M GROUP

Appendix 14

Climate Change Adaptation Report

18 December 2025

Contents

Introduction

The importance of planning for climate change

What's Climate Change?

The Met Office describes climate change as a shift in weather patterns and temperature over a long period of time and on a large scale due to emission of greenhouse gases (GHG) into the air. Changes to weather patterns and temperature are likely to have deleterious impacts on operations and infrastructure, if left unchanged.

Climate projections show that the impacts being experienced because of climate change will intensify, the severity of which will be determined by our ability to reduce future GHG emissions. Projections based on future GHG emission figures are referred to as Representative Concentration Pathways (RCP) and have been produced for the UK using the 2018 UK Climate Projects (UKCP18) climate projection tools. A summary of the best- and worst-case RCPs can be viewed below in Table 1.

Table 1: Best- and worst-case scenarios for future average temperatures and precipitations

		Best-case Scenario (RCP 2.6)		Worst-case Scenario (RCP 8.5)	
Data		**Summer**	**Winter**	**Summer**	**Winter**
Average temperature	**Baseline**	15.4°C	4°C	15.4°C	4°C
	Projected (2050)	1.7°C warmer	0.9°C warmer	2.1°C warmer	1.6°C warmer
	Projected (2099)	2.3°C warmer	1.2°C warmer	6.5°C warmer	4°C warmer
Average precipitation	**Baseline**	171mm	195mm	171mm	195mm
	Projected (2050)	17% drier	4% wetter	23% drier	7% wetter
	Projected (2099)	25% drier	7% wetter	42% drier	24% wetter

Identifying the risks that climate change poses to an organisation and identifying suitable control measures to mitigate them is crucial for long-term operational resilience. Additionally, control measures must be identified to protect human and environmental health due to climate change impacts, such as fugitive emissions of harmful substances in the event of a fire, flooding, or failure of infrastructure.

To ensure that these risks are considered, the Environment Agency (EA) requires that all environmental permits issued on or after 1st April 2023 must include climate adaptation planning within their Environmental Management Systems (EMS). Where an environmental permit was issued before this date, permit holders must produce a climate change adaptation risk assessment by 1st April 2024 and incorporate it into their EMS. This Climate Change Adaptation Plan (CCAP) will follow the structure of BS EN ISO 14090:2019, allowing easy integration into M Group Highways Infrastructure's ISO 14001 Environmental Management System.

This CCAP will identify the risks posed to the Operation performed at Devon County Council's Rydon Depot (the Site) by climate change, the control measures to mitigate them, and a plan for when and how those measures will be implemented.

Assessment

Assessing the operational hazards, impacts, and overall risk due to climate change

Impacts

The first step to assessing the risk that climate change presents to an operation is to identify the potential impacts it may have; this could include flooding, drought, strong winds, storms, and extreme weather. When identifying the potential impacts that may affect us, we should consider operations performed at the Site, operations performed away from the Site, the broader M Group Highways business, our clients, and our supply chain partners (the Operation). Identifying climate change impacts should involve multidisciplinary teams from every stakeholder to ensure that all possibilities are covered. At this point, we should also identify the adaptation measures we have already implemented to help protect the Site and its operations from climate change.

Table 2: Operational Climate Change Impacts

Climate change variable	Business area	Impact	Responsible	Adaptation action
Summer daily maximum temperatures could be up to 7°C higher resulting in more frequent >40°C temperatures	Operations	Shutdown due to fire	M Group Highways	Fire response procedure within ISO 45001 and ISO 14001 Management Systems Trained fire marshals always present on site
		Overheating of plant and vehicles	M Group Highways	No idling policy Regular maintenance in accordance with manufacturer instructions/ guidance
		Drought	M Group Highways	Consumption minimisation best practice methods ISO 14001 Environmental Management System

Climate change variable	Business area	Impact	Responsible	Adaptation action
		Health	M Group Highways	ISO 45001 Management System
		Dust	M Group Highways	ISO 45001 Management System Vehicle washdown area
	Logistics	Products cannot be produced and/or supplied	M Group Highways	Alternative suppliers onboarded
		Loss of power	M Group Highways	None
	Assets	Damage to infrastructure due to heat expansion	M Group Highways	Expansion joints in existing infrastructure
	Community resilience	Loss of power	M Group Highways	None
		Fire	M Group Highways	None
	Markets	Reduced supply and increased demand for products	M Group Highways	Alternative suppliers onboarded
		Fluctuations in prices of products and services	M Group Highways	Alternative suppliers onboarded
	Finances	Climate change resilient infrastructure will be more expensive	M Group Highways	Early warning procedures Compensation events
		Changes to insurance policy	M Group Highways	None
Winter daily maximum	Operations	Freezing of infrastructure	M Group Highways	None

Climate change variable	Business area	Impact	Responsible	Adaptation action
temperatures up 4°C higher with greater high and low temperature extremes		Freezing of plant	M Group Highways	None
		Health	M Group Highways	ISO 45001 Management System
	Logistics	Snow blocking access to the Site	M Group Highways	Utilisation of the Site's gritter fleet
		Suppliers can't deliver products	M Group Highways	Alternative suppliers onboarded
		Loss of power	M Group Highways	None
	Assets	Collapse of structures due to snow	M Group Highways	Site inspections
	Community Resilience	Loss of power	M Group Highways	None
		Loss of gas infrastructure	M Group Highways	None
	Markets	Reduced supply and increased demand for products	M Group Highways	Alternative suppliers onboarded
		Fluctuations in prices of products and services	M Group Highways	Alternative suppliers onboarded Cost-plus model Compensation events Early warning system
	Finances	Climate change resilient infrastructure will be more expensive	M Group Highways	Early warning procedures Compensation events

Climate change variable	Business area	Impact	Responsible	Adaptation action
		Insurance doesn't cover climate change impacts	M Group Highways	None
Daily rainfall intensity could be up to 20% greater than experienced currently	Operations	Flooding of the Site	M Group Highways	None
	Logistics	Flooding of local roads	M Group Highways	None
		Suppliers can't deliver products	M Group Highways	Alternative suppliers onboarded
	Assets	Flooding of site offices	M Group Highways	None
		Flooding of site plant and vehicles	M Group Highways	None
	Community resilience	Isolation of vulnerable people	M Group Highways	None
		Loss of power	M Group Highways	None
	Markets	Reduced supply and increased demand for products	M Group Highways	Alternative suppliers onboarded
		Fluctuations in prices of products and services	M Group Highways	Alternative suppliers onboarded Cost-plus model Compensation events Early warning system
	Finances	Climate change resilient infrastructure will be more expensive	M Group Highways	Early warning procedures Compensation events

Climate change variable	Business area	Impact	Responsible	Adaptation action
		Insurance doesn't cover climate change impacts	M Group Highways	None
Average winter rainfall may increase by 40% compared to current figures	Operations	Snow blocking access to the Site	M Group Highways	Utilisation of the Site's gritter fleet
		Sealed drainage and water storage system filled	M Group Highways	Tankers available to empty storage tanks Storage tanks may be opened to the foul sewer network
	Logistics	Suppliers can't deliver products due to flooding or snow	M Group Highways	Alternative suppliers onboarded Utilisation of the Site's gritter fleet
		Loss of power	M Group Highways	None
	Assets	Collapse of structures due to snow	M Group Highways	Site inspections
	Community Resilience	Loss of power	M Group Highways	None
	Markets	Reduced supply and increased demand for products	M Group Highways	Alternative suppliers onboarded
		Fluctuations in prices of products and services	M Group Highways	Alternative suppliers onboarded Cost-plus model Compensation events Early warning system

Climate change variable	Business area	Impact	Responsible	Adaptation action
	Finances	Climate change resilient infrastructure will be more expensive	M Group Highways	Early warning procedures Compensation events
		Insurance doesn't cover climate change impacts	M Group Highways	None
Sea level may increase by up to 0.6m	Operations	Flooding of the Site	M Group Highways	None
		Suppliers can't deliver products	M Group Highways	Alternative suppliers onboarded Cost-plus model Compensation events Early warning system
	Logistics	Flooding of local roads	M Group Highways	None
	Assets	Flooding of site offices	M Group Highways	None
	Community resilience	Isolation of vulnerable people	M Group Highways	None
		Loss of power	M Group Highways	Alternative suppliers onboarded
	Markets	Reduced supply and increased demand for products	M Group Highways	Alternative suppliers onboarded Cost-plus model Compensation events Early warning system

Climate change variable	Business area	Impact	Responsible	Adaptation action
		Fluctuations in prices of products and services	M Group Highways	Early warning procedures Compensation events
	Finances	Climate change resilient infrastructure will be more expensive	M Group Highways	None
		Insurance doesn't cover climate change impacts	M Group Highways	Alternative suppliers onboarded
Summers could experience up to 40% less rainfall than currently experienced	Operations	Drought	M Group Highways	Consumption minimisation best practice methods ISO 14001 Environmental Management System
	Logistics	Suppliers can't deliver products due to flash flooding	M Group Highways	Alternative suppliers onboarded
	Assets	No impact		
	Community resilience	Drought	M Group Highways	None
	Markets	Reduced supply and increased demand for products	M Group Highways	Alternative suppliers onboarded Cost-plus model Compensation events Early warning system

Climate change variable	Business area	Impact	Responsible	Adaptation action
		Fluctuations in prices of products and services	M Group Highways	Early warning procedures Compensation events
	Finances	No impact		
Peak water flow could be up to 50% greater at its peak and up 80% less at its lowest	Operations	No impact		
	Logistics	No impact		
	Assets	No impact		
	Community resilience	Discharges to surface waters will be less diluted causing greater impact	M Group Highways	None
	Markets	No impact		
	Finances	No impact		
Increased frequency of extreme weather conditions such as high winds and lightning	Operations	Volume of highway clearance works exceed operational capacity	M Group Highways	Subcontractors available
		Dust	M Group Highways	ISO 45001 Management System Vehicle washdown area
		Health	M Group Highways	ISO 45001 Management System
	Logistics	Suppliers can't deliver products due to extreme wind	M Group Highways	Alternative suppliers onboarded

Climate change variable	Business area	Impact	Responsible	Adaptation action
		Loss of power	M Group Highways	None
	Assets	Overturning of vehicles	M Group Highways	None
		Damage to site structures	M Group Highways	None
	Community resilience	Isolation of vulnerable people	M Group Highways	None
		Loss of power	M Group Highways	None
	Markets	Reduced supply and increased demand for products	M Group Highways	Alternative suppliers onboarded Cost-plus model Compensation events Early warning system
		Fluctuations in prices of products and services	M Group Highways	Early warning procedures Compensation events
	Finances	Climate change resilient infrastructure will be more expensive	M Group Highways	None
		Insurance doesn't cover climate change impacts	M Group Highways	Alternative suppliers onboarded

Risk Assessment

Once the potential impacts and existing adaptation measures have been identified, we can begin to assess the risk. Risk is determined by the likelihood and severity of an impact. Impacts with a risk score of 5 or greater present an unacceptable risk to the Operation and require mitigation through identification and implementation of additional control measures.

Once the priority impacts have been identified, we can identify the control measures that afford the Operation the greatest resilience to the relevant climate change impact. The four aspects of resilience can be viewed below.

Table 3: The Four Aspects of Resilience

Aspect	Details
Resistance	Preventing damage from occurring.
Reliability	Designing a process to operate in a range of conditions or circumstances.
Redundancy	Availability of alternative, backup, or spare resources.
Recovery	An operation's ability to return to normal after a disruption.

The risk matrix that will be utilised in this CCAP can be seen below.

Table 4: Risk Matrix

Likelihood	1 (very low)	2 (low)	3 (medium)	4 (high)	5 (very high)
Severity					
1	1	2	3	4	5
2	2	4	6	8	10
3	3	6	9	12	15
4	4	8	12	16	20
5	5	10	15	20	25

A risk will be placed into one of 5 risk bands:

- **Very low**: risk score 1 to 4
- **Low**: risk score 5 to 9
- **Medium**: risk score 10 to 14
- **High**: risk score 15 to 19
- **Very high**: risk score 20 to 25

Table 5: Assessment of Climate Change Impact Risk

Climate change variable	Business area	Impact	Likelihood	Severity	Risk	Resilience actions	Likelihood	Severity	Residual risk
Summer daily maximum temperatures could be up to 7°C higher resulting in more frequent >40°C temperatures	Operations	Shutdown due to fire	4	3	12	Combustible materials and wastes shall be dampened in the event of prolonged or extreme hot weather Toolbox talks will be given on the early signs of fire ahead of prolonged or extreme hot weather Hourly site inspections during daily peak temperatures A minimum of two subcontractors onboarded to perform critical services on behalf of Milestone Infrastructure in the event of a temporary shutdown	2	3	6
		Overheating of plant and vehicles	4	4	16	No idling policy operated at the Site at all times Daily coolant checks on all plant and vehicles during periods of prolonged or extreme hot weather Use of plant at peak daily temperatures during periods of extreme hot weather will be limited to	1	4	4

Climate change variable	Business area	Impact	Likelihood	Severity	Risk	Resilience actions	Likelihood	Severity	Residual risk
						operation-critical activities only Toolbox talks will be delivered ahead of forecasted prolonged or extreme hot weather to all staff at the Site regarding working methods to prevent overheating and how to tackle fire Regular maintenance in accordance with manufacturer instructions/ guidance			
		Drought	4	3	12	Rainwater is harvested from structures on the Site and utilised for non-potable applications Bottled water will be available for all staff at the Site	4	2	8
		Health	5	4	20	Staff will be forced to take water breaks at regular intervals during periods of extreme hot weather Operational output targets will be temporarily reduced during periods of extreme hot weather	2	4	8

Climate change variable	Business area	Impact	Likelihood	Severity	Risk	Resilience actions	Likelihood	Severity	Residual risk
						Toolbox talks will be delivered ahead of forecasted extreme hot weather to all staff at the Site on heat-related illnesses and how to recognise them			
		Dust	3	5	15	Dust suppression will be utilised in loose materials and waste storage areas during periods of prolonged or extreme hot weather Where dust is tracked onto the surface infrastructure at the Site the site will be cleaned by road sweeper or plant with a sweeper attachment Toolbox talks will be delivered ahead of forecasted prolonged or extreme hot weather to all staff at the Site regarding working methods to reduce dust generation and the potential health implications of dust	1	5	5
	Logistics	Products cannot be produced	4	2	8	A minimum of two alternative suppliers should	4	1	4

Climate change variable	Business area	Impact	Likelihood	Severity	Risk	Resilience actions	Likelihood	Severity	Residual risk
		and/or supplied				be identified for each product Products should be over-stocked at the Site to cover temporary supply gaps			
		Loss of power	3	3	9	A backup generator will be utilised to regain power to the Site in the event of medium-term loss of power (days) All staff may temporarily work from laptop batteries in the short-term (minutes, hours) All staff may temporarily tether to mobile data connections and use mobile phone batteries in the short-term (minutes, hours) All office staff are set up to work from home in the event of long-term loss of power (a week or greater)	4	1	4
	Assets	Damage to infrastructure due to heat expansion	3	4	12	All concrete infrastructure installed with expansion joints	1	4	4

Climate change variable	Business area	Impact	Likelihood	Severity	Risk	Resilience actions	Likelihood	Severity	Residual risk
						External metal pipework and fittings will be insulated Hourly site inspections during daily peak temperatures Toolbox talks will be delivered ahead of forecasted prolonged or extreme hot weather to all staff at the Site regarding how to identify damage to infrastructure			
	Community resilience	Loss of power	4	5	20	Engage and support the local community's Local Resilience Forum (LRF) Use local social media channels to update the community on upcoming extreme weather and signpost support services	2	5	10
		Fire	4	5	20	Engage and support the local community's Local Resilience Forum (LRF) Use local social media channels to update the community on upcoming extreme weather and signpost support services	2	5	10

Climate change variable	Business area	Impact	Likelihood	Severity	Risk	Resilience actions	Likelihood	Severity	Residual risk
	Markets	Reduced supply and increased demand for products	5	3	15	Identify products made from alternative materials Use products made from recycled waste where possible Reduce products that rely on international markets Increase quantity of products stored locally at the Site	5	2	10
		Fluctuations in prices of products and services	5	4	20	Services and materials charged to the client on a cost-plus basis Early warnings issued to the client ahead of forecasted market fluctuations Innovating with supply chain partners to produce products from alternative materials Increase circularity through prevention, reuse, and recycling methodologies	5	3	15
	Finances	Climate change resilient infrastructure	4	4	16	Identify infrastructure, logistical, and operational changes required to provide resilience to the impacts of climate change	4	2	8

Climate change variable	Business area	Impact	Likelihood	Severity	Risk	Resilience actions	Likelihood	Severity	Residual risk
		will be more expensive				Provide early warnings including timescales and costs for the require to the client as early as possible so that funding can be set aside Consider carbon reduction and climate change resilience when designing new works to reduce future costs Consider carbon reduction and climate change resilience when undertaking repair works to reduce future costs Innovate to drive efficiency and reduce costs			
		Changes to insurance policy	5	4	20	Ensure insurance policy includes claims resulting from climate change impacts Ensure that provision is made for increasing insurance costs due to an increased frequency and cost of claims	5	8	8
Winter daily maximum	Operations	Freezing of infrastructure	5	3	15	External pipework will be insulated	2	3	6

Climate change variable	Business area	Impact	Likelihood	Severity	Risk	Resilience actions	Likelihood	Severity	Residual risk
temperatures up 4°C higher with greater high and low temperature extremes						Where insulated pipework continues to freeze inline heating will be installed Where drainage infrastructure becomes frozen small quantities of the Site's grit salt and brine may be utilised to aid melting External pipework will be checked weekly for damage resulting from contraction during periods of extreme cold weather			
		Freezing of plant	4	3	12	All water reservoirs will contain an additive that prevents freezing	1	3	3
		Health	3	4	12	Toolbox talks will be delivered ahead of forecasted prolonged or extreme cold weather to all staff at the Site regarding driving in icy conditions and recognising the early signs of temperature related illnesses such as hypothermia and frost bite	1	3	3

Climate change variable	Business area	Impact	Likelihood	Severity	Risk	Resilience actions	Likelihood	Severity	Residual risk
	Logistics	Snow blocking access to the Site	4	2	8	The Site's gritting fleet will grit apply grit salt and brine to the Site and surrounding local roads whilst performing their regular winter highway maintenance duties	2	2	4
		Suppliers can't deliver products	4	3	12	A minimum of two alternative suppliers should be identified for each product Extra materials will be stored at the Site for use during temporary supply chain disruption	3	1	3
		Loss of power	4	3	12	A backup generator will be utilised to regain power to the Site in the event of medium-term loss of power (days) All staff may temporarily work from laptop batteries in the short-term (minutes, hours) All staff may temporarily tether to mobile data connections and use mobile phone batteries in	4	1	4

Climate change variable	Business area	Impact	Likelihood	Severity	Risk	Resilience actions	Likelihood	Severity	Residual risk
						the short-term (minutes, hours) All office staff are set up to work from home in the event of long-term loss of power (a week or greater)			
	Assets	Collapse of structures due to snow	3	5	15	Flat-roofed structures will be inspected continuously by operatives using the site during snowfall Where snow has accumulated significantly on roofs the snow will be physically removed Grit salt will be applied to the roof to aid melting of snow Pitched roofs will be favoured where possible	1	5	5
	Community Resilience	Loss of power	4	5	16	Engage and support the local community's Local Resilience Forum (LRF) Use local social media channels to update the community on upcoming extreme weather and signpost support services	2	5	10

Climate change variable	Business area	Impact	Likelihood	Severity	Risk	Resilience actions	Likelihood	Severity	Residual risk
		Loss of gas infrastructure	4	5	20	Engage and support the local community's Local Resilience Forum (LRF) Use local social media channels to update the community on upcoming extreme weather and signpost support services	2	5	10
	Markets	Reduced supply and increased demand for products	5	3	15	Identify products made from alternative materials Use products made from recycled waste where possible Reduce products that rely on international markets Increase quantity of products stored locally at the Site	5	2	10
		Fluctuations in prices of products and services	5	4	20	Services and materials charged to the client on a cost-plus basis Early warnings issued to the client ahead of forecasted market fluctuations Innovating with supply chain partners to produce products from alternative materials	5	3	15

Climate change variable	Business area	Impact	Likelihood	Severity	Risk	Resilience actions	Likelihood	Severity	Residual risk
						Increase circularity through prevention, reuse, and recycling methodologies			
	Finances	Climate change resilient infrastructure will be more expensive	4	4	16	Identify infrastructure, logistical, and operational changes required to provide resilience to the impacts of climate change Provide early warnings including timescales and costs for the require to the client as early as possible so that funding can be set aside Consider carbon reduction and climate change resilience when designing new works to reduce future costs Consider carbon reduction and climate change resilience when undertaking repair works to reduce future costs Innovate to drive efficiency and reduce costs	4	2	8
		Insurance doesn't cover climate	5	4	20	Ensure insurance policy includes claims resulting	2	4	8

Climate change variable	Business area	Impact	Likelihood	Severity	Risk	Resilience actions	Likelihood	Severity	Residual risk
		change impacts				from climate change impacts Ensure that provision is made for increasing insurance costs due to an increased frequency and cost of claims			
Daily rainfall intensity could be up to 20% greater than experienced currently	Operations	Flooding of the Site	3	3	9	Waste and material bays will serve as a flood barrier to surface water risk from the northwest, west, and southwest Site drainage infrastructure will be cleaned regularly as per the schedule within the Depot Environmental Management Plan Erectable flood barriers may be implemented on the open face of waste and materials bays Other facilities operated by the client and third-party receiving facilities may be utilised for incoming waste until flood water subsides	3	1	3
	Logistics	Flooding of local roads	4	3	12	Extent of flood water will be determined and alternate routes planned for	4	2	8

Climate change variable	Business area	Impact	Likelihood	Severity	Risk	Resilience actions	Likelihood	Severity	Residual risk
						incoming and outgoing traffic Standing flood water will be over pumped into the nearest drainage point Toolbox talks will be delivered ahead of forecasted prolonged or extreme rainfall regarding how to drive in heavy rain and through floodwater			
		Suppliers can't deliver products	5	3	15	A minimum of two alternative suppliers should be identified for each product Extra materials will be stored at the Site for use during temporary supply chain disruption	5	1	5
	Assets	Flooding of site offices	2	4	8	Site drainage infrastructure will be cleaned regularly as per the schedule within the Depot Environmental Management Plan Flood barriers will be installed on doorways to prevent the increase of flood water ahead of forecasted extreme rainfall	1	4	4

Climate change variable	Business area	Impact	Likelihood	Severity	Risk	Resilience actions	Likelihood	Severity	Residual risk
						Site office staff will be instructed to work from home where possible			
		Flooding of site plant and vehicles	2	4	8	Site drainage infrastructure will be cleaned regularly as per the schedule within the Depot Environmental Management Plan Site plant and vehicles will be relocated to an area of the site not at risk of flooding ahead of forecasted extreme rainfall	1	4	4
	Community resilience	Isolation of vulnerable people	4	5	20	Engage and support the local community's Local Resilience Forum (LRF) Use local social media channels to update the community on upcoming extreme weather and signpost support services	2	5	10
		Loss of power	4	5	16	Engage and support the local community's Local Resilience Forum (LRF) Use local social media channels to update the community on upcoming	1	5	4

Climate change variable	Business area	Impact	Likelihood	Severity	Risk	Resilience actions	Likelihood	Severity	Residual risk
						extreme weather and signpost support services			
	Markets	Reduced supply and increased demand for products	5	4	20	Identify products made from alternative materials Use products made from recycled waste where possible Reduce products that rely on international markets Increase quantity of products stored locally at the Site	5	2	10
		Fluctuations in prices of products and services	5	4	20	Services and materials charged to the client on a cost-plus basis Early warnings issued to the client ahead of forecasted market fluctuations Innovating with supply chain partners to produce products from alternative materials Increase circularity through prevention, reuse, and recycling methodologies	5	3	15
	Finances	Climate change	4	4	16	Identify infrastructure, logistical, and operational	2	4	8

Climate change variable	Business area	Impact	Likelihood	Severity	Risk	Resilience actions	Likelihood	Severity	Residual risk
		resilient infrastructure will be more expensive				changes required to provide resilience to the impacts of climate change Provide early warnings including timescales and costs for the require to the client as early as possible so that funding can be set aside Consider carbon reduction and climate change resilience when designing new works to reduce future costs Consider carbon reduction and climate change resilience when undertaking repair works to reduce future costs Promote innovation to drive efficiency and cost reduction			
		Insurance doesn't cover climate change impacts	5	4	20	Ensure insurance policy includes claims resulting from climate change impacts Ensure that provision is made for increasing insurance costs due to an	2	4	8

Climate change variable	Business area	Impact	Likelihood	Severity	Risk	Resilience actions	Likelihood	Severity	Residual risk
						increased frequency and cost of claims			
Average winter rainfall may increase by 40% compared to current figures	Operations	Snow blocking access to the Site	4	2	8	The Site's gritting fleet will grit apply grit salt and brine to the Site and surrounding local roads whilst performing their regular winter highway maintenance duties	2	2	4
		Sealed drainage and water storage system overwhelmed	3	4	12	Buried water tanks are twice the current average daily rainfall + 40% The tanks will be triggered with an alarm system to notify the site that the tanks are approaching full Milestone Infrastructure or third-party tankers will take the waste water treatment facility in the event that the tanks' alarms are triggered	1	4	4
	Logistics	Suppliers can't deliver products due to flooding or snow	4	3	12	A minimum of two alternative suppliers should be identified for each product Extra materials will be stored at the Site for use	4	1	4

Climate change variable	Business area	Impact	Likelihood	Severity	Risk	Resilience actions	Likelihood	Severity	Residual risk
						during temporary supply chain disruption			
		Loss of power	4	3	12	A backup generator will be utilised to regain power to the Site in the event of medium-term loss of power (days) All staff may temporarily work from laptop batteries in the short-term (minutes, hours) All staff may temporarily tether to mobile data connections and use mobile phone batteries in the short-term (minutes, hours) All office staff are set up to work from home in the event of long-term loss of power (a week or greater)	4	1	4
	Assets	Collapse of structures due to snow	3	5	15	Flat-roofed structures will be inspected continuously by operatives using the site during snowfall Where snow has accumulated significantly on roofs the snow will be physically removed	1	5	5

Climate change variable	Business area	Impact	Likelihood	Severity	Risk	Resilience actions	Likelihood	Severity	Residual risk
						Grit salt will be applied to the roof to aid melting of snow Pitched roofs will be favoured where possible			
	Community Resilience	Loss of power	4	5	20	Engage and support the local community's Local Resilience Forum (LRF) Use local social media channels to update the community on upcoming extreme weather and signpost support services	2	5	10
	Markets	Reduced supply and increased demand for products	5	4	20	Identify products made from alternative materials Use products made from recycled waste where possible Reduce products that rely on international markets Increase quantity of products stored locally at the Site	5	2	10
		Fluctuations in prices of products and services	5	4	20	Services and materials charged to the client on a cost-plus basis	5	3	15

Climate change variable	Business area	Impact	Likelihood	Severity	Risk	Resilience actions	Likelihood	Severity	Residual risk
						Early warnings issued to the client ahead of forecasted market fluctuations Innovating with supply chain partners to produce products from alternative materials Increase circularity through prevention, reuse, and recycling methodologies			
	Finances	Climate change resilient infrastructure will be more expensive	4	4	16	Identify infrastructure, logistical, and operational changes required to provide resilience to the impacts of climate change Provide early warnings including timescales and costs for the require to the client as early as possible so that funding can be set aside Consider carbon reduction and climate change resilience when designing new works to reduce future costs Consider carbon reduction and climate change resilience when	2	4	8

Climate change variable	Business area	Impact	Likelihood	Severity	Risk	Resilience actions	Likelihood	Severity	Residual risk
						undertaking repair works to reduce future costs Innovate to drive efficiency and reduce costs			
		Insurance doesn't cover climate change impacts	5	4	20	Ensure insurance policy includes claims resulting from climate change impacts Ensure that provision is made for increasing insurance costs due to an increased frequency and cost of claims	2	4	8
Sea level may increase by up to 0.6m	Operations	Flooding of the Site	1	4	4	Site drainage infrastructure will be cleaned regularly as per the schedule within the Depot Environmental Management Plan Erectable flood barriers will be implemented on the open face of waste and materials bays Other facilities operated by the client and third-party receiving facilities may be utilised for incoming waste until flood water subsides	1	2	2

Climate change variable	Business area	Impact	Likelihood	Severity	Risk	Resilience actions	Likelihood	Severity	Residual risk
		Suppliers can't deliver products	4	3	12	A minimum of two alternative suppliers should be identified for each product Extra materials will be stored at the Site for use during temporary supply chain disruption	4	2	8
	Logistics	Flooding of local roads	4	3	12	Extent of flood water will be determined and alternate routes planned for incoming and outgoing traffic Standing flood water will be over pumped into the nearest drainage point Toolbox talks will be delivered ahead of forecasted prolonged or extreme rainfall regarding how to drive in heavy rain and through floodwater	4	2	8
	Assets	Flooding of site offices	3	4	12	Site drainage infrastructure will be cleaned regularly as per the schedule within the Depot Environmental Management Plan Flood barriers will be installed on doorways to	1	4	4

Climate change variable	Business area	Impact	Likelihood	Severity	Risk	Resilience actions	Likelihood	Severity	Residual risk
						prevent ingress of flood water ahead of forecasted extreme rainfall Site office staff will be instructed to work from home where possible			
	Community resilience	Isolation of vulnerable people	4	5	20	Engage and support the local community's Local Resilience Forum (LRF) Use local social media channels to update the community on upcoming extreme weather and signpost support services	2	5	10
		Loss of power	4	5	20	Engage and support the local community's Local Resilience Forum (LRF) Use local social media channels to update the community on upcoming extreme weather and signpost support services	2	5	10
	Markets	Reduced supply and increased demand for products	5	3	15	Identify products made from alternative materials Use products made from recycled waste where possible	5	2	10

Climate change variable	Business area	Impact	Likelihood	Severity	Risk	Resilience actions	Likelihood	Severity	Residual risk
						Reduce products that rely on international markets Increase quantity of products stored locally at the Site			
		Fluctuations in prices of products and services	5	4	20	Services and materials charged to the client on a cost-plus basis Early warnings issued to the client ahead of forecasted market fluctuations Innovating with supply chain partners to produce products from alternative materials Increase circularity through prevention, reuse, and recycling methodologies	5	3	15
	Finances	Climate change resilient infrastructure will be more expensive	5	4	20	Identify infrastructure, logistical, and operational changes required to provide resilience to the impacts of climate change Provide early warnings including timescales and costs for the require to the client as early as possible	2	4	8

Climate change variable	Business area	Impact	Likelihood	Severity	Risk	Resilience actions	Likelihood	Severity	Residual risk
						so that funding can be set aside Consider carbon reduction and climate change resilience when designing new works to reduce future costs Consider carbon reduction and climate change resilience when undertaking repair works to reduce future costs Promote innovation to drive efficiency and cost reduction			
		Insurance doesn't cover climate change impacts	5	4	20	Ensure insurance policy includes claims resulting from climate change impacts Ensure that provision is made for increasing insurance costs due to an increased frequency and cost of claims	2	4	8
Summers could experience up to 40% less rainfall than currently experienced	Operations	Drought	4	3	12	Rainwater is harvested from structures on the Site and utilised for non-potable applications	4	1	4

Climate change variable	Business area	Impact	Likelihood	Severity	Risk	Resilience actions	Likelihood	Severity	Residual risk
						Rainwater run-off will be harvested, treated, and utilised for non-potable applications Bottled water will be available for all staff at the Site			
	Logistics	Suppliers can't deliver products due to flash flooding	4	3	12	A minimum of two alternative suppliers should be identified for each product Extra materials will be stored at the Site for use during temporary supply chain disruption	4	1	4
	Assets	No impact							
	Community resilience	Drought	4	5	16	Engage and support the local community's Local Resilience Forum (LRF) Use local social media channels to update the community on upcoming extreme weather and signpost support services	2	5	10
	Markets	Reduced supply and	5	4	20	Identify products made from alternative materials	5	2	10

Climate change variable	Business area	Impact	Likelihood	Severity	Risk	Resilience actions	Likelihood	Severity	Residual risk
		increased demand for products				Use products made from recycled waste where possible Reduce products that rely on international markets Increase quantity of products stored locally at the Site			
		Fluctuations in prices of products and services	5	4	20	Services and materials charged to the client on a cost-plus basis Early warnings issued to the client ahead of forecasted market fluctuations Innovating with supply chain partners to produce products from alternative materials Increase circularity through prevention, reuse, and recycling methodologies	5	3	15
	Finances	No impact							
Peak water flow could be up to 50% greater	Operations	No impact							
	Logistics	No impact							

Climate change variable	Business area	Impact	Likelihood	Severity	Risk	Resilience actions	Likelihood	Severity	Residual risk
at its peak and up 80% less at its lowest	Assets	No impact							
	Community resilience	Discharges to surface waters will be less diluted causing greater impact	2	4	8	Engage and support the local community's Local Resilience Forum (LRF) Use local social media channels to update the community on the increased risk to the environment Run local workshops to improve awareness of the increased risk to the environment	1	4	4
	Markets	No impact							
	Finances	No impact							
Increased frequency of extreme weather conditions such as high winds and lightning	Operations	Volume of highway clearance works exceed operational capacity	4	3	12	Identify subcontractors in the event that workload exceeds capacity Ensure that the Site is prepped to receive the incoming waste from cleared blockages Prioritise highways that by operational significance to	4	2	8

Climate change variable	Business area	Impact	Likelihood	Severity	Risk	Resilience actions	Likelihood	Severity	Residual risk
						the local community to minimise impact			
		Dust	3	4	12	Stockpiles will be wetted ahead of extreme high wind weather conditions and wetted throughout	1	4	4
		Health	3	5	15	Ensure that staff reduce the amount of time spent outside during electrical storms Toolbox talks will be delivered ahead of forecasted electrical storms regarding how to reduce the risk of being struck by lightening At least one first aid trained person on the Site or in a crew at all times Route to the nearest Accident & Emergency planned for all working locations and the Site	1	5	5
	Logistics	Suppliers can't deliver products due to extreme wind	3	4	12	Materials may be collected using smaller site vehicles Extra materials will be stored at the Site for use	2	4	8

Climate change variable	Business area	Impact	Likelihood	Severity	Risk	Resilience actions	Likelihood	Severity	Residual risk
						during temporary supply chain disruption			
		Loss of power	4	3	12	A backup generator will be utilised to regain power to the Site in the event of medium-term loss of power (days) All staff may temporarily work from laptop batteries in the short-term (minutes, hours) All staff may temporarily tether to mobile data connections and use mobile phone batteries in the short-term (minutes, hours) All office staff are set up to work from home in the event of long-term loss of power (a week or greater)	4	1	4
	Assets	Overturning of vehicles	3	5	15	Operations will be paused in the event of an extreme weather conditions (high wind, lightening) until they subside	1	5	5
		Damage to site structures	3	5	15	Operations will be paused in the event of an extreme	2	5	10

Climate change variable	Business area	Impact	Likelihood	Severity	Risk	Resilience actions	Likelihood	Severity	Residual risk
						weather conditions (high wind, lightening) until they subside Forecasted wind loads will be compared against the designed wind loads of the structures and structures strengthened if insufficient Site structures and infrastructure will be inspected after an electrical storm to identify any damage at the earliest opportunity			
	Community resilience	Isolation of vulnerable people	4	5	20	Engage and support the local community's Local Resilience Forum (LRF) Use local social media channels to update the community on upcoming extreme weather and signpost support services	2	5	10
		Loss of power	4	5	20	Engage and support the local community's Local Resilience Forum (LRF) Use local social media channels to update the community on upcoming	2	5	10

Climate change variable	Business area	Impact	Likelihood	Severity	Risk	Resilience actions	Likelihood	Severity	Residual risk
						extreme weather and signpost support services			
	Markets	Reduced supply and increased demand for products	5	3	15	Identify products made from alternative materials Use products made from recycled waste where possible Reduce products that rely on international markets Increase quantity of products stored locally at the Site	5	2	10
		Fluctuations in prices of products and services	5	4	20	Services and materials charged to the client on a cost-plus basis Early warnings issued to the client ahead of forecasted market fluctuations Innovating with supply chain partners to produce products from alternative materials Increase circularity through prevention, reuse, and recycling methodologies	5	3	15
	Finances	Climate change	4	4	16	Identify infrastructure, logistical, and operational	2	4	8

Climate change variable	Business area	Impact	Likelihood	Severity	Risk	Resilience actions	Likelihood	Severity	Residual risk
		resilient infrastructure will be more expensive				changes required to provide resilience to the impacts of climate change Provide early warnings including timescales and costs for the require to the client as early as possible so that funding can be set aside Consider carbon reduction and climate change resilience when designing new works to reduce future costs Consider carbon reduction and climate change resilience when undertaking repair works to reduce future costs Promote innovation to drive efficiency and cost reduction			
		Insurance doesn't cover climate change impacts	4	4	16	Ensure insurance policy includes claims resulting from climate change impacts Ensure that provision is made for increasing insurance costs due to an	2	4	8

Climate change variable	Business area	Impact	Likelihood	Severity	Risk	Resilience actions	Likelihood	Severity	Residual risk
						increased frequency and cost of claims			

Risk Prioritisation

Implementation of resilience actions should be prioritised for impacts that present the greatest risk and impacts that have little barrier to implementation. Impacts with a risk of medium or higher are considered to present 'unacceptable risk' and must be mitigated.

Adaptation Plan

A key part of the Climate Change Adaptation Plan is the adaptation plan – this involves producing a forward programme implementation of mitigation measures, placing each measure into one of four implementation categories:

- Immediate: begin implementation immediately ready for day one
- Short term: implementation between years one and four
- Medium term: implementation between years five and nine
- Long term: implementation on or after year ten

Monitoring

The climate change variables explored in this CCAP were predicted using statistical climate change projections. To do this, the Met Office had to make a series of assumptions, such as future GHG emissions, and the projections are accompanied by a series of caveats and limitations. It is therefore possible that the variables explored in this CCAP could vary in severity and timescale, when compared to the projections. As a result, the variables may change, or new variables may occur that require new adaptation measures.

The adaptation and resilience measures used to control the risks resulting from climate change variables are not guaranteed to be successful. To ensure that this plan continues to be relevant and effective, it is critical that this plan is reviewed periodically and after extreme weather events. Reviews should identify excessive or underperforming measures so that changes can be implemented before that climate change impact is experienced again. The Review Log may be found in Appendix 2.

Appendix 1 Adaptation Plan

Implementation Timescale	Impact	Mitigation Measure
Immediate	– Increases in daily and average summer temperatures – cost of climate resilient infrastructure – Increases in daily rainfall intensity – flooding of Site – Increases in average winter rainfall – flooding of Site – Increases in extreme weather event frequency – insufficient insurance / costs	– Monitor and record impacts of severe weather events on facility / infrastructure. – Ensure regular maintenance programme for site drainage implemented. – Review climate adaptation actions as part of annual management review and/or similar forum.
Short term	– Increases in extreme weather event frequency – cost of climate resilient infrastructure	– Commission drainage capacity assessment for different rainfall scenarios up to worst-case projection. – Explore options to capture rainfall from adjacent buildings for re-use. – Explore options to retain and re-use water from dewatering process. – Explore odour mitigation options for particularly dry periods such as misting / chemical application. – Explore options to cover bays to ensure dewatering process remains effective. – Explore opportunities to establish similar facilities in other highways depots to enhance network of dewatering facilities across the contract. – Increase capacity of bays and commercialise to generate additional funds to support climate adaptation and resilience measures.

Implementation Timescale	Impact	Mitigation Measure
Medium term		– Upgrade drainage system as informed by drainage capacity assessment with additional attenuation tanks etc. – Review fleet and plant to increase capability to undertaken drainage maintenance activities without relying on external contractors and maximise capability to recycle water from drainage cleansing and dewatering processes. – Install sensors to record the climate and system capacity more proactively with associated alarm systems
Long term		– Review options to vary the permit and increase the overall capacity of the dewatering infrastructure in line with operational constraints.

Appendix 2 Review Log

Date	Business Area	Variable	Event Description	Effect