

Biodiversity Plan (2023)

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Introduction

This is Glasgow Caledonian University's (GCU) first Biodiversity Plan (BP) and it sets out how the University will promote biodiversity across its Estate in support of Strategy 2030's vision, ambition and commitments.

It is an interim plan and a starting point for enhancing biodiversity in GCU's estate and will contribute the refresh of the University's Master Plan.

Definitions for biodiversity abound, but for the purposes of this Plan, the University will draw on the one used in Scotland's Biodiversity Strategy [2020 Challenge for Scotland's Biodiversity](#) which is that *"Biodiversity is all of life: animals, plants, fungi and microorganisms and their interactions with their environment. Together, these form living systems, called ecosystems, which sustain nature and upon which our own survival depends."*

Strategy 2030 sets out the GCU's vision as the University for the Common Good for the next decade and uses the Sustainable Developments Goals (SDG) as a framework for achieving its ambition across six strategic themes (Figure 1). The commitment to enhance biodiversity sits within the sixth theme: Engaged University Community committed to the Common Good.



Figure 1 Strategy 2030 vision and ambition.

Enhancing biodiversity across GCU's Estate will make a modest contribution to the attainment of the following SDG (detailed in Appendix A):

- SDG 12 - Responsible Consumption and Production
- SDG 13 - Climate Action
- SDG 15 - Life on Land

This Plan highlights opportunities for enhancing biodiversity across the University's Estate now and in the future as part of a refreshed Master Plan. It is accompanied by the Biodiversity Plan Implementation Document (BP-ID) detailing which opportunities will be explored to support the University's commitments and the SDGs. For convenience, opportunities and interventions are categorised as either: biodiversity interventions; student and staff engagement; and measuring and monitoring proposals.

The following sections of this document provide context for the development of the BP and an outline of the opportunities and measures being considered.

Vision for 2030

By 2030 GCU's Estates and buildings will be a haven for biodiversity in Glasgow's city centre, providing connectivity to other green spaces in the City and readily available sources of water, year-round naturally occurring food and shelter.

The University's grounds maintenance practices adopt a whole ecosystem approach and actively promote biodiversity.

The abundance of species that make the University's grounds their home provide an opportunity to connect with, and learn about nature. Biodiversity in our Estate contributes to the health and wellbeing of everyone on campus by creating tranquil places with enhanced sensory experiences (of sight, sound and smell).

Aims & Objectives

This Plan covers the period for the academic years up to 2029-30. It's aims are to:

- Enhance biodiversity across GCU's Estate.
- Establish a series of principles to support and inform the refresh of GCU's Master Plan.

To achieve these aims, the University will:

1. Establish a methodology for monitoring in biodiversity across its Estate.
2. Adopt a strategic, whole-ecosystem approach to enhancing biodiversity.
3. Identify and mitigate risks to biodiversity on Campus.
4. Identify and deliver opportunities for enhancing biodiversity in its Estate.
5. Use biodiversity for engaging the University community in more sustainable practices.
6. Report progress and celebrate success.
7. Regular review of approach to ensure continual improvement.

Whilst the time-scales of the BP are to 2029-30 it is anticipated that a review will be warranted once the refresh of the Master Plan for the Estate has been completed.

Wider Context

GCU's BP sets out a range of broad principles to guide and inform conversations about biodiversity on Campus now and in the future. It also supports and links to the following local and national (as detailed in Appendix B):

- [Scotland's Biodiversity Strategy](#)
- [2020 Challenge for Scotland's Biodiversity](#)
- [Glasgow Local Biodiversity Action Plan](#)

The BP also provides an opportunity to contribute and support the various City Centre regeneration proposals under development by Glasgow City Council.

Scope

The scope of this BP is all building and grounds owned/operated by GCU in Glasgow (Figure 2), but the broad principles underpinning it will be relevant should the University's Estate increase.

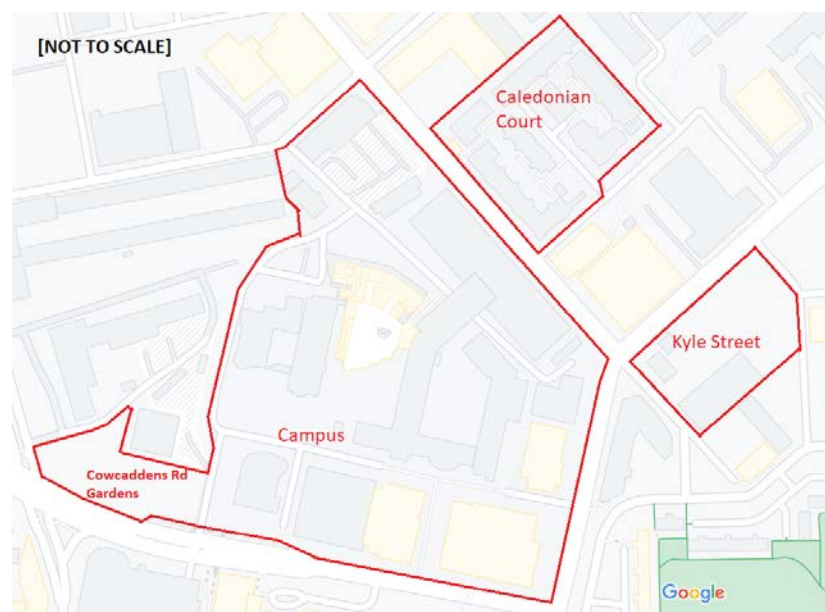


Figure 2 Campus map with areas within scope of the Biodiversity Plan (map image credit: Google).

The University will also ensure that enhancing biodiversity is a material consideration in future thematic sustainability plans.

Site History

GCU's Campus is a dense, city centre block with 13 buildings spread over 64,500m², of which around 10% is soft landscaping/vegetated (Figure 3).



Figure 3 Aerial view of GCU's Campus in Glasgow.

The University is on the site of the former Buchanan Railway Street Railway Station (1849-1966)¹ which previously was the location of the East Cowcaddens Quarry (early 1800s to 1849) and the city Poorhouse/Asylum (1809 -1905² roughly in the present location of the Arc). The area was heavily industrialised and little remained of rural, undeveloped site that pre-dated the Quarry (see Appendix C for maps of historic land-use).

Whilst it is not possible to return biodiversity on the University's Estate to pre-industrial levels, through this BP will provide the strategic direction to foster a gradual, continuous increase in the quantity and quality of biodiversity found in the University's grounds.

Underlying Principles

The following principles and concepts will inform the development of measures in this BP:

- Whole habitat/ecosystem approach (e.g. by creating natural occurring food, water and shelter for organisms in as many trophic levels as possible).
- Develop and sustain tree cover (e.g. by planting trees to minimise gaps when aged/diseased trees have to be removed).
- Promote native species (e.g. Scottish/UK) and ensure any problematic, non-native species are adequately managed.
- Explore synergies between the formal 'ornamental' element of the University's grounds with a 'wilder' element attractive to wildlife (e.g. by establishing wildlife refuges and planting pollinator friendly species).
- Explore biodiversity opportunities in both horizontal and vertical surfaces of our Estate regardless of orientation (e.g. by establishing green roofs and living walls).

¹ Wikipedia article on [Buchanan Street Railway Station](#).

² A brief overview of Glasgow City Poorhouse is available from [this article](#), whilst [this article](#) has an account of the unsanitary conditions experienced by residents.

- The management and the University's grounds will deliver wildlife benefits and promote soil health (e.g. mowing regimes will be adjusted to protect flowering plants, grass will be 'grass cycled' and leaf fall used produce leafmould for subsequent application across the grounds).
- Foster the establishment of edible gardens (e.g. by planting fruit trees and herbs).
- Contribute to the student experience (e.g. by increasing access and use of spaces where students can connect with and learn about nature).
- Foster stakeholder engagement (e.g. through the provision of information and opportunities for volunteering, study and research).
- Support broader Estates operational requirements (e.g. grounds maintenance and campus security).
- Draw on third-party resources to support the University's biodiversity's initiatives (e.g. citizen science surveys).
- Evidence based decision making.

Biodiversity Measures & Interventions

Below is a list of measures and interventions the University will explore to achieve the aims of this BP. Further detail about where, when and how these opportunities will be explored is detailed in the accompanying Biodiversity Plant Implementation Document (BPID).

1. **Improve soil health** by maintaining biodegradable matter on campus, such as through grass cycling and leaf mould. Compost heaps were considered, but excluded because of the nature of the process (it's quite involved) and potential regulatory implications.
2. **Wildflowers** areas will be established to provide a habitat for invertebrates and pollinators (e.g. bees and butterflies). Scottish wildflowers will be used to the extent possible to create self-seeded areas. Mowing regimes will be adjusted to protect seeded areas and signage will be introduced to raise awareness.
3. **Edible plants** (fruits and herbs) will be planted as a food to a variety of wildlife (e.g. invertebrates, pollinators and birds) and as a mechanism for raising awareness when incorporated into the on-campus catering offer.
4. **Hedges** will be established/maintained to provide additional shelter and sources of food for insects, invertebrates and birds.
5. **Increase tree cover** to support succession planning for existing trees to reduce the risk of developing big 'gaps' should they need to be replaced (due to size, age or disease). Non-native, biodiversity poor species will be replaced by native species. Where appropriate, fruit trees will be introduced to help create a 'edible' landscape.
6. **Provide shelter** for a variety of organisms through the above initiatives, introducing artificial shelter (e.g. bird/nesting boxes) and "bug hotels". Creating shelter for wildlife also provides numerous stakeholder engagement opportunities (e.g. bird box or bug hotel building opportunities).
7. **Provide water** for biodiversity on campus (particularly during the summer).
8. **No pesticides, synthetic fertilizers or peat** will be used in our grounds.
9. **Weed control** will be done sparingly and using biodegradable weed killer which will only be applied on hard surfaces.

Opportunities for Student & Staff Engagement

The above biodiversity opportunities will enable a the following (non-exhaustive) student and staff engagement opportunities (also incorporated in to the BPID).

1. **Signage** explaining what particular initiatives are.
2. **Citizen science surveys** (e.g. birds, insects and flowers) to help establish biodiversity baselines and monitor change.
3. **Student projects** that help understand, manage and enhance biodiversity opportunities at the University.
4. **Talks and tours** (including self-guided) to highlight extent and progress of biodiversity initiatives on Campus.
5. **Workshops** to give stakeholders another opportunity to get involved (e.g. bird box or bug hotel building).
6. **Web-cams** to show-case unique aspects of biodiversity on campus that might otherwise be difficult to highlight (e.g. nesting boxes)
7. **Produce** grown in GCU used in on-campus catering offer.
8. **Social media content** to raise awareness and foster engagement.
9. **Biodiversity volunteers** mailing list will be established to connect with interested stakeholders.

Biodiversity Plan Budget

The total budget for delivering the delivering the BP is £18,450 over seven years (to 2029-30) at an average £2,700. A breakdown of the costs is provided in the Biodiversity Plan Implementation Document.

Management & Monitoring

To support the evidence-based decision-making approach, a variety of metrics will be introduced to help quantify various aspects of the BP.

Biodiversity metrics will draw on existing approaches and ideally lend themselves to a participatory approach (e.g. citizen science surveys and student projects). The appropriateness of the metrics will be reviewed regularly to ensure that they adequately support the delivery of the BP's aims and objectives.




Metrics will be used to report the state of biodiversity in GCU's Estate and how it is changing.

The execution of the BP through the BPID will be reviewed annually by GCU's Sustainability Forum. Progress will be reported to the University Planning & Resources Group and more widely through the sustainability pages in the University's website.

Acknowledgements

GCU's Sustainability Officer (SO) is grateful for the input from students and colleagues who provided valuable feedback on the proposals contained in this BP (through a consultation held during Dec 2022 and Jan 2023 using a Padlet). Amongst the many that contributed to the development of this BP, the SO is particularly grateful for the guidance, suggestions and time provided by Dr. Paul Baker (SHSL) and Dr. Karin Helwig (SCEBE).

Appendix A – Contribution SDG

| SDG | Target & Overview of BP contribution |
|--|--|
|  <p>12 RESPONSIBLE CONSUMPTION AND PRODUCTION</p> | <p>Target 12.8 - By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature</p> <p>Indicator 12.8.1 - Extent to which (i) global citizenship education and (ii) education for sustainable development are mainstreamed in (a) national education policies; (b) curricula; (c) teacher education; and (d) student assessment</p> <p>GCU's Biodiversity Plan will be used to foster conversations about broader sustainability issues across the University.</p> |
|  <p>13 CLIMATE ACTION</p> | <p>Target 13.3 - Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning</p> <p>13.3.1 - Extent to which (i) global citizenship education and (ii) education for sustainable development are mainstreamed in (a) national education policies; (b) curricula; (c) teacher education; and (d) student assessment</p> <p>GCU's Biodiversity Plan will be used to foster conversations about broader sustainability issues across the University.</p> |
|  <p>15 LIFE ON LAND</p> | <p>Target 15.8 - By 2020, introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species on land and water ecosystems and control or eradicate the priority species</p> <p>Indicator 15.8.1 - Proportion of countries adopting relevant national legislation and adequately resourcing the prevention or control of invasive alien species</p> <p>Through the Biodiversity Plan the University will contribute to this Goal by monitoring and acting against invasive species in our grounds.</p> |
|  <p>15 LIFE ON LAND</p> | <p>Target 15.9 - By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts</p> <p>Indicator 15.9.1 - (a) Number of countries that have established national targets in accordance with or similar to Aichi Biodiversity Target 2 of the Strategic Plan for Biodiversity 2011–2020 in their national biodiversity strategy and action plans and the progress reported towards these targets; and (b) integration of biodiversity into national accounting and reporting systems, defined as implementation of the System of Environmental-Economic Accounting</p> <p>Biodiversity Plan will provide a framework for incorporating national guidance on biodiversity into how the University's estate/grounds are managed.</p> |

Appendix B – Wider Context

This Appendix provides a very brief synopsis of how GCU's BP will support and contribute (at a very local level) to: Scotland's Biodiversity Strategy, 2020 Challenge for Scotland's Biodiversity and Glasgow's Local Biodiversity Action Plan.

[Scotland's Biodiversity Strategy](#) (SBS) aims to: conserve biodiversity for the health, enjoyment and wellbeing of the people of Scotland now and in the future.

It proposes to achieve this through the five main objectives, each with specific outcomes for 2030 and supported by an 'Agenda for Action':

1. Species & Habitats: To halt the loss of biodiversity and continue to reverse previous losses through targeted action for species and habitats
2. People: To increase awareness, understanding and enjoyment of biodiversity, and engage many more people in conservation and enhancement
3. Landscapes & Ecosystems: To restore and enhance biodiversity in all our urban, rural and marine environments through better planning, design and practice
4. Integration & Co-ordination: To develop an effective management framework that ensures biodiversity is taken into account in all decision making
5. Knowledge: To ensure that the best new and existing knowledge on biodiversity is available to all policy makers and practitioners

GCU's Biodiversity Plan supports the SBS by contributing to the following objectives:

- People ('Agenda for Action' points: 2, 4, 5, 6, 8, 10 & 11) by creating 'biodiversity' opportunities for engaging our community.
- Landscapes & Ecosystem ('Agenda for Action' point: 4) by introducing measures to enhance biodiversity in the University's estate.
- Knowledge ('Agenda for Action' points: 8, 9 & 12) by supporting opportunities that enhance our collective biodiversity knowledge.

[2020 Challenge for Scotland's Biodiversity](#) reviews the SBS and adopts a more ecosystem centred approach, but retains similar outcomes and the same objectives.

GCU's BP supports the following outcome and key steps in '2020 Challenge for Scotland's Biodiversity' by providing a road map for enhancing biodiversity in across the University's Estate:

- Outcome: Improved health and quality of life for the people of Scotland, through investment in the care of green space, nature and landscapes.
- Key steps (selected): Encourage public organisations and businesses to review their responsibilities and action for biodiversity, and recognise that increasing their positive contribution to nature and landscapes can help meet their corporate priorities and performance.

Glasgow's [Local Biodiversity Action Plan](#) (LBAP) sets out a number of Glasgow City Council will deliver on Scotland's Biodiversity Strategy:

- Through the planning process and policy

- By developing a better understanding of biodiversity in the City
- Practical interventions to promote and enhance biodiversity.

GCU's BP will align measures to promoted and enhance biodiversity in our Estate with Glasgow's LBAP.

Appendix C – Maps of Historic Land Use

This Appendix has a series of maps which provide a chronology of land-use change in GCU's present location (since 1802). Maps are sourced from the [National Library of Scotland](#)'s digital archives. George Square, present in all of the maps below, is a good reference for locating GCU.



Figure 4 Map of the City of Glasgow – 1802 (source: [National Library Scotland](#)). Area to the North of George Square is largely agricultural/undeveloped.

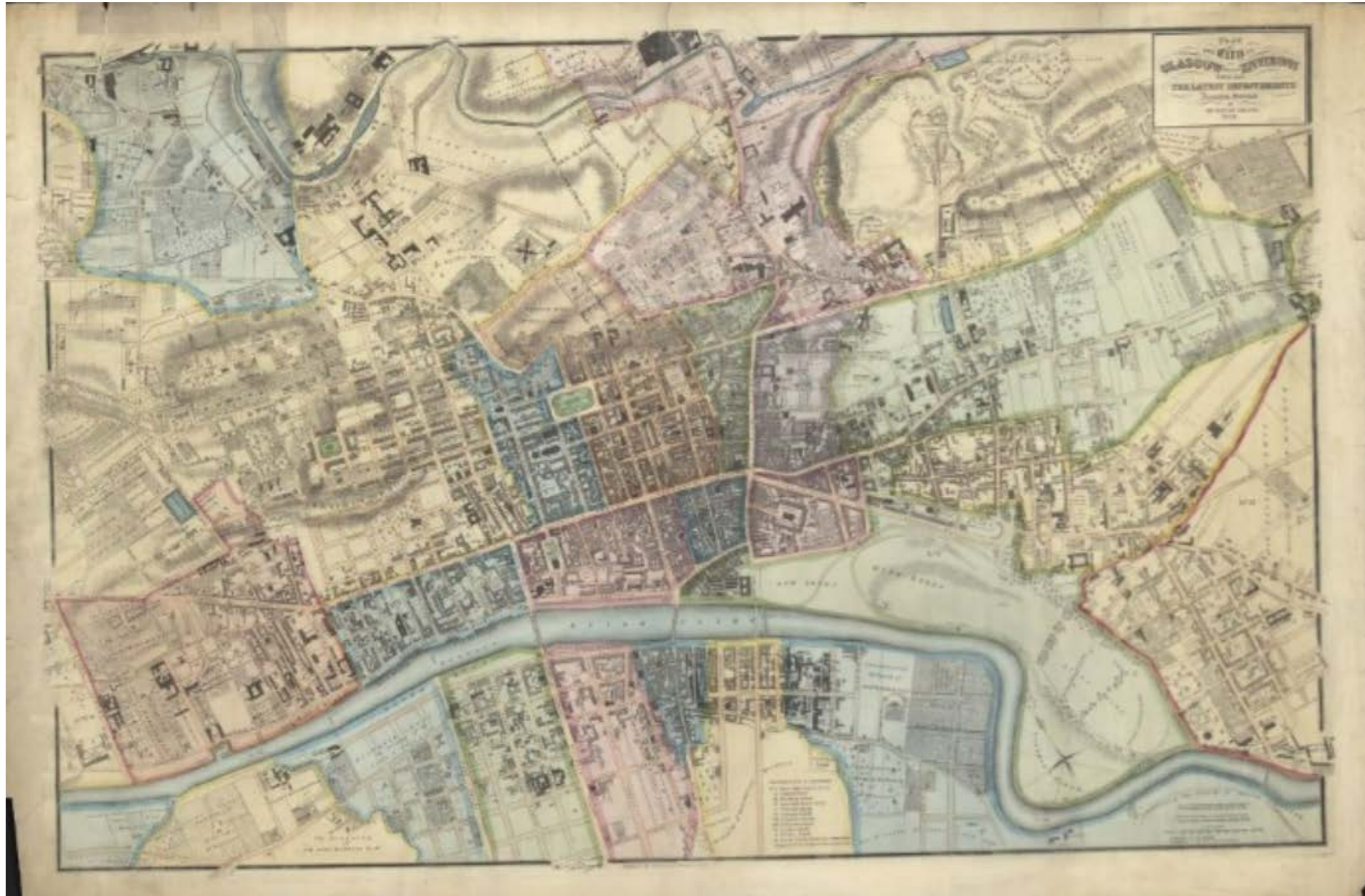


Figure 5 Plan of the City of Glasgow 1828 (source: [National Library Scotland](#)). East Cowcaddens Quarry and the New Towns Hospital are visible to the North of George Square.

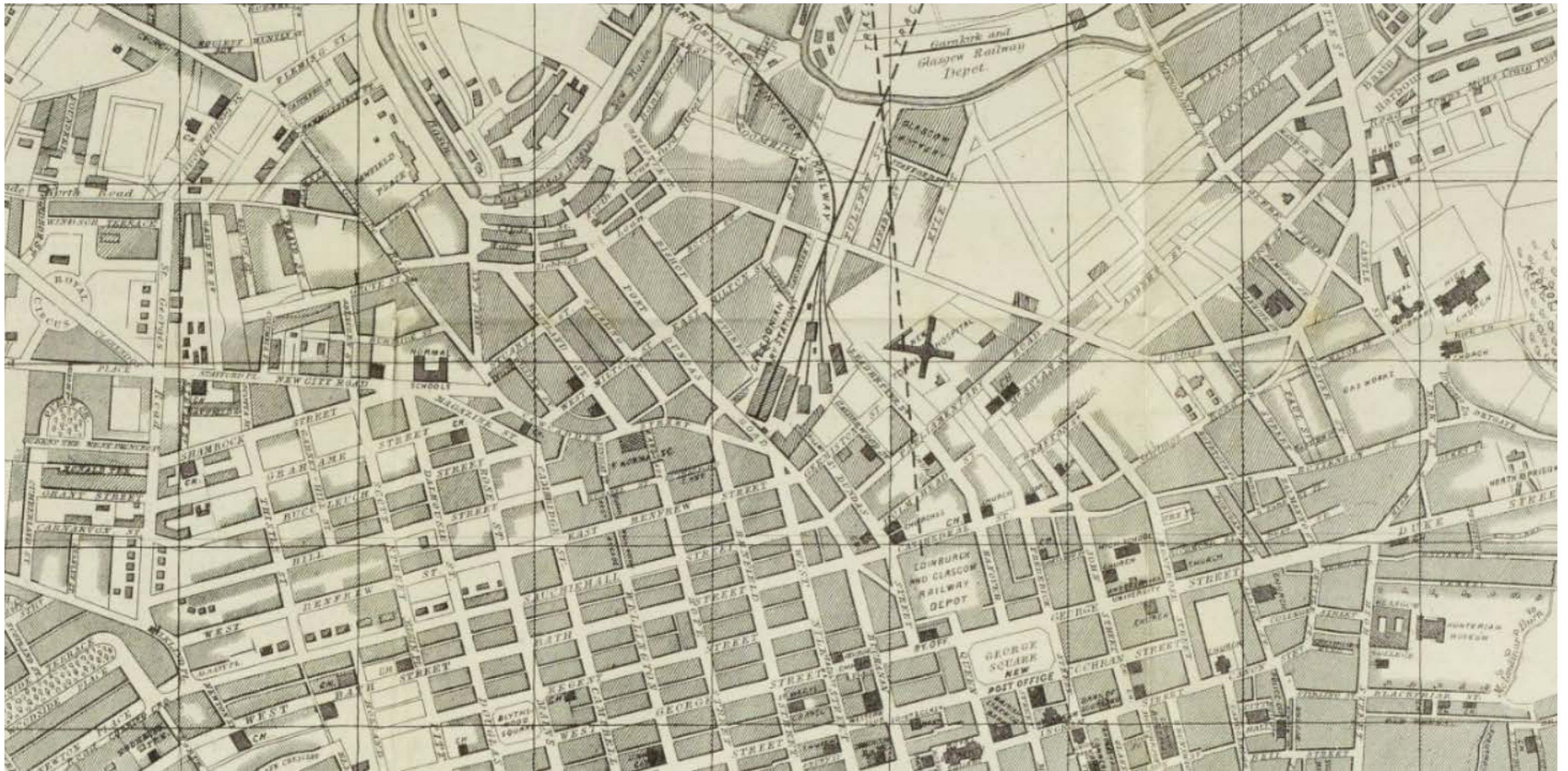


Figure 6 Extract of "Plan of Glasgow and Suburbs. Engraved expressly for the Post Office Directory" published between 1860-1861 (source: [National Library Scotland](#)). The site of the Buchanan Street Railway Station is identified as the "Caledonian Railway Station" and City Poorhouse (the Asylum) as "New Towns Hospital" are north of George Square.



Figure 7 Extract from "New Plan of Glasgow" published between 1909-1910 ([source: National Library Scotland](https://www.nls.uk)). City poorhouse/Asylum ("New Tows Hospital") no longer featured.