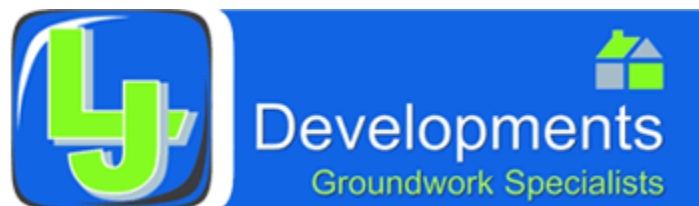




# CRESTWOOD ENVIRONMENTAL LTD

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## Climate Change Risk Assessment

Beam Quarry, Great Torrington

Report Reference: CE-BQ-1936-RP01 - CCRA - Final

Report Date: 7 December 2021

Produced by Crestwood Environmental Ltd.

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**Crestwood Report Reference:** CE-BQ-1936-RP01 - CCRA - Final:

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Final	17.08.2021	Andrew Abbott <b>(Senior Environmental Consultant)</b>	Stuart Thompson <b>(Technical Director)</b>

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The report is provided for the sole use of the named client and is confidential to them and their professional advisors. No responsibility is accepted to others.

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# 1 INTRODUCTION

## 1.1 BACKGROUND

- 1.1.1 Crestwood Environmental Ltd ('Crestwood'), has been commissioned by L J Developments Ltd. to carry out a Bespoke Environmental Permit application for the deposit of inert waste for recovery at Beam Quarry in Great Torrington, North Devon.
- 1.1.2 This Climate Change Risk Assessment (CCRA) has been produced on behalf of L J Developments Ltd. in line with Environment Agency guidance on 'Adapting to climate change: risk assessment for your environmental permit'<sup>1</sup> to support an application for a new bespoke Environmental Permit for a waste operation under the Environmental Permitting (England and Wales) Regulations 2016 (as amended).

## 1.2 LOCATION

- 1.2.1 The Site is located in Great Torrington, North Devon, immediately to the south of the A386 road at National Grid Reference (NGR) 247000, 120400. The Site is approximately 2 km to the north-west of the village of Great Torrington and 5.7 km to the south-east of Bideford.

## 1.3 AIMS

- 1.3.1 This assessment aims to consider the potential climate change hazards associated with the activity, to identify impacts and to determine the influence which management practices have on reducing risks.

## 1.4 SCORING MATRIX

- 1.4.1 The risk assessment in Table 2 is based upon the severity and likelihood scoring in the guidance on 'Adapting to climate change: risk assessment for your environmental permit'.

### **Severity of impact:**

- severe impact (4): short-term, acute impact to operations resulting in permanent compliance breaches.
- medium impact (3): short-term, acute impact to operations resulting in multiple temporary compliance breaches.
- mild impact (2): short-term, acute impact to operations resulting in single temporary compliance breach.
- minor impact (1): short or long-term impact to operations resulting in additional measures for compliance.

### **Likelihood:**

- highly likely (4): event appears very likely in the short term and almost inevitable over the long term, or there is evidence of the event already happening.
- likely (3): it is probable that an event will occur, or circumstances are such that the event is not inevitable, but possible in the short term and likely over the long term.
- low likelihood (2): circumstances are such that an event could occur, but it is not certain even in the long term that an event would occur and it is less likely in the short term.
- unlikely (1): circumstances are such that it is improbable the event would occur even in the long term.

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<sup>1</sup> Available online at <https://www.gov.uk/guidance/adapting-to-climate-change-risk-assessment-for-your-environmental-permit> (last accessed 17.08.2021)



## 2 METHODOLOGY

- 2.1.1 This Climate Change Risk Assessment has been produced in accordance with Environment Agency guidance on 'Adapting to climate change: risk assessment for your environmental permit'.
- 2.1.2 The CCRA applies to bespoke waste and installation permits which are expected to operate for more than five years, even if the operations are expected to cease prior to 2050. This includes the commissioning and aftercare phases, as predicted changes may come into effect prior to this.
- 2.1.3 The risk assessment enables the qualitative assessment of how the Site and processes are likely to be affected by climate change.

### 2.2 RISK SCREENING

- 2.2.1 The results of the screening tool are reproduced in Table 1 below.

*Table 1 Climate Change Risk Screening*

Category	Screening Questions	Score	Your Score
1) TIMESCALES	<p>How long will a permit be required for this site/activity?</p> <p><b>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.</b></p> <p>Less than 20 years of operation</p> <p>Until between 2040 and 2060 (between 20 and 40 years from now)</p> <p>Until 2060 or beyond (more than 40 years from now)</p>	<p>0</p> <p>1</p> <p>3</p> <p>5</p>	1 – Restoration of the Site is estimated to take 10 years, with the final restoration stage achieved within 11 years of commencement.
2) FLOODING	<p>What is your site's risk of flooding from rivers or the sea?</p> <p>Not in a flood risk zone</p> <p>Very low or low</p> <p>Medium</p> <p>High</p>	<p>0</p> <p>1</p> <p>2</p> <p>5</p>	5 – Parts of the southern extent of the Site are located within a Flood Zone 3 associated with Mill Leat.
3) WATER USE	<p>If you use water for your site operations or fire prevention, what is the source of your water?</p> <p>Water not required</p> <p>Mains water</p> <p>Surface water or groundwater abstraction</p>	<p>0</p> <p>1</p> <p>5</p>	0 – Water not required for activities pertaining to restoration of the Site. No combustible waste will be stored on Site.
TOTAL SCORE	6 – CCRA required (score is >5).		

- 2.2.2 The CCRA has been reproduced in Table 2 below.



Table 2 Climate Change Risk Assessment

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.	Operations will be external. Potential for increase in dust emissions from Site, which could dry out faster.	3	2	6	Dust Management Plan. Vehicle speed reduction, drop heights reduced for tipping / processing, vehicles to remain sheeted, maintain haul roads and highway outside site, utilise damping down of waste.	2	2	4
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.	Operations will be external. No impact is anticipated.	N/A	N/A	N/A	N/A	N/A	N/A	N/A
3. The biggest rainfall events are up to 20% more intense than current extremes (peak rainfall intensity)*.	Increased risk to slope stability. The existing sumps within the quarry will be augmented by the construction of a new attenuation lagoon in the south-eastern corner with a base level of 18.5 mAOD and a capacity of 3,000 m <sup>3</sup> . Following year 7, all runoff will be directed to the new attenuation lagoon, which will be constrained to greenfield runoff rates.	3	3	9	Adhere to the recommendations outlined in the Stability Risk Assessment.  Construction of new attenuation lagoon which, following year seven, will limit runoff to greenfield runoff rates.  Infilling of the quarry may reduce surface runoff due to improved infiltration properties of restoration soil cover.	1	3	3
4. Average winter rainfall may increase by 41% on today's averages.	Increased flooding from surface water on Site. <b>See above.</b>	3	3	9	Increased flooding from surface water on Site. <b>See above.</b>	1	3	3
5. Sea level could be as much as 0.6m higher compared to today's level*.	Inland site; negligible impact.	N/A	N/A	N/A	N/A	N/A	N/A	N/A



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 45% less rain than now.	Operations will be external. Potential for increased dust emissions.	3	2	6	Dust Management Plan. Vehicle speed reduction, drop heights reduced for tipping / processing, vehicles to remain sheeted, maintain haul roads and highway outside site, utilise damping down of waste.	2	2	4
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.	Increased / reduced flow from on-Site spring. Water not utilised for site operations.	3	1	3	Not required where pre-mitigation score is less than 5.	N/A	N/A	N/A

### 3 Conclusion

- 3.1.1 Further to the results of the climate change risk assessment screening tool (refer to Table 1) which gave a score of more than 5, a climate change risk assessment has been carried out in accordance with Environment Agency guidance on 'Adapting to climate change: risk assessment for your environmental permit'.
- 3.1.2 The risk assessment considered the likelihood and severity of potential impacts, with and without mitigation in place, that the restoration of Beam Quarry and the associated activities could pose to the quality of air, water and land in the event of seven changing climate variables.
- 3.1.3 Variables considered include extreme rainfall events, rises in sea levels, an increase and decrease in the peak flow of watercourses, an increase in summer daily average temperatures and potentially warmer and colder average winter temperatures when compared with the present.
- 3.1.4 Results indicate that with measures implemented to mitigate the risk, the likelihood of operations impacting climate change have a maximum score of 2 (defined as 'low likelihood: circumstances are such that an event could occur, but it is not certain even in the long term that an event would occur and it is less likely in the short term') and a minimum score of 1 (defined as 'unlikely: circumstances are such that it is improbable the event would occur even in the long term').
- 3.1.5 In terms of severity, results show that after mitigation, of the seven potential climate change variables, three were not applicable, two give results of 2 (defined as 'mild impact: short-term, acute impact to operations resulting in single temporary compliance breach') and two, which are associated with an increase in rainfall, resulted in a score of 3 (defined as 'medium impact: short-term, acute impact to operations resulting in multiple temporary compliance breaches').
- 3.1.6 In light of the results, the highest potential climate change impact of the quarry restoration proposal is short-term and has a 'low likelihood' with a 'medium severity' associated with extreme rainfall events.



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