



UNIVERSITY OF
LIVERPOOL



NESS BOTANIC GARDENS COLLECTION POLICY 2025-28

Contents

Executive summary 3

SECTION 1: INTRODUCTION 4

 Purpose 4

 Aims 5

SECTION 2: THE LIVING COLLECTION 6

SECTION 3: CURATION 10

 3.1 Acquisition 10

 3.2 Accession 12

 3.3 Horticultural management 13

 3.4 Data management 14

SECTION 4: EDUCATION & RESEARCH 18

SECTION 5: CONSERVATION 20

SECTION 6: PRIORITIES 2025–28 22

 6.1 Operational priorities 22

 6.2 Projects 24

 6.3 What will success look like? 25

SECTION 7: GOVERNANCE 26

SECTION 8: RESOURCE LIST 27

APPENDIX I: Priority collection profiles 28

APPENDIX II: Component assessments 34

Executive summary

This policy sets out the purpose of the plant collection at Ness Botanic Gardens (NBG). It aligns the development of the collection with Liverpool 2031, supporting green space development across the University of Liverpool’s estate and working in partnership with Botanic Gardens Conservation International.

- An assessment of the value of components identifies our collection scope and priority collections as follows:
- Our priority taxonomic collections are identified as *Alnus*, *Betula*, *Malus*, *Primula*, *Rhododendron* and *Sorbus*.
 - Our priority planted features are identified as the Rock Garden, Herbaceous Area and the Rhododendron Border and Pinewood.
 - Our priority specialised themes are identified as alpine, Bulley’s Gardens, Himalayas (China), native plants, evolution and ‘people and plants’.
- Our curatorial policies are explained, followed by an explanation of how we will use the collection to support education, research and conservation.
- Finally, we list our current priorities for this planning window and define what success looks like.

Section 1: Introduction

Purpose

The purpose of this policy is to guide the management and development of the NBG plant collection. It covers both the living elements (e.g. plants, seeds) and non-living elements (e.g. data records, herbarium vouchers, photographs).

It articulates the rationale for our plant holdings and ensures that we are ‘cultivating plants for a purpose’, mitigating against individual bias and the potential for focus on components that are low cost but also low value. In addition, an important aspect of this policy is to develop staff and public understanding of – and engagement with – the NBG plant collection.

The policy has two key drivers:

- Supporting Liverpool 2031.
- Partnership working as an active member of Botanic Gardens Conservation International (BGCI).

Supporting Liverpool 2031

Liverpool 2031 is the University of Liverpool’s strategic framework for the period to its 150th anniversary in 2031. NBG is committed to supporting the University’s main areas of strategic focus, notably research and education.

NBG is also focused on supporting the UoL **Sustainability Strategy and Biodiversity Plan**. Botanic gardens have an important role to play in the conservation and enhancement of biological diversity. This work is guided by the **Convention on Biological Diversity** (CBD) and two programmes that have followed on from the Convention: the **Global Strategy for Plant Conservation** (GSPC) 2020-2030 and the **UK Biodiversity Framework**. This activity includes *ex-situ* conservation, *in-situ* conservation and biodiversity conservation. NBG will develop botanic garden partnerships working in support of the **United Nations Sustainable Development Goals**.

All UoL horticultural activity sits with the NBG team. NBG is committed to supporting the University’s aim to achieve net zero carbon by 2035, one of the key aims set out in the Sustainability Strategy.

Delivering as a Botanic Gardens Conservation International member

Ness Botanic Gardens is a member of **Botanic Gardens Conservation International** (BGCI). This document is our response to the expectations of a botanic garden set out in **From Idea to Realisation: BGCI’s Manual on Planning, Developing and Managing Botanic Gardens**, and is intended to support our application for botanic garden accreditation and subsequent partnership working with BGCI and its member institutions.

Aims

CURATION

- We will assess the value and cost of acquisitions to prioritise the maintenance or enhancement of priority components.
- We will manage the collection in compliance with national and international law.
- We will capture the data associated with new accessions effectively.
- We will protect the health of our plant collections and adhere to UK plant health legislation.
- We will propagate and care for our plant collection effectively.
- We will develop and promote NBG priority collections across the University estate.
- We will manage the data associated with our plant collection effectively.

EDUCATION & RESEARCH

- We will use the living plant collection to deliver an outstanding programme of educational activities.
- We will work effectively with educational partners.
- We will promote and facilitate the use of the living plant collection for research.
- We will provide outdoor and protected growing spaces for plant-based research.

CONSERVATION

- We will work effectively with partner institutions like BGCI.
- We will maintain and develop our *ex-situ* collections, increasing the representation of threatened taxa.
- We will support the *in-situ* conservation of endangered local flora.

Section 2: The Living Collection

Collection summary:¹

- 7,386 Accessions
- 6,806 Taxa
- 210 Plant Families
- 71 Threatened Species
- 3 National Plant Collections
- 17 National Champion Trees
- 33% of accessions wild source

Mediterranean garden

¹ Based on available audit data March 2025.

Collection history

In 1898 Liverpool cotton broker Arthur Bulley purchased sixty acres of farmland at Ness on the Wirral peninsula. Bulley built a house and developed a series of garden spaces, including a rock garden and an herbaceous garden. He also started a commercial plant nursery (Bees Ltd) in 1904 and was a significant sponsor of 'plant hunters' in the early twentieth century, for example George Forrest and Frank Kingdon Ward. He had a particular interest in alpine plants and was keen to explore further the more mountainous regions of the world, especially the Himalayas.

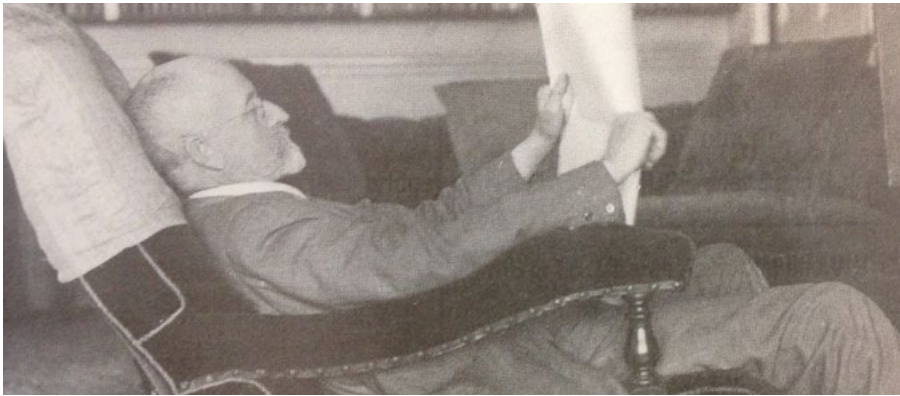
Bulley died in 1942 and 'Bulley's Gardens', as they were known, were gifted to the University of Liverpool in 1948 by his daughter Lois Bulley. During the 75 years of the University's ownership the size of the landscaped garden expanded, and several individuals led the development of the garden's collections of taxa, planted features and specialised themes – most notably Ken Hulme (Director from 1957 to 1989) and Dr Hugh McAllister (Botanist, and Deputy Director from 1972 to 1997).

In the earlier years of University ownership, many accessions were for amenity, horticultural or historical reasons. Focal taxa included rhododendrons, camellias, heathers and primulas. After 1972 there was a shift in accessions policy towards wild-collected specimens of known origin for the purposes of taxonomic research – many rare and endangered species were obtained in the course of this work, notably *Betula* and *Sorbus* taxa.

During the twentieth century special interest plant groups developed, including the Alpine Garden Society, Rhododendron, Camelia and Magnolia Group of the Royal Horticultural Society and the British Cactus and Succulent Society – branches of these three groups meet regularly at Ness.

In 1998 a catalogue of NBG plant collections was published (*Index Nessensis*). This set out the priority taxa at that time, which included collections of herbaceous genera which have since been lost (e.g. *Meconopsis*, *Epimedium*, *Iris*). Planted features have also been added, removed and modified, leading to a 'layered' effect typical of an historic garden setting. A list of extant planted features is given in Appendix II. Examples of lost components include the display and research glasshouses, heather garden, native plant garden, herb garden and rose garden.

Clockwise (Gardeners Hannah Jones and Susie Swift, Ken Hulme, Dr Hugh McAllister, Arthur Bulley)



Analysing value

Three component types have been identified:

1. Taxonomic collections of a single plant genus (e.g. *Sorbus*).
2. Planted features – multiple genera planted intensively in a single location (e.g. the Rock Garden).
3. Specialised themes – multiple genera planted extensively across the site but linked by a theme (e.g. plants from China).

BGCI provide a framework for considering botanic garden activity based on its educational, research and conservation value. Other values typically considered in historic garden landscapes include heritage, aesthetic and biodiversity. The components of the plant collection and landscape at Ness are therefore assessed using the following framework of six values:

- Education.
- Research.
- Conservation.
- Aesthetic.
- Heritage.
- Biodiversity.

Each taxonomic collection, planted feature and specialised theme has been assessed based on these values and given a score of 0, 1 or 1* as explained in Table 1. The sum determines the base value and exceptional value if applicable.

Table 1: Values

Value	Score	Explanation
Education	0	Not used for education.
	1	Occasional education use.
	1*	Exceptional educational value – collection of plants for educational purpose.
Research	0	No research activity recorded.
	1	Plants present that have been used in research.
	1*	Exceptional research value – collection of plants for research purpose.
Conservation	0	No conservation status recorded.
	1	Some plants have conservation status.
	1*	Exceptional conservation value – wild origin plants of threatened status, stable breeding populations.
Aesthetic	0	Limited aesthetic value.
	1	Medium level of aesthetic value limited by small numbers of plants or short period of interest.
	1*	Exceptional aesthetic value – large numbers of plants providing interest for significant period.
Heritage	0	No heritage value recorded.
	1	Some heritage value.
	1*	Exceptional heritage value – significant link with the history of Ness.
Biodiversity	0	No biodiversity value recorded.
	1	Some biodiversity value.
	1*	Exceptional biodiversity value – high level of biodiversity activity recorded.

The value of components may need to be adjusted following audit completion and an analysis of legal compliance.

Analysing cost

Each component also has an associated cost in terms of people, financial or natural resource. People resource costs include horticultural maintenance, propagation and plant records. Financial resource costs include acquiring plants from commercial nurseries. Natural resource cost can relate to energy (e.g. plants requiring a protected growing environment such as a glasshouse) or water.

Each taxonomic collection, planted feature and specialised theme has been assessed based on these values and given a score of A, B or C as explained in Table 2.

Table 2: Cost

Cost	Score	Explanation	Example
Low	A	Components with a low people/financial and natural resource cost	Established hardy woody plants or bulbs
Medium	B	Components with <i>either</i> a high people/financial <i>or</i> a high natural resource cost	Low maintenance tender plants (e.g. cacti)
High	C	Components with a high people/financial and natural resource cost	Annual plants requiring frequent water use or glasshouse protection

To inform the next iteration of the policy, the Curator and Head Gardener will review the cost of each component in more detail, including people input measured in hours per year.

Staffing levels have fluctuated during the history of Ness Botanic Gardens. In 1907, when Bees’ Nursery was located in the gardens, fifty-two garden staff were employed. By the end of World War II, just two staff remained. The University of Liverpool rebuilt the staffing resource, and by 1995 there were seventeen full-time horticultural staff and three trainees. Today, there are nine staff. Volunteer numbers have remained at a similar level during this thirty-year period – following a benchmarking exercise against other gardens in 2021, the numbers are capped to enable effective management.

There can be a bias in collections towards components with a lower cost, and an associated loss of higher cost components, even if valuable – for example, significant collections of *Primula*, *Gentian* and *Meconopsis* have been lost at Ness. It must be accepted that the prioritisation of higher cost components will have an impact on the resource available for other components. It is noted that it is possible to mitigate cost in various ways, for example working in partnership with groups like the Alpine Garden Society and using sustainable technologies to heat protected growing spaces.

Cost may change for components over time. For example, woody taxa might have a medium cost initially, but a low cost once established. Confidence in global climate models has increased and suggest that the UK will experience more extreme weather events, such as flash flooding and periods of drought – it is likely that this will influence the cost of maintaining some components.

Priority collections

The value and cost of each collection has been assessed and categorised as follows:

Priority collections have exceptional value in two or more areas. These collections will be maintained, and their development prioritised.

Significant collections have exceptional value in one area. These collections will be maintained. They will only be developed if resource is available.

Secondary collections may be maintained or removed.

Priority collection profiles are listed in Appendix I. An assessment of the value and cost of each component can be found in the tables in Appendix II.

Priority taxonomic collections

Our priority taxonomic collections are *Alnus*, *Betula*, *Malus*, *Primula*, *Rhododendron* and *Sorbus*.

Our significant taxonomic collections are *Acer*, *Borinda*, *Camellia*, *Cotoneaster*, *Galanthus*, *Gentiana*, *Magnolia*, *Meconopsis* and *Spiraea*.

Some individual plants have exceptional value, including *Pieris formosa* var. *forrestii* (1000-1657), *Magnolia sprengeri* var. *diva* (1000-0380), *Araucaria araucana* (1000-6375), *Lindera praetermissa* (1000-3541) and *Ilex linii* (1000-4376).

Priority planted features

Our priority planted features are the Rock Garden, Herbaceous Area and the Rhododendron Border & Pinewood.

Our significant planted features are the family beds, Specimen Area (Shrubbery) and Mediterranean Garden.

Priority specialised themes

Our priority specialised themes are Alpines, Bulley’s Gardens, Himalayas (China), native plants, evolution and ‘people and plants’.

Our significant specialised themes are All-Year-Round Interest, the International Conifer Conservation Project (ICCP), Ness Heritage Plants and Plant Collectors.

Section 3: Curation

3.1 Acquisition

Our aims:

- We will assess the value and cost of acquisitions to prioritise the maintenance or enhancement of priority components.
- We will manage the collection in compliance with national and international law.

Acquisition workflow

The NBG acquisition process is coordinated by the Curator and is summarised in the flowchart in Figure 2.

Acquisition source and type

Acquisition sources include collection from natural habitats, exchange between botanic gardens, donations from private collections and purchase from commercial enterprises. Material type includes seed, cuttings or rooted plants.

Acquisition criteria

Accepting or rejecting plant material is an important undertaking that places acquisition at the heart of this collection policy. To maintain the focus of the plant collections, NBG acquisition is based on the following three-step process.

Step 1 – Assessing Value

The primary focus of NBG acquisition is to maintain and enhance the value of priority components. The Curator uses the set of values set out in section 1.2 to decide if the acquisition maintains or adds value. Examples are given in Table 5.

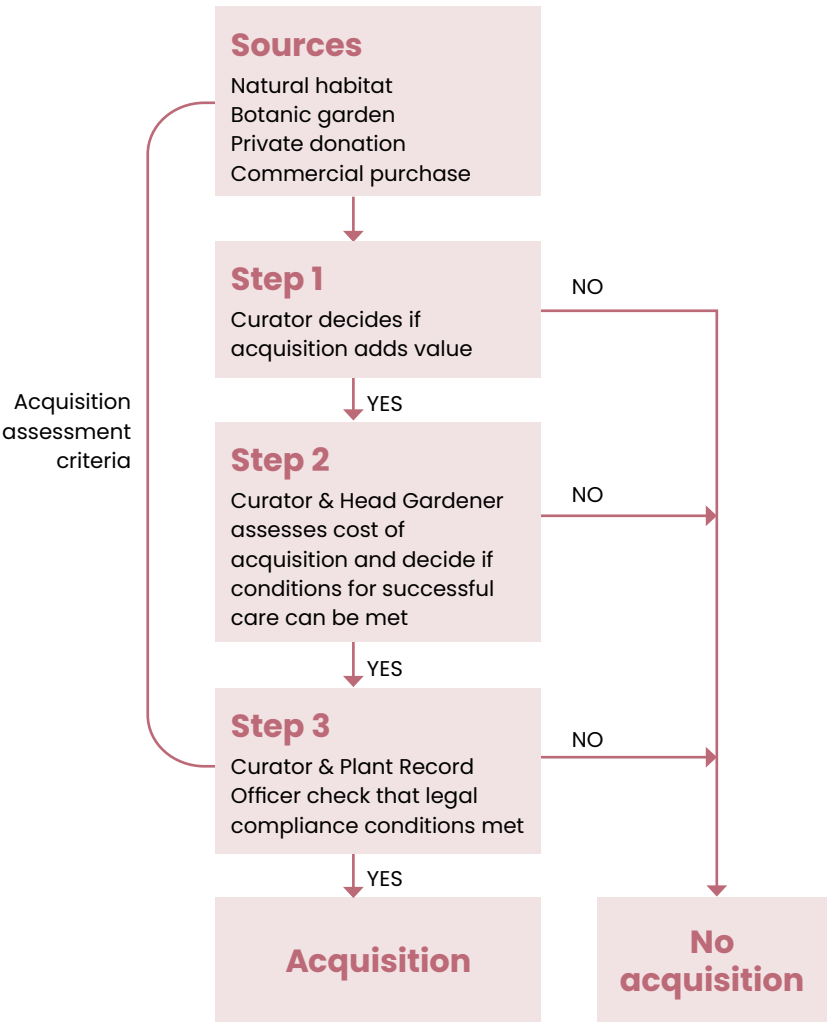


Figure 2: Acquisition workflow

Table 5: Assessing value

Component type	Example	Added value
Taxa	Gap filling with wild origin plants of threatened status to the <i>Sorbus</i> collection	Conservation, research and education
Planted feature	The introduction of geographically themed beds to the Rock Garden	Education, heritage and aesthetic
Specialised theme	Working in partnership with the Department of Medicine and the School of Veterinary Science to create a medicinal garden	Research, education

Source can affect value, for example: wild origin seed acquired from another botanic garden via the *Index Seminum* scheme will have a higher conservation value than plants acquired from a commercial nursery.

STEP 2 – Assessing cost

Each acquisition will have an associated cost. The Curator and Head Gardener use the set of costs set out in section 1.2 to assess the cost of an acquisition and decide whether the conditions for successful care can be met. Examples are given in Table 6.

Table 6: Assessing cost

Component type	Example	Associated cost
Taxa	Gap filling with wild origin plants of threatened status to the <i>Sorbus</i> collection	People resource (gap analysis, partnership working, propagation, establishment)
Planted feature	The introduction of geographically themed beds to the Rock Garden	People/finance resource to source and establish plants. Irrigation required in establishment.
Specialised theme	Working in partnership with the Department of Medicine and the School of Veterinary Science to create a medicinal garden	People/finance resource to plan, prepare site and plant. Irrigation required.

Source can affect cost, for example: wild origin seed acquired from another botanic garden via the *Index Seminum* scheme is free, but there is a higher short-term resource cost to propagate and establish material in the collection, Plants acquired from a commercial nursery have a high financial cost, but lower initial people cost.

For each acquisition the conditions for successful care must be assessed. This includes horticultural management (for example, propagation and establishment) as well as an understanding of growing requirements (for example, soil and climate). Information regarding NBG soil and climate and **plant hardiness** is available in the NBG Garden and Plant Collection Management and Development Plan. Sustainable use of our limited resource is key to effective acquisition.

STEP 3 – Assessing legal compliance

Plant material should only be accepted if it conforms to national legislation and international treaties and agreements. This will protect the reputation of both Ness Botanic Gardens and the University of Liverpool.

Access and benefit sharing

Acquisition of wild origin material must comply with national and international policies relating to Access and Benefit Sharing (ABS). Every country holds rights over the biodiversity (genetic resources) found within its borders. This is a principle agreed at the signing of the Convention on Biological Diversity (CBD) on 29 December 1993 and made legally binding through the Nagoya Protocol on 12 October 2014.

We will maintain records demonstrating that new acquisitions of wild-collected plant material originally gathered on or after 29 December 1993 abides by the CBD’s core provisions, as follows:

- Access is subject to the ‘prior informed consent (PIC)’ of the provider country
- Access will be on ‘mutually agreed terms (MAT)’
- Any benefits from the utilisation of genetic resources will be shared fairly and equitably with the provider country.

The **International Plant Exchange Network** (IPEN) was formed as a collective response of botanic gardens to CBD provisions. NBG will register as an IPEN member and abides by its rules for the acquisition, maintenance and supply of plant genetic resources.

Convention on International Trade in Endangered Species

The Convention on International Trade in Endangered Species (CITES) is a United Nations Convention. Species threatened through international trade are included on three lists, or Appendices (I, II and III), which offer varying degrees of protection. Around 30,000 species of flora are currently listed, and a permitting system regulates international trade in these species.

We will ensure CITES-listed species are collected legally and carry the necessary documentation. To find out if a species is listed on CITES we will use the [CITES Website](#) and BGCI's [PlantSearch](#) database.

Plant health

The [International Plant Sentinel Network](#) (IPSN), coordinated by BGCI, is a global network dedicated to safeguarding plant health worldwide. This collaborative network brings together botanic gardens and other institutions with the aim of providing an early warning system, identifying and sharing information about new and emerging pests and pathogens risks, and promoting best biosecurity practices within botanic gardens/arboreta. NBG will join IPSN and monitor pest alerts in relation to new acquisitions.

Invasive non-native species

Plants known to be invasive will not be introduced into the collection – acquisitions will be checked using the [Defra](#) and [INNS](#) websites.

3.2 Accession

All acquisitions will be accessioned to our plant database (IrisBG). The definition of an accession is:

‘plant material (individual or group) of a single taxon and propagule type with identical or closely similar parentage acquired from one source at the same time’

For tracking purposes an accession is catalogued and assigned a unique identifier number associated with additional information.

Our aim:

- We will capture the data associated with new accessions effectively.

Accession workflow

The NBG accession process is managed by the Plant Record Officer and is summarised in the flowchart on the right:

Step 1 Data Capture & Verification

Minimum data standard

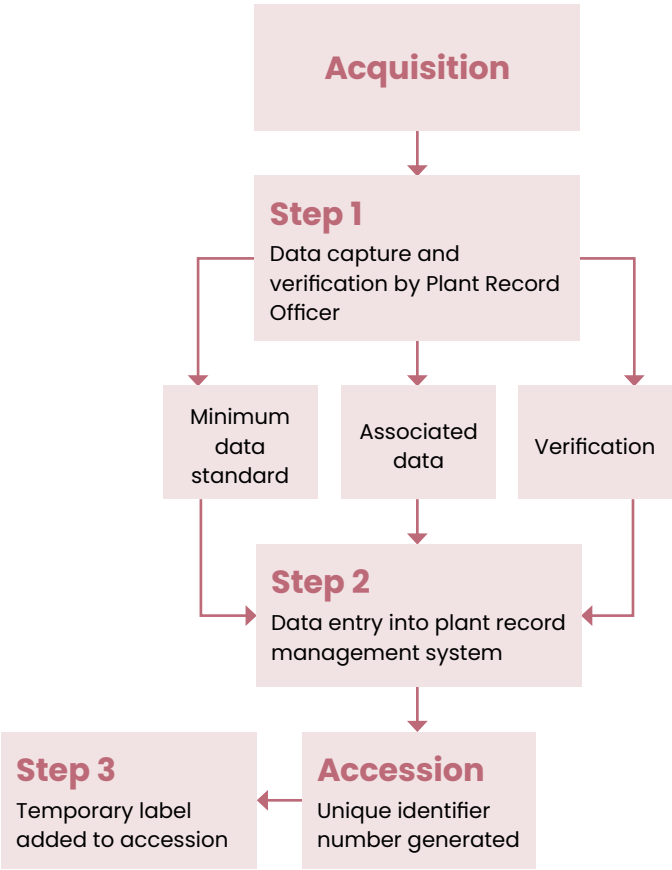
- The following data will be captured for all acquisitions:
- Determination including taxon name and determination level.
 - Origin including donor type and provenance.
 - Material type and quantity.

In addition, for wild source material, locality & collection information will be captured.

Associated data

This data adds value to the curation of the living collection and may include photographs, references to herbarium vouchers and correspondence.

Figure 3: Accession workflow



Verification

Taxonomic nomenclature will be checked using [Plants of the World Online](#) (POWO) and other similar databases. Other verification evidence (e.g. collector or donor) will be recorded. If required, verification by an external authority may be sought.

Step 2 Data Entry And Accession

Data entry is via the IrisBG collection management software. This generates a unique accession number, in the format YEAR-SEQUENTIAL NUMBER/ITEM NUMBER. So, for example 2025-0001/1 is the first item of the first accession in 2025.

Step 3 Temporary Label

A temporary label with the taxon name and accession number is produced for all vegetative material (i.e. living plants and cuttings) by the Plant Record Officer. Temporary labels for seeds will be added at the propagation stage.

3.3 Horticultural management

Good horticulture underpins the effective maintenance and development of the NBG plant collection.

Our aims:

- We will protect the health of our plant collections and adhere to UK plant health legislation.
- We will propagate and care for our plant collection effectively.
- We will develop and promote NBG priority collections across the University estate.

Plant health management

Awareness

The Plant Record Officer will act as contact and be responsible for communicating relevant IPSN information to the NBG team. The Plant Record Officer will also refer to the [UK Plant Health Information Portal](#) as required.

Quarantine

All seeds and vegetative material will be inspected on arrival for signs of pests or disease by the Head Gardener. Only certified seed may be direct sown in the gardens. All other sown seed and vegetative material will be held in the quarantine area for a minimum of four weeks. The plants will be monitored for pests and diseases by the Head Gardener or designated individual, and incidences reported to the Curator.

The IPSN's [Guide to Biosecurity in Botanic Gardens and Arboreta](#) will be used to plan quarantine activity, which will include the provision of disinfection equipment to be used by all those entering or leaving the quarantine area and the safe disposal of infected material.

Material transfer out

Every UK business that works with plants must be registered as a [plant health professional operator](#). We will register with this scheme and also apply to be authorised to issue [plant passports](#) for when we move regulated plant material in Great Britain – all plants for planting require a UK plant passport (for example, to other UoL campus sites or botanic gardens), although there is no requirement for a plant passport for the movement of seed intended for scientific purposes.

Animal and Plant Health Agency

We will facilitate inspection requests by the [Animal and Plant Health Agency](#) (APHA) and report issues of concern.

Invasive non-native species

New acquisitions will be monitored for signs that they may become invasive now (or under future climate change scenarios). Several invasive non-native species are already present in the garden, including *Impatiens glandulifera* (Himalayan balsam), *Reynoutria japonica*. (Japanese knotweed) and *Heracleum mantegazzianum* (giant hogweed). The University of Liverpool's [Biodiversity Plan](#) includes our commitment to remove these species. This links to Target 6 of the [Global Strategy for Plant Conservation 2020-2030](#) – eliminate, minimize, reduce and or mitigate the impacts of invasive alien species on biodiversity and ecosystem services. There is an annual programme of physical control (e.g. hand weeding) and the targeted application of herbicide where appropriate.

Propagation

Propagation may be required following accession (e.g. seeds, cuttings) or to maintain, develop or share elements of the collection. Propagation will enable us to develop and promote NBG priority collections across the University estate.

All propagation activity must be approved by the Curator. Propagation must be compatible with our collection priorities and available resource.

All propagules must be labelled with temporary tags designating the number of the original accession. This activity will be coordinated by the Plant Record Officer.

Planting & establishment

All planting locations must be approved by the Curator.

Conditions for successful care must be checked by the Head Gardener using the [RHS website](#), or similar resources.

The Head Gardener is responsible for passing location information to the Plant Record Officer, and for ensuring adequate resource allocation to enable successful establishment.

Maintenance

Key components of horticultural maintenance at Ness include weed control, grass cutting, composting and irrigation. The Curator and Head Gardener will work with the UoL Sustainability team to promote sustainable practices in each of these areas.

The Curator will lead the development of a Landscape Succession Plan. As part of this work, the Curator and Head Gardener will coordinate a process of thinning and renovation pruning, to prioritise the health and longevity of high value components of the collection as well as maintaining key internal and external views.

Movement of accessioned plants must be approved by the Curator and Head Gardener and communicated to the Plant Record Officer.

Detailed maintenance information is available in the NBG Garden and Plant Collection Management and Development Plan (2017).

Risk management

Risks to the to the living collection include pests and diseases, invasive species and climate change.

The Curator, Head Gardener and Plant Records Officer will regularly review the [UK Plant Health Information Portal](#) and horticultural press for the latest information regarding plant health issues and invasive species, and communicate/action accordingly.

Projected climate change will impact on the plant collection, including plant selection and horticultural practices. The Landscape Succession Plan will include an evaluation of the potential impact of climate change using the [BGCI climate assessment tool](#) and benchmarking against the plans of other institutions, for example Kew's [Landscape Succession Plan](#).

3.4 Data management

Data associated with the plant collection is managed by the Plant Record Officer, with oversight from the Curator. NBG has a subscription to the [IrisBG](#) collection software. Administration rights are limited to the Curator, Plant Record Officer and Head Gardener. Other staff, including garden and welcome desk staff, are given non-administrative user accounts to enable interrogation of the system as required by role.

Our aims:

- We will manage the data associated with our plant collection effectively.

Mapping

All newly planted accession items are mapped by the Plant Record Officer when planted. IrisBG is updated if items are moved to a different location.

Labelling

All newly planted accessions are given a permanent label. The format is shown in Figure 4.

Figure 4: Label format.



Common names are only given if it is deemed to be widely used.

Provenance can be coded G, U, W or Z as follows:

- **G** indicates the plant is of cultivated garden origin.
- **U** is used if the origin of the plant is unknown.
- **W** indicates that the plant is of known wild origin.
- **Z** indicates the plant is from a cultivated plant descended from one of known wild origin.

By default, plants are labelled with black labels. Red labels are used to indicate taxa of threatened status. Blue labels indicate UK & Ireland Champion Trees.

Herbarium material

Historically, a significant quantity of herbarium voucher material has been collected for archiving in the [Botany Collection](#) at the World Museum in Liverpool. A review of this activity by the Curator and Plant Record Officer is scheduled for late 2025 and an updated position will be provided in the next iteration of this document.

Audit

Auditing of the collection involves checking and recording the following elements:

- Accession number
- Taxon name, updating name if required
- Number of items in accession
- Location in collection
- Condition (including photographic record)
- Label condition and replacement if necessary.
- Impact of pests and diseases

At the time of issue of this policy, a full audit of the collection by the Curator and Plant Record Officer with the support of Dr Hugh McAllister is pending completion. A process of auditing by component area at regular intervals will then begin.

Regular collection reviews will allow trends over time to be identified and impacts such as those of climate change, to be monitored.

Material transfer out

Exchange of plant material out of the garden must be approved by the Curator and documented by the Plant Record Officer using the exchange function in IrisBG (see Figure 5).

Figure 5: IrisBG exchange function

Exchange

Exchange no:	6	Date:	2024-10-18	Quantity:	1	
From:	Ness Botanic Garden - University of Liverpool, Ness, CH64 4AY, United Kingdom • Inst. code: LIVU					
To:	Chester Zoo, Upton-by-Chester, CH2 1EU, United Kingdom • Ref: Phil Esseen					
Material:	Ripe fruit for Chester Zoo's arboretum					
Comments:						

Items

Item no.	Taxon name	Locality • Collector • Coll.no • Coll.date
1000-9476/2	Malus halliana var. spontanea	JPN: Kyushu, Mt. Kirishima • Wilson • •

Terms and conditions

In response to the International Convention on Biological Diversity, the material is supplied to other research institutions on the following conditions:

1) The material will be used for the common good in the areas of research, education and conservation.

2) Information on the material will be appropriately stored and the connection between the information and the material will be maintained.

3) If scientific publications are produced on the plant material provided, the origin of the material must be cited. In addition, the institution would expect to receive a copy of these publications.

4) Permission must be sought from the institution if the recipient seeks to commercialise either the genetic material, its products or research derived from it. Such commercialisation will be subject to the conditions of a separate agreement with the country of origin.

By requesting the material, the recipient accepts and pledges to respect the above conditions.

IrisBG - Collection Management

A crucial principle of the IPEN Code of Conduct (section 3.1) is that plant material distributed through IPEN is only intended for use in scientific research, education, conservation activities, raising public awareness and display. All plant material entering IPEN is tagged with a unique identifier, the IPEN Number, which remains connected with that material and its progeny through all generations to come.

Deaccessioning

Deaccessioning is a normal part of curation that helps maintain the focus and quality of the collection. It is the process of permanently eliminating an accession from the living collection.

Reasons to deaccession material include:

- It is not a priority collection.
- Death.
- Significant pest or disease issues.
- The accession is missing.
- Plant toxicity presenting significant risk to people.
- Invasiveness.

The cause of de-accessioning is recorded on the management data system. The accession remains on the database as a historic accession record.

Annual reporting

The Plant Record Officer will produce an annual data report in January relating to the prior year, to include:

- Total number of living families, taxa, accessions and individual plants.
- ‘In year’ number, type, source and value of accessions and deaccessions.
- Number of plants labelled.
- Wild source percentage.
- Number of threatened species.
- Number of champion trees.

The annual report will be submitted to the Director, Head of Service and Curator of Ness Botanic Gardens.

The Plant Record Officer is also responsible for updating BGCI PlantSearch annually and providing an annual report to Plant Heritage.

View of rock garden and Mickwell House



Section 4: Education & Research

4.1 Education

NBG is an outdoor classroom for all age groups. Our audience includes adult visitors, HE students, school groups and families with young children.

Our aims:

- We will use the living plant collection to deliver an outstanding programme of educational activities.
- We will work effectively with educational partners.

Educational activity may be themed as follows:

Table 7: Educational themes

Theme	Example activities
Biodiversity	Treezilla recording by UoL LIFE233 students.
	KS2 sustainability trek for school groups.
Conservation	Communicating the threats to plant diversity and the importance of plant conservation, including through tours and labelling plants of threatened status.
Evolution	Phytogeographic plantings in the Herbaceous Area and Mediterranean Garden, with associated interpretation and tours.
	KS2 animal and plan trek for school groups.
Heritage	Connecting visitors with Arthur Bulley’s story, including his sponsorship of ‘plant hunters’. Heritage and rhododendron trails for adult visitors.
	Rhododendron, Camellia and Magnolia Group and Alpine Garden Society talk programmes.
	KS1 plant hunters world trek for school groups.
Horticulture	Adult horticultural courses.
	KS1 seed sowers explorers trek for school children.
People and plants	Exploring human interaction with plants as food, medicine and poisons including tours to pharmacy students from Liverpool John Moores University.
Research projects	Ness provides research colleagues with excellent opportunities for public engagement, including interpretation for visitors and public events.
Wellbeing	Forest bathing and ‘Botanical Bliss’ events.

Partnerships

Undergraduate teaching

NBG will support UoL undergraduate teaching across all three faculties, for example hosting fieldwork relating to the Biodiversity Practical Skills module (LIFE233), part of the BSc (Hons) in Ecology & Environment. We will also connect with other HE institutions, for example facilitating visits by students from Liverpool John Moores University (LJMU).

School groups and families

We will continue to connect extensively with local schools, welcoming a variety of early years and primary aged pupils on school visits and delivering Early Years Foundation Stage (EYFS), Key Stage 1 and Key Stage 2 learning.

Adult education

We will develop course provision in partnership with UoL Continuing Education. We will also continue to develop our partnerships with gardening groups delivering educational programmes (e.g. Rhododendron, Camellia and Magnolia Group, the Alpine Garden Society and the British Cactus and Succulent Society).

4.2 Research

NBG supports research colleagues in all three academic faculties. Our living collection is utilised for a variety of research purposes, including taxonomy, phenology and horticulture. In addition, NBG hosts research by colleagues in several outdoor and protected growing spaces.

Our aims:

- We will promote and facilitate the use of the living plant collection for research.
- We will provide outdoor and protected growing spaces for plant-based research.

Partnerships

Faculty of Health and Life Sciences

Ecological research hosted by NBG includes the large growing facility run by [Dr Raj Whitlock](#) researching the impact of climate change on UK grasslands. The research of [Professor Wayne Dawson](#) seeks to identify species that pose the highest risk to biodiversity before they become introduced and established, and also to study plant roots and their responses to changes in the environment to fully understand the impacts of climate change on plant and ecosystem function.

Plant-based food is critical to human evolution and sustainable development. [Dr James Hartwell](#) and [Dr Susanna Boxall](#) are using space at Ness Botanic Gardens to explore new crops that may be suited to UK arable rotations.

Faculty of Science and Engineering

Phenology examines biological phenomena such as timing of germination, blooming in the spring or leaf colour changes in the fall. [Dr Andrew Hackett-Pain](#) is currently investigating the weather cues (triggers) of masting in beech at Ness.

Faculty of Humanities and Social Sciences

[Dr Pete Hommel](#) and [Dr Ceren Kabucku](#) are exploring ancient crop ancestors at the Experimental Archaeology Research and Teaching Hub (EARTH). NBG is engaged with colleagues in the [Department of History](#) exploring the Liverpool region’s connection to the British Empire and the effect that had on the region’s natural history.

Other botanic gardens and institutions

NBG regularly hosts visits from – and exchanges plant material with – individuals and institutions involved in scientific research in the UK and globally. Recent examples include facilitating research on native *Sorbus* and providing herbarium voucher material to RHS Wisley.

Section 5: Conservation

NBG has a collection of plants of known wild origin from around the world. Many of these plants originate from *Index Seminum* and collecting expeditions (listed in *Index Nessensis*). Some of these plants are threatened in the wild. This gives the collection significant *ex situ* conservation value and naturally promotes partnership activity. There is potential to support *in situ* conservation partnership activity if the development of propagation resource is successful (see Section 3.1).

Our aims:

- We will work effectively with partner institutions like BGCI
- We will maintain and develop our ex-situ collections, increasing the representation of threatened taxa
- We will support the in-situ conservation of endangered local flora

Partnerships

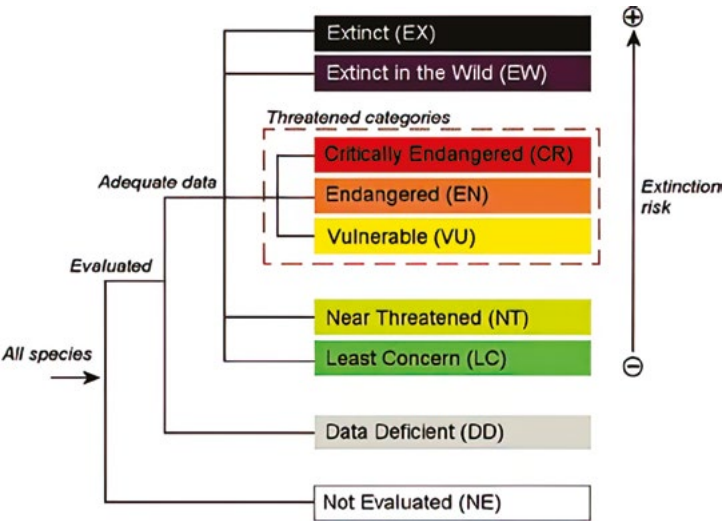
BGCI

NBG is a member of **Botanic Gardens Conservation International** (BGCI), which links the botanic gardens of the world in a global network for plant conservation. BGCI has a number of resources available to members including [PlantSearch](#), a tool for accessing and sharing information about living collections. The Ness taxa list has been uploaded to PlantSearch.

The **Global Strategy for Plant Conservation 2020-2030** was formally adopted at COP16 in October 2024. Of particular relevance to botanic gardens is Target 4 – ‘Ensure urgent management actions to halt human induced extinction of known threatened species’. NBG will support global efforts to halt the continuing loss of plant diversity by maintaining and developing our *ex-situ* collection. We also share plant material with other botanic institutions – our involvement with the *Index Seminum* scheme is under review, but seed is collected and material shared on request.

The International Union for Conservation of Nature (IUCN) curates a **red list** of threatened species. There are three threatened categories, in ascending order: vulnerable ((VU), Endangered (EN) and Critically Endangered (CR) – see figure 6.

Figure 6: IUCN threatened categories



NBG holds collections of 64 threatened taxa, as listed in Table 8.

Table 8: NBG threatened taxa (see section 3.4 for key to provenance codes)

Vulnerable taxa	Endangered taxa	Critically endangered taxa
<i>Aesculus hippocastanum</i> G <i>Aesculus wangii</i> W <i>Aria Hibernica</i> W <i>Aria porrigentifformis</i> W <i>Camellia granthamiana</i> Z <i>Cedrus libani</i> var. <i>brevifolia</i> W <i>Cupressus chengiana</i> W <i>Cupressus macrocarpa</i> G <i>Hedlundia minima</i> W <i>Hedlundia subsimilis</i> W <i>Heptacodium miconioides</i> G <i>Karpatiosorbus devoniensis</i> W <i>Karpatiosorbus latifolia</i> W <i>Karpatiosorbus pseudovertesensis</i> W <i>Magnolia sargentiana</i> G <i>Photinia lasiogyna</i> W <i>Picea breweriana</i> G <i>Picea likiangensis</i> W <i>Picea morrisonicola</i> W <i>Pinus muricata</i> G <i>Pittosporum dallii</i> G <i>Podocarpus salignus</i> W <i>Pseudolarix amabilis</i> W <i>Thuja koraiensis</i> G	<i>Abeliophyllum distichum</i> W <i>Abies koreana</i> U <i>Abies pinsapo</i> subsp. <i>marocana</i> W <i>Acer griseum</i> G <i>Alnus maritima</i> W <i>Araucaria araucana</i> G <i>Aria × leptophylla</i> W <i>Aria wilmottiana</i> W <i>Betula megrelica</i> W <i>Chamaecyparis formosensis</i> W <i>Echium pininana</i> W <i>Ginkgo biloba</i> G <i>Hedlundia arranensis</i> W <i>Juniperus cedrus</i> W <i>Karpatiosorbus bristoliensis</i> W <i>Karpatiosorbus subcuneata</i> W <i>Kirengeshoma palmata</i> G <i>Magnolia dawsoniana</i> G <i>Magnolia stellata</i> G <i>Majovskya sudetica</i> W <i>Metasequoia glyptostroboides</i> W <i>Picea chihuahuana</i> Z <i>Picea martinezii</i> W <i>Picea omorika</i> W <i>Pinus radiata</i> G <i>Sequoia sempervirens</i> W <i>Sequoiadendron giganteum</i> Z <i>Sorbus hajastana</i> W <i>Sorbus neglecta</i> Z <i>Sorbus rinzenii</i> W	<i>Aria vexans</i> W <i>Betula chichibuensis</i> W <i>Betula murrayana</i> W <i>Cupressus dupreziana</i> var. <i>dupreziana</i> Z <i>Fraxinus profunda</i> W <i>Glyptostrobus pensilis</i> W <i>Hedlundia leyana</i> W <i>Hedlundia pseudofennica</i> W <i>Torreya taxifolia</i> W <i>Wollemia nobilis</i> G

BGCI measures extinction risk to trees through the Global Tree Assessment and the associated **Red List** assessments and **ex situ surveys** which highlight gaps in the *ex situ* conservation of plants. Some of these assessments have particular relevance to Ness, for example the **Red List and Ex situ Survey of Betulaceae**.

The **metacollection** is suggested as the best way forward for conservation collections – gardens working together to conserve taxonomic groupings (maintaining taxa at multiple locations reduces the likelihood of loss). To this end, BGCI coordinates a suite of **Global Conservation Consortia** which catalyse groups of institutions and experts to collaboratively develop and implement comprehensive strategies to prevent extinction of priority threatened plant groups.

NBG is a member of the Global Conservation Consortium for whitebeams, rowans and service trees, led by Westonbirt Arboretum. This was launched in 2024 to prevent extinctions and ensure healthy whitebeams, rowans and service trees species and populations for the future.

NBG supports the programmatic objectives of the Global Conservation Consortia, which are as follows:

- Foster new and existing network(s) of experts.
- Identify species of greatest conservation concern and prioritize conservation action.
- Ensure effective *in situ* species conservation.
- Establish, expand and manage *ex situ* collections of high conservation value.
- Foster applied research (e.g. conservation biology, ecology, horticulture, population genetics, taxonomy) to support species conservation.
- Build capacity to empower and mobilise in-country partners in diversity centres and across species’ ranges.
- Increase public awareness and engagement with species conservation issues.
- Collaboratively fundraise to scale-up conservation action.

NBG will work with BGCI and develop our collections through gap analysis.

Integrated Plant Conservation

In situ is Latin for “on site”. *In situ* conservation is therefore the conservation of species diversity within normal and natural habitats and ecosystems. By comparison, *ex situ* conservation focuses on safeguarding species by keeping them in places such as living collections. Because our natural systems face many threats, conserving them is not easy, and must use many techniques.

Plant Heritage

Plant Heritage is a national charity whose mission is to conserve the diversity of garden plants. NBG holds three National Plant Collections in partnership with Plant Heritage, managed through an annual report system.

ICCP

The **International Conifer Conservation Programme** (ICCP) promotes conifer conservation globally and is based at the Royal Botanic Garden Edinburgh. NBG has 12 taxa linked to this programme.

Xi’an Jiaotong–Liverpool University

Xi’an Jiaotong–Liverpool University (XJTLU) is an international joint–venture university founded by Xi’an Jiaotong University in China and the University of Liverpool. XJTLU is located in Suzhou, famous for its gardens which have been listed by UNESCO. NBG will explore partnership working with colleagues in Chinese botanic gardens through XJTLU.

UOL Sustainability Team

The University’s first ever **Biodiversity Plan** was published in 2025, building upon the commitments set out in our Sustainability Strategy and Environmental Policy. It includes a commitment to increase biodiversity throughout our estate, supporting greater genetic, species and ecosystem diversity, and sets out our ambition to engage with local organisations to promote a positive impact on biodiversity throughout the Liverpool City Region and wider local area. It notes that NBG offers significant potential for conservation of endangered species both in and out of their natural environments, to propagate plants to be used throughout the University estate and as a location for plant research.

Conservation charities

Our volunteers monitor the biological diversity at Ness in partnership with our local biological Records Centre (RECORD). There are regular surveying and mitigation provided for protected species, including badgers, bats and great crested newts).

Section 6: Priorities 2025–28

6.1 Operational priorities

The following list of priorities is based on the content of Sections 1 to 5:

Category	Action	Responsibility	Target date
Living collection	BGCI accreditation.	Curator	31 Dec 2025
	Develop staff and public understanding of collection and its management and development.	Curator	31 Dec 2026
	Enhance priority collections by increasing resource level and adding value.	Curator	Each year
	Review Ness Botanic Gardens name, option to include ‘& Arboretum’.	Head of Service	31 Dec 2026
	Review cost of non–priority components. Action as follows: maintain, reduce input or remove.	Curator	31 Dec 2027
	Increase threatened species of priority taxa.	Curator	31 Dec 2027
	Register <i>Malus</i> national plant collection.	Plant Record Officer	31 Dec 2026
	Review native plant collections and decide re development.	Curator	31 Dec 2027
	Climate change review.	Curator	31 Dec 2027
Education & research	Support for UoL undergraduate and postgraduate study.	Curator and Learning & Engagement Manager	Each year
	Delivery of school group and family activities.	Learning & Engagement Manager	Each year
	Review and development of botanical/horticultural adult education opportunities.	Curator	31 Dec 2027
	Develop plan for consistent and effective interpretation.	Head of Service, Learning & Engagement Manager & Curator	31 Dec 2026
	Website content development including purchase and roll out of IrisBG Garden Explorer.	Curator & Plant Record Officer	31 Dec 2026
	Effective partnership working with UoL research colleagues.	Curator	Each year
	Support for external taxonomic research requests.	Curator	Each year
	Develop partnership working with BGCI and other botanic gardens, including Chester Zoo and RBGE.	Curator	Each year
	Develop partnership working with the Department of History.	Head of Service & Curator	Each year
	Develop partnership working with Department of Medicine and Leahurst.	Head of Service & Curator	31 Dec 2027

Category	Action	Responsibility	Target date
Curation	Identify and action gaps and opportunities in priority collections.	Curator	31 Dec 2027
	Join the International Plant Exchange Network (IPEN).	Plant Record Officer	31 Dec 2025
	Register for UK plant passport.	Plant Record Officer	Easter 2026
	Accession UoL Faculty collections.	Plant Record Officer	31 Dec 2026
	Joining International Plant Sentinel Network (IPSN).	Plant Record Officer	31 Dec 2025
	Set up quarantine area and enact process.	Head Gardener	31 Dec 2026
	Propagation review including resource allocation to support priority collections and UoL Biodiversity Plan.	Curator & Head Gardener	31 Dec 2026
	Develop sustainable practices working with the UoL Sustainability Team, including irrigation and weed control.	Head Gardener	31 Dec 2027
	Develop horticultural knowledge and skill relating to priority collections.	Curator & Head Gardener	Each year
	Increase resource level to better maintain arboretum.	Curator & Head Gardener	31 Dec 2027
	Develop Landscape Succession Plan and associated programme of works to promote good collection health, mitigate for climate change and maintain key internal and external views.	Curator & Head Gardener	31 Dec 2027
	Complete beta testing IrisBG Handheld and implement.	Plant Record Officer	31 Dec 2025
	Improve item mapping accuracy in partnership with Dr Freddie Draper.	Plant Record Officer	31 Dec 2025
	Complete full audit (Curator & PRO with Dr Hugh McAllister) including labelling.	Curator & Plant Record Officer	31 Aug 2026
	Red label all three threatened categories.	Plant Record Officer	31 Dec 2026
	Review of provenance against CBD/Nagoya and CITES and adding data to accession map.	Plant Record Officer	31 Dec 2027
	Review conservation status of collection (%wild origin, threatened status, number of stable breeding populations).	Plant Record Officer	31 Dec 2026
	Review native plant representation.	Plant Record Officer	31 Dec 2027
	Catalogue and archive historic records in partnership with UoL Special Archives and Collections.	Head of Service & Curator	31 Dec 2027
	Review herbarium activity including world museum collection and link to IrisBG.	Curator & Plant Record Officer	31 Dec 2026
	Share plant material at request, communication of collection scope using BGCI and IrisBG/Garden Explorer.	Curator & Plant Record Officer	Each year
	Annual report production.	Plant Record Officer	31 Dec 2025
Conservation	Develop capacity to support biodiversity gains across the University estate in partnership with the UoL Sustainability Team.	Head of Service & Curator	31 Dec 2027
	Develop capacity to support <i>in situ</i> native plant conservation.	Curator	31 Dec 2028

6.2 Projects

The following list of projects are based on the content of Sections 1 & 2 and will require capital expenditure.

1. Glasshouse project

The phased development of new glasshouses was identified as a priority in the Ness Botanic Gardens (NBG) Strategy 2026. The glasshouse project will provide the following benefits:

- They will add value to several priority collections, including alpinines and evolution.
- They will add educational value for visitors, school groups and UoL students (e.g. new MSc in Global Change Ecology and Evolution, starting in Oct 2025).
- An increase in enclosed/controlled environment growth space will support some 20+ researchers at Liverpool who undertake research involving plants/plant-soil interactions/plant-insect interactions, addressing the impacts of environmental change and sustainability, as well as supporting plant conservation.
- Adding wet weather provision and event space will lead to increasing commercial revenue.
- The improvement of NBG propagation resource (facility and staffing) will support both *ex-situ* and *in-situ* conservation, linked to partner botanic gardens via Botanic Gardens Conservation International (BGCI). It is also fundamental to the objective identified in the Biodiversity Plan to propagate plants to be used throughout the University estate.

Action	Responsibility	Target Date
Project conception and initiation	Head of Service & Curator	2026

2.Medicinal Gardens

Working in partnership with the Department of Medicine and the School of Veterinary Science to create medicinal plantings across the UoL estate.

Action	Responsibility	Target Date
Project conception and initiation	Head of Service & Curator	2026

3.Sustainability

Working in partnership with the UoL Sustainability team to develop sustainable facilities and use of natural resources.

Action	Responsibility	Target Date
Delivery of compost area project	UoL project team	2025
Irrigation project conception and initiation	Head of Service & Curator	2026

6.3 What will success look like?

- A. We will be a BGCI accredited botanic garden by 2026 and working effectively in partnership with other botanic gardens.
- B. Our priority collections will be effectively managed and developed using the following targets, monitored via the annual reports:
1. The qualitative analysis of ‘in year’ accessions will demonstrate value has been added to the priority collections
 2. We will add 1000 labels per annum
 3. We will increase the representation of threatened species in the collection from 64 to 100 in 2028.
 4. We expect the total number of accessions to decrease through 2025 to 2028 as data accuracy is improved via the auditing process.
- C. We will be clearly communicating our collection priorities to UoL colleagues and the general public.
- D. Partnership working with UoL colleagues supporting research and teaching activity will increase year-on-year, monitored via the academic list.
- E. Our plant records will be up-to-date with all areas audited by 2028, and the data analysed to inform the next iteration of the policy.
- F. We will have improved our propagation activity to support the NBG collection and biodiversity across the University estate, working closely with the Sustainability Team.

Section 7: Governance

Governance of this policy sits with Property and Campus Services Senior Management Team.

Review of the policy will be carried out every 3 years. Feedback will be sought from all stakeholders, including the NBG team, UoL academic faculty colleagues and the UoL Sustainability team.

Evaluation of the collection will allow us to:

- Ensure that collections remain relevant and aligned with the garden’s purpose
- Highlight gaps
- Determine how the collection has been used
- Identify partnership working with other collections and BGCI.

Approval and Implementation

Policy author: Nick Lightfoot (Curator)

This policy is approved by the Head of Service, Ness Botanic Gardens.

Signature: 

Date: 3 November 2025

Record of revisions

Version	Issue date	Description of revisions
1.0	03.11.25	N/A

Section 8: Resource List

The following resources have been used in developing this policy:

University of Liverpool

[Liverpool 2031](#)

[Sustainability strategy 2031](#)

[Biodiversity plan 2025-2031](#)

BGCI resource

[From Idea to Realisation: BGCI’s Manual on Planning, Developing and Managing Botanic Gardens](#)

[Botanic Garden Accreditation Standards Manual](#) and [associated resources](#).

Plant Collection Policy online learning module.

Journal articles including Sutherland, L.A. and Cosgrove, C. (2010) ‘Valuing a national collection: A work in progress at the Australian National Botanic Gardens’, *BGjournal*, 7(1), pp. 7–11.

Other botanic garden collection policies

Cambridge University Botanic Garden’s [Living Collection Strategy](#).

Conservatory and Botanical Garden of Geneva [Management Policy for the Living Collections](#).

Royal Botanic Garden Edinburgh’s Living Collection Policy.

NBG resource

NBG strategy 2026 (2019)

NBG Garden and Plant Collection Management and Development Plan (2017)

Historic sources:

Arthur Bulley	McLean, B., Royal Botanic Gardens, K. and Royal Botanic Garden, E. (1997) <i>A pioneering plantsman: A.K. Bulley and the great plant hunters</i> . London: Stationery Office.
Ken Hulme	Ken Hulme <i>Ness Gardens</i> guidebooks (various dates) <i>Friends of Ness Garden Newsletter</i> . <i>Bulley’s Beginnings to the Present Day</i> (1987)
Hugh McAllister	McAllister, H.A. (2005) <i>The Genus Sorbus</i> . A Botanical Magazine Monograph. London. Kew Publishing. Ashburner, K.B. & McAllister, H.A. (2016) <i>The Genus Betula</i> . (Reprint with corrections) A Botanical Magazine Monograph. London. Kew Publishing.
General	<i>Index Nessensis</i> (1998) Annual report 1994/1995

Royal Horticultural Society

[Gardening in a Changing Climate](#)

IUCN

IUCN. (2012). IUCN Red List Categories and Criteria.

Appendix I: Priority Collection Profiles

TA1 *Rhododendron*

Description	Large collection of hardy <i>Rhododendron</i> , species and cultivars.
Location	Primarily Rhododendron Border & Pinewood, Herbaceous Area, Azalea Walk and Spinney.
History	Forrest and Kingdon Ward both collected <i>Rhododendron</i> spp. when sponsored by Bulley. Rhododendron Border created by first Director (Jimmy Duncan), expansion into Pinewood by Ken Hulme. Significant azalea accession via Denny Pratt.
Principal mode of acquisition	Nurseries, field expeditions, donations.
The collection in numbers	
Number of taxa	529
Number of items cultivated	1301
Proportion wild origin	14%
Representativeness	16%
Threatened taxa	0



Rhododendron mallotum

TA2 *Sorbus*

Description	Significant collection of genus, registered as a National Plant Collection.	
Location	Extensive distribution across garden.	
History	Created by Dr Hugh McAllister as part of taxonomic revision of genus and led to publication of <i>Sorbus</i> monograph.	
Principal mode of acquisition	Field expeditions, Index Seminum, donations.	
The collection in numbers		
Number of taxa	153	
Number of items cultivated	700	
Proportion wild origin	81%	
Representativeness	40%	
Threatened taxa	19	

TA3 *Betula*

Description	Significant collection of genus. Frequently referenced in <i>Betula</i> monograph and registered as a National Plant Collection.	
Location	Extensive distribution across garden.	
History	Created by Dr Hugh McAllister, working on Betulaceae taxonomy in partnership with Kenneth Ashburner. Led to publication of <i>Betula</i> monograph.	
Principal mode of acquisition	Field expeditions, Index Seminum, donations.	
The collection in numbers		
Number of taxa	104	
Number of items cultivated	744	
Proportion wild origin	78%	
Representativeness	63%	
Threatened taxa	3	

Betula bomiensis

TA7 *Primula*

Description	Herbaceous genus associated with Arthur Bulley.	 <i>Primula bulleyana</i>
Location	Primarily Rock Garden. Other locations include Azalea Walk and meadow.	
History	Significant link to NBG heritage and Bulley's sponsorship of George Forrest. <i>Primula bulleyana</i> and <i>P. beesiana</i> named after Bulley and Bees Ltd respectively. Index Nessensis demonstrates depth of collection c.2000.	
Principal mode of acquisition	Previously field expeditions, Index Seminum. Recently nurseries.	
The collection in numbers		
Number of taxa	72	
Number of items cultivated	108	
Proportion wild origin	24%	
Representativeness	7%	
Threatened taxa	0	

TA8 *Malus*

Description	Significant collection of <i>Malus</i> species, including the progenitors of the domesticated apple.	 <i>Malus toringo</i>
Location	Extensively distributed, with a notable concentration in Hollingrave Hey.	
History	Largely built up by Dr Hugh McAllister and research student due to his interest in Rosaceae and drought tolerant species.	
Principal mode of acquisition	Field expeditions, Index Seminum.	
The collection in numbers		
Number of taxa	68	
Number of items cultivated	180	
Proportion wild origin	40%	
Representativeness	60%	
Threatened taxa	0	

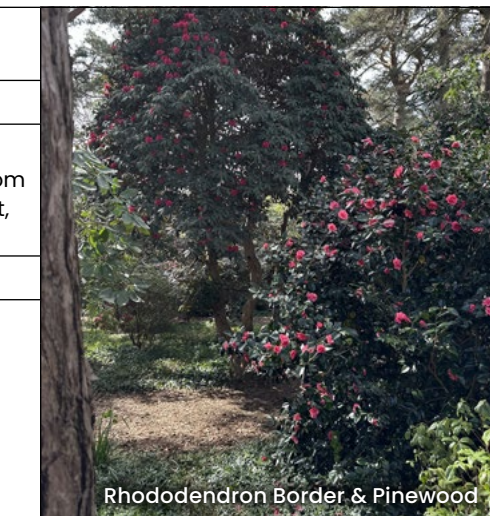
TA9 *Alnus*

Description	Significant collection of genus, registered as a National Plant Collection.	
Location	Extensive distribution across garden.	
History	Created by Dr Hugh McAllister, working on Betulaceae taxonomy in partnership with Kenneth Ashburner.	
Principal mode of acquisition	Field expeditions, Index Seminum, donations.	
The collection in numbers		
Number of taxa	47	 <i>Alnus maximowiczii</i>
Number of items cultivated	240	
Proportion wild origin	88%	
Representativeness (the number of taxa cultivated in the garden as a percentage of the total number of taxa in the group worldwide)	90%	
Threatened taxa	1	

PF12-16 Herbaceous Area

Description	Approximately 3-acre site which includes the Herbaceous Border and Pratt azaleas.	 Herbaceous area
Location	125m northwest of Mickwell House.	
History	Original herbaceous garden described by McLean as one of two main gems created by Bulley. History of current herbaceous border dates to mid C20th. Historic site of Bees Ltd and UoL glasshouses.	
Principal mode of acquisition	Nurseries, field expeditions, <i>index seminum</i> .	
The collection in numbers		
Number of taxa	356	
Number of specimens cultivated	382	
Proportion wild origin	7%	
Threatened taxa	5	

PF21-22 Rhododendron Border & Pinewood

Description	Approximately 2.5-acre woodland and woodland margin planting.	
Location	250m north of Mickwell House.	
History	James Duncan (first NBG Director) started development of the rhododendron border from 1956. Pinewood planted in 1900 as shelter belt, developed by Hulme into woodland garden.	
Principal mode of acquisition	Nurseries, field expeditions, <i>index seminum</i> .	
The collection in numbers		
Number of taxa	331	
Number of specimens cultivated	837	
Proportion wild origin	19%	
Threatened taxa	2	

Rhododendron Border & Pinewood

PF55-59 Rock Garden

Description	One of the largest rock gardens in the UK (1.5 acre) with several elements including a stream garden and meadow.	 Rock Garden
Location	100m southeast of Mickwell House.	
History	Created by Bulley and well-stocked by 1900. Developed by Hope, Hulme and others from mid C20th.	
Principal mode of acquisition	Nurseries, field expeditions, <i>index seminum</i> .	
The feature in numbers		
Number of taxa	438	
Number of specimens cultivated	511	
Proportion wild origin	7%	
Threatened taxa	7	

ST1 Alpines

Description	Small, hardy plants including true alpine flora.
Location	Rock Garden and containers in the Alpine House and associated planters
History	Bulley loved alpine plants, as evidenced by his rock garden and his radio talk ‘The fascination of alpiners’ in 1934. He sponsored famous alpine gardener Farrer, who visited Ness in 1917. Dedicated Alpine House founded 1970, established in current site 2003 and maintained with volunteer support from AGS.
Principal mode of acquisition	Nurseries, field expeditions, <i>index seminum</i> .
The collection in numbers	
Number of specimens cultivated	c. 400
Proportion wild origin	c. 2%



ST3 Bulley’s Garden

Description	Extant elements of Arthur Bulley’s Garden.
Location	Extensive distribution, including planted features Rock Garden, Herbaceous Area, Pinewood and Spinney. Also taxa, e.g. <i>Pieris</i> .
History	From 1898 to 1942 Arthur Bulley developed the landscape at Ness – adding buildings and planted features which were linked by pathways and protected by shelter belts. Modified elements of this landscape remain.
Principal mode of acquisition	Nurseries, field expeditions.
The collection in numbers	TBC



ST4 Himalayas (China)

Description	Collection of taxa originating from Himalayan areas of western China and neighbouring countries.
Location	Extensive distribution across garden.
History	Linked to NBG heritage and Bulley’s sponsorship of plant collectors. Many late twentieth century plantings linked to taxonomic research of Dr Hugh McAllister.
Principal mode of acquisition	Field expeditions, <i>index seminum</i> , donations.
The collection in numbers	TBC



ST11 Native plants

Description	Planted features and taxa featuring native plants.
Location	Extensive distribution across garden, including native hedge (PF39) and wildflower meadow (PF46).
History	Late C20th development of planted features included native plant garden. Public engagement with local native flora (e.g. SSSI lowland heathland) planned.
Principal mode of acquisition	Seed companies, field expeditions.
The collection in numbers	TBC



ST11 Evolution

Description	Planted features and taxa demonstrating the taxonomic and geographic evolution of plants.
Location	Mediterranean Garden, family beds/evolution garden, Herbaceous Area, Pingo plus dispersed elements (e.g. ferns).
History	Late C20th/earlyC21st development of evolution theme in glasshouse and outdoor plantings, including convergent evolution and phytogeography.
Principal mode of acquisition	Nurseries, field expeditions, <i>index seminum</i> .
The collection in numbers	TBC



ST12 People and plants

Description	Planted features and taxa demonstrating the relationships between plants and people.
Location	Extensive distribution, including crop plantings, Potager, poisonous plants trail (pending 2025) and medicinal planting (pending).
History	Mainly late C20th/earlyC21st development including glasshouse economic plantings glasshouse and herb garden.
Principal mode of acquisition	Nurseries, field expeditions, <i>index seminum</i> ,
The collection in numbers	TBC



Appendix II: Component Assessments

Taxonomic collections

The following list is based on a download of the plant database, ranking the top fifty genera by quantity of plants. It is based on pre-audit data – an updated list will be used at review. Several genera below fiftieth place have a significant base value (e.g. *Berberis*).

Code	Genus	Item count	Education	Research	Conservation	Heritage	Aesthetic	Biodiversity	Base Value	Exceptional value	Cost
TA1	<i>Rhododendron</i>	1479	1	0	0	1*	1*	1	4	**	A
TA2	<i>Sorbus</i>	938	1*	1*	1*	1*	1*	1	6	*****	A
TA3	<i>Betula</i>	685	1*	1*	1*	1*	1	1	6	****	A
TA4	<i>Cotoneaster</i>	508	0	1	1*	1	1	1	5	*	A
TA5	<i>Camellia</i>	268	1	1	1	0	1*	5	5	*	A
TA6	<i>Acer</i>	240	1	1	1	0	1*	1	5	*	A
TA7	<i>Primula</i>	172	1	0	0	1*	1*	1	4	**	B
TA8	<i>Malus</i>	147	1	1*	1*	1	1	1	6	**	A
TA9	<i>Alnus</i>	143	1	1*	1*	0	0	1	3	**	A
TA10	<i>Erica</i>	117	0	0	0	1	1	1	3		A
TA11	<i>Galanthus</i>	113	1	0	0	0	1*	1	3	*	A
TA12	<i>Magnolia</i>	108	1	0	0	1	1*	1	4	*	A
TA13	<i>Salix</i>	104	1	1	1	1	0	1	5		A
TA14	<i>Spiraea</i>	103	0	1*	1*	0	1	1	4	*	A
TA15	<i>Rosa</i>	100	0	0	1	1	1	1	4		A
TA16	<i>Prunus</i>	98	0	0	1	0	1	1	3		A
TA17	<i>Helleborus</i>	84	0	0	0	0	1	1	2		A
TA18	<i>Salvia</i>	80	0	0	0	0	1	1	2		B
TA19	<i>Pinus</i>	76	1	1	1	1	1	1	6		A
TA20	<i>Viburnum</i>	75	0	0	0	0	1	1	2		A
TA21	<i>Anemone</i>	73	0	1	0	0	1	1	3		A
TA22	<i>Meconopsis</i>	71	1	0	0	1*	1	1	4	*	B
TA23	<i>Penstemon</i>	66	0	0	0	0	1	1	2		B
TA24	<i>Lilium</i>	65	0	0	0	0	0	0	0		B
TA25	<i>Iris</i>	63	0	0	0	0	1	1	1		A
TA26	<i>Clematis</i>	62	0	0	0	0	1	1	2		A
TA27	<i>Berberis</i>	60	0	1	1	0	1	1	4		A
TA28	<i>Geranium</i>	60	0	0	1	0	1	1	3		A
TA29	<i>Hedera</i>	60	1	1	1	1	1	1	6		A
TA30	<i>Quercus</i>	60	1	0	1	1	1	1	5		A
TA31	<i>Ilex</i>	59	1	0	1	0	1	1	4		A
TA32	<i>Hosta</i>	57	0	0	0	0	1	1	2		A
TA33	<i>Calluna</i>	53	1	0	0	1	1	1	4		A
TA34	<i>Hypericum</i>	53	0	0	1	0	1	1	3		A
TA35	<i>Cornus</i>	50	0	0	0	0	1	1	2		A
TA36	<i>Dryopteris</i>	48	0	0	0	0	1	1	2		A
TA37	<i>Hydrangea</i>	48	0	0	0	0	1	1	2		A

TA38	<i>Borinda</i>	47	0	1*	1	0	1	1	4	*	A
TA39	<i>Euonymus</i>	47	0	0	0	0	1	1	2		A
TA40	<i>Cistus</i>	46	0	0	1	0	1	1	3		A
TA41	<i>Arisaema</i>	45	0	0	0	0	1	1	2		A
TA42	<i>Aster</i>	44	0	0	1	1	1	1	4		A
TA43	<i>Dianthus</i>	44	0	0	0	0	1	1	2		B
TA44	<i>Santolina</i>	43	0	0	0	0	1	1	2		B
TA45	<i>Tricyrtis</i>	43	0	0	0	0	0	0	0		A
TA46	<i>Abies</i>	42	0	0	1	0	1	1	3		A
TA47	<i>Gentiana</i>	42	1	0	0	1*	1	1	4	*	B
TA48	<i>Lonicera</i>	41	0	0	0	0	1	1	2		A
TA49	<i>Pieris</i>	41	0	0	1	1	1	1	4		A
TA50	<i>Saxifraga</i>	41	0	0	0	0	1	1	2		A

Planted features

The following list is based on the planted features described in the NBG Garden and Plant Collection Management and Development Plan (2017).

Code	Component Area	Feature	Education	Research	Conservation	Heritage	Aesthetic	Biodiversity	Base Value	Exceptional value	Cost
PF1	Mickwell & Car Park	Car park beds	0	0	1	0	1	1	3		B
PF2		Visitor centre entrance	1	0	0	0	1	1	3		B
PF3		Mickwell House entrance	1	0	0	0	1	1	3		B
PF4		Laburnum arch area	0	0	0	0	1	1	2		B
PF5	Visitor Centre & North Bank	Rocket composter area	1	0	0	0	0	0	1		A
PF6		Visitor centre roof	1	0	0	0	1	1	3		A
PF7		Garden entrance bed	1*	0	0	1	1	1	4	*	B
PF8		Family beds	1*	1	1	1	1	1	6	*	B
PF10		Crocus lawn	0	0	0	0	1	1	2		A
PF11		North bank	0	0	0	0	1	1	2		B
PF12	Herbaceous Area	Ness Holt bed	0	0	0	0	1	1	2		A
PF13		North area	1	0	0	0	1	1	3		B
PF14		Herbaceous Border	1*	0	0	1*	1*	1	4	***	B
PF15		Bulley Azalea Border	0	0	0	1	1	1	3		B
PF16		Ness Botanische	0	0	0	0	1	1	2		B
PF17	Kitchen Garden	Potager	1	0	0	0	1	1	3		C
PF18		Alpine House	1	0	0	1*	1	1	4	*	C
PF19		Wirral Evolutions beds	0	0	0	0	1	1	2		B
PF20		Orchard	1	0	0	0	1	1	3		A

PF21	Pinewood & Rhododendron Border	Pinewood	1	0	1	1*	1*	1	5	**	B
PF22		Rhododendron Border	1	0	1	1*	1*	1	5	**	B
PF23		Woods End	0	0	1	0	1	1	3		B
PF24	Specimen Area	Miscellaneous Beds	1	0	1	1*	1	1	5	*	B
PF25	Croft & Paddock	Arid House	1	0	0	0	1	1	3		B
PF26		Nursery Areas	0	0	1	0	1	1	3		B
PF27	Heather/ Med Garden	Remnant heather/ conifer area	0	0	0	1	1	1	3		B
PF28		Mediterranean Garden	1*	0	1	1	1	1	5	*	B
PF29		South Area	0	0	1	0	1	1	3		A
PF30		HG3	0	0	1	0	1	1	3		B
PF31		Original Oaks Lawn & Azalea Walk area	0	0	1	1	1	1	4		B
PF32	Oak Lawn & Azalea Walk	Additional Miscellaneous Beds	0	0	1	0	1	1	3		B
PF33		Nursery area	1	1	1	1	1	1	6		A
PF34	Picnic Lawn	Holly collection	1	0	1	1	1	1	5		B
PF35		Tree groupings	1	0	1	1	1	1	5		A
PF36	Spinney	Bamboo groupings	1	1	1	1	1	1	6		A
PF37		Azalea beds	1	0	1	1	1	1	5		B
PF38		General area	1	1	1	1	1	1	6		A
PF39	Hollingrave Hey	Native Hedge	1	0	0	1	1	1	4		A
PF40		Barnyards	1	1	1	1	1	1	6		A
PF41		Nursery Area	1	1	1	1	1	1	6		A
PF42		Nature Trail	1	1	1	1	1	1	6		A
PF43		Copse	1	1	1	1	1	1	6		A
PF44		Orchard	1	1	1	1	1	1	6		A
PF45		Perimeter	1	1	1	1	1	1	6		A
PF46	Meadow & Stott Willow	Meadow	1	0	1	0	1	1	4		B
PF47		Stott Willow	1	1	1	0	1	1	5		A
PF48	Terraces	Friend's Terrace	0	0	1	1	1	1	4		B
PF50		Australasian Bed	1	0	1	0	1	1	4		B
PF51		Mexico Bed	1	0	0	0	1	1	3		B
PF52		West Bank	0	0	1	0	1	1	3		A
PF53		East Bank	0	0	1	0	1	1	3		B
PF54		Lower Terrace	1	0	0	1	1	1	4		B
PF55		General area	1*	0	1	1*	1*	1	3	***	B
PF56	Rock Garden	Wedding Area	0	0	0	0	1*	1	2	*	B
PF57		Tufa Bank	1	0	0	1	1*	1	4	*	B
PF58		Stream	1	0	0	1*	1	1	4	*	B
PF59		Alpine Meadow	1	0	0	1	1	1	4		B
PF60	Little Overdale	Miscellaneous Beds	1	1	1	1	1	1	6		B

PF61	Pingo	Pingo Pond	1	0	1	1	1	1	5		B
PF62		Evolution Garden	1	0	1	0	1	1	4		B
PF63		Miscellaneous Beds	0	0	1	0	1	1	3		B
PF64	Water Garden	Stream & small pond	0	0	0	0	1	1	2		B
PF65		Nature pond & bank	0	0	1	1	1	1	4		B
PF66		Dipping pond	1	0	0	0	1	1	3		A
PF67		Tree groupings	0	0	1	0	1	1	3		A
PF68	Overdale & Heath Hornes	Meadow	0	0	1	0	1	1	3		B
PF69		Eucalyptus grove	0	0	1	0	1	1	3		A
PF70		European Sorbus	1	1	1	1	1	1	6		A
PF71		Miscellaneous Beds	1	1	1	1	1	1	6		A
PF72	Reserve Car Park & Great Dale Hey	Wedding entrance	0	0	0	0	1	1	2		B
PF73		Miscellaneous beds	1	1	1	1	1	1	6		A
PF74	New Fields	N/A	0	0	0	0	0	1	1		A

Specialised themes

Code	Theme	Education	Research	Conservation	Heritage	Aesthetic	Biodiversity	Base Value	Exceptional value	Cost
ST1	Alpines	1*	0	0	1*	1	1	4	**	B/C
ST2	All-year-round interest	1	0	0	1	1*	1	4	*	B
ST3	Bulley's Gardens	1*	1	1	1*	1	1	6	**	B
ST4	China	1	1	1*	1*	1	1	6	**	B
ST5	International Conifer Conservation Project (ICCP)	1	1	1*	0	1	1	5	*	A
ST6	Ness heritage plants	1	0	1	1*	1	1	5	*	B
ST7	Plant collectors	1	1	1	1*	1	1	6	*	B
ST8	Shelter belts	1	0	0	1	1	1	4		A
ST9	Tree Register	1	0	1	1	1	1	5		A
ST10	Native plants	1*	1	1	1	1	1*	6	**	A
ST11	Evolution	1*	1	1*	1	1	1	6	**	B
ST12	People and plants	1*	1*	1	1	1	1	6	**	B

