

12. CLIMATE CHANGE

12.1 Introduction

- 12.1.1 Within Schedule 4 (5(f)), the EIA regulations require *'the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change;'* to be considered within considered with the ES.

12.2 Aims and Objectives

- 12.2.1 This chapter considers the potential effects of the development on climate change, and the vulnerability of the scheme to climate change.

12.3 Legislation and Policy Context

- 12.3.1 This section provides a review of legislation, policy and guidance relevant to the proposed development in the context of climate change

International policy

The Paris Agreement

- 12.3.2 In December 2015, the adoption of the 'Paris Agreement' was established through the twenty first session of the Conference of Parties (COP21), which outlined the intention of UNFCCC member states to refocus and meet the ambitions of climate change targets first introduced in the 'Kyoto Protocol' in 1992.
- 12.3.3 The Paris Agreement stresses the *'urgency of accelerating the implementation of the Convention and its Kyoto Protocol'* and within this, ensuring that the long-term temperature goals are met.
- 12.3.4 The Agreement sets out the ambition of holding the increase of global average temperature to *'well below 2°C'* above pre-industrial levels and to pursue efforts to limit temperature increase to 1.5 °C. It was acknowledged that to achieve these ambitions, there is a requirement to ensure Parties reach global peaking of greenhouse gas emissions as soon as possible and do so by employing means that allow pathways toward *'low greenhouse gas emissions and climate-resilient development'*.
- 12.3.5 In October 2016, the threshold for entry into force of the Paris Agreement was achieved, with at least 55 countries, which account for at least 55% of the world's greenhouse gas emissions,

ratifying the Agreement. The Paris Agreement entered into force on 4th November 2016 and the UK ratified the Agreement on 18th November 2016.

- 12.3.6 Next year (between the 1st and 12th November 2021) may see the UK host one of the most important global climate summit since Paris 2015. The UK's presidency for COP26 rests on action at home.

The Intergovernmental Panel on Climate Change

- 12.3.7 The Intergovernmental Panel on Climate Change (IPCC) is the United Nations body for assessing the science related to climate change. They provide regular assessments of the scientific basis of climate change, its impact and future risks, and options for adaptation and mitigation.

- 12.3.8 The IPCC has published five comprehensive assessment reports reviewing the latest climate science, along with several special reports on specific topics. The Fifth Assessment Report (AR5) is the latest key report, finalised in 2014. The Sixth Synthesis Report will be the last of the AR6 products due for release in 2022.

- 12.3.9 The Climate Change 2014 Synthesis Report¹ provides a summary of the detailed report. Within this, a number of climate change scenarios are considered, and these provide potential future baselines based on human activities under different scenarios. Scenarios considered include a stringent mitigation scenario, two intermediate scenarios, and one scenario with very high greenhouse gas emissions.

- 12.3.10 Section 2.2. of the Synthesis Report confirms that *'Surface temperature is projected to rise over the 21st century under all assessed emission scenarios. It is very likely that heat waves will occur more often and last longer, and that extreme precipitation events will become more intense and frequent in many regions. The ocean will continue to warm and acidify, and global mean sea level to rise.'*

- 12.3.11 The figures below set out the five difference scenarios, with the top figure showing different annual anthropogenic CO₂ emissions under difference scenarios, and the bottom figure showing the corresponding human-induced global warming.

¹ https://www.ipcc.ch/site/assets/uploads/2018/02/SYR_AR5_FINAL_full.pdf

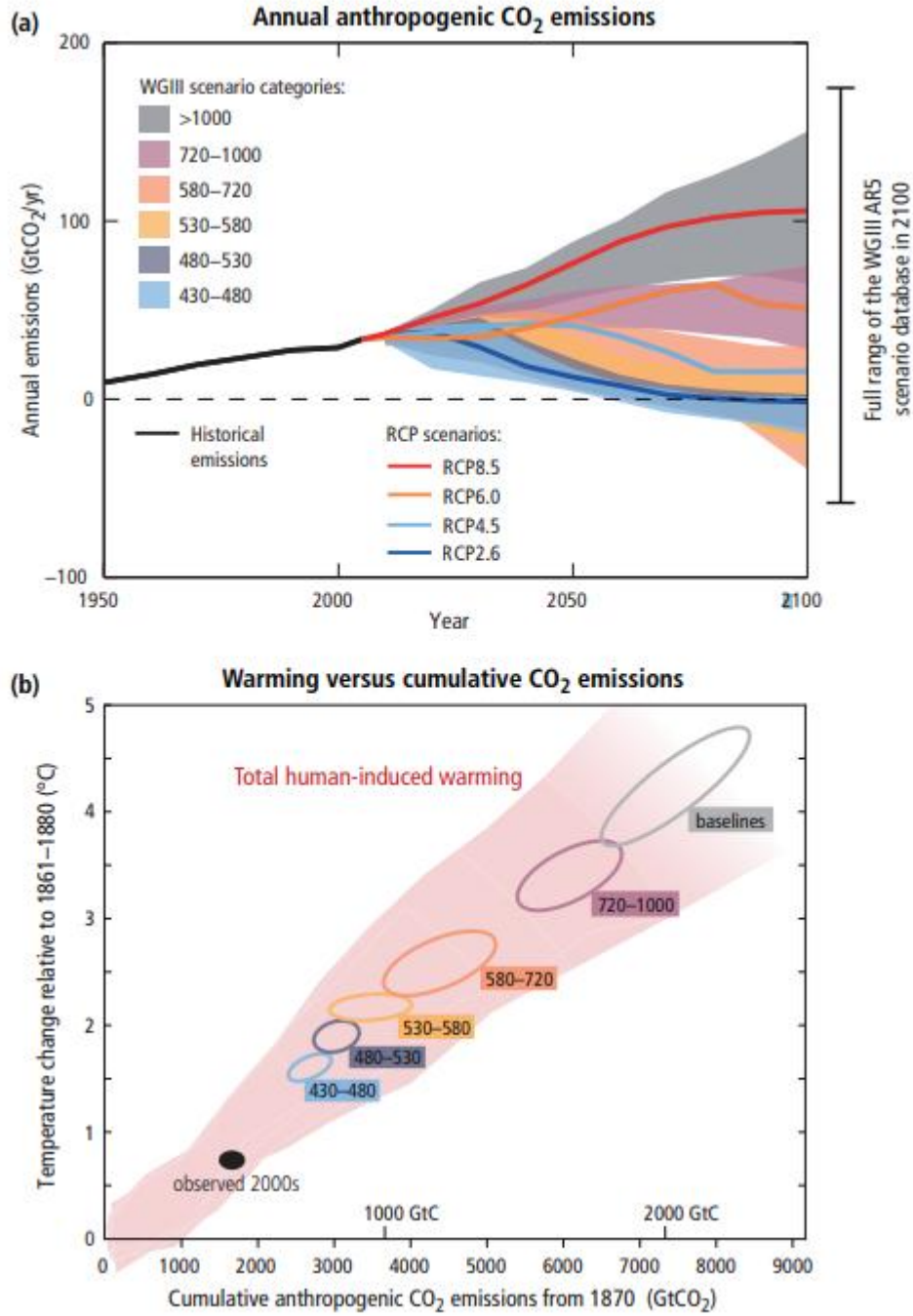


Figure 12.1 Climate change scenarios

UK Context

12.3.12 The UK Government has recognised the link between climate change and energy, setting stringent targets for the reduction in traditional energy generation (from fossil fuels) and increased in the use of renewable energy.

12.3.13 There have been numerous energy papers and targets set, including:

-) The White Paper on Energy 'Meeting the energy challenge' (DTI) (May 2007)
 -) The Climate Change Act 2008 The UK Renewable Energy Strategy (July 2009)
- 12.3.14 In order to work towards the legally binding targets of the Climate Change Act 2008, Carbon budgets are set by Parliament on the advice of the independent Committee on Climate Change. So far, five carbon budgets have been set in law, covering the period from 2008 to 2032. The first three budgets (for 2008-23) were set in 2008 and the fourth (for 2023-27) in 2011. The fifth carbon budget was set in 2016. It limits UK greenhouse gas emissions from all sources, excluding international aviation and shipping, to 1,725 MtCO₂ between 2028 and 2032. This is equivalent to a 57 per cent reduction in annual UK emissions over this period on average, relative to 1990.
- 12.3.15 The Committee on Climate Change has reported that the first and second carbon budget were met and the UK was on track to meet the third, but is not on track to meet the fourth or fifth budgets.
- 12.3.16 Most recently, the UK government has produced a number of progress documents as follows;
-) Leading on Clean Growth – The Government's response to the Committee on Climate Changes 2019 Progress Report to Parliament – Reducing the UK emissions (October 2019);
 -) Net Zero The UK's contribution to stopping global warming (May 2019) and,
 -) Reducing UK Emissions 2019 Progress Report to Parliament (July 2019).
- 12.3.17 The Leading on Clean Growth Document has adopted a target of net-zero emissions of greenhouse gases in the UK by 2050 (i.e. at least a 100% reduction in emissions from 1990). Whilst the power industry is recognised as making great strides towards the use of renewable energy, the document states that:
- "Our legally binding commitment to reach net zero greenhouse gas emissions in 2050 will require deep decarbonisation".*
- 12.3.18 In the Net Zero report, the Climate Change Committee made clear that meeting this target is contingent on early and decisive action to strengthen policy.
- 12.3.19 In the 2019 Progress Report, states that overall actions to date have fallen short of what is needed for the previous targets and well short of those required for the net-zero target. Stating that:

-) **“Policy implementation in the last year.** Last year, the Committee set out 25 headline policy actions for the year ahead. Twelve months later, only one has been delivered in full. Ten of the required actions have not shown even partial progress.
-) **Underlying progress.** The Committee also monitor indicators of underlying progress such as improvements to insulation of buildings and the market share of electric vehicles. Only seven out of 24 of these were on track in 2018. Outside the power and industry sectors, only two indicators were on track. This is a continuation of recent experience - over the course of the second carbon budget (2013-2017), only six of 21 indicators were on track.
-) **Projected progress.** The Government's own projections demonstrate that its policies and plans are insufficient to meet the fourth or fifth carbon budgets (covering 2023-2027 and 2028-2032). This policy gap has widened in the last year as an increase in the projection of future emissions outweighed the impact of new policies”.

12.3.20 The key messages for the Government on preparing for Climate Change outlined in these documents are as follows:

-) *Climate change will impact the majority of Government’s key objectives. All relevant policies should include plans which take into account a minimum of a 2°C temperature increase, with consideration of more extreme scenarios.*
-) *Leaving adaptation responses to local communities and organisations without a strategic national plan will not manage the risks from climate change. That strategic plan is still missing.*
-) *The Government must ramp up resources for adaptation. It should take action on all of the urgent risks set out in the UK Climate Change Risk Assessment, and improve monitoring of risk, action and the impacts of climate change.*

12.3.21 The Key messages for the Government on tackling Climate Change are as follows:

-) *Embed net-zero policy across all levels and departments of government, with strong leadership at the centre.*
-) *Provide a clear and stable direction for policy to ensure it is business-friendly. People must be engaged in the challenge and policy designed with their needs in mind.*
-) *Use the UK’s new net-zero target to help encourage increased improvement elsewhere, including adoption of similar targets by other developed countries in the EU and beyond.*

National Planning Policy

- 12.3.22 The overarching National Policy Statement for Energy (EN-1) is specific to Nationally Significant Infrastructure Project applications, however it states that it is likely to be a material consideration in the decision making on planning applications that fall under the Town and Country Planning Act 1990 (paragraph 1.2.1).
- 12.3.23 Part 2 of the statement seeks to meet the legally binding targets to cut greenhouse gas emissions, transition to a low carbon economy, decarbonise the power section, reforms the electricity market, secure energy supplies and replace outdated energy infrastructure.
- 12.3.24 Part 3 outlines that considerations of need for renewable and low carbon energy should be given considerable weight when determining planning applications for energy developments.
- 12.3.25 Paragraph 3.4.3 states that future largescale renewable energy in the UK includes energy from waste, where;
- “Energy from Waste (EfW) – the principal purpose of the combustion of waste, or similar processes (for example pyrolysis or gasification) is to reduce the amount of waste going to landfill in accordance with the Waste Hierarchy and to recover energy from that waste as electricity or heat. Only waste that cannot be re-used or recycled with less environmental impact and would otherwise go to landfill should be used for energy recovery. The energy produced from the biomass fraction of waste is renewable and is in some circumstances eligible for Renewables Obligation Certificates, although the arrangements vary from plant to plant’.*
- 12.3.26 The National Policy Statement on Renewable Energy Infrastructure (EN-3) was adopted in July 2011 and provides national policy in respect of renewable energy generation. Paragraph 1.1.1 of EN-3 underlines the importance of the generation of electricity from renewable sources by stating:
- “Electricity generation from renewable sources of energy is an important element in the Government’s transition to a low-carbon economy.”*
- 12.3.27 The revised NPPF published in June 2019 and its accompanying Planning Practice Guidance (PPG) seeks provide the context for applications which are not deemed to be of National Significance as follows.
- 12.3.28 Paragraph 151 of the NPPF seeks to ensure that there is an increased in the use and supply of renewable and low carbon energy and heat stating that 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.

12.3.29 Planning Practice Guidance for Climate Change was last updated in March 2019. This document recognises the legally binding target set out within the Climate Change Act 2008 to reduce the UK's greenhouse gas emissions by at least 80% in 2050 from 1990 levels.

Local Policy

12.3.30 Durham County Council declared a Climate Change Emergency in 2019 and pledged to:

-) Reduce carbon emissions from Durham County Councils operations by 80%;
-) Investigate what further actions are necessary to made County Durham Carbon Neutral by 2050 and pledge to achieve this.

12.3.31 These two Climate Change Emergency Targets are the overarching aims of the Councils work on carbon reduction both within the Council and across the county.

12.3.32 Durham County Council have published numerous strategies which include:

-) The Climate Change Strategy
-) The Sustainable Energy Action Plan
-) Climate Change Delivery Plan
-) Carbon Management plan(s) and
-) Climate Emergency Report.

12.3.33 The most recent study of CO2 emissions within the County of Durham are replicated below:

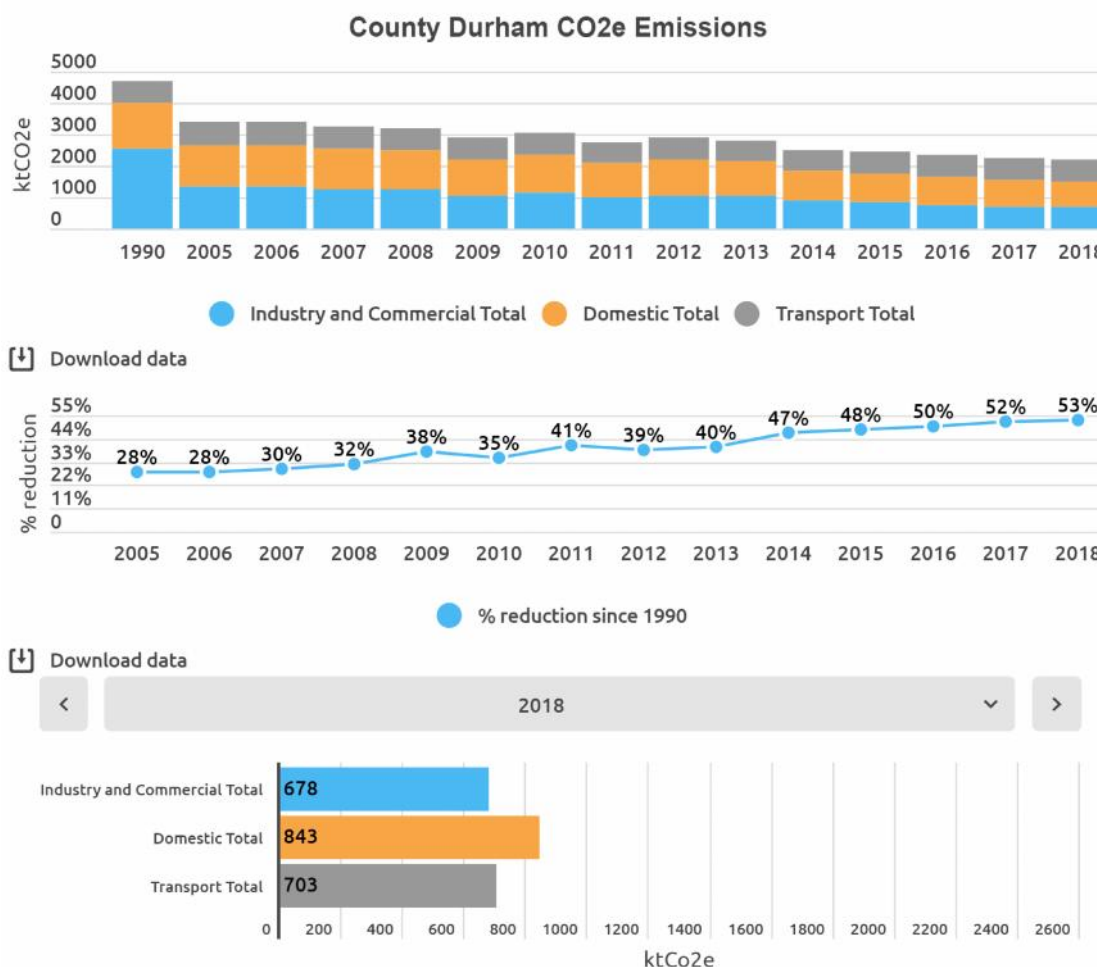


Figure 12.2: County Durham CO2e Emissions

12.3.34 The figures for 2018 show a 53% reduction from 1990 figures but demonstrate that further measures are required.

Conclusion

12.3.35 The above analysis is clear that reducing greenhouse gases is the only way to limit climate change.

12.3.36 Central to limiting these emissions is the movement towards being carbon neutral which is defined as;

“The balance of the amount of carbon dioxide released into the atmosphere by a particular activity with an equal amount of carbon sequestration or carbon off-set”.

12.3.37 This chapter seeks to assess the impact of the proposed development on climate change and its contribution towards the low carbon economy.

12.4 Assessment methodology

Relevant Guidance

- 12.4.1 There is no specific methodology required to be used when considering climate change, however legislation and policy as outlined above is clear that the central driver to climate change is Green House Gas (GHG) emissions and as such the assessment of the developments impact on climate change should focus on its contribution towards GHG emissions.

Consultation

- 12.4.2 In response to the Scoping Opinion request, Durham County Council provided a Scoping Opinion on the 25th September. This stated that:

“The Scoping Report identifies the requirement to address climate change and sets out that this would involve a review of relevant policy and guidance and an assessment of the proposal against this. Details of carbon savings and climate impact will be included. It is agreed that this is an acceptable approach....”.

- 12.4.3 This chapter seeks to provide this information.

Study Area

- 12.4.4 Climate Change is an international issue, and this report will therefore consider effects of the scheme on the global climate with specific reference to the climate changes expected in the UK.

Assessment of Impact

- 12.4.5 The IPCC recommends a methodology whereby different greenhouse gases can be compared by using carbon dioxide as a datum for comparison. By definition, 1 kilogram of carbon dioxide has a Global Warming Potential (GWP) of 1. Methane has a GWP of 21, so 1 kg of methane has the same heat trapping potential as 21 kg of carbon dioxide.

Climate Change Adaptation

- 12.4.6 EIAs are also required to consider the impact of climate change on the proposed development. This is required to consider the susceptibility or resilience of the development (i.e. the receptor) to climate change, and how small or great the impacts of climate change on the receptor would be.

12.4.7 In addition to the assessment of carbon, this ES Chapter also summarises the air quality assessment work undertaken as part of chapter 9 of this ES on air quality.

Assessment of Significance

12.4.8 There is no established threshold for assessing the significance of individual project's contributions to climate change. However, IEMA guidance on considering Greenhouse Gas (GHG) Emissions within EIAs² states that '*...it might be considered that all GHG emissions are significant and an EIA should ensure the project addresses their occurrence by taking mitigation action...*'.

12.4.9 Appendix C of the above guidance states that '*When evaluating significance, all new GHG emissions contribute to a significant negative environmental effect; however, some projects will replace existing development that have higher GHG profiles. The significance of a project's emissions should therefore be based on its net impact, which may be positive or negative. Where GHG emissions cannot be avoided, the EIA should aim to reduce the residual significance of a project's emissions at all stages. Where GHG emissions remain significant, but cannot be farther reduced... approaches to compensate the project's remaining emissions should be considered.*'

12.4.10 For the purpose of this chapter, significance will be considered in the following way:

-) **Neutral effect:** The project will be 'carbon neutral development', with net zero carbon emissions.
-) **Beneficial effect:** The project will remove more carbon emissions from the atmosphere than it creates.
-) **Adverse effect:** The project will create more carbon emissions than it removes from the atmosphere.

Cumulative Impact

12.4.11 Due to the global nature of climate change, it is not possible to calculate the cumulative impact of this scheme.

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<https://www.iema.net/assets/newbuild/documents/IEMA%20GHG%20in%20EIA%20Guidance%20Document%20V4.pdf>

12.4.12 This chapter will assess the impacts of climate change on the proposed development.

Limitations

12.4.13 This chapter has made general assumptions as to the carbon capture of existing waste management infrastructure.

12.5 Baseline Conditions

12.5.1 Chapter 6 of this ES includes an assessment of current Commercial and Industrial Waste arisings and their current management. This assessment has demonstrated that a large proportion of commercial and industrial waste is still landfilled or exported for management abroad.

12.5.2 The baseline condition is therefore that the waste is landfilled.

12.6 Identification and Evaluation of Key Impacts

Construction

12.6.1 The construction phase will generate vehicle movements and as such will generate a small amount of Green House Gas emissions. This will have a **temporary negative effect** on climate change.

Operations

12.6.2 If it is assumed that after decomposition, in the long term, all the carbon in the waste sent to landfill (baseline scenario) will be converted to carbon gas and it will do so in the short term during incineration (proposed development), the relative carbon tonnages are equal.

12.6.3 However, this assumption can only be made if all methane gas emissions from landfilling are efficiently passed to the landfill gas utilisation plant for processing. This is highly unlikely and as such the baseline solution (the landfilling) would result in the emission of methane which has a significantly greater impact on climate change than combustion of the same materials within the proposed Facility which is a highly controlled environment.

12.6.4 In addition to the reduction in emissions from disposing waste to landfill, it is also widely accepted that energy produced by energy from waste facilities replaces that generated by other fuels such as coal, oil and natural gas.

12.6.5 The Chapter 10 (Air Quality & Human Health) of this ES has assessed the impact of the proposed development on emissions to air and has concluded that the proposed development will not have a significant impact on air quality or Human Health.

12.6.6 It can therefore be concluded that the proposed development will have a **minor beneficial effect** on climate change.

Vulnerability of the scheme to Climate Change

12.6.7 Within this ES, the schemes vulnerability to climate change has been considered within Chapter 10 (Air Quality) and Chapter 11 (Water Environment) of this Environmental Statement.

Flood Risk Assessment

12.6.8 Attenuation storage is required to reduce the post-application surface water runoff from the Site to calculated greenfield runoff rates and account for a 40% allowance for climate change and the predicted increase in rainfall intensity that could occur over the lifetime of the proposed development.

12.6.9 In accordance with Environment Agency drainage guidance, the storage has been designed to account for rainfall storm return periods up to and including the 1 in 100-year rainfall event, which includes a climate change allowance in rainfall intensity assuming no infiltration losses.

12.7 Design Response and Mitigation

12.7.1 During construction, best practice associated with vehicle movements will be initiated.

12.7.2 The proposed development incorporates the best available techniques for treating GHG emissions. The Environment Agency permit and associated monitoring will ensure that the facility keeps within the required limits.

12.7.3 The proposed development has been designed to allow for climate change in its flood risk assessment.

12.8 Residual Impacts

12.8.1 The proposed Energy Facility will generate GHG emissions, however, the proposed development overall off set of both carbon and greenhouses gases to offer a **minor beneficial effect** on the existing baseline scenario.

12.9 Conclusion

12.9.1 Overall, the proposed development offers a **minor beneficial effect** over the baseline scenario. This is because the development will significantly reduce the methane emissions associated landfilling which has a significant GWP.

12.9.2 The proposed development will also offset carbon used in generation of electricity, working towards both national and local low carbon goals.

12.9.3 In addition, the impacts of climate change have been considered within relevant technical assessments, and this confirms that the proposed development is appropriate for the application site.

12.9.4 Table 12.1 below contains a summary of the likely impacts of the proposed development.

Phase	Nature of Effect	Significance of Impact	Magnitude of Impact	Duration	Mitigation	Residual	Level
Construction	GHG	Minor	Minor Adverse	Temporary	Best Practice	Minor adverse	International
Operation	GHG	Minor	Minor Beneficial	Permanent	Monitor and control emissions	Minor beneficial	International
Operation: Climate Change Resilience	Air Quality Flood Risk Ecology	Minor	Minor Adverse	Permanent	Monitor and Control Emissions/ Environment	Neutral	Regional

Table 12.1 Summary of Effects