

# Holyrood Park Landscape Conservation Management Plan



Holyrood Park is truly a city Park like no other, a remarkable upland landscape at the heart of Scotland’s capital city that shapes the city’s identity and encompasses a range of habitats and heritage.

**Outline Strategic Plan for Holyrood Park,
Historic Environment Scotland 2023.**

## Executive Summary

Holyrood Park is a truly unique landscape in the heart of Edinburgh. A fascinating and dramatic melding of geology, plant habitats, history, and cultural influences, it is the largest and most challenging Property in Care managed under the responsibility of Historic Environment Scotland.

This Landscape and Conservation Management Plan for Holyrood Park will help safeguard the special features of the Park, protect archaeology, better plan future management operations, and guide the allocation of HES resources.

It is the result of internal engagement in HES and with NatureScot. It has been informed by specialist review of archaeological condition records, a preliminary ecological appraisal, a hydrological study, and an update to the landscape character appraisal.

The conservation management plan synthesises a wealth of information and records about the Park into a clear series of actions and processes, presented in an accessible manner yet containing considerable practical detail. The plan covers not just management, but also some bold new interventions to address visitor pressures and to equip the Park for a changing climate.

As with all plans, it must have flexibility enough to respond to future changes. The creation of a new baseline of data and mapping, presented in this online format, should help ensure that the plan can be readily reviewed and updated to remain current through future decades.

## Introduction

### Vision

The vision to excel in the care of the landscape of Holyrood Park will be achieved through:

* investigating, conserving, and enhancing its rare and valuable natural habitats and wildlife
* preserving and investigating its historical, cultural, geological, and archaeological significance
* developing resilience to environmental risks of climate change and biosecurity
* creating a positive and enriching experience for visitors

### Aims

The aim of the Plan is to:

* assess the natural significance and physical characteristics of the site
* evaluate the previous and current landscape management practices of the Park
* identify the condition and vulnerability of archaeological features, threats to heritage significance, and opportunities for conservation and protection
* consider how the Park can adapt to be more climate resilient
* incorporate the necessary management requirements for nationally important designations, especially the two Sites of Special Scientific Interest (SSSI) and the Ancient Monument. This will include predicted, regular, routine, and repair works within the plan to support and justify future consent applications, and allow them to be made as efficiently as possible
* analyse changes over time to the vegetation habitats, define objectives and methods for habitat enhancements and management, together with timescales and delivery partners
* propose access improvements including the potential for virtual access utilising technology
* improve the resilience of the Park to visitor pressure
* propose climate change adaptations for watershed management
* create a framework guide for design of works within the Park

The Plan will take into consideration the factors that influence how the Park is managed and will follow this clear set of guiding principles:

1. The Plan should seek to optimise the maintenance and management of the Park, whilst balancing the sometimes-competing interests of natural and built heritage, history, archaeology, ecosystems, geology, landscape character, and visitor use, desired use, and experience.
2. The management of the Park must take into cognisance the national and local designations, in particular the Ancient Monument listing for Holyrood Park, and the two SSSIs - Arthur’s Seat Volcano and Duddingston Loch. It must align with relevant national and local policies, and existing commitments to partner organisations (e.g. the City of Edinburgh Council Biodiversity Action Plan).
3. The Plan should identify parameters of areas where there is scope for potential new landscape interventions within the Park, and explain why other areas are not appropriate.
4. Proposals in the plan must be practical and achievable but need not be governed by current availability of funds or staff resources.  The Plan will be a prospectus for stewardship, against which funding applications can be made in future.

### Scope

The purpose of the LCMP is to inform and define sensitive management of Holyrood Park to secure its special qualities into the future. This plan is founded on an understanding of the significance of the landscape at Holyrood Park, in terms of its cultural, historic, and natural qualities.

The plan identifies threats to those features that give the Park significance, opportunities for improvement, and factors that influence how we manage the Holyrood Park Property in Care (PiC).

In line with Heritage Fund Conservation, Planning Guidance, Historic Environment Scotland (HES) should be able to use the plan to:

1. Plan maintenance, conservation and repair works.
2. Improve public access and understanding.
3. Implement measures to help adaptation to climate change.
4. Adapt the site to meet new or existing changes.
5. Write a brief for any new design work that is needed.
6. Plan activities to help people engage with their heritage.
7. Identify gaps in knowledge and plan further research.

In addition to determining the cultural and historical significance, a holistic LCMP assesses and understands the natural significance and physical characteristics of the site.

The LCMP forms one of the project briefing documents for the wider workstreams to be undertaken as part of the potential development of a Sustainable Management Plan (SMP), subject to the outcomes of the finalised Park Strategic Plan.

As the LCMP is required to maintain and enhance the condition of the designations that make up Holyrood Park, it sits as an independent report and will be used to inform development of the SMP and its other components.

The LCMP is not a full revision of the 1993 ‘Holyrood Park Management Plan’; the Sustainable Management Plan (SMP) and other workstreams are required to fully address a complete revision.  However, it revisits some of the topics within the 1993 plan and determines whether requirements have changed over a 30-year period.

The wider landscape setting beyond the PiC boundary, including adjacent wildlife corridors, the Palace, Abbey, and areas around the Parliament (among others) have also been given consideration necessary to gain an understanding of the significance of the setting of Holyrood Park.

### Limitations

There are some components of the 1993 Management Plan that are part of other work streams that will together be contained in the SMP, such as vehicle traffic management, staffing requirements, and events / activity plans for example, and are not included as part of the scope of the LCMP.

Holyrood Palace and Gardens is outside the scope of this study.

### Authors and contributors

[RaeburnFarquharBowen](https://raeburnfarquharbowen.com/) was appointed as lead consultant in February 2023 to deliver a Landscape Conservation Management Plan (LCMP) for Holyrood Park.

They have been supported by [Rathmell Archaeology](http://www.rathmell-arch.co.uk/), [Echoes Ecology](https://echoesecology.co.uk/), and [Civic Engineers](https://civicengineers.com/).

A working group has guided and contributed to the Plan. This group was made up of HES staff directly involved with management of the park (Park Management, Visitor and Ranger Services, Cultural Resources, Landscape and Ecology) with assistance from the HES National Investment Team, HES Heritage Directorate, and NatureScot.

### This document vs StoryMap

This accompanying word document to the Storymap has been produced to assist those who may find the Storymap format difficult to navigate. The Storymap is produced on a format that is easiest to navigate using a mouse and contains numerous interactive images. This word document will contain the same text as the Storymap and incorporate the content of interactive images in text that are important to our understanding of the park.

## Significance



Of all the properties under HES care, Holyrood Park perhaps exhibits the broadest range of heritage values assessed at a consistently high level of significance and with exceptionally high levels of public visitation and use.

**Holyrood Park Statement of Significance,
Historic Environment Scotland**

Holyrood Park is a large-scale, dramatic and rugged open space within the heart of the city of Edinburgh, 8 km in circumference and 259 ha in area, with Arthur’s Seat summit at 251m above sea level. The park is covered by a number of national designations for both natural and cultural heritage and is also a key feature within the setting of The Old and New Towns of Edinburgh World Heritage Site. It includes at least 111 recorded archaeological sites, eight listed buildings, and two separate Sites of Special Scientific Interest (SSSI), which together cover almost the entire Park.

The significance of Holyrood Park derives from a diverse range of cultural and natural heritage values, expressed in detail within the Statement of Significance for Holyrood Park and the citations for the Sites of Special Scientific Interest.

The following discussion provides a brief overview of a range of values covered by the Statement of Significance for Holyrood Park ([Historic Environment Scotland, PIC224; 2018](https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=e1a38947-6fa5-4f6a-887a-a57000d19aa0)) which together contribute to the overall significance of the Park. These are set out in accordance with ICOMOS guidance (International Council on Monuments and Sites). This is supplemented by further information on the SSSI natural heritage designations that encompass much of the property.

Significance means having important value for past, present, or future generations (as defined in The Burra Charter 2013; ICOMOS)

The assessment of significance seeks to address all aspects of the Park, including the built features, tangible and intangible associations, natural heritage, historic planting, landscape character, and known or potential buried archaeological remains.

As well as assessing this range of more “objective” heritage values the assessment addresses a range of more “subjective” values which make the place important to people. These include aesthetic or emotional connection, the feelings evoked by a place, perceptions of the place, and the contemporary use or values which pertain to the Park.

### Historic value



The primary historical values of the Park come from its close association with the Palace of Holyroodhouse and Holyrood Abbey and their key role in national history. It is a unique survival of a Royal Park established in the Stewart period which retains its original boundaries and is relatively undisturbed by later development.

**Holyrood Park Statement of Significance,
Historic Environment Scotland**

**Threats:** The encroachment of built development within the Park has been guarded against, but development pressures at the boundary and in adjacent neighbourhoods could impact the historical values. The declining condition of the boundary wall and St Anthony's Chapel threaten these significant features. Road, footway, and cycleway proposals could lead to creeping urbanisation and clutter in the lower park and on Queen's Drive.

**Opportunities:** Opportunities are limited through the LCMP; however, the boundaries of the Park should be maintained, protected, and repaired to ensure their future. Design guidance in this plan can help protect against inappropriate interventions within the Park, such as planting of species not in-keeping with the history of the Park, or the installation of paving, furniture, or fences that are out of character.

### Scientific Value



The key geological features of the Park, Arthur’s Seat and Salisbury Crags, are a nationally important resource for the study of geology. The association with James Hutton and the foundation of the science of geology is famous and internationally recognised.

**Holyrood Park Statement of Significance,
Historic Environment Scotland**

The Park contains two Sites of Special Scientific Interest whose features encompass a range of geological, terrestrial ecology, and aquatic ecology interest. [Arthur's Seat Volcano SSSI](https://sitelink.nature.scot/site/91) and [Duddingston Loch SSSI](https://sitelink.nature.scot/site/547).

**Threats:** Erosion, leading to damage or loss of key geological features, is a threat to the scientific significance of the Park. Arthur’s Seat itself has been reduced in height by half, and its jagged edges smoothed down, over millennia of erosion. Both Hutton’s Section and the Radical Road are temporarily restricted from public access for safety due to the continued risk of rock fall.

There is potential for encroaching scrub / gorse to obscure areas of geological interest. The construction / maintenance of paths could obstruct some important rock outcrops, but this can be, and has been, avoided, by working around these outcrops and leaving them exposed.

**Opportunities:** Embracing opportunities to restore and mitigate against erosion to protect the Park’s significant scientific features is a critical element of the future conservation and management of the Park.

The current closure of the Radical Road restricts access to Hutton's Section, a location with great geological interest. Future plans for the Radical Road should include specific consideration of access to this part of the Crags.

### Archaeological value



Holyrood Park is a nationally significant archaeological resource. The long history of occupation attested by well-preserved archaeological features, such as the cultivation terraces, offer a unique opportunity to experience and interpret landscape-scale archaeology within a city setting.

**Holyrood Park Statement of Significance,
Historic Environment Scotland**

**Threats:** Threats to the Park’s archaeology are both human (erosion) and natural (encroachment of gorse scrub and self-seeding trees). Excessive pedestrian activity results in loss of vegetation cover, in turn exposing the underlying sediment to be compacted or actively eroded which leaves archaeological information at risk of degradation and loss. Archaeological sites with high gorse scrub coverage are likely to experience notable deterioration in the quality and coherency of their archaeological strata, mainly through the physical impact of the root structure of the scrub, although hydrological change, aeration, and other soil changes will also occur. These same effects may be induced by the consequences of climate change, with warmer drier summers and more extreme rainfall events causing accelerated erosion.

**Opportunities:** Several opportunities exist to better preserve, and mitigate the loss of, the archaeologicalsignificance within Holyrood Park. This begins with establishing a clear baseline understanding of the existing condition of archaeological sites and their surrounds, to better facilitate regular monitoring, which will enable early intervention prior to adverse impact.

Targeting erosion of sites by re-routing pedestrians, episodic pedestrian exclusion, and / or localised engineering of paths with improved drainage and wayfinding may help to protect significant archaeological sites within the Park. Ongoing management of gorse scrub and self-seeding trees will reverse their ongoing encroachment into archaeological sites.

### Natural value



The Park is nationally recognised for the importance of its natural heritage value. It has not been subject to modern agricultural methods hence it has high biodiversity value and acts as a biodiversity reservoir and corridor for the surrounding areas. The exceptionally diverse and exposed geology of the Park, together with the varied topography and aspect, have created conditions for diverse habitats to develop; these are of national importance and thus afforded SSSI status.

**Holyrood Park Statement of Significance,
Historic Environment Scotland**

**Threats:** Although the vascular plant assemblages are considered to be in favourable condition by NatureScot, the lowland calcareous and lowland acid grasslands are noted as being in favourable and declining condition. The expansion of dominant coarse grass species (such as the tall-growing false oat grass) into the diverse calcareous grassland habitat, previously kept shorter and open by grazing, is causing a loss of conservation value. This is further worsened by the expansion of dense gorse thickets, and some woodland, to the detriment of grassland habitats across the Park as revealed by mapping of gorse over the last few decades.

Erosion caused by heavy visitor footfall has resulted in the localised loss of some open habitats, as path edges have become braided, widened through use, and more bare earth is exposed, and vegetation cover lost.

The consequences of climate change, with warmer drier summers, are increasing the frequency with which Hunter’s Bog dries out, reducing the viability of wetland habitat. Simultaneously, more extreme rainfall events result in erosion of soils and pollution of surface water.

**Opportunities:** The restoration of diverse calcareous and acid grassland characteristics to a greater area of the Park, reversing the decline in the condition of these notified biological features, through changes in management, including the exploration of the potential to reintroduce grazing as a management process, which has further cultural and historic value. Improvements to the path network can reduce the impacts of erosion on vegetation and thin soils. Gorse and woodland management can limit the further expansion of gorse over more valuable open habitat, and make provision for well-planned native woodland expansion in appropriate areas. Improvements to the path network can reduce the impacts of erosion on vegetation and thin soils.  Improved catchment management can improve the health and resilience of wetland habitats in the Park.

### Aesthetic Value



As a public park in the middle of a city, Holyrood is unique for the quality of outdoor experience and the feeling of 'wildness' that its hinterland offers; this is amplified by the high nature conservation value of the site. A walk-up Arthur’s Seat and the panoramic views from the top is one of Edinburgh’s defining experiences.

**Holyrood Park Statement of Significance,
Historic Environment Scotland**

**Threats:** The Park's distinctive experiential appeal, combined with the considerable annual influx of tourists to the City of Edinburgh, has led to a rise in visitor numbers over the years, which jeopardises the sense of "wildness" cherished by those who visit.

The integrity of the park's aesthetic character faces significant challenges from visitor erosion, particularly in heavily foot-trafficked zones like the summit of Arthur's Seat. Conversely, attempts to mitigate erosion through the introduction of interventions such as formal paths and wayfinding, as well as the addition of visitor amenities, lighting, ad-hoc memorial planting and the like, also pose a threat to the Park's inherently natural qualities.

Intensive human use of the Park brings problems of litter and vandalism, including graffiti on rock faces, that are visually degrading. Expansive areas of gorse and tall grassland are vulnerable to fires which can have a dramatic visual impact that persists. The threat of encroachment of urbanisation, especially through traffic management within the Park (zebra crossings and the like), can erode the aesthetic character and quality.

**Opportunities:** Opportunities exist to try to restore the appearance of some already eroded areas of the Park, whilst protecting other areas from further or future erosion. Considering opportunities to enhance the feeling of "wildness" of the Park and improving nature conservation values, through restoration of habitats and management of encroaching species such as gorse, will contribute to protecting the identified significant aesthetic qualities of the Park. Adequate resourcing of proactive and responsive management in the Park is key to controlling the problems arising from use and abuse of the Park by visitors; a "broken windows" approach to littering and graffiti, together with persistent human engagement with visitors, is proven to work.

### Social Value



In addition to the Park’s contribution to the city’s 'brand value', its role, along with the parliament, Edinburgh Castle and the Royal Mile, as a stage for key national events is considerable and it holds a strong (and historically rooted) place in the nation’s consciousness.

**Holyrood Park Statement of Significance,
Historic Environment Scotland**

**Threats:** Threats to the Park’s social significance relate to any potential reduction in capacity for flexible contemporary human use of the Park. This includes both residents and tourists visiting for informal leisure and recreation; more organised team sports within the Parade Ground area; and the capacity to host nationally significant events such as War Memorial Services, the Edinburgh Festival Cavalcade, Armed Forces Day events; and major sporting and charity runs such as the Great Edinburgh Run. Enforced temporary closures of areas of the Park (including Hutton’s Section and the Radical Road) currently restrict use and have been met with significant public discontent.

**Opportunities:** Opportunities to enhance the social value of the Park are limited through the LCMP, aside from ensuring the preservation of the Parade Ground and other key Park locations for events, and facilitating better accessibility where achievable across the Park.

### Spiritual Value



While it lies outwith the Edinburgh Old and New Towns World Heritage Site boundary, the importance of the Park (particularly Arthur’s Seat and Salisbury Crags) in defining the Edinburgh cityscape cannot be overstated. These values feed in to the inspirational qualities of the landscape and have demonstrably affected many artists and writers, and continue to do so today.

**Holyrood Park Statement of Significance,
Historic Environment Scotland**

**Threats:** For many, especially regular users, these values add immeasurably to quality of life and well-being, which, by nature are intangible, personal and often deeply felt. This in itself creates a challenge in preserving a seemingly abstract notion within ongoing management of the Park.

**Opportunities:** Opportunities to safeguard the spiritual value of the Park are achieved by preserving the aesthetic qualities of the Park, particularly the sense of perceived "wildness" in contrast to the city. Strengthening of a perceived link with the deep past, whether in geological time or the timescale of human civilisation, both very important features of the Park, can deepen the spiritual connection with place.

## Site Description

### Physical Characteristics

Holyrood Park covers 259 hectares of the centre of Edinburgh and is a large-scale open space with dramatic topography comprising grasslands, wetlands and water bodies, scrub, trees, and woodlands.

The rugged character of the Park is a strong counterpoint to the surrounding city. The highest point in the Park is Arthur’s Seat with a summit at 251m above sea level which commands panoramic views over the city of Edinburgh, Firth of Forth and the wider landscapes of Lothian and Fife beyond. Whinny Hill and Salisbury Crags make up the triumvirate of high ground in the Park that in profile are so distinctive a part of the skyline of Edinburgh.

The dramatic geological features of Arthur’s Seat and Salisbury Crags are visually striking. More gentle terrain flows between the crags and contains three water bodies - St Margaret’s Loch, Dunsapie Loch and Duddingston Loch, together with a wetland at Hunter’s Bog.

### Boundaries

The Park is enclosed by stone boundary walls that extend to approximately 8km in length, with numerous entry points into the Park for those walking and wheeling. There are five road entrances that connect with interior roads within the Park.

The boundary wall varies in nature, composition, and age along its length and has been repaired in numerous places. Formalised and enclosed in the 1540s under James V, the wall was built using stone quarried from Salisbury Crags and Camstane, and its line may reflect earlier boundaries, associated with the medieval abbeys of Holyrood and Kelso.

The wall delineates the boundary of the Sanctuary, a key aspect to the Park's past historical social significance. In Victorian times grand entrance gateways and ornate iron work were added. Some of the readable boundaries to the Park have been lost with the development of the parliament and Dynamic Earth in recent years.

### Designations

There are several nationally important designations applicable to Holyrood Park, and the management of the landscape must acknowledge the significance of the designation, management requirements pertaining to each designation, and any consents required.

**Holyrood Park is a Scheduled Monument:** [Holyrood Park](https://portal.historicenvironment.scot/designation/SM13032#:~:text=The%20monument%20comprises%20the%20whole,most%20boundary%20walls%20and%20gates.) is of national importance as a unique historic landscape within the heart of the city, embracing a wide range of archaeological and historic sites and monuments. Many of these are of national importance in their own right (for example, the prehistoric fort on Arthur's Seat, the enclosed settlement at Dunsapie, and St Anthony's Chapel and well), but together they have added value as part of an intact archaeological landscape, in which is preserved many different types of evidence of human development and changing land use through several millennia.

The Park is also of national importance because of its ecclesiastical and royal associations, particularly with David I, James IV, James V, Mary Queen of Scots and Queen Victoria and Prince Albert. It had fundamental importance in the development of geological science by the 18th century geologist, James Hutton, whose name is commemorated at 'Hutton's Section' on Salisbury Crags.  It has a wide range of other cultural associations with important historical personages and events, writers, scholars, and artists, such as Hugh William Williams and Sir Walter Scott, through to innumerable visitors and ordinary townsfolk over the centuries.  Holyrood Park has always had, and continues to have, an iconic status in the life of Scotland's capital city as well as a dramatic impact on Edinburgh's famous skyline.

Nationally important monuments in Scotland are protected under the Ancient Monuments and Archaelogical Areas Act 1979. The aim is to secure the long-term protection in the national interest, in situ and as far as possible in the form it has come down to us. Works on scheduled monuments should normally be the minimum level of intervention that is consistent with conserving what is culturally significant in a monument. Scheduled monument consent is required for most works within a scheduled monument, including any that would demolish, destroy, damage, remove, repair, alter or add to a monument, or for any flooding or tipping.

**Arthur's Seat Volcano is a SSSI:** [Arthur’s Seat Volcano is a Site of Special Scientific Interest (SSSI)](https://sitelink.nature.scot/site/91)designated by NatureScot. A SSSI is an area of land and water that is considered to best represent our natural heritage.

The SSSI citation is based on the volcanic features, which makes it one of the most nationally important educational sites for geology, with historical significance in the development of geological science. This complex geology is reflected in the plant communities present, with three biological features comprising this aspect of the SSSI designation.

Currently the condition of the geological feature is seen as ‘Favourable’ along with the condition of the vascular plant assemblage (although this was deemed to be declining). However, the lowland calcareous grasslands and lowland acid grasslands are noted as being in ‘Unfavourable’ condition. One of the main objectives is to improve the condition of the grasslands through landscape management.  NatureScot provides a site management statement that explains the management required to conserve its protected features. HES must apply to NatureScot for consent to carry out certain operations that might affect the protected features. Operations Requiring Consent can be found in the Appendices.

**Duddingston Loch is a SSSI:** [Duddingston Loch is a Site of Special Scientific Interest (SSSI)](https://sitelink.nature.scot/site/547), with two biological and one geological features of interest. It is the only natural freshwater loch in the City of Edinburgh area.  Currently the condition of both the eutrophic loch is assessed as being ‘Unfavourable’, due in part to the presence of invasive Canadian pondweed and New Zealand pygmyweed.

Duddingston Loch together with the adjacent Bawsinch nature reserve is currently managed by the Scottish Wildlife Trust (SWT) under a management plan.

**The Old and New Towns of Edinburgh are a World Heritage Site:** [Old and New Towns of Edinburgh World Heritage Site](https://ewh.org.uk/the-unesco-world-heritage-site/) is defined by its "outstanding universal values". The remarkable juxtaposition of two clearly articulated yet contrasting urban planning phenomena, in the organic medieval Old Town and the planned Georgian New Town, provides a clarity of urban structure unrivalled in Europe. These two distinctive townscapes, each of exceptional historic and architectural interest, are linked across the Waverley Valley by the North Bridge and the Mound, creating an outstanding urban landscape.

Some of the finest public and commercial monuments of the New-classical revival in Europe survive in the city, reflecting its continuing status as the capital of Scotland since 1437, and a major centre of thought and learning in the 18th century Age of Enlightenment, with close cultural and political links with mainland Europe.

The successive planned extensions from the first New Town, and the high quality of the architecture, set standards for Scotland and beyond, and exerted a major influence on the development of urban architecture and town planning throughout Europe.

The dramatic topography of the Old Town combined with the planned alignments of key buildings in both the Old and the New Town, results in spectacular views and panoramas and an iconic skyline.

The Old and New Towns together form a dramatic reflection of significant changes in European urban planning, from the inward looking, defensive walled medieval city of royal palaces, abbeys, and organically developed burgage plots in the Old Town, through the expansive formal Enlightenment planning of the 18th and 19th centuries in the New Town, to the 19th century rediscovery and revival of the Old Town with its adaptation of a distinctive Baronial style of architecture in an urban setting.

**The Palace of Holyroodhouse and Holyrood Park is an Inventory Garden and Designed Landscape:** [The Inventory of Gardens and Designed Landscapes](https://portal.historicenvironment.scot/designation/GDL00308) lists sites of national importance due to their cultural significance for their interest in the following topics: artistic, historical, horticultural, architectural, archaeological, scenic and nature conservation. Archaeological interest was not assessed when it was originally designated in 1987. If HES wants to make a change that needs planning permission the planning authority will consult the relevant department (within HES) for their view on the proposals. HES is responsible for the routine maintenance and longer-term management of the site.

### Policy Context

The following is a list of policies that provide context for the current and future management of Holyrood Park. Comprehensive information on policies affecting the Park is provided in Appendix B of the Holyrood Park Strategic Plan.

**National Policies:**

**National Planning Framework 4- Relevant Policies:**

Policy 1. Tackling the climate & nature crises

Policy 2. Climate mitigation & adaptation

Policy 3. Biodiversity

Policy 4. Natural places

Policy 5. Soils

Policy 6. Forestry, woodland & trees

Policy 7. Historic assets & places

Policy 20. Blue & green infrastructure

Policy 21. Play, recreation & sport

Policy 22. Flood risk & water management

**Regional and Local Policies:**

* Edinburgh & Lothians Strategic Drainage Partnership
* Edinburgh Water Management Vision
* Edinburgh 2030 Climate Strategy, Delivering a Net Zero, Climate Ready City
* Edinburgh Biodiversity Action Plan 2022-2027
* Edinburgh Climate Change Risk Assessment
* Edinburgh Local Development Plan
* Edinburgh Green-Blue Network Project & Design Guidance
* Edinburgh Thriving Green Space Project
* Edinburgh Million Tree Initiative
* Edinburgh Surface Water Management Plan
* Draft Climate Ready Edinburgh Plan.  Climate adapted, nature positive places. This plan will cover the range of habitat, water management, green travel, and healthy communities encompassed within the other policies above, and places Holyrood Park within a whole-city system of adaptation and resilience for a just transition

**HES Policy & Literature Review:** A comprehensive literature review has been undertaken, reviewing previous relevant reports, including landscape character assessments, landscape and conservation management reports, interim updates, and extensive consultation with Holyrood Park staff.

This plan is cognisant of relevant HES Policy documents including:

* Our Past, Our Future is Scotland’s new strategy for the historic environment (2023). It sets out a national mission to sustain and enhance the benefits of Scotland’s historic environment, for people and communities now and into the future.
* Historic Environment Policy for Scotland (HEPS) (2019). This is a policy statement for decision making for the whole of the historic environment. It is used at national and local levels, from funding decisions to applications to wind farms.
* HES Corporate Plan: Heritage for All (2022 – 2025). Renewed commitment to green recovery, inclusion, and responsible tourism taking centre stage.
* HES & NatureScot joint statement – Landscape, People and Place (2020). Both HES and NS share statutory roles in the conservation, management, and sustainable use of our landscapes and in promoting their enjoyment and understanding. The joint statement provides an opportunity to raise the profile of their landscape work and its importance to a nature-rich and history-rich future.
* HES Climate Action Plan (2020-2025). This plan sets out how we will place the environmental impact of our activities at the heart of our policy and strategy decision-making processes and support others to do the same.
* HES Annual Operating Plan (2023-2024). The plan sets out the key areas of work HES aims to deliver over the next financial year.It is designed to deliver an ambitious programme of activity while recognising challenges in the world today such as the cost of living, supply chain disruptions, the ongoing impacts of the COVID-19 pandemic, and the acceleration of climate change.

### Current Use

As a public park in the middle of a city, a walk into Holyrood Park to clamber to the top of Arthur’s Seat, or to walk over Salisbury Crag, to experience the panoramic views across the iconic cityscape is one of the defining experiences of Edinburgh.

The pressure and wear on the Park caused by increased visitor numbers, has increased substantially in recent years. The Park is a significant draw for domestic and international tourists visiting Edinburgh, currently ranked as one of the top two attractions to visit ahead of Edinburgh Castle, on Tripadvisor.

Residents use the Park for everyday recreation, amenity, and exercise. The Parade Ground is used for sporting activity, although not marked out in any way for formal games.

Duddingston Loch together with Bawsinch is managed by the Scottish Wildlife Trust (SWT) as a nature reserve with only limited access that includes permitted fishing.

There are regular events in the Park including festivals, spiritually and culturally focused gatherings and events, as well as sporting and charity events.

There is regular active research, monitoring, educational activities, and surveying carried out in the Park.

## Landscape Character

Whilst on the edge of the World Heritage Site boundary, the Park contributes significantly to the defining Edinburgh skyline with the "Lion’s head and haunch" silhouette of Arthur’s Seat particularly distinctive on distant approach to the city.

The Park offers visitors the experience of a certain level of apparent wildness in the city that is unique. An area of relatively undeveloped open space of this scale in the centre of a city is unusual, and the panoramic viewpoint atop Arthur’s Seat is a strong draw for visitors.

The landscape of Holyrood Park has influenced the fields of science, literature and arts within Edinburgh and is also nationally and internationally recognisable.

### Landscape Character Appraisal

Holyrood Park Landscape Study by Cobham Resources Consultancy in 1992 was undertaken as one of the background studies to inform the subsequent management plan of 1993.

The survey comprises primarily of a landscape character assessment with an international to local scale landscape evaluation and potential landscape improvements based on enhancement of landscape character. This did not include Duddingston Loch or Bawsinch Nature Reserve.

The study identified nine landscape character areas (LCA) which have been reviewed, and a further character area has been added at Duddingston Loch and Wells o'Wearie. The Lower Park character area has now been sub-divided into the Galloping Glen and the Parade Ground because of their quite different character that warrants separation.

**Arthur’s Seat:** The rugged summits of Arthur’s Seat, Nether Hill and Crow Hill form the dramatic core of the Park and dominate the skyline of the city.

Steep rocky and scrub-vegetated crags gird the southern and western aspects to form the abrupt mountainous profile so evident in views from the centre of the city and Calton Hill.

The summits are rounded bosses of exposed bedrock, criss-crossed with fissures and ledges on which there is sparse vegetation as a result of sheer numbers of visitors crowding the summit.

Where the gradient of the ground eases into the hollows between the three peaks and around the saddle between them and Whinny Hill, scrub cover gives way to open grassland; on the eastern flank of Nether Hill there are prominent cultivation terraces visible as obvious lines across the hillside from some distance away from the Park.

The sense of exposure, of superelevation over the cityscape, and of panoramic views that lay bare the geomorphology of Edinburgh, the Lothians and Fife beyond, is experienced very strongly on Arthur’s Seat.

The juxtaposition of a rough montane character with the complex and historical city laid out beneath is striking yet harmonious; the preponderance of stone and slate built streets and landmark buildings root the city into its landscape.

**The Dry Dam:** This curiously named feature is a V-shaped valley that falls away northwards from the saddle plateau between Arthur’s Seat and Whinny Hill.

It has a narrow entrance from the north between the steep ground of Haggs Knowe and the crags of St Anthony’s Chapel; it then runs due south between the ridges of Lang Rig and Whinny Hill, before broadening and curving eastwards into the scooped bowl below the summit saddle.

The upper bowl is of grassland whilst the valley part is almost entirely cloaked in dense gorse. The base of the valley is marked by the main path to the summit, which climbs onto the side of the Lang Rig before curving onto the saddle; it has been denuded by the volume of foot traffic, to form a broad swathe of bare soil and rocks.

Higher up, there are a number of informal paths spreading out across the bowl to climb on to Whinny Hill, the saddle, and Arthur’s Seat.

The Dry Dam is sheltered and visually enclosed; throughout its length the summit of Arthur’s Seat dominates the view southwards.

**The Dasses:** This feature consists of a northwards running grassy crease, bounded between the parallel craggy crest of the Lang Rig immediately to the east and a series of three rocky bosses overlooking Hunter’s Bog on the west. The rocky features are a sill of dolerite.

Below the airy, undulating crest, steep slopes of scree are covered with dense gorse scrub and scattered young woodland down as far as the floor of the valley holding Hunter’s Bog.

The rolling ridgeline has a worn path that provides a delightful, airy route to or from Arthur’s Seat, with views across the lush valley of Hunter’s Bog towards Calton Hill.

Haggis Knowe forms the northern end of this ridge.

**Hunter’s Bog:** Hunter’s Bog is a ‘hidden valley’, forming a gentle green bowl in striking contrast to the surrounding craggy volcanic landscape.

It affords a sense of tranquility, elevated above the bustle of the city and bounded by rising ground on all sides except the north, in which direction views are towards the industrial and docklands of Leith.

Deeper soil and natural drainage result in more lush vegetation than elsewhere in the Park, with a shallow pond occupying the valley floor. This pond has been lost in four out of five summers since 2018, due to the drier summers and the transpiration effect of grasses that have colonised previously submerged areas.

This character zone lacks the exposed bedrock, crag, scree, and thin soils found throughout the rest of the core of the Park.

The bog is enclosed to the west by the inclined dip slope of Salisbury Crags, clothed in grassland with patches of gorse and scattered trees.

To the east the steeper crags and scree of Arthur’s Seat and The Dasses, the lower slopes cloaked in dense gorse and young pioneer woodland define the edge of the valley.

The smooth bowl is broken only by the hummocky old quarry, thick with gorse.

**Salisbury Crags:** The iconic profile of this long, uniform cliff standing atop an equally uniform steep slope that rises abruptly from the Galloping Glen, is perhaps the most striking visual element of the Park when viewed from the historic heart of Edinburgh.

It forms a sharp pediment from which Arthur’s Seat bulges upwards in the background.

Immediately beneath the line of cliffs runs The Radical Road, a historic track of cultural significance that has formed a key part of tourism in the Park for two centuries.

The crags are undulating in plan and rich in rock architecture. Formed of a sill of dolerite (known locally as 'Whin'), they have been quarried for building stone, creating several bays in the cliff line. At the southern end of the cliff lies the historically significant Hutton’s Section, a feature of importance to the development of geological science.

The slope beneath the crags and the path falls away steeply as a uniform scree cone over which thin calcareous soil has developed to support herb-rich grassland.  Scrub and woodland regeneration form a mottled texture and colour over the slope, with bare scree evident beneath the quarried sections of the crag where waste rock was cast.

The Radical Road affords elevated views across the spectacularly varied skyline profile and street pattern of the heart of Edinburgh, and it has long been the most accessible way for visitors to gain such views from the Park.

A parallel route worn along the top of the crags gives a strong sense of exposure that offers an unusual thrill within the city, akin to being on a balcony poised far above the teeming cityscape.

**The Galloping Glen:** A gentle valley sweeping around the foot of Salisbury Crags, hemmed in by the wooded ridge of St Leonard’s Bank and the tall housing blocks of Dumbiedykes, and opening up at Holyrood where the grounds of the parliament and the abbey meet the Park.

The glen crests a rise where Queen’s Drive meets Holyrood Park Road, falling southwards towards the Wells O’Wearie to meet the rocky spur of Samson’s Ribs.

Queen's Drive runs through the floor of the glen and there are extensive mown grass verges on either side; compared to most of the Park, this has a lush and manicured, urban parkland character.

The rock-trap embankment skirting the toe of the slope beneath Salisbury Crags is an artificial linear landform.

The glen provides a route for all modes of travel, but for most Park users would not be a destination in itself.

The imposing rampart of Salisbury Crags form a prominent and dominant feature and signals impregnability; this is a transit route around the Park, not a place to gain access into the scenic core of the park. It affords framed views towards the city, without the panoramic, elevated character of other views from the Park.

**St Leonard’s Bank:** A wooded bank defines the western limits of the Park where it meets the densely developed neighbourhoods of St Leonard's Bank/Hill and Dumbiedykes. It is formed by another dolerite sill, the northern end of which was quarried (a rugged location now occupied by a bike park).

St Leonard’s Bank creates a strong visual enclosure to the Galloping Glen and contributes to the attractive setting of the properties and streets immediately outside the Park boundary here. The boundary wall of the Park bounds rear gardens beyond, but is punctuated at several points by path entrances at St Leonard's Bank, St Leonard's Hill, Braidwood Gate and Dumbiedykes Road with paths leading down to Queen's Drive.

Heavily wooded and with some small crags, St Leonard’s Bank has a well-used path worn along its crest to meet Queen's Drive at the Holyrood Park Road roundabout.

**The Parade Ground:** A distinctively cultural greenspace that contrasts strongly with the rest of the Park, this landscape is an almost flat area of mown grassland containing some clumps of trees; it includes St Margaret’s Loch, a pond with an unnaturally regular edge and shape.

The land is visually associated with the adjacent Holyrood Abbey and Queen's Drive acts to emphasise this separation from the rugged landscape to southwards.

It offers an extensive area of open parkland suited to active recreation, which is used for outdoor events.

Views to Arthur’s Seat are attractive, with the dramatic landmarks of Salisbury Crags, Haggis Knowe, and the crag and ruins of St Anthony’s Chapel providing a distinctive setting to this green part of the urban fabric and drawing the visitor into the rugged core of the Park.

It lacks the distinctive geology and vegetation cover of Arthur's Seat and feels like a different landscape entirely; it benefits from the adjacent scenic grandeur, but is manicured and lacking in texture or interest.

The triangular green at Royal Park Terrace is distinctively more urban in character.

**Whinny Hill:** The domed shoulder extending northwards from Arthur’s Seat is a gentler landform in which crags and bosses are present along the western side, overlooking the valley of the Dry Dam, and at their steepest, forming a basalt cliff and shelf on which stand St Anthony’s Chapel Ruins.

Whinny Hill has a broad crown with low ridges and bosses of rock lightly exposed; it falls away gently north-eastwards down to the boundary at Willowbrae.

As the name suggests, gorse is a diagnostic feature across this area, occurring in large and small patches intercut by grassland and a maze of trodden routes; the bright yellow flowers occurring as solid masses at any time of the year are striking.

There are broader meadows on the eastern flank above the Queen's Drive; below this road lie dense deciduous woodland, supplemented by planting in recent decades, which forms visual enclosure of the Park from neighbouring residential streets.

Within the stands of gorse there grow dispersed clumps of deciduous trees, typically birch, rowan, and sycamore; this is particularly evident near Dunsapie Loch.

Queen's Drive affords attractive views of Calton Hill as it rounds this flank of the Park, the cluster of monuments seen in profile and picturesquely framed by the slope of Whinny Hill.

This part of the Park is quieter in visitor numbers and the mosaic of gorse and grassland can feel relatively sheltered and intimate in scale.

**Dunsapie:** The eastern edge of the Park rises above the village of Duddingston and the large park area of Willowbank.

Dunsapie is a boss of rock rising like a fortress over the adjacent lochan and defining the scenic valley through which Queen’s Drive runs as it circumnavigates Holyrood Park.

Queen’s Drive is a significant feature of this part of the Park, gently winding past Dunsapie Loch before emerging onto the exposed slope of Arthur’s Seat as a balcony high above Duddingston.

The road affords easy access into the Park, but motor vehicles using the road are intrusive, as is the car park.

Compared with the core areas of the Park, Dunsapie has a rather softly picturesque character; the composition of loch, crag, woodland, meadow, and scrub, each element of modest scale, contrasts with the bold scale and severity of Arthur’s Seat. The small loch itself has a cleanly defined shoreline without natural marginal vegetation, appearing artificial in origin.

Post-war woodland planting on the Park boundary has matured and forms a continuous canopy with the broadleaved woodlands on Willowbank, of similar age.

The footpath down to Duddingston, known as ‘Jacob’s Ladder’, is well used and has been recently reconstructed to a durable standard.

**Duddingston Loch & Wells o'Wearie:** Duddingston Loch and Bawsinch Nature Reserve lie within a flat area of lowland wetland character that contrasts with the striking hills and crags of the core of the Park. The loch and associated wetlands and meadows form a prominent natural feature in views south from Queen's Drive and Arthur’s Seat. The Wells o'Wearie is a relatively secluded and wooded valley feature lying between Samson's Ribs and the Park boundary; it contains a small burn and several ponds, flowing down towards Duddingston Loch.

The loch itself is the largest of the three lochs within Holyrood Park, and the only one of natural origin and form. It has characteristic aquatic, extensive reed bed and fringing marshland vegetation. Developing willow scrub, encroaching birch trees and a small area of mixed deciduous woodland complete the transition from freshwater to woodland.

This diversity of habitats, dominated by wetlands, is managed by the Scottish Wildlife Trust (SWT). There are only limited points of access and paths, protecting sensitive wildlife from excessive disturbance.

This character area is well enclosed along the edges and thus rather hidden except from elevated viewpoints.  It is bounded to the south by the historic Innocent Railway line, now a pedestrian-cycleway, which has an old stone wall and mature vegetation on both sides that preclude visibility of Duddingston Loch and Arthur’s Seat for most of its length.

Duddingston Road West runs along the east side, with vegetation again precluding visibility into the site. Queen's Drive passes along the northern edge, affording picturesque views southwards across the loch to Duddingston village and beyond; this road is separated from the loch shore by steep slopes that preclude access.

The loch and reserve has a notable tranquility, being away from the well-used routes of the Park and with limited accessibility.

Tranquil views are had from two community gardens on the north-east edge ([Jock Tamson’s Gairden](https://www.jocktamsonsgairden.org.uk/) and [Dr Neil’s Garden](https://www.drneilsgarden.co.uk/)).  A picturesque white boathouse used to sit on the lochside edge, but has recently been demolished following vandalism. The Thomson Curling Tower on the water’s edge is visible in the longer-range views from Queen's Drive and beyond.

There is an informal path access to the banks of the loch from Old Church Lane, through a gateway and overgrown vegetation. Although this path appears uninviting and difficult in places, there are benches and bins by the water’s edge and the path continues to the "Hangman’s Rock".

The Bawsinch Nature Reserve has restricted access to the public, to minimise disturbance to breeding birds; there is a bird hide within the Reserve, accessible to keyholders only.  SWT volunteers periodically lead guided walks around the reserve.

To the west of the loch, the wetland transitions to drier grassland, grazed by cattle; known as "Murder Acre", a grim reminder of a fatal riot by trade apprentices in 1677.

### How the Landscape has changed through history

Before the influence of humans began to alter the natural vegetation cover, the landscape of the Park was mostly wooded.

From the Bronze Age onwards there was an increasing pattern of cultivation and management of the land, along with settlement and hunting, as native woodland was steadily cleared.

The striking remains of cultivation terraces are still clearly visible today on the eastern slopes of Crow Hill and Arthur's Seat.

During the Royal stewardship and use as a hunting ground, the Park was relatively undeveloped compared with other parts of the city. There is, however, evidence of medieval cultivation.

As the Park evolved into more of a recreational resource for the city and its visitors, the Park was managed by draining boggy areas, and creating lochs.

Some existing houses were demolished to create a flatter area of grassland to the north, known as Parade Ground, which was maintained as short cut grass and used for military parades and events.

At this time a series of Victorian "improvements" were introduced incorporating roads, paths, gates, railings, and lodgehouses.

More trees and woodland were planted mostly to the perimeter of the Park, in part to screen housing being built next to the Park.

Grazing of the extensive grassland continued right up until 1977; this was considered the optimum management to keep the grasslands in good condition. Sheep were removed from the Park due to concerns over localised erosion caused by over-grazing, conflict with road vehicles, and growing problems with dog worrying. Since then selected areas of grassland have been maintained by annual cutting, but this covers far less area than was previously grazed.

Since the cessation of grazing the vegetation has changed considerably over the last 50 years, notably by considerable gorse encroachment into areas that were previously grassland.

Despite efforts to manage the scrub and gorse, over the last 40 years there has been a steady encroachment, and comparative mapping illustrates the considerable extent of grassland lost to gorse advancement.

## Heritage

### Cultural Heritage

The Park has a rich cultural heritage spanning thousands of years. Historic events and changing land use have continually shaped the Park we see today. In turn the landscape has influenced Edinburgh's cultural heritage, shaping social history, sparking new thinking in the Scottish Enlightenment, and inspiring literature and film.

There is evidence of human activity spanning over dating back over 6,000 years, with communities living, fortifying, hunting, and working the land through the Mesolithic, Bronze, and Iron Ages. This increasing pattern of cultivation and management of the land, together with settlement and hunting, accompanied the progressive clearance of native woodland from much of the area of the Park.

Many traces of the prehistoric past survive today, including extensive cultivation terraces and Iron Age fortifications.

Through much of the medieval period the Park land was divided between Holyrood and Kelso Abbeys; pastoral farming of sheep and livestock, as well as some cultivation, provided income and resources for both abbeys. This farming activity would have kept the landscape relatively cleared of trees and woodland, as seen in the background of this image of the Abbey and High Street from 1544.

From the 1100s onwards the Park had a strong royal connection, being occasionally used as a royal hunting ground; it is famous for its associations with King David I and the legend of the founding of Holyrood Abbey in 1128.

By the 1500s, royal accommodation at Holyrood was firmly established and monastic activity in the park waned. The landscape was enclosed as a royal park under James V in 1541 with the construction of the boundary wall. The first intensive quarrying likely began at this time, with stone from Camstone quarry likely used in construction of the boundary wall and Holyrood Palace.

James V established the first Park Keepers and grazing remained important through the 1500s and 1600s. The Park became a dramatic backdrop for royal events, from wedding celebrations to jousting tournaments. In 1564 Mary Queen of Scots ordered the damming of Hunter’s Bog to form an artificial loch upon which a re-enactment of a naval battle was performed. Remains of this dam are still visible today.

Over the following centuries, as the city of Edinburgh grew, the perimeter of the Park became increasingly industrialised. Quarrying came to be a dominant feature, particularly along Salisbury Crags.

From at least the 1700s the Park has had strong military associations. Jacobite forces under Bonnie Prince Charlie set up a camp on the slopes of Arthur's Seat close to Duddingston in 1745, protected from the guns of Edinburgh Castle.

In 1778 soldiers from the Seaforth highlanders and the wild Macraas mutinied over rumours that they ere to be sent abroad, contrary to their enlistment for home defence. They gathered on Arthur's Seat with a large group of sympathisers, supplied by the public with food and water. A piper played to keep their spirits up, pacing the path known as Piper's Walk. Eventually the soldiers were persuaded that they wouldn’t be sent abroad, ending their protest. But, in 1782 the army sent this unit to India, many of them dying on the journey and deployment.

Military training, encampments, and parades have long been activities in the Park, as have protests for social action.

The Scottish Enlightenment, during the 1700s and early 1800s, was characterised by an outpouring of intellectual and scientific accomplishments. Holyrood Park was witness and inspiration to numerous ventures during this period.

Famously, James Hutton made key observations while studying the rocks and deposits around Salisbury Crags during quarrying. Hutton’s new and controversial ideas laid the foundations for modern geology, challenging existing beliefs about the age of the Earth.

In the early 1800s, the Park was increasingly valued for its landscape quality and this sentiment was given impetus by Queen Victoria who, "much pleased" with Edinburgh, was the first monarch since the 17th century to use the Palace of Holyroodhouse as a formal royal residence. Vexed by excessive quarrying of Salisbury Crags, in 1843 the Crown purchased the Park, bringing it back under royal control and putting an end to the widespread quarrying activity. In 1845 the Park returned to direct Crown control once more and during the 1850s the Park was opened up for local people to access. It retained military functions as rifle range and parade ground.

Some existing buildings were demolished at the northern edge, to create an area of managed grassland known as the Parade Ground.

Prince Albert was a driving force behind the transformation of the Park into a landscape for public enjoyment, of a scenic quality befitting the backdrop to a royal palace. Marshes were drained, scrub removed and lochs created, Queen's Drive was constructed to allow carriage rides, and four formal entrances with picturesque lodgehouses were built to demarcate the distinct parkland from the surrounding city. These lodges, designed in a Picturesque style, add to the character of the Park; they are located at Holyrood (standing outside the 21st Century Scottish Parliament), Meadowbank, Duddingston and St Leonard's. Originally these lodges served as accommodation and offices for the park staff, with St Leonard's Lodge containing a tea room for visitors to the Park.

These Victorian 'improvements' provided new recreational opportunities such as boating, canoeing, punting, and rowing, as well as skating and curling in winter. The rules of curling were drawn up by the Grand Caledonian Curling Club, which was formed in Edinburgh in 1838 and became the sport’s governing body. The royal patronage of Queen Victoria led in 1843 to this becoming the Royal Caledonian Curling Club.

The variety of flora and fauna present in the Park within easy reach of the city have meant that it has been a popular venue for botanising, either in excursions or on a less organised basis. The Botanical Society of Scotland, the Botanical Society of Britain and Ireland and the Edinburgh Naturalists' Field Club, have all frequented the Park.

The rugged character of Salisbury Crags attracted aspiring mountaineers as the sport of rock climbing developed in the late-Victorian period, with the South Quarry on Salisbury Crag being an active bouldering venue to this day; elsewhere in the Park the bylaws do not permit climbing.

In the early 20th Century women were not permitted to join the Scottish Mountaineering Club, so the Ladies’ Scottish Climbing Club was founded in 1908 and, being Edinburgh-based, used Salisbury Crags as their main training ground.

The Park has been a focus for many cultural events such as May Day, the Edinburgh Festival and the Samhuinn Fire Festival. It has hosted protests and activism, and it has been a feature of sporting events such as the Edinburgh Marathon and the UCI 2023 Cycling World Cup road race. Beyond these formalised events, it is utilised by many community groups and societies for regular social and sporting gatherings as part of the beat of thriving city life.



a hill for magnitude, a mountain in virtue of its bold design.

**Robert Louis Stevenson**

Although surrounded by a busy cityscape, Holyrood Park has many attributes of wild land, distilling the rugged mountain landscapes of Scotland into a small area that offers a unique experience in the city.

The dramatic landform and its changing appearance with the light and weather create a powerful atmosphere for the senses.

These characteristics have acted as a foil and backdrop, often proving as inspiration for many artists, photographers, writers, and poets.

### Natural Heritage

**Underlying geology:** The volcanic hills of Edinburgh are key to the character and historical development of the city. From the summit of Arthur’s Seat, which dominates the city skyline, the physical, visual, geological, and archaeological relationship between Arthur’s Seat, Calton Hill, Castle Rock, and Blackford Hill becomes apparent.

Within the Park lie a complex of chiefly volcanic rocks expressed in the dramatic topography. Their relative resistance to wear, pattern of jointing, porosity, and chemical content affect the characteristics of the overlying soil, leading to striking variations in soil pH and thus plant species growing on different parts of the Park area. Depending on the underlying rock and soil type, acid, neutral, and calcareous grassland have all developed within the area of the Park. The complex geology of this area is reflected in the richness of the plant communities that are present.

**Biodiversity:**



The park is of exceptional interest due to the diversity of plant species present, with over 350 species of higher plant being recorded from within Holyrood Park, including a large number of rare species with over 60 plants that are rare in Scotland or the Lothian area.

**Site Management Statement for SSSI 91; NatureScot**

The natural heritage of the Park comprises an exceptional range of plant habitats for such a compressed area. Grasslands of several distinct types, cliff and rock habitats, scrub, woodland, wetland, and water bodies are all found closely together. The habitat diversity is closely associated with the volcanic geological composition of the site, resulting in varied soil types which support the presence of species-rich grasslands and rare plant communities of open habitat.

This botanical diversity in turn supports priority species that are at Near Threatened and Nationally Scarce status, such as the Northern Brown Argus butterfly.



Holyrood Park is unique in Edinburgh as an example of lowland, unimproved grassland, and is the largest and most diverse area of such unimproved lowland grassland in the Lothian area.

**NatureScot**

**Ecological survey:** An ecological survey of the vegetation habitats and features of the Park was undertaken in Summer 2023, using the NVC Extended Phase 1 Habitat Survey methodology.

The majority of Holyrood Park comprises neutral or acid grasslands, with discrete areas of calcareous grasslands occurring on the base-rich rocky outcrops.

The complex geology of Holyrood Park has created an exceptional richness of plant communities with a large number of rare plants and invertebrates recorded within the Park together with a handful of rare moss and mollusc species.

All of the rare invertebrate, plant, and moss species (with the exception of adder’s tongue fern — Ophioglossum vulgatum), can be attributed to either the inland cliff habitat itself or the associated grasslands on the steeper slopes around the cliff faces, highlighting the importance of the inland cliff habitats within the Park.

The variety of habitats supports a diverse avifauna of 118 recorded bird species, including two remaining breeding pairs of skylarks, recorded by the Ranger team and volunteers.

An absence of grazing in the last five decades has resulted in the grassland sward becoming rank and losing species diversity in many areas. Gorse (Ulex europaeus) dominates many of the steep slopes, to a much greater extent than when the Park was grazed.

When compared with the Phase 1 map from 1990 (HES), the areas where the expansion of the gorse is most obvious include up the southern slopes of Crow Hill, along the tops of Whinny Hill and along the western slopes of Salisbury Crags.

The expansion of the gorse onto the thinner base-rich soils and the cliff faces is a significant threat to the designated habitats and important plant and invertebrate species found within the Park.

## Archaeology

### Introduction

This part of the LCMP covers both a description of the archaeology found in the Park, the condition and sensitivity of each archaeological feature, and recommendations for management of this archaeological resource to optimise its preservation and value.

### The Archaeology of Holyrood

The Park's rich past encompasses traces of Mesolithic hunter-gatherer activity around 6000 years ago, Bronze Age communities living and burying their dead around 3000 years ago, and the presence of four Iron Age hill forts on prominent rocky hilltops.

The most extensive archaeological remains within the Park are the agricultural terraces and rig and furrow formations which are indicative of a landscape intensively cultivated for over a thousand years. A patchwork of prehistoric, medieval, and post-medieval agricultural remains indicates a very long connection with cultivation.

In a more contemporary context, during the First World War the Park functioned as a training ground for soldiers, and during Second World War accommodated allotments and air raid shelters.

In essence, Holyrood Park serves as a living testament to the diverse and continuous human activities that have shaped its archaeological landscape throughout the ages, but like many archaeological sites, most of the remains in the Park are challenging to discern from ground level. Many of these traces exist in the form of understated mounds and irregularities, posing a risk of misinterpretation as natural topographic features.

### Archaeological Condition Assessment

An Archaeological Condition Assessment was undertaken by Rathmell Archaeology in 2023 as part of this Landscape and Conservation Management Plan, to establish the baseline condition of archaeological sites within the Park which could be at particular risk of loss from deleterious land use or vegetation cover.

The Condition Assessment has collated and reviewed the known extent of archaeological sites from multiple surveys undertaken within Holyrood Park since 1947, and established 1:1 relationships between the information on record and a series of defined geographic extents of sites within the Park.

These defined geographic site extents can now be regularly reassessed with a set of agreed characteristics against a clear baseline, facilitating a methodology for recording any future change in condition on or within 20m of each site. (The latter spatial extent is important for recognising vegetation and ground cover change that is moving towards the site, enabling intervention if desired before adverse impact.)

Some of the distinctly identified site extents are closely related — for example a series of adjacent sites may cumulatively form a coherent field system, with settlement nestled within and around. However, each individually identified site may have a different significance, sensitivity to change, and hence likely management response should they be compromised by changes in their condition, and so have been recorded separately.

Perhaps understandably given the deep history of Holyrood Park, there are clear limitations in the current archaeological data on record.

Some known features captured by historic maps have only historically been recorded in textual information or as indicative points on a map, rather than defined areas which can be readily identified today for ongoing monitoring — for example the Prestonfield Fountain shown on Windy Gowl in David Crawford’s 1824 Sketch map of the City of Edinburgh and Leith.

Conflicting interpretations of identified sites between various professional surveys illustrate the challenges of reconciling nearly 80 years of archaeological survey within the Park. One of the recommendations of this study is that low-impact investigative work be undertaken on those sites with conflicting interpretations to improve the understanding of their significance and associated sensitivity to change.

There remains limited understanding in some areas as to whether further archaeological features survive. For example, linear **rampart complexes** are identified as archaeological sites with defined extents around the **ramparts** themselves, however, there is uncertainty as to whether they bound a coherent area, and if so whether archaeological features survive within these areas.

### Threats to Archaeological Heritage

Each identified archaeological site has been initially assessed against the agreed condition criteria as a baseline, and categorised in relation to the sensitivity to change of each individual site through a red / amber / green classification.

**Red:** The site has a high sensitivity to change. This means the site has been inferred to embody complex archaeological strata and upstanding form, with a high risk of loss of embodied information and ability to interpret should change occur. Red sites include forts, scooped settlements, Medieval or later rural settlements (MoLRS), ramparts and roundhouses.

**Amber**: The site has a moderate sensitivity to change. This means that while the site may be inferred to embody archaeological strata and upstanding form, this may be less complex strata, or have a repetitive character over its extent. Amber sites include extensive field banks and cultivation remains.

**Green**: The site has a low sensitivity to change. This means that the site has been inferred not to embody archaeological information that would warrant significant consideration should change be proposed. Green sites include quarries, rock traps, roads and tracks, and natural features.

This categorisation is coarse, and subject to refined assessment particularly within some of the larger sites. For example, the large areas identified at Hunter's Bog capture the full extent of features relating to the rifle range sites, but in many cases these features are relatively small, discrete earthworks or similar. Hence some features should be considered Red lying within a larger area that could be considered Green – the use of Amber for these large areas suggests some capacity for change.

The ideal landscape condition for most archaeological sites, from a solely archaeological perspective, is to maintain short-cropped grass without active erosion or incursion of deleterious woody or rank vegetation. For many sites this is not their current condition, and this aspiration may pose a conflict with other natural heritage conservation aspirations and indeed human use across the Park.

The height of grass generally is not considered a notable difference in terms of the direct impact of vegetation cover on an archaeological site; where grass cover at any height is considered neutral or beneficial for maintaining site condition when compared to other ground cover options. However longer grass can visually obscure ground features of archaeological significance. Throughout Holyrood Park, grass-cutting does frequently create a differentiation across larger archaeological sites between areas cut and those not cut, and generally whole archaeological sites should be managed within a single cutting regime.

Caution should also be noted given that long grass may encourage narrow pedestrian trample routes, which in turn can precipitate erosion. In turn, transitioning from level ground to sloping ground exaggerates erosion, and uncut grass presents an environment that may lead to the incursion of woody scrub and self-seeded trees.

Only 15% of archaeological sites within Holyrood Park is not touched at all by woody scrub, either on or within 20m of the site extents. Scrub coverage is largely identified as gorse, which is prevalent throughout the Park, but notably forms extensive stands across Whinny Hill where archaeological sites are almost all partially or fully covered by this vegetation.

As scrub is deleterious woody vegetation, those sites with high coverage are anticipated to have experienced a notable deterioration in the quality and coherency of their archaeological strata. This will mainly be through the physical impact of the root structure of the scrub, although hydrological change, aeration, and other soil changes will also occur. Those sites with currently lower infestations of scrub have a risk, if not mitigated, of deterioration in condition should the scrub further encroach.

The spread of self-seeding trees poses similar potential risk to archaeological sites. This is demonstrable particularly on the eastern slopes of Crow Hill, where self-seeded trees are commencing a deterioration in the condition of the cultivation, enclosure, and settlement sites on this slope, endangering several sites.

All identified Red sites should be cleared of scrub and annually managed for removal of self-seeding trees.

All identified Amber sites should also be reviewed to establish which sites require to be maintained by clearing / removal of scrub, and annually managed for removal of self-seeding trees, with the focus on those sites that currently are not severely impacted by scrub and self-seeded trees but are at risk from their spread (such as sites on The Dasses, Haggis Knowe, and Crow Hill) rather than those already heavily infested (such as Whinny Hill).

Any sites not selected should be prioritised for investigative works to further understand significance prior to any loss.

Woodland within the Park which is intentionally planted, bounded, and managed, tend to be mature and, in part, edged by ground that is being actively cut to maintain open grassland, waterbodies, or roads. These sites are disproportionately cultivation remains on the periphery of the Park and are predominantly of Amber sensitivity to change.

None of the woodland overlying sites have been observed to have been prepared by forestry plough or other forestry operations to improve drainage. As such, the main impact of these trees will be through the physical disruption to the fabric of the sites from the individual root plates.

Once established, woodland impact remains relatively stable until either forestry operations seek to remove stems or the trees are subject to gross failure, such as from wind blow.

Managed woodland in Red or Amber sites should be monitored to enable managed removal of over-mature trees to mitigate this risk.

Where vegetation cover on an archaeological site is lost and the underlying sediment is either being compacted or actively eroded, archaeological information is also at risk of degradation and loss.

Pedestrian erosion is by far the most evident cause for unvegetated surfaces on archaeological sites in the Park, with 75 sites having some level of impact. The most severely impacted five sites, with >10% unvegetated surface, are all on or around the summit of Arthur’s Seat, and the impact on these sites fits into the reality of a significant area without vegetation covering due to footpaths and general trample areas at the summit of Arthur’s Seat.

For those sites with much lower levels of pedestrian erosion, this typically appeared where routes cross earthen or stone banks on a perpendicular path with the bank, then subject to localised erosion. However, there are localised exceptions where eroding routeways are running along the length of linear archaeological sites.

One example of this is the eastern bounding bank of farmstead (Site #46) that had been integrated into a broad eroding path climbing along The Dasses, and another is the main segment of the rampart (Site #14) running across Salisbury Crags that, as a cross-slope feature, has been opportunistically used on its upslope side as a routeway with consequent erosion in places.

The use of this path is promoted as part of the ‘Landscape and Beginning’ tour by HES, and three temporary signs have been observed driven into the rampart.

Whilst the recommendation here is to support investigative works as a priority to recover an understanding of these sites’ significance in mitigation of the loss suffered, an opportunity also exists to re-route pedestrians in these localised instances to mitigate further loss.

Linear erosion on wholly earthen features, such as cultivation remains, appeared to be predominantly initiated by climbing routes that cross such sites.

The clearest examples of this are on the eastern slopes of Crow Hill with walking routes carving channels through the cultivation remains. Though these channels are very visible scars on the landscape, comparing the erosion areas from 2022 to 2018 suggests that in a 4-5 year cycle, the alignment and location of these channels appears very stable.

Given the inevitable pressure for routeways from Dunsapie Loch up Crow Hill and Arthur’s Seat, seeking to limit pedestrian routes to these existing channels appears an expedient means of suppressing further loss from the archaeological sites crossed. There is also evidence currently within Holyrood Park that the managed deflection of pedestrians may enable some of these channels to successfully recover their vegetation surface.

In addition to the impact on the large footprint cultivation remains, there are also impacts from these channels to other, more discrete sites, on the same slopes. One of these routes crosses the northern end of the military training trench (Site #196), while another crosses the disputed scooped settlement (Site #23), both of which are of red sensitivity to change.

In these cases, we should seek to stabilise established routes as they cross sites through localised engineering of paths and/or episodic pedestrian exclusion to promote revegetation and/or reseeding with a hardy grass mix. Investigative works should precede any localised engineering of paths crossing a site.

There is a visible compression route across the Parade Ground from vehicle movement, confidently identified as having been caused by cycling rather than pedestrian movement.

Other causes of vegetation loss assessed were from burning identified as either small-scale (barbeques and bonfires) or large-scale (areas of burning). There is no evidence of areas of burning impacting known archaeological sites from the 2023 condition assessment — although area burns have in the recent past affected Whinny Hill, exposing and impacting bank systems there.

Unvegetated surfaces from burrowing animals appear to be very rare across the archaeological sites in the Park, however where animal burrowing is identified on sites categorised as Red in terms of Sensitivity to Change, conservation through active management should be implemented. It should be noted that this would be dependent on the species of burrowing animal and their protection status.

### Opportunities to protect archaeological heritage

In each case where proposed action is desirable, a more detailed archaeological appraisal will be needed; this will consider the known detail of archaeology against the specific proposal, to ascertain whether any adverse impact is likely to be caused. In many cases the archaeology will be considered of low vulnerability to the proposed change, in others the archaeological record may be insufficiently detailed to allow a decision until further detailed review or survey has been undertaken.

The establishment in this report of a new baseline for archaeological recording of condition and location will enable greater clarity and ease of search in future and provide a framework into which further survey records can be placed.

## Landscape Management

### Past Landscape Management

**Appearance:** Huxley and Pratt stated in 1966 that,



in general appearance the Park may appear to have altered very little in the last hundred years (seventeenth and eighteenth century prints show a landscape very similar to that of today).

Their examination of photographs from 1906 revealed that, most … areas identifiable in the photographs and on the ground appeared to have changed very little.

However, while they did not find significant landscape-scale changes in the Park, they did find records that evidenced a decline in species diversity.

**Grassland:**  The Park was grazed from at least the 1950s until sheep were removed in 1977, at which time there were 800 sheep kept on the Park between March and September.

There was undoubtedly livestock grazing during previous centuries; grazing levels must have fluctuated over the years, since the Park was said to have been tree-covered in 1883, and parts have been cultivated since the Iron Age.

However, grazed grassland is likely to have been the dominant habitat for most of the past few centuries; for much of this span, cattle rather than sheep would have been present.

In 1966 it was recorded that between 1000 and 2000 sheep were grazing in Holyrood Park between March and September; this constitutes a moderate to high stocking density for such land, and it is likely that grazing was concentrated on the short-mown grassland of the Park fringes and the fescue-bent grassland on the upper slopes, leading to much higher local grazing densities likely to cause erosion.

A corollary of the preferential grazing of the more palatable lower and upper grasslands was a lack of grazing of the mid-altitude zone, which as a result developed a cover of tall coarse grasses and gorse.

Grazing was ceased in 1977 due to erosion caused by intensive grazing of localised areas and over grazing of vegetation growing on thin soils.

Rabbits have been present in the Park throughout and have caused localised erosion through grazing and burrowing activity; aside from the passage through the Park of individual deer arriving along the Innocent Railway or from Prestonfield golf course, rabbits have been the only grazing animals present since 1977 and their feeding will have benefitted the conservation of some of the grassland habitats.

The last grazers in the Park experienced problems such as worrying by dogs and collision with vehicles on the Park roads.

A part-time shepherd was employed by the Park and utilised pens and shearing facilities at the Wells o' Wearie.

At the time the Park police were very conscientious in patrolling and capturing stray dogs and keeping an eye on the sheep.  Blackface hogs were grazed in preference to grey-faced ewes because the latter were too valuable to take the losses experienced.

In recent years a small herd of cattle has been regularly grazed on Murder Acre adjacent to Duddingston Loch. This is within the Scottish Wildlife Trust’s Nature Reserve area and is fenced.

Since the cessation of grazing in the Park there has been an appreciable increase in the cover of unmanaged coarse grassland dominated by tall grass species, and of gorse, both of which bring greater fire risk.

**Gorse:** Gorse is a very prominent constituent of the landscape of Holyrood Park, forming extensive swathes of dark green draped over scree slopes, crags, quarried ground and undulating slopes, vibrant with yellow blossom for much of the year.

The area of gorse was surveyed in 1977, 2001 and 2023 (the latter surveyed from aerial photography), revealing a 133% increase in gorse cover over the course of 46 years since grazing was abandoned in the Park.

**Trees and Woodland:**  Tree cover has not been a significant feature of the Park for many years.

A programme of tree planting formed part of the 1993 Management Plan with the aim of creating native woodland with a balanced mix of species supporting a woodland ground flora and native fauna.

This planting encompassed linear areas around the Park perimeter, an area on the western slope of Arthur’s Seat in the head of Hunter’s Bog valley, and at the Dunsapie car park.

There were also small areas of native wetland tree/scrub planting carried out at the lochs to diversify the marginal habitat, and some localised planting of parkland trees in the lower Park. Planted woodland was managed to selectively thin and to remove non-native species; some coppicing was undertaken but this had ceased by 2004.

**Wetlands:**  The management of Duddingston Loch is covered separately from that of the other lochs and wetland habitats in the Park, because the former is a nature reserve managed separately by the Scottish Wildlife Trust and with quite different priorities than the majority of Holyrood Park.

Past management of Dunsapie Loch and St Margaret’s Loch has attempted to establish native marginal vegetation and aquatic / emergent plants; such efforts have failed mainly due to the grazing impact of waterfowl and geese, present in elevated numbers.  Hunter’s Bog has been improved by blocking outflow drains so as to retain wetter conditions; annual cutting of the tall marginal / grass habitat has been undertaken in order to improve species diversity, preventing a transition into coarse rank grassland.

Following a recommendation in the 1993 Management Plan, a number of small pools were created along the inflow ditch of Duddingston Loch at the Wells O’Wearie, extending the wetland habitat

**Rock Faces:** To protect and conserve the rare plant species growing on rock outcrops and cliffs, local selective hand-cutting of gorse has been undertaken in conjunction with monitoring of the populations of rare plants.

**Heath:** Although the expansion of the area of heath was an ambition of the 1993 Management Plan, with collection and propagation of seed recommended, this was left entirely to natural processes and no management action taken.

**Dogs:**  With a growing awareness of dog-fouling as an issue, the 1993 Management Plan recommended the creation of a dog toilet at the Meadowbank car park and the evaluation of "poop-scoop" and bins. Both were implemented, but subsequently discontinued due to the lack of use.

### Current Landscape Management

The priority focus of current landscape management is to support the unimproved and semi-improved grassland habitat objectives of the SSSI designation.

NatureScot defines the priority focus of management to conserve the natural features of the SSSI:

* to maintain and enhance the habitat and species interest for which the SSSI is notified. This can be achieved through continuing grassland management at Holyrood Park and through the regular survey, monitoring and translocation of species from Holyrood park to other parts of the SSSI and beyond
* to ensure that geological exposures are maintained at present levels and that adequate access to these exposures is maintained. This can be achieved through maintaining the current visibility of the geological features
* to encourage recreational, educational, and research use of the site, without compromising the above interests

The vascular plant assemblage is considered by NatureScot to be in 'Favourable' but declining condition, potentially now tipping over into 'Unfavourable'. The lowland calcareous and lowland acid grasslands are considered to be in 'Unfavourable' condition and will continue to further decline if positive management measures are not implemented. This should be a key aim of future management of the grasslands.

**Grasslands:** Grasslands are currently managed in selected areas by cutting once per year and leaving arisings in situ or cutting and lifting arisings to reduce nutrient levels (ability to lift and remove arisings is dependent on terrain and access).

This supports the management objectives of the SSSI and are implemented in agreement with NatureScot. Where areas are more difficult to reach or the ground is wet, such as Hunter’s Bog, specialist soft-track machinery has been brought in to cut the grassland/wet marginal vegetation and these areas will be monitored to ascertain if it brings them into more favourable condition.

The extents of grassland management are limited by difficulties of access to reach some areas, steepness of slopes for safe operation of machinery, uneven terrain unsuitable for mechanised cutting, and the risk of damaging archaeological features. Compared with the historic grazing management, the proportion of grassland that can practically and economically be maintained by mechanical means is significantly smaller.

Unfortunately, the cut material cannot be bailed as the flail cutting machines produce only chopped mulch; the grass mulch is disposed on site within clearings in gorse stands local to the cut area. The alternative of removing grass mulch from the Park has been considered but found to be unsustainable due to the vehicle movements over the Park required to get the grass down to the roadside, the cost of transport and gate fees to take it to a commercial compost facility, and the presence of litter that contaminates the cut grass.

The calcareous grassland and most of the acid grassland are associated with thinner soils on steep slopes and cliff faces that need protecting from scrub encroachment but don’t require any direct management/cutting regime. Plants noted in the Scottish Biodiversity List and Edinburgh Biodiversity Action Plan (with the exception of adder’s-tongue fern) are all located within these areas.

More biodiverse meadow areas have been created in recent years along the flatter northern part of the Park where this had previously been amenity grass with low biodiversity value.

Conservation grazing is provided at Murder Acre by the Scottish Wildlife Trust using their flying flock and small herd of cattle.

**Perennial vegetation :** Efforts are made to keep the open cliff habitats, on which rare perennial species grow, from colonising to scrub; but access is difficult. Pockets of spring sandwort growing on rock faces is nationally scarce and under threat in the Park from encroaching gorse; a programme of translocation of this species is underway but it is too early to determine whether it has been successful.

**Gorse:** Gorse stands are generally not subject to management except for some limited cutting back adjacent to paths and valued geological exposures, and the cutting of fire breaks through the extensive stands of gorse, such as on the western flank of Whinny Hill.

These measures mitigate the risk of damaging or dangerous fires to some degree, but the effects of climate change are likely to make fires more likely and more severe.

**Trees and Woodlands:** Trees and Woodlands on site are managed actively managed by HES through the Holyrood Parks and Gardens Manager, who annual monitors and records the condition of the tree and woodland stock on site, as per guidance from the National Tree Safety Group.  Implementation works in terms of felling and pruning for safety reasons are then carried out in an timely manner, with necessary consents being obtained.  Recently new plantings have been undertaken, such as the Jubilee Wood in a few select areas dependant on ecological and archaeological sensitivities, where new whips and herbaceous native understory has been planted.  There are areas within the park which are subject to birch regeneration, some of which is occurring in ecological and archaeological sensitive areas.  These are currently managed on an ad hoc basis.  Overall there is no long term woodland management plan for the existing woodlands within the park.

### Current Management of Bawsinch and Duddingston Loch Reserve

NatureScot defines the priority focus of management to conserve the natural features of the SSSI:

* to maintain access to and visibility of the geological feature (Windy Gowl) by ensuring that it is not obscured by vegetation
* to improve the condition of the open water and transition open fen features by decreasing phosphorus levels, via maintenance of the outflow ditch and a reduction in nutrient inputs
* to improve the condition of the transition open fen feature though appropriate habitat works. Including reed cutting and removal of trees and invasive non-native species

Duddingston Loch is managed by Scottish Wildlife Trust (SWT) as part of the Bawsinch Wildlife Reserve.  SWT have their own management plan with the following long-term objectives:

* 1. To maintain and enhance the nature conservation value of the reed bed, marsh, woodland, scrub, open water areas, and grassland.
	2. To facilitate visitor, educational, and research use of the reserve without compromising other objectives.
	3. To comply with all other obligations and maintain high standards of reserve management.

Duddingston Loch and Sanctuary has been acknowledged for many years as being a site of both botanical and ornithological significance.

Within the Sanctuary major work was carried out in the 1980s to excavate a series of channels creating a series of island areas.

Trees and invasive non-native shrubs have been removed from the reedbeds.

Grasslands at Goose Green in the south-eastern edge of the Loch have been managed by cut and lift to reduce nutrient levels, with the cuttings taken offsite to a composting facility. This is with the aim of diversifying the grass meadow, but has had only mixed success due to Greylag geese grazing and trampling the area, as well as faecal contamination of the grass, which runs off into the Loch increasing the nutrient levels. SWT have considered grazing but a lack of fencing between the green and woodland would require the use of electronic collars to limit where the stock can go.

Conservation grazing of Murder Acre by the SWT flying flock and small herd of cattle is used to manage this meadow in a traditional manner. There have been opportunities in the past to make hay and feed this to the cattle, but conditions need to be dry. The south facing bank has completely dried out in the last couple of years, whilst good for invertebrates, is not good for the condition of the grassland habitat.

There has been an increase in non-native Canada geese occupying both grassland areas.

**Management of woodlands on the reserve:** Sanctuary woodlands management prioritises removal of non-native shrubs / tree species and herbaceous material, mostly removed by volunteer groups. Within the wet woodland large poplar trees dominate, and regenerating poplar is cut back.

Colin’s Wood is a planted woodland of native UK species. Management is limited.

**Reedbed / Marsh / Wetland:** Within the reedbeds woody species are removed to prevent the reedbeds from drying out, except an area where there is a heron. The reeds are cut back periodically to encourage regeneration.

The marshes / wetland areas were cut as channels in the 1980s, but as the channels have eroded and widened, and become dangerously deep, this is now considered a bad idea.

**Loch / Aquatic & marginal vegetation:** The Loch is fed by runoff from Prestonfield golf course, a watercourse coming in from the west via Wells O’Wearie, runoff from Holyrood Park slopes at Crow Hill / Nether Hill and surrounding roads. There is one outlet point that is periodically cleaned out. The water quality in the loch is described as 'Unfavourable' – declining in 2004. One of the negative factors being the presence of Invasive Non-Native Species (INNS) of Canadian pondweed and New Zealand pygmy-weed. It has excessively high levels of phosphorus which is resulting in high frequencies of undesirable species. Conversely, the loch does not support plant families that are indicators of 'Favourable' condition.

**Gorse:** There is the presence of gorse in patches. This is cut back regularly, except around the rock faces / cliffs where rock destabilisation might be an issue if the gorse is removed.

**Paths:** There is managed access within the reserve, with a number of key holders, and educational group visits. The paths to the bird hides are kept clear of overgrown vegetation. There is a series of bridges to access the reedbeds, but these are not to public access standards, only for reed management.

## Public Access

### Current Condition of Routes

The Principal route to the summit of Arthur’s Seat is via the Dry Dam cutting through the centre of the Park, north to south.

There are several other major routes:

* Along the top of Salisbury Crags
* From Dunsapie car park to the summit
* Volunteer's Walk through Hunter's Bog
* Radical Road along the foot of Salisbury Crags is currently closed due to the risk of rockfall
* Piper's Walk contours around the west flank of Arthur's Seat
* Galloping Glen path alongside Queen's Drive
* Raven’s Rock path climbs steeply up the southern flank of the summit
* The Lang Rig and The Dasses parallel the Dry Dam route to the plateau
* The path spur to St Anthony's Chapel

These main paths are either tarmac, crushed stone, or stone pitched. There are many informal, unsurfaced routes criss-crossing the Park.

The path condition reflects the impact of use and we have created a Red / Amber / Green (RAG) hierarchy indicating priorities for improvement. The most used route is a Red category – the Dry Dam and plateau / summit areas are heavily eroded, with large and irregular riser steps and steep gradients. They require urgent comprehensive rebuilding work to make safer, more comfortable, and of adequate width to cope with the numbers using the path. Extensive reinstatement of the grass beyond the path will be required. The seed mixes used should consist of existing grassland species found at each location. This could be achieved by creation of site-specific seed mixes for the relevant grassland habitat types found within the park.

The other major routes are Amber in category – these are eroded paths that require remedial works to prevent further erosion. For some of these that are heavily eroded unsurfaced paths, surfacing works should be considered together with reinstatement of the grass beyond the path.

The large informal path network is categorised as Green – and these should be monitored for signs of erosion.

## Hydrology

### Current Hydrology

Several previous reports regarding site topography (Holyrood Park, Edinburgh: Aerial Laser Scan Survey – Visualisation & Interpretation  2017 HES; LIDAR Survey data 1998 onwards) have informed the production of both a gradient banding analysis and a stream network model.

The gradient banding provides a clear indication of where slope gradient becomes a key factor in management decisions and where basins indicate locations for potential reprofiling to increase storage of rainwater.

A deluge analysis using InfoDrainage on a digital terrain model of the Park applied an amount of rainfall to the surface to establish likely channelling and ponding.

This has provided key information to establish where surface water control elements are feasible and effective.

The deluge model was carried out using a depth of 50mm over 30 minutes, representing an exceptionally intense rainfall event. and applying a Manning’s Roughness coefficient of 0.1, consistent with the vegetation cover in the Park.

 The stream network model indicatively shows surface water paths and denotes areas which drain into the same ‘basins’. The basin analysis shows that the Park has two primary basins, and it is the northern basin that constitutes the great majority of the Park area and has the greatest potential for effective interventions. The intention is to focus design within the northern part.

Small improvement works to aid surface water management have already been carried out across Holyrood Park. These light touch interventions, which are in keeping with the landscape, are implemented by the Park staff.

**Hunter’s Bog:** Hunter’s Bog is a shallow wetland with seasonal standing water. The ephemeral nature of the pond is the exception rather than the norm, as this has only occurred in the last five years, partly due to the drier summers, but also grasses have colonised previously submerged areas. The wetland has a silt trap at the southmost point of the accessible area, which serves to remove debris prior to surface water entering the piped outflow down to St Margaret’s Loch. The wetland is an important ecological feature and delays runoff leaving the upper Park.

 **St Margaret’s Loch:** Lies to the north of the Park, squeezed between Queen’s Drive and the foot of Whinny Hill; it is artificial in origin. The Loch currently serves as storage with a penstock system which is manually released into the Scottish Water system beneath Duke’s Walk and Meadowbank. Scottish Water plans show that there are several surface water connections from the lochs in Holyrood Park into their combined or surface water sewer system.  A short surface water run is also present adjacent to St Margaret’s Loch, which allows water from the swales and wetlands adjacent to the summit path into the Scottish Water system. Available construction drawings also highlight the presence of a porous pipe at the entrance to Ulster Crescent, a road which lies immediately east of the Park. This was implemented in 2021 to address localised flooding issues.

**Dunsapie Loch:**  Lies in a hollow formed between Arthur’s Seat, Whinny Hill and Dunsapie. Originally a marshy area, the loch is artificial in origin. It discharges eastwards into culverts flowing beneath the residential streets of Willowbrae.  There is limited capacity to expand storage volume due to the loch being in an elevated position with a valley feature running from it; raising of an impounding embankment would be required, which is unlikely to be desirable in this archaeologically sensitive area.

**Duddingston Loch:** Duddingston Loch captures the runoff from the southern portion of the Park, which consists largely of steep ground and extensive rock faces. The small area of gently sloping ground at the Wells O’Wearie drains to the loch.

Surface water flooding has been a regular occurrence on Queen’s Drive at Dumbiedykes and Holyrood Gait, by the boundary wall at Holyrood Park Road, on Duke’s Walk and on Royal Park Terrace.

## Proposals

The priority focus of current landscape management is to support the unimproved and semi-improved grassland habitat objectives of the SSSI designation. The SSSI objectives also support the archaeological conservation objectives, and there may also be consideration given to the aesthetics of the Park in relation to its significance on cultural heritage.

Successful management of the SSSI features will provide the best opportunity for improving biodiversity and nature generally within the Park, thereby contributing to the Scottish Government's biodiversity aims, and would help maintain the open character that contributes to public enjoyment and views.

### Grasslands

The priority for grassland management on Holyrood Park should be to maintain and expand the most valuable Lowland Calcareous Grassland (NVC communities CG2 and CG7), allowing this grassland type to spread out from its remaining locations and re-establish in suitable areas.  There has been significant loss of calcareous grassland in the period since grazing was removed, with a corresponding increase in rank grassland of low diversity and in expansion of the area under gorse cover.

Re-establishment of calcareous grassland should focus on the fringes of areas where the Lowland Calcareous Grassland persists, introducing appropriate management to these areas to allow expansion into areas occupied previously (using the 1977 survey as a guide).  The deployment of more mobile and capable mowing equipment can help initiate this management.

Both calcareous, neutral and dry, acid grasslands can be maintained through regular grazing, cutting, or even burning; any of these will remove the annual production of the grassland, prevent tall coarse grasses from exerting dominance in the sward, and thus allow diversity of species.  In time, coarse grassland (MG1) can be converted to a short, open sward of either calcareous or acid grassland, depending on the underlying soil characteristics; this will permit greater diversity of native forb and grass species within the sward.

**Grassland Cutting:** The management plan proposes continuation and expansion of grassland cutting together with the re-introduction of grazing as a pilot project in the most suitable area for re-establishing calcareous grassland habitat.

There are three main grassland types: calcareous grasslands (CG2 and CG7), acid grasslands (U1, U2, U4) and neutral grasslands (MG1). Since the removal of sheep grazing in 1977 some areas of calcareous and acid grasslands, which are nationally rare and/or important, have been degraded or disappeared as a result of gorse incursion and the spread of the coarse species false oat grass and cocksfoot. Much of the existing calcareous and acid grasslands are associated with thinner soils on steep slopes/cliff faces which need protecting from scrub encroachment but have low productivity and require limited direct management/cutting.  The rare plant species noted in the LBAP and the SSSI description are all, with the exception of adder's-tongue fern, located within these areas.

The ideal management prescription for the calcareous grasslands (CG2 and CG7) would include sheep grazing and gorse control, but due to current practical constraints on grazing the use of grass cutting is proposed in combination with gorse control. There are three preferred locations for calcareous grassland management and expansion:

1. The slopes below Salisbury Crags, which have large areas of remaining calcareous grassland (CG2) together with areas now degraded since cessation of grazing.
2. The south-east slopes of Crow Hill, where there is calcareous grassland (CG7) in mosaic with gorse scrub.
3. The crest and east slope of Whinny Hill, where gorse stands surround an area of calcareous grassland (CG2).

These areas are also preferable as they are in areas of least archaeological sensitivity.

The ideal management prescription for the unimproved acid grasslands (U1 and U4) would involve sheep and possibly cattle grazing following an initial mechanical cut or burn to open the sward, together with gorse control.  Because of the practical constraints on grazing, the use of grass cutting is proposed in combination with gorse control.  The acid grassland (U2) on hilltops could be left alone as rabbits and trampling keep the sward short.

Preferred management for the extensive neutral grasslands (MG1) that predominate would be a patchwork of cutting and thereafter grazing with sheep and cattle, together with gorse control.  Because of the practical constraints on grazing, the use of grass cutting is proposed, with two close cuts in early spring distributed in a patchwork manner.  Removal of cuttings is very beneficial to prevent thatch and to reduce nutrient status.

Cutting is less effective to grazing for a number of reasons, some of which can be mitigated through care in execution.

To maintain the open habitat and species diversity of neutral and calcareous grassland in the Park, cutting should be undertaken at least once each year, late in the season (September) to allow completion of seed set and to benefit invertebrates and birds.  Ideally, a further cut in April and one in late October will benefit the sward. The damper grassland around Hunter's Bog must be cut no earlier than September as adder's-tongue fern emerges in June and August. NatureScot recommend an additional spring cut in this particular location. Undesirable species that seed prolifically, such as rosebay willowherb and creeping thistle, should be locally cut before they finish flowering. Cuttings should be removed where possible. All-terrain machines allow expansion of cutting into more areas.

The hemiparasitic yellow rattle is present in the grassland sward in some areas of the Park.  Increasing the frequency of this species within the neutral and calcareous grassland will reduce the vigour of coarse grass species and thereby allow a greater diversity of grass and forb species to grow. Scarification of the cut sward together with sowing of yellow rattle seeds, either sourced within the Park or from an approved provenance, would replicate the effect of poaching by livestock and encourage sward diversification. This would require significant resourcing from Park staff and budget, so a pilot area should first be undertaken in consultation with NatureScot to trial the process and allow evaluation of results.

In the lower Park (Galloping Glen and Parade Ground) the frequency of grass-cutting should be reduced over a larger area, removing cuttings in order to reduce fertility and the dominance of coarse grasses. The verges along Galloping Glen should be frequently cut, however, to frame the footpaths. Lesser used areas towards the crags can be cut less frequently to provide a more gradual transition into a wilder character area. Variations in the cut height to create visual and structural diversity together with scarifying and seeding of yellow rattle would further diversify the sward. Plug planting of woodland ground flora beneath the scattered broadleaved trees would further enhance species diversity and naturalness.

Core areas of the Parade Ground will continue to be managed as regularly mown amenity grass that supports active leisure use and periodic events. For these areas, a pause of a few weeks in mowing during late Spring will allow daisies to flower to help pollinating insects.  There are significant areas around the periphery that can be removed from such intensive mowing and encouraged to diversify through scarifying and seeding or plug planting with appropriate native wildflowers, suited to a relatively fertile soil type.  Use of yellow rattle should be part of this treatment.

Cut and lift operations are suited to in-house capabilities, assisted by contractor when staff capacity is limited.

To best preserve the integrity of archaeology, management should, where possible, be uniform across whole sites within any cutting regime, suppressing edge effects on the archaeology.

**Grassland Grazing:** Grazing is the most beneficial way to manage grassland for wildlife.  The spatial and temporal variety of sward structure created by the action of animals in browsing, trampling, and excreting all contribute to a diverse pattern that benefits a variety of flora and fauna.  There is increasing evidence that light grazing aids soil health and carbon sequestration. Grazing needs to be kept at a level that keeps the sward healthy; overstocking will lead to denudation and erosion, which were both factors in the decision to remove grazing from the Park in 1977.

Grazing poses particular challenges and for grazing to be practical and effective, the following management challenges must be overcome:

* protecting livestock from worrying by dogs
* a suitable flock/herd must be found, able to be brought onto the Park during the growing period (April – October)
* a shepherd or cattle hand must be available to manage the livestock and deal with circumstances arising
* the size and terrain of grazed area must be sufficient to ensure a low effective stocking density
* animal welfare requires a water supply, supplemental feeding, and control of parasites. Pens would be needed for stock management functions, accessible by vehicle and trailer
* keeping the livestock protected and in the right place, especially off the roads and within the Park boundaries, will require stock fencing. Because the installation of fence posts can be damaging to archaeology, a detailed archaeological assessment will be needed beforehand to ascertain that no risk is posed by the driving of fence posts. Fencing might cause visual impact to the Park. 'Virtual fencing' using collars could be a solution, provided it is consistent with good welfare and that the livestock are robust enough to deal with dogs; if in doubt, stock fencing would be necessary
* areas used by ground nesting birds should be grazed later, once eggs are hatched and no longer vulnerable to trampling
* the grazed area should not include well-used visitor paths; any desire line path will be blocked by the fencing

A mixture of cattle and sheep would be beneficial; the cattle help to shorten and open up the tall coarse grass sward (MG1) whilst the sheep would maintain the new shorter sward height. Cattle trampling of gorse regrowth helps the transition to grassland following gorse cutting.  Some areas of coarse grass or open scrub would need an initial flail cut to beat down the vegetation before grazing could commence. Selection of grazing animals would need to be cognisant of archaeological sensitivities to ensure there is no damaged caused by hoofs.

Grazing is currently managed on the Murder Acre by SWT, using a small flock of sheep alternated with a small herd of cattle. Such an arrangement could be extended onto a suitable part of the Park in order to expand the area of calcareous grassland under management. Grazing would not yield an agricultural economic return because the scale of operation, exceptional management requirements, and the cost of seasonal transportation to and from the home farm would exceed income from agricultural subsidy and livestock sales.  There would be significant costs to meet from the Park management budget.

Alternative livestock might be considered.  Alpaca offer greater resilience to disturbance than sheep. Goats could be utilised in fenced or unfenced areas, are more effective than sheep at browsing scrub and thistles, able to cross steep rocky ground, and robust when faced by a dog. However, this affords them access to browse upon rare herbaceous and woody plant species on the crags, which would be very damaging to the health of these populations. Grazing by deer would have some advantages: the animals are robust, nimble, and broad in their tastes. However, it is unlikely that virtual fencing collars would work on a feral deer herd and so there would need to be significant investment in physical containment at the Park boundaries, such as cattle grids on the roads and fencing to close off exit routes.

Rabbits are already present, and their grazing appears helpful for species diversity, although their burrowing and localised overgrazing may be damaging to archaeology.

A trial of grazing would help inform a wider feasibility study for grazing within the Park and help to identify suitable areas that may meet the criteria. The study would review the economic cost / benefits. Grazing would be most effective in short bursts of intensive stocking during the growing season, especially spring and early summer. Grazing through winter would represent poor value and is not recommended.

Grazing with livestock requires detailed consideration of the availability of a suitable herd, of shepherding staff, the need for fencing and pens, animal welfare and watering, farm management and recording, veterinary and supplemental feed costs, movement of animals to and from the Park, third party liability, and public education. The danger to livestock posed by dogs and public understanding of grazing management within what is an urban Park are the most important issues that need to be addressed for grazing to be practical; dog owners have proven unwilling to adequately control their dogs or to comply with seasonal area restrictions to protect ground-nesting birds, thus it can be assumed that unfenced grazing of sheep would be impractical.

**Burning:** Whilst in theory it is possible to manage grassland, and even scrub, by burning this is not a practical or desirable method in the Park, because:

* fire could cause damage to archaeological features and thus is not permitted on archaeological sites, especially on a scheduled monument
* controlling a managed burn is labour-intensive and carries inherent risk, especially on steep ground. Gorse is especially flammable
* it would undermine the fire prevention message given to the public
* fire can destroy invertebrates, their shelter and food sources
* smoke would cause a significant nuisance and air pollution in this urban context

### Woodlands

Management of the existing woodlands will seek to ensure their long-term resilience and to diversify their structure.  The following operations are proposed:

* selective thinning, to favour native species diversity, to diversify the canopy structure, and to remove trees of poor form or susceptible to disease (particularly ash). Progressive removal of non-native and pioneer species to favour forest canopy species
* interplanting of canopy, understorey, shrub, and field layer species so as to diversify species and structure, enhancing resilience to disease, pest, and climate stresses
* rotational coppicing of suitable native tree and shrub species to vary the canopy structure and bring periodic openings for woodland herbaceous flora
* encourage natural regeneration, selectively thinning seedlings to favour desirable species and density
* coppicing of willow carr within Duddingston Loch
* regularly inspect trees growing in close proximity to paths and well-used open areas of the Park, taking action as required for reasonable safety
* maintain clear visibility through woodland close to paths as a measure to improve personal security, especially of female visitors

Within the majority of the Park there is a presumption against woodland planting or establishment of woodland through natural regeneration. This is because the most favoured habitat of the SSSI is open grassland. On some of the steep slopes flanking The Dasses and Arthur’s Seat succession to woodland might be permitted, but only where there are no archaeological sensitivities, the setting of nearby archaeological sites would not be adversely affected, and there are no valuable open habitat flora present. Selective removal of sycamore and buddleia will be required, to favour native tree and shrub species.

The proliferation of birch trees must be carefully monitored to prevent their establishment in the valuable open habitats; selective thinning to reduce seeding may be required.  Self-seeded trees and scrub should be cut and removed from archaeological sites categorised as Red in terms of Sensitivity to Change, on an annual cycle. Stumps should be treated to prevent regrowth, and the treatment should include a 20m buffer to each site.  Managed woodland that overlies those sites categorised as Red or Amber in terms of Sensitivity to Change should be monitored to enable managed removal of over-mature trees at risk of windblow.

Limited new woodland planting in the Park can contribute to national and local targets for increasing urban tree cover.  Peripheral, lower parts of the Park are best suited to this habitat type; these locations outside of the Queen’s Drive have amenity and neutral grassland of low biodiversity value.

Care is needed to avoid planting of any archaeological features or to plant woodland that will obscure valued views or adversely affect the landscape character or the setting of archaeological features.

Such new woodland can provide enhanced connectivity of existing woodland canopy within and beyond the boundaries of the site. The species should be native and naturalised broadleaves appropriate to the urban context and providing the full range of canopy structure, e.g. oak, gean, rowan, beech, horse chestnut, bird cherry, hazel, guelder rose, briar.

Planting of birch and hawthorn should be resisted due to their capacity to spread into nearby open habitats, and planting of any easily windblown species that might establish in areas of archaeological sensitivity should be avoided.

Woodland planting can be achieved using forestry transplant whips and feathers together with establishment maintenance (spot weed control); planting of larger nursery stock trees is not required.

Limited new planting of parkland specimen trees alongside Duke's Walk would enhance biodiversity and climate resilience. Elsewhere on the Parade Ground important views connecting the Palace with the Park will remain open.

A greater variety of deciduous broadleaved tree species would be appropriate here than in the woodlands, although the intent should remain a green canopy of forest-scale trees – such as lime, beech, oak, horse chestnut, hornbeam, willow, poplar, and maple.

Coloured, variegated, and small-scale ornamental trees must be avoided. Varied species ensure greater resilience to long-term climate change, new pests, and diseases.

### Scrub

Gorse (*Ulex europaeus*) dominates many of the steep slopes and has in recent decades expanded up the southern slopes of Crow Hill, along the tops of Whinny Hill and along the western slopes of Salisbury Crags.  The expansion of the gorse onto the thinner base-rich soils and the cliff faces is a significant threat to the important plant and invertebrate species found within the Park. There are risks to the archaeological and geological features that could be disturbed or damaged by gorse roots, and a risk to the landscape character of areas where gorse now dominates previously open vegetation.

Management of gorse will continue by cutting back where it encroaches on main paths and areas of archaeological or geological interest, except where this action might destabilise rock faces. Fire breaks are also cut to manage the fire risk to large continuous stands of gorse. The location and arrangement of fire breaks needs to be given careful consideration due to their visual impact within the wider landscape, avoiding straight lines and repetitive spacing, instead following natural ‘lines of force’ in the landscape.

Cutting will be by combination of hand work, tractor-mounted flail, and tracked radio-controlled flail machine; the choice depends on slope angle, terrain, accessibility, and archaeological sensitivity. Cut vegetation should be removed and chipped.

Gorse around the foot of cliffs serves a useful function as a rock trap, and also deters access by visitors to hazardous ground (thereby also protecting breeding birds on the rockface from disturbance).

Once gorse has been cleared from an area there will often be bare soil exposed, vulnerable to colonisation by ruderal plants that suppress the desirable calcareous or acid grassland species. Seeding with a mix of native red fescue, wavy hair-grass and sweet vernal grass would help establish a durable cover to bind the soil surface and allow the native forbs to colonise from the seedbank and adjacent intact areas of sward. Ecoplug treatment should be used on larger gorse cut stumps in the first instance, however if regrowth should occur, re-growth of gorse should be sprayed with Grazon when around 10cm high.

Areas of steep slope flanking The Dasses and Arthur’s Seat have pioneer trees emerging through the gorse cover; in some of these areas, provided they do not contain archaeological sensitivity or valuable plants of open habitat, it will be appropriate to allow succession processes to continue. Selective removal of sycamore and buddleia may be required.

### Cliffs and Bare Ground

Of the rare invertebrate and plant species listed on the Scottish Biodiversity List or the Edinburgh Biodiversity Action Plan and occurring in the Park, all except adder’s-tongue fern *Ophioglossum vulgatum* can be attributed to either the inland cliff habitat itself or the associated grasslands on the steeper slopes around the cliff faces, highlighting the importance of the inland cliff habitats within the Park.

Management of gorse by cutting where it is accessible (including using roped access in some areas) will continue in order to reduce encroachment onto geological features, and rare plant and moss species. There are some areas identified within the rock risk plans as priority areas for NatureScot to protect the Geological SSSI. The rockfall risk management plan recommends that in some cases gorse cover is helpful in reducing risk of rockfall and that the removal of gorse would risk spalling rock from the cliffs, whilst it also cautions that the expansion of gorse roots in rock fissures causes rock instability; a careful dynamic assessment is needed to inform whether to remove or retain each plant. Particular care is needed to protect the few specimens of rock whitebeam from suppression under gorse cover.

Careful collection of seeds and nursery propagation of rock whitebeam, maiden pink, sticky catchfly, sandwort, and other rare plant species will continue. This enables planting out of these plants into crevices in rock faces of the correct aspect and conditions; localised clearance of gorse may be needed.

To prevent further erosion of thin soils in the summit areas and promote renewal of the plant cover, temporary fencing is proposed to redirect visitors whilst remedial work establishes. Within the fenced area, site specific grass seed mix can be sown with a protective mulch mat of jute/coir geotextile to retain moisture and to shelter seedlings during establishment. In heavily compacted and scoured areas, imported topsoil will be spread following ripping, before seeding and geotextile; the imported topsoil will be sourced from path and drainage works elsewhere in the Park, matched for soil type.  If unavailable in the Park, an approved local source of equivalent pH and textural character will be used.

### Dry Acid Heath

The small patches of dry acid heath found on the slopes of Arthur’s Seat and Whinny Hill can be supplemented by brash seeding of adjacent areas once they have been cleared of gorse and the surface thatch removed. Suitable heather brash may be sourced from within the Park or from Blackford Hill, to be harvested when in seed and placed over the ground as a carpet. A coir geotextile over the top, pegged in place, will help to hold the brash in place and prevent disturbance by animals and birds; an archaeological assessment of pegging method and location would be necessary.

### Reedbed / Marsh / Wetland

Open wetland habitats at Hunter’s Bog and Duddingston Loch should be kept clear of trees and scrub by regular inspection, seedling removal/cutting and spot treatment to prevent regrowth. Capacity for extending wetlands to provide enhanced habitat and climate resilience has been identified within the proposed hydrological adaptations. Raising of the outlet water level at Hunter’s Bog will extend the area and depth of standing water and decrease the likelihood of drying out. This will naturally expand the area of aquatic marginal plants and push outwards the fringe of wet-meadow. Annual cutting should be undertaken over the fullest area practicable, to prevent succession to willow scrub. Planting of native aquatic marginal habitat along the wet fringes of St Margaret’s Loch and Dunsapie Loch will require a grid of protective coir mesh fencing subdivisions to exclude waterfowl and dogs. Floating vegetated islands can be introduced to St Margaret’s Loch, with submerged plants hanging beneath; these can help improve water quality. The presence of Canadian pondweed and New Zealand pygmyweed should be targeted to reduce their extent in Duddingston Loch. Where new swales are formed these will generally be of the same grass sward as adjacent grassland areas. Where these swales open up into deeper and more extensive basins in which rainwater resides, localised aquatic marginal planting or wet marshy grassland seeding will be appropriate. In the north-east part of the Park there are spring seepages located within the planted woodland. Selective felling of trees and plug planting of native marginal species, with localised scrapes to open up damp glades will increase diversity especially of invertebrates. All of the water bodies should be surveyed for water quality, to provide a baseline for future monitoring, and to inform management decisions.

### Invasive Non-Native Species (INNS)

Constant vigilance is needed to detect the presence of INNS growing in the Park and to take the correct steps to contain, control, and eradicate them.  All sightings of INNS will be recorded in the LCMP dataset so that the location can be scheduled for the most appropriate treatment (herbicide, hand-pulling, cutting).

### Disposal of cut gorse and grass

Grass cuttings are currently disposed of into clearings within dense stands of gorse, where they are left to compost.  This avoids the time, cost, fuel use and ground wear required to transport it down to the roadside and onwards to a composting facility.  Removal from site has cost and carbon implications, but retention on site may cause nutrient leaching into sensitive grassland and wetland habitats, potentially degrading their condition. Careful deposition of the arisings should be planned to minimise this risk.

Options for a bulk composting area within the Park warrant further investigation. The HES and Palace works yards at Croft an Righ may offer some potential but are already constrained in size. It might only be feasible to deal with a small proportion of cut grass in this way; greater efficiency could be achieved through use of in-vessel composting, but the installation of such a vessel would entail significant cost. Blending of grass with other more woody waste would be required to achieve good results. A further problem is the presence of litter and dog waste within the cut material, which contaminates the resulting compost. An end-use for the compost would be needed; there is very limited scope for use within the Park so other users would need to be identified. With a number of golf-courses and recreation grounds nearby at Prestonfields, Duddingston, and Holyrood High School, there may be potential partnerships for supply of arisings or of compost for top-dressing. The challenge would be in achieving a good standard of compost of the right sieve size. A waste management strategy for the Park is needed to provide a holistic approach.

### Proposed Visitor Access Improvements

**Aims :** This Plan addresses public access on foot within the Park. It does not cover active travel and vehicular routes in the park, situated on or alongside the roads; these are the subject of a separate ‘movement strategy’.

The access improvements are necessary in order:

* for conservation of sensitive archaeology and ecological areas
* for the public to use paths that are safe and fit for purpose
* to ease ongoing management for Park staff, in terms of health and safety

**Priorities:** The priority for improvements should be focused on those most heavily used and eroded routes:

* The principal route from Holyrood to the summit of Arthur’s Seat via the Dry Dam
* Arthur’s Seat summit and the plateau
* Lion’s Haunch to Raven’s Rock path
* Salisbury Crags crest line
* The Dasses

**Principles for Improvements:** These are recommendations for improvement. Further detailed design work and careful micro-siting would be required.

Any proposed works to excavate for path surfacing and drainage must be subject to archaeological assessment and may require investigation or monitoring to prevent damage to archaeological features.

Outcrops of bedrock reveal the geological interest of the SSSI and so it is generally not appropriate to cover bedrock with built-up paths. NatureScot should be consulted on any proposals likely to affect exposed bedrock.

In principle, the paths should be made narrower in areas where they have become much wider over time (currently exceeding 8m in places) through footfall and runoff eroding the soft edges. The route at the northern entry to the Dry Dam, used by the largest proportion of visitors penetrating Holyrood Park, is 3.0 - 3.5m wide; it has a comfortable and durable surface, and the verges are not worn, so the width is adequate for visitor numbers using it.  A similar width is recommended for major paths to be constructed in heavily eroded sections of the path network.

Path surfacing, steps, and drainage should be considered as a coherent whole. Drainage will comprise frequent crossfall waterbars that flow into soft sustainable drainage features – swales leading to basins, with regular break dams. Pitched stone gutters along the edge of the major paths would help to prevent future erosion by limiting people to the path for the most part. Revegetation of all eroded areas will require temporary fencing to enable establishment and prevent trampling out.

Indicative key improvements as follows:

**Dry Dam entrance:** From the start of this route at the foot of Lang Rig, this path could become a durable bound surfaced path of 3.5m width extending as far as 50m south of the branch of St Anthony’s Chapel path.  This will be a much more durable surface for the heavy use it receives, particularly given the steep gradient of the path.

**Dry Dam narrow valley section:** The Dry Dam continues southward where there are several braided paths and heavily eroded ground; the pitched stone path is lost to the edge, partially overgrown with gorse. This section of the path could become a pitched stone path of 3.50m width with stone gutter along the west side (and the existing pitched stone path retained as a gutter on the east side). The path will incorporate regular water bars and will form a stepped route of semi-regular form for comfort to ensure adherence to the path.  The remainder of the braided paths would be remodelled to become a series of small basins between swales, with pitched stone check dams and vegetation reinstatement.

**Dry Dam upper:** Existing steps are irregular in riser height with many too tall for comfort, so that visitors detour onto the soft verges causing erosion. This section could become a compacted self-bound gravel path at 3.0-3.5m width with pitched stone steps, waterbars and gutters to prevent rainfall running down the path and to contain visitors on the path.  The new steps would have regular riser heights and treads with stone extending beyond the width of the path on either side for additional durability.

**Plateau:** This area is heavily eroded, and the extent of area could be reduced where eroded beyond the main circulatory routes, to allow reinstatement of vegetation. The main route with some existing sections of stone pitching and steps is not obvious due to being lost in the expanse of bare ground; a patch of gorse partly screens the start of the path onwards towards the summit. The strategy here is to make the easiest and most durable route to the summit very obvious to visitors so that most take that path unquestioningly.

Another path that takes an ascending traverse westwards along the northern slope of Arthur’s Seat appears to be the main route as it is much more visible and direct from the plateau; but this route runs into steeper and more complex terrain. We propose closing off and re-vegetating this route to dissuade visitors from using it as it is more perilous as well as the erosion being highly visible in views from the north. Clearance of the patch of gorse, together with stone pitch edging to the uphill side of the path, and soiling of the eroded zone beyond would make the path more visually obvious, safer, and robust. It would connect with the existing sections of stone pitching. The main plateau is heavily eroded with no vegetation or topsoil cover remaining; options here are to either stone pitch leaving exposed bedrock areas undisturbed or to resurface with a compacted self-bound gravel material with stone pitched edging and restored verge shoulders. Temporary fencing would be required to safeguard restored soft areas and prevent re-use of abandoned desire lines, until a robust sward was established.

**Arthur’s Seat summit:** Once the defined path route to the summit is more firmly confirmed at the Plateau, it ascends over increasingly rocky terrain where visitors naturally spread out to clamber over the bedrock. Providing a more obvious and easier route to the summit will be safer and popular for most visitors and enable some of the eroded patches of soil and acid grassland to be revegetated. Localised path improvements using pitched stone and/or gravel will thread amongst the bedrock features.

To help encourage use of the preferred path to the summit, appropriate waymarking should be considered. This should be suited to use amongst bedrock.

**Lion’s Haunch to Raven’s Rock path:** Although the lower part of this route is well-contained by a gulley amongst steep topography, it emerges onto an open shoulder where surfacing using self-bound gravel with pitched stone drainage bars and steps on steeper parts would arrest the developing erosion.

**Salisbury Crags Path:** There are numerous parallel narrow paths eroding the summit of the Crags extending across 10m width in places. The proposed improvement would be to select one preferred alignment and construct a path to 3.0m width using compacted self-bound gravel material. The rutted ground would be reinstated using carefully matched topsoil and native grassland seeding with protective jute/coir geotextile mulch. Micro-siting of the path line and level would help embed it into the landscape and limit visual intrusion.

**The Dasses:** The Dasses have become a heavily eroded band several metres wide. The proposed improvement would be to select one preferred alignment to be surfaced to 3.0m width with compacted self-bound gravel material, with reinstatement of the grass surrounding.

**St Anthony’s Chapel path :** This narrow path consisting of stone pitch and bedrock steps with gravel sections will be repaired as a stone pitched and gravel path of 2.0m width. The worn ground surrounding the chapel ruin will be repaired where severely eroded by footfall. Exposed bedrock would remain undisturbed. This path treatment must be sensitive to the archaeological significance of the Chapel and its setting.

**The Radical Road:** This major path is currently closed following significant rockfall from Salisbury Crags immediately above.  The Rock Risk Management Policy, which is in development, will make proposals for future management of this route.

The current closure of the Radical Road restricts access to Hutton's Section, a location with great geological interest. Future plans for the Radical Road will need to include consideration of access to this feature.

**East slope grass paths:** Localised wear in the grass surface can be repaired using soiling and seeding behind temporary protective fencing during establishment. Turf translocation may also be undertaken to provide more rapid results, seeding the donor sites to re-establish cover.

**Summit path waymarking:** Ensuring that visitors are able to find the most direct and easy route to reach the summit will help to reduce the widespread wear between the plateau and the summit, focusing the majority of footfalls onto a durable route.  Low-key waymarking would help achieve this.

**Hangman’s Rock path:** Localised improvements to the path surface using aggregate, and cutting back of overhanging vegetation.

### Footway and Crossing Improvements

Improvements to pedestrian crossings, footways and cycling routes on and alongside the Park roads would be positive measures to encourage active travel in the park and connections with the path network.  However, this aspect forms part of a separate study and plan for travel in the Park, so is not included in this landscape management plan.

### Dogs

With the growth in recent years of the number of dog owners using the Park there has been an increase in the level of disturbance to vulnerable ground-nesting birds, as well as incidences of nuisance and fouling. Positive action is proposed to address these problems:

* Increased numbers of suitable bins, located at path entry points to the Park and at strategic locations within the Park where they can serve high concentrations of dog walkers whilst being visually unobtrusive.
* Information notices highlighting vulnerable areas.
* Fencing of vulnerable nesting areas during the nesting season to discourage access away from the paths in these areas (some of these informal routes will be closed by the fencing).
* Education face-to-face by Park Rangers.
* Introduce a permit/licence scheme for commercial dog walkers in the Park to help manage their activities and potential impacts arising.

### Orientation, Wayfinding and Interpretation

A Strategy is needed to help visitors navigate the Park and to reduce the erosion caused by visitors not following paths.  This strategy should address three key elements:

* **Orientation.** Giving the arriving visitor a sense of where they are and how the Park is laid out.
* **Wayfinding.** Helping the visitor navigate the Park, whilst keeping a sense of wildness to the experience. Wayfinding must not be intrusive or prolific, but low-key and targeted.
* **Interpretation.** Helping the visitor understand the Park as a natural and cultural landscape.

A careful balance is sought between effectiveness of information and respect for the sense of place. A measure of self-sufficiency and adventure forms part of the attraction of a visit to the Park; there should be a reticence to install signs and any waymarking should be low key so that they do not distract from the naturally ‘wild’ character of Arthur’s Seat.  All of these elements can be delivered through digital means, accessed through QR codes displayed at orientation points, to aid the visitor wanting more information.

### Litter Bins and Waste Management

A waste management strategy for the Park is needed to provide a holistic approach to litter and waste. The [HES Litter Prevention Action Plan](https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=cb44a1b8-3f74-4df9-8c3e-a8be0107a9c2#:~:text=Towards%20a%20Litter%2Dfree%20Scotland,information%2C%20infrastructure%2C%20and%20enforcement)provides current guidance on this subject.

### Picnics and Barbecues

In Summer people often have barbecues on the Parade Ground, which can cause scorched grass and the risk of fire.  Barbecues and their management should be considered in the updated fire management plan for the site; simple and robust solutions are available that need not be highly visible or affect the character of this important amenity space. Barbecues in other more sensitive areas of the Park should remain prohibited.

### Proposed Adaptations to Watershed Management for Climate Resilience

There are several opportunities to manage the landscape to slow the rate of runoff and increase the extent of wetland habitat for ecological benefit, whilst more effectively managing the quality and quantity of surface water flowing into the three lochs in Holyrood Park. In the detailing of any proposals HES will liaise and seek advice from other interested external parties such as SEPA, NatureScot and Scottish Water.

Whilst the known archaeology in the Park is well-defined and these features have generally been avoided when designing hydrological proposals, there remains the potential for archaeology in many areas. Thus any proposal that will involve excavation or alteration of ground levels or alteration of features should be assessed for its archaeological impact and may require archaeological investigation.

**Hunter’s Bog:** Hunter’s Bog is an important ecological feature, and the design intent is to increase its area to improve biodiversity and increase the volume of rainwater it can store to limit downstream flow during heavy rainfall. There is scope for Hunter’s Bog outfall level to be raised, thereby increasing the volume of water that can be retained for a short time during cloudburst events before slow release and connection into St Margaret’s Loch.

Threats:

* increased frequency and duration of drought causing loss of permanent standing water and drying of marshy surroundings
* encroachment of pioneer trees (willow and birch)
* intense rainfall events causing downstream erosion and flooding

Opportunities:

* safeguard standing water by increasing level of the outflow and forming landscape bund
* expand wetland habitat area by raising discharge level
* increase stormwater surcharge capacity of Hunter’s Bog using an outflow control chamber
* occasional removal of surface sediment and grass roots to prevent loss of standing water habitat
* discharge path swales and water bars into the wetland to increase supply

**The Dry Dam :** The Dry Dam currently has extensive erosion due to heavy use by visitors but also caused by rainwater runoff. In conjunction with proposed path improvements, the introduction of additional waterbars across the path directed toward stepped valley basins at the head of the Dry Dam. These will connect to a swale convergence before discharge into St Margaret’s Loch which should reduce erosion and control water flow / improve water quality discharged into the Loch.

Threats:

* intense rainfall events causing erosion of soil
* runoff combined with visitor pressure causing footpath erosion and destabilisation
* steep gradient where the valley narrows

Opportunities:

* create series of wetland swales and basins to hold rainwater and slow outflow
* path waterbars and swales to quickly remove water to vegetated ground
* use the wetland elements to channel visitors onto a rebuilt, widened path, which will funnel visitors and limit future footfall erosion

**St Margaret’s and Dunsapie Lochs:** These two bodies of water have great potential for habitat improvements that will also bring water quality benefits and improved amenity.

Threats:

* increased frequency and duration of drought causing reduction of water quality and depth
* intense rainfall events causing inflow of soil and nutrients, including from road
* visitor pressure on lochside areas causing trampling and erosion
* elevated waterfowl population causing nutrient enrichment and erosion
* manual penstock management is vulnerable. Lack of native marginal vegetation

Opportunities:

* improve robustness of stormwater storage using an automated outflow control informed by sensors and remote forecasting
* increase stormwater capacity of the loch through modelling to optimise the volume and outflow control, reducing downstream flooding
* create wetland swales and basins to filter sediment and nutrients from runoff arriving from Hunter’s Bog, the Dry Dam, and the Queen's Drive
* establishing native reedbed and marginal vegetation by planting in the drawdown zone around the loch margin, protected from trampling and waterfowl browsing by temporary fencing
* introduce floating vegetated islands to improve water quality and provide protected waterfowl nesting sites.

**The Galloping Glen and Wells O’Wearie:** The road and pavement encircling the Park is prone to flooding, but there are opportunities to minimise the risk by introducing a series of swales and dry basins to keep the water within the landscape and reduce flood risk. These would also introduce linear wetland and meadow habitat into what is currently amenity grassland, providing ecological enhancement.

Threats:

* surface water flooding at Dumbiedykes and Holyrood Park Road
* increased frequency and duration of drought of the grassland

Opportunities:

* create wetland swales and basins to absorb excess overland flow of stormwater
* potential for disconnection of road drainage into the swales and basins, to reduce loading on the sewer
* nutrient cycling of runoff via the new wetland habitats
* highly visible demonstration of SuDS and increasing urban biodiversity

**Duddingston Loch:** This loch drains a relatively small proportion of the Park on the southern flank of Arthur’s Seat, much of which consists of steep craggy ground and so there is only limited scope for improvements to surface water flows.  However, runoff from the Queen’s Drive and Duddingston Low Road could benefit from rainwater management through the landscape such as swales and small basins, to reduce pollution before discharge into the loch. The proposals at Wells O’ Wearie will also serve this purpose.

It would be useful to carry out survey and monitoring of the aquatic and marginal vegetation in the waterbodies in Holyrood Park to serve as a useful indicator of water quality and ecological health.

**Willowbrae issues:** These minor ditch features may be enhanced as wetland habitat by local felling or coppicing of trees and easing back of ditch banks to encourage native wet woodland/marginal vegetation to establish. There is very limited scope for expansion of capacity, due to archaeological constraints and the slope angle.

### Archaeological Management Recommendations

The following is a summary of those recommendations from the archaeological condition assessment of particular relevance to inform landscape management operations.

1. ensure that Canmore is updated with the fruits of research, site, and event information timeously to bring consistency of record data, using GIS shapefiles / polygons. This must be available to management staff planning landscape operations
2. undertake desktop review and, where appropriate, low-impact investigative works to ascertain potential impacts of proposed landscape management works/operations affecting the ground (e.g. fencing, pegging, drainage, bunding) prior to their detailed approval
3. review grass cutting areas with the intent to manage whole sites within any cutting regime, suppressing edge effects on the site condition
4. those sites categorised as Red in terms of Sensitivity to Change should have scrub and self-seeded trees cut and removed on, at minimum, an annual cycle. Stumps should be treated to prevent regrowth. This should include a 20m buffer to each site
5. determine which sites categorised as Amber in terms of Sensitivity to Change should be maintained in clearings and have scrub and self-seeded trees cut and removed on at minimum an annual cycle. Stumps should be treated to prevent regrowth
6. managed woodland that overlies those sites categorised as Red or Amber in terms of Sensitivity to Change should be monitored to enable managed removal of over-mature trees at risk of windblow
7. support investigative works on those sites compromised by extensive scrub and self-seeded tree infestation to seek an understanding of their significance before further loss
8. support investigative works on those portions of sites subject to erosive damage to recover an understanding of their significance in mitigation of the loss suffered
9. seek to stabilise established routes as they cross sites through localised engineering of paths and/or episodic pedestrian exclusion to promote revegetation and/or reseeding with a hardy grass mix
10. where animal burrowing is identified on sites categorised as Red in terms of Sensitivity to Change, active management should be implemented

## Credits

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