Forest and Woodland Strategy

DRAFT

Glasgow City Council
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Contents

Executive Summary

1. **Introduction**
2. **Regulatory Framework**
3. **Climate Change**
4. **Ecological Emergency**
5. **Glasgow Tree Canopy Cover 2024**
6. **Opportunities and Challenges**

a. Benefits of trees

b. Trees and Management Responsibilities

c. Trees for Equality

d. Trees and Open Space

e. Ancient and Veteran Trees

f. Trees and Glasgow's Economy

g. Trees and Development Proposals

h. Trees and Resilience to Threats

i. Trees and Community Participation

j. Trees and the Historic Environment

k. Trees for Improving Air Quality

l. Trees on Vacant and Derelict Land

m. Trees On Our Streets

n. Trees for Water Management

o. Trees and Soils

p. Trees and Growing Food

7. Vision for 2034

8. Monitoring and Review

9. Conclusions

10. Delivering the Glasgow City Council Forestry and Woodland Strategy

Executive Summary

There is broad consensus that human activity is a leading cause of climate change, particularly through the release of greenhouse gases such as carbon dioxide into the atmosphere. The resulting forecast changes to the UK's climate are warmer and wetter winters, and hotter and dryer summers, together with more frequent and intense extreme weather events. The predicted impacts include greater threats from localised flooding, and heat stress, together with increasing pressure on the habitats of plants and animals. The reduction in animal and plant populations, natural habitats and environments, has led to agreement that there is an ecological crisis which must be addressed.

As the impacts of climate change and the reduction in animal and plant species are linked, implementing nature-based solutions which improve habitats and ecosystems can help to mitigate the adverse impacts of climate change. Similarly, reducing the causes of climate change can contribute to improving habitats and ecosystems.

The United Nations agreed at the COP26 (Glasgow) conference that an accelerated pace of change is needed to secure net-zero greenhouse gas emissions by 2050. The Scottish Government has set the target of net-zero emissions in Scotland by 2045, and this is to be achieved through nature-based solutions as set out in the 'Update to the Climate Change Plan 2018-2032 Securing a Green Recovery on the Path to Net-Zero'.

At its 2022 COP15 (Montreal) conference the United Nations agreed that by 2030, 30% of the planet and 30% of degraded ecosystems will be protected. This target is reflected in the Scottish Biodiversity Strategy to 2045 sets out which sets out a nature-based solutions approach to improving ecological connectivity through nature networks, species recovery and restoring nature.

Glasgow City Council declared a climate and ecological emergency in 2019 and set out the response to climate change in 'Glasgow's Climate Plan: Our Response to the Climate and

Ecological Emergency'. It includes a nature-based solutions approach to enabling the city to become carbon neutral by 2030.

There are two aspects to achieving the Council's net zero by 2030 target:

· reducing the level of greenhouse gases (e.g. carbon dioxide) emitted into the atmosphere, mainly by reducing reliance on fossil fuels, and

· absorbing carbon dioxide already in the atmosphere (i.e. carbon sequestration).

Through the process of photosynthesis, trees remove carbon dioxide from the atmosphere, and therefore forests and woodlands play an important role in delivering the net zero target. In addition, trees and hedgerows provide habitats and can form natural links, allowing animals to move through urban neigbourhoods to urban fringe areas and beyond.

Protecting all trees and hedgerows, not only ecologically valuable ones (such as ancient trees and woodlands), and replacing them when they are lost, is therefore an important activity in delivering the net-zero targets and reversing biodiversity loss. Further, by expanding the overall level of canopy cover, the contribution which trees and hedgerows make to absorbing carbon dioxide in the atmosphere and reversing the ecological crisis will increase.

The need to expand woodlands tree planting in Scotland is set out in Section A159 of the Town and County Planning (Scotland) Act 1997. It requires planning authorities to produce a forest and woodland strategy which, amongst other things, the protection of seeks the expansion of the range of types of woodlands to provide physical, cultural, economic, social and environmental benefits. It is essential, therefore, that new tree planting, of any scale, is effectively planned and designed to ensure their social, economic, and environmental

benefits are maximised, they are in the right location and are of an appropriate species for the site or location.

In addition to contributing towards the net-zero emissions target, and addressing the ecological emergency, trees and hedgerows can deliver a number of other benefits:

· enhance the character of the surrounding area, including creating attractive environments which attract investment;

· support the circular economy;

· improve health by removing particulates from the atmosphere;

· provide shade which cools public and private outdoor spaces, natural habitats, and buildings (so reducing energy consumption for air conditioning);

· increase the attractiveness of vacant and derelict sites thereby also improving communities, while reducing contamination;

· help to reduce the risk of both wider scale and localised flooding by intercepting rainwater, slowing water flow into watercourses and absorbing water through their roots; and

· contributing to improving physical health through opportunities for exercise and enhancing the mental health and well-being by having a positive effect on human psychology.

This Forestry and Woodlands Strategy sets out the following vision for trees and woodlands in Glasgow in 2034:

· Glasgow's urban area has 20% canopy cover, thereby meeting the Clyde Climate Forest target, and Bridgeton, Dalmarnock, Govan, Levern and District and Possilpark, in particular, have increased canopy cover levels.

· Through increased canopy cover vacant and derelict sites contribute to meeting the net zero target, enhancing biodiversity, and increasing the attractiveness of communities;

· Canopy cover provides multiple benefits to Glasgow's residents and visitors and enhances local neighbourhoods;

· The impact of ash dieback disease is being addressed through the planting of alternative species

· Access to woodlands is increased and contributes to the health and wellbeing of the city's residents;

· More trees and woodlands are protected through the planning system, and related processes, through the identification of new TPOs and trees of high nature.

· Green network and ecological connectivity will have improved as a result of increased tree planting;

· Trees and woodlands will be more resilient to threats, including those related to climate change;

· New developments enhances existing canopy cover on site, and have effective tree maintenance arrangements in place

There are a number of strategies at national, regional, and local levels which support, and will be supported by, increased protection of existing trees and hedgerows, and by expanding canopy cover levels, and this Forestry and Woodlands Strategy aligns with them. These include (but not exclusively):

· Scottish Government's Update to the Climate Change Plan 2018-2032 Securing a Green Recovery on the Path to Net-Zero

· Scotland's Forestry Strategy 2019-2029

· Scottish Biodiversity Strategy 2045 ‘Tackling the Nature Emergency in Scotland’

· Pollinator Strategy for Scotland 2017-2027

· National Planning Framework 4

· Forestry and Woodland Strategy for Glasgow City Region 2020

· Glasgow City Council’s Strategic Plan 2022-2027

· Glasgow’s Climate Plan: Our Response to the Climate and Ecological Emergency’

· Glasgow’s Local Biodiversity Action Plan

· Glasgow Pollinator Plan 2017-2027

· Let’s Grow Together: Glasgow Food Growing Strategy 2020 – 2025’

1. Introduction

Why are trees important?

1.1 Trees are important not only to Glasgow’s residents, but also to those who work here and who visit the city. They are integral to the character of gardens, streets and avenues, and Glasgow’s many parks and open spaces, in addition to forming ancient and other woodlands in and around the city. Similarly, hedgerows, boundary trees and shelterbelts are a key element in the countryside and farmland on the city’s fringes. All trees and hedgerows can provide natural links for wildlife, allowing animals to move throughout the city, and to its urban fringes and beyond, while also bringing nature to areas of the city which lack access to it, thereby supporting the liveability of those areas. They can also offer protection from flooding

(including through their inclusion in SUDS), stabilise land, absorb carbon emissions and some ground contaminants, improve air quality, reduce noise, and regulate temperature. In addition, they can create economic opportunities and, typically, they increase in value over time.

What is a forest and is it different from a woodland?



1.2 The UK Forestry Standard (UKFS) defines forests as *'land predominately covered in trees (defined as land under stands of trees with a canopy cover of at least 20%), whether in large tracts (generally called forests) or smaller areas known by a variety of terms (including woods, copses, spinneys or for shelterbelts)'*. It also advises the term *'woodland'* has local nuances but, for its purposes, the UKFS uses *'woodland'* interchangeably with *'forest'*. Scotland's Forestry Strategy 2019-2029 adopts this definition, and also states woodland includes native and non-native trees, semi-natural and plantation areas.

Why prepare a forest and woodlands strategy?

1.3 Scotland's Forestry Strategy 2019-2029 highlights that while in the last 100 years, forest and woodland cover in Scotland has increased from around 5% to 18.5%, which is a higher level than the rest of the UK, it is well below the European Union (EU) average of 43%.

1.4 The need to expand woodlands tree planting in Scotland is set out in the Planning (Scotland) Act 2019, which amends the Town and County Planning (Scotland) Act 1997. It requires local authorities to produce a forest and woodland strategy which, amongst other things, seeks the expansion of the range of types of woodlands to provide physical, cultural, economic,

social and environmental benefits. In addition, the need to increase tree planting to deliver net-zero greenhouse gas emissions is highlighted in Scotland's Third Land-Use Strategy 2021-2026. It is essential, therefore, that new tree planting, of any scale, is effectively planned and designed to ensure their social, economic, and environmental benefits are maximised, they are in the right location and are of an appropriate species for the site or location.

1.5 To meet the national net-zero target, existing trees must also continue to contribute to mitigating climate change impacts and enhancing biodiversity. This aspect is also addresses by the Planning (Scotland) Act 2019, which requires forest and woodlands strategies to set out the Council's measures to protect and appropriately maintain existing trees and woodlands, whether they are single trees, small groups of trees or significant woodlands. Replacing lost trees, whether that be through planned feeling, disease, natural ageing, or any other reason, is therefore essential to maintain and increase the level of canopy cover in the city. Ensuring the City's tree stock is resilient to threats such as Ash Dieback disease, is therefore important.

1.6 The Forestry and Woodland Strategy for Glasgow City Region 2020 (FWSGCR) was produced by the eight local authorities in the Clydeplan area, including Glasgow City Council, and sets out a strategic policy and spatial framework for the area which aims to maximise benefits for the local economy, communities and the environment. Amongst other things it seeks to:

· direct woodland to the most appropriate locations;

· promote the creation of high quality, multi-functional woodland;

· assist in protecting and enhancing valued woodland;

· inform woodland planting to secure positive effects for biodiversity and environmental net gain;

· inform development of future Local Development Plans (LDP) and planning guidance for the local authorities within the Glasgow City Region area;

· inform local authority development management, investment and asset management decisions on proposals that include woodland removal or woodland creation;

· complement partner strategies and guidance for the rural and area natural environment.

1.7 The FWSGCR also points out local authorities can develop their own, more detailed, local strategies for their area which reflect local considerations. Glasgow's Forest and Woodland Strategy sets out a strategy for the city which covers the 2024-2034 period, however, because trees are a long-lived asset, regular monitoring of the progress made in delivering its requirements is essential. This, together with appropriate adjustment(s) whenever important changes to the social, economic, environmental, legislative or policy context are identified, will deliver a legacy for future generations.

1.8 Glasgow's forest and woodland strategy sets out the Council's approach to all trees within the city, but it should not be seen as a stand-alone document, however, instead it nests within a wider network of inter-related strategies and plans produced, not only by Glasgow City Council, but also by other organisations, including the FWSGCR, and other strategies and documents produced by the Scottish and UK governments.

1.9 Importantly, the forest and woodland strategy informs, the emerging City Development Plan which will set out the City Council's land-use strategy, and its policies and proposals for sustainable development within Glasgow.

1.10 It will not be appropriate to plant trees on every suitable site within the city as some may be required to meet other needs, demands and priorities, and the City Development Plan takes a balanced view in determining the most appropriate use for each site/location. This process includes engagement

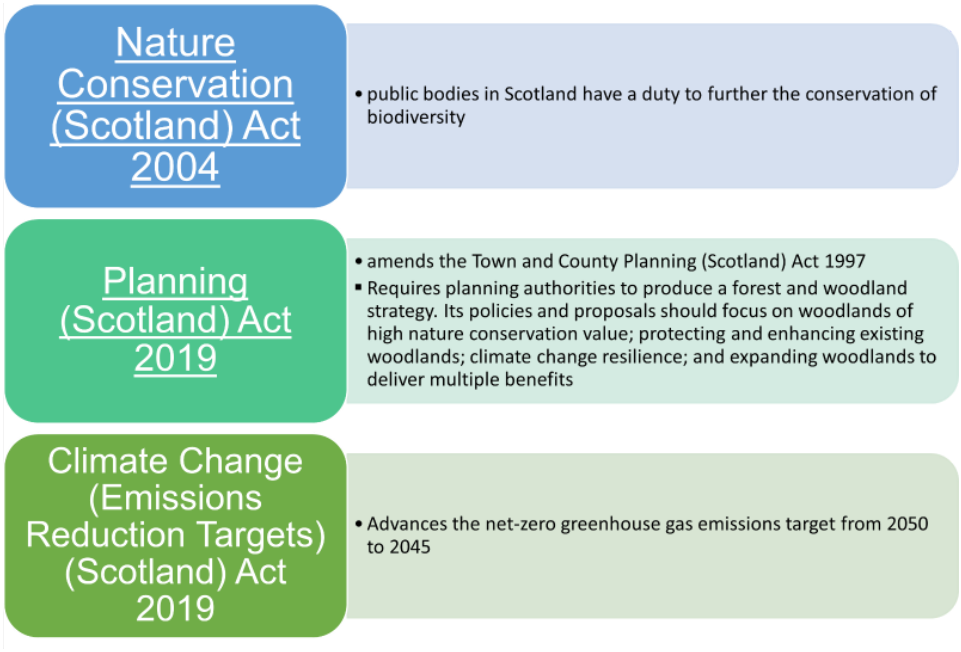
with Glasgow's residents, partners organisations and other stakeholders to ensure their views are taken into consideration.

1.11 The Forest and Woodlands Strategy is the primary strategy and policy document relating to all woodland and tree planting in the City. It directs tree planting to the most appropriate locations where there are opportunities to contribute towards mitigating climate change and increasing the City's biodiversity, while also providing multiple benefits such as improving amenity and green networks, increasing carbon capture, and contributing to water management.

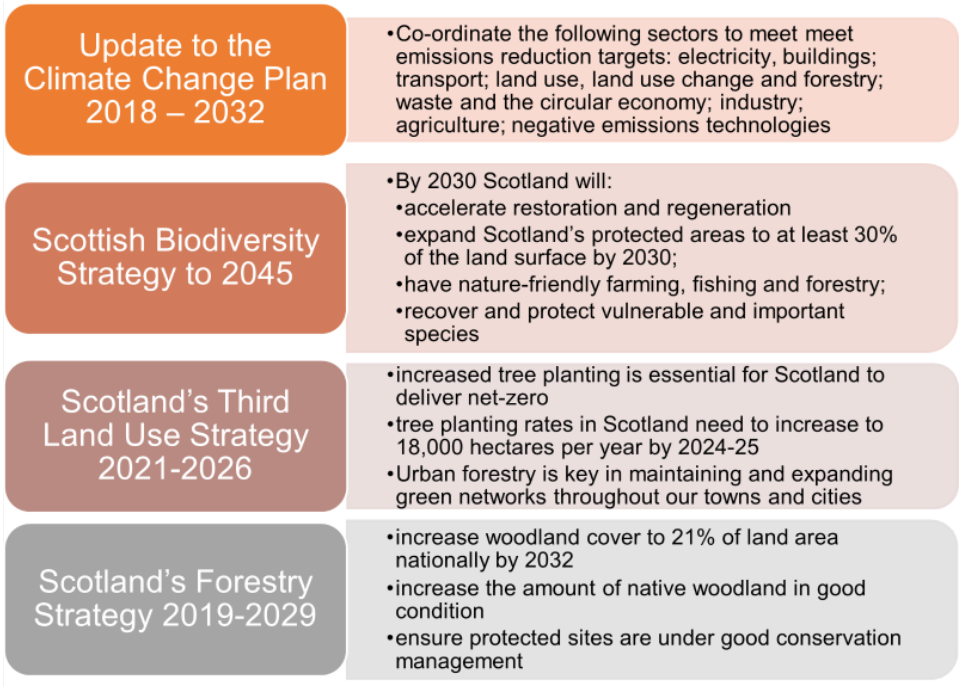
1.12 This strategy should not be confused with the Council's Tree plan, which relates to trees within the Council's estate, and directs Council investment and activities related to tree planting to the most beneficial locations in line with this forest and woodlands strategy.

2. Regulatory Framework

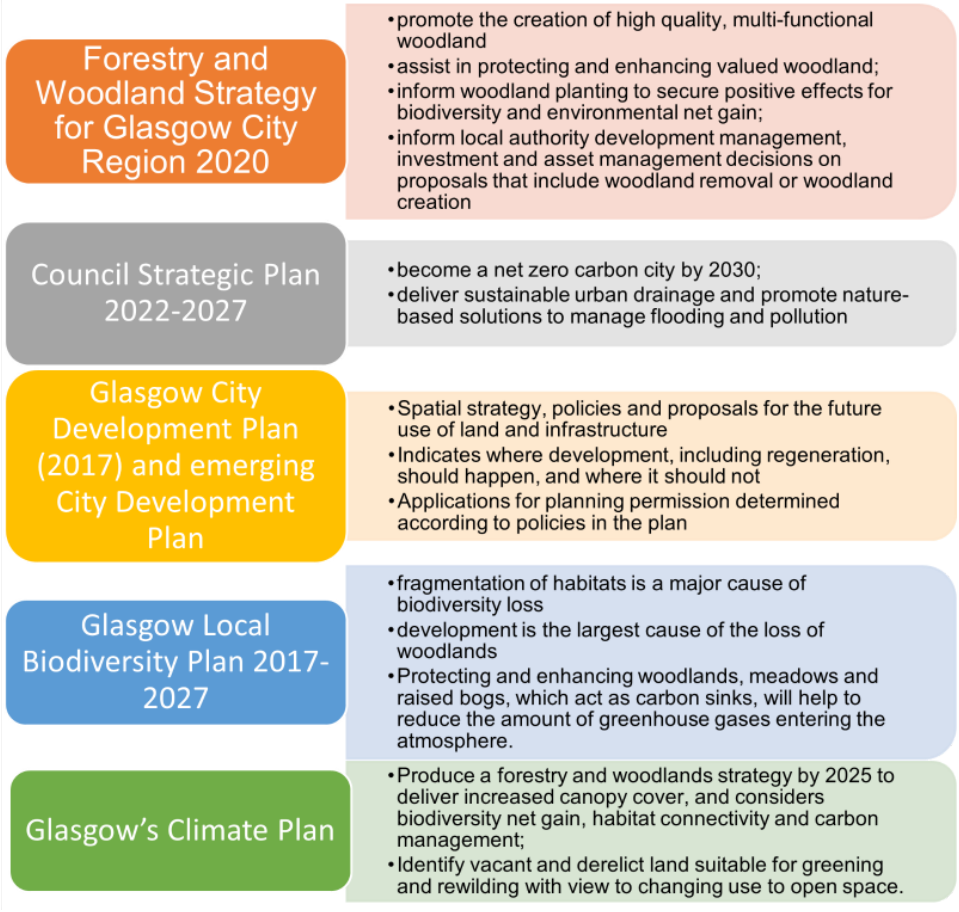
2.1 This forestry and woodlands strategy has been prepared to meet the requirements of the Planning (Scotland) Act 2019 and other relevant legislation (see below), and to support the emerging Glasgow City Development Plan which will replace the Glasgow City Development Plan which was adopted in 2017:



2.2 The following national strategies relate to the climate and ecological emergencies, and this Forestry and Woodlands Strategy supports their aims and objectives:



2.3 This Forestry and Woodlands Strategy also supports the following plans and strategies:

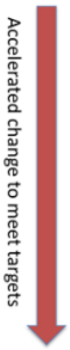


3. Climate and Ecological Emergencies

3.1 There is broad consensus that human activity is a leading cause of climate change, particularly through the release of greenhouse gases such as carbon dioxide into the atmosphere. The Met Office's projected changes to the UK and Scottish climate suggest an increased likelihood of warmer and wetter winters on average, with hotter and drier summers, and more frequent and intense extreme weather events. The forecast impacts of these changes include greater threats from localised flooding, and heat stress, together with increased pressure on the habitats of plants and animals.

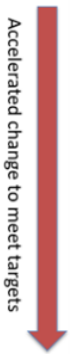
3.2 There has been significant international and national agreement on the need to address climate change. The United Nations has suggested the following targets since 1997 and the increasingly intensive actions required to meet the current net-zero target by 2050:

UN Agreement	Aim/Target
1997: UN COP 3 Kyoto	Reduce greenhouse gas emissions by an average of 5% against 1990 levels during 2008-2012
2015: UN COP 21 Paris	Keep global ave. temp. rise to 'well below' 2°C (3.6°F) above pre-industrial levels, while working to keep it below 1.5°C (2.7°F). Target - global net-zero emissions (i.e. carbon neutral) by 2050
2021: UN COP 26 Glasgow	Accelerated pace of change needed to keep temp rise below 1.5°C (2.7°F) within reach and secure global net zero emissions by 2050. Revise actions to reach targets Phase-out coal; curtail deforestation; switch to electric vehicles; invest in renewables; protect communities and natural habitats



3.3 The UK and Scotland have followed a similar pattern, with the need to reduce greenhouse emissions first being acknowledged in legislation through the UK Climate Change Act 2008, and Scotland setting its own target in 2009, which then became more stringent in 2019:

Act	Aim/Target
Climate Change Act 2008	Basis for the UK's approach to tackling and responding to climate change. Target: net zero by 2050: i.e. reduce greenhouse gas emissions by at least 100% of 1990 levels (includes Scotland, Wales and Northern Ireland)
Climate Change (Scotland) Act 2009	Target: at least 80% reduction from the baseline year, 1990 by 2050. Public sector bodies have a statutory duty to cut greenhouse gas emissions, and prepare for the impacts of climate change
Climate Change (Emissions Reduction Targets)(Scotland) Act 2019	Target: reduction accelerated to net zero by 2045, rather than 80% by 2050 in Scotland, not rest of UK. Why – more opportunities to remove CO_2 from the atmosphere through afforestation and carbon capture and storage



3.4 To address climate change, the Scottish Government produced the 'Climate Change plan: The Third Report on Proposals and Policies 2018-2032. It set out a multi-sectoral approach to tackling climate change impacts and was subsequently revised by the 'Update to the Climate Change Plan 2018-2032 Securing a Green Recovery on the Path to Net-Zero' which sets out a 'Green Recovery' approach to achieving the new net zero by 2045 target introduced by the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 These strategies can be summarised as follows:

Strategy	Key Issues
(Scotland's) Climate Change Plan 'The Third Report on Proposals' 2018	Multi-sector approach to reducing greenhouse gas emissions: • electricity: renewable energy generation; energy efficient buildings; • transportation: significant increase in the uptake of ultra-low emission electric and hydrogen vehicles; • industry: fuel diversification; energy efficiency; heat recovery; • waste: no landfilling of biodegradable municipal waste by 2021; food waste reduced by 50% by 2030; expand the circular economy to reduce reliance on scarce resources; • agriculture: adopt low carbon farming methods; • land-use and forestry: by 2032, Scotland's woodland cover will increase from around 18% to 21%; by 2050, Scotland's woodlands will be delivering a greater level of ecosystem services, such as natural flood management and biodiversity enhancement.
Update to the Climate Change Plan 2018-2032 'Securing a Green Recovery on the Path to Net-Zero'	Updates the 2018 Climate Change Plan, reflecting the revised net zero by 2045 target. Sets out the 'green recovery' prioritising economic, social and environmental wellbeing, a co-ordinated approach to decarbonisation, and incorporating a place-based approach to delivering change in communities.

3.5 Glasgow City Council declared a climate and ecological emergency in 2019, and set out the response to climate change in 'Glasgow's Climate Plan: Our Response to the Climate and Ecological Emergency' (Climate Plan). Its actions set out the direction of travel required by Glasgow to tackle the climate and ecological emergency and includes a nature-based solutions approach to enabling the city to become carbon neutral by 2030. This target date compares with 2045 for Scotland, and this forest and woodlands strategy is a response to Action 35 of the Climate Plan which requires the development of an 'Urban Woodland Strategy' for the city.

Strategy	Recommendation
Glasgow's Climate Plan: Our Response to the Climate and Ecological Emergency	Multiple themed approach to climate change mitigation: • Communication and Community Empowerment - Significant public engagement to ensure residents have their say on actions to tackle climate change and improve their neighbourhoods; • Just and Inclusive Place – includes ensuring people are at the centre of the transition to net zero, creating benefits and opportunities for all in the city; • Well Connected and Thriving City - support the development of low-carbon retrofits and new buildings that are fit for the future; strengthen energy networks, and support decarbonisation of transport systems; • Health and Wellbeing - protect and enhance local habitat connectivity and biodiversity in the city; help reconnect communities with nature; support equitable access to good quality open space and green infrastructure in the city; • Green Recovery - transition towards a circular economy; Support tree planting and maintenance, peatland restoration, and green infrastructure; support improved infrastructure for walking, cycling and remote working. Action 35: develop an 'Urban Woodland Strategy' which delivers increased canopy cover, considers biodiversity net gain, habitat connectivity and carbon management.

3.6 There are two aspects to achieving the Council's net zero by 2030 target: reducing the level of greenhouse gases (e.g. carbon dioxide) emitted into the atmosphere, mainly by reducing reliance on fossil fuels, and absorbing carbon dioxide already in the atmosphere (i.e. carbon sequestration).

Through the process of photosynthesis, trees remove carbon dioxide from the atmosphere, and therefore forests and woodlands play an important role in delivering the net zero target, and their role needs to be set in the wider carbon emissions reduction and sequestration context.

3.7 In terms of reducing emissions, the Scottish Government's Update to the Climate Change Plan sets out the approach to delivering a green recovery, and meeting the climate change targets. It highlights that, reduced emissions will be achieved through, amongst other things, increased renewable energy generation, converting homes and non-domestic to low or zero carbon heating systems, and reductions in emissions from transport systems. This approach is echoed in the Climate Ready Scotland: climate change adaptation programme 2019-2024.

3.8 Similarly, the Council's Strategic Plan 2022-2027 indicates reduced emissions can be achieved through a cleaner and greener transport system, as well as decarbonising energy systems. In addition, the Council's Climate Plan highlights that increasing the amount of renewable energy (e.g. solar thermal), PV or heat pumps in the city, and cleaner public transport as part of the City's Low Emissions Zone can contribute to lowering emissions. The Council's Local Heat and Energy Efficiency Strategy (GLHEES) supports the Scottish Energy Strategy, the Scottish Energy Efficiency Programme, and the Heat in Buildings Strategy which provide strategic frameworks to decarbonise Scotland's heating and tackle fuel poverty.

3.9 The important role which trees play in mitigating the impacts of climate change through carbon sequestration is acknowledged in Scotland's Forestry Strategy 2019-2029. The Scottish Government's Update to the Climate Change Plan highlights the significant increases in forestry and widespread peatland restoration in particular, can reduce green house gases and other pollutants and increase the levels of carbon dioxide being absorbed.

3.10 One of the aims of Forestry and Woodland Strategy for Glasgow City Region 2020 is to *'Maximise the contribution that the Glasgow City Region area's existing and future woodlands can make to achieving carbon neutrality in line with the Scottish Government targets and adapting to the impacts of climate change.'* through their capacity to absorb and store carbon dioxide from the atmosphere. This is reflected in Glasgow's Climate Plan Our Response to the Climate and Ecological Emergency, the Glasgow Climate Adaption Plan 2022-2030.

3.11 Trees and woodlands play an important role in delivering the national and Glasgow City Council's net zero emissions targets through carbon capture, and any net loss in canopy cover within the city would therefore threaten carbon sequestration levels and the contribution trees make to achieving the net zero target. Some trees in the city might be more vulnerable to threats such development, disease, ageing (including ageing street trees in residential and other areas) and vandalism, but wherever trees are lost it is important that they are replaced with trees of an appropriate age and species in order maintain canopy levels in the city, and retain the character and ecology of the area.

3.12 Increasing canopy cover levels in the city will boost the contribution of trees to carbon sequestration and, therefore, their contribution to meeting net zero targets.

3.13 It is recognised that there has been a reduction in biodiversity in terms of the number of plant and animal species, and the extent of their populations, as a result of the impacts of climate change on natural habitats and environments. There is increasing agreement on the urgency of tackling the biodiversity crisis, and the connectivity between climate change and the loss of plants and animals means implementing nature-based solutions which improve habitats and ecosystems can help mitigate the adverse impacts of climate change.

3.14 Protecting existing habitats and ecosystems is therefore an important step in reducing biodiversity loss, and reflecting this, the United Nations 2022 Biodiversity Conference (COP 15) in Montreal, Canada, agreed to protect 30 per cent of the planet and 30 per cent of degraded ecosystems by 2030. Following that approach, the Scottish Biodiversity Strategy 2045 'Tackling the Nature Emergency in Scotland' (2022), applies the same target that by 2030, 30% of Scotland's land (and seas) which are important for biodiversity will be protected. As with the approach to climate change, Scotland's Biodiversity Strategy promotes a nature-based approach to nature recovery and restoration.

3.15 In terms of the land-use planning system, National Planning Framework 4 recognises the climate and nature emergencies and responds by setting out the approach to delivering change which considers competing interests and results in decisions which are in the long-term public interest.

Agreement/Strategy	Aim/Target
UN 2022 Biodiversity Conference (COP 15) Montreal	Target: protect 30 per cent of the planet and 30 per cent of degraded ecosystems by 2030
 Scottish Biodiversity Strategy to 2045 'Tackling the Nature Emergency in Scotland' (2022)	Protect at least 30% of the country's land, and seas Nature-based solutions - improving ecological connectivity through nature networks, species recovery, and nature restoration
 NPF4	Spatial Principles • Just transition - empowering people to shape their places; • Conserving and recycling assets - productive use of existing buildings, locking in carbon, minimising waste, and building a circular economy; • Local living - easy access locally to services, greenspace, learning, work and leisure; • Compact urban growth - limit urban expansion and optimise use of land to provide services and resources, including carbon storage, flood risk management, blue and green infrastructure and biodiversity; • Rebalanced development - investment in areas of past decline, and manage development sustainably in areas of high demand; • Rural revitalisation - encourage sustainable development in rural areas. Biodiversity (policy 3) LDPs should protect, conserve, restore and enhance biodiversity. Promote nature recovery and nature restoration. Create and strengthen nature networks. Forestry, woodland and trees (policy 6) LDPs should protect existing woodland and the potential for its enhancement or expansion to avoid habitat fragmentation and improve ecological connectivity,

3.16 Glasgow's Local Biodiversity Action Plan (LBAP) sets out aims, objectives and actions for the period 2017 to 2027. It indicates woodlands have become fragmented, with the largest loss being due to development, and this will impact on many other habitats and species. It highlights recreation usage, vandalism, diseases, pests and pathogens, and non-

native species as being other threats to Glasgow's woodlands. It also sets out the management requirements for each of the woodland types in the city.

3.17 Tree planting should be based on a clear understanding of the existing ecology of an area and the impacts it might have on that ecology.

3.18 With regard to management of woodlands, the LBAP indicates that while managing woodlands in ways which encourage natural regeneration (i.e. trees self-seeding) can be beneficial as they can, for example, result in mixed species woodlands which are are more resilient to threats and can benefit wildlife. These need to be balanced against any potentially detrimental effects, however, and the LBAP states '*An increased height and density of ground vegetation can lead to reductions in populations of insects and small plants*.'

3.19 The Pollinator Strategy for Scotland 2017-2027 (PSS) stresses pollinator species (e.g. bees and flies) are integral to biodiversity, but they are under threat from land-use changes, land management, pesticides, pollution, invasive non-native species, diseases and the impacts of climate change. Glasgow Pollinator Plan 2017-2027 reflects these and also points to the loss of natural and semi-natural woodlands, and the fragmentation and isolation of habitats and open spaces as contributing factors to the loss of pollinators.

4. Glasgow Tree Canopy Cover 2024

4.1 The city's trees are found in woodlands, shelterbelts, parks, on streets and in private gardens. Many are protected by existing designations such as Tree Preservation Orders (TPOs), and by land-use planning and other policies, and these will continue to be protected. The Town and Country Planning (Scotland) Act 1997, as amended, and National Planning Framework 4, require the protection of ancient woodlands, ancient trees, and veteran trees as they are not replaceable, often form an important landscape feature, and provide

invaluable habitats. They also require planning authorities to identify woodlands of high nature conservation value and to protect and enhance them through the development plan. The Council will protect the ancient trees and woodlands, and veteran trees from adverse impacts, loss or damage through designation and policies in the Development Plan and any other appropriate means.

4.2 Both NPF4 and the Town and Country Planning (Scotland) Act 1997, as amended, require planning authorities to identify woodlands of high nature conservation value and also to protect and enhance them through the development plan.

4.3 The City Development Plan (adopted 2017) identifies Ancient, Long-Established or Semi-Natural Woodland areas, and these, together with veteran trees, will be protected from adverse impacts, loss or damage. In order to ensure the continued accuracy of information relating to these important trees and woodlands, and to safeguard all trees of a high nature conservation value in the city, it will be necessary to undertake a survey using desk based and field survey techniques where necessary.

4.4 Not only have valuable trees in Glasgow to be protected, but Scotland's Forest Strategy 2019-2029 targets increasing forest and woodland cover in Scotland to 21% of the total area by 2032 to help address climate change. More locally, the Clyde Climate Forest also requires increased planting and aims to have 18 million trees planted throughout the Glasgow City Region by 2030, including increasing the average tree canopy cover in urban glasgow to 20% by planting, in particular, in areas of deprivation and locations at risk from the impacts of climate change.

4.5 Scotland's Third Land-Use Strategy states that through innovative planning and careful design, cities, towns and villages can deliver a multitude of uses in the same area. Changing land-use patterns, delivering canopy cover targets, and increasing environmental benefits will require co-ordination through the emerging City Development Plan, this

strategy requires tree planting to be and in accordance with the UK Forestry Standard. The Council's approach to expanding tree canopy cover within its estate is set out in the Tree Plan.



4.6 Initial canopy cover analysis suggests around 18% of Glasgow's land area has tree canopy cover, with the average level in Council Wards being 19%. Two Wards, Linn (31%) and Newlands/Auldburn (29%) have the highest level, while Anderston/City/Yorkhill (Ward 10) and Govan (Ward 5), have the lowest levels with less at less than 10% each. To deliver a range of benefits such as linking nature/green networks, improving air quality, alleviating flooding, and creating attractive urban and countryside environments, planting trees and hedgerows must be undertaken in accord with this strategy.

4.7 The Council's Tree Plan, which relates only to trees and woodlands in Council ownership, has identified potential sites totalling around 189 hectares (175 ha in parks and 14 Ha on streets) as being potentially suitable for tree and woodland planting over the next 10 years. It also suggests there is the potential for additional sites to be nominated by communities and stakeholders, thereby possibly increasing this figure.

4.8 It is estimated that of the 848 hectares of vacant and derelict land in Glasgow, approximately 225 hectares have canopy cover. As a result, there is maximum of around 633 Ha of vacant and derelict land available for tree planting. Not all of these site would be suitable, or appropriate for tree planting, however, due to site conditions and they might be required for other uses.

4.9 Analysis will be undertaken to establish potential areas which might be suitable for tree and woodland planting.

4.10 Before planting commences, including when extending and restoring woodlands and reconnecting green networks, a detailed investigation of the site's suitability for tree planting will need to be undertaken by the individual or body planting the trees to satisfy themselves there are no constraints to planting, and appropriate tree species (including tree and hedgerow species which retain foliage in winter) are proposed taking site conditions and characteristics into account including ensuring the soil type is suitable for the selected species, and there are no adverse impacts on protected species. Planting should be undertaken in accordance with the UK Forestry Standard.

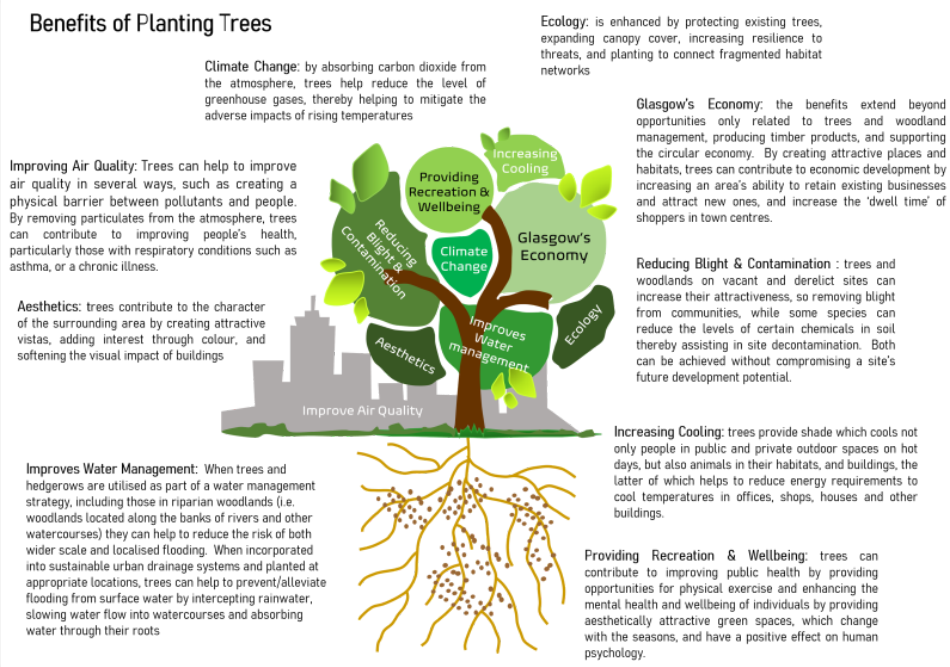
5. Opportunities and Challenges

5.1 A number of studies have estimated the value of the contribution to, for example, addressing climate change, decreasing impacts on human health, and reducing the need for energy to cool buildings. In 2015, Glasgow City Council and Forestry Commission Scotland jointly funded the study 'Valuing Urban Trees in Glasgow' to assess the monetary value of the contribution Glasgow's trees make towards matters such as avoided surface water run-off, air pollution removal, and carbon storage and sequestration. The study concluded the lives of Glasgow's residents and visitors are considerably improved by the city's trees, which should be valued alongside other infrastructure projects. Given the age of that study, there will be benefits to be gained by updating it, importance thereby enabling decisions to be based to on more up to date information.

5.2 In order to maximise the benefits derived from existing trees, tree planting, and good management practices, the Council will protect existing trees and woodlands (including having a presumption in favour of retaining all healthy and structurally sound trees), while also seeking the replacement of lost trees, where and when appropriate, and an increase in the level of tree and woodland planting in the city. The

benefits which trees provide include carbon capture, improving air quality and providing habitats for animals, in addition to their intrinsic aesthetic value, and details are set out in the diagram below:

a. Benefits of Trees



b. Trees and Management Responsibilities

5.3 It is estimated that Glasgow has around 2 million trees (around 18% of the land area), which together make up Glasgow's urban forest. The responsibility for the safety and management of these trees rests with the land owner, as does the obligation to obtain the correct permissions for any proposed works where they are required.

5.4 Public bodies in Scotland have a duty under the Nature Conservation (Scotland) Act 2004 to further the conservation of biodiversity when carrying out their responsibilities, and in doing so, must have regard to, amongst other things, the Scottish Biodiversity Strategy.

5.5 In addition to preparing this strategy, the Council also has responsibility and powers under its role as Planning Authority to protect trees by designating Tree Preservation Orders, and Conservation Areas.



5.6 When granting planning permission for new development the Council also has powers to attach conditions to protect existing trees or require new ones to be planted. In addition to entering into legal agreements with landowners to ensure the protection or enhancement of trees where planning conditions are inappropriate, the Council can also agree compensatory planting (at the developer's expense), or payment in leu of planting in the area nearby (see Glasgow City Council, Supplementary Guidance 7 Natural Environment). The Council also either owns or maintains groups of trees and individual trees in places such as parks and cemeteries, but also street trees on footways, verges, etc. The approach to managing and enhancing these trees is set out in the Tree Plan.

5.7 Other public sector organisations such as NHS Greater Glasgow and Clyde (e.g. in hospital grounds), and Network Rail (e.g. along railways) are also responsible for maintaining trees, and so too are commercial organisations and householders.

5.8 The management of all existing and proposed woodlands in Glasgow should adhere to the UK Forestry Standard, ensuring they provide long-term tree cover, are maintained in good condition, and provide a key community resource.

c. Trees for Equality

5.9 Scotland's Third Land Use Strategy 2021-2026 indicates that through the Green Infrastructure Fund and Green Infrastructure Community Engagement Fund the Scottish Government will will support projects in some of the country's most deprived areas. It states the projects supported will improve local green infrastructure and deliver benefits from nature to local communities.

5.10 National Planning Framework 4 (NPF4) states there are localised areas of high and low deprivation in the Glasgow city region, but access to quality greenspace and nature-based solutions, and providing opportunities for play, socialising, relaxation and physical activity, can reduce inequality and improve health and wellbeing.

5.11 By 2032, the Clyde Climate Forest project aims to increase the average canopy cover in urban Glasgow to 20%, and direct new tree planting in urban areas to those neighbourhoods with low levels of existing canopy cover, and particularly to areas experiencing deprivation and at risk from the climate change impacts.

5.12 The Council's Tree Plan (for trees in the Council's estate), identifies several communities, including Bridgeton, Dalmarnock, Govan, Levern and District and Possilpark, where planting ~~for~~ to deliver the Clyde Climate Forest will take place. Most of the trees planted will be native species with non-native species also incorporated in places to support pollinators and enhance the visual aspect of open spaces.

Ward (Community)	% Canopy Cover of Ward
Ward 3 Greater Pollok (Levern & District)	21
Ward 5 Govan (Govan)	9
Ward 9 Calton (Bridgeton, and Dalmarnock)	12
Ward 16 Canal (Possilpark)	13

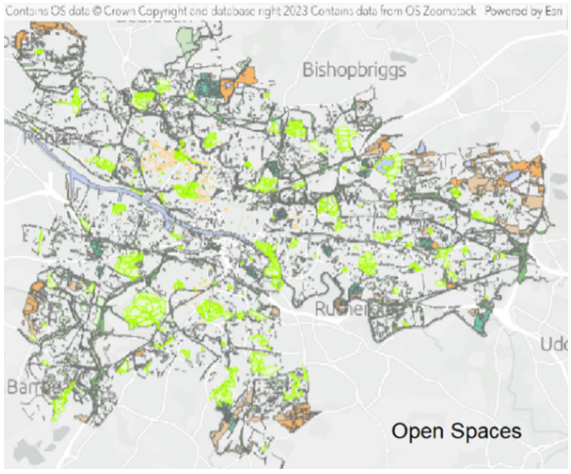
Sources: Tree Canopy – Google Tree Canopy data

Note: the above figures are Council Wards, and figures for smaller areas within the Wards can differ from it.

d. Trees and Open Space

5.13 The Glasgow's Open Space Strategy will be an important consideration in identifying sites for tree planting. NPF4 defines open space as being '*Space within and on the edge of settlements comprising green space or civic areas such as squares, market places and other paved or hard landscaped areas with a civic function'. It is the aim of the Council's Open Space Strategy to provide access to open space of an appropriate size within a 400m walk of people's homes.* This aligns with the intent of NPF4 to '*create connected and compact neighbourhoods where people can meet the majority of their daily needs within a reasonable distance of their home*' through local living and 20 minute neighbourhoods.

5.14 The Council either owns or controls many areas of open space in the City, most notably the major parks, but there are other open spaces, such as the grounds of hospitals, which are controlled by other public bodies, and these too might be capable of accommodating further tree canopy cover. Expanding tree cover on open spaces, , can increase access to woodlands and recreation opportunities, improve biodiversity and air quality, and contribute to the health and wellbeing of local communities.



5.16 Not all open spaces will be suitable for tree planting, given their size, the type of open space and their use (e.g. park), site specific conditions, and demand for other uses. When proposing tree/woodland planting or expansion, consideration has to be given to retaining the character of the open space, while also ensuring safety factors are incorporated (e.g. gateways to and from these areas), and multiple benefits are provided. To achieve this, investigation of the potential for open spaces and other land under the Council's ownership or control to contribute to increasing tree canopy cover should be undertaken, and brought forward in accord with this strategy, the Council's Tree Plan, and the OSS.

e. Ancient and Veteran Trees

5.17 Both NPF4 and the Town and Country Planning (Scotland) Act 1997, as amended, require planning authorities to identify woodlands of high nature conservation value and also to protect and enhance them through the development plan.

5.18 National Planning Framework 4 and this strategy seek to protect ancient woodlands as they are not replaceable, and are often an important landscape feature in the setting and character of a location, they are important to habitats and biodiversity, and they provide recreational opportunities.

5.19 The Council has identified Ancient, Long-Established or Semi-Natural Woodland areas, as set out in the City Development Plan (adopted 2017). In order to ensure the continued accuracy of this information it will be necessary to undertake a survey using desk based and field survey techniques where necessary.

5.20 There are also, however, many woodland areas which are supported through a protective designation, but which have value in terms of biodiversity, landscape, placemaking, recreation etc. In this regard, there is a presumption in favour of retaining all healthy and structurally sound trees

f. Trees and Glasgow's Economy

5.21 The trees in Glasgow provide a boost to the city's economy in a number of ways, some of which are direct, and others which are indirect. They can be delivered through pubic organisations, private companies and community enterprises. The importance of high quality spaces in terms of attracting investment which brings well paid jobs and highly productive jobs is highlighted the Glasgow City Region Economic Strategy (Dec 2021). In addition, the Glasgow Green Deal Action Plan aims to reshape the city's economy, and has the following interlinked objectives, to which this Forestry and Woodlands strategy contributes:

· reducing carbon emissions and building resilience to the impacts of climate change

· creating prosperity, sustainable jobs and high-quality places

· eliminate poverty and deliver justice through inclusion and equality.

5.22 In terms of direct impacts, the economy can be increased through the provision of services, training, and employment in, for example, tree planting, arboriculture and related services, and producing goods made from timber. Enterprises

in this sector, however, are often small, place an emphasise on serving local areas, and may have limited capacity to expand. There may also, however, be opportunities for community wealth building.

5.23 Other activities, such as public realm improvements incorporating trees, can create physical environments can increase the attractiveness of the locality to private investors, thereby providing indirect benefits to the local economy. Trees in town centres (e.g. street trees) can encourage shoppers to stay longer (increase dwell time) and perhaps spend more, they provide shade, and they can improve the environment of industrial areas. Trees at key transport nodes, intersections and corridors, and within existing parks and public open spaces, also increase the attraction of these places for residents and visitors to the city, all helping the city's economy. A specific monetary value on the benefits of tree planting in environmental improvements, which would better inform investment decisions, hasn't been possible up to now.

5.24 Environmental benefits which can improve a local economy can be of interest to companies which are interested in, for example, off-setting their carbon footprint through investment in nature based projects, and environmental improvements, on their premises or at other sites, either on their own, or partnership with others.

g. Trees and Development Proposals

5.25 Scotland's Third Land Use Strategy 2021-26 indicates decisions on the use and management of land need to be taken holistically to make sure the decisions are arrived at in a balanced way, having considered the many and varied demands placed on land, while also protecting and enhancing landscapes. Nature recovery is at the heart of the national strategy set out in National Planning Framework 4 (NPF4), and it suggests towns and cities will have improved green infrastructure and open spaces with more nature as a result.

5.26 Glasgow's Local Biodiversity Action Plan (LBAP) indicates development is the largest cause of tree loss in the city, and opportunities for mitigation planting are reducing. Even where mitigation planting is undertaken, it can often take 20-30 years for the chosen measures to replace the ecosystem which was lost.

5.27 There is a presumption against development which would have an adverse effect on a protected species, either directly, indirectly or cumulatively. This may include impact on the habitat of a protected species. SG7 Natural Environment highights that most bird species and a wide range of other wild animals and plants have general protection from deliberate damage or harm under the law. It also indicates some species, such as otters, bats and great crested newts have special protection from disturbance and harm under European legislation, and are known as European Protected Species (EPS). The presence of protected species on, or near, a site where tree works/planting is proposed is therefore a critical consideration in tree planting proposals.

5.28 A survey for the presence of protected species must be carried out prior to any form of site disturbance including ground investigation works and clearance. Mitigation measures will often be necessary and this can affect the design, layout and timing of the works. A licence from SNH will be needed for works which would constitute an offence involving species with special protection. It should be noted that a licence may be needed for works which do not need a planning application, and this includes tree works/planting.

5.29 Where appropriate, mitigation could be used to ensure no adverse effect on protected species. To meet legal requirements, it is important that the mitigation is well designed and properly implemented to ensure it is effective.

5.30 Trees, particularly well-established ones, are highly prized by local communities and this is reflected in the expressions of concern which are often voiced in response to proposed developments which would to remove them.

Clearance of development sites, therefore, should only begin when construction of the approved proposal is about to commence. Site compounds should not result in the loss of trees only to provide the compound, and the loss of trees around the edge of woodlands should be avoided.

5.31 To protect and enhance biodiversity, and provide attractive amenity, create and improve links within the green network and restore degraded habitats, it is important to base development proposals on an understanding of the characteristics of the development site, including nearby habitats, and the role played by existing trees and hedgerows.

5.32 There is, therefore, a presumption in favour of retaining all healthy and structurally sound trees in the city, as incorporated in the City Development Plan, Supplementary Guidance 7 Natural Environment. The design of proposed developments should follow a placemaking approach, take the biodiversity of existing on-site vegetation into account, and provide nature-based solutions which draw on the results of a tree survey and ecological site appraisal, to enhance biodiversity. The scope of the survey (and that of any subsequent survey work), and the extent of the nature-based solutions, will be in proportion to the scale of the site, and its characteristics, in addition to other Development Plan policy requirements affecting the proposal. The solutions should reflect the mitigation hierarchy. The tree survey could be stand-alone or part of a wider landscape or ecological survey/appraisal, however, it should identify any geodiversity, wildlife or habitats of significance and suggest how these will be accommodated within the development (as required by Supplementary Guidance 7 Natural Environment).

5.33 Development proposals should be based on a design-led approach and demonstrate the following have been considered with regard to existing trees and proposed tree/hedgerow planting:-

· Retaining and enhancing existing trees within greenspaces should be in accord with the Glasgow Open Space Strategy

· native woodland trees, fruit trees, and foraging hedgerows whenever appropriate, to increase resilience to threats, and support pollinator species;

· trees and hedgerows within development boundary treatments, wherever possible.

· new planting should incorporate native woodland trees species, fruit trees, and foraging hedgerows, trees and hedges that retain their leaf cover or structure in winter, tree nurseries, whenever appropriate, to increase resilience to threats, and support pollinator species;

· a management plan setting out how they will be managed and maintained in future must accompany development proposals

· Incorporporating trees within development boundary treatments.

5.34 As currently required by Supplementary Guidance 7 Natural Environment of the City Development Plan, where trees would be justifiably lost as a result of development proposals, this Forestry and Woodland Strategy requires compensatory planting on a site nearby in the applicant's ownership to maintain tree canopy cover levels. Alternatively, if this is not feasible, funding for compensatory planting can be provided by the developer in lieu of planting. This approach to compensatory funds will be used by the Council to plant new trees and woodlands in the vicinity of the development, in line with this Forestry and Woodland Strategy and other council tree/woodland planting ambitions.

5.35 Where there are existing trees and/or hedgerows on a site and they are retained, or they are proposed, except within the private garden of a dwellinghouse or flat, a tree management

plan, prepared by a suitably qualified arboriculturist, is required in support of development proposals. It must set out the following:

- a schedule of maintenance works for retained and proposed trees, including site monitoring arrangements, who will implement the individual elements of the schedule, when they will be undertaken, and the financial arrangements to ensure the works are completed;

- a statement/report, prepared by an appropriately qualified person, which identifies the existing biodiversity of the site, and how the proposal will enhance biodiversity of the site;

- arrangements for identifying and addressing emergency situations, (e.g. removal of dangerous tree branches) and any mitigation measures required to meet the requirements of the planning consent and the tree management plan (e.g. replacement planting);

- proposed tree root protection measures for new trees during and after the construction period tree survey of the site should identify those trees which would be retained and those which would be removed;

- location of new trees and those to be removed, including justification for the removal of trees. The information should be provided in digital format, and it will be used by the Council in the determination of planning applications, to inform the development of strategies, policies and proposals, and any other relevant planning issue;

- justification for not providing new or replacement planting on-site, how off-site compensatory planting nearby will be achieved, funded, and managed in future, for example through a compensatory financial contribution and legal agreement with the Council, in line with relevant Council policies and procedures and this strategy.

- the suitability of new and replacement trees for the site in terms of, for example, landscape characteristics, heritage considerations, biodiversity enhancement, soils type, climate mitigation, and connecting green networks.

- justification for the selected tree species in light of the spatial and climatic constraints and characteristics of the site, and the potential impacts on surrounding buildings and land uses (e.g. type of open space provision, soil type, sunlight and shade implications, enhancement of biodiversity (including pollinator species), resilience to climate change, linkages to green network, impact of canopy cover, etc)

- the proposed mitigation measures.

5.36 Proposed developments within the private garden of a dwellinghouse or flat should not have an adverse impact on existing trees or hedgerows. Where an adverse impact would occur, a statement setting out and justifying the proposed mitigation measures will be required.

h. Trees and Resilience to Threats

5.37 As with trees and woodlands throughout the country, those in Glasgow face a range of threats, such as climate change, disease, development and competition for other land uses.

5.38 Climate change is bringing warmer and wetter winters and hotter and drier summers, and more frequent and intense extreme weather events. These changes have different implications for different species of tree, as some are more capable of adapting to the conditions than others. This results in the need for careful selection of resilient species to ensure they are able to provide multiple benefits for communities in the longer term.

5.39 The Glasgow Local Biodiversity Action Plan (LBAP) suggests the loss of trees is leading to fragmented woodlands,

and that development is the largest cause of tree loss in the city, while opportunities for mitigation planting are reducing. Even where mitigation planting is undertaken, it can take 20-30 years for the chosen measures to replace the ecosystem which was lost.

5.40 There are a number of diseases which are harmful, and potentially fatal, to trees, but at the moment Ash Dieback disease, which is the most significant tree disease since Dutch Elm disease was first identified in the United Kingdom in the 1960s, is of most concern. This normally fatal disease restricts the trees capacity to move water and nutrients around its structure, resulting in leaf loss and branch dieback.

5.41 The City Council estimates there are approximately 250,000 ash trees in Glasgow, and around 35,000 of them are in high-risk areas, including parks, schools, and main arterial routes where public safety is a major concern. There is recognition that Ash Dieback disease could also have impacts on the visual amenity and character of conservation areas and locations covered by Tree Preservation Orders.

5.42 In response, the Council has set out a 7-year programme in line with guidance from the UK Tree Council Ash Dieback Action Plan Toolkit. The loss of a significant number of ash trees will have a serious impact on Glasgow's tree resource, and it is important to take steps to replace the lost trees in a way which supports biodiversity and ensures the city's tree stock is resilient to similar threats in the future. It is estimated that by using a cost of £800 to £1200 per tree for felling and removal, an indicative cost of approximately £25 million to £38 million over the next 7 years. Replacing trees lost to this disease, and other causes, will need to be replaced just to maintain current canopy cover levels. In order to increase canopy cover and contribute more to the net zero targets, trees in addition to those lost will need to be planted in the city.

5.43 Ageing, unhealthy, dead or damaged trees can create a public safety hazard and detract from visual amenity. In areas

where there is a dominant species of tree, for example in woodlands or in urban areas conservation areas and tree lined streets, trees should be retained wherever possible, but when a tree(s) require to be replaced, consideration should be given to using a variety of trees of appropriate size, age and species to increase resilience, while also maintaining the character of the area.

5.44 National Planning Framework 4 (NPF4) requires the expansion of woodlands and to deliver the net increase in the number of trees and area of canopy cover in Glasgow, not only do the potentially significant number of trees which will been lost to Ash Dieback disease need to be replaced, but so do all lost trees, regardless of the reason for their loss.

5.45 There is a presumption in favour of retaining all healthy and structurally sound trees. When considering new tree planting, a variety of appropriate species of trees should be selected in order to provide resilience to threats from climate change and pests and diseases. The species selected should also be appropriate in terms of the biodiversity, amenity, and soil type found at the site. To increase the resilience of woodlands, all landowners should plant tree species which support and enhance existing habitats, including native species, and those which are suitable for future climatic conditions. Some areas should be left to regenerate naturally, and a quantity of deadwood should be left to encourage insects and fungi, etc., to support biodiversity.

i. Trees and Community Participation

5.46 Glasgow's 'community' includes those who live, work, study or visit the city, and their views are important, as are those of stakeholders and the Council's many partner organisations.

5.47 The Council, in partnership with several universities, and creative practitioners, is a participant in the 'Every Tree Tells a Story' project which engages with a wide variety of Glasgow citizens of different ages, origins, roles, and locations. The

project allows participants to share why, and how trees matter to them.

5.48 It will not be appropriate to plant trees on every suitable site within the city as some are suitable for other uses and are required to meet other needs, demands and priorities. As a result, a balanced view needs to be taken to determine the most appropriate use for each site/location, and this is achieved through the City Development Plan process and involves community participation.

j. Trees and the Historic Environment

5.49 The UK Forestry Standard (UKFS) must be followed when considering woodland and forest planting in Scotland. In addition to many other matters, it sets out the legal basis for protecting archaeological heritage, together with steps which should be taken to ensure tree, woodland and forest planting schemes do not accidentally or unknowingly damage historic features. Damage can be avoided by first of all undertaking an evaluation of the site for archaeological remains at the outset of the planning and design stage and before planting operations begin.



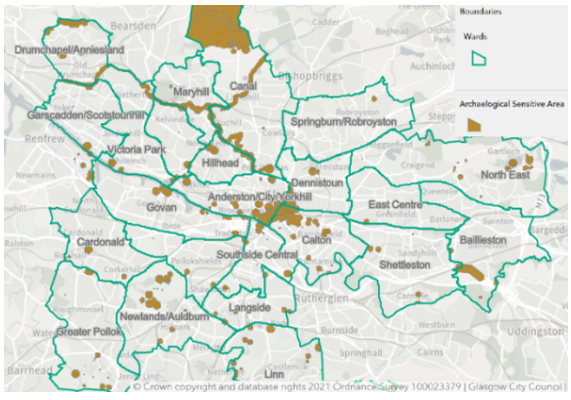
5.50 The Forestry and Woodland Strategy for Glasgow City Region 2020 indicates trees are part of the area's cultural heritage, contributing to the setting and character of urban areas, and forming an integral part of the historic environment. Trees increase the attractiveness of places to live and invest in, and as such protecting them from inappropriate works is important to maintain the cultural value, character and appeal of historic environments. Glasgow has a variety of historic environments, including conservation areas, and 'Designated Garden and Designed Landscapes', each with its own

character. The latter are all owned or managed by Glasgow City Council who liaise with Historic Environment Scotland on their design and management.

5.51 Many historic features are outwith the ownership of the Council and can be in multiple ownership. The quality of tree management in these areas can vary, but it is important to ensure it is of a high and consistent standard, and one way of working towards that is to provide tree management guidance for private owners.

5.52 The trees within many historic areas are of similar (mature) age and will increasingly require to be carefully managed to preserve the area's setting, character and biodiversity. It is also important to ensure any works to remedy harm or loss of trees through, for example, ageing, storm damage or disease, are appropriate and any necessary replanting is done with appropriate species which, among other things, sustain its character and biodiversity and increase resilience.

5.53 In historic areas, both within and outwith the Council's ownership/management, the Council encourages positive management of trees and woodlands, including succession planning and selective replanting to conserve the character and significance of these areas, and improve their resilience to the effects of climate change and other threats.



5.54 There are also many non-designated remnants of historic gardens and designed landscapes in Glasgow. Some are already within designated Tree Preservation Areas (TPOs), and many are in parks or in the green belt fringes of the City, and these would also benefit from a high and consistent standard of tree management.

5.55 Glasgow has many features which are of historical importance, including ancient woodlands and veteran trees, ruined buildings and relics which are underground or whose presence may be hidden by vegetation. Some are protected from disturbance through specific designations, for example, Scheduled Monuments, Listed Buildings, and the Antonine Wall which runs through the north of Glasgow and forms part of the UNESCO Frontiers of the Roman Empire World Heritage Site.

5.56 Many archaeologically important features are not protected by national or international designations but are recorded in the City Council's Historic Environment Record (HER) and should be protected from adverse impacts whenever possible. Their potential presence can be established by contacting the West of Scotland Archaeology Service (WoSAS) (email: enquiries@wosas.glasgow.gov.uk; website: https://www.wosas.net/index.html).

5.57 In addition to clarifying the presence of any important features, WoSAS can advise on the most appropriate methods to prevent or minimise any adverse impact which tree and woodland planting might have.

5.58 The potential presence of features of archaeological importance must be evaluated before tree and woodland planting operations begin (including woodland expansion and new woodlands) by contacting the West of Scotland Archaeology Service (WoSAS). Any mitigation work to protect archaeological features must be agreed with WoSAS and be incorporated into the proposed tree planting scheme.

k. Trees for Improving Air Quality

5.59 Air pollution can impact human health and contribute to respiratory conditions such as asthma, especially amongst young people and those with a chronic illness. In addition to having an adverse impact on human health, air pollution in

the form of chemical (e.g. Nitrogen Dioxide) and particulate pollutants, can also be detrimental to ecosystems and habitats.

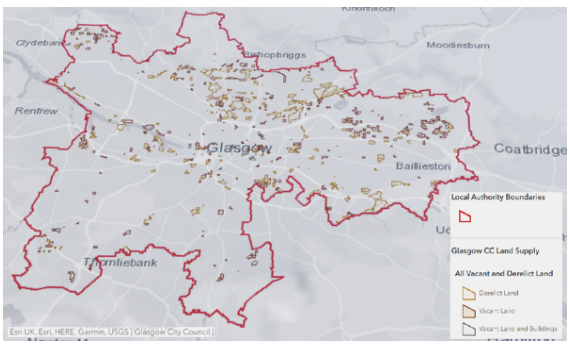


5.60 In 2018, to improve air quality, Glasgow City Council introduced Scotland's first low emission zone (LEZ) broadly covering the city centre. The first of the two phases sought reductions in emissions from scheduled bus journeys, and the second, introduced in June 2023, restricts access for the most polluting vehicles to protect public health and support wider climate change ambitions by encouraging more sustainable transport options.

5.61 Trees can help to improve air quality in several ways, such as creating a physical barrier between pollutants and people, while also removing particles from the air, which, in turn, can, reduce the adverse impact on human health and habitats.

I. Trees on Vacant and Derelict Land

5.62 Previous industrial activity has left a legacy of undeveloped sites which in some instances blight local communities. While there has been a trend of reducing levels of vacant and derelict land (VDL) in Glasgow in the last decade or so, the city has consistently had the highest concentration of any local authority in Scotland. The key challenges in reducing the level further include the complex mix of poor ground conditions, fragmented ownership and inadequate infrastructure which restricts the development potential of sites.



5.63 The distribution of vacant and derelict land continues to be concentrated in the east and the north of the City, with smaller concentrations in other inner city and peripheral areas. A high proportion of sites are

categorised as long term vacant, i.e. more than 15 years, and around half of the VDL sites are in Council ownership.

5.64 Tree and woodland planting, and appropriately managed self-seeded trees on previously developed land, can not only provide environmental and ecological benefits, but also improve health and wellbeing, provide leisure and recreation opportunities, improve flood risk management, and change the way communities perceive their area. Tree and woodland planting can be a relatively low-cost approach to remediating some of the effects previous industrial activity as some tree species can, for example, remove organic chemical waste from soils. Given the complex nature of previously developed sites, the suitability of incorporating tree and woodland planting to assist in decontaminating sites must be justified through a site-specific assessment.

5.65 The Vacant and Derelict Land Fund is a Scottish government programme which aims to bring vacant land into beneficial use. Its objectives for the 2023/24 Programme are: Tackling Long Term (more than 15 years) Vacant and Derelict Land; stimulating economic growth and job creation; developing a diverse sustainable environment with a focus on either permanent or temporary greenspace, and; supporting Communities to flourish and tackle inequalities. Amongst the City Council's focus for the 2023/24 Programme were: new and enhanced greenspace to benefit both existing and planned communities in areas of multiple deprivation; and sustainable food growing and tree planting initiatives. The City council's one year allocation for 2023/24 was £1,95 million.

5.66 The Vacant and Derelict Land Investment Programme (VDLIP) provides funding for local authorities to improve previously developed sites by providing urban green spaces, low carbon developments and renewables (including housing), involving the community, and following a place-based approach. In 2023, five projects in Glasgow were awarded funding, and these offer a variety of benefits such as improved public realm and environment, green

infrastructure, greenspace and public realm, woodland and biodiversity enhancements, and a Community Net Zero hub.

5.67 It is important that all potential funding streams which can help to address the level of vacant and derelict land in the city are utilised, and site proposals incorporate tree canopy cover which delivers multiple benefits, has the support of the community, and incorporates tree management arrangements

m. Trees On Our Streets

5.68 Not all of Glasgow's trees are found in the countryside surrounding the city and in its parks. Many are located along its public footpaths, verges and central reservations where they add to the visual amenity and character of the street, and this changes with each season. The presence of street trees can improve the aesthetics of an area and so encouraging investment.

5.69 Forest Research guidance on noise abatement indicates roads are one of the main sources of noise, and that it can impact people, for example, by causing anxiety. The guidance also indicates trees (and shrubs) can act as noise buffers when the appropriate species and planting design are used. It is therefore important to retain and safeguard areas of trees on road verges and small areas of amenity areas associated with the road network. In addition to reducing noise (particularly at noise sensitive locations), new tree planting associated with the road network can also contribute to the green network, provide 'verge nature reserves' and increasing biodiversity, particularly when they incorporate understory vegetation.

5.70 As the predicted increase in temperature through climatic change materialises, the impacts might be greater in densely developed urban areas where temperatures can generally be warmer than in suburban and countryside areas. They might also affect those who are sensitive to heat from the sun (e.g. young and elderly people) more. The 'heat island' effect, which is caused by factors such as large areas of impervious surface materials absorbing heat, building materials reflecting



it, and a lack of vegetation to provide shade, may increase in future. Tree lined streets not only improve aesthetics, but the shade they provides cools people and buildings on hot days. By cooling buildings, the need to operate air conditioning is reduced, resulting in lower demands for energy (e.g. for air conditioning) to reduce temperatures in public buildings, offices, shops, care homes, children's nurseries, and houses, etc, thereby contributing to meeting the net-zero target. Other benefits include creating links in the green network for animals, enhance biodiversity and air quality, and reduce surface water run-off.

5.71 It is important to overcome the constraints to planting street trees, including identifying footpaths with suitable widths to provide safe pedestrian access, and avoid disruption to pedestrians, vehicles, underground and overhead utilities, and avoiding issues arising from leaf drop and other tree debris. All street tree planting schemes must incorporate more than one species of tree(s) to increase resilience, be suitable for the soil type in which they are planted, provide multiple benefits, and be supported by suitable ongoing management arrangements.

5.72 Street trees will offer opportunities to increase canopy cover in particular areas of the city. Projects such as the Council's 'Avenues', which incorporated tree planting on the north side of Sauchiehall Street as a key component of public realm and sustainable transport improvements, and the re-development of Sighthill, are examples of trees being integral to place design and bringing multiple benefits to the locality.

5.73 Proposals for new development (other than householder developments) must incorporate new tree planting, including

proposals for street trees, unless it can be demonstrated to the Council's satisfaction that site conditions make it impractical.

5.74 New residential developments provide an opportunity for new tree planting, and the Council's 'Design Guide New Residential Areas', particularly 'Appendix 4: Guidance on Street Tree Details, Specifications & Standards' details aspects of tree selection, planting systems and onward maintenance deemed appropriate for a variety of settings. It indicates trees should be incorporated from the start of the design process, and it is essential they are included in the design of new residential developments whenever possible.

5.75 Development proposals must demonstrate they have followed the advice within Appendix 4: Guidance on Street Tree Details, Specifications & Standards of the Council's 'Design Guide New Residential Areas' into account at the beginning of the residential design process.



5.76 Proposals should consider alternative methods of providing street trees, perhaps with smaller leaf sizes, such as in planters which provide a range of benefits, are resilient to threats and are supported be suitable maintenance methods. As the useful life expectancy of a trees in planters is limited (approximately 10 years maximum), however, before their deterioration becomes irreversible, they should be re-planted in the ground at an appropriate location.

n. Trees for Water Management

5.77 National Planning Framework 4 indicates the growing risk of flooding in central Scotland could have significant impacts in the future, but a network of natural infrastructure (blue and green) in urban areas can, amongst other things, create places that are more resilient to flooding.

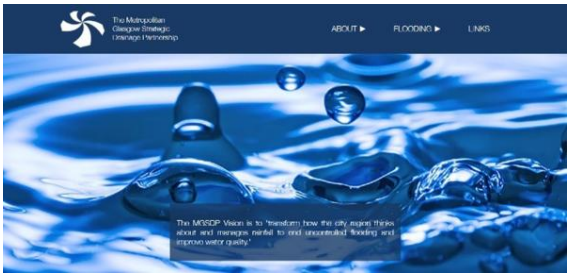
5.78 Glasgow's natural assets, including rivers and wetlands and the areas immediately surrounding them, contribute to the city's landscape character, support a diverse range of wildlife, and contribute to health and well-being. It is generally accepted, however, that as a consequence of climate change there will be more extreme weather events, including heavier and more frequent rainfall and, as a result, without appropriate mitigation measures being applied, the number of people, buildings and habitats at risk from the adverse impacts of flooding could increase.

5.79 Glasgow is particularly susceptible to the following types of flooding:

- Surface water flooding - this occurs where heavy rainfall lands on a saturated, compacted or impervious surface, flows across it, and gathers at the lowest point;

- Drain and sewer flooding - happens when drains become blocked as a result of heavy rainfall. In locations where this occurs, the quantity of rainwater can be managed successfully if the drainage system is supplemented with above ground water storage methods such as sustainable drainage systems.

- River flooding – this happens when a river is no longer capable of containing the water flowing into it and as a result it spills over its banks into the surrounding area.



5.80 The Council is one of the founding partners of the the Metropolitan Glasgow Strategic Drainage Partnership (MGSDP), which has a vision *'to transform how the city region thinks about and manages rainfall to end uncontrolled flooding and improve water quality.'* Habitat improvement is amongst the MGSDP's five objectives, and in this regard: *'The Partnership's overarching aim is to provide a holistic approach to managing surface water which will reduce flood risk and unlock development potential, while improving*

water quality and allowing residential areas to harmonise with the natural landscape and greenspace areas.'

5.81 When trees and hedgerows are utilised as part of a water management strategy, including those in riparian woodlands (i.e. woodlands located along the banks of rivers and other watercourses) they can help to reduce the risk of both wider scale and localised flooding. There are several ways in which trees do this. Leaves slow rainfall from reaching the ground, the tree root system can consolidate soil thereby stabilising riverbanks and help to increase soil permeability, which reduces surface water run-off into rivers, thereby lowering the risk that they'll overflow their banks. Scotland's Third Land Use Strategy acknowledges that planting trees can contribute to reducing the risks for communities in downstream locations from the adverse impacts of flooding, and can also prevent soil erosion.

5.82 Glasgow City Council promotes the management and separation of surface water from foul sewerage above ground level (i.e. without the use of pipes), and this can be done in several ways, most notably through swales, basins, ponds and wetlands. As they are on the surface, sustainable urban drainage systems (SUDS) can enhance the urban environment, and increase biodiversity, while also managing surface water. It is therefore critical that during the design phase of any SUDS, consideration is given to how many trees of an appropriate mix of species can be incorporated to provide multiple benefits, such as increasing biodiversity and contributing to amenity, in addition to flood mitigation.

o. Trees and Soils

5.83 Soil is a key part of the environment and is a habitat within itself supporting many microbial, animal and plant species, and is important for agriculture, but also for trees and woodlands. Soil acts as both a source of carbon dioxide, and as a carbon sink, particularly peat soils, and as a result it can have an impact on climate change and biodiversity loss. Soil is vital not only to agriculture, but also to forestry and

woodlands, and it provides multiple benefits, such as filtering water running into watercourses, reducing the risk from flooding, and helping to tackle biodiversity loss while also contributing to climate change mitigation.

5.84 Soil is, however, a finite resource which can, if not treated properly, be easily damaged or even destroyed, and it is therefore vital it is protected from harm. This is reflected in National planning framework 4 (NPF4), which aims to protect carbon-rich soils, restore peatlands and minimise the impact of development on soil.

5.85 The soil type prescribes the type and range of plant species that can be supported. Ancient woodlands have some of the least spoilt soils in the United Kingdom and these woodlands need to be protected, and opportunities to expand them identified by development plans. When considering expanding these important woodlands it will not only be necessary to plant the appropriate range of tree species, but to also ensure the soil type in the expansion area is appropriate for the selected species. This practice needs to be applied to all tree planting, regardless of their scale and location, whether they be in countryside around the city, or street trees in built-up areas, to ensure the trees provide multiple benefits for a significant period of time.

5.86 Planting trees on peat soil can have an adverse impact on the existing ecology of the peat ecosystem. Before planting trees, therefore, investigations should be undertaken to ensure the species of tree(s) selected is/are appropriate for the soil type within which it/they will be planted, and will not result in poor tree health and/or degraded soils.

5.87 Urban soils in particular may have become compacted by previous uses and might now be of poor quality for tree planting. Techniques such as tree planting for phytoremediation can bring the benefit or removing contamination. In order to make these sites suitable for tree planting, however, bioremediation techniques might also be required to enhance the soils for tree planting.

p. Trees and Growing Food

5.88 Other than growing fruit trees in private gardens, trees grown to provide fruit are normally found in allotments and commercial orchards. Allotments in cities provide important habitats for wildlife, contribute to the green network, and support insects (including pollinator species), plants and mammals. In addition to providing fresh food, they also provide the opportunity for physical exercise and social interaction.



5.89 The Council's food growing strategy *'Let's Grow Together: Glasgow Food Growing Strategy 2020 – 2025'* outlines the following ways individuals and groups can grow their own food, including fruit: allotments, community gardens, backcourts, stalled spaces, school grounds, social enterprises, hospital grounds, housing associations (backcourts and other areas of land). The Council owns or leases over half of the 32 allotments in the city, and only fruit trees (excluding non-native species), can be grown on them, thereby offering a potential source of additional tree canopy cover in addition to the other benefits allotments provide.

5.90 Food forests incorporate fruit trees and nuts trees, and other edible shrubs and bushes which provide a variety of foods including fruits, leafy vegetables, nuts, seeds and edible oils that can diversify diets and address seasonal food and nutritional gaps. Food Forests are also sources of a wider range of edible plants and fungi. Alexandra Park Food Forest was was created in 2016 by the community as a public space for all to enjoy and reap its social and environmental benefits. Commercial orchards offer another potential source of trees

and fresh fruit, and can provide other biodiversity benefits associated with grasses, shrubs and flowers.

5.91 It is important that sufficient opportunities for food growing, including for growing fruit trees, are provided in Glasgow to contribute towards increasing the total canopy cover in the city, improve resilience to threats, provide food for pollinator species, and provide associated social, economic and environmental benefits.

5.92 Sites should be identified and brought forward with the support of the local community, and in accord with this strategy, the City Development plan, the Council's Tree Plan, open space strategy, LBAP, Pollinator plan, and the food growing strategy.

6. Vision for 2034

6.1 The following is the vision for trees and woodlands in Glasgow in 2034:

· Glasgow's urban area has 20% canopy cover, thereby meeting the Clyde Climate Forest target, and Bridgeton, Dalmarnock, Govan, Levern and District and Possilpark, in particular, have increased canopy cover levels.

· Through increased canopy cover vacant and derelict sites contribute to meeting the net zero target, enhancing biodiversity, and increasing the attractiveness of communities;

· Canopy cover provides multiple benefits to Glasgow's residents and visitors and enhances local neighbourhoods;

· The impact of ash dieback disease is being addressed through the planting of alternative species

· Access to woodlands is increased and contributes to the health and wellbeing of the city's residents;

· More trees and woodlands are protected through the planning system, and related processes, through the identification of new TPOs and trees of high nature.

· Green network and ecological connectivity will have improved as a result of increased tree planting;

· Trees and woodlands will be more resilient to threats, including those related to climate change;

· New developments enhances existing canopy cover on site, and have effective tree maintenance arrangements in place

7. Monitoring and Review

7.1 This strategy is based on the data available at the time of its production, and it is recognised that with improved data the Councils knowledge and understanding of the issues facing the city's trees will be improved, for example by identifying new sources of data, and analysing trends.

7.2 Regular review and revision of the strategy and its delivery programme will also be vital to assess its success, identify where changes are desirable, and to maintain its relevance in terms of legislative and national, regional and local policy contexts. Regular monitoring and updating will also maintain the strategy's relevance in terms of of investment decisions, and targeting and supporting funding bids. To achieve this it will be necessary to regularly collect appropriate data during the strategy's lifetime such as location, species, age, height, health, and other appropriate measures.

7.3 Developing a comprehensive digital twin and interactive map of trees in the city will be an important factor not only for informing strategies, policies and proposals, but also for monitoring and revision processes, and potentially recording maintenance activities on trees in the Council's estate. Such a model might include information on the ecological impact trees are having on the environment such as the amount of carbon dioxide absorbed from the atmosphere, and the 2015, study 'Valuing Urban Trees in Glasgow' could help inform it. Obtaining an update on the data and information within that report would be invaluable in developing a digital twin and interactive map, in addition to providing up to date information to inform the forest and woodland strategy, the Tree plan, the Development Plan, and other plans and strategies.

7.4 An interactive map could be developed to allow a degree of on-line interrogation of the data by members of the public, and allow anyone to report issues in relation to tree status, such as where action might be necessary in order to address a potential safety hazard, thereby increasing community involvement with trees and woodlands in Glasgow. In addition to informing the forest and woodlands strategy, and the Council's Tree Plan, the evidence gathered could also inform other Council strategies such as the Climate Adaption Plan, the Biodiversity Action Plan, and the Local Biodiversity Action Plan.

8. Conclusions

8.1 The climate and ecological emergencies have led to targets for reducing emissions of greenhouse gases, such as carbon dioxide, having been set internationally and nationally, together with targets for protecting biodiversity. The Scottish Government's target of net zero emissions by 2045 are set out in legislation, and Glasgow City Council's aim is for the city to have net zero emissions by 2030. In Scotland, the target is for 30% of the land and sea to be protected.

8.2 Reducing the release of greenhouse gases into the atmosphere, and absorbing those already released, are the ways in which the targets can be achieved. As trees are effective in absorbing carbon dioxide, not only is protecting existing trees important, but increasing the level of canopy cover is also necessary. To increase canopy cover in the city, and therefore contribute to climate change mitigation and address the ecological emergency, not only must every tree that is lost, for example through Ash Dieback disease, be replaced, but more trees than those lost need to be planted.

8.3 Trees also offer multiple benefits, however, such as improving green networks, increasing the attractiveness of residential, commercial and urban fringe areas, improving air quality, and mitigating the risk of flooding. Investment in carefully designed new tree planting schemes can, therefore, not only contribute to delivering net zero targets and improving biodiversity, they can also provide range of social and economic benefits.

9. Delivering the Glasgow Forestry and Woodlands Strategy