

Bow Farm – Environmental Management System Climate Change Adaptation Risk Assessment

Climate change effect and potential impacts		Judgement				Action and mitigation	
Climate change effect	Potential impact	Probability of exposure	Consequence	Magnitude of risk	Justification for magnitude	Risk management and mitigation	Residual risk
1. Higher summer daily maximum temperatures	Potential for increased waste reactions or fires involving heat sensitive or combustible waste.	Very low	Medium	Low	<p>Permitted waste types are inert and have a very low potential to catch fire.</p> <p>No combustible wastes will be accepted or stored at the site in accordance with the Environmental Permit EPR/BP3922LW.</p>	<p>Activities will be managed and operated in accordance with the Environmental Management System (EMS).</p> <p>Robust Waste Acceptance Criteria and Procedures (submitted as Appendix Giii of Environmental Permit application EPR/BP3922LW/A001) ensures all imported waste has an accompanying Waste Transfer Note, is inspected, and taken away from site if it does not conform to the list of accepted wastes. The Waste Acceptance Criteria and Procedures also detail if and when imported material is required to be tested and what the method is for this independent verification testing.</p> <p>Personnel to follow Emergency preparedness and response, Group Emergency Response Plan and Environmental Contingency Plan (EMS Procedure 15).</p>	Very low
1. Higher summer daily maximum temperatures	Potential for fire if the temperature exceeds the heat rating of components in electrical equipment or components are subjected to intense and direct sunlight.	Low	Medium	Low	<p>Plant protected from prolonged periods of direct sunlight.</p> <p>Regular shutdown periods / breaks to avoid overheating.</p> <p>Plant is routinely inspected and maintained in accordance with operating manual.</p>	<p>Activities will be managed and operated in accordance with the Environmental Management System (EMS).</p> <p>Personnel to follow Emergency preparedness and response and Site Equipment and Maintenance Procedure (EMS Procedure 14).</p> <p>Reviewing the heat rating of components that have high workloads or are likely to be exposed to direct sunlight and heat.</p> <p>Shading electrical equipment if it is subject to direct sunlight for prolonged periods of time.</p> <p>Regular checks of equipment before use. Identification and reporting of defects and</p>	Low

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						equipment risks. Records kept of inspections and maintenance undertaken.	
1. Higher summer daily maximum temperatures	Potential increase in high temperature expansion and stress of plant, pipework and fittings. UV degradation of plastic pipes and hoses causing them to fail.	Low	Medium	Low	Regular shutdown periods / breaks to avoid overheating. Plant is routinely inspected and maintained in accordance with operating manual.	Activities will be managed and operated in accordance with the Environmental Management System (EMS). Personnel to follow Emergency preparedness and response and Site Equipment and Maintenance Procedure (EMS Procedure 14). Regular checks of equipment before use. Identification and reporting of defects and equipment risks. Records kept of inspections and maintenance undertaken. Replacement of exposed pipes and hoses when necessary.	Low

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1. Higher summer daily maximum temperatures	Potential increased dust emissions from tipping, especially in dry and windy weather, and from haul roads. Reduced availability of water for dust suppression.	Medium	Low	Low	<p>Permitted waste types are inert. The activities may produce dust from movement of vehicles and tipping operations especially in dry and also windy weather.</p> <p>The potential for impact from dust will be minimised and managed in accordance with the mitigation measures set out in the Dust Emissions Management Plan (submitted as Appendix J of Environmental Permit application EPR/BP3922LW/A001).</p>	<p>Activities will be managed and operated in accordance with the Environmental Management System (EMS) and the Dust Emissions Management Plan.</p> <p>Site operation procedures to minimise and manage dust and particulates – stopping waste receipt until strong winds have ceased and/or the use of a mobile water bowser to spray the haul road to prevent dust becoming airborne. Personnel to follow dust emissions procedure within Group Emergency Response Plan, if high levels of dust emissions are a risk.</p> <p>Personnel to follow Environmental Complaints EMS Procedure if any complaints from local residents in relation to dust generated from site activities.</p> <p>Regular site cleaning and use of dust suppression systems.</p> <p>Capturing, collecting and storing rainwater in storage ponds/lagoons for use in dust suppression systems. The storage lagoons provide more water than is required for the water bowser and wheel-wash.</p> <p>In the event of a water shortage, dust suppression throughout the site will be a priority. If in extreme circumstances, where there is not enough water in the ponds/lagoons, mains water will be utilised and some or all site operations will be suspended so as not to cause adverse dust impacts beyond the site boundary.</p>	Low

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1. Higher summer daily maximum temperatures	<p>Long periods of hot and dry weather could lead to a drought and may have an impact on water supplies for:</p> <ul style="list-style-type: none"> • emergency water usage • cooling systems • fire fighting • processes that require water as input 	Low	Medium	Low	<p>Emergency water usage and cooling systems – EMS encourages minimisation of water use where viable, to enable increased water availability during emergencies. Captured rainwater is stored in ponds/lagoons for use in dust suppression. The ponds/lagoons provide excess capacity for the water requirements. In the event of a water shortage, dust suppression throughout the site will be a priority. If in extreme circumstances, where there is not enough water in the ponds/lagoons, mains water will be utilised and some or all site operations will be suspended so as not to cause adverse dust impacts beyond the site boundary.</p> <p>Firefighting – Permitted waste types are inert and have a very low potential to catch fire. No combustible wastes will be accepted or stored at the site in accordance with the Environmental Permit EPR/BP3922LW. Therefore, the likelihood of requiring water for firefighting is very low. Rainwater from the storage lagoons/ponds and mains water supply are available.</p> <p>Processes requiring water input – Not many processes on site which require water input. In the event of a water shortage, dust suppression throughout the site will be a priority and therefore any other activities which require water will be suspended.</p>	<p>Activities will be managed and operated in accordance with the Environmental Management System (EMS) and the Dust Emissions Management Plan.</p> <p>Dust suppression throughout the site will take precedence during water shortages, meaning other operations will be suspended, if required.</p> <p>During operations undertake reviews of the levels of water usage to determine whether this can be reduced and how it can be reduced, for example re-circulation.</p> <p>Identifying which systems and processes have a critical need for water and what the baseline requirements are.</p> <p>Discussions with water utilities about the supply of water and any likely drought restrictions during prolonged periods of dry weather.</p> <p>Reviewing fire suppression plans including water, and considering what alternative means of firefighting are when water is scarce.</p>	Low

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1. Higher summer daily maximum temperatures	Potential increased risk of pests and scavengers from stockpiled waste such as food and drink containers, food contaminated wastes and 'black bag' type wastes.	Very low	Very Low	Very Low	<p>Permitted waste types are inert and have a very low potential to attract pests and scavengers.</p> <p>No food waste/food waste containers/municipal wastes will be accepted or stored at the site in accordance with the Environmental Permit EPR/BP3922LW.</p>	<p>Activities will be managed and operated in accordance with the Environmental Management System (EMS).</p> <p>Robust Waste Acceptance Criteria and Procedures (submitted as Appendix Giii of Environmental Permit application EPR/BP3922LW/A001) ensures all imported waste has an accompanying Waste Transfer Note, is inspected, and taken away from site if it does not conform to the list of accepted wastes. The Waste Acceptance Criteria and Procedures also detail if and when imported material is required to be tested and what the method is for this independent verification testing.</p> <p>Personnel to follow Environmental Complaints EMS Procedure if any complaints from local residents in relation to odour generated from site activities that might attract pests.</p> <p>Imported inert waste material deposited into the Phases 1 to 9 excavation area will have no storage at the site prior to deposition, in accordance with the Procedure for Inert Waste and Tipping at Bow Farm Site (EMS Procedure 13). This will reduce the opportunity for the presence of pests at the site.</p>	Very Low
1. Higher summer daily maximum temperatures	Potential increased risk of wildfires impacting the site.	Very Low	Medium	Low	<p>Permitted waste types are inert and have a very low potential to catch fire.</p> <p>No combustible wastes will be accepted or stored at the site in accordance with the Environmental Permit EPR/BP3922LW.</p> <p>Activities associated with the deposit for recovery area within excavation</p>	<p>Activities will be managed and operated in accordance with the Environmental Management System (EMS).</p> <p>Personnel to follow Emergency preparedness and response, Group Emergency Response Plan and Environmental Contingency Plan (EMS Procedure 15).</p>	Very Low

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					area Phases 1 to 9 will be located away from any vegetation.	<p>Monitoring vegetation surrounding the site during spells of hot and dry weather.</p> <p>Identifying areas of the site, wastes and equipment that are at greatest risk from wildfires and reviewing fire prevention plan to address these.</p> <p>Identifying processes and areas of the site where sparks and heat may be generated which have the potential to ignite dry vegetation and taking steps to prevent this.</p>	
2. Higher winter daily temperatures	Slightly higher winter maximum temperatures could generate odour complaints and pest infestations.	Very Low	Very Low	Very Low	<p>Permitted waste types are inert and have a very low potential to generate odour or attract pests and scavengers.</p> <p>No food waste/food waste containers/municipal wastes will be accepted or stored at the site in accordance with the Environmental Permit EPR/BP3922LW.</p>	<p>Activities will be managed and operated in accordance with the Environmental Management System (EMS).</p> <p>Robust Waste Acceptance Criteria and Procedures (submitted as Appendix Giii of Environmental Permit application EPR/BP3922LW/A001) ensures all imported waste has an accompanying Waste Transfer Note, is inspected, and taken away from site if it does not conform to the list of accepted wastes. The Waste Acceptance Criteria and Procedures also detail if and when imported material is required to be tested and what the method is for this independent verification testing.</p> <p>Personnel to follow Environmental Complaints EMS Procedure if any complaints from local residents in relation to odour generated from site activities that might attract pests.</p> <p>Imported inert waste material deposited into the Phases 1 to 9 excavation area will have no</p>	Very Low

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						storage at the site prior to deposition, in accordance with the Procedure for Inert Waste and Tipping at Bow Farm Site (EMS Procedure 13). This will reduce the opportunity for the presence of pests at the site.	
3. Lower winter daily temperatures	Lower winter temperatures could result in an increased risk of pipes (or similar) on plant and equipment freezing.	Low	Low	Low	<p>Plant is routinely inspected and maintained in accordance with operating manual.</p> <p>Check of plant on startup during days experiencing freezing conditions to ensure functionality.</p> <p>If necessary, plant/exposed areas of plant are covered at the end of the working day to reduce exposure to frost.</p>	<p>Activities will be managed and operated in accordance with the Environmental Management System (EMS).</p> <p>Personnel to follow Emergency preparedness and response and Site Equipment and Maintenance Procedure (EMS Procedure 14).</p> <p>Regular checks of equipment before use. Identification and reporting of defects and equipment risks. Records kept of inspections and maintenance undertaken.</p> <p>Replacement of exposed pipes and hoses when necessary.</p>	Low
4. Increased daily extreme rainfall	Potential for increased site surface water runoff, ponding and flooding, including potential for drainage systems and interceptors to be overwhelmed.	Medium	Medium	Medium	<p>Most of the site is located in an area that has a very low (less than 0.1% annual chance) of flooding from surface water, according to the Government's long term flood risk map. Small parts of the Phases 1 to 9 excavation area have low, medium and high risk (>3.3% annual chance) areas of surface water flood risk. These areas are not shown to increase significantly when future climate change risks are applied on the long term flood risk map – 'Yearly chance of flooding between 2040 and 2060'. None of the areas of surface water flood risk are shown to contribute to off-site receptors.</p> <p>Very few buildings on site. Site weighbridge and offices will be elevated above any potential flood waters.</p> <p>During site operations, direct rainfall and surface water runoff within the</p>	<p>Activities will be managed and operated in accordance with the Environmental Management System (EMS).</p> <p>Management of surface water in accordance with approved Planning Permissions and Surface Water Management Plan (GWP Consultants LLP Report No. 240707). Surface Water Management Plan to be reviewed regularly as part of wider EMS review.</p> <p>Weather forecasts checked to see if likely for high rainfall amounts to be experienced at the site. Modify or suspend activities where necessary if risk is increased.</p> <p>Drainage systems will be inspected and maintained.</p>	Low

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					excavation area Phases 1 to 9 will be managed in accordance with the approved Bow Farm Surface Water Drainage Scheme report (GWP Report No. 240707), prepared separately to discharge Condition 20 of Planning Permission Number 19/000048/CM (Worcestershire County Council). The Surface Water Drainage Scheme report is included as an Appendix of the Hydrogeological Risk Assessment (Appendix Giv of the Environmental Permit application). Approved Planning Permissions provide for surface water management, including controlled attenuation and discharge from the completed site which incorporates climate change allowances.		
5. Sea level rise	If a site is located near the coast there is potential increased risk of flooding.	None	None	None	Potential sea level rise of 0.6m when compared to current sea level will not impact on the site. The site is over 30km away from the coast.	Not applicable as no risk.	None
6. Lower summer rainfall amounts	Long periods of hot and dry weather could lead to a drought and may have an impact on water supplies for: <ul style="list-style-type: none"> • emergency water usage • cooling systems • fire fighting • processes that require water as input 	Low	Medium	Low	Emergency water usage and cooling systems – EMS encourages minimisation of water use where viable, to enable increased water availability during emergencies. Captured rainwater is stored in ponds/lagoons for use in dust suppression. The ponds/lagoons provide excess capacity for the water requirements. In the event of a water shortage, dust suppression throughout the site will be a priority. If in extreme circumstances, where there is not enough water in the ponds/lagoons, mains water will be utilised and some or all site operations will be suspended so as not to cause adverse dust impacts beyond the site boundary. Firefighting – Permitted waste types are inert and have a very low potential to catch fire. No combustible wastes will be accepted or stored at the site in accordance	Activities will be managed and operated in accordance with the Environmental Management System (EMS) and the Dust Emissions Management Plan. Dust suppression throughout the site will take precedence during water shortages, meaning other operations will be suspended, if required. During operations undertake reviews of the levels of water usage to determine whether this can be reduced and how it can be reduced, for example re-circulation. Identifying which systems and processes have a critical need for water and what the baseline requirements are.	Low

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					<p>with the Environmental Permit EPR/BP3922LW. Therefore, the likelihood of requiring water for firefighting is very low. Rainwater from the storage lagoons/ponds and mains water supply are available.</p> <p>Processes requiring water input – Not many processes on site which require water input. In the event of a water shortage, dust suppression throughout the site will be a priority and therefore any other activities which require water will be suspended.</p>	<p>Discussions with water utilities about the supply of water and any likely drought restrictions during prolonged periods of dry weather.</p> <p>Reviewing fire suppression plans including water, and considering what alternative means of firefighting are when water is scarce.</p>	
7. Increased flows in watercourses	Increased potential for flooding of site from river capacity exceedance causing fluvial flooding.	Medium	Medium	Medium	<p>The majority of the Phases 1 to 9 excavation area is located within fluvial flood risk Flood Zone 1 (less than 0.1% annual chance of flooding from rivers) and Flood Zone 2 (between 0.1% and 1% annual chance of flooding from rivers). Only the outer extremities of the Phases 1 to 9 area is located in Flood Zone 3 (annual chance river flooding is greater than 1%). This is according to the Government's Flood Map for Planning. The map shows that the risk of fluvial flooding to the site increases slightly when the climate change (2070 to 2125) layer is applied. Flood defences exist on the banks of the River Severn and the Mythe Brook.</p> <p>The fluvial flood risk to the site is described within the Bow Farm Sand and Gravel Quarry Development Hydrogeological and Hydrological Impact Assessment and Flood Risk Assessment report (GWP Report No. 190714), which is included in Appendix 4 of the Environmental Setting and Site Design (Appendix Giv of the Environmental Permit application).</p> <p>Any flood waters on site will be allowed to enter the excavation void within Phases 1 to 9. The Bow Farm Flood Storage Compensation Scheme (GWP Report No. 241008), prepared separately to discharge Condition 19 of Planning Permission</p>	<p>Activities will be managed and operated in accordance with the Environmental Management System (EMS).</p> <p>Personnel to follow Emergency preparedness and response, Group Emergency Response Plan and Environmental Contingency Plan (EMS Procedure 15).</p> <p>Weather forecasts checked to see if potential for high flows in the River Severn and Ripple Brook. Modify or suspend activities where necessary if risk is increased.</p> <p>Management of surface water in accordance with approved Planning Permissions and Surface Water Management Plan (GWP Consultants LLP Report No. 240707). Surface Water Management Plan to be reviewed regularly as part of wider EMS review.</p>	Low

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					<p>Number 19/000048/CM (Worcestershire County Council), provides a scheme for flood storage compensation at the site, including the principles behind the movements of soil stripped from areas on site and how flood storage betterment is provided through the life of the development. Discharge of Condition 19 was subsequently permitted by Worcestershire County Council in June 2025 through Condition discharge application 24/000035/DIS. The Flood Storage Compensation Scheme report is included in Appendix 11 of the Hydrogeological Risk Assessment (Appendix Giv of the Environmental Permit application).</p> <p>Very few buildings on site. Site weighbridge and offices are within Flood Zone 1 and will be elevated above any current and potential fluvial flood waters.</p>		
8. Increased frequency and intensity of storms	Potential for high winds to damage buildings and infrastructure and blow waste from the site. Increased potential for lightning strikes to damage buildings and infrastructure.	Low	Medium	Low	<p>Very few buildings and little infrastructure on site that will be impacted by high winds and lightning.</p> <p>Permitted waste types are inert. Potential increased dust movement in windy weather, but storm may bring rain which suppresses dust movement. Inert waste has low contamination potential, so risk is minimal even if it is blown away from site.</p> <p>The potential for impact from dust will be minimised and managed in accordance with the mitigation measures set out in the Dust Emissions Management Plan (submitted as Appendix J of Environmental Permit application EPR/BP3922LW/A001). If necessary, some or all site operations can be suspended so as not to cause adverse dust impacts beyond the site boundary.</p>	<p>Activities will be managed and operated in accordance with the Environmental Management System (EMS).</p> <p>Personnel to follow Emergency preparedness and response, Group Emergency Response Plan and Environmental Contingency Plan (EMS Procedure 15).</p> <p>Personnel to follow Environmental Complaints EMS Procedure if any complaints from local residents in relation to wind-blown dust or other site activities.</p> <p>Weather forecasts checked to see if potential for high winds/storm conditions and adjust site practices accordingly – operational shutdown/evacuation and mobile backup generators if necessary.</p>	Low

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						<p>Reviewing buildings and infrastructure to identify vulnerable areas to high winds/lightning and measures to protect them and mitigate any impacts from damage.</p> <p>Secure loose materials and equipment during high winds.</p>	