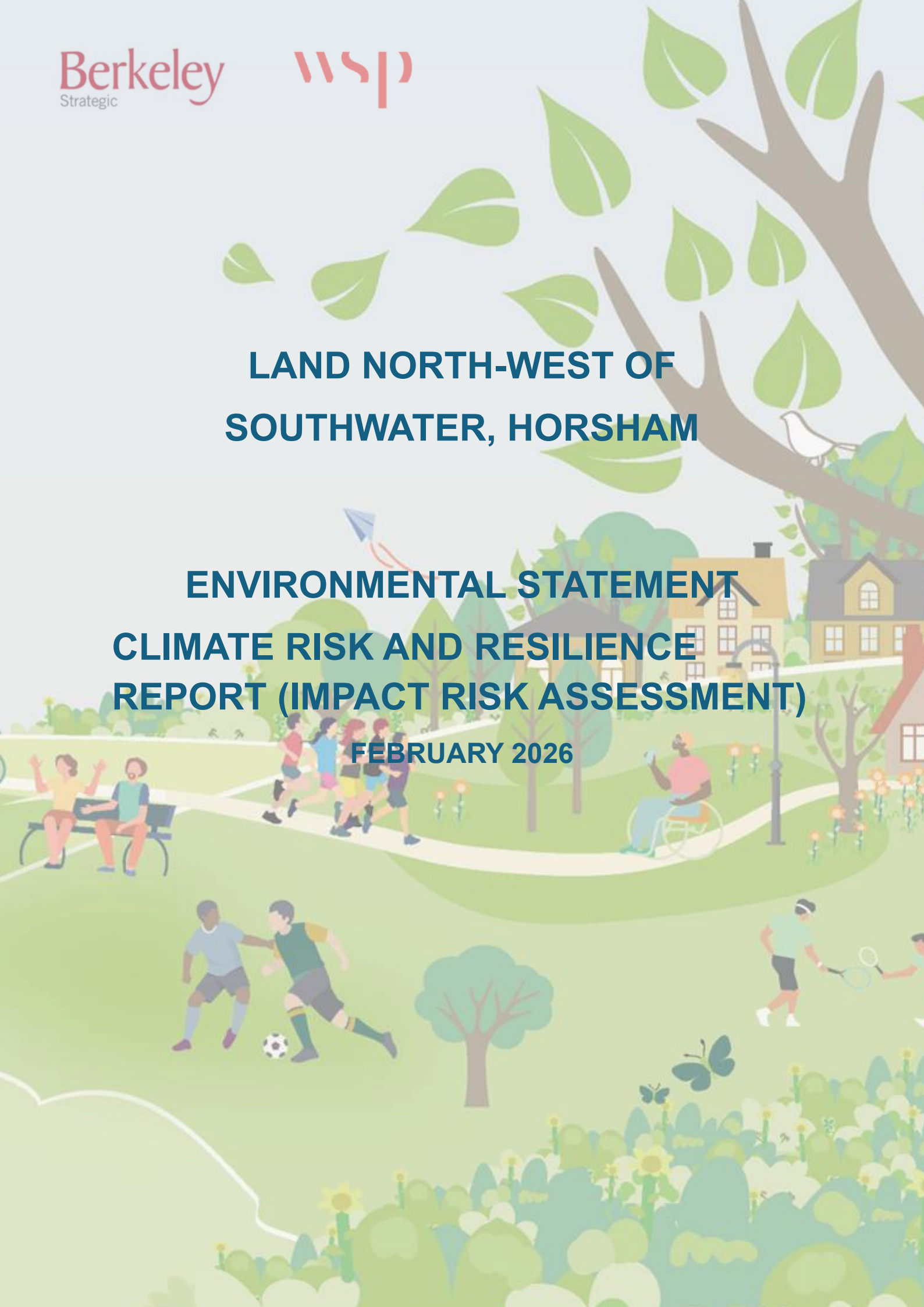

LAND NORTH-WEST OF SOUTHWATER, HORSHAM

ENVIRONMENTAL STATEMENT

CLIMATE RISK AND RESILIENCE REPORT (IMPACT RISK ASSESSMENT)

FEBRUARY 2026

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GLOSSARY

Term	Definition
Acute events	Extreme climate induced events such as *hurricanes, floods, heatwaves, and wildfires* that can cause immediate damage to people, assets, infrastructure and ecosystems.
Adaptive capacity	The ability of the systems based on the existing embedded measures, to adjust to potential damage to take advantage of opportunities or to respond to consequences.
Chronic events	Climate induced long-term changes that may translate into a hazard, such as *sea level rise, increasing average temperatures, and changing precipitation patterns*.
Climate hazard	The potential occurrence of a natural or human-induced physical event or trend that may cause loss of life, injury, or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, ecosystems and environmental resources.
Climate impact	"Impact" is used primarily to refer to the effects on natural and human systems of extreme weather and climate events and of climate change. Impacts generally refer to effects on lives, livelihoods, health, ecosystems, economies, societies, cultures, services and infrastructure due to the interaction of climate change or hazardous climate events occurring within a specific time-period and the vulnerability of an exposed society or system. Impacts are also referred to as consequences and outcomes. The impacts of climate change on geophysical systems, including floods, droughts and sea level rise, are a subset of impacts called "physical impacts".
Climate parameter	The broad classification of climate variables, including temperature, humidity, precipitation, wind and sea level.
Climate trend	Climate trends refer to the pattern of climate change over decades to understand how the climate is changing. Trends indicate potential climate hazards that may arise in a climate parameter.
Confidence	The level of certainty in *climate trend* data. Confidence is assessed by considering the range in the climate data percentiles (10^{th}, 50^{th} and 90^{th}) and the likelihood and degree to which the projected trend will occur.
Exposure	The presence of people, livelihoods, species or ecosystems, environmental functions, services, resources, infrastructure, or economic, social or cultural assets in places and settings that could be affected.
Impact consequence	The outcome of the impact, considering the severity of the hazard, vulnerability and adaptive capacity of the people, infrastructure or systems.
Impact likelihood	The chance of an impact on people, infrastructure systems and assets, occurring due to a climate induced risk

Term	Definition
Intensity of change in climate trend	Refers to the strength or magnitude of change in a specific climate parameter over time and may indicate how quickly or severely a particular aspect of the climate is changing.
Physical risk	Physical risk refers to the potential harm from climate induced hazards to people, assets, infrastructure and ecosystems. These may arise from *immediate impacts* of sudden extreme weather events (Acute Physical Risks) or *gradual, long-term changes* (Chronic Physical Risks).
Project components	The key components of the Proposed Development which may be impacted by *climate hazards*.
Resilience	The capacity of systems and its component to anticipate and cope with a hazardous event or trend or disturbance, and accommodate, or recover from the effects of a hazardous event or trend in a timely and efficient manner.
Risk	Risk is the outcome of the dynamic interaction between the vulnerability of *project components* and the assessment of impact likelihood and impact consequence as result of *climate hazards.*
Sensitivity	Degree to which an element or a combination of elements shaping a system or species is affected, either adversely or beneficially, by climate variability or change.
Susceptibility	Helps in assessing how likely individuals, infrastructure and ecosystems are to be adversely impacted from climate-induced hazards.
Vulnerability	Propensity or predisposition to be adversely affected.

Definitions provided are adapted from the IPCC (Intergovernmental Panel on Climate Change) (**Ref 1.1**) and ISO 14091:2021 (**Ref 1.2**) glossaries, ensuring alignment with widely recognised standards on climate and risk terminology. These sources provide structured, precise language that supports global understanding and consistency in discussing climate-related issues.

1 INTRODUCTION

1.1 PURPOSE

1.1.1. To support the Environmental Impact Assessment (EIA) for the Land North-West of Southwater ('the Proposed Development'), this Climate Risk and Resilience Report (CRRR) considers the impacts posed to the Proposed Development by climate change and how the Project has and can increase its resilience to climate change. The CRRR aligns with the EIA Regulations (**Ref 1.3**) which require that *"A description of the likely significant effects of the development on the environment resulting from, inter alia …the vulnerability of the project to climate change"* is considered within the assessment.

1.1.2. The CRRR is a two phased approach. The first phase (CRRR Vulnerability Assessment (**Ref 1.4**)) was delivered to support the 2025 Scoping Report (**Volume 2, Appendix 1.1**) and identifies the Proposed Development components which may be vulnerable to climate change. The second phase (CRRR Impact Risk Assessment) assesses the likelihood and consequence of potential climate related impacts which may affect the Proposed Development with the overall aim to reduce impact risks through adaptive capacity.

1.1.3. The CRRR has been developed with engagement from Design teams to identify measures which build in adaptive capacity and improves the resilience of the Proposed Development to a changing climate.

1.1.4. The Proposed Development comprises a residential-led development of up to 1,000 homes (a mix of C2 and C3 use classes), an employment area, community and leisure facilities including retail, provision for nursery, primary and secondary school, gypsy and traveller pitches, landscaping, open space and new road improvements. The Proposed Development is located west of and adjacent to Southwater, West Sussex and is located within the administrative area of Horsham District Council (HDC).

1.2 APPROACH

1.2.1. To understand the risk and resilience of the Proposed Development, a Climate Change Risk Assessment (CCRA) has been developed. A CCRA is a dynamic analysis that identifies and evaluates the impacts of physical climate change on assets and operations. Physical climate risks are the damages and losses that occur due to the consequences of climate change. These physical risks result from acute events, such as flooding, wildfires and extreme heat, and chronic climatic changes like droughts and sea level rise.

1.2.2. The CRRR and CCRA has been developed using industry best practice, including Institute of Sustainability and Environmental Professionals (ISEP) (formally Institute of Environmental Management and Assessment (IEMA)) Environmental Impact Assessment (EIA) Guide to Climate Change Resilience and Adaptation (**Ref 1.5**), ISO 14090: Adaptation to climate change – Principles, requirements and guidelines (**Ref 1.6**), and ISO 14091 Adaptation to climate change - Guidelines on vulnerability, impacts and risk assessment (**Ref 1.2**).

1.3 STRUCTURE

1.3.1. This report provides the methodology for the development of the CCRA (**Section 2**) and presents the climate data relevant to the Proposed Development (**Section 3**). This climate data was used to consider how the changing climate will affect the Proposed Development, determining the vulnerability of the Proposed Development components (as reported in the CRRR (Vulnerability Assessment) (**Ref 1.4**). **Section 4** of this CRRR presents the Impact Risk Assessment for the Proposed Development.

2 METHODOLOGY

2.1 OVERVIEW

2.1.1. The CCRA follows a step-by-step methodology and builds on the CCRA Vulnerability Assessment (**Ref 1.4**) completed to support the 2025 EIA Scoping Report (**Volume 2, Appendix 1.1**). This provided the basis for Proposed Development components with moderate, high or very high vulnerability to have a more in-depth assessment of potential climate-related impacts and identify the likelihood and consequence of those impacts, using a risk-based approach. The steps for the CCRA Impact Risk Assessment are as follows:

- Revise and develop the potential climate change impacts that might impact the Proposed Development components;
- Revise and develop the resilience measures (adaptive capacity) which will allow for a revision of the vulnerability rating;
- Assessment of the likelihood of the impact occurring and the magnitude of the consequence of the impact using a risk-based approach; and
- Identify those risks which are above a tolerable level and further implement resilience measures.

2.1.2. The findings derived from the CCRA provide a framework to support effective decision-making about the Proposed Development's design and operation. The objective of using this approach is to ensure climate change has been considered within the design and planning of the Proposed Development.

2.2 CLIMATE TRENDS AND HAZARDS

2.2.1. To identify the climate trends and hazards, current and future baselines were established.

2.2.2. The current baseline is based on historic climate data obtained from the Met Office records (**Ref 1.7**) for the closest meteorological climate station to the Site (Charlwood climate station), Met Office Regional Climate Profile for the England SE & Central S region and the UK (**Ref 1.8**) and key findings from the latest State of the UK Climate Report (**Ref 1.9**). The current baseline is represented by the period 1991-2020.

2.2.3. To establish the future baseline, the current United Kingdom Climate Projections (UKCP18) (**Ref 1.10**) have been used to analyse future changes in a range of climate variables that may be experienced at the location of the Project. The Climate Risk Indicators (CRI) (**Ref 1.11**) developed as part of the UK Climate Resilience Programme, have been used to obtain data for the future climate projections to inform the assessment. The CRI utilises the UKCP18 projections and allows for a range of climate related indicators to be assessed. The CRI data for the Local Authority area of Horsham have been used for this assessment.

2.2.4. The CCRA considers three time periods over the 21st century. These time periods have been guided by the design life of Project and the available data within UKCP18:

- Short-term future – the period 2021-2050 (2030s) has been used to understand short-term climate risks. This timeframe was used for the assessment of the construction phase for the CCRA Vulnerability Assessment (**Ref 1.4**);

- Medium-term future – the period 2041-2070 (2050s) has been used to understand medium-term climate risks. This timeframe falls within the operational phase of the Proposed Development; and
- Long-term future – the period 2071-2100 (2080s) has been used to assess long-term climate risks. This timeframe has been used to assess the operational phase vulnerability.

2.2.5. The future climate scenarios are based on Representative Concentration Pathways (RCPs) to model and project future climate. The assessment considers RCP 8.5 as a high emissions pathway representing a potential future which is slow to transfer to low-carbon energy provision[1]. By incorporating timeframes into the climate scenarios, the climate projections will span a representative range of plausible future conditions and provide a more useful representation of uncertainty.

2.2.6. Analysis of the baseline and future climate scenarios allows for future changes in climate patterns (climate trends) to be identified. The level of confidence in the climate data is evaluated, by considering the likelihood and degree to which the climate trend is occurring and direction of the trend based on the best available climate science. The evaluation is based on the level of uncertainty in climate science, and the variation between the 10th and 90th percentiles of the climate projections. A rating of low, moderate, and high confidence is provided for each climate trend, based on the following criteria:

- High confidence: Climate science has a good level of confidence in the modelled data, or the trend over all percentiles is the same.
- Moderate confidence: Climate science has a moderate level of confidence in the modelled data. The climate trends over the 10th and 90th percentiles suggest the climate event may or may not happen, but there is still a clear trend in the 50th percentile.
- Low confidence: Climate science is too uncertain to model the climate trend / projection data with any significant level of accuracy or there are limited to no projections available. The climate trends over the 10th and 90th percentiles suggest the climate event may or may not happen.

2.2.7. Associated climate hazards are identified from the climate trends. The hazard likelihood and intensity of the climate hazard occurring are rated on a five-point scale from very low to very high (**Table 2-1**) The rating is undertaken for each of the timeframes (2030s, 2050s and 2080s) to indicate the direction of travel of the climate hazard.

[1] RCP's are a method of capturing assumptions about the economic, social and physical changes to our environment that will influence climate change. Four RCP's have been developed. The most optimistic scenario (RCP 2.6) represents a pathway where greenhouse gas emissions are strongly reduced resulting in a best estimate global average temperature rise of 1.6°C by 2100. The most conservative scenario is RCP 8.5 which represents a pathway where greenhouse gas emissions continue to grown unmitigated, leading to a best estimate global average temperature rise of 4.3°C by 2100. RCP 4.5 and RCP 6.0 are two medium stabilisation pathways with varying levels of mitigation. The use of RCP 8.5 for the assessment aligns with the ISEP EIA Guide and represents a conservative, highest-impact climate scenario. This approach is considered suitable within EIA's as it is consistent with the precautionary principle to assess potential future climatic conditions

Table 2-1 - Criteria used to assess the climate hazard likelihood and intensity of change

Level	Qualitative description
Very high	The climate hazard occurs very frequently, and / or the intensity of change is significant / noticeable
High	The climate hazard or event occurs frequently, and / or the intensity of change is noticeable
Moderate	The climate hazard or event occurs occasionally, and / or the intensity of change may be noticed
Low	The climate hazard or event occurs very occasionally, and / or the intensity of change is unlikely to be noticed
Very low	The climate hazard or event rarely and / or the intensity of change is unlikely to be perceptible

2.3 PROPOSED DEVELOPMENT COMPONENTS: IDENTIFICATION AND VULNERABILITY

2.3.1. The Proposed Development components considered in CCRA Impact Risk Assessment are:

- Dwellings;
- Commercial, schooling and leisure facilities;
- Gypsy and traveller pitches, landscaping and open space;
- New road improvements; and
- End users

2.3.2. The vulnerability of Project components considers their exposure, sensitivity and existing adaptive capacity or resilience to climate hazards. The CCRA Vulnerability Assessment (**Ref 1.4**) deemed that the Proposed Development components related to the construction Site, plant and equipment and workers had either very low or low vulnerabilities and therefore required no further assessment. All Proposed Development components had very low or low vulnerability to the following climate variable, and are therefore scoped out of further assessment:

- Decreases in relative humidity;
- Ground movement and instability;
- Heavy rainfall; and
- Lightning and lightning strikes.

2.3.3. The exposure rating identifies if the climate hazard will interact with the Proposed Development component. For example, the component may be located below ground or within a building which will prevent it from being exposed to certain climate hazards. Exposure is based on a binary ‘yes’ / ‘no’ basis.

2.3.4. The sensitivity rating is based on literature review, and knowledge of the Proposed Development, to indicate how susceptible the Proposed Development component is to the climate hazard. The rating, on a five-point scale, considers how much damage, or how altered the component may be to each climate hazard. **Table 2-2** provides the criteria for assessing components sensitivity.

Table 2-2 - Criteria used to assess the sensitivity of Proposed Development components

Level	Qualitative description
Very high	The component is highly susceptible to be altered by the projected changes to climate (e.g., lose much of its original function and form).
High	The component is directly affected by the climate hazard and may lose some of its form and function.
Moderate	The component is able to tolerate some climatic conditions without being fully altered though remains susceptible to being altered to some extent.
Low	The component would be able to tolerate some climatic conditions with minimal impact to their function and form.
Very low	The component is not susceptible to be altered by the projected changes to climate as the climatic factors have little influence on the component.

2.3.5. Climate resilience or adaptation measures (referred to as adaptive capacity) are taken into account for each Proposed Development component. Such measures may include technological and engineering solutions (termed 'grey' measures), nature-based solutions ('green' measures), or soft measures which include policy, legal, social, management and financial measures. The known adaptive measures have been identified through documentation review and engagement with the Applicant and design team. The adaptation measures have been reviewed and updated as the Proposed Development design developed between the EIA Scoping and the EIA Environmental Statement. A rating on a five-point scale is assigned to each Proposed Development component for each climate hazard. The rating, as demonstrated in **Table 2-3** is inverse to other criteria used, as components with high adaptive measures are rated lower than those with poor adaptive measures.

Table 2-3 - Criteria used to assess the known adaptive capacity of the Proposed Development components

Level	Qualitative description
Very high	The adaptation measures are very robust and are expected to reduce climate impacts to a tolerable level without the need for further measures.
High	The adaptation measures provide good adaptive capacity, no further design measures are required however monitoring and maintenance is required throughout the design life to review the level of effectiveness.
Moderate	The adaptation measures provide fair adaptive capacity, where some level of risk is tolerable and accepted.
Low	The adaptation measures provide a poor level of adaptive capacity, however the risk is accepted.
Very low	There are little to no adaptation measures and there is a high risk that the climate hazard will affect the function of the assets.

2.3.6. A vulnerability value is calculated for each time period considering the climate hazard, sensitivity, adaptive capacity and exposure. Firstly, the sensitivity and adaptive capacity for each Proposed Development component is assessed using the matrix outlined in **Table 2-4.**

Table 2-4 - Risk matrix: Sensitivity x adaptive capacity

		Adaptive capacity				
		Very Low	Very Low	Very Low	Very Low	Very Low
Sensitivity	Very Low	Very Low	Very Low	Very Low	Low	Low
	Low	Very Low	Low	Low	Low	Moderate
	Moderate	Very Low	Low	Moderate	Moderate	Moderate
	High	Low	Low	Moderate	High	High
	Very High	Low	Moderate	Moderate	High	Very High

2.3.7. The output from the sensitivity x adaptive capacity matrix is then assessed against the climate hazard, using the matrix in **Table 2-5**.

Table 2-5 - Risk matrix: Raw vulnerability x hazard

		Raw vulnerability				
		Very Low	Low	Moderate	High	Very High
Hazard	Very High	Low	Moderate	Moderate	High	Very High
	High	Low	Low	Moderate	High	High
	Moderate	Very Low	Low	Moderate	Moderate	Moderate
	Low	Very Low	Low	Low	Low	Moderate
	Very Low	Very Low	Very Low	Very Low	Low	Low

2.3.8. As exposure is determined through a binary 'yes' / 'no' assessment, where Proposed Development components are not exposed to the climate hazard, the risk score is identified as not applicable.

2.3.9. The overall vulnerability rating is categorised through the five-point scale for each Proposed Development component and climate hazard, as set out in **Table 2-6**.

Table 2-6 - Vulnerability categories

	Vulnerability category					
Vulnerability rating	Not applicable	Very low	Low	Moderate	High	Very high

2.3.10. Where Proposed Development components with moderate, high or very high vulnerability are identified, these have been taken forward for the likelihood and consequence of impact assessment which is presented in this CRRR.

2.4 IMPACT IDENTIFICATION

2.4.1. Potential impacts which may occur to the Proposed Development components as a result of climate change are identified through literature review and knowledge of the Project. Literature reviews include, but are not limited to, UK CCRA evidence reports (**Ref 1.12**), and sector guidance relevant to the built environment (**Ref 1.13**).

2.5 LIKELIHOOD AND CONSEQUENCE OF IMPACT

2.5.1. The CCRA Impact Risk Assessment assesses the climate risk by undertaking a risk assessment which assesses the likelihood of the climate impact occurring and the magnitude of the consequence of the impact should it occur, taking into account design control measures. The criteria used for assessing the likelihood of the climate change impact is contained in **Table 2-7**.

Table 2-7 - Criteria used to assess likelihood of climate change impact.

Level	Qualitative description
Very high	The impact is anticipated to occur frequently (approximately annually) or is almost sure to happen.
High	The impact is anticipated to occur regularly (approximately once every ten years) or is likely to happen.
Moderate	The impact is anticipated to occur limited times (approximately once every 30 years) or as likely it is unlikely to happen.
Low	The impact is anticipated to occur occasionally (approximately once in 60 years) or is unlikely to happen .
Very low	The impact is anticipated to occur rarely (approximately once every 100 years) or is almost sure to not happen.

2.5.2. If the climate change impact was to occur, the consequence scoring considers (where appropriate to the Proposed Development) health, safety and environmental (HSE) damage; structural integrity; and functionality aspects which may impact the Proposed Development components and operations. When assigning a score rating, the consequence element which is considered most appropriate to the impact is used – it is not required for all criteria to be met. The consequence scoring takes into account the known adaptive measures for the component. The criteria for assessing consequence are set out in **Table 2-8**.

Table 2-8 - Criteria used to assess the consequence of climate change impact.

Level	Qualitative description
Very high	Permanent and extensive damage. Disruption lasting substantially more than ten days as this will include unplanned and early renewal of large portions of the facility / infrastructure due to damage. Severe health effects and / or fatalities.
High	Facility / infrastructure damage. Disruption lasting more than three but less than ten days. Unplanned maintenance and early renewal of some portions of infrastructure or sub-assets. Severe health effects. Significant effect on the environment, requiring remediation.

Level	Qualitative description
Moderate	Limited facility / infrastructure damage with damage recoverable by maintenance or minor repair on a small portion of the infrastructure / assets. Disruption lasting more than one but less than three days. Adverse effects on health and / or the environment.
Low	Localised facility / infrastructure disruption. No permanent damage, minor restoration work required which may require facility closure lasting less than one day. Slight adverse health or environmental effects.
Very low	No facility / infrastructure damage, minimal adverse effects on health, safety and the environment. Facility doesn't shut down.

2.6 RISK RATING

2.6.1. The risk rating is calculated considering the vulnerability, impact likelihood impact consequence for each time period to give a five-point scale (very low, low, moderate, high, very high) for each Proposed Development component and climate impact.

2.6.2. Firstly, the impact likelihood and consequence are assessed using the matrix set out in **Table 2-9**.

Table 2-9 - Risk matrix: Impact likelihood x impact consequence / Impact x vulnerability

		Impact consequence / Impact				
		Very Low	**Low**	**Moderate**	**High**	**Very High**
Impact likelihood / Vulnerability	**Very High**	Low	Moderate	Moderate	High	Very High
	High	Low	Low	Moderate	High	High
	Moderate	Very Low	Low	Moderate	Moderate	Moderate
	Low	Very Low	Low	Low	Low	Moderate
	Very Low	Very Low	Very Low	Very Low	Low	Low

2.6.3. The output from the impact likelihood x impact consequence matrix is then assessed against the vulnerability rating, using the same matrix. The output of this provides the overall risk rating, as set out in **Table 2-10**.

Table 2-10 - Overall risk rating

	Risk category					
Risk rating	Not applicable	Very Low	Low	Moderate	High	Very High

2.6.4. Where impacts with moderate, high or very high risk are identified, additional measures to reduce the risk are recommended in this CRRR.

3 CLIMATE CHANGE DATA

3.1 CURRENT CLIMATE

3.1.1. This section provides a summary of the climate trends over the past three decades (1991–2020) for temperature, precipitation (rain and snow), wind, humidity, and flood risk. This provides an understanding of how recent climate trends have impacted the Proposed Development location. For context, the current baseline presents local, regional and national information.

3.1.2. According to the latest State of the UK Climate 2024 Report (**Ref 1.9**) (published 2025), the UK's climate is changing, with recent decades warmer, wetter, and sunnier than the 20th century on a national and local scale. This report highlights that the UK land temperatures over the last decade have warmed by 1.24°C compared to 1961-1990, which is at a broadly consistent, though slightly higher, rate than the observed change of 1.23°C for global mean surface temperatures over land. The key findings from the report are:

- The last three years have been in the UK's top five warmest on record.
- The average highest maximum temperature over the most recent decade 2015–2024, 35.9°C, was 2.3°C higher than 1991–2020 and 4.5°C higher than 1961–1990.
- The UK's average lowest minimum temperature over the most recent decade 2015–2024 was 0.4°C higher than 1991–2020 and 3.9°C higher than 1961–1990.
- The number of days with temperature anomalies exceeding the 1961–1990 average by 5°C has doubled, by 8°C has trebled, and by 10°C has quadrupled for the most recent decade 2015–2024.
- The UK's climate has become steadily wetter since the 1980s, due to an increase in October to March) rainfall. Observations suggest a slight increase in heavy rainfall across the UK in recent decades.
- Six of the 10 wettest October to March time periods have occurred in the 21st Century so far, with October 2023 to March 2024 the wettest winter half-year on record of 827mm.
- October to March rainfall for the most recent decade 2015–2024 has been 6% wetter than 1991–2020 and 16% wetter than 1961–1990, compared to little change for April to September.
- 2024 was the UK's 13th wettest year in the series from 1836 with 109% of average rainfall, the sixth wettest winter (December to February), and the sixth wettest spring (March to May).
- The UK annual mean wind speed from 1969 to 2024 shows a downward trend, consistent with that observed globally.
- Nine named storms hit the UK in 2024. Red warnings were issued for Isha in January and Darragh in December, in comparison to 12 named storms in 2023.

LOCAL CONTEXT

Rainfall and Temperature.

3.1.3. **Table 3-1** presents the long-term average (1991 – 2020) seasonal rainfall (mm), long term average, maximum and minimum seasonal temperature (°C), and the long-term seasonal sunshine (hours) for the local climate station (Charlwood station), the region (England SE & Central S), and the UK (**Ref 1.14**). The summer season comprises the months of June, July and August. Winter season comprises the months of January, February and December.

Table 3-1 - Local, regional and national rainfall, temperature and sunshine hours baseline

Variable	Season	Location		
		Charlwood Climate Station	England SE & Central S	UK
Long term average seasonal rainfall	Summer	165.8 mm	170.42 mm	253.41 mm
	Winter	250.8 mm	234.38 mm	344.87 mm
Long term average mean seasonal temperature	Summer	16.7°C	16.6°C	14.6°C
	Winter	4.8 °C	5.1°C	4.1°C
Long term average maximum temperature	Summer	22.2 °C	21.4 °C	18.9°C
Long term average minimum temperature	Winter	1.6°C	2.0°C	1.3°C
Long term seasonal sunshine	Summer	624.7 hours	628.3 hours	506.5 hours
	Winter	174.7 hours	194.1 hours	162.2 hours

3.1.4. The data indicates that the local climate is drier in both summer and winter compared to the UK average rainfall, yet closely aligns with regional climate patterns. The Charlwood climate station recorded 5 mm less rainfall in summer and 16 mm more in winter relative to the England SE & Central S region.

3.1.5. Local maximum summer temperatures are comparable to regional values but are 2.5°C higher than the UK average. Winter minimum temperatures are similar to both the UK and regional averages. The area experience 128 more hours of sunshine than the UK average. Being in Southern England, the region is influenced by continental weather patterns from mainland Europe, which can bring hot and humid conditions during summer.

Snow

3.1.6. Snowfall is closely linked with temperature, with falls rarely occurring if the temperature is higher than 4°C. In the local area, snowfall is normally confined to the months including and between November to April, but upland areas may have brief falls in October and May. Snow rarely lies outside the period from December to March. On average, the number of days with snow falling is about 12-15 per year over the lower lying areas but about 20 days over the higher ground of the Chilterns, North Downs and Weald (**Ref 1.14**).

Wind

3.1.7. The local area is one of the more sheltered parts of the UK, the windiest areas being in western and northern Britain, closer to the Atlantic. The strongest winds are associated with the passage of deep areas of low pressure close to or across the UK. The frequency and strength of these depressions is greatest in the winter half of the year, especially from December to February, and this is when mean speeds and gusts (short duration peak values) are strongest.

Humidity

3.1.8. The annual average relative humidity in the vicinity of the Proposed Development is 82-84%.

Flood Risk

3.1.9. Data from the Environment Agency indicates that the Proposed Development is not in a location at risk of flooding from rivers or the sea. The surface water flood map, presented in **Figure 3-1,** indicates that the Proposed Development has sporadic areas at high chance of yearly flooding (more than 3.3% chance each year), likely to be associated with the local topography (**Ref 1.15**).

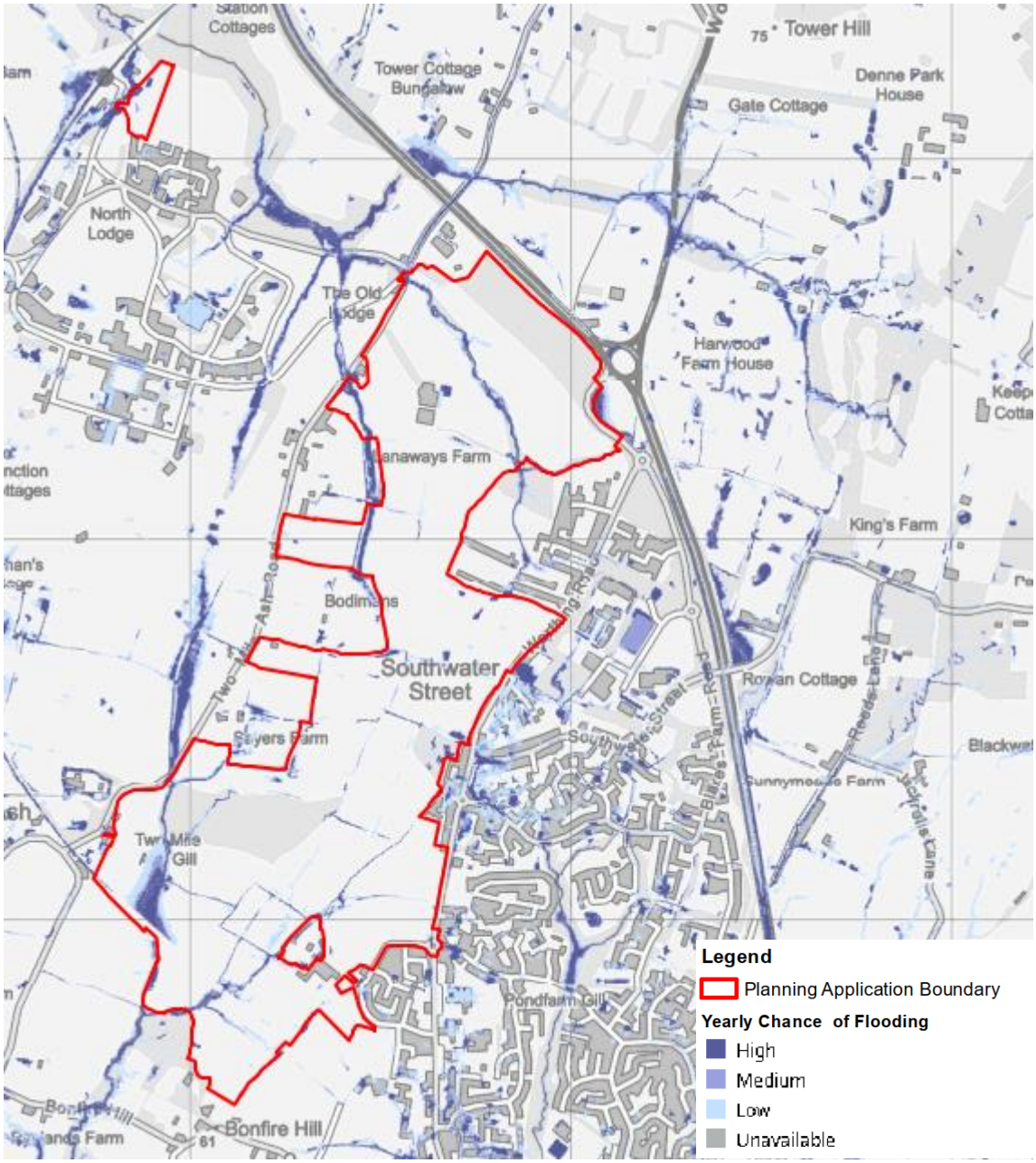

Figure 3-1 - Yearly chance of flooding from rivers and surface water

Past major events

3.1.10. **January 2025**: In January 2025, severe stormy weather caused flooding, fallen trees, and transport disruptions across Sussex including Horsham. The Environment Agency issued 22 flood alerts in the region. Fallen trees had blocked the A264 Horsham Road and the B2036 London Road in Crawley (**Ref 1.16**).

3.1.11. **September 2023**: In early September the UK experienced a significant heatwave with daily maximum temperatures exceeding 30°C, across south-east England for seven consecutive days from the 4th to 10th of September and reaching 31 to 32°C across south-east England. On the 10th of September, Faversham (Kent) recorded 33.5°C, making this, unusually, the hottest day of the year. The heat and humidity made uncomfortable conditions for the elderly and vulnerable, and difficult conditions for sleeping at night (**Ref 1.17**).

3.1.12. **February 2021:** Storm Darcy brought some strong winds and heavy snow to parts of south-east England on 7th, while persistent snow showers resulted in significant accumulations across eastern England, including the areas of Horsham. Snow and ice caused widespread travel disruption, with roads closed across many eastern coastal counties; Kent and Essex were particularly affected by deep snow. Hazardous conditions made driving conditions difficult with several accidents (**Ref 1.18**).

3.2 FUTURE CLIMATE PROJECTIONS

3.2.1. Climate change is projected to lead to warmer wetter winters and hotter drier summers, with an increase in the intensity and frequency of extreme events such as heatwaves, drought, extreme rainfall leading to flash flooding, storms and wind events. The information presented below illustrates how the climate may evolve at the Proposed Development location by the end of the century.

Rainfall and Temperature

3.2.2. **Table 3-2** provides an overview of current and projected summer and winter temperature and rainfall for the for the Local Authority of Horsham, the nearest land data (**Ref 1.8**). Data is presented for 50th percentile with the 10th and 90th percentile values shown in brackets. Values should be considered as positive values, unless prefixed by a '-' denoting a negative value.

Table 3-2 - Temperature and rainfall climate projection data (anomalies)

Climate Variable	Model Reference (1981-2010)	Current Baseline (1991-2020)	RCP 8.5 50th percentile (10th – 90th)			Direction of climate trend
			2030s	2050s	2080s	
Average summer temperature (°C change from model reference)	16.5°C	16.7°C	1.6 °C (0.6°C to 2.5 °C)	2.8°C (1.4°C to 4.2 °C)	5.5°C (3 °C to 8°C)	↑
Average winter temperature (°C change from model reference)	4.5°C	4.8°C	1°C (0.3°C to 1.8°C)	1.7°C (0.6°C to 2.3°C)	3.2°C (1.3°C to 5.2°C)	↑
Minimum winter temperature (°C change from model reference)	1.3°C	1.6°C	1°C 0.2°C to 2°C)	1.9°C (0.5°C to 3.3°C)	3.3°C (1.2°C to 5.8°C)	↑
Maximum summer temperature (°C change from model reference)	22°C	22.2°C	1.8°C (0.5°C to 2.9°C)	3.2°C (1.4°C to 5°C)	6°C (2.9°C to 9.2°C)	↑
Summer rainfall (% change from model reference)	156 mm	165.8 mm	-11% (-28.1 % to 6.1 %)	-20.3% (-45.3% to 0.2%)	-36.7% (-63.65 to -8.26%)	↓
Winter rainfall (% change from model reference)	230 mm	250.8 mm	9.7% (-2% to 22.3%)	14.8% (-1.4% to 34.2%)	28.1% (3% to 59.6%)	↑

3.2.3. Indicators of climate risk are shown in **Table 3-3** (**Ref 1.8**). These provide an indication of sector specific thresholds which are projected to change in the future. The indicators presented in **Table 3-3** are provided against the model reference period of 1981-2010. These indicators are unavailable for the current baseline period (1991-2020). Data is presented for 50th percentile with the 10th and 90th percentile values shown in brackets. Values should be considered as positive values, unless prefixed by a '-' denoting a negative value.

Table 3-3 - Future projections (absolute) of climate risk indicators

Climate Indicator	Model Reference (1981-2010)	RCP 8.5			Direction of Climate trend
		2030s	2050s	2080s	
Met office heatwave (events per year)	0.7	1.9 (0.9 to 3.2)	3.4 (1.6 to 4.9)	4.7 (3.1 to 6.1)	↑
Heat stress (days per year)	0.1	0.9 (0.3 to 2.1)	3.3 (1.1 to 7.7)	14.2 (4.2 to 33.5)	↑
Road melt risk (days per year)	16.4	33.9 (22.5 to 47.4)	51.4 (31.1 to 73.3)	85.0 (50.1 to 115.3)	↑
Cooling days (degree-days)	147.6	247.8 (188.6 to 316.4)	350.2 (238.9 to 489.3)	609.8 (369.4 to 910.3)	↑
Wildfire events (days per year)	32.6	59.8 (52.9 to 77.1)	79.2 (70.5 to 96.1)	110.9 (102.4 to 136.3)	↑
Road accident risk (days per year)	37.3	26.1 (18.7 to 33.8)	19.1 (11.1 to 29.4)	10.3 (3.7 to 23.1)	↓
Heating days (degree-days)	2042.5	17[63].9 (1618.9 to 1905.1)	1582.4 (1379.6 to 1782.7)	1257.2 (973.0 to 1547.7)	↓

Climate Indicator	Model Reference (1981-2010)	RCP 8.5			Direction of Climate trend
		2030s	2050s	2080s	
SPEI Drought (proportion of time)	0.1	0.2 (0.1 to 0.3)	0.2 (0.1 to 0.3)	0.4 (0.2 to 0.5)	↑
Soil moisture	n/a	-19.1 (-33.2 to 5.0)	-25.9 (-40.5 to -4.6)	-34.7 (-48.8 to -11.7)	↑

Notes:
Heatwave: A UK heatwave threshold is met when a location records a period of at least three consecutive days with daily maximum temperatures meeting or exceeding the heatwave temperature threshold. The threshold for the local area is 27°C.
Heat stress: Days with shade Wet Bulb Globe Temperature (WBGT) above 25°C
Road melt risk: Days with maximum temperature above 25°C
Cooling days: How much (in degrees), and for how long (in days), outside air temperature was higher than 18°C
Wildfire: Days with Met Office Wildfire Index at the Very High Fire Severity level or above
Road accident risk: Days with minimum temperature below 0°C
Heating days: How much (in degrees), and for how long (in days), outside air temperature was lower than 15.5°C
SPEI Drought: Number of months with a Standardised Precipitation Evaporation Index (calculated from 6-month accumulated rainfall minus potential evaporation) less than -1.5
Soil Moisture: Change in average seasonal soil moisture content. Data only available at regional scale East of England.

Snow

3.2.4. With regards to future changes, rising winter temperatures are likely to reduce the amount of precipitation that falls as snow in winter. Snowfall data is unavailable for the probabilistic projections (25km), however both the regional (12km) and the local (2.2km) show a decrease in both falling and lying snow across the UK for the period of 2061-2080 relative to the 1981-2000 baseline

Wind

3.2.5. While climate projections are based on current scientific understanding, wind projections remain highly uncertain. According to the Met Office UKCP18 Factsheet on Wind (**Ref 1.19**) there have been no significant trends in maximum gust speeds recorded by the UK wind network over the last four decades.

3.2.6. Global projections for the UK suggest an increase in near-surface wind speeds during winter in the latter half of the 21st century (**Ref 1.19**). In addition, a recent study of weather systems in the UK (**Ref 1.20**) indicates that the British Isles may experience more frequent westerly storm events in winter, characterised by strong winds and heavy rain, along with a shift towards warmer and wetter winter conditions. Although the frequency of these events is expected to rise, the study also notes a decrease in their duration, meaning these patterns may persist for shorter periods.

Humidity

3.2.7. Relative humidity is a function of air temperatures and water vapour content. High humidity levels can result in increased mould and bacteria impacting health and increase corrosion, warping and swelling of building fabric. Lower humidity levels can increase allergies and spread of illness and can cause cracking in flooring and furniture. Projections for seasonal relative humidity indicates a decreasing trend across summer and winter, with the greatest reduction in summer humidity levels, as shown in **Table 3-4** (**Ref 1.10**). Humidity projection data is not published for the 2080s.

Table 3-4 - Changes in relative humidity

	RCP8.5	
Season	2030s	2050s
Winter	-0.4% (-2.0% to 1.4%)	-0.6% (-2.3% to 1.2%)
Summer	-5.5% (-10.8% to -0.5%)	-9% (-14.4% to -3.6%)

Slope Failure

3.2.8. Datasets from the GeoIndex onshore from British Geological Survey indicate that the risk of slope failure or landslide is low (improbable) for 2030, 2050 and 2080. The Proposed Development is within the low-risk area (**Ref 1.21**).

Flood Risk

3.2.9. Data from the Environment Agency indicates there is no change in the yearly chance of flooding from rivers and sea in the future timeframes (2036 and 2069). The yearly chance of surface water flooding across the Site between 2040 and 2060 is depicted in **Figure 3-2** and is similar in terms of spatial spread over the Site to the current conditions (**Figure 3-1**), where there is evidence of sporadic flooding (**Ref 1.15**).

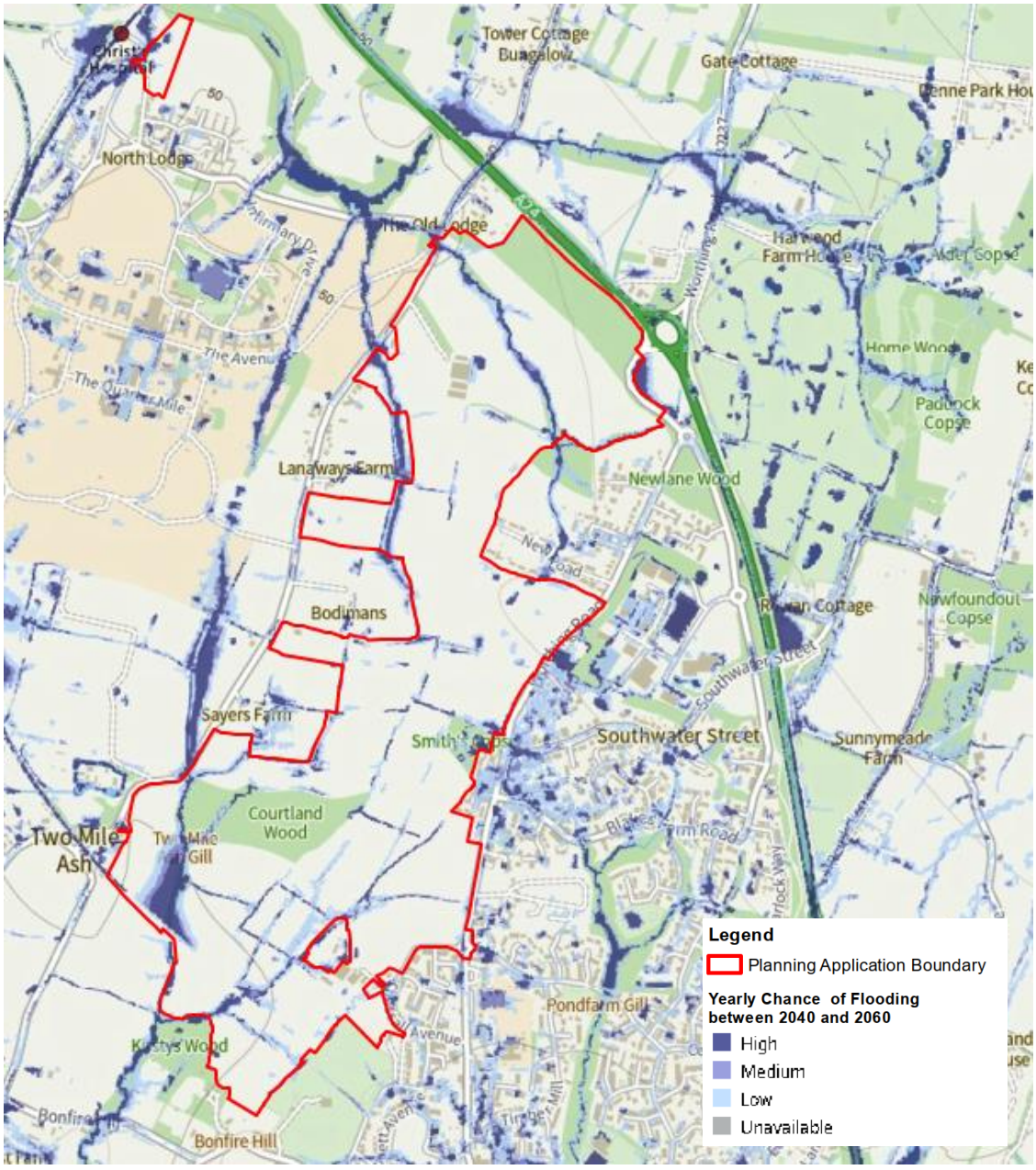

Figure 3-2 - Yearly chance of flooding between 2040 and 2060 from surface water

3.3 CLIMATE TRENDS

3.3.1. Based on the current climate baseline and the future climate projections, the climate trends and hazards can be summarised as shown in **Table 3-5**. The level of confidence in the climate science and projection data is provided for each time period.

Table 3-5 - Climate trends

Climate Parameter	Climate Trend Description	Trend Confidence			Climate Hazard
		2030	2050	2080	
Temperature	Increase in average summer temperatures	High	High	High	Increased growing season and vegetation growth
	Increase in the frequency and intensity of hot days and prolonged hot spell events	High	High	High	Hotter days and nights
		High	High	High	Increase intensity of sun glare and UV
	Increasing frequency and intensity of hot and dry conditions	High	High	High	Wildfire events
Humidity	Changes in relative humidity	Low	Low	Low	Decrease in relative humidity (summer)
	Increase in frequency and intensity of hot days and increase in relative humidity	Moderate	High	High	Increase in the number of heat stress days
Precipitation	Decrease in summer rainfall and / or prolonged dry spells	Low	Moderate	High	Reduced water availability
	Increased frequency, volume and / or duration of extreme precipitation events	Low	Low	Moderate	Heavy rainfall Flooding (fluvial, pluvial and standing water)
	Changes in soil moisture content coupled with increasing frequency and intensity of hot days	High	High	High	Ground movement and instability
Wind	Increased intensity of wind and storm events including high winds, lightning, wind-blown rain, dust storms and blizzards	Low	Low	Low	Lightning and lightning strikes
		Low	Low	Low	High winds

4 IMPACT RISK ASSESSMENT

4.1.1. The impact risk assessment is presented in **Table 4-2**. The key findings of the assessment are summarised here.

Climate Hazard Summary

4.1.2. According to climate projection data, the severity of most climate hazards is expected to increase over time, resulting in higher hazard ratings. In the short term, most hazards are rated low, with the exception of reduced water availability, which is rated high.

4.1.3. By the medium term (2050s), hotter days and nights, as well as wildfire events, are rated as high hazards, with reduced water availability increasing to a very high hazard.

4.1.4. In the 2080s, climate hazards relating to increased intensity of sun glare and UV radiation are rated as high. Very high hazard ratings relate to hotter days and nights, wildfire events and reduced water availability.

Design and Operational Adaptation and Control Measures Summary

4.1.5. Design and operational adaptation and control measures that will be implemented as part of the detailed design or reserved matters application have been incorporated into the assessment. These measures are considered to be standard practice for new developments or committed to as part of the Proposed Development. Measures identified to date that have enhanced climate resilience and therefore reduced the vulnerability scoring include:

Dwellings, End users and Commercial, schooling and leisure facilities:

- Material specification will be determined at detailed design. A fabric-first approach will ensure high thermal performance.
- All dwellings will be designed (at later Reserved Matters Application stages) to comply with Part O of the Building Regulations.
- The masterplan will follow best-practice principles of orientation to maximise daylight / natural ventilation and reduce overheating, with detailed layout strategies confirmed at reserved matters.
- Retained hedgerows, new planting, open spaces and SuDS will deliver natural cooling / shading.
- Drainage systems will include open channels and wetland planting areas.
- Planted and recreational areas will be zoned providing buffer between built spaces and green spaces.
- Open spaces, verges, and street trees will provide a green aspect to all walking and cycling routes through the Site, contributing to comfort, visual quality, and climate resilience.
- Maintenance activities will be detailed within the landscape management plan.
- The development will be designed to ensure access for emergency vehicles is possible.
- Detailed design will consider the inclusion of material choices and refuse bins to manage or deter potential fire risks.
- Firefighting will be handled by Local Fire and Rescue Service.
- The Proposed Development will adopt best-practice water efficiency measures to meet the planning requirement of ≤85 litres/person/day for internal use and 5 litres per day for external use.
- To address Horsham District Council's water neutrality requirement, the Applicant is also exploring offsetting through the Southern Water Neutrality Offsetting Scheme (SNOWS).

- Landscaping will support the mitigation of wind tunnel effects.
- Owner / occupiers will be responsible for maintaining properties.
- Water efficiency measures will be considered as part of the BREEAM specifications.

New Road Improvements:

- Roadway specification will align to West Sussex County Council requirements.
- West Sussex County Council will be responsible for the maintenance of adopted roads.
- Rain gardens and tree canopy coverage will provide some cooling / shading to roadways

Gypsy and traveller pitches, landscaping and open space:

- Adopted roads and infrastructure will be regularly checked and maintained.
- Retained hedgerows, new planting, open spaces and SuDS will deliver natural cooling / shading.
- A landscape management plan will be developed as part of the detailed design.
- Species planting will take into account climate change, through the inclusion of European and native species.
- Drainage systems will include open channels and wetland planting areas.
- Planted and recreational areas will be zoned providing buffer between built spaces and green spaces.
- Open spaces, verges, and street trees will provide a green aspect to all walking and cycling routes through the Site, contributing to comfort, visual quality, and climate resilience.
- Maintenance activities will be detailed within the landscape management plan.
- The development will be designed to ensure access for emergency vehicles is possible.
- Detailed design will consider the inclusion of material choices and refuse bins to manage or deter potential fire risks.
- Firefighting will be handled by Local Fire and Rescue Service.

Vulnerability Assessment Summary

4.1.6. The Vulnerability Assessment has been updated based on the revised design and operational adaptation measure and the rating of the effectiveness of these measures. The revised vulnerability assessment identified four “Moderate” vulnerabilities in 2080’s for dwellings, end users, new road improvements and commercial, schooling and leisure facilities against hotter days and nights.

Likelihood Impact Summary

4.1.7. Potential climate-related impacts for the Project components which were identified as having moderate vulnerability in the CRRR Vulnerability Assessment (**Ref 1.4**), have been taken forward for an assessment of likelihood of the impact occurring, and the consequence if the impact did occur. Climate related impacts include damage or degradation to Proposed Development components, overheating and uncomfortable living and working conditions, loss of landscaped areas, and increased risk of injuries.

4.1.8. No likelihood impacts ratings of ‘Very High; were assigned across any timeframe. The likelihood impact assessment identified that in the 2030s, the likelihood of climate-related impacts was ‘Very Low’, ‘Low’ or ‘Moderate’. Four ‘Moderate’ impacts related to damage to dwellings and buildings, increased risk of injury to end users and loss of vegetation, trees and landscaped areas from high winds or flying debris.

4.1.9. In the 2050s, 16 ‘Moderate’ impact likelihood ratings were assigned against high wind, hotter days and nights, increase in the number of heat stress days, increase in the number of sun glare and UV and reduced water availability. No ‘High’ ratings were assigned.

4.1.10. In the 2080s, five ‘High’ impact likelihood ratings were identified, comprising:

- Increased risk of heat-related health impacts on residents, employees, visitors and contractors due to increase in the number of heat stress days;
- Uncomfortable living and working environments resulting from increase in the number of hotter days and nights;
- Disruption of daily activities and services to end users, dwellings and commercial, schooling and leisure facilities due to reduced water availability.

Consequence Impact Summary

4.1.11. The impact consequence rating considers (where appropriate to the Proposed Development) health, safety and environmental (HSE) damage; structural integrity; and functionality aspects which may impact the Project components and operations.

4.1.12. No impacts were assessed as having high or very high consequence. Impacts which have been rated with ‘High’(5 impacts) and ‘Moderate’ consequence (4 impacts) are summarised in **Table 4-1**. The table shows the receptors and hazards to which the impacts are relevant.

Table 4-1 - Summary of impacts with moderate consequence

Receptor(s)	Hazards	Impact	Impact Consequence
Dwellings	Wildfire events	Damage to buildings from wildfire.	High
Commercial, schooling and leisure facilities	Wildfire events	Damage to buildings from wildfire.	High
New road improvements	Wildfire events	Damage to roads from wildfire.	High
End users	Wildfire events	Increased risk of fire and safety concerns for end users.	High
End users	High winds	Increased risk of injury to end users from flying debris and high winds.	High
Dwellings	Reduced water availability	Disruption of daily activities and services.	Moderate
Commercial, schooling and leisure facilities	Reduced water availability	Disruption of daily activities and services.	Moderate
End users	Increase in the number of heat stress days	Increased risk of heat-related health impacts on residents, employees, visitors and contractors.	Moderate
End users	Reduced water availability	Disruption of daily activities and services.	Moderate

Risk Summary

4.1.13. The overall risk rating of the CCRA considers the parameters summarised above (climate hazard, sensitivity, effectiveness of adaptive capacity, impact likelihood and consequence) to provide an overall risk rating. Where risks are rated as medium, high or very high, it is considered that additional adaptation measures are required.

4.1.14. In total, 25 impacts were identified and assessed for the Proposed Development. Across the three time-periods only very low and low risks have been identified, with no moderate, high and or very high risks.

Table 4-2 - Impact risk assessment

Project Component	Climate Hazard	Hazard			Exposure	Sensitivity	Design / operational adaptation measures	Effectiveness of measures	Vulnerability			Impact	Impact Likelihood			Impact Consequence	Risk		
		2030s	2050s	2080s					2030s	2050s	2080s		2030s	2050s	2080s		2030s	2050s	2080s
Dwellings	Hotter days and nights	Moderate	High	Very High	Yes	High	Material specification will be determined at detailed design. A fabric-first approach will ensure high thermal performance. All dwellings will be designed (at later Reserved Matters Application stages) to comply with Part O of the Building Regulations. The masterplan will follow best-practice principles of orientation to maximise daylight / natural ventilation and reduce overheating, with detailed layout strategies confirmed at reserved matters. Retained hedgerows, new planting, open spaces and SuDS will deliver natural cooling / shading.	Very High	**Low**	**Low**	**Moderate**	High temperatures can expand, melt and deform building fabric, increasing material deterioration.	Low	Moderate	Moderate	Low	**Low**	**Low**	**Low**
Dwellings	Increase intensity of sun glare and UV	Low	Moderate	High	Yes	Moderate	Material specification will be determined at detailed design. A fabric-first approach will ensure high thermal performance. All dwellings will be designed (at later Reserved Matters Application stages) to comply with Part O of the Building Regulations. The masterplan will follow best-practice principles of orientation to maximise daylight / natural ventilation and reduce overheating, with detailed layout strategies confirmed at reserved matters. Retained hedgerows, new planting, open spaces and SuDS will deliver natural cooling / shading.	Very High	**Very Low**	**Very Low**	**Low**	Increased solar radiation can hasten material degradation.	Low	Moderate	Moderate	Low	**Very Low**	**Very Low**	**Low**
Dwellings	Wildfire events	Moderate	High	Very High	Yes	Moderate	Drainage systems will include open channels and wetland planting areas. Planted and recreational areas will be zoned providing buffer between built spaces and green spaces. Open spaces, verges, and street trees will provide a green aspect to all walking and cycling routes through the Site, contributing to comfort, visual quality, and climate resilience Maintenance activities will be detailed within the landscape management plan. The development will be designed to ensure access for emergency vehicles is possible. Detailed design will consider the inclusion of material choices and refuse bins to manage or deter potential fire risks. Firefighting will be handled by Local Fire and Rescue Service.	Very high	**Very Low**	**Low**	**Low**	Damage to buildings from wildfire.	Low	Low	Moderate	High	**Very Low**	**Low**	**Low**
Dwellings	Reduced water availability	High	Very High	Very High	Yes	Moderate	The Proposed Development will adopt best-practice water efficiency measures to meet the planning requirement of ≤85 litres/person/day for internal use and 5 litres per day for external use. To address Horsham District Council's water neutrality requirement, the project team is also exploring offsetting through the Southern Water Neutrality Offsetting Scheme (SNOWS).	Very High	**Low**	**Low**	**Low**	Disruption of daily activities and services.	Low	Moderate	High	Moderate	**Low**	**Low**	**Low**
Dwellings	High winds	Low	Moderate	Moderate	Yes	Moderate	Maintenance activities will be detailed within the landscape management plan. Landscaping will support the mitigation of wind tunnel effects. Owner / occupiers will be responsible for maintaining properties.	High	**Low**	**Low**	**Low**	Damage to dwellings and buildings from high winds or flying debris.	Moderate	Moderate	Moderate	Low	**Low**	**Low**	**Low**
Commercial, schooling and leisure facilities	Hotter days and nights	Moderate	High	Very High	Yes	High	Material specification will be determined at detailed design. A fabric-first approach will ensure high thermal performance. All dwellings will be designed (at later Reserved Matters Application stages) to comply with Part O of the Building Regulations.	Very High	**Low**	**Low**	**Moderate**	High temperatures can expand, melt and deform building fabric, increasing material deterioration.	Low	Moderate	Moderate	Low	**Low**	**Low**	**Low**

Project Component	Climate Hazard	Hazard			Exposure	Sensitivity	Design / operational adaptation measures	Effectiveness of measures	Vulnerability			Impact	Impact Likelihood			Impact Consequence	Risk		
		2030s	2050s	2080s					2030s	2050s	2080s		2030s	2050s	2080s		2030s	2050s	2080s
							The masterplan will follow best-practice principles of orientation to maximise daylight/natural ventilation and reduce overheating, with detailed layout strategies confirmed at reserved matters. Retained hedgerows, new planting, open spaces and SuDS will deliver natural cooling/shading.											
Commercial, schooling and leisure facilities	Increase intensity of sun glare and UV	Low	Moderate	High	Yes	Moderate	Material specification will be determined at detailed design. A fabric-first approach will ensure high thermal performance. All dwellings will be designed (at later Reserved Matters Application stages) to comply with Part O of the Building Regulations. The masterplan will follow best-practice principles of orientation to maximise daylight / natural ventilation and reduce overheating, with detailed layout strategies confirmed at reserved matters. Retained hedgerows, new planting, open spaces and SuDS will deliver natural cooling / shading.	Very High	**Very Low**	**Very Low**	**Low**	Increased solar radiation can hasten material degradation.	Low	Moderate	Moderate	Low	**Very Low**	**Very Low**	**Low**
Commercial, schooling and leisure facilities	Wildfire events	Moderate	High	Very High	Yes	Moderate	Drainage systems will include open channels and wetland planting areas. Planted and recreational areas will be zoned providing buffer between built spaces and green spaces. Open spaces, verges, and street trees will provide a green aspect to all walking and cycling routes through the Site, contributing to comfort, visual quality, and climate resilience Maintenance activities will be detailed within the landscape management plan. The development will be designed to ensure access for emergency vehicles is possible. Detailed design will consider the inclusion of material choices and refuse bins to manage or deter potential fire risks. Firefighting will be handled by Local Fire and Rescue Service.	Very high	**Very Low**	**Low**	**Low**	Damage to buildings from wildfire.	Low	Low	Moderate	High	**Very Low**	**Low**	**Low**
Commercial, schooling and leisure facilities	Reduced water availability	High	Very High	Very High	Yes	Moderate	Water efficiency measures will be considered as part of the BREEAM specifications.	Very High	**Low**	**Low**	**Low**	Disruption of daily activities and services.	Low	Moderate	High	Moderate	**Low**	**Low**	**Low**
Commercial, schooling and leisure facilities	High winds	Low	Moderate	Moderate	Yes	Moderate	Maintenance activities will be detailed within the landscape management plan. Landscaping will support the mitigation of wind tunnel effects. Owner / occupiers will be responsible for maintaining properties.	High	**Low**	**Low**	**Low**	Damage to dwellings and buildings from high winds or flying debris.	Moderate	Moderate	Moderate	Low	**Low**	**Low**	**Low**
Gypsy and traveller pitches, landscaping and open space	Increased growing season and vegetation growth	Low	Moderate	Moderate	Yes	Moderate	Retained hedgerows, new planting, open spaces and SuDS will deliver natural cooling / shading. A landscape management plan will be developed as part of the detailed design. Species planting will take into account climate change, through the inclusion of European and native species.	Very High	**Very Low**	**Very Low**	**Very Low**	Increased maintenance requirement and cost for managing landscaped areas.	Low	Low	Moderate	Low	**Very Low**	**Very Low**	**Very Low**
Gypsy and traveller pitches, landscaping and open space	Hotter days and nights	Moderate	High	Very High	Yes	Moderate	A landscape management plan will be developed as part of the detailed design. Species planting will take into account climate change, through the inclusion of European and native species.	Very High	**Very Low**	**Low**	**Low**	Loss of vegetation and landscaped areas from prolonged high temperatures.	Low	Low	Moderate	Low	**Very Low**	**Low**	**Low**
Gypsy and traveller pitches, landscaping and open space	Increase intensity of sun glare and UV	Low	Moderate	High	Yes	Moderate	A landscape management plan will be developed as part of the detailed design. Species planting will take into account climate	Very High	**Very Low**	**Very Low**	**Low**	Loss of vegetation and landscaped areas from high UV exposure.	Very Low	Very Low	Low	Low	**Very Low**	**Very Low**	**Low**

Project Component	Climate Hazard	Hazard			Exposure	Sensitivity	Design / operational adaptation measures	Effectiveness of measures	Vulnerability			Impact	Impact Likelihood			Impact Consequence	Risk		
		2030s	2050s	2080s					2030s	2050s	2080s		2030s	2050s	2080s		2030s	2050s	2080s
							change, through the inclusion of European and native species.												
Gypsy and traveller pitches, landscaping and open space	Wildfire events	Moderate	High	Very High	Yes	Moderate	Drainage systems will include open channels and wetland planting areas. Planted and recreational areas will be zoned providing buffer between built spaces and green spaces. Open spaces, verges, and street trees will provide a green aspect to all walking and cycling routes through the Site, contributing to comfort, visual quality, and climate resilience Maintenance activities will be detailed within the landscape management plan. The development will be designed to ensure access for emergency vehicles is possible. Detailed design will consider the inclusion of material choices and refuse bins to manage or deter potential fire risks. Firefighting will be handled by Local Fire and Rescue Service.	Very high	**Very Low**	**Low**	**Low**	Loss of vegetation and landscaped areas from fire.	Low	Low	Moderate	Low	**Very Low**	**Low**	**Low**
Gypsy and traveller pitches, landscaping and open space	Reduced water availability	High	Very High	Very High	Yes	Moderate	A landscape management plan will be developed as part of the detailed design. Species planting will take into account climate change, through the inclusion of European and native species.	Very High	**Low**	**Low**	**Low**	Loss of vegetation and landscaped areas during drought conditions.	Low	Low	Moderate	Low	**Low**	**Low**	**Low**
Gypsy and traveller pitches, landscaping and open space	High winds	Low	Moderate	Moderate	Yes	Moderate	Maintenance activities will be detailed within the landscape management plan. Landscaping will support the mitigation of wind tunnel effects.	High	**Low**	**Low**	**Low**	Loss of vegetation, trees and landscaped areas from high winds.	Moderate	Moderate	Moderate	Low	**Low**	**Low**	**Low**
New road improvements	Hotter days and nights	Moderate	High	Very High	Yes	Moderate	Roadway specification will align to West Sussex County Council requirements. West Sussex County Council will be responsible for the maintenance of adopted roads. Rain gardens and tree canopy coverage will provide some cooling / shading to roadways	High	**Low**	**Low**	**Moderate**	High temperatures can melt and deform surfaces, increasing material deterioration.	Low	Moderate	Moderate	Low	**Low**	**Low**	**Low**
New road improvements	Increase intensity of sun glare and UV	Low	Moderate	High	Yes	Moderate	Roadway specification will align to West Sussex County Council requirements. West Sussex County Council will be responsible for the maintenance of adopted roads. Rain gardens and tree canopy coverage will provide some cooling / shading to roadways	High	**Low**	**Low**	**Low**	Increased solar radiation can hasten material degradation.	Low	Moderate	Moderate	Low	**Low**	**Low**	**Low**
New road improvements	Wildfire events	Moderate	High	Very High	Yes	Low	Drainage systems will include open channels and wetland planting areas. Planted and recreational areas will be zoned providing buffer between built spaces and green spaces. Open spaces, verges, and street trees will provide a green aspect to all walking and cycling routes through the Site, contributing to comfort, visual quality, and climate resilience Maintenance activities will be detailed within the landscape management plan. The development will be designed to ensure access for emergency vehicles is possible. Detailed design will consider the inclusion of material choices and refuse bins to manage or deter potential fire risks.	Very high	**Very Low**	**Low**	**Low**	Damage to roads from wildfire.	Low	Low	Moderate	High	**Very Low**	**Low**	**Low**

Project Component	Climate Hazard	Hazard			Exposure	Sensitivity	Design / operational adaptation measures	Effectiveness of measures	Vulnerability			Impact	Impact Likelihood			Impact Consequence	Risk		
		2030s	2050s	2080s					2030s	2050s	2080s		2030s	2050s	2080s		2030s	2050s	2080s
							Firefighting will be handled by Local Fire and Rescue Service.												
End users	Increase in the number of heat stress days	Very Low	Low	High	Yes	High	All dwellings will be designed (at later Reserved Matters Application stages) to comply with Part O of the Building Regulations. The masterplan will follow best-practice principles of orientation to maximise daylight / natural ventilation and reduce overheating, with detailed layout strategies confirmed at reserved matters. Retained hedgerows, new planting, open spaces and SuDS will deliver natural cooling / shading.	High	**Very Low**	**Low**	**Low**	Increased risk of heat-related health impacts on residents, employees, visitors and contractors.	Low	Moderate	High	Moderate	**Very Low**	**Low**	**Low**
End users	Hotter days and nights	Moderate	High	Very High	Yes	High	All dwellings will be designed (at later Reserved Matters Application stages) to comply with Part O of the Building Regulations. The masterplan will follow best-practice principles of orientation to maximise daylight / natural ventilation and reduce overheating, with detailed layout strategies confirmed at reserved matters. Retained hedgerows, new planting, open spaces and SuDS will deliver natural cooling / shading.	High	**Low**	**Low**	**Moderate**	Uncomfortable living and working environments	Low	Moderate	High	Low	**Low**	**Low**	**Low**
End users	Increase intensity of sun glare and UV	Low	Moderate	High	Yes	Moderate	All dwellings will be designed (at later Reserved Matters Application stages) to comply with Part O of the Building Regulations. The masterplan will follow best-practice principles of orientation to maximise daylight / natural ventilation and reduce overheating, with detailed layout strategies confirmed at reserved matters. Retained hedgerows, new planting, open spaces and SuDS will deliver natural cooling / shading.	High	**Low**	**Low**	**Low**	Glare and UV exposure creates uncomfortable living and working conditions.	Low	Moderate	Moderate	Low	**Low**	**Low**	**Low**
End users	Wildfire events	Moderate	High	Very High	Yes	Moderate	For commercial, schooling and leisure facilities, BREEAM requirement will make reference to building user guides that will detail emergency and evacuation measures. Firefighting will be handled by Local Fire and Rescue Service.	Very high	**Very Low**	**Low**	**Low**	Increased risk of fire and safety concerns for end users.	Low	Low	Moderate	High	**Very Low**	**Low**	**Low**
End users	Reduced water availability	High	Very High	Very High	Yes	Moderate	Water efficiency measures will be considered as part of the BREEAM specifications (for commercial / leisure components) . The Proposed Development will adopt best-practice water efficiency measures to meet the planning requirement of ≤85 litres/person/day for internal use and 5 litres per day for external use (for dwellings). To address Horsham District Council's water neutrality requirement, the project team is also exploring offsetting through the Southern Water Neutrality Offsetting Scheme (SNOWS) (for dwelling).	Very High	**Low**	**Low**	**Low**	Disruption of daily activities and services.	Low	Moderate	High	Moderate	**Low**	**Low**	**Low**
End users	High winds	Low	Moderate	Moderate	Yes	Moderate	Maintenance activities will be detailed within the landscape management plan. Landscaping will support the mitigation of wind tunnel effects. Owner / occupiers will be responsible for maintaining properties.	High	**Low**	**Low**	**Low**	Increased risk of injury to end users from flying debris and high winds.	Moderate	Moderate	Moderate	High	**Low**	**Low**	**Low**

5 RECOMMENDATIONS

5.1.1. No moderate, high or very high risks have been identified for the 25 impacts assessed. In line with the assessment approach, no additional design or operational measures are required, on the basis that the measures outlined are implemented.

5.1.2. A selection of good practice monitoring and management actions are outlined below to support the Project.

Detailed Design and Reserved Matters

5.1.3. Consideration of climate change during the detailed design and at reserved matters is essential to ensure that the Project builds resilience to both acute and chronic climate hazards over its lifetime. Early integration of adaptive design measures can significantly reduce vulnerability to projected climate impacts. This approach supports the delivery of a robust, future-proofed development. Embedding climate resilience adaptation measures at the design stage can provide cost effective and environmentally responsible mitigation measures rather than retrofitted solutions at a later time.

Construction phase

5.1.4. During construction phase, embed weather-related risks into construction environmental management plans to protect construction sites, materials and workers from climate hazards. This could be through:

- Implementation of risk assessments;
- Monitoring of weather forecasting and adjusting construction works to account for extreme weather events; and
- Implementing inspections / maintenance of the construction site and materials to minimise damage or flooding impacts (from uncovered stockpiles, blocked drainage for example).

6 ASSUMPTIONS AND LIMITATIONS

6.1.1. The UKCP18 projections have been used to infer future changes in a range of climate variables that may affect the vulnerability of the Project to climate change. At the time of writing, these represent the most up-to-date representation of future climate in the UK. The Climate Risk Indicator (CRI) has been developed using UKCP18 projections.

6.1.2. There are inherent uncertainties associated with climate projections and they are not predictions of the future. It is possible that future climate will differ from the future climate against which the Project has been assessed, depending on global emissions over the next century. A 'high' emissions scenario (RCP 8.5) across short-, medium- and long-term time frames have been used to develop a baseline against which climate change risk has been assessed.

6.1.3. Any further research, analysis or decision-making should take account of the accuracies and uncertainties associated with climate projections. It is also important to note that the analysis is based on selected observational data, the results of climate model ensembles and a selected range of existing climate change research and literature available at the time of assessment. Any future decision-making based on this analysis should consider the range of literature, evidence and research available at that time and any changes to this.

6.1.4. Some climate hazards are derived from combinations of climate parameters (for example drought and erosion are driven by changes in precipitation and temperature). For the purposes of the assessment climate hazards have been grouped under the primary climate parameter driver.

6.1.5. Design and operational adaptation measures that will be implemented as part of the detailed design or reserved matters application have been incorporated into the assessment. These measures are considered to be standard practice for new developments, or committed to as part of the Project.

7 REFERENCES

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