

# Climate Adaptation Report – ARP4

December 2024

## Contents

1. Amendments, Distribution, Replacements and Endorsement .....	3
1.1 Amendments .....	3
1.2 Distribution.....	3
1.3 Replacement: .....	3
1.4 Endorsement: .....	3
2. Background .....	4
2.1 Structure of Report .....	4
2.2 Glasgow International Airport Limited .....	4
2.3 Sustainability Strategy .....	4
3. Climate Risk and Resilience .....	5
3.1 Glasgow International Airport Limited’s Approach to Risk Management.....	5
3.2 Understanding of Climate Risks.....	6
3.2.1 Current Climate .....	7
3.2.2 Future Climate Projections .....	8
3.2.3 Future Climate Risks .....	9
3.2.4 Climate Risks and Actions.....	10
3.2.5 Potential Opportunities.....	15
3.3 Assumptions and Uncertainty .....	16
3.4 Interdependencies .....	16
4. Barriers .....	18
5. Monitoring and Evaluating Progress .....	19
5.1 Embedding Climate Risks within the Organisation .....	19

## 1. Amendments, Distribution, Replacements and Endorsement

### 1.1 Amendments

Version No.	Issue Date	Comments/Changes
0.1	16/12/2021	Draft Document Issued
1.0	21/12/2021	Final Document Issued
0.2	19/12/2024	Draft Review of document to add updates to 2024
2.0	31/12/2024	Final Document Issued with 2024 personnel and progress revisions

### 1.2 Distribution

Controlled Master Copy: Sustainability Coordinator  
MRS Section 8: Document Management

### 1.3 Replacement:

HSSE-ENV-CCAPR-003- Climate Change Adaptation Progress Report December 2021 V1.0

### 1.4 Endorsement:

Document Sponsor: Sustainability Director  
Document Owner: Sustainability Coordinator  
Revision Period: 1 Year  
Retention Period: 5 Years  
Date Approved: 31/12/2024.

## 2. Background

Under the Climate Change Act 2008, section 63(5) the Secretary of State will direct certain Reporting Authorities to produce reports on the current and future predicted effects of climate change and on their proposals for adapting to climate change. The first round of reporting in 2011 focused upon major public infrastructure providers from the energy, transport, and water sectors. This was mandatory for businesses to complete.

Glasgow Airport is owned by AGS Airports Limited which was established in 2014 to invest in Aberdeen, Glasgow, and Southampton airports. Glasgow Airport was one of the organisations involved in the mandatory reporting process in 2011. Glasgow was subsequently formally requested to complete this process in both the second and third rounds. Although not formally requested, AGS understands the potential risk of climate change to both its infrastructure and operational performance and as such, Aberdeen and Southampton airports are to complete a voluntary Climate Change Adaptation Risk Assessment (CCARA). This round of reporting is the first time Glasgow, Aberdeen, and Southampton will all be aligned as a group.

### 2.1 Structure of Report

The structure of this report broadly follows the process in which GLAL would assess risks to its operations and infrastructure. This involved a developed understanding of future climate risks and builds on the report issued in 2016. It will address any modifications, changes, increased risks, assumptions, and actions implemented as a result.

### 2.2 Glasgow International Airport Limited

Glasgow Airport is owned and operated by AGS Airports Limited which is jointly held by Ferrovial (via Faero UK Limited) and AGS Ventures Airports Limited, an entity controlled by Macquarie European Infrastructure Fund 4 LP.

Glasgow Airport sees around 20 airlines serving approximately 100 destinations worldwide, including North America, Europe and the Gulf. Glasgow Airport is one of Scotland's principal international gateways.

In addition to being one of Scotland's largest charter hubs, Glasgow Airport serves more Scottish destinations than any other airport and is a key component of Scotland's transport infrastructure. The airport supports over 30,000 jobs across Scotland and makes the largest contribution of any airport to Scotland's economy, generating £1.44 billion GVA annually.

### 2.3 Sustainability Strategy

At Glasgow airport we have always been acutely aware that operating such important pieces of infrastructure comes with responsibilities, to our people, to our communities and to the environment. It is an undeniable fact that we must act now to reverse climate change. To do so will require partnerships across all levels of government and society and it is these partnerships that underpin the United Nations Sustainable Development Goals.

As a group (AGS), we have set ourselves the target of achieving net zero carbon for our direct emissions by the mid-2030s. These are positive and important first steps, however, we recognise our airports have a wider impact over and above our direct emissions. That is why we are committed to working with the wider aviation industry to support our sector achieve net zero carbon emissions (Scope 1 to 3) by 2045.

This purpose is underpinned by a commitment to growing sustainably. If we are to truly embed sustainability at the core of AGS, we need to set ambitious and stretching targets across all areas of the business, which demonstrate an absolute willingness to balance the clear economic and social benefits of aviation with our climate change responsibilities. It is important we make firm commitments to ensure our people view us as an employer of choice, the communities we serve can share in our success and we set out how we will grow in a responsible manner.

Our full sustainability strategy can be viewed [here](#). AGS is currently developing a new ESG (Environmental, Social, Governance) Strategy, which will replace the Sustainability Strategy. Once complete, this will be published on the Sustainability pages of our website.

### 3. Climate Risk and Resilience

#### 3.1 Glasgow International Airport Limited's Approach to Risk Management

Risk Management is about the identification, evaluation and effective management of anticipated events that will affect the achievement of our business objectives. It is a core skill, which must be integral to every business process and to every management decision. The risks that are presented to our shareholders, must be within tolerable limits and the mitigating controls must also be at a correspondingly proportionate cost. Risk Management must form part of Glasgow Airport's culture, with the opportunities presented being exploited and the downside treated, terminated, tolerated or transferred.

Risk management within AGS Airports Limited seeks to enable the identification, evaluation and continuous management of the threats to the achievement of the individual airports' purpose, vision, objectives and strategy. One of the intentions of this process, is to ensure closer alignment of Risk Management to Business Continuity and operational Contingency Planning requirements.

The strategy of the process for risk management is to:

- Optimise the control of risk in the context of business priorities and resource constraints;
- Meet the AGS Airports Limited Executive Committee requirements for a simplified risk register format;
- Establish a system that is reliable and consistent for risk and control assessment across the business
- Enhance effectiveness and efficiency across the business;
- Align risk management with the key performance areas for our core business;
- Focus risk management around actions and clear accountability; and
- Reduce complexity

### 3.2 Understanding of Climate Risks

To understand the climate risk associated with Glasgow Airport operations and infrastructure, 8 different climate variables were analysed:

- Temperature;
- Rainfall;
- Snow;
- Ice
- Fog;
- Wind;
- Lightning and;
- Sea-level rise

These were fed into the DEFRA risk register template, ensuring a strict standard and uniformity was achieved across all organisations reporting across the sector. As with the Glasgow Airport approach to risk management, a 5 x 5 risk matrix was used in analysing climatic risk, assessing the likelihood and consequence of the variable in question. A red, amber, green (RAG) status is provided as a result of the scoring. This is shown in Figure 1.

Figure 1

Horizons: 2025, 2050, 2080		Impact					Score
		Minimal	Minor	Moderate	Major	Catastrophic	
Likelihood	Almost Certain	5 / moderate	10 / major	15 / major	20 / severe	25 / severe	1 - 3
	Likely	4 / moderate	8 / moderate	12 / major	16 / major	20 / severe	4 - 9
	Possible	3 / minor	6 / moderate	9 / moderate	12 / major	15 / major	10 - 19
	Unlikely	2 / minor	4 / moderate	6 / moderate	8 / moderate	10 / major	20 +
	Highly Unlikely	1 / minor	2 / minor	3 / minor	4 / moderate	5 / moderate	

The methodology for understanding the climate risks was as follows.

- A baseline assessment of the current climate surrounding Glasgow Airport
- Future climatic projections assessed to 2025, 2050, 2080
- Infrastructure and operational risks identified
- Action plan put in place

To understand future climatic changes with a relative degree of certainty, the UK Climate Projections 2018 (UKCP18) has been reviewed. This builds on the previous UKCP09 assessment tool utilised for

the round 1 and round 2 reports. The UKCP18 uses cutting edge climate science to provide updated observations and projects change out to 2100 in the UK and globally.<sup>1</sup>

### 3.2.1 Current Climate

The climate of Western Scotland is milder than that of Eastern Scotland due to the stronger maritime influence, as the prevailing winds blow from the sea. The warm Gulf Stream also has a strong influence. The annual mean temperature is around 9°C. Extreme low temperatures have been experienced at Glasgow Airport, where a minimum of -20°C and a maximum of -12°C on 29 December 2005. July and August are the warmest months in the region with mean daily maxima ranging from less than 15 °C on the highest ground to more than 19 °C in southern Dumfries and Galloway and the Clyde valley. These may be compared with 23.5 °C in the London area. The temperature variation is shown for Paisley in Figure 2.

Average annual rainfall totals 1000 mm in the upper Clyde valley, this average can be compared to annual totals around 500 mm typical of the driest parts of Eastern England. Rainfall is generally well-distributed throughout the year, however, there is a marked seasonal variation<sup>1</sup>. Autumn and early winter are, in general, the wettest seasons, especially from October to January, and spring and early summer is normally the driest part of the year, especially from April to June. The average monthly rainfall for Paisley is shown in Figure 3.

Figure 2

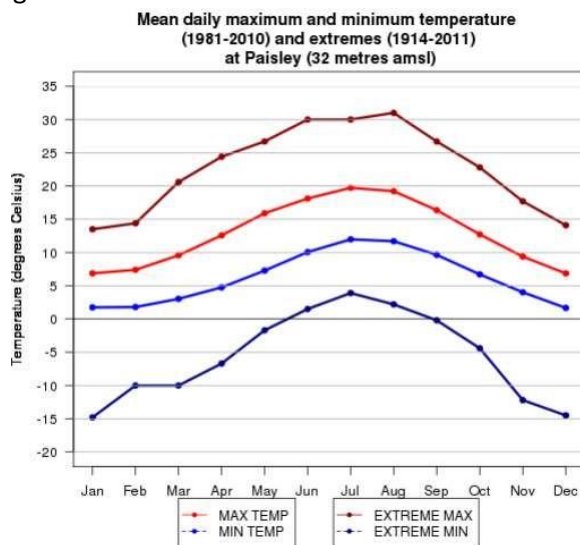
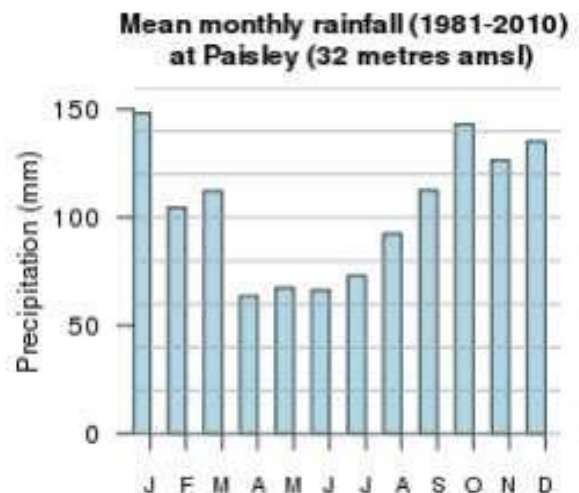


Figure 3



The occurrence of snow is linked closely with temperature, with falls rarely occurring if the temperature is higher than 4 °C. For snow to lie for any length of time then the temperature normally has to be lower than this. Over most of the area, snowfall is normally confined to the months from November to April. Snow rarely lies at lower levels outside the period December to March.<sup>2</sup>

The direction of the wind is defined as the direction from which the wind is blowing, in the West of Scotland, this is typically from the South-West.

<sup>1</sup> <https://www.metoffice.gov.uk/research/approach/collaboration/ukcp/about>

<sup>2</sup> [western-scotland-climate---metoffice.pdf \(metoffice.gov.uk\)](https://www.metoffice.gov.uk/research/approach/collaboration/ukcp/about/western-scotland-climate---metoffice.pdf)

## 3.2.2 Future Climate Projections

UKCP18 was used to analyse future climate situations likely to be experienced and have influence on Glasgow Airport and its operations. Various Representative Concentration Pathways (RCPs) were used to analyse the extent of change that could be experienced.

- RCP 8.5 – Business as Usual – No reduction in emissions (Worst Case Scenario)
- RCP 4.5 – Intermediate Scenario (Emissions peak around 2040 and then decline)
- RCP 2.6 – Global Temperature rise is kept below 2 °C. This would see carbon emissions start declining in 2020 and go to zero by 2100.
- RCP 1.9 – Would keep global temperature rise to below 1.5 °C as noted in the Paris Agreement.

For the purposes of this report, both the high emission scenarios and low emission scenarios have been reviewed with the assumption that it would fall somewhere between these.

In central Scotland, by the 2070's summers are highly likely to become warmer. Even using a low emission scenario, the predicted temperature change range is -0.1°C cooler to 2.8°C this means that -0.1°C cooler will be exceeded 90% of the time resulting predominantly warmer temperatures. This possibility increases to a 0.6°C - 4.8°C increase in a high emissions scenario<sup>3</sup>.

The trend in winter is relatively similar, showing a range of -0.3°C cooler to 2.7°C warmer in a low emission scenario and 0.6°C warmer to 4.5°C.

In a high emissions scenario, it is projected that rainfall is likely to decrease by up to 40% during the summer months. In a low emission scenario, rainfall is still likely to decrease by up to 30%. Conversely, in winter, rainfall is likely to increase by up to 12%. However, it should be noted that although summers will be largely drier, when rainfall does occur, these events are likely to be of significant intensity with high hourly rainfall rates, particularly during the autumn period. Resilience against an increase of large precipitation events over a short period should be a key focus.

Snowfall is likely to significantly decrease over time due to the rising temperatures.<sup>4</sup> However, as with rainfall, should temperature conditions fit, snowfall events could become more severe when they do occur. Recent events such as the “Beast from the East” in 2018 could occur more regularly during snowfall events.

There is a high degree of uncertainty surrounding changes to wind direction, fog and storm conditions such as lightning strikes. Stormy conditions are likely to increase in frequency and severity over time because of climate change.

---

<sup>3</sup> [https://www.metoffice.gov.uk/binaries/co\\_ntent/assets/metofficegovuk/pdf/research/ukcp/ukcp18-infographic-headlinefindings-land.pdf](https://www.metoffice.gov.uk/binaries/co_ntent/assets/metofficegovuk/pdf/research/ukcp/ukcp18-infographic-headlinefindings-land.pdf)

<sup>4</sup> [ukcp18\\_factsheet\\_snow\\_jul-2021.pdf \(metoffice.gov.uk\)](#)



### 3.2.3 Future Climate Risks

Using the information noted above in section 3.2.1, a summary of the prioritised climate change risks associated with each climate variable identified for the short, medium and long term at Glasgow Airport have been summarised below. The risks have been prioritised based on:

- The identified effects, its likelihood of occurring and its consequence on airport operations and/or infrastructure.
- The likelihood that critical thresholds are exceeded, and
- The robustness of existing control measures in place to manage the risk

A total of 34 climate risks were identified and reviewed and noted as either green (low risk), amber (medium risk) or red (high risk). The full risk assessment is available in appendix 1.

All risks have been allocated to a specific airport business unit and assigned a specific business owner responsible for managing that risk.

#### Short Term (2020-2025)

Implementing current mitigation measures, 31 climate risks were noted as green and 3 as amber in the short-term profile until 2025. There were no risks noted as red. Amber risks were as follows;

- Bird hazard management and changes to migration patterns of birds. Although related to climate change, the reduction in flights due to the impact of COVID-19 has also increased this risk in the short term.
- Distribution of pests and diseases and potential pandemic risk. As above – related to current COVID-19 impact.
- Localised flooding because of short, heavy rainfall events.

#### Medium Term – (2025 – 2050)

In the medium term, climate change is predicted to accelerate and therefore climate risks are greater. Out of the 34 identified climate risks, 5 have increased from green to amber, 1 has decreased from amber to green but none have increased to a red, high risk. Changes are noted below;

- Increase in freeze-thaw as a result of wetter winters resulting in potential structural damage to roads, airfields, and taxiways
- Increase in the risk of localised flooding from the Black and White Cart river systems due to increased hardstanding combined with an increase in severe rainfall events.
- Increased risk of water ingress to low lying assets due to changes in groundwater levels.
- Increased risk of storm events resulting in loss of power due to grid connection loss and supply interruption.
- Increased risk of storm events resulting in disruption to aircraft movements, cancellations, loss of passengers and diversions.

- Decreased risk of pandemic due to robust procedures implemented during the COVID-19 pandemic.

#### Long Term – (2050 – 2080)

The long-term outlook shows a further acceleration in climate change and increased risks out of the 34 risks, 3 have increased from green to amber and 2 have increased from amber to red. Changes to the risks in the long-term horizons are noted below.

- Further increased risk of storm events and intensity
- Increased risk of high variability of snowfall events. These are likely to become less frequent but more severe.
- Increased risk of short-term flooding particularly to the north of the runway along Walkinshaw road and to the area next to Barnsford road at the Fire Training Ground.
- Increased hard-standing as a result of future development resulting in increased run-off and increased flood risk.
- Access risks for passengers/staff due to flooding particularly round Barnsford Road.

### 3.2.4 Climate Risks and Actions

#### Original Actions

The risk matrix generated as part of the original and subsequent Climate Change Adaptation Risk Assessment identified several areas where actions were deemed necessary in the short term. Progress against these during ARP4 is summarised in Table 1 below:

Risk	Action - Previous Report (2016)	Action - Previous Report (2021)	Update Comments
<p><u>New Buildings</u></p> <p>Increased flood risk resultant from proximity to large water bodies and increased precipitation.</p>	<p>No new construction in areas identified as 'at risk' from Flood Risk Assessment (FRA); all building construction has been compliant with building standards with respect to design requirements.</p>	<p>Sustainability Procurement document with respect to sustainability criteria related to construction and asset replacement now in place. Where new construction is planned for areas identified as being at risk from flooding this would be addressed as part of the Capital approvals process. Additional, revised, FRA to incorporate the risk of climate change should be undertaken prior to any development taking place.</p>	<p>Regular jetting maintenance of surface water drains is completed annually. This ensures efficient surface water drainage.</p>
<p><u>Existing critical assets</u></p> <p>Increased flood risk resultant from proximity to large water bodies and increased precipitation.</p>	<p>Assessment carried out and linked to flood risk assessment. One potentially vulnerable asset was identified (05B Electrical Centre) where some flooding</p>	<p>As a further mitigation measure consideration will be given to raising the level of the switchgear in this</p>	<p>The asset is yet to be upgraded and no significant flooding events have occurred. Regular jetting maintenance of surface water drains is</p>

	<p>occurred in 2013; new field drainage was put in place in the area and new pumps were installed in the existing sump area: no further flooding issues have been observed. In addition, a project was undertaken to improve surface drainage in grassed areas of the airfield; this involved removal of thatch build-up and has been effective in reducing localised ponding.</p>	<p>area as part of the next upgrade of this asset.</p>	<p>completed annually. This ensures efficient surface water drainage.</p>
<p><u>Drainage Infrastructure Effectiveness</u></p> <p>Increased flood risk resultant from proximity to large water bodies and increased precipitation.</p>	<p>Camera survey carried out of the full landside drainage network serving interceptor/outfall system. Substantial silt accumulation which was reducing drainage capacity and creating problems with water backup and localised flooding at some drains on Sanderling Road was identified. Drains cleaned as a result. In addition to this action, site interceptors continue to be cleaned on a regular basis as part of the PPM programme and in line with a regulatory requirement as part of the airport's CAR Licence (governing</p>	<p>As part of the capital approvals process the airport's Sustainability Assurance Manager is listed as a mandatory internal consultee. This process ensures that activities that may have potentially adverse environmental impacts are identified at an early stage and appropriate mitigation measures factored into the design process and/or addressed via the introduction of new operating</p>	<p>The capital approvals process now consults the Sustainability Coordinator.</p> <p>Regular maintenance of outflow interceptors prevents build-up of silt in rivers. Further protecting them from increased surface water runoff pollution resultant from higher rainfall. Annual jetting maintenance of surface water drains is completed to ensure efficiency. This prevents surface water flooding resultant from increased precipitation.</p>

	discharge into the local watercourse).	procedures. Any new development works which may result in an increase in hardstanding must also consider CAR Licence conditions which specify maximum areas serving surface water outfalls.	
Though climate change will result in an overall reduction in frost and snowfall, the greater intensity of storms results in a less predictable winter period. This has significant impacts for winter operations at GLA.	Historically, winter operations were resourced via external contractors. In winter 2014 this was brought in-house. This decision has enabled a faster and better coordinated response to poor weather events in addition to upskilling internal staff members and helping to raise awareness of the issues associated with winter weather.	Wash-up and lessons learned from the more recent 2018 “Beast from the East” snow event.  Winter operations are managed in-house with on-call external contractors available for more severe weather events and snow clearing.	Winter operations remain a carefully monitored practice at Glasgow airport. The rental of extra equipment, e.g., tractors, provides flexibility to strengthen available resources over the short term.
Increased risk to energy security due to climate change, e.g., intense storms impacting aging energy grid infrastructure.	Feasibility studies already carried out into the viability of solar PV as well as additional independent studies being carried out at the time of writing. These studies are being overseen by the Sustainability Assurance Manager and the findings will be communicated to the airport’s Sustainability Board	Glasgow Airport has already ensured zero carbon electricity through its procurement process with REGO backed renewable grid energy supply. Work is progressing on moving this further to onsite generation with a solar farm planned in the next 5	Glasgow airport continues to utilise REGO backed renewable energy at 100% of consumption rate.  The Solar PV Project is expected to be operational from July 2025.  End of life replacement of gas based heating and hot water has been completed in the

	<p>which meets every 2 months.</p>	<p>years. The Glasgow Airport NetZero roadmap also plans for decarbonisation of the airport heat network by the mid 2030's in line with its net zero target.</p>	<p>Whitehouse facility. With the same transition scheduled for the fire station in 2025. Gas boilers were also replaced in plant rooms 12 and 86.</p> <p>Load Shedding Facility has been embedded into the BMS to enable quick shedding if grid demands dictate.</p> <p>An Energy and Utilities Manager position has been filled to lead energy security and resilience.</p>
<p><u>Asset Management</u></p> <p>Increased strain on airport infrastructure, e.g., due to intense weather events.</p>	<p>Asset Management Plans relating to HVAC, LTHW Systems, Chiller performance and the BMS which are designed to improve the resilience of the airport's current building stock in terms of heating and cooling capacity. Performance against the established objectives is reported at the monthly Asset Assurance Group meeting.</p>	<p>Performance of HVAC, LTHW and Chiller systems are continuously monitored on a weekly basis. In addition to this. IoT technology is planned to streamline energy use and performance.</p>	<p>A Chiller in plant room 73 was replaced in 2022. Whilst the replacement of a number of Chiller systems across the airport has been scheduled up to 2030.</p> <p>Upgrades to the HVAC system on the lower floor of the West Pier are scheduled for 2025.</p> <p>The replacement of roof coverings over the international departure lounge and central search are planned for 2026 and 2028 respectively.</p>

<p><u>Procurement</u></p> <p>Increased strain on airport infrastructure, for example due to intense weather events.</p>	<p>A Sustainable and Ethical Procurement Policy has recently been produced for the AGS Airport Group. This policy identifies 5 focus areas where detailed procurement guidelines and standards will be produced to help minimise the environmental impact associated with purchased goods and services. One of the focus areas identified was 'Construction and Asset Replacement' and climate resilience factors will be taken into account when developing the guidelines and standards in this area.</p>	<p>The Sustainable and Ethical Procurement Policy has been revised and updated in line with government net zero targets and objectives.</p> <p>As part of the Airport Carbon Accreditation level 3, and airport stakeholder engagement programme will be put in place to ensure collaboration on carbon reduction and climate change adaptation issues.</p>	<p>The sustainable and Ethical Procurement Policy has been consistently applied across a number of tenders. With input from key employees, including members of the sustainability team.</p>
-------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

### 3.2.5 Potential Opportunities

During the climate change risk assessment process opportunities were also identified. These opportunities are dependent on the extent of climate changes in the region.

<b>Opportunity</b>	<b>Action</b>
<p>Climate becomes warmer and drier, especially over the summer period. This has potential to increase inbound tourism. This could be further enhanced as traditional holiday destinations become too hot and less desirable.</p>	<p>Extent of this opportunity is still unclear. This will be monitored with potential increasing summer temperatures.</p>

Increase demand for routes to southern coastal destinations within the UK. Glasgow is suited well to domestic travel with many routes already established across the UK. Demand for this could increase for summer holiday periods.	Extent of this opportunity is still unclear. Ongoing monitoring of demand to southern coastal destinations.
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------

### 3.3 Assumptions and Uncertainty

The biggest uncertainties identified as part of this project were the accuracy of future climate modelling and the lack of information on the future of prevailing wind conditions. This has a significant impact on Glasgow Airport’s existing runway, alongside any consideration of a second, this being a parallel and not crosswind runway. Any significant change to the prevailing wind direction would pose a risk to the business. Runway movements are highly influenced by wind speed and direction and consequently a sound understanding of impacts in this area is vitally important to long term planning.

Assumptions have been made on the future of aviation travel technology remaining in its current state and the infrastructure growing as per the Glasgow Airport Masterplan.

Glasgow Airport, like all businesses, acts within financial constraints. The airport must balance the need to invest in climate change mitigation measures with other business investment priorities. The uncertainty surrounding longer-term climate impacts generated via UKCP18 makes the production of a sound business case for capital investment in infrastructure and/or technology difficult to achieve.

As part of its ongoing risk review of potential climate change impacts Glasgow Airport will consider in greater detail the above limitation and attempt to identify if any other information is available to support its longer-term evaluation in this area.

One of the biggest challenges facing the airport is understanding how longer-term climate change impacts together with local infrastructure developments out with the airport boundary may impact on the longer-term flood risk for airport land.

### 3.4 Interdependencies

Glasgow Airport is acutely aware of its interdependencies and recognises the need to engage with them to ensure climate change resilient infrastructure and operations.

Interdependency	Comments
Utility supply – electricity, gas, and water.	Glasgow airport is committed to increasing its resilience in the face of significant reliance on external utility supply. An Energy and Utilities Manager role has been added at the group level, which holds responsibility for reducing the impact



	<p>of this key interdependency. A key focus here is Glasgow Airport's commitment to delivering on site energy generation and switching from gas to electric to reduce reliance on external energy.</p> <p>Effective risk management and business continuity plans play a significant role in ensuring continued safe operation of Glasgow Airport.</p> <p>Think about renewable – removing complete resilience, also look at generators etc. Water plans.</p>
<p>Transport Network. Glasgow Airport is only accessible by road, for both passenger access and goods into the airport (fuel, de-icer etc.)</p>	<p>Glasgow Airport is committed to improving surface access to the airport for both passengers and goods. It recognises the key limitations of only being accessible by road but there is a clear need to further investigate how this impacts the airport with regard to interdependencies.</p>
<p>Airline and Handling Agents – without these organisations there would not be a viable business.</p>	<p>Though Glasgow airport is a key piece of travel infrastructure it is largely reliant on airlines and handling agents to remain a viable business. As a result, ensuring that our on-site infrastructure is suitable and attractive for use by these key third parties is a top priority. A failure in delivery here would have significant impacts not just for the company and its shareholders but for the vast array of downstream stakeholders recognised by Glasgow Airport.</p>
<p>Air Traffic Control – Managing Glasgow Airspace</p>	<p>Air Traffic Control (ATC) is a crucial service that ensures the safe day to day operation of Glasgow Airport. Effective risk management and business continuity plans play a significant role in ensuring continued safe operation of Glasgow Airport. Planned maintenance, fault checking, and replacement of key equipment is completed. Back up facilities and equipment are also provided to ensure the continued provision of safe airspace management in the event of unexpected failure.</p>

SEPA – Flood Risk Management, and flood warnings, Licence consents	Suitable notice of flood warnings is key to prevention. To mitigate this, StormGeo reports are monitored internally throughout winter months where risk is highest. Regular water quality monitoring, particularly in the winter months, is also completed to ensure compliance with key licenses and Consents from SEPA and Scottish Water.
UK/Scottish Government – Compliance with legislation, policy changes and targets.	Legislative compliance forms a key part of AGS Airports’ Managing Responsibly System. Any changes to legislation, policy and targets that may impact operations across the group are carefully monitored. This is completed through internal audits, legislation tracking and corrective action tracking. Glasgow Airport and its parent company, AGS Airports Limited, will endeavour to prepare for upcoming regulatory changes as effectively as possible.
Local Authority – Managing local developments impacting operation of business	As a key piece of transport infrastructure, Glasgow Airport is directly impacted by both Renfrewshire council and Glasgow City Council development plans. Proactive engagement with these local authorities allows Glasgow Airport to fully understand and support key developments that may have a significant impact on its day-to-day operations. Key examples include land use change and the surface access network.

#### 4. Barriers

There are several potential barriers which require to be addressed in delivering certain climate change adaptation improvement measures. These are summarised below:

- Environmental Taxes: The complex and ever-changing nature of the environmental tax framework creates uncertainty around medium to long-term planning. For example, the recent abolishment of the CRC energy efficiency scheme and disproportional increase in Climate Change Levy costs. More recently, the proposed changes to the Energy Savings and Opportunities Scheme. The lack of clarity surrounding long-term funding for renewables

remains a potential barrier to the implementation of potential climate change adaptation solutions.

- **Financial Investment:** Securing internal investment for measures to mitigate potential long-term climate change impacts, like any other investment, requires the presentation of a robust business case; one of the key (although not sole) determinants will relate to the projected IRR. Uncertainty surrounding the potential fiscal returns associated with 'green investments' (see point above) is a barrier to potential investment; furthermore, at this stage, the lack of certainty regarding some potential long-term adverse climate impacts being realised provides a weak basis for making investment decisions.
- **Regulatory Constraints:** The aviation sector is subject to close scrutiny with respect to its environmental impacts and specifically its contribution to climate change; the evolution of new/tighter financial controls may potentially restrict the Airport's ability to invest in additional measures/infrastructure that are not integral to meeting compliance requirements.

## 5. Monitoring and Evaluating Progress

Glasgow Airport operates an integral management system, the Managing Responsibly System (MRS). The MRS is certified to ISO 14001 (Environmental Management), ISO 22301 (Business Continuity), ISO 55001 (Asset Management) and ISO 45001 (health and Safety Management). The MRS is a mature system which has been effective in managing the business and driving continual improvement across the business for many years.

A crucial part of the MRS is the risk register which tracks departmental risks and provides an overall view of the most significant business risks. Impacts arising from climate-related events such as flooding, storms and extreme weather are continually tracked on the system. In addition to ongoing monitoring of risks, specific actions arising from internal or external audits or those generated from internal committees are tracked via the organisations Corrective Action Required Tracker (CART). The CART is a highly effective tool for ensuring that key actions underpinning each of the areas covered by the MRS are tracked and closed out within an agreed timescale.

AGS commits to reviewing the climate adaptation report annually. This review will consist of ensuring climate data is up to date, risks are accurate and updated to reflect any advancement of climate data.

### 5.1 Embedding Climate Risks within the Organisation

The MRS will be the tool used to ensure climate risks identified as part of this process will be included within the company risk register as noted above. Once these risks are in the risk register, they will be regularly reviewed and amended in line with the risk review process.

In addition to these measures Glasgow Airport has comprehensive contingency plans in place which are regularly reviewed and tested and an integral element of GLAL's risk management function. This suite of contingency plans cover a wide range of meteorological events and other natural 'disasters'

including snowfall, flooding, high winds, fog, offsite problems at destination airports, disruption to surface access and extended flight bans.

Furthermore, Glasgow Airports governance structure ensures that climate change issues are firmly on the agenda up to board level. Managers meet monthly at the Managing Responsibly Governance Group (MRGG) where significant risks and opportunities are raised, discussed and actioned. Glasgow Airport also has a Health Safety Security and Sustainability Committee (HSSSC). The HSSSC purpose is to provide assurance to the board regarding the adequacy and effectiveness of the companies Health, Safety, Security and Sustainability systems and their application.