

APPENDIX 7.2 IN-COMBINATION CLIMATE CHANGE IMPACT ASSESSMENT

Construction Phase

A summary of potential In-Combination Climate Change Impacts (ICCI) and effects during the construction phase is provided in Table 1. The assessment is based on professional judgment informed by a review of individual technical assessments within the ES.

Table 1 Construction Phase In-Combination Climate Impacts and Effects

Effect of Proposed Development on Receptors	Proposed Development and Mitigation Measures	Climate Change Trend	Potential ICCI on Individual Topic ES Chapters' Effects or Embedded Mitigation	Is there a Significant In-Combination Climate Impact?	Additional Mitigation Required?
Air Quality Potential interactions of climate change with the identified effects are considered to be negligible, based on professional judgement and review of the topic ES chapter.					
Exposure of sensitive receptors to dust from construction activities.	Adoption of best practice in compliance with the IAQM guidance to reduce impacts from high-risk sites would be undertaken. The CMP would include measures such as the implementation of dust suppression methods.	Increased frequency and intensity of high temperatures: Drought conditions.	Extended periods of drought could arise as a result of warmer summer months and limited precipitation. This may increase dust production and reduce deposition which has the potential to affect human health.	Not significant due to the embedded mitigation measures committed to in the CMP (e.g., increase the frequency of inspections during activities with a high potential to create dust or in prolonged dry weather).	No additional measures required.
Exposure of sensitive receptors to dust from construction activities.	As outlined in the CMP, Control of dust would rely upon good site management and mitigation techniques including some that rely on water, such as ensuring effective water suppression.	Increased frequency and intensity of high temperatures: Drought conditions.	Drought conditions may reduce the availability of water for dust suppression mitigation measures, which would reduce the effectiveness of embedded mitigation measures.	Not significant due to mitigation measures which do not rely on water as committed to in the CMP (e.g., covering stockpiles and minimising stockpile size).	No additional measures required. Temporary storage of water could be considered during the construction phase to be used for dust suppression in drought conditions.
Ecology Potential interactions of climate change with the identified effects are considered to be negligible, based on professional judgement and review of the topic ES chapter.					
N/A	N/A	N/A	Negligible	No significant In-Combination Climate Impact.	No additional mitigation required.
Daylight, Sunlight, Overshadowing and Solar Glare Potential interactions of climate change with the identified effects are considered to be negligible, based on professional judgement and review of the topic ES chapter.					
N/A	N/A	N/A	Negligible	No significant In-Combination Climate Impact.	No additional mitigation required.

Water Resources and Flood Risk					
Potential interactions of climate change with the identified effects are considered to be negligible, based on professional judgement and review of the topic.					
N/A	N/A	N/A	Negligible	No significant In-Combination Climate Impact.	No additional mitigation required.
Ground Conditions					
Potential interactions of climate change with the identified effects are considered to be negligible, based on professional judgement and review of the topic ES chapter.					
Contamination of controlled waters within and adjacent to the Site due to mobilisation of contaminants or silt-laden surface water run-off from the Site.	Construction works would be undertaken in compliance with the CMP which would include measures to avoid and minimise potential contamination impacts, including storing, handling, and managing construction materials with due regard to the potential for mobilisation; selection of appropriate piling and excavation techniques. The CMP also includes control measures to reduce run-off, contamination and dust impacts during the construction phase.	Increased frequency of heavy rainfall events	Increased frequency of heavy rainfall events could increase mobilisation of contaminants and surface water run-off from the Site, potentially spreading contamination to controlled waters.	Not significant due to sufficient mitigation measures specified within the CMP.	No additional mitigation required.
Harm to offsite land users due to dermal contact with mobilised soil/dust, inhalation or ingestion, as a result of direct exposure of contaminants.	As outlined in the CMP, standard construction control measures such as environmental monitoring, stockpile management and dust suppression would be implemented in order to minimise airborne contamination.	Increased frequency and intensity of high temperatures: Drought conditions.	Increased frequency and intensity of drought events could increase dust creation, increasing the risk of contaminated soil being mobilised and potentially affecting offsite users.	Not significant due to mitigation measures specified in CMP including sufficient dust suppression measures and storing, handling, and managing construction materials with due regard to the potential for mobilisation.	No additional mitigation required.
Human Health					
Potential interactions of climate change with the identified effects are considered to be negligible, based on professional judgement and review of the topic ES chapter.					

N/A	N/A	N/A	Negligible	No significant In-Combination Climate Impact.	No additional mitigation required.
Noise and Vibration Potential interactions of climate change with the identified effects are considered to be negligible, based on professional judgement and review of the topic ES chapter.					
N/A	N/A	N/A	Negligible	No significant In-Combination Climate Impact.	No additional mitigation required.
Wind Microclimate Potential interactions of climate change with the identified effects are considered to be negligible, based on professional judgement and review of the topic ES chapter.					
N/A	N/A	N/A	Negligible	No significant In-Combination Climate Impact.	No additional mitigation required.

Operational Phase

A summary of potential ICCI and effects during the operational phase is provided in Table 2. The assessment is based on professional judgment informed by a review of individual technical assessments within the ES.

Table 2 Operational Phase In-Combination Climate Impacts and Effects

Effect of Proposed Development on Receptors	Existing Design and Mitigation Measures	Climate Change Trend	Potential In-Combination Climate Impact on Individual Technical Effects or Embedded Mitigation	Is there a Significant In-Combination Climate Impact?	Additional Mitigation Required?
Air Quality Potential interactions of climate change with the identified effects are considered to be negligible, based on professional judgement and review of the topic ES chapter.					
Increased exposure of sensitive receptors to poor air quality due to open windows as a result of overheating.	Chapter 6: Air Quality outlines the provision of airtight hermetically sealed windows at all residential homes on the first floor and at certain homes on the second and third floor would be implemented for air quality mitigation.	Increased frequency and intensity of extreme weather events: Heatwaves.	Increased frequency and intensity of heatwaves could increase the need to ventilate homes through opening windows to avoid overheating, reducing effectiveness of air quality mitigation.	Not significant due to mitigation measures included within the overheating assessment, including: <ul style="list-style-type: none"> - Provision of windows that open to allow rapid ventilation. - Provision of mechanical ventilations. - Ventilation air shall be supplied from an intake point at the rear of the building away from the major pollution sources. 	No additional mitigation required.
Ecology Potential interactions of climate change with the identified effects are considered to be negligible, based on professional judgement and review of the topic ES chapter.					

Loss of and degradation of habitat, enhancement of existing habitats, creation of new habitat.	Proposed enhancements to habitats on Site include retaining the existing Norway Maple tree, planting trees and shrubs, and green infrastructure within the Proposed Development. The Landscape Design Statement includes planting a mixture of native and non-native plant species to benefit wildlife. The design includes Sustainable Drainage Systems (SuDs), trees and shrubs, a green roof and rain garden, maximised for their biodiversity value via design, location, and connectivity.	Increased frequency and intensity of high temperatures: Heatwaves and drought conditions.	Increased temperatures, heatwaves and drought conditions could cause vegetation dieback and reduce the effectiveness of mitigation planting, intended to create new habitat.	Not significant due to mitigation measures included within the Landscape Design Statement including: <ul style="list-style-type: none"> - Selection of vegetation including a range of species rich planting and avoidance of high-water demand species. - Proposed species are robust and suitable for the microclimate of the Site; and - Proposed Sustainable drainage and rain gardens 	No additional mitigation required.
Daylight, Sunlight, Overshadowing and Solar Glare Potential interactions of climate change with the identified effects are considered to be negligible, based on professional judgement and review of the topic ES chapter.					
N/A	N/A	N/A	Negligible	No significant In-Combination Climate Impact.	No additional mitigation required.
Water Resources and Flood Risk Potential interactions of climate change with the identified effects are considered to be negligible, based on professional judgement and review of the topic.					

Surface water flood risk to site occupants and surrounding areas.	As outlined in the Drainage Strategy Report, the Proposed Development would result in minimal changes to the overall impermeable areas across the Site and therefore would have minimal changes to the: <ul style="list-style-type: none"> - Volume of surface water ponding on the Site. - Volume of surface water runoff leaving the Site or discharging into surrounding areas. - Peak discharge rate from the Site. Drainage systems would be designed to sufficiently drain the foul and surface water flows arising from the Proposed Development.	Increased frequency of heavy rainfall events	Increased frequency and intensity of rainfall events as a result of climate change could increase the risk of surface water flooding to the Site occupants and surrounding areas, due to overwhelming of drainage systems.	Not significant due to the Drainage Strategy including a 45% climate change allowance.	No additional measures required.
Ground Conditions Potential interactions of climate change with the identified effects are considered to be negligible, based on professional judgement and review of the topic ES chapter.					
N/A	N/A	N/A	Negligible	No significant In-Combination Climate Impact.	No additional mitigation required.
Human Health Potential interactions of climate change with the identified effects are considered to be negligible, based on professional judgement and review of the topic ES chapter.					
N/A	N/A	N/A	Negligible	No significant In-Combination Climate Impact.	No additional mitigation required.
Noise and Vibration Potential interactions of climate change with the identified effects are considered to be negligible, based on professional judgement and review of the topic ES chapter.					
Exposure of sensitive receptors to increased noise levels due to open windows as a result of overheating.	Chapter 9: Noise and Vibration outlines that where noise levels are too high to allow the opening of windows, acoustically attenuated ventilation, delivered into the residential habitable rooms is proposed to prevent the need for residents to open windows during the overheating scenario.	Increased frequency and intensity of high temperatures and of extreme weather events: Heatwaves.	Increased temperatures and heatwaves could lead to increased frequency of internal noise exceeding thresholds as a result of opening windows in high temperatures.	Not significant due to mitigation measures which include refinement of the façade measures and ventilation design at the detailed design phase.	No additional mitigation required.
Wind Microclimate Potential interactions of climate change with the identified effects are considered to be negligible, based on professional judgement and review of the topic ES chapter.					

Exposure of sensitive receptors to high wind speeds.	<p>Chapter 13: Wind Microclimate includes mitigation measures such as soft landscaping to reduce the effects of wind on sensitive receptors. The Landscape Design Statement includes measures such as:</p> <ul style="list-style-type: none"> - A grid of trees to frame key routes through the development and to create areas of shelter within the park; and - Areas of new planting and street trees along Newcastle Street. 	<p>Increased frequency and intensity of high temperatures and of extreme weather events:</p> <p>Heatwaves and drought conditions.</p>	<p>Increased temperatures and heatwaves could cause vegetation dieback and reduce the effectiveness of mitigation planting, intended to mitigate the effects of wind on sensitive receptors.</p>	<p>Not significant due to mitigation measures included within the Landscape Design Statement including:</p> <ul style="list-style-type: none"> - Selection of vegetation including a range of species rich planting and avoidance of high-water demand species. - Proposed species are robust and suitable for the microclimate of the Site. - Sustainable drainage and rain gardens are proposed. 	<p>No additional mitigation required.</p>
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