATIONS	**RECOVERY OPERATIONS**
D1 Deposit into or on to land (e.g. landfill, etc.) D2 Land treatment (e.g. biodegradation of liquid or sludgy discards in soils, etc.) D3 Deep injection (e.g. injection of pumpable discards into wells, salt domes or naturally occurring repositories, etc.) D4 Surface impoundment (e.g. placement of liquid or sludgy discards into pits, ponds or lagoons, etc.) D5 Specially engineered landfill (e.g. placement into lined discrete cells which are capped and isolated from one another and the environment, etc.) D6 Release into a water body except seas/oceans D7 Release to seas/oceans including sea-bed insertion D8 Biological treatment not specified elsewhere in this Annex which results in final compounds or mixtures which are discarded by means of any of the operations numbered D1 to D12 D9 Physico-chemical treatment not specified elsewhere in this Annex which results in final compounds or mixtures which are discarded by means of any of the operations numbered D1 to D12 (e.g. evaporation, drying, calcination, etc.) D10 Incineration on land D11 Incineration at sea D12 Permanent storage (e.g. emplacement of containers in a mine, etc.) D13 Blending or mixing prior to submission to any of the operations numbered D1 to D12 D14 Repackaging prior to submission to any of the operations numbered D1 to D13 D15 Storage pending any of the operations numbered D1 to D14 (excluding temporary storage, pending collection, on the site where the waste is produced)	R1 Use principally as a fuel or other means to generate energy R2Solvent reclamation/regeneration R3 Recycling/reclamation of organic substances which are not used as solvents (including composting and other biological transformation processes) R4 Recycling/reclamation of metals and metal compounds R5 Recycling/reclamation of other inorganic materials R6 Regeneration of acids or bases R7 Recovery of components used for pollution abatement R8 Recovery of components from catalysts R9 Oil re-refining or other reuses of oil R10 Land treatment resulting in benefit to agriculture or ecological improvement R11 Use of waste obtained from any of the operations numbered R1 to R10 R12 Exchange of waste for submission to any of the operations numbered R1 to R11 R13 Storage of waste pending any of the operations numbered R1 to R12 (excluding temporary storage, pending collection, on the site where the waste is produced)

Chelson Meadow LTP

No.	**Type of Waste (LoW)**	**Nature of the Waste Produced**	**Hazard Rating**	**Waste Recovery or Disposal methods (R or D code)**	**Recovery or disposal method impact score**	**Impact: Hazard Score** *Multiplied* **R or D Score**	**Amount of waste (tonnes per year)**	**Total Score: Impact Score** *Multiplied* **Tonnes**
1	19 07 03	Biosludge	4	R3	4	16	100	1600
2								
3								

CHELSON MEADOW LTP - ENVIRONMENTAL RISK ASSESSMENT (ECOSYSTEMS)

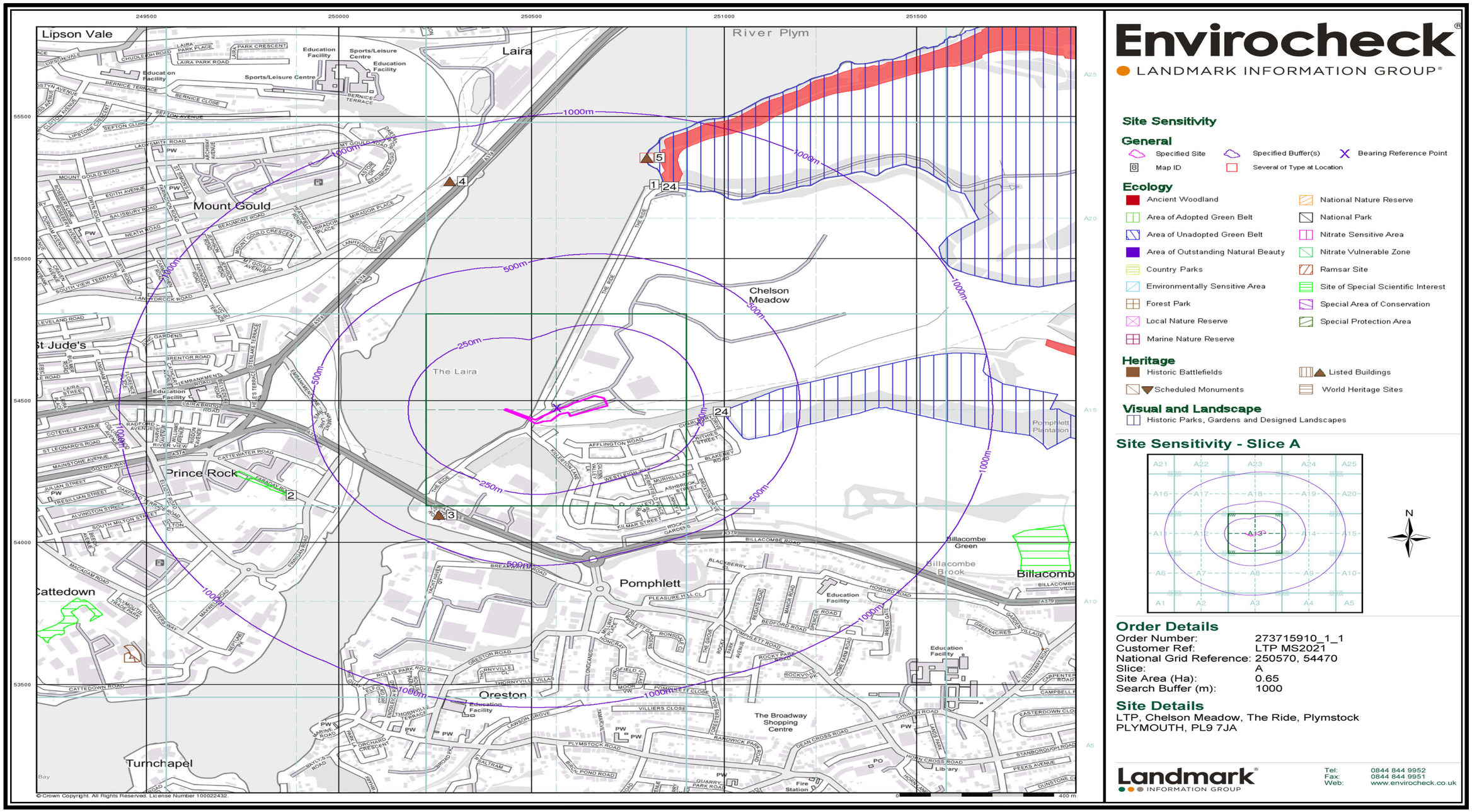

Figure 1: LTP permit boundary (purple line) in relation to sensitive receptors (see key) at 250m, 500m and 1000km from permit boundary

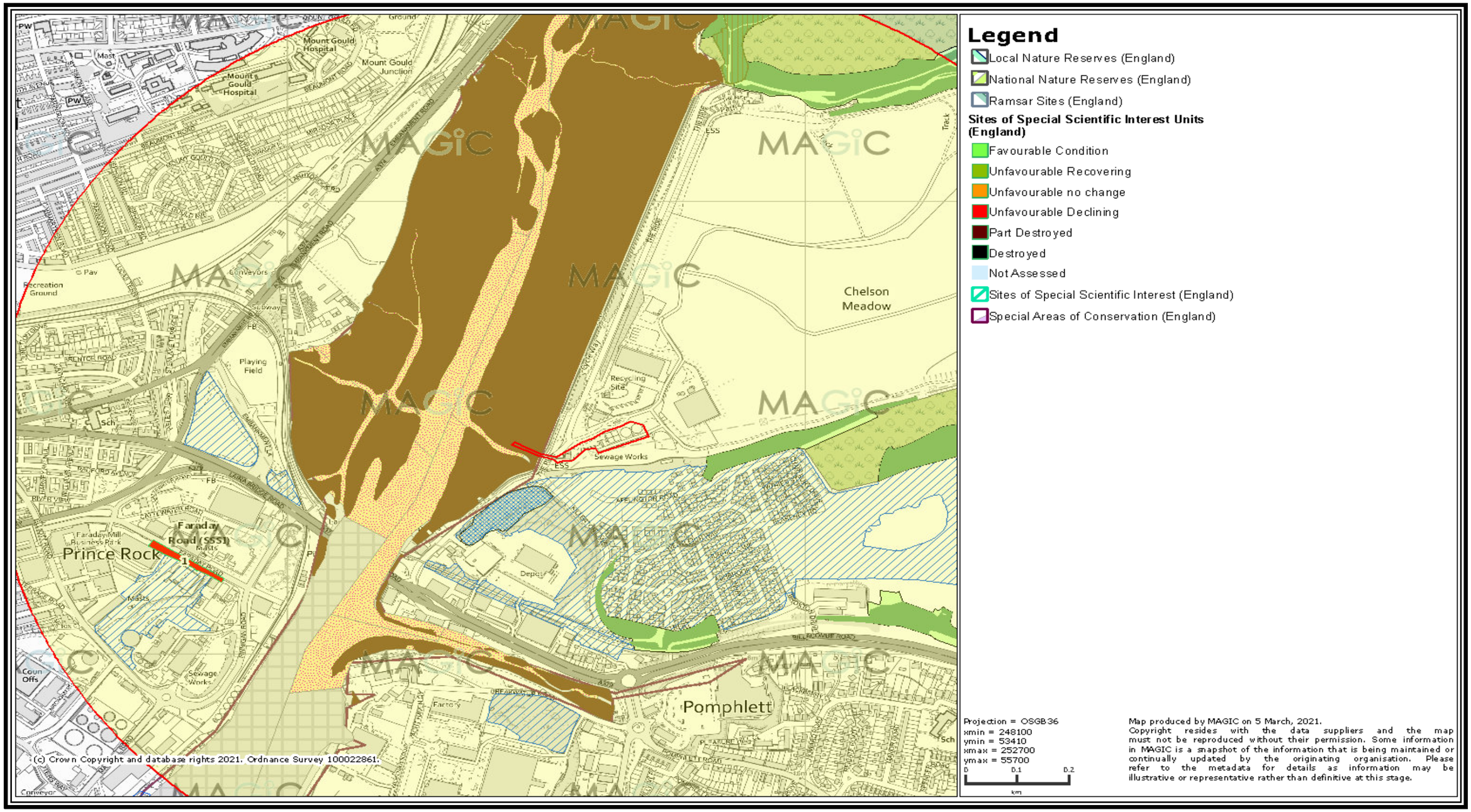

Figure 2: Sites of ecological interest within 1000m distance of the LTP permit boundary, magic.gov.uk. 2021

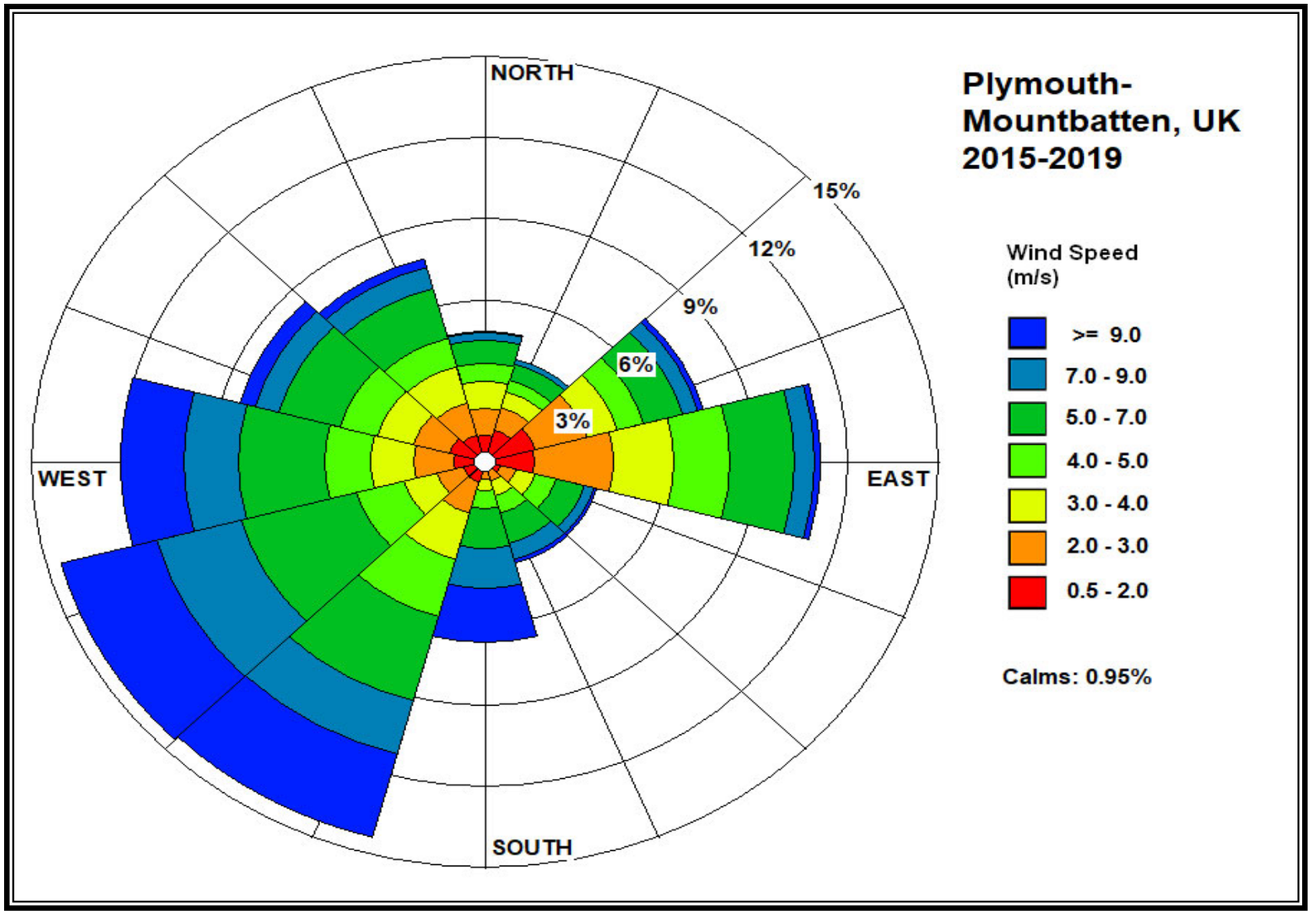

Figure 3: Wind rose for Plymouth 2015-2019. Prevailing winds are in the sector between west and south west. Winds in the sectors north to north-north-east and south to east-south-east are least frequent. Over the period 2015-2019, easterly winds occurred ca. 10% of the time.

ENVIRONMENTAL RISK ASSESSMENT - WASTE OPERATIONS

LOCATION: Chelson Meadow Leachate Treatment Plant	**DATE:** 11.05.2021	**ASSESSOR:** Leppitt Associates
OPERATION: Biological Treatment of Non Hazardous Landfill Leachate	**WASTE CATEGORY:** Landfill Leachate	

ITEM	HAZARD/*SOURCE*	PATHWAY	RISK/HARM	RECEPTOR	SEVERITY (H/M/L)	PROBABILITY (H/M/L)	RISK (H/M/L)	JUSTIFICATION OF RISK	GENERIC CONTROLS/PRECAUTIONS	OVERALL RESIDUAL RISK
1	**Litter** *Non-hazardous (plastics & man-made fibres) windblown material moving off site* *Vandalism of containers leading to escape of loose waste*	Airborne material derived from waste transfer operations	Visual & physical impact Ingestion Physical impact Smothering	Ecosystems: *River Plym* *Mud Flats Priority Habitat (PH)* *Woodland PH* *Saltram estate* *Restored landfill* *South Leat*	 H H H H H H	 L L L L L L	 M M M M M M	Liquid waste (landfill leachate) derived from landfill drainage system. Large waste facility immediately adjacent . Proximity and direction of receptor: waste facility immediately adjacent; South Leat 70m S; capped landfill, River Plym & mud flats at permit boundary; PH woodland 125m ESE; Saltram estate ca. 750m NNE. Prevailing wind from SW to W, plus some E	Boundary fence to intercept litter. TCM on site and inspecting regularly. 24 hour CCTV Closed waste bins provided outside control room Litter removal as required and transfer to residual container.	L
2	**Noise & Vibration** *Vehicle movements on & off site* *Mechanical and electrical infrastructure operating 24/7*	Airborne noise Ground vibration	Unacceptable noise pollution Structural damage to buildings Noise levels damaging to human health & disruptive to animal/bird behaviour	Ecosystems: *River Plym* *Mud Flats Priority Habitat (PH)* *Woodland PH* *Saltram estate* *Restored landfill*	 H H H H H	 H H H M H	 H H H H H	Small numbers of vehicles visiting regularly. Tanker movements occasional Treatment operations 24/7 Aging blowers inherently noisy and close to residential area Proximity and direction of receptor: waste facility immediately adjacent; capped landfill, River Plym & mud flats at permit boundary; PH woodland 125m ESE; Saltram estate ca. 750m NNE. Prevailing wind from SW to W, plus some E	24hr repeating treatment Regular servicing of all infrastructure. Blowers to be replaced 2022, to conform to requirements of noise risk assessment TCM on site PPE for site operatives Complaints procedure	L

GUIDANCE NOTES

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M = MEDIUM
L = LOW

SEVERITY * PROBABILITY = RISK

H * H = H
H * M = H
M * M = M
L * H = M
L * M = M
L * L = L

ENVIRONMENTAL RISK ASSESSMENT - WASTE OPERATIONS

LOCATION: Chelson Meadow Leachate Treatment Plant	**DATE:** 11.05.2021	**ASSESSOR:** Leppitt Associates
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ITEM	HAZARD/*SOURCE*	PATHWAY	RISK/HARM	RECEPTOR	SEVERITY (H/M/L)	PROBABILITY (H/M/L)	RISK (H/M/L)	JUSTIFICATION OF RISK	GENERIC CONTROLS/PRECAUTIONS	OVERALL RESIDUAL RISK
3	**Dust & Particulate matter** *Vehicle movements*	Airborne	Smothering Eutrophication/ contamination Inhalation	Ecosystems: *River Plym* *Mud Flats* *Priority Habitat (PH)* *Woodland PH* *Saltram estate* *Restored landfill* *South Leat*	 H H H H H H	 L L L L L L	 M M M M M M	Small numbers of vehicles visiting regularly. Tanker movements occasional Treatment process does not generate dust/particles South Leat has seasonal water flow Proximity and direction of receptor: waste facility immediately adjacent; South Leat ca. 70m S; capped landfill, River Plym & mud flats at permit boundary; PH woodland 125m ESE; Saltram estate ca. 750m NNE. Prevailing wind from SW to W, plus some E	Access route and site base engineered. Dampening down of engineered surfaces as required TCM on site and inspecting regularly including regular infrastructure checks. Management System and Emergency Procedure in place.	L

GUIDANCE NOTES	SEVERITY * PROBABILITY = RISK	
H = HIGH **M = MEDIUM** **L = LOW**	**H * H = H** **H * M = H** **M * M = M** **L * H = M**	**L * M = M** **L * L = L**

ENVIRONMENTAL RISK ASSESSMENT - WASTE OPERATIONS

LOCATION: Chelson Meadow Leachate Treatment Plant	**DATE:** 11.05.2021	**ASSESSOR:** Leppitt Associates
OPERATION: Biological Treatment of Non Hazardous Landfill Leachate	**WASTE CATEGORY:** Landfill Leachate	

ITEM	HAZARD/*SOURCE*	PATHWAY	RISK/HARM	RECEPTOR	SEVERITY (H/M/L)	PROBABILITY (H/M/L)	RISK (H/M/L)	JUSTIFICATION OF RISK	GENERIC CONTROLS/PRECAUTIONS	OVERALL RESIDUAL RISK
4	**Odours** *Malodorous waste* *Vehicle emissions*	Airborne	Inhalation of emissions	People: *On site* *Off site*	 H H	 L L	 H H	Landfill leachate generated from anaerobic decomposition of waste with potential for odour. Leachate received is highly diluted and has minimal odour. No odorous additives during treatment process Storage tanks and SBR tanks open-topped Proximity and direction of receptor: waste facility immediately adjacent; residential 70m S; capped landfill, River Plym & mud flats at permit boundary; PH woodland 125m ESE; Saltram estate ca. 750m NNE. Prevailing wind from SW to W, plus some E	Odour monitoring as outlined in Management System. Odour Emergency Procedure and Complaints Procedure in place. TCM on site and inspecting regularly.	L

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M * M = M
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L * M = M
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ENVIRONMENTAL RISK ASSESSMENT - WASTE OPERATIONS

LOCATION: Chelson Meadow Leachate Treatment Plant	**DATE:** 11.05.2021	**ASSESSOR:** Leppitt Associates
OPERATION: Biological Treatment of Non Hazardous Landfill Leachate		**WASTE CATEGORY:** Landfill Leachate

ITEM	HAZARD/*SOURCE*	PATHWAY	RISK/HARM	RECEPTOR	SEVERITY (H/M/L)	PROBABILITY (H/M/L)	RISK (H/M/L)	JUSTIFICATION OF RISK	GENERIC CONTROLS/PRECAUTIONS	OVERALL RESIDUAL RISK
5	**Mud on roads** *Vehicle movements*	Surface water bodies Highway	Oxygen depletion in surface water bodies Contamination of water accessed by domestic livestock Generation of dust on drying (see 3 above) Slippery road	Ecosystems: *River Plym* *Mud Flats* *Priority Habitat (PH)* *Woodland PH* *Saltram estate* *Restored landfill* *South Leat*	 M M M M M H	 L L L L L L	 M M M M M M	Approach road and site base of engineered construction No soils etc. accepted South Leat has seasonal water flow Proximity and direction of receptor: waste facility immediately adjacent; South Leat ca. 70m S; capped landfill, River Plym & mud flats at permit boundary; PH woodland 125m ESE; Saltram estate ca. 750m NNE.	Good housekeeping policy. TCM on site and inspecting regularly. Cleaning of engineered site base and adjacent highway as required.	L

GUIDANCE NOTES

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ENVIRONMENTAL RISK ASSESSMENT - WASTE OPERATIONS

LOCATION: Chelson Meadow Leachate Treatment Plant	**DATE:** 11.05.2021	**ASSESSOR:** Leppitt Associates
OPERATION: Biological Treatment of Non Hazardous Landfill Leachate	**WASTE CATEGORY:** Landfill Leachate	

ITEM	HAZARD/*SOURCE*	PATHWAY	RISK/HARM	RECEPTOR	SEVERITY (H/M/L)	PROBABILITY (H/M/L)	RISK (H/M/L)	JUSTIFICATION OF RISK	GENERIC CONTROLS/PRECAUTIONS	OVERALL RESIDUAL RISK
6	**Non-conforming Waste** *Additional external inputs to leachate drainage system via surface water drainage system to waste facility*	Surface water Airborne	Toxic Hazardous Explosive	Ecosystems: *River Plym* *Mud Flats* *Priority Habitat (PH)*	 H H	 L L	 M M	Part of drainage system serving adjacent waste facility enters the leachate drainage system via oil interceptors Most outfall discharge is at high tide Emergency discharge can be outside tidal window Biological treatment process can be inhibited by uncontrolled inputs Leachate of known composition monitored annually for permit compliance Proximity and direction of receptor: River Plym & mud flats at permit boundary.	Drainage can be isolated from the tanks for known incident Oil interceptors with maintenance programme Long term plan to redirect surface water Regular chemical monitoring of incoming leachate Outfall monitored weekly Permit compliance includes toxicity testing Non-conforming liquor transferred to permitted facility as a priority. TCM on site and inspecting regularly Site operated under Environmental Permit and with Management System and Emergency Procedure in place.	L

GUIDANCE NOTES	SEVERITY * PROBABILITY = RISK	
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ENVIRONMENTAL RISK ASSESSMENT - WASTE OPERATIONS

LOCATION: Chelson Meadow Leachate Treatment Plant	**DATE:** 11.05.2021	**ASSESSOR:** Leppitt Associates
OPERATION: Biological Treatment of Non Hazardous Landfill Leachate		**WASTE CATEGORY:** Landfill Leachate

ITEM	HAZARD/*SOURCE*	PATHWAY	RISK/HARM	RECEPTOR	SEVERITY (H/M/L)	PROBABILITY (H/M/L)	RISK (H/M/L)	JUSTIFICATION OF RISK	GENERIC CONTROLS/PRECAUTIONS	OVERALL RESIDUAL RISK
7	**Fire** *Vehicle fires* *Equipment/ Process fire* *Fire Water* *Smoke* *Arson - Waste/Plant* *Dissolved methane gas explosion (DSEAR)*	Convection Radiation Conduction	Loss of property Damage to human health Loss of vegetation Asphyxiation Contamination of treatment process	Ecosystems: *River Plym* *Mud Flats* *Priority Habitat (PH)* *Woodland PH* *Saltram estate* *Restored landfill* *South Leat* *Groundwater*	 H H H H H H H	 L L L L L L L	 *M* *M* *M* *M* *M* *M* *M*	Site drainage connected to treatment system, composed of bacterial biomass vulnerable to environmental variation Proximity and direction of receptor: waste facility immediately adjacent; South Leat ca. 70m S; capped landfill, River Plym & mud flats at permit boundary; PH woodland 125m ESE; Saltram estate ca. 750m NNE. Prevailing wind from SW to W, plus some E	Engineered site base with site drainage Gas and fire detection systems in control room and pump lifting station DSEAR RA for LTP Confined spaces defined Chemical cabinet storage Regular monitoring of mixed liquor and bacterial health Fire extinguishers Fire water can be isolated from incoming leachate storage tank Oils spills contained and cleaned immediately 24 hour CCTV Fire prohibition & no smoking policy Mains water on site Site mechanical and electrical infrastructure serviced to manufacturers specification. TCM on site and inspecting regularly.	L

GUIDANCE NOTES **H = HIGH** **M = MEDIUM** **L = LOW**	**SEVERITY * PROBABILITY = RISK** **H * H = H** **H * M = H** **M * M = M** **L * H = M** **L * M = M** **L * L = L**

ENVIRONMENTAL RISK ASSESSMENT - WASTE OPERATIONS

LOCATION: Chelson Meadow Leachate Treatment Plant	**DATE:** 11.05.2021	**ASSESSOR:** Leppitt Associates
OPERATION: Biological Treatment of Non Hazardous Landfill Leachate		**WASTE CATEGORY:** Landfill Leachate

ITEM	HAZARD/*SOURCE*	PATHWAY	RISK/HARM	RECEPTOR	SEVERITY (H/M/L)	PROBABILITY (H/M/L)	RISK (H/M/L)	JUSTIFICATION OF RISK	GENERIC CONTROLS/PRECAUTIONS	OVERALL RESIDUAL RISK
8	**Surface and ground water pollution** *Noxious liquid emanating from:* *- leaks of hydraulic fluids & fuel* *-uncontrolled emission of leachate* *- fire water*	Direct run-off from site Percolation into ground water	Contamination of ground and surface water	Ecosystems: *River Plym* *Mud Flats* *Priority Habitat (PH* *South Leat* *Groundwater*	 H H H H	 M M M M	 H H H H	Small numbers of vehicles visiting regularly. Tanker movements occasional LTP constructed on historic landfill (contaminated land) Proximity and direction of receptor: waste facility immediately adjacent; South Leat ca. 70m S; capped landfill, River Plym & mud flats at permit boundary; PH woodland 125m ESE; Saltram estate ca. 750m NNE. Prevailing wind from SW to W, plus some E	Hydraulic fluids etc. stored in locked container/store Site base of engineered construction with site drainage Periodic infrastructure monitoring and maintenance Incoming leachate volume measured by flow meter - unusual decline should trigger investigation Monitoring of South Leat water composition All spillages contained, see Emergency Procedure. TCM on site and inspecting regularly Site operated under Environmental Permit with Management System in place. Site mechanical and electrical infrastructure serviced to manufacturers specification.	L

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ENVIRONMENTAL RISK ASSESSMENT - WASTE OPERATIONS

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9	**Vandalism of Plant or Fuel & Hydraulic Oil Storage leading to leaks** *Noxious liquid emanating from:* *- leaks of hydraulic fluids & fuel from damaged site plant or fuel store*	Direct run-off from site Percolation into ground water	Contamination of ground and surface water Contamination of treatment process	Ecosystems: *River Plym* *Mud Flats* *Priority Habitat (PH* *South Leat* *Groundwater* *LTP Bacterial biomass*	 H H H H H	 L L L L M	 M M M M H	Site drainage connected to treatment system, composed of bacterial biomass vulnerable to environmental variation Small numbers of vehicles visiting regularly. Tanker movements occasional Treatment operations 24/7 Proximity and direction of receptor: waste facility immediately adjacent; South Leat ca. 70m S; capped landfill, River Plym & mud flats at permit boundary; PH woodland 125m ESE; Saltram estate ca. 750m NNE. Prevailing wind from SW to W, plus some E	Site secured by fencing and gates locked out of hours Compound is part of a larger facility with security measures Intruder alarms on key infrastructure with telemetric output Hydraulic fluids etc. stored in locked container/store Site plant maintained regularly and with daily checks CCTV Regular monitoring of mixed liquor and bacterial health Site base of engineered construction with site drainage All spillages contained, see Emergency Procedure. TCM on site and inspecting regularly, including regular infrastructure checks Site operated under Environmental Permit with Management System in place. Site mechanical and electrical infrastructure serviced to manufacturers specification.	L

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ENVIRONMENTAL RISK ASSESSMENT - WASTE OPERATIONS

LOCATION: Chelson Meadow Leachate Treatment Plant	**DATE:** 11.05.2021	**ASSESSOR:** Leppitt Associates
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10	**Discharge to River Plym** *Permit non-compliance in one or more parameters*	Direct emission to River Plym direct bio-uptake by mud flat ecosystem	Contamination of surface water (River Plym) and mud flats	Ecosystems: *River Plym* *Mud Flats* *Priority Habitat (PH)*	 H H	 L L	 M M	River Plym used for leisure activities Treatment operations 24/7 Proximity and direction of receptor: River Plym & mud flats receive discharge	Permit specifies point source emission trigger levels Regular chemical monitoring of incoming leachate allowing treatment adjustment Outfall monitored weekly for discharge parameters SBR Biomass monitored weekly Site mechanical and electrical infrastructure serviced to manufacturers specification. LTP Operator or equivalent on site during the working week. LTP can be managed remotely TCM on site and inspecting regularly. Management System and Emergency Procedure in place.	L

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ENVIRONMENTAL RISK ASSESSMENT - WASTE OPERATIONS

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11	**SBR Foam** *Permit non-compliance*	Direct emission from SBRs direct bio-uptake or percolation into soil and surface/ ground water	Contamination of soils, ground and surface water Imperceptible contact with skin	Ecosystems: *R Plym* *Mud Flats* *Priority Habitat* *South Leat*	 H H H	 L L L	 M M M	Storage tanks and SBR tanks open-topped Biofoam generated by aeration process Treatment operations 24/7 Proximity and direction of receptor: waste facility immediately adjacent - and specifically weighbridge and haul road; South Leat ca. 70m S; River Plym & mudflats at permit boundary. Prevailing wind from SW to W, plus some E	Automated release of anti-foam at critical wind speed - system subject to regular servicing (monthly) TCM on site and inspecting regularly. Management System and Emergency Procedure in place. CCTV LTP Operator or equivalent on site during the working week. LTP managed remotely Telemetric alarm	L

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L * M = M
L * L = L

https://www.gov.uk/guidance/adapting-to-climate-change-risk-assessment-for-your-environmental-permit

You must do a climate change risk assessment for any new bespoke waste and installation environmental permit application if you expect to operate for more than 5 years. If you get a screening **score of 5 or more**, you will need to **complete your climate change risk assessment** and submit it with your application form.

CATEGORY	SCREENING QUESTIONS	SCORE	YOUR SCORE
1 TIMESCALES	*How long will a permit be required for this site/activity?* 5 years or less of operation. No need to fill in the rest of the screening. You do not need to fill in a risk assessment. Less than 20 years of operation Until between 2040 and 2060 (between 20 and 40 years from now) Until 2060 or beyond (more than 40 years from now)	0 1 3 5	**5**
2 FLOODING	*What is your site's risk of flooding from rivers or the sea?* Not in a flood risk zone Very low or Low Medium High	0 1 2 5	**1**
3 WATER USE	*source of your water?* Water not required Mains water Surface water or groundwater abstraction	0 1 5	**1**
		TOTAL SCREENING SCORE	**7**

https://environment.data.gov.uk/catchment-planning/data-download/#/

South west England river basin district: climate change risk assessment worksheet

Name (as on your part A application form): Chelson Meadow Leachate Treatment Plant

Our permit reference number (if you have one): EPR/CP3731LZ/V004

Your document reference number: Environmental Risk Assessment

Risk assessment worksheet for the 2050s

South west England river basin district

You must carry out a climate change risk assessment for any new bespoke waste and installations permit applications if you expect to operate for more than 5 years. Use the user guide to complete the table. You can add in extra pages if necessary.

Consider how your operations will be affected by the changes in weather and climate described in the table. Consider any changes to average climate conditions that may impact on your operations, for example extreme rainfall.

Also consider:

- critical thresholds - where a 'tipping point' is reached, for example a specific temperature where site processes cannot operate safely
- changes to averages - for example an entire summer of higher than expected rainfall causing waterlogging
- where hazards may combine to cause more impacts

You can add in other climate variables if you wish.

If you have stated on your application form that you do not expect to be operational in 2050, you must still consider climate change risks for the time you do intend to operate. Whilst the variables are for the 2050s, this is an estimated date and you may experience these conditions before then.

Risk scoring matrix

Assess the impact(s) from each of the weather and climate change scenarios and calculate your risk score using the risk scoring matrix.

Your risk score is the likelihood of something happening multiplied by the severity of its impact.

	Severe impact (score = 4)	Medium impact (score = 3)	Mild impact (score = 2)	Minor impact (score = 1)
Highly likely (score = 4)	16	12	8	4
Likely (score = 3)	12	9	6	3
Low likelihood (score = 2)	8	6	4	2
Unlikely (score = 1)	4	3	2	1

This worksheet will sit in your management system. It must appear on the management system summary you submit with your application, even if you do not need to submit the whole risk assessment with your application.

If your pre-mitigation risk score (column D) is 5 or higher, you must complete columns E to H.

LOCATION: Chelson Meadow Leachate Treatment Plant	**DATE:** 12.05.2021	**ASSESSOR:** Leppitt Associates
OPERATION: Biological Treatment of Non Hazardous Landfill Leachate	**LOCATION:** Landfill Leachate	

Potential changing climate variable	**A** **Impact**	**B** **Likelihood**	**C** **Severity**	**D** **Risk** **(B x C)**	**E** **Mitigation** **(what will you do to mitigate this risk**	**F** **Likelihood** (after mitigation)	**G** **Severity** (after mitigation)	**H** **Residual risk** **(F x G)**
1. Summer daily maximum temperature may be around 7°C higher compared to average summer temperatures now.	Summer leachate production will decline Treatment efficiency will increase	1	1	1	None required			
2. Winter daily maximum temperature could be 4°C more than the current average, with the potential for more extreme temperatures, both warmer and colder than present.	Incoming leachate temperature buffered by ground temperature Treatment volume is large and aeration will buffer lower temperatures to some degree Treatment efficiency will increase with temperature increase Treatment efficiency vulnerable to prolonged extreme cold	1	1	1	None required			
3. The biggest rainfall events are up to 20% more intense than current extremes (peak rainfall intensity)*.	Large increase in incoming leachate	3	3	9	Leachate very dilute so treatment more rapid Ensure no surface water drainage enters the treatment system Maintain integrity of landfill cap Investigate and prevent other sources of water ingress	2	2	4
4. Average winter rainfall may increase by 41% on today's averages.	Large increase in incoming leachate	3	3	9	Leachate very dilute so treatment more rapid Ensure no surface water drainage enters the treatment system Maintain integrity of landfill cap Investigate and prevent other sources of water ingress	2	2	4
5. Sea level could be as much as 0.6m higher compared to today's level *.	Flood risk to LTP compound increased	3	4	12	Ensure no surface water drainage enters the treatment system Raise the level of wet well outer wall raise the level of the engineered base in the vulnerable section of the compound Design flood protection for electrical substation and pump lifting station	2	2	4
6. Drier summers, potentially up to 45% less rain than now.	Summer leachate production will decline	1	1	1	Treatment process adjusted to stronger leachate	1	1	1
7. At its peak, the flow in watercourses could be 40% more than now, and at its lowest it could be 80% less than now.	Tidal river - see No. 5 Increased flow in South Leat but unlikely to be sufficient to breach cut-off wall	1	1	1	Maintain integrity of cut-off wall	1	1	1

*Indicates data has come from climate change allowances as part of the spatial planning process. Evidence from your planning submission is acceptable evidence for this worksheet.
https://www.gov.uk/guidance/select-a-waste-recovery-or-disposal-method-for-your-environmental-permit

To operate under an environmental permit, you must do a risk assessment predicting the environmental impact that different ways of disposing of waste will have.

In your risk assessment you must compare the different options you have for recovering or disposing of the waste you produce. You need to do this when you're:

- choosing between recovery or disposal options for the waste you produce
- doing a derogation options appraisal because you cannot operate within the Best Available Technique (BAT) associated emissions levels

Nature of Waste: Use the following hazard rating scores:

hazardous waste - score 10	stable non-reactive hazardous waste - score 8	biodegradable non-hazardous waste - score 4	other non-hazardous waste - score 2	inert waste - score 1

D or R Code: Choose from the following list:

composting - R3 - score 2	recycling of wood, metal, plastic or glass - R3, R4, R5, R11, R12 - score 3	chemical recovery - R2 to R9 - score 4	land-spreading - R10 - score 4	using waste as fuel - R1 - score 6	biological treatment (with energy recovery) - D8 - score 8
incineration (with energy recovery) - D10 - score 10	biological and physico-chemical treatment - D8, D9 - score 12	releasing waste into rivers and lagoons - D6, D7 - score 15	permanent storage - D3, D12 - score 17	incineration without energy recovery - D10 - score 20	landfill - D1 or D5 - score 30

DISPOSAL OPERATIONS	**RECOVERY OPERATIONS**
D1 Deposit into or on to land (e.g. landfill, etc.) D2 Land treatment (e.g. biodegradation of liquid or sludgy discards in soils, etc.) D3 Deep injection (e.g. injection of pumpable discards into wells, salt domes or naturally occurring repositories, etc.) D4 Surface impoundment (e.g. placement of liquid or sludgy discards into pits, ponds or lagoons, etc.) D5 Specially engineered landfill (e.g. placement into lined discrete cells which are capped and isolated from one another and the environment, etc.) D6 Release into a water body except seas/oceans D7 Release to seas/oceans including sea-bed insertion D8 Biological treatment not specified elsewhere in this Annex which results in final compounds or mixtures which are discarded by means of any of the operations numbered D1 to D12 D9 Physico-chemical treatment not specified elsewhere in this Annex which results in final compounds or mixtures which are discarded by means of any of the operations numbered D1 to D12 (e.g. evaporation, drying, calcination, etc.) D10 Incineration on land D11 Incineration at sea D12 Permanent storage (e.g. emplacement of containers in a mine, etc.) D13 Blending or mixing prior to submission to any of the operations numbered D1 to D12 D14 Repackaging prior to submission to any of the operations numbered D1 to D13 D15 Storage pending any of the operations numbered D1 to D14 (excluding temporary storage, pending collection, on the site where the waste is produced)	R1 Use principally as a fuel or other means to generate energy R2Solvent reclamation/regeneration R3 Recycling/reclamation of organic substances which are not used as solvents (including composting and other biological transformation processes) R4 Recycling/reclamation of metals and metal compounds R5 Recycling/reclamation of other inorganic materials R6 Regeneration of acids or bases R7 Recovery of components used for pollution abatement R8 Recovery of components from catalysts R9 Oil re-refining or other reuses of oil R10 Land treatment resulting in benefit to agriculture or ecological improvement R11 Use of waste obtained from any of the operations numbered R1 to R10 R12 Exchange of waste for submission to any of the operations numbered R1 to R11 R13 Storage of waste pending any of the operations numbered R1 to R12 (excluding temporary storage, pending collection, on the site where the waste is produced)

Chelson Meadow LTP

No.	**Type of Waste (LoW)**	**Nature of the Waste Produced**	**Hazard Rating**	**Waste Recovery or Disposal methods (R or D code)**	**Recovery or disposal method impact score**	**Impact: Hazard Score** *Multiplied* **R or D Score**	**Amount of waste (tonnes per year)**	**Total Score: Impact Score** *Multiplied* **Tonnes**
1	19 07 03	Biosludge	4	R3	4	16	100	1600
2								
3								