Climate Change Adaptation Risk Assessment

TeleCycle Europe Ltd.

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SITE DETAILS

TeleCycle Europe Ltd,

Unit 1 Redwither Business Park,

First Avenue,

Wrexham,

LL13 9XP

OPERATOR DETAILS

TeleCycle Europe Ltd,

Unit 15,

Drome Road,

Deeside Industrial Park,

Deeside,

CH5 2NY

PERMIT REFERENCE

PPN-01526

DOCUMENT REFERENCE

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CONTENTS

1. INTRODUCTION 6

1.1. Scope 6

1.2. Aim 6

1.3. Site Activities 7

2. SITE SETTING 8

2.1. Location 8

3. METHODOLOGY 9

4. CLIMATE IMPACT TOOLS 10

4.1. Identification of Site-Specific Risks based on Activities on Site, Sensitive Receptors Affected and the Impact on Climate Change 10

5. SCREENING TOOLS 12

6. CLIMATE CHANGE RISK ASSESSMENT 15

6.1 Scoring matrix 15

6.2 Considerations in carrying out a CCRA. 15

6.3 Risk Assessment Worksheet for the 2050s 16

7. CONCLUSIONS 22

APPENDIX

APPENDIX	TITLE
K419.2~09~008	List of Wastes

TABLES

TABLE	TITLE
Table 1	Outline of Risks and Impacts on Climate Change.
Table 2	Screening Tool for CCRA.
Table 3	Likelihood of Occurrence and Impact Scale.
Table 4	Climate Change Risk Assessment, Likelihood, Severity, and Mitigation Measures.

DRAWINGS

REFERENCE	TITLE
K419.2~20~006	Site Layout Plan
K419.2~20~005	Site Setting Plan (2km)

1. INTRODUCTION

This Climate Change Risk Assessment (CCRA) accompanies the application for a Bespoke Environmental Permit for an Installation (Tier 3 Bespoke Installation Permit), as confirmed in the pre-application request (PPN-01526). The site will operate in addition to their already permitted facility at Drome Road (EPR/CB3896ZW)..

Wiser Environment prepared this CCRA on behalf of TeleCycle Europe Ltd. (the operator and applicant) in line with current Environment Agency guidance, 'Climate change: risk assessment and adaptation planning in your management system'[1] and 'Develop a management system: environmental permits – A changing climate' available on gov.uk website[2] which requires the integration of climate change adaptation planning into management systems where the permit was issued on or before 1st April 2023.

1.1. Scope

This CCRA is applicable to Unit 1 Redwither Business Park, First Avenue, Wrexham, LL13 9XP, and identifies potential hazards and risks from activities carried out on the site and how the activities will impact or be affected by climate change. The pathways through which risks and hazards can affect sensitive receptors and methods for mitigating these risks as well as screening tools to quantify the intensity of potential risks and hazards have been highlighted in this CCRA.

1.2. Aim

This Climate Change Risk Assessment aims to:

- Identify the impact the activity has on climate change.
- Identify how the activities will be affected by climate change.
- Determine the influence management practices and controls have on reducing risk as well as to draw out adaptive solutions.

[1] Climate change: risk assessment and adaptation planning in your management system - GOV.UK (www.gov.uk) Last Updated 3 April 2023
[2] Develop a management system: environmental permits - GOV.UK (www.gov.uk) Last Updated 3 April 2023

1.3. Site Activities

The accepted wastes are listed in Appendix A.

TeleCycle Europe Ltd. conduct treatment of WEEE, shredding various WEEE products, sorting the subsequent fractions, prior to dispatch to further processing facilities, both domestically and internationally. Material for shredding will primarily be made of low-grade PCBs, modems, PCs, power supplies, power boards and small domestic appliances. Site shall also accept copper cable for shredding, then subsequently bulked until an economic load is created prior to shipment for refining.

The permitted activities are restricted to the following:

- Section 5.3 Part A (1) a) (ii) – Disposal or recovery of hazardous waste with a capacity exceeding 10 tonnes per day, physico-chemical treatment;
- Section 5.4 Part A (1) b) (iv) – Recovery or a mix of recovery and disposal of non-hazardous waste with a capacity exceeding 75 tonnes per day, treatment in shredders;
- Section 5.6 Part A (1) a) - Temporary storage of hazardous waste with a total capacity exceeding 50 tonnes pending any of the activities listed in Sections 5.1, 5.2, 5.3.

Some WEEE will be accepted onto site for bulking prior to dispatch to appropriate re-processors. Site will also operate a manual dismantling operation which will take WEEE items too large or unsafe for shredding and separate into valuable components that can serve as feedstock for the shredder or alternatively mixed with output from the shredding process.

Future planned operations include receipt of WEEE for assessment of capability for reuse – this activity is intended as a future development and will not be undertaken from the outset but is described within this application.

Also intended as a future phase is the acceptance of catalytic convertors for storage, sorting, separation and shearing. These activities are a replication of the permitted activities at the Drome Road facility.

2. SITE SETTING

2.1. Location

The site is operated by TeleCycle Europe Ltd and is located at Unit 1 Redwither Business Park, First Avenue, Wrexham, LL13 9XP. The site is located at National Grid Reference SJ 38320 50209 and is shown on the Permit Boundary Plan (K419.2~20~003).

The site is located within an established industrial area in Wrexham, approximately 4.65 km from the centre. The site is accessed via several local roads; the closest main road is A534 and is situated approximately 1.9 km north of site. Outside of the immediate commercial land use, the estate is surrounded by agricultural land.

The site is located within the Redwither Business Park off of First Avenue within the wider Wrexham Industrial Estate. The site is approximately 0.75 ha, underlain with an impermeable surface and equipped with two warehouse buildings, a canopy area and a yard area for loading and unloading. As part of waste operations, storage bays are to be constructed from legio block walls within the yard area.

3. METHODOLOGY

The methods for this Climate Change Risk Assessment (CCRA) are in accordance with the Environment Agency's guidance, 'Climate change: risk assessment and adaptation planning in your management system[3]. The Impacts and mitigation measures considered in preparing this assessment were adapted from the Environment Agency Guidance regarding non-hazardous and inert waste climate change risk assessment[4].

The CCRA applies to bespoke waste and installation permits that are expected to operate for more than 5 years, even if operations such as commissioning processes and after care may cease before 2050. The predicted climate changes may come into effect prior to 2050.

This CCRA focuses on risk and impact in relation to the variables below.

- Location
- Seasonal variations
- Temperature changes
- Dust emissions
- Drier summers
- Rainfall and flooding
- Sea level rises
- River flow
- Storms

[3] Climate change: risk assessment and adaptation planning in your management system - GOV.UK (www.gov.uk), Last Updated 3 April 2023
[4] Non-hazardous and inert waste treatment: examples for your adapting to climate change risk assessment - GOV.UK (www.gov.uk) Last Updated 17 May 2023

4. CLIMATE IMPACT TOOLS

The Climate Impact Tool is a high-level risk screening and communication tool which pulls together national level information on climate change impacts. The tool is applicable to review risks within the management systems, activities carried out at TeleCycle Europe Ltd. and their climate impacts with regards to the objectives of the company. This can include statutory requirements, projects, or permit applications. The risks and opportunities climate change poses towards achieving these objectives and requirements is assessed using the screening tool. After the climate opportunities, risks and impacts are identified using the climate impact tool, further assessment, using project specific and local information, will be required to understand the level of opportunity or risk. If the outcome of the activities on site are identified as risky; it is important to specify how the climate risks will be addressed now or in the future. The climate impact screening tool was obtained from the climate impacts tool on the Government Website[5]

The climate impact tool has 2 parts which focus on

1. The present-day physical impacts (the new normal and new extremes) and potential future changes (by 2100) based on +2°C and +4°C pathways.

2. Potential climate impacts for future change

4.1. Identification of Site-Specific Risks based on Activities on Site, Sensitive Receptors Affected and the Impact on Climate Change.

A list of activities taking place on the site that have the potential to cause harm are listed in Table 1. In the event of a hazard, these activities may put sensitive receptors at risk of harm, compromising health and safety while also having long and short-term impacts on the environment.

[5] Climate impacts tool - GOV.UK (www.gov.uk) Last Updated 31 October 2023

Table 1: Outline of Risks and their Impacts on Climate Change.

S/No	Risk	Sensitive receptors	Present Impacts on Climate change	Future Impacts on Climate change
1	Leaks from potentially flammable substances (i.e diesel, petrol etc) on site.	Drainage systems, Soils, closest surface water features (River Clywedog 1.1km south and isolated pond 166m east), nearby commercial areas and residential properties (650m north).	Soil contamination, ground, and surface water pollution.	Challenges to land management, reduced agricultural output and carbon sequestration.
2	Increasing temperature within stored waste piles, accidental fires, and arson.	Surrounding residential areas and agricultural land.	Burnt vegetation, carbon emissions, air pollution.	High temperatures and drought increase the risk of waste fires and wildfires.
3	Dust and air pollution from waste movements onto, around and off site.	Site workers and residential areas.	Poor air quality	Air quality changes that could impact people and the environment.
4	Odours from site activities such as waste movement and treatment processes.	Staff, Site workers and residential areas.	Poor air quality	Air quality changes that could impact people and the environment.
5	Traffic and emissions from vehicular movement	Neighbouring residential areas and other sites close to the premises.	GHG emissions, poor air quality	GHG emissions, air quality changes that could impact people and the environment.
6	Flood and waterlogging of site equipment.	Neighbouring commercial areas and other sites close to the premises.	Flood and waterlogging, surface water pollution.	Floods can impact emergency responder access and resources, threaten communities, impact on infrastructure.

5. SCREENING TOOLS

Using the following categories (Length of site operation, flooding, and water use) from the screening tool in Table 2, if the total screening score is 5 or more, then a CCRA will be needed. If the site operations last for only 5 years or less, then no risk assessment will need to be submitted with the application, regardless of the screening score. A score for every category in Table 2 is applied to specify whether or not a climate change risk assessment is required if operations exceed 5 years, or if 'Not Applicable'(N/A) is entered. After site specific screening using the categories in Table 2, a total score of 6 was obtained. This means that a CCRA is needed.

Table 2: Screening Tool for CCRA

Category	Screening Questions	Score	Your Score	Comments
1. Time Scales	How long will a permit be required for this site/activity?		5	Unknown length of operations. (Screened in to provide conservative scenarios.)
	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.	0		
	Please go straight to question 7.			
	Less than 20 years of operation	1		
	Until between 2040 and 2060 (between 20 and 40 years from now)	3		
	Until 2060 or beyond (more than 40 years from now)	5		
2. Flooding	What is your site's risk of flooding from rivers or the sea?		1	The site is located in a low-risk zone for flooding from rivers, the sea and surface water.
	Not in a flood-risk zone	0		
	Very low or Low	1		
	Medium	2		
	High	5		
3. Water Use	If you use water for your site operations or fire prevention, what is the source of your water?		1	The site uses mains water.
	Water not required.	0		

Category	Screening Questions	Score	Your Score	Comments
	Mains water Surface water or groundwater abstraction	1 5		
Total Screening Score			7	Screened into requirement for CCRA.

6. CLIMATE CHANGE RISK ASSESSMENT

A climate change risk assessment must be carried out for any new bespoke waste and installations permit applications if you expect to operate for more than 5 years. The Flood risk assessments: Climate change allowances[6] was used to measure the risk of flooding due to peak river flow, rainfall intensity and impacts on sea level rise.

6.1 Scoring matrix

The severity and likelihood of occurrence of a risk will be measured on a 5 × 5 scale (**Table 3** below).

Table 3: Likelihood of Occurrence and Impact Scale

		Impact				
		Insignificant 1	**Minor 2**	**Significant 3**	**Major 4**	**Severe 5**
Likelihood	**5 (Almost Uncertain)**					
	4 (Likely)					
	3 (Possible)					
	2 Unlikely					
	1 Rare					

Low	Medium	High	Extreme

6.2 Considerations in carrying out a CCRA.

- Consider how your operations will be affected by the changes in weather and climate described in the Table 5.

[6] Flood risk assessments: climate change allowances - GOV.UK (www.gov.uk) Last Updated 27 May 2022

- Consider any changes to average climate conditions that may impact on your operations, for example extreme rainfall.
- 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

Even if site operations cease before 2050, you must still consider climate change risks for the time you intend to be in operation. Whilst the variables are predicted for the 2050s, this is an estimated date, and climate change conditions may be experienced before the estimated date.

The risk assessment worksheet must be included in the management system summary which will be submitted with the permit application.

6.3 Risk Assessment Worksheet for the 2050s

Name (as on your part A application form): TeleCycle Europe Ltd.

Our permit reference number (if you have one): PPN-01526

Your document reference number: K419.2~09~011

The site is under the River Dee Management Catchment.

If your pre-mitigation risk score (column D) is 5 or higher, you must complete columns E to H (Table 4).

Table 4: Climate Change Risk Assessment, Likelihood, Severity, and Mitigation Measures.

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 6°C higher compared to average summer temperatures now.	a) Higher temperatures in the heaps of waste material may cause fires.	4	4	16	Fire watches and visual checks are carried out at start and end of the day, as well as ad hoc checks through the day. All staff are trained to remain vigilant for signs of combustion. All stockpiles are overseen by CCTV which is monitored 24/7. Hot works are not standard operations and a fire watch for 1 hour after the hot works have been completed is undertaken. The site operates a no smoking policy in all areas of site other than the designated area. Batteries are not accepted onsite. The majority of wastes are stored internally or with weatherproof covering. These are done so within bulk bags, IBCs or wrapped pallets which prevents direct exposure to weather conditions. Storage times are minimised, with feedstock material under normal operating conditions moving through the process within 2 weeks. Site operates under a FIFO policy. Visual inspection during operational hours will also identify hot spots. During prolonged periods of hot dry weather, steps will be taken to minimise external heating of waste stacks, such as shading waste where practicable and reducing storage times. Metals are the only waste open to the elements, but these are stored within fire-resistant bays and in their largest form.	2	2	4
	b) Fires, infrastructural and equipment failure.	2	4	8		2	2	4

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)
	c) Due to higher temperatures, increase in odour produced by the waste	1	2	2	Due to the type of waste accepted onsite, very limited odours will be produced.	N/A		
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.	Extreme cold and ice make roads unsafe for transport and delivery of waste thereby impacting on supply chain.	3	2	6	Pour rock salt on roads to reduce skidding and accidents on site. Daily site inspections will check for any burst and/or frozen water main pipes due to cold temperatures. During periods of warmer weather, wastes will be stored in shaded areas where practicable and storage times will be reduced.	2	2	4
3. The biggest rainfall events are up to 20% more intense than current extremes (peak rainfall intensity) *.	Surface water flooding from nearest surface water features.	2	3	6	Integrity of sealed site surface and drainage system shall be checked as part of daily site inspections. Records of this check will be kept. If access to the site is not possible due to surface water flooding, the site will cease	1	2	2

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)
4. Average winter rainfall may increase by 29% on today's averages.	Flooding and washout of stored waste types.	2	2	4	accepting waste and this will be diverted to a suitable facility. Site sits on an impermeable surface, and all treatment processes take place internally. Surface water drains will be covered if ingress needs to be prevented. The site is located in a low-risk flooding area. Due to the type of waste stored onsite and as the majority of wastes are stored internally or with weatherproof covering, washout of stored waste is unlikely.	1	2	2
5. Sea level could be as much as 0.6m higher compared to today's level *.	The site is not located near the coastline.	1	3	3	The site is not located on or near to the coastline and the closest surface water feature is an isolated pond 166m east of the site. If flooding does occur onsite which prevents access to the waste reception area, all waste deliveries will be stopped and diverted to a suitable local facility.	1	2	2

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)
6. Drier summers, potentially up to 34% less rain than now.	a) Increased dust – less water to suppress dust impact from activities on site (vehicular movement, dusty waste load).	3	3	6	All waste is stored within separate containers and the majority of wastes are stored internally or with weatherproof covering. All treatment and shredding takes place within a building. Equipment is connected to a filtered LEV system to extract/collect dust fibres from the process line, which reduces the requirement for dust suppression. When there is sufficient water supply, the storage bays will be cleaned to prevent the build-up of material during drought conditions.	2	1	3
	b) Undetected source of ignition within collected waste materials could be transferred to the finished product.	2	3	6	All stockpiles are overseen by CCTV which is monitored 24/7. Daily site checks are also conducted and all staff our trained to remain vigilant for signs of combustion. The site operates a no smoking policy in all areas of site other than the designated area. Batteries are not accepted onsite.	2	2	4

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)
7. At its peak, the flow in watercourses could be 30% more than now, and at its lowest it could be 65% less than now.	a) Overflowing from nearest surface watercourses (River Clywedog 1.1km south)	1	3	3	The site is located within a low-risk area for surface water and river flooding, and the closest surface water feature is an isolated pond 166m east of the site. If surface water flooding does occur, any incoming waste will be stopped and diverted to other permitted facilities.	1	2	2
	b) Water quality and quantity problems to carry out site operations	2	2	4	The site is supplied by mains water and the nearest fire hydrant is located approximately 18m east of the site.	1	2	2
Increased frequency and intensity of storm events	Increased surface water flooding and damage to site infrastructure	2	3	6	The site has CCTV which is monitored 24/7. If any damage to site infrastructure is noted this will be reported and rectified at the earliest opportunity. Staff are trained in emergency response and fire evacuation procedures.	2	2	4

7. CONCLUSIONS

- Site specific screening was done using the screening tool in Table 3, and a total score of 7 was obtained. The CCRA was carried out in accordance with the Environment Agency's guidance, 'Climate change: risk assessment and adaptation planning in your management system'[7].
- We considered the likelihood of occurrence of risks from all site activities, and the results show that after mitigation measures are put in place, the maximum score for the likelihood that site activities will impact climate change is 2 (Unlikely) and the minimum score is 1 (Rare).
- The maximum severity that activities on site will Impact on climate change after mitigation measures was 2 (Minor) while the minimum was 1 (Insignificant).
- The highest potential impact on climate change from site activities is associated with increasing Summer daily maximum temperature and storm events. After mitigation, there is a possibility that these variables may occur but with minor impact.

[7] Climate change: risk assessment and adaptation planning in your management system - GOV.UK (www.gov.uk) Last Updated 3 April 2023

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