Climate Change Adaptation Risk Assessment

Guy & Wright Ltd.

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SITE DETAILS

The Vineries

Green Tye

Much Hadham

Herts

SG10 6JJ

OPERATOR DETAILS

Guy and Wright Ltd

The Vineries

Green Tye

Much Hadham

Herts

SG10 6JJ

PERMIT REFERENCE

EPR/ PP3793EU/V005

DOCUMENT REFERENCE

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REFERENCE	TITLE
K163.1~20~045	Site Layout Plan
K163.1~20~043	Site Setting Plan (2km)

1. INTRODUCTION

This document is the Climate Change Risk Assessment (CCRA) for Guy & Wright Ltd. to identify risks, threats and hazards arising from their activities and the impact these activities have on climate change. Guy & Wright Ltd. is regulated by the Environment Agency under permit number EPR/ PP3793EU/V005.

Wiser Environment prepared this CCRA on behalf of Guy & Wright 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 Guy & Wright Ltd, The Vineries, Green Tye, Much Hadham, Herts, SG10 6JJ, 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 the List of Waste Document (Appendix A: K163.1~09~007).

Guy & Wright Ltd. operate a non-IED Installation for an Anaerobic Digestion facility which includes the storage of digestate is also permitted via on-site lagoons and biogas is burnt in 3 Combined Heat and Power Engines. Ther permitted activities are restricted to recovery or a mix of recovery and disposal of non-hazardous waste with a capacity exceeding 75 tonnes (or 100 tonnes per day if the only waste treatment is Anaerobic Digestion) involving biological treatment and storage of digestate and other waste pending any of the operations numbered R1 to R12.

This permit variation seeks to vary from a non-IED waste anaerobic digestion facility to an installation activity under Schedule 1, Section 5.4 Part A (1) (b), Recovery or a mix of recovery and disposal of non-hazardous waste with a capacity exceeding 100 tonnes per day if the waste treatment activity is anaerobic digestion, involving one or more of the following activities: i) biological treatment. In addition, the variation seeks to remove the daily tonnage limit on processing animal wastes, add two further digestate storage lagoons and add a fourth Combined Heat and Power Engine.

2. SITE SETTING

2.1. Location

Guy & Wright Ltd. The Vineries, green Tye, Much Hadham, Herts SG10 6JJ (the site) has a National Grid Reference TL 44251 18635 and is shown on the Site Layout Plan (K163.1~20~045). The site is surrounded by primarily agricultural land to the north and west which is owned by Guy & Wright Ltd. with residential housing to the south of the site. The site is located 398m E from Green Tye village centre and 511m NE from the B1004.

The site setting is shown in the Sensitive Receptors Plan (2km) (K163.1~20~043).

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 Guy & Wright 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 (unnamed drainage ditch approximately 576m east), nearby residential areas and surrounding agricultural land.	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 residential areas 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 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.** **Please go straight to question 7**. 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	Unknown length of operations. (Screened in to provide conservative scenarios.)
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	0	The site is not located within a flood risk zone and the nearest surface water feature is an unnamed drainage ditch 576m east of the site.
3. Water Use	If you use water for your site operations or fire prevention, what is the source of your water? Water not required.	0	1	The site uses mains water.

Category	Screening Questions	Score	Your Score	Comments
	Mains water Surface water or groundwater abstraction	1 5		
Total Screening Score			6	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): Guy & Wright Ltd.

Our permit reference number (if you have one): EPR/ PP3793EU/V005

Your document reference number: K163.1~09~011

The site is under the Lee Upper Operational 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.	3	4	12	Fire extinguishers are located across the site (see Site Layout plan K163.1~20~041). A fire hydrant is located on the main road adjacent to the site. All waste is treated under the 'first in first out' procedure and daily inspections are undertaken. The maximum capacity of the solid waste storage area is 180m^3 and this is located away from the site boundary, to reduce odour impacts offsite. There is CCTV at the site entrance and security fencing around the site. Site staff live onsite so are onsite outside of operational hours. No hot loads are accepted onsite and there is no smoking onsite. Any flammable substances on site, such as diesel or petrol will be stored in appropriate locations to ensure their flashpoint is not reached during high ambient temperatures. An alarm detection system is installed within the AD process. Weekly visual inspections of all fire exits and firefighting equipment are undertaken and recorded in the site diary.	2	2	4
	b) Fires, infrastructural and equipment failure.	2	4	8		2	2	4
	c) Due to higher temperatures, increase in odour produced by the waste							

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)
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 makes roads unsafe for transport and delivery of waste thereby impacting on supply chain.	4	1	4	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.	2	1	2
3. The biggest rainfall events are up to 20% more intense than current extremes (peak rainfall intensity) *.	Surface water flooding from the onsite pond.	2	3	6	All external drainage is inspected monthly and if this is not free flowing, then this will be cleared. If access to the reception area is not possible due to surface water flooding from the onsite pond or elsewhere, the site will cease accepting waste and this will be diverted to a suitable facility. All solid waste is stored on an impermeable surface and within the reception area. The reception area has a drainage system so any liquid runoff from the waste is contained and fed into the macerator.	1	2	2
4. Average winter rainfall may increase by 29% on today's averages.	Flooding and washout of stored waste types.	2	4	8		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)
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 drainage feature is over 500m from 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
6. Drier summers, potentially up to 34% less rain than now.	Increased dust – less water to suppress dust impact from activities on site (vehicular movement, dusty waste load).	3	3	6	Visual dust monitoring will be undertaken as part of the daily inspections. Water used for dust suppression as required. There is an onsite pond which can also be used as water for dust suppression as well as an onsite water tank with a capacity of 90,000 litres. All waste delivered to site will be covered.	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)
	b) Undetected source of ignition within collected waste materials could be transferred to the finished product.	3	2	6	No smoking policy and no hot loads accepted onsite. All incoming waste deliveries are supervised by site staff, who conduct visual inspections before accepting the waste and during the unloading process. If non-confirming wastes are identified, these are removed from the waste and placed in the quarantine area awaiting offsite removal.	2	2	4
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) Onsite pond or nearest surface water drainage ditch (576m east) overflowing.	2	3	6	The closest surface water feature (excluding the onsite pond) is over 500m from 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	3	3	The site is supplied by mains water. There is also an onsite pond and water tank which can be used in emergencies as a water supply.	2	1	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)
Increased frequency and intensity of storm events	Increased surface water flooding and damage to site infrastructure	3	3	6	There is automated alarm system to the AD plant which alerts the site manager of any change in operation, including damage to equipment. Members of staff live onsite so there is presence onsite during non-operational hours. 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 6 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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