

Climate Change Assessment

Introduction

This Climate Change Assessment has been prepared by INNOV8 PLANNING Ltd and reports on the likely effects of the proposed MRF in terms of climate change in the context of the site and surroundings, the wider environment, recognising that climate change is a global issue.

The climate change assessment presented within this assessment includes a

- Qualitative assessment of greenhouse gas ('GHG') emissions; and
- Vulnerability and risk assessment: A qualitative discussion of the vulnerability of the proposed Development to climate change effects

Planning Policy Context

Legislation

Climate Change Act 2008

The Climate Change Act 2008 establishes the framework for the UK to set and deliver GHG emission reduction targets; mainly through the establishment of the Committee on Climate Change which ensures targets are evidence based and independently assessed. The Act commits the UK government to reduce GHG emissions to a minimum of 80% below 1990 baseline levels by 2050. In addition to this, the Government is also required to regularly report on emission target progress, assess the risks and opportunities to the UK associated with climate change, and develop preparation and adaptive plans for these.

The UK Climate Change Risk Assessment is required to be produced every five years under the Climate Change Act 2008, in order to look at the risks and opportunities arising for the UK from climate change. The 2017 series of reports, alongside other documents from the European Commission used in this assessment potential vulnerabilities and adaptive potential of the proposed development and site regarding climate change impacts.

Town and Country Planning EIA Regulations 2017

On the 16th May 2017, the European Commission Environmental Impact Assessment Directive (2014/52/EU) was incorporated into English law under the Town and Country Planning (Environmental Impact Assessment) Regulations 2017. This legislation requires the consideration of climate change within an EIA. The key text in relation to climate change is provided below.

Schedule 3: Regulation 5(4)

1(f): "The characteristics of development must be considered with particular regard to the risk of major accidents and/or disasters relevant to the development concerned, including those caused by climate change, in accordance with scientific knowledge."

Schedule 4: Regulation 18(3) INFORMATION FOR INCLUSION IN ENVIRONMENTAL STATEMENTS

"A description of the likely significant effects of the development on the environment resulting from, inter alia:" ...

4: "A description of the factors specified in regulation 4(2) likely to be significantly affected by the development...climate (for example GHG emissions, impacts relevant to adaptation)"

5(f): “the impact of the project on climate (for example the nature and magnitude of GHG emissions) and the vulnerability of the proposed development to climate change”

National Planning Policy and Sustainable Design Definitions

National Planning Policy Framework

The policies within the NPPF relevant to climate change can be found in chapter 14 ‘Meeting the challenge of climate change, flooding and coastal change’. Those most specific to this assessment are detailed below:

Paragraph 148: *“The planning system should support the transition to a low carbon future in a changing climate, taking full account of flood risk and coastal change. It should help to: shape places in ways that contribute to radical reductions in GHG emissions, minimise vulnerability and improve resilience; encourage the reuse of existing resources, including the conversion of existing buildings; and support renewable and low carbon energy and associated infrastructure.”*

Paragraph 149: *“Plans should take a proactive approach to mitigating and adapting to climate change, taking into account the long-term implications for flood risk, coastal change, water supply, biodiversity and landscapes, and the risk of overheating from rising temperatures. Policies should support appropriate measures to ensure the future resilience of communities and infrastructure to climate change impacts, such as providing space for physical protection measures, or making provision for the possible future relocation of vulnerable development and infrastructure.”*

Paragraph 150: *“New development should be planned for in ways that: a) avoid increased vulnerability to the range of impacts arising from climate change. When new development is brought forward in areas which are vulnerable, care should be taken to ensure that risks can be managed through suitable adaptation measures, including through the planning of green infrastructure; and b) can help to reduce GHG emissions, such as through its location, orientation and design. Any local requirements for the sustainability of buildings should reflect the Government’s policy for national technical standards.”*

Paragraph 151: *“To help increase the use and supply of renewable and low carbon energy and heat, plans should: a) provide a positive strategy for energy from these sources, that maximises the potential for suitable development, while ensuring that adverse impacts are addressed satisfactorily (including cumulative landscape and visual impacts); b) consider identifying suitable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure their development; and c) identify opportunities for development to draw its energy supply from decentralised, renewable or low carbon energy supply systems and for co-locating potential heat customers and suppliers.”*

Paragraph 153: *“In determining planning applications, local planning authorities should expect new development to: a) comply with any development plan policies on local requirements for decentralised energy supply unless it can be demonstrated by the applicant, having regard to the type of development involved and its design, that this is not feasible or viable; and b) take account of landform, layout, building orientation, massing and landscaping to minimise energy consumption.”*

Paragraph 157: *“All plans should apply a sequential, risk-based approach to the location of development – taking into account the current and future impacts of climate change – so as to avoid, where possible, flood risk to people and property. They should do this, and manage any residual risk, by: a) applying the sequential test and then, if necessary, the exception test as set out below; b)*

safeguarding land from development that is required, or likely to be required, for current or future flood management; c) using opportunities provided by new development to reduce the causes and impacts of flooding (where appropriate through the use of natural flood management techniques); and d) where climate change is expected to increase flood risk so that some existing development may not be sustainable in the long-term, seeking opportunities to relocate development, including housing, to more sustainable locations.”

Any Other Relevant National Planning or Development Strategies

Supplementary planning guidance on climate change was issued in 2014 with the aim to advise “how to identify suitable mitigation and adaptation measures in the planning process to address the impacts of climate change.” This provides guidance to authorities for the implementation of climate change considerations into Local Plans but is helpful in outlining the topic areas for review and suggestions of general mitigation and adaptation methods.

Qualitative Assessment of Greenhouse gases

When considering the effects of the proposed development on climate, unlike other technical areas, assessment of individual receptors is not strictly applicable. Climate change is a global phenomenon and highly localised impacts as a direct result of emissions associated with this development are extremely unlikely. It is understood that certain regions, populations, and species are more sensitive to climate changes than others, but it would not be reasonable to provide an assessment of the proposed developments potential impact on these receptors as any single development would have an infinitesimal impact on global climate change. However the proposed development will result in the emissions of greenhouse gases from the delivery of waste to the site and from the construction and operation of the MRF, which is a long term and permanent effect. The baseline is not the ‘do nothing scenario’ which results in the material being landfilled. The effect of this is explored below.

Therefore, the baseline is considered to be a typical MRF development.

Construction

Construction to accord to approved conditions of environmental permit and CEMP to reduce potential impacts. In order to eliminate all residual effects, the development would need to have completely net zero emissions. Notwithstanding embodied emissions in the materials and emissions from the plant used to construct the development, it would also be necessary to eliminate all operational emissions.

Completed Development

Emissions associated with landfills ie. methane are considered harmful and methane is one of the more potent GHGs. The proposed development seeks to minimise the amount of waste sent to landfill thus helping to reduce the amount of methane produced by the adjacent landfill. Therefore, the proposed development is considered beneficial in terms of minimising the impact of climate change.

In addition to diverting waste from landfill for the recycling of materials reduces the need for the use of virgin materials which again reduces the amount on energy required to provide raw products for manufacturing. Metals, glass, building materials, clay ceramics and most plastics are made from limited natural resources. Some items made from these materials can be reused, and this saves the most energy and reduces the impact on the environment. For example, glass bottles only need to be

washed and sterilised before they can be filled again. Other products cannot be reused in this way, but they can be recycled.

Advantages of recycling

The advantages of recycling compared to producing materials and objects from natural resources include:

- fewer quarries and mines are needed to extract finite reserves of metal ores
- less crude oil needs to be extracted from the crust as a raw material for making plastics
- less energy is needed for recycling compared with making a new product from natural resources, so the emission of greenhouse gases is reduced
- the amount of waste that is disposed of in landfill is reduced

It is now widely acknowledged that material production causes over half of greenhouse gas (GHG) emissions from industry and that material efficiency and the circular economy i.e. recycling, are important strategies to reduce GHG emissions.

The proposed development will utilise electricity to run the plant and machinery. It is possible that the electricity for the facility could be supplied by the landfill gas engines or future renewable energy such as PV and Wind.

Elimination of all emissions will not be possible for the scale and type of development; however, steps can be taken to reduce residual effects via adopting mitigation. However it must be concluded that the proposed development will be beneficial to the effects of climate change by its very nature.

Resilience To Climate Change: Vulnerability and Risk Assessment

The update to EIA regulations not only requires an assessment of the potential impacts of a proposed development on climate change but also its vulnerability to climate change itself. In the context of the proposed development, the spirit of the regulations is to ensure that the risk to climate change effects are identified and mitigated if required.

Global Climate Change Projections

The following highlights the main projected global climate change issues:

Climate Change Issues

Solar Radiation

Long term projected changes in surface solar radiation, as a result of global warming, would suggest a decrease in available solar power due to a decrease in downwelling shortwave radiation, likely linked to the increase of water vapour. This is considered to be anthropogenic strengthening of “natural” decadal variability in irradiance, known as global dimming and brightening, which is influenced by synoptic weather patterns, cloud variations and atmospheric aerosols.

Heat Waves

The Intergovernmental Panel on Climate Change (IPCC) predict that temperature extremes will increase more rapidly than global mean surface temperature, with the number of hot days projected to increase in most land regions.

Extreme Rainfall and Flooding

IPCC and Met Office both suggest a general uncertainty in the projection of changes in heavy precipitation for the UK due to position in the transition zone between north and south Europe's contrasting projected changes. It is generally agreed the northern parts of the UK will experience overall increases of up to 10%, whilst southern areas may experience decreases of up to 5%. Overall, the UK is expected to see a general increase in precipitation trends up to 2100.

Rising Sea Levels

The most recent modelling indicates global sea level rise of 0.26-0.77m by 2100, under a 1.5°C warming scenario. Risk is amplified on small islands and in low lying coastal areas and deltas.

Storms and Winds

Atmospheric circulations have large variability across interannual through to decadal time scales, which makes forming projections with any reasonable confidence very difficult. There is more robust evidence in the Northern Hemisphere that since the 1970s there has been a general poleward shift of storm tracks and jet streams and near-surface terrestrial wind speeds have been declining by approximately 0.1-0.14 m s⁻¹ per decade across land.

Despite anemometers being used for decades to measure near surface wind speed, the data has rarely been used to analyse trends and lacks important instrumentation meta data. In general, confidence is low in wind speed projections due to large uncertainties across global data sets.

Cold Spells and Snow

It has been observed the spring snow cover has been continuing to decrease in extent in the Northern Hemisphere and that cold temperature extremes are projected to decrease along with the number of frost days.

Risk Assessment – the proposed development will be able to withstand extreme weather conditions and increased rainfall events.

Conclusion

By its very nature developments that support the circular economy reduce the amount of GHG that is emitted into the atmosphere.