Environment Agency

Guidance

Combustion energy from waste: examples for your adapting to climate change risk assessment

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Applies to England

Contents

This publication is available at https://www.gov.uk/government/publications/adapting-to-climate-change-industry-sector-examples-for-your-risk-assessment/combustion-energy-from-waste-examples-for-your-adapting-to-climate-change-risk-assessment

Possible impacts and mitigation measures to consider when preparing your climate change risk assessment.

Summer daily maximum temperature

This may be around 7°C higher compared to average summer temperatures now, with the potential to reach extreme temperatures as high as over 40°C with increasing frequency based on today's values.

Impact 1

Greater potential for odour and pests from received and stored waste.

The mitigation for this could be to make sure:

- odour management systems are well maintained
- odour management procedures remain effective
- pest management systems are well maintained
- waste inventory is minimised as far as possible during shutdowns

Impact 2

Increased risk of fire, depending on waste storage and management.

The mitigation for this could be to make sure there is an:

- effective fire prevention plan
- appropriate fugitive or diffuse emissions plan

Winter daily maximum temperature

This could be 4°C more than the current average with the potential for more extreme temperatures, both warmer and colder than present.

Impact 1

Extremely cold temperatures could lead to pipes freezing and associated process disruption. But risks are likely to be low due to most pipework being internal. The main risk is likely to be freezing of condensate from air-cooled condensers, particularly under lower plant load.

The mitigation for this could be to:

- regularly inspect and maintain insulation, particularly on pipework and equipment in exposed areas of the site
- consider insulation on condensate pipework

Daily extreme rainfall

Daily rainfall intensity could increase by up to 20% on today's values.

Impact 1

Flooding could lead to increased site surface water and flash flooding, leading to:

- damage to on-site equipment
- possible flooding of the waste bunker

The mitigation for this could be to prepare flood plan with reference to the guidance Preparing for flooding: A guide for sites regulated under EPR and COMAH (https://www.gov.uk/government/publications/preparing-for-flooding-a-guide-for-regulated-sites).

Impact 2

The site may experience flash flooding issues. Storage lagoons may require more capacity or careful management. The capacity of surface water discharge points may become overwhelmed.

The mitigation for this could be to make sure:

- drains and lagoons are managed correctly

- surface falls are considered at the design stage
- the surface water management plan takes increases into consideration

Impact 3

Potential for contaminated floodwater or surface water run-off from site causing pollution.

The mitigation for this could be to:

- make sure there is secure storage of chemicals
- maintain drainage systems, including interceptors and traps, to avoid uncontrolled washout of pollutants

Impact 4

Other related extreme daily rainfall events may damage building structures, with increased potential for fugitive odour emissions.

The mitigation for this could be to:

- assess potential for storm damage
- repair or maintain building integrity

Average winter rainfall

Average winter rainfall may increase by over 40% on today’s averages.

Impact 1

This could lead to localised site flooding causing:

- damage to on-site equipment
- possible flooding of the waste bunker

The mitigation for this would be to prepare flood plan with reference to the guidance Preparing for flooding: A guide for sites regulated under EPR and COMAH (https://www.gov.uk/government/publications/preparing-for-flooding-a-guide-for-regulated-sites).

The plan should include:

- risk assessment of process equipment and services at greatest risk from flooding
- provision of emergency pumps to remove floodwater and identification of lowest risk location for discharge of floodwaters
- protection of control and electrical systems
- identification and protection of flat bottom tanks at risk of floating in floodwater

Sea level rise

Sea level rise which could be as much as 0.6m higher compared to today's level.

Impact 1

If located near the coast, a site could experience increased:

- risk of flooding and associated impacts
- corrosion due to increase in saltwater spray

The mitigation for this would be to prepare flood plan with reference to the guidance Preparing for flooding: A guide for sites regulated under EPR and COMAH (https://www.gov.uk/government/publications/preparing-for-flooding-a-guide-for-regulated-sites).

The plan should include:

- risk assessment of process equipment and services at greatest risk from flooding
- provision of emergency pumps to remove floodwater and identification of lowest risk location for discharge of floodwaters
- protection of control and electrical systems
- identification and protection of flat bottom tanks at risk of floating in floodwater

To prevent corrosion, measures could include protecting plant and equipment prone to corrosion through:

- painting with resistant coating
- regular inspection and maintenance

Impact 2

There could be localised issues with surface water discharge, leading to backing up and worsening site flooding.

The mitigation for this could be to:

- monitor and review the situation
- consider site-specific flood defence measures depending on level of risk

Drier summers

Summers could see potentially up to 40% less rain than now.

Impact 1

Potential increased use or reliance on mains water for dust suppression and cleaning, particularly at biomass co-incinerators.

The mitigation for this could be to make sure:

- measures are in place to review and minimise water use and maximise collection and use of rainfall
- mains water capacity is adequate, taking into account reduced availability of rainwater for activities such as dust suppression and cleaning

Impact 2

There is potential for increased reliance on potable water for incinerator bottom ash (IBA) quenching.

The mitigation for this would be to make sure:

- sources of water for dust suppression and IBA quench are sufficient and not reliant on rainfall
- opportunities for rainwater harvesting and on-site reuse and recycling of water are maximised

Impact 3

There is likely to be more dust from the waste and the ash produced on site.

The mitigation for this is to make sure the dust management plan takes this into account.

River flow

The flow in the watercourses could be 50% more than now at its peak, and 80% less than now at its lowest.

Impact 1

The occurrence is likely to be low as Energy from Waste (EfW) plant is not a high water user and only clean surface water is discharged to water course (with any on-site effluent discharged to foul sewer) other than two hazardous waste incinerators which discharge treated effluent to watercourse.

The mitigation would be to monitor and review the situation.

Impact 2

At low flow there is likely to be increased stress on a river if the plant is discharging into it.

The mitigation for this could be to:

- manage the discharge flow rate to avoid impacts

- consider additional holding capacity

Storms

Storms could see a change in frequency and intensity. The unique combination of increased wind speeds, increased rainfall, and lightning during these events provides the potential for more extreme storm impacts.

Storms and high winds could damage building structures with increased potential for fugitive odour emissions.

The mitigation for this could be to:

- review the design of vulnerable and tall structures and buildings
- review wind loading calculations, providing reinforcement if necessary
- maintain building integrity

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