

# SUSTAINABILITY ANNUAL REPORT

2024-2025

WORLD  
CHANGING  
GLASGOW





# INTRODUCTION

As a world-leading university with a strong commitment to sustainability, Glasgow recognises that it has a duty to lead by example. In 2014, the university became the first UK university to commit to fully disinvesting from fossil fuels. In 2017, it signed the Sustainable Development Goals Accord, committing to combatting climate change and environmental degradation. And in 2019, it became the first Scottish university to declare a climate emergency.

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In 2023, the Scotland Beyond Net Zero partnership was launched, founded by the Universities of Glasgow and Edinburgh, bringing together world-class research and expertise from across Scotland in the name of climate action. This groundbreaking research collaboration to catalyse action and empower policy makers, organisations and industry to make informed change which will support communities across Scotland to take the action needed to achieve our ambitious targets.

In 2024, The University of Glasgow launched a new research centre focused on supporting the global transition to sustainable, low-carbon energy systems. The Glasgow Centre for Sustainable Energy brings together academics from across the University to find interdisciplinary new ways of delivering the radical reform of energy services and infrastructure required to reach net-zero.

In 2025, The University of Glasgow launched an exciting initiative aimed at transforming the educational experience of our pre-honour’s undergraduate students. Curriculum for Life (C4L) are new elective courses providing students with opportunities to develop themselves as global citizens, creative leaders, change makers and social innovators. C4L courses are credit-bearing, elective modules designed to encourage students to engage meaningfully in an interdisciplinary cohort, learning, thinking and practicing beyond their core disciplines.

Explicitly aligned with the UN’s SDGs, C4L courses focus on real-world challenges, foster future-ready skills, and encourage collaboration across colleges and schools at the University of Glasgow.

These actions have been recognised by the Times Higher Education Impact Ratings, where the University ranked 12th globally in 2025 for the positive impact we have on the world, and 19th in the world in QS Sustainability Rankings.

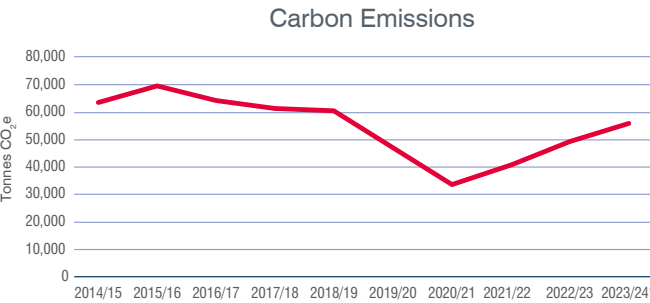
This report focuses on our business operations and the progress we continue to make towards environmental, social and economic sustainability.



# CARBON MANAGEMENT

## Glasgow Green - Carbon Reduction

Through our Glasgow Green strategy – the University has committed to becoming carbon neutral by 2030 via the offsetting of its net emissions. This would mean reducing our carbon emissions to 37,000 CO<sub>2</sub>e by 2030, and 32,000 CO<sub>2</sub>e by 2035. The interim carbon reduction target laid out in our Carbon Management Plan is 47,000 tonnes CO<sub>2</sub>e by 2025/26. The chart below tracks progress since AY 2014/15.



In 2023/24, UofG emissions totalled **56,507 tonne CO<sub>2</sub>e**, an increase from 2022/23, and a continuation of trends seen since the return to campus post Covid and increases in resultant flight related business travel and other Scope 3 emissions. The University has set out new travel policy principles that seeks to address this trend, with more detail provided later in this report.

Our Glasgow Green Strategy and associated implementation plans outline the actions which collectively will allow us to achieve a significant reduction in our carbon footprint, and reverse the trends seen across the last 2 reporting years. Below, some examples of projects initiated and competed across the last year are highlighted:

1. Approval and introduction of 4 Business Travel Principles, which includes no internal UK flights other than in exceptional circumstances.
2. New EV charging points installed at Thurso Street and the Kelvin Building.
3. Fluorescent Tube obsolescence replacement with LED across level 5 of the library.
4. Replacement of Ultra-Low Temperature Freezer lab equipment in the Sir Graeme Davies building
5. Introduction of solar panels in suitable locations, with all new builds on campus having PV planned at initial stages. This includes the Fraser Building, with panels fitted in 2024.

We are already generating electricity via our solar PV panels, in 2023-24 we generated 86,270.52 kilowatt hours of electricity, up from 68,847 kilowatt hours generated in 2022-23. This is alongside the ongoing use of wood pellets for bioenergy at our Garscube estate.

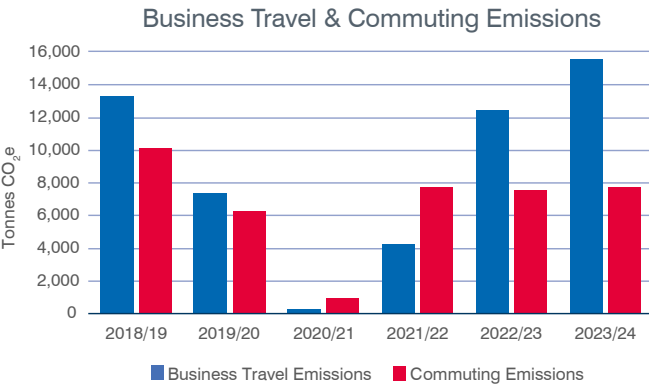
\*2023/24 saw the Scottish Government make a further ask of public bodies to report additional carbon emissions associated with the procurement of goods and services within the Public Bodies Climate Change Duties Report. For 2023/24, this was 119,639 tonne CO<sub>2</sub>e for the University. Thus, the total carbon footprint reported to Scottish Government for 23/24 was 176,146 tonne CO<sub>2</sub>e.

47,000t  
**CO<sub>2</sub>e**  
by 2025/26

37,000t  
**CO<sub>2</sub>e**  
by 2030



# BUSINESS TRAVEL AND COMMUTING EMISSIONS



The University of Glasgow is committed to reducing its carbon footprint from commuting and business travel and making it easier for staff and students to travel sustainably. Emissions associated with business travel in 2023-24 surpassed pre-COVID levels, 19 per cent above the 2018-19 total. We have seen a stabilisation of commuting related emissions, as a greater equilibrium is reached post-COVID with regard to flexible working and staff travel plans, with a 3 per cent reduction from 2022-23. A travel survey from late 2024 suggests a subsequent rise in commuter related emissions, focussing the need for ongoing attention and action.

## Business Travel Emissions

The University provides guidance to staff with regard to business travel and ensures that guidance and policies on reducing carbon emissions from business travel are proportionate, fair, and equitable. Recent updates have been made to institutional business travel policy, including new sustainability considerations covering: no use of flights within the UK other than exceptional circumstances; no use of business class flight travel for journeys of less than 5 hours.

We also support and promote the use of alternative means of disseminating research and interacting with peers, collaborators and stakeholder, such as social media, including advice on how to gather and evaluate social media “reach”.

We also advocate for changes in travel patterns throughout the higher education sector, in collaboration with other HEIs and funding bodies, eg. ensuring advice and support for grant application budgets seeking to include sustainable travel.

## Commuting Travel Emissions

One of the challenges to increasing public transport use is the cost, frequency, capacities and timings of some services. Parking fees and the associated cost of driving are often cheaper than public transport fares, with travel by car the only realistic method of commuting available to some staff.



In addressing this, the University seeks to provide discounts and support for low-carbon travel where possible. For example, the University continues to offer staff access to an interest free transport loan for purchasing an annual rail pass or SPT Zonocard, which is then paid back in 10 equal deductions from salaries. Over the last four years, the University have offered staff and student free bike hire in partnership with Nextbike. We host a number of bike stations on our campus, and will continue to work with the council to support similar bike hire initiatives moving forward.

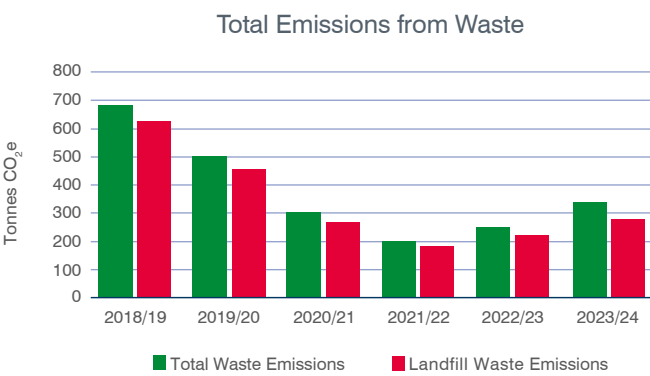
The University also encourages active travel by offering the Cycle to Work scheme allowing staff to obtain a bike for a discount, and various free incentives such as the Bike repair stations, storage lockers, training and routes, showers and bike parking.

# LOW CARBON ENERGY USE

The University tracks the use of low carbon energy sources across the estate, published in our annual report to the Sustainable Scotland Network. In 23/24, the university overall energy use increased by around 8%, from 511,280 Gigajoules to 554,993 Gigajoules, due to a proportional increase in University floorspace with the opening of new buildings on our Western Campus. Further, our renewable electricity produced on campus via our Solar PV’s increased from 248 to 311 Gigajoules, an increase of over 25%.



# WASTE AND RECYCLING



In 2023-24 we produced 337 tonnes of CO<sub>2</sub>e emissions associated with our waste, a 33% increase from 2022-23. While we have seen an increase in the last year, our waste emissions are significantly lower than 2018-19 levels, with a continued step change in the volumes going to landfill. The emissions from waste sent to landfill proportional to total waste emissions has decreased over the last year from 87% to 84%. This indicates that we are recycling a relatively higher volume of waste than last year. It is important we continue to monitor waste production closely and push forward with recycling plans and initiatives to encourage behaviour change.



We have seen changes in the total volume of waste recycled, with the overall trend downward from pre-Covid highs. Due to the significant campus redevelopment activity that has been taking place in previous years, the total volumes are heavily influenced by the scale and type of construction activity taking place on campus.

The University has been working hard to change the way it collects, sorts, and recycles its waste. Our Waste Management Strategy and Action Plan 2022–27 sets out our policy toward the collective responsibility for the management of waste across all our campus locations, and to ensure that the waste hierarchy of ‘reduce, reuse and recycle’ is promoted and practised. As part of our annual Climate Reporting obligations, we monitor and record the volume of waste landfilled and recycled. The Strategy and Action

Plan commits the University to continually improve the way it manages waste and will also help us to ensure that we achieve and maintain legal compliance. The associated action plan provides a detailed description of the steps that we will take in the next 12 months to improve waste management on campus. We will undertake to update the action plan on an annual basis.

## Spotlight on: Eco-Hub

The Eco-Hub is a social space that promotes sustainability on the UofG campus. We act as a meeting point for staff, students and the wider community to come together to discuss and build a sustainable world. We provide services to help address the cost of living and the climate crisis. Everyone, including students, staff members and the wider public, are welcome to the Eco-Hub, whether you want to access its services, or come to specific events. We aim to be an explicitly anti-oppressive space, particularly welcoming groups who have faced marginalisation from traditional environmentalism. Over the last year, we saw 14,832 visits to our Eco-Hub – evidencing strong demand for such a space on campus.

The Eco-Hub has a permanent clothes and homeware swap-shop and a collection of educational resources on the environment. It also hosts bike repair sessions and practical workshops such as clothing repair and sustainable crafting. We host GUEST’s Student2Student Essentials project, where all incoming students are encouraged to take home pre-loved kitchenware and homeware for FREE! Items include cutlery, pans, plates, food containers, stationary, and bedding.

We are a practical outlet to contribute towards the university’s sustainability goals as well as your own personal goals; it can be time-consuming or inconvenient to make sustainable changes in your personal life, but our hub makes it easy, sociable and cost-saving. Taking small practical sustainable actions can be a great way to combat your climate anxiety.

The Eco-Hub is a great way to meet like minded individuals and learn more in a comfortable environment, and connect with sustainability-oriented groups in Glasgow and find out how they are facilitating climate action and empowering communities.

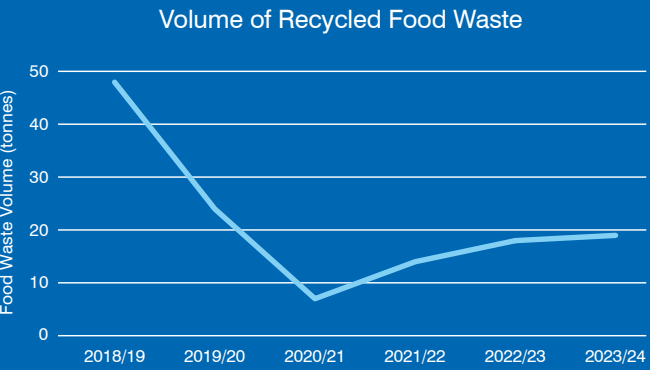
## Chemical Waste

The University’s Safety and Environmental Protection Service (SEPS) department provides guidance and training on occupational health and safety and environmental legislative compliance matters across the University. SEPS provide full instructions to staff and students on the proper disposal of chemical waste from laboratory operations to prevent harmful contamination of waterways and aquatic ecosystems from pesticides, biocides, and mercaptans, as well as other flammable, corrosive, poisonous and radioactive substances. Instructions outline how to properly identify, segregate, and contain chemical waste in accordance with the University’s ‘Zero to Drain Policy’, where all chemical waste is disposed via the University’s approved chemical waste contractor so far as is reasonably practical.

# PLASTICS WASTE

The University has a single-use plastics free campus policy and has implemented several initiatives to fulfil this aim. This involves ensuring that all crockery and cutlery in our catering operations are recyclable and compostable. We also work to minimize single-use plastics in packaging and supply chains, working closely suppliers to achieve this. For example, Mossiel Dairy deliver in recycled plastic containers which are washed and sent back to be reused again. We also have replaced paper plates and plastic platters for delivery functions with re-usable alternatives such as melamine plates and ‘clip-closure’ storage containers or compostable alternatives. Our policy also intends to minimise the use of disposable items; for example, we have introduced a 20p levy attached to hot drinks served in a reusable cup to promote the purchase of reusable containers. Our catering team works closely with the GU Heritage gift shop to promote sales of Keep Cups to members of the UofG community and beyond. We also work hard to ensure disposable cups go into the correct waste stream after they leave the university.

# SUSTAINABLE FOOD



The volume of food waste that the University recycles is tracked and has fallen since 2018-19, though there has been a small increase from 2021-22. The increases over the last two years can be explained by the return of in-person working and teaching to campus. This means that the University is becoming more efficient in its food consumption. However, the decrease in food waste over the years does not capture the amount of food that is wasted but not split from general waste to landfill and mixed recycling. The University must therefore continue to manage food efficiently but also maintain efforts to ‘close-the-loop’ by doing our best to ensure food is placed into the correct waste streams. Our Catering team is leading on this by developing a waste audit procedure to identify any major waste issues; by improving chefs’ knowledge of the amount of waste produced; and by providing support for the Eco-Hub project.

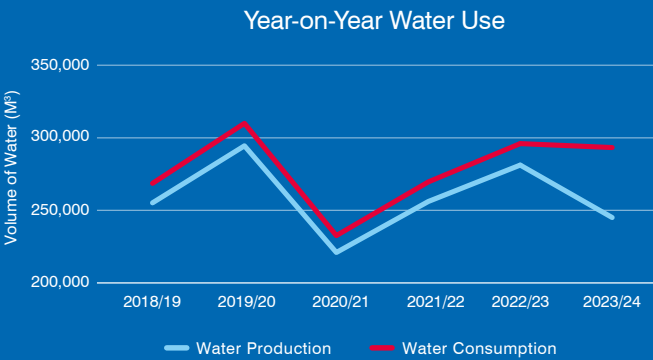
In 2025 we were delighted to announce that we now hold a Bronze Food For Life Certification and a 3-Star Food Made Good Award. We are the only university in Scotland to hold both these accreditations.





# WATER

## Water consumption and production



We actively measure the total volume of water used in the university that is taken from mains supply and other sources. Our water consumption has decreased in 2023-24 by 4 per cent from 2022-23. The University is taking steps to reduce our levels of water consumption and wastewater. Our Design Standards Document specifies that we prioritise low water use appliances in our buildings' showers, WCs and taps. Our design teams also aim to prioritise the use of water saving technologies such as self-closing taps, check meters for new water tanks to detect leaks, non-refrigerated plumbed-in drinking water fountains, low flush toilets, and low flow rate hand wash taps and showers.

We have also promoted water consciousness through the installation of 50 free-to-use sustainable water fountains in buildings around campus to encourage the use of reusable water bottles. The fountains are sustainable because they are not chilled and are run on the domestic water supply. This means that they are not plugged into the electricity to chill the water or require deliveries of plastic water barrels. Furthermore, the fountains continue to de-incentivise the purchase of single-use plastic bottles and cups by providing ample access to water on campus.

### Water recycling and reuse

Additionally, our Design Teams prioritise water recycling through the implementation of rainwater harvesting systems for use in the flushing of buildings' toilets and urinals as well as for gardening and landscaping use.

Rainwater harvesting systems are used in our James McCune Smith (JMS), Advanced Research Centre (ARC) and Sir Michael Stoker buildings, and the volume tracked and re-used as "grey" water to offset the need to use water from the mains for toilet flushing etc. Between April 2021 and September 2024, we have harvested over 36,000 m3 of water for re-use on the estate, equivalent to flushing well over 200,000 toilets.

### Wastewater treatment

All the University's wastewater is treated by Scottish Water as is all wastewater across Scotland. The process to treat wastewater is as follows:

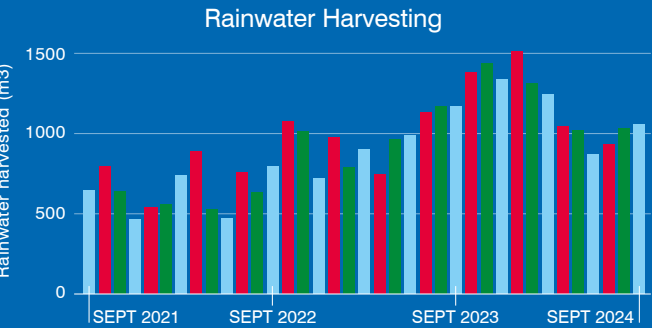
- Stage 1: Removal of litter, wood and plastic.
- Stage 2: Removal of stones and grit.
- Stage 3: Removal of sludge for treatment until it is made harmless. It is then used to improve soil health for plant growth or for burning to generate electricity.
- Stage 4: Cleaning of wastewater tanks by benign bacteria to remove harmful chemicals and waste.
- Stage 5: The wastewater is stirred and allowed to rest before being poured back into rivers or the sea.

Treating our wastewater in this process prevents polluted water from entering our water system. It also protects our marine environment and aquatic ecosystems from harmful waste.

Our design standard also ensures designers refer to the compliance notes in both the BREEAM Ene 02 – Energy Monitoring and Wat 02 – Water Monitoring requirements in the current version of the BREEAM UK New Construction (Non-Domestic Technical Manual). The University require our design teams to identify key impacts and risks of future climate change and propose adaptation solutions – with a focus on river and surface water flood risk, including contributions of the site's flood risk to other places, as well as flows onto the site. The design of drainage systems and groundworks should take into account the possibility of increased maximum run-off rates, increased risk of flooding and rising groundwater levels.

The BREEAM assessments are based upon criteria that define the environmental impact of a project and have undergone extensive research in their development. For example, with regard to pollution, an assessment of measures taken to limit the main pollutants (other than CO<sub>2</sub>) that inflict damage upon the atmosphere, land or local watercourses.

The rain gardens on University Place, planting beds in St Mungo Square and the main Rain Gardens below the square are designed to catch and attenuate surface water runoff (carrying pollutants such as salt, hydrocarbons from asphalt and any spilt materials) The planting includes species capable of cleaning surface water runoff (e.g. reeds/ rushes and marginals) and the check dams within the rain gardens slow the rate at which surface water passes through the planting enabling the settlement of pollutants and silt within the beds.



# SUSTAINABLE PROCUREMENT

The University procures all goods and services with high ethical standards, focusing on social, economic and environmental considerations by applying principles of sustainable procurement. This follows the Public Contract (Scotland) 2015 regulations, the Procurement Reform Act 2014, and the Procurement (Scotland) Regulation 2016.

The University of Glasgow Procurement Office has implemented the Advanced Procurement of University and Colleges (APUC) Supply Chain Code of Conduct. This focuses on the organisations and its Suppliers responsibilities in social, ethical, economic and environmental areas across the Supply Chain. The University Procurement Strategy is committed to delivering our Sustainability Objectives, which include identifying modern slavery risks within our Supply Chain.

The University's Procurement Office has received various accreditations including being the first higher education institution globally to receive the Chartered Institute of Procurement and Supply (CIPS) Sustainable Procurement Review GOLD Award.

# ETHICAL INVESTMENT

The University of Glasgow is committed to socially responsible investment. As part of this commitment, the University has put in place a policy on Socially Responsible Investment.

Since coming into force, the policy has been reviewed annually to ensure it continues to be applicable to the University's annual accounts and presently has remained unchanged. Ethical Investment reports too are produced and published annually.

The University's investments are monitored by the Investment Advisory Committee (IAC), a sub-committee of the Finance Committee. The student body is represented on the Finance Committee by the President of the SRC, and provisions within the policy allow for student and staff representation with respect to investments via student bodies, trade unions or IAC structure.







# BIODIVERSITY

The University of Glasgow has committed to an ongoing responsibility to protect and enhance biodiversity throughout our campuses and local communities. We improve the biodiversity capabilities of our estate by continuing to annually review our Biodiversity Strategy and Action Plan (2022-2027). Throughout our campuses, staff from the Estates Directorate and the Biodiversity Working Group work together to help support the sustainable use of natural habitats. We continue to recognise the importance of trees in the townscapes of university buildings and the imperative to protect and support biodiversity in university forested areas.

Our campuses at Garscube, Dumfries and Cochno Farm cover vast sways of woodlands and historic parklands, offering conservation and protection to natural specimens. The University is keen to further promote this, ensuring sustainable planting is observed by providing guidelines for specific species to cultivate in a variety of local ecosystems. Along University Gardens, Oakfield Avenue and the Principal's Lodgings, native plant species to support biodiversity have been re-cultivated, with a variety of shrubs including rose bushes and wildflower gardens to support natural habitats in urban environments.

Over the past year, we have worked closely with both Green Action Trust (GAT) and the consultancy, Urban Movement to develop woodland management plans for the Garscube and Cochno estates, generate a GIS model of habitat types on the estate, understand the feasibility for additional green infrastructure on the Gilmorehill campus and around our halls of residence (HoR) and develop a costed set of interventions that will help us to enhance biodiversity on the campus.

## Spotlight on: Land Use for Net Zero

University of Glasgow led research that promises to bring about fresh thinking on land use change to help achieve the UK's net zero target has received funding from UK Research and Innovation (UKRI).

Rapid Engagement with Stressed Peatland Environments and Communities in Transformation (RESPECT) is an innovative project that will produce data, methods, landholder tools and proposals for governance reforms to change agricultural practices on peatland, and reduce emissions from land use.

RESPECT was awarded £4.5 million by the UKRI Land Use for Net Zero Research programme over three years. It is a collaboration between the University of Glasgow, and the Universities of Newcastle, Hull and Stirling, that brings together expertise in law, archaeology, ecology and environmental geography.

RESPECT will collate data through novel interdisciplinary collection, modelling and engagement methods. These data will establish the capacity of land and land users to contribute to the net zero target, as well as generate other social and environmental co-benefits, balanced against conflicting land use demands, within the context of climate change.

The baseline data will inform the production of a Peatland Triage Tool, providing decision-support for landowners, land managers, farmers and crofters seeking to undertake peatland restoration.

## Alien Species

The University's Grounds and Gardens team also prioritise the removal of invasive and alien plant species. They use an external contractor to spray and remove Japanese Knotweed and Giant Hogweed, as well as the biannual spray of Impatiens Balsamina at the Garscube campus.

Surrounded by a rich variety of aquatic and terrestrial habitats, the University's Scottish Centre for Ecology and the Natural Environment (SCENE) field station gives researchers unique opportunities for studying and the conservation of a broad range of species and ecological communities. With Loch Lomond on one side and the Dubh Loch on the other side, plus mountains and moorlands with broadleaf and coniferous ancient oak woodlands is part of the rare temperate rainforest ecosystem with a wealth of biodiversity set in protected University land. The Eurasian hedgehog is on the International Union for Conservation of Nature (IUCN)

Red List for British Mammals, as such it is imperative that we protect these and all endangered species team of dedicated staff and students have signed up to the UK nation-wide Hedgehog Friendly Campus Campaign, striving to make the University sites accessible and welcoming environments to the Eurasian Hedgehogs.

The University's Estates team also works closely with the SSPCA, RSPB and the Glasgow Peregrine Project to ensure the protection of the peregrine falcons who nest annually in the University's Gilbert Scott tower.

Peregrine Falcons are a highly protected species under The Wildlife and Countryside Act, and across the UK, they are increasingly using historic buildings to raise their young. The University installed cameras in the nesting area at the top of the Gilbert Scott Tower and discovered earlier this year that the falcons had hatched several chicks. This allows for regular monitoring of the falcons and their young, with the Gilbert Scott Tower being the only closely monitored Peregrine Falcon nest in Glasgow.

Throughout the Spring and Summer of 2025, The Glasgow Peregrine Project hosted Falcon Viewing Sessions outside the Hunterian Art Gallery, where members of the public were able to watch the Falcons in their urban environment through high-powered telescopes. Members of the Scottish Ornithologists Club were on hand to answer questions about the Peregrine Falcons nesting at UofG.



# OUR STUDENTS' COMMITMENT TO SUSTAINABILITY

Glasgow University Environmental Sustainability Team (GUEST) is a student-led team within the Estates Directorate providing paid project-based work placement opportunities to students in areas such as biodiversity, sustainable food, sustainable travel, communications, and student/community engagement. These projects not only play a vital role in the ongoing promotion of sustainability on campus, but also provide an opportunity for students to develop both professionally and personally, while contributing to the everyday functioning of the University. GUEST also offers the opportunity for interns to work on its projects on a voluntary basis. GUEST were once again heavily involved with promoting partnerships for sustainability across global audiences delivering a number of important sessions for students and staff.



# ANNEX A:

## University of Glasgow Design Standards extracts

This University of Glasgow Design Standards reflect good industry practice and standards and sets out the drivers for achieving a sustainable campus. This document is primarily relevant for new build projects but also incorporates specific requirements for refurbishment and redevelopment works. These Design Standards define the requirements for all projects undertaken by the University and must be used by all, including staff, contractors, architects, designers, design teams and consultants.

**Note: These design standards are accurate and up to date as of October 2025. Excerpts are included here relevant to the Times Higher Education Sustainable Development Goals Impact Ratings.**

The University of Glasgow has declared a 'Climate Emergency' and is committed to net zero for GHG emissions by 2030. It is essential that all projects deliver the highest sustainability criteria. Please refer to the University's Climate Change Strategy (Glasgow Green), approved by the University Court.

The University's strategic climate change management goals include:

1. Engaging and empowering our community
2. Promoting efficiency
3. Establishing good governance and policy
4. Delivery of continuous improvement initiatives
5. Building resilience through partnerships

The University is committed to 'building a sustainable future through our research and actions'. We will

- Actively adopt and advance the United Nations' Sustainable Development Goals
- Create greener, healthier and more sustainable campuses within our communities
- Evolve our operations and ways of working to meet our commitment of being net zero for GHG emissions by 2030.

The University's sustainability vision is to be 'A worldclass, world-changing University where collective responsibility is taken to ensure we undertake our work in an ethical and sustainable manner'.

Designers must ensure that the University's buildings deliver sustainability goals.

The University has duties placed upon it under the Climate Change (Scotland) Act 2009. Progress in relation to these duties is reported in the Public-Sector Climate Change Reporting Duty Return, annually. Designers must ensure that the University's buildings deliver sustainability goals.

**Note: The Climate Change Strategy and associated KPIs for the campus are currently under review, subject to completion of our 'Climate Neutral Estate' feasibility work package. Please liaise with the UofG Project Manager / Design Champion to ensure developing designs are aligned with current University Policy.**

### General Policies and Standards

- > UofG Climate Change Strategy (Glasgow Green)
- > The Building (Scotland) Regulations Non-Domestic
- > Technical Handbook, including Appendix B.
- > Net Zero Public Sector Buildings Standard
- > Public Bodies Climate Change Duties: Putting them into Practice'.
- > Waste Scotland Regulations
- > Gilmorehill Campus Development Framework
- > UofG Biodiversity Policy and Action Plan
- > UofG Woodland Management Plans for Garscube,
- > Cochno and SCENE
- > UofG Metering Strategy
- > UofG Strategic Travel Plan
- > UofG Carbon Management Plan
- > Biodiversity Duty under the Nature Conservation (Scotland) Act 2004
- > Biodiversity Duty Reporting under the Wildlife and
- > Natural Environment (Scotland) Act 2011
- > UofG campus Phase 1 Habitat Surveys (Green Action Trust) and accompanying biodiversity recommendations
- > UofG Cycling Strategy
- > UofG Climate Change Adaption Plan
- > UofG Waste Management Strategy
- > UofG Energy Strategy
- > UofG Thermal Comfort Policy
- > UofG BEMS Strategy
- > UofG Metering Strategy UofG Climate Neutral Estate recommendations
- > TM65 – Embodied carbon in building services
- > TM66 – Creating a circular economy in the lighting industry now available
- > TM67 – Electrification of buildings for net-zero

Designs should be based on established methods of sustainable construction and whole life costing principles, minimising energy consumption, carbon emissions and incorporate low and zero carbon technologies.

Feasibility studies for low and zero carbon technologies should take into account the impact of future electricity grid decarbonisation.

The process for Life Cycle Costing will commence at RIBA Stage 1 of the design process and must be considered during any value engineering exercise.

### Sustainable Design Targets and Objectives

#### Public Sector Net Zero Buildings Standard, Integrated approach to Sustainable Design

Design teams must ensure compliance with Section 6 Building Regulations (Scotland) and ensure measures are included to address the University of Glasgow's 2030 Carbon Emissions Target

Designers are to undertake a fully integrated, collaborative, multi-disciplinary approach to sustainable design from RIBA Stage 1. Optimum measures relating to orientation, passive design, natural ventilation, glazing, insulation, materials, should be provided.

Passive design analysis, whole life costing analysis and climate change adaption assessments are to be assessed at an early stage, during RIBA stage 1 and completed before end RIBA stage 2.

The Public Sector Net Zero Buildings Standard should be used by project teams to ensure that both new buildings and refurbishments enhance the places and communities they are set in, result in low carbon emissions and energy/offsetting costs and provide healthier and more productive indoor and outdoor environments.

The following aspects should be considered:

- > Inclusive Net Zero Economy Outcomes
- > Construction Embodied Carbon (Upfront Carbon)
- > Operational Energy (Emissions from Energy Use)
- > Other Whole Life Carbon (Embodied Carbon throughout the Lifecycle)
- > Indoor Environmental Quality (Comfort and Wellbeing Indoors)
- > Environmental Aspects (Project-specific Environmental Priorities)

Other environmental aspects must, include Biodiversity, Sustainable Travel, Waste Management, Climate Resilience, Improved Space Utilisation and Community Benefits, at a minimum.

Note: For smaller refurbishment projects, design teams should refer to operational energy targets (by building archetype) that have been specified via our Climate Neutral Estate work package. Design Teams should also check Asset Works for interventions that have been identified as required (on a location specific basis) and ensure a project sustainability form has been completed and signed off.

### Performance Targets

**Monitoring and Measuring of Impact**  
Building energy performance, along with metering and BEMS functionality, must be demonstrated by the contractor prior to handover.

A clear strategy must be established for monitoring and then optimising operational energy consumption during both the commissioning period and for 2 years, post occupancy, to ensure new buildings continue to operate as designed.

**Passive Design**  
The design team must ensure a strong focus on passive design and low carbon measures in compliance with Building Regulations. Mechanical services design should identify how specific CO<sub>2</sub> emissions will be achieved and this should be recorded in the RIBA Stage 3 report. Design teams should use the Passive House Planning Package (PHPP) or a similar dynamic modelling software to demonstrate the energy efficiency of proposed plans.

The design team should ensure that passive design features are incorporated into the design of all new buildings and refurbishment projects from the earliest stages of the design process to maximise the opportunity to reduce the environmental impact and running costs of the building over its lifetime. The main requirements include:

- > Optimising orientation
- > Optimising natural shading
- > High standards of insulation
- > High standards of air tightness, while maintaining adequate ventilation
- > Low emissivity double glazing
- > Maximising efficiency and heat recovery on mechanical systems
- > Primary plant and equipment shall be selected to minimise energy use and carbon emissions.

**Orientation**  
Each building should be modelled at an early stage in the design process to optimise the orientation of the building in relation to daylight and sunlight and the prevailing wind direction.

Orientation strategies should explore making best use of high summer sun angles and low winter sun angles on southern exposures while minimising excessive solar gain on east and specifically west exposures from low year-round sun angles. Evidence of orientation consideration is a key deliverable for RIBA Stage 2.

**Natural Ventilation**  
Natural ventilation strategies will focus on designing clear and robustly controlled air flows through buildings for daytime and nighttime cooling. All areas shall be naturally ventilated unless formally agreed by UofG.

The following options are to be explored to provide fresh air and minimise carbon emissions associated with ventilation:

- > Natural ventilation – single sided ventilation
- > Cross ventilation
- > Natural Ventilation – passive stack ventilation
- > Displacement ventilation with high level outlet.

### Space Planning for Passive Design

A multi-disciplinary passive design workshop must be held during RIBA Stage 1 with a focus on organising room adjacencies and defining environmental conditions to maximise natural thermal comfort for health and wellbeing.

### Thermal Performance of Building Envelope

The thermal performance of the building envelope must be optimised to provide high levels of insulation and provide levels of daylight to minimise lighting loads.

Façade engineering options should optimise the glazing size, position, shading and window detail to get the most benefit from the sun while avoiding overheating in summer and heat loss in winter. South facing façades shall have a maximum of 40% glazing unless otherwise agreed.

Design calculation should outline the optimum insulation thickness to reduce unwanted heat loss or heat gains through the roof, walls, doors, windows and floors. Avoidance of thermal bridging, and elimination of penetrations/ gaps where insulation layer is not continuous should be addressed in the design, which is especially relevant to refurbishment projects.

Air tightness has a high impact on the heat consumption in a building. Air infiltration figures shall be lower than 5m<sup>3</sup>/m<sup>2</sup>/hr @50Pa for naturally ventilated buildings and 3m<sup>3</sup>/m<sup>2</sup>/hr @50Pa for any mechanically ventilated buildings.

Alternatively, envelope airtightness should remain <0.6 ACH (Air changes per hour) @ 50Pa test pressure in accordance with Passivhaus standard.

### Daylighting

Designs must optimise natural daylighting whilst minimising overheating. The daylighting strategy will relate to the orientation of the façade and the types and levels of daylight necessary in each space. Daylight simulations should be carried out at an early stage to test the size of apertures and the glazing types. The façade and fenestration should be developed to ensure that the optimum levels of daylight are achieved.

Daylighting – 80% of all occupied areas shall be capable of achieving a daylight factor of 2% minimum.

### Shading

Shading strategies must be developed alongside the space planning and environmental briefing at RIBA 1 to ensure that the design for each space relates to the usage and orientation. Natural shading options such as overhangs and vertical ecological screening should be considered.

### Thermal Mass

To reduce primary energy consumption, options for exposed thermal mass should be developed alongside the primary structural engineering and internal layout solutions (including M&E layouts). Exposed thermal mass should be balanced with the provision of acoustically absorbent options to maintain comfortable acoustic conditions. The benefits of thermal mass is often lost through excessive wall, ceiling and floor coverings. Evidence of thermal mass consideration must be demonstrated at RIBA Stage 3.

### Night Cooling

Fenestration designs should allow, safe, secure night cooling where possible.

### Energy Efficiency

Mechanical and Electrical plant must be selected to optimise energy efficiency and utilise options for heat recovery and free cooling.

The Building Energy Management system should be developed in close consultation with the UofG Operations team (Note: UofG currently has two Building Energy Management Systems (BEMS) installed; Distech and Trend IQ Vision).

Intelligent lighting controls should be selected in accordance with how spaces are utilised and in discussion with the relevant user groups. The design team must ensure that the mechanical and electrical services design and installations provide a functional, flexible and energy efficient building by utilising best practice to achieve:

- > Robust and resilient engineering systems
- > Good comfort conditions for the occupants
- > Installations which require relatively low maintenance
- > Systems which have straightforward operational procedures
- > Systems must be as energy efficient as possible and minimise carbon emissions.

### Low and Zero Carbon Technologies

The design team must ensure that low and zero carbon technologies are investigated and optimised for each project. The extent of what should be considered for

each project is to be agreed at RIBA Stage 1 and thereafter the viability confirmed at RIBA Stage 2, in conjunction with the development of passive design and energy efficiency strategies to reduce the demand for energy

Low zero carbon feasibility studies (for renewable energy technologies, waste heat recovery systems or energy storage systems) must be undertaken in accordance with best practice, BRE guidance and consider site-wide decentralised energy provision.

### Grid decarbonisation

Low zero carbon feasibility studies must be undertaken in accordance with best practice with reference to Government guidance on grid de-carbonisation in the UK and future projected UK grid carbon factors.

### Metering

The specification for metering in buildings can be found in the UoG Metering Strategy. This document sets out the guidelines and standards that apply to UoG Estate and its design requirements for Energy & Utilities Metering.

Buildings must have separate electronic meters that measure electricity, heating/cooling, gas and water consumption. All metering data will feed into a dedicated Energy Management platform used by the University. Secure communication between meters and platform should be approved by IT. An on-premises metering deployment option has been selected where local meters communicate over our internal IT Network with data being stored on University Servers.

### Smart Metering

Artificial Intelligence should effectively support operations of the buildings to meet sustainability goals and provide a safe and comfortable space for occupants.

### Life Cycle Assessment from Concept Stage

Each design team will ensure that a life cycle assessment or 'cradle to grave' approach is taken to reduce whole life costs and to provide a more sustainable solution for the project. Early stage LCC analysis should be undertaken from RIBA Stage 1 onwards.

## Water Efficiency

### Selection of Low Water Use Appliances

To minimise primary energy consumption, low water use appliances are to be selected for showers, WCs and taps throughout the building.

The following requirements/technologies must be used:

- > A check meter must be installed where any new water tank is being installed for leak detection.
- > Taps will be self-closing. Timed-flow (e.g. percussion) taps and flow regulators should be used on all wash hand basin taps with an operating period of 5-7 seconds and a maximum flow rate of 2 l/min, excepting cold water services required for specific agreed purposes.
- > Plumbed-in drinking water fountains must be provided in appropriate locations in all buildings, and locations clearly marked on developed layouts. These should be connected to the internal drainage system, be non-refrigerated, have a swan neck tap for bottle filling and a bubble to drink directly from (no plastic cups).
- > Wash hand basin taps to have a maximum flow rate of 2 l/min.
- > WCs will be low volume flush.
- > All hot water piping will be adequately insulated.
- > Instantaneous electric showers are preferred. Where cylinder fed showers are used, shower flow rates to be limited to 6l/min using in-line flow restrictors which cannot be overridden to higher flow rates.
- > All dish washers, washing machines, and driers will be "A", "AA" or "AAA" rated as appropriate.
- > Rainwater harvesting must be provided for use in the buildings grey water system for the flushing of urinals and toilets and for gardening / landscaping use. If this cannot be provided this must be highlighted on the project derogation schedule for UofG consideration/approval.

### Use of rainwater collection for Irrigation

The potential for incorporation of gravity fed rainwater collection and supply of recycled rainwater systems should be investigated to provide water for irrigation of planting around building.

### Use of brown roofs

The potential for Brown Roofs should be considered to increase biodiverse habitats across the campus. A brown roof aims to re-instate habitat conducive to local species on the roof.

### Use of blue roofs

The potential for Blue Roofs should be investigated to increase storage and attenuate run off. A blue roof is one that is designed to retain water above the waterproofing membrane. A blue roof deliberately retains some or all of the water either temporarily or permanently.

### Use of green roofs

The potential for Green Roofs should be considered as a means to promote biodiversity. Each green roof can introduce a piece of nature, and on some buildings a recreational space can be created for staff and students to enjoy.

## Materials and Waste

### Materials Efficiency

A materials efficiency workshop should be carried out at RIBA Stage 1 The Materials efficiency strategy should address the following:

- > Material efficient design
- > Standardisation of components
- > Prefabrication of building elements
- > Design for functional adaptability
- > Use of Revit/BIM to minimise waste and primary material usage
- > Application of principles of clean design
- > The use of Circular Economy Principles
- > Specification of Sustainable Timber
- > Use of Environmentally Friendly building materials,
- > Green Guide A rated Materials
- > Use of Inert Materials
- > Use of Materials with Recycled Content
- > Use of Materials with Low VOC content
- > Site won recycled materials
- > Recycling of demolitions
- > Recycling of Architectural Salvage items

### Construction Waste Management Plan

Contractors must develop a construction waste management plan. Waste from the demolition of buildings must be recycled or reused during the new build construction. Key waste streams should be identified at the start of the project and measures implemented to reduce these wastes. Good storage facilities for raw materials to minimise damage should be provided.

During construction, every effort should be made to capture recyclable materials including wood, inert brick, rubble, soil, tarmac with a view to reusing and recycling these. Certain other waste streams including WEEE (Waste Electrical and Electronic Equipment) or Special Waste require special treatment and segregation and allowances should be included in the 'Contractors Prelims'.

Waste streams arising during construction should be measured and compared with established benchmarks (e.g. the BRE SMARTWaste web-based tool at [smartwaste.co.uk](http://smartwaste.co.uk)).

WRAP contains useful information on how to manage waste – [wrap.org.uk/construction/](http://wrap.org.uk/construction/).

Design teams should also refer to Zero Waste Scotland's 'Designing out Construction Waste' guide.



**Waste Reduction, Re-use and Recycling**

The University aims to reduce waste that is sent to landfill. This means minimising waste throughout the campus. i.e. reducing packaging, using take back schemes or re-using materials.

Designers and Contractors must adhere to the waste management requirements stipulated below.

The University have a WARPi asset reuse portal; any reusable furniture/assets that become available as a result of project work must be catalogued on the portal in order to facilitate reuse elsewhere in the organisation.

Designers must ensure the provision of adequate facilities for the storage and collection of other wastes (e.g. chemical, clinical, radioactive and other hazardous wastes such as waste oils). Designers must work closely with the client team during the briefing stage of the project to develop systems which meet the requirements of the Universities FM team in terms of movement and collection of waste. The following options should be investigated:

**External Recycling and Waste Points**

The University of Glasgow has a clear hierarchy of waste segregation in relation to the WRAP waste streams, plus hazardous waste (clinical and chemical). Adequate and secure space for storing specialist waste (chemical, clinical, radioactive, WEEE etc.) must be provided.

The use of green composting spaces for food waste recycling and re-used for landscaping maintenance should be considered.

Refer to UofG-D0C-42-1 for existing external general waste & recycle bin locations.

**Internal Recycling and Waste Strategy**

Designers must develop an internal Recycling and Waste Strategy. This should include as a minimum;

- > Pairs of general waste and dry mixed recyclable bins should be provided at convenient locations for staff and students throughout the buildings (total number provided should be appropriate for each building and should be agreed with UofG through the briefing process). These locations should be clearly demonstrated on developed layouts.
- > There will be no provision of wastepaper bins at individual desks.
- > Food waste bins to be provided at all hospitality services locations, both front and back of house.
- > Each general waste store must be physically separate from the dedicated recyclable materials store.
- > Plumbed in drinking water fountains must be provided in appropriate locations in all buildings.
- > Banks of microwaves should be provided, where appropriate, so that staff and students can easily reheat food.
- > Hospitality Services outlets must make use of reusable crockery/cutlery, where possible

**Land Use and Biodiversity**

**Protection of Existing Ecological Features**

Designers and Contractors must ensure the protection of existing flora and fauna habitats on and adjacent to the project sites and seek to enhance biodiversity. Design Teams should refer to UofG campus Phase 1 Habitat Surveys and UofG Woodland Management Plans, in this regard.

A qualified ecologist should be appointed to assess the existing ecology of each site at RIBA Stage 1 and make recommendations to introduce features and planting schemes to enhance the existing ecology and promote biodiversity.

In general:

Design teams should try to avoid building on land which has not been previously disturbed – the use of previously occupied or contaminated land is encouraged, where possible.

Design teams must determine the ecological baseline and zone of influence of a putative site and identify any biodiversity risks and opportunities for achieving optimum outcomes – negative impacts on the ecology of the site and its zone of influence arising as a result of the project must be avoided, or limited as far as possible.

Design teams must enhance the ecological value of the site and areas within its zone of influence in support of local, regional and national priorities.

Ongoing monitoring, management and maintenance of the site and, its habitats/ecological features must be secured to ensure intended outcomes are realised for the long term. An Ecology report will be developed at RIBA Stage 2 outlining the methods proposed to enhance the existing ecology.

**Biodiversity**

Green space around the University should enhance wellbeing and provide habitats that encourage biodiversity and help with climate change adaptation. Designers must protect green spaces and develop designs to improve biodiversity including consideration for the incorporation of beehives and the potential for community gardens.

New developments designed with a floor area greater than 1,000 m² will require a biodiversity checklist to be completed under the legalisation of the Nature Conservation (Scotland) Act 2004.

The completed biodiversity checklist will detail how the development will seek to protect existing habitats and provide an outline of mitigation, enhancement or compensation strategies.

Each new building should have a biodiversity action plan. The design team should compile and incorporate the plan requirements into the design, consulting with the University regarding the approved list of plants, trees, species and landscaping preferences.

The Biodiversity Action Plan must seek to explore opportunity for building specific biodiversity and landscaping measures.

**Green Roofs**

The University of Glasgow aims to promote Green roofs that are fit for purpose, accessible and can be used by staff and students. Design teams should incorporate green roofs where possible and ensure that features such as bat/bird boxes and bee bricks are included in plans for new buildings and infrastructure.

Designers should refer to the University of Glasgow Biodiversity Strategy and Action Plan and Campus Development Framework.

Early consultation with the estates team regarding landscaping plans and plant species must be undertaken at RIBA Stage 1.

**Sustainable Transport**

Design Teams should give priority to promoting active modes of travel and healthy alternatives to vehicular transport by encouraging staff, students and visitors to make journeys by foot or by bicycle rather than by car.

**Active Travel Routes**

Design teams should ensure that campus buildings can be accessed via a network of safe accessible routes that are well maintained and lit. These should be suitable for pedestrians, cyclists and users of mobility aids. Designs should address potential conflicts between pedestrians and cyclists and minimise these.

**Provision of Cycle Facilities**

Cycle facilities include bicycle parking, storage lockers, showers and changing areas, repair stands with pumps, drying space. Other facilities that benefit cyclists could be water fountains and vending machines for bicycle replacement parts.

Numbers of bicycle parking and showers are to be identified in accordance with BREEAM and local planning guidelines. Bicycle parking should be in safe accessible locations, preferably indoors, and shelters provided, if outdoors.

Outdoor cycle facilities should be close to building entrances and include adequate lighting and CCTV coverage. Indoor facilities should be access-controlled to prevent theft.

**Design of Cycle Facilities**

Required numbers of bicycle parking spaces should be achieved without compromising on quality. For Sheffield type stands, the normal distance between stands is 80cm or above.

When designing areas for bike parking, careful consideration should be taken to account for comfortable movement of those with bicycles to get to the bike parking space.

While double-decker type bicycle parking has the potential to achieve bike parking numbers in small spaces, these should be only chosen if:

- > Convenient space is given to access the upper level bike parking when these stands are fully extended – if two racks of this type face each other, this needs to be tested with both fully extended, and a corridor of at least 1m given between them
- > Measurements confirm that ceiling heights allows the use of the upper tier
- > The distance between upper and lower tier is high enough to prevent head injuries by users of the lower tier

All bicycle parking and other cycling facility design options should be consulted on with the Sustainable Travel responsible within the UofG Sustainability Team.

**Public Transport Promotion**

All building designs should consider the inclusion of public transport information, such as a live departure board, in reception or other suitable areas.

**Car Parking and Electric Vehicle Charging Points**

The provision of car parking and EV charging points are not a default for new buildings on campus. Both are centrally managed and subject of campus-wide plans, and normally not part of design briefs for single buildings.

**Disabled Car Parking Spaces, access issues**

To address access issues, drop-off and pick-up spaces, especially for taxis, should be considered. Car parking spaces for blue badge holders ('disabled spaces') should be considered in alignment with local planning and campus development policy.

**Adaption to Climate Change**

Adaptation to climate change means anticipating the adverse effects of climate change and taking appropriate action to prevent or minimise the damage they can cause or taking advantage of opportunities that may arise.

The University is a founding partner of Climate Ready Clyde ([climatereadyclyde.org.uk](http://climatereadyclyde.org.uk)), which is a cross-sector initiative funded by the Scottish Government and 12 member organisations to create a shared vision, strategy and action plan for an adapting Glasgow City Region.

In addition to a legal duty under the Climate Change (Scotland) Act 2009, the University wants to ensure that the estate and buildings continues to operate as a high performing asset over their lifetime. Therefore, Design Teams must identify key impacts and risks of future climate change and propose adaptation solutions.



Whilst the assessment is expected to be comprehensive, key areas of focus should assess:

- > Changes in heating and cooling demand, overheating risks and minimising demand for artificial cooling (e.g. through use of natural ventilation).
- > The impact on landscaping and green infrastructure, ensuring it is suitable for the lifetime of the building, with appropriate asset management plans.
- > Risks of more intense and frequent storm damage, wind, moisture and driving rain.
- > River and surface water flood risk, including contributions of the site's flood risk to other places, as well as flows onto the site.
- > This assessment must include a comparison of the whole-life costs and benefits of an un-adapted vs. an adapted design.

Design teams should propose a method to undertake the Climate Change Assessment and agree this in Advance with UofG (e.g. methodology outlined in the RIBA Green Overlay). Appropriate data including UK Climate Projections and SEPA flood maps should be used which include an uplift for climate change and supporting data such as CIBSE Weather Data files for future years.

Design teams are to review the 'Climate Ready Clyde's 'A Changing Climate for Development' toolkit, which helps to identify climate risks in built environment and infrastructure projects.

The design team must demonstrate how the building will cope (or be adapted to cope) in so far as it is practicable with the effects of climate change (UKCIP 'medium-high emission scenario' average UK temperature will rise by up to 3.5°C by 2080).

The design of drainage systems and below-ground works should take into account the possibility of increased maximum run-off rates, increased risk of flooding and rising groundwater levels.

A detailed adaption to climate change report should be developed at RIBA Stage 2 which outlines how the building design will help to mitigate these risks.

Design Teams should refer to UofG Climate Change Adaptation Plan and make reference to the Climate Ready Clyde 'Climate Risk Screening Toolkit'.

**The International WELL Building Standard™**

The design team should refer to the international WELL Building Standard™ for further guidance in relation to optimising the design for the Health and Wellbeing of the occupants across the University's existing estate and within new developments. This standard sets out guidance in relation to the following health related elements:

- > Air
- > Water
- > Nourishment
- > Light
- > Fitness
- > Comfort
- > Mind

Each design and construction team should work closely with the client team to develop building specific strategies to optimise and prioritise the health and wellbeing of occupants within each building.

**Soft Landscaping**

The Masterplan underscores the significance of trees and planting in the urban and campus environment:

**Linear and Avenue Tree Planting**

Along corridors to enhance streetscapes.

**Specimen Trees**

Large feature trees in open spaces to create landmark features.

**Ornamental Planting**

Focused in high-profile areas, such as adjacent to seating and pathways, to enhance sensory engagement.

**SuDS and Rain Gardens**

These should be integrated into designs to: Support wet grassland, marginal, and aquatic planting. Provide opportunities for native tree planting, such as willows and alder, to enhance biodiversity.

**Amenity Grass Areas**

Included in primary spaces (e.g., University Square, University Place, and Dumbarton Place) to complement hard landscaping.

**Wildflower Grasslands**

Integrated into designs to support biodiversity and aesthetic value.

**Native Planting**

Research and use of native species for new proposals are essential. All planting must be approved by the University via the Soft Landings process.

**Sustainability and Natural Corridors**

Incorporate the creation of natural corridors as outlined in the Glasgow City Council Biodiversity Action Plan, connecting the campus with wider urban green networks.

**Specimen Feature Trees**

**Tree species to be selected from:**

Oak (Quercus spp.), Horse Chestnut (Aesculus hippocastanum), Sweet Chestnut (Castanea sativa), Beech (Fagus sylvatica), Lime (Tilia spp.), Maple (Acer spp.), Plane (Platanus x acerifolia), Tulip Tree (Liriodendron tulipifera), Pine (Pinus sylvestris), Cedar (Cedrus deodara).

**Small Specimen Feature Trees**

**Tree species to be selected from:**

Lime (Tilia spp.), Maple (Acer spp.), Plane (Platanus x acerifolia), Tulip Tree (Liriodendron tulipifera), Pine (Pinus sylvestris), Cedar (Cedrus deodara), Rowan (Sorbus spp.), Cherry (Prunus spp.).

**Avenue/ Street Trees**

**Tree species to be selected from:**

Lime (Tilia x europaea), Plane (Platanus x acerifolia), Maple (Acer spp.), Hornbeam (Carpinus betulus), Cherry (Prunus spp.), Turkish Hazel (Corylus columna), Birch (Betula spp.).



