The Isabella Plantation Access Project
Richmond Park

Landscape and Building Design

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43 Chalton Street
London NW1 1JD
Tel: 020 7383 5784
Fax: 020 7383 4798
london@landuse.co.uk

4 Great George Street
Bristol BS1 5RH
Tel: 0117 929 1997
Fax: 0117 929 1998
bristol@landuse.co.uk

37 Otago Street
Glasgow G12 8JJ
Tel: 0141 334 9595
Fax: 0141 334 7789
glasgow@landuse.co.uk

28 Stafford Street
Edinburgh EH3 7BD
Tel: 0131 202 1616
edinburgh@landuse.co.uk
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1 Introduction

WHAT IS THE PROJECT ABOUT.

1.1 While the Isabella Plantation is an extremely popular destination within Richmond Park, famed particularly for the flowering of its rhododendrons and azaleas in late spring, there are some sections of the community for whom access to and within the Plantation is not so easy.

1.2 Hence the main aim of this project is to bid for Heritage Lottery Funding to allow The Royal Parks to improve some aspects of the Plantation and enable a wider cross section of the community to appreciate its beauty, tranquillity and its variety of plant, animal and insect life.

1.3 In addition the project also aims to achieve greater sustainability in the use of water for irrigation and for toilets and power.

1.4 A key criterion of the project is that any improvements that are made respect the unspoilt nature of the Plantation and potentially improve its environmental interest and diversity.

1.5 The design process has followed a number of steps:

- Surveys to provide information on the nature and condition of the of the Plantation and its infrastructure;
- Consultation with a wide range of organisations and people currently using the Plantation, or potential users, as well as those responsible for working and managing the Plantation;
- Consultation with specialists on matters such as sustainable energy and reed bed treatment of sewage.

1.6 The design proposals draw on this research and consultation to provide the improvements to access, facilities and the environment which are thought to be appropriate for the needs of visitors but still respect and even enhance the qualities of the Plantation.

THE CURRENT SITUATION

1.7 Isabella Plantation was fenced off from the rest of Richmond Park in 1831 by Lord Sidmouth, the Park Deputy Ranger, and planted with oak, sweet chestnut and beech as a timber crop, hence the name Plantation.

1.8 In the 1950’s a woodland garden was created in the western half of the Plantation, largely by George Thomson, the Park Superintendent from 1951-1971, in conjunction with his Head Gardener, Wally Miller. Initially the garden concentrated on rhododendrons and azaleas but more recent additions include; the creation of a central stream and enlarging the Plantation to include Peg’s Pond,(1960’s); a ‘natural stream’ at the northern end of the Plantation;
(1985) a Bog garden (2000) and more recently a white Garden in the north east corner of the woodland garden.

This continual development and enhancement has created a tranquil and varied garden and a haven for wildlife which can be accessed by visitors using a network of paths, some natural desire lines, others more formal paths surfaced with a variety of natural gravels. A sample of the attractions of the Plantation is shown in Fig. 1: Isabella Plantation – Its Assets and Issues.

Visitor facilities include a permanent toilet at the southern end, open spring through to autumn, and a temporary wheelchair accessible portaloo close to Peg’s Pond, and the disabled users car park. The main visitor car park is at Broomfield Hill to the south of the Plantation. This car park contains a small catering kiosk.

While for most people access to and within the Plantation is acceptable, and perhaps appropriate for a largely informal woodland garden, there is potential to improve access around the Plantation, as well as the provision of and access to facilities. Some of the current issues (as illustrated in Fig. 1: Isabella Plantation – Its Assets and Issues) include:

- puddling of the paths in wet weather;
- path surfaces, bridges, pontoons etc which are not easy for people with reduced mobility to access;
- poor toilet facilities for wheelchair users
- signage which is inaccessible to some users and a paucity of directional signs.

In addition to the physical aspect of accessibility, it is felt that more could be accomplished in attracting a wider cross section of the community to the Plantation and providing users with the means to gain a greater understanding of and involvement in the assets found within the Plantation.

Part of this will be achieved by presenting the Plantation’s assets, its plants, birds, water in a way that can be accessed and appreciated by those who have impaired senses; ensuring that paths, benches and tactile signs emphasise the sounds and feel of the Plantation, bird song, water rippling, wind in leaves, the scent and feeling of different shrubs and trees.

The Primary Objectives

Hence the overall objectives of the project are to:

- improve physical access;
- improve infrastructure/facilities;
- protect habitats and sustainability;
- establish an education, volunteering and community engagement programme.

This document concentrates on the design issues that need to be addressed to achieve these objectives.
FIG 1: ISABELLA PLANTATION - ITS ASSETS AND ISSUES

ASSETS

1. Ponds
2. Ducks/birds
3. Streams
4. Stepping stones
5. Bog Garden
6. Tranquility
7. Heather beds
8. Shaded lawns
9. Well defined paths
10. Veteran trees
11. Mature woodland
12. Azaleas
13. Woodland glades

ISSUES

1. Puddles on paths in wet weather
2. Gates difficult for wheelchair access
3. Benches distanced from paths
4. Bridges too narrow
5. Stepping stones, fun but not accessible for everyone
6. Worn pond edge
7. Portaloo is only wheelchair accessible toilet
8. Toilets have steps to gain entry
9. Information - difficult for wheelchair users to read
10. Distance from park entrance and public transport
11. Pontoons can trap wheels of wheelchairs, buggies etc.
12. Pot holes on track to car park for disabled users
13. Health of plants
Qualifications to be aware of:

1.16 Isabella Plantation is set within Richmond Park, which is a Royal Park, a Site of Special Scientific Interest and a National Nature Reserve. Hence any proposals must respect the conditions that these designations impose.

The Improvements

1.17 The proposals can be split into three separate but co-ordinated topics:
   - Buildings and infrastructure (eg. toilets, shelter);
   - Landscape;
   - Community involvement and activities.

1.18 While the latter are not the primary considerations of this report, the design of the improvements has taken note of the activities planned to ensure that the proposed building and landscape work provides appropriate facilities.

Building brief

1.19 The initial brief for the building work was to:
   - provide accessible toilets;
   - to provide a simple covered space for shelter;
   - to provide a site for a catering facility.

1.20 During the various stages of consultation which were undertaken as part of the preparation of this Stage 1 bid, it became clear that the provision of catering facilities within the Plantation was not popular, as it was felt that this would spoil the tranquil and natural character of the Plantation and has since been dropped from the brief.

Key questions to be covered in the buildings design

1.21 Prior to starting the design process a number of questions were put forward for the architects to consider in their designs:
   - What is the overall function of the buildings?
   - What should be the feel or style of the building?
   - What do we want in terms of environmental performance/sustainability?
   - Should there be any catering, and if so, what style of catering should there be?
   - What should be the relationship of building to the site?
   - Should there be any seats/benches/litterbins etc associated with the buildings?
   - What do we do to the existing toilet block?

Landscape brief

1.22 The overall brief for the landscape designers is for:
   - Improved accessibility – surfaces, fittings, information;
   - Protection of the plant collection, maintaining the natural feel of the place;
• Enhancements to the plant collection and biodiversity;
• Improvements to car parking and service access;
• Ensuring that the buildings, modifications and additions fit within the landscape of the Plantation.

**Key questions to be covered in the landscape design**

1.23 What is important about Isabella?
1.24 What should we particularly promote about Isabella?
1.25 What shouldn’t we touch?
1.26 What should we repair?
1.27 How do we enhance accessibility?
1.28 To help provide potential solutions to the questions posed, we have prepared a Master plan (Fig. 2) which provides a broad overview of the Plantation and the principle design suggestions. These design principles are then looked at in more detail to provide information on the solutions put forward to achieve the objectives of improved access for people who might find the current facilities challenging or inaccessible.
Renovate and add disabled access to existing toilet

Main Access

Thomson’s Pond
Improve access
Stepping stones

Improve access Stepping stones

Bog Garden
Improve access

Improve access

Proposed Route
Proposed Route Extension
Proposed Link
Access Improvements to Existing Toilets

New Pedestrian Access

Vegetation Management

New Pedestrian Access

Mess Room
Storage tank for water pumped from Pen Ponds.
Site for Combined Heat and Power Units, and Photovoltaic cells.
Storage and charging of Liberty vehicle

Liberty vehicle
Transport from main car park

Peg’s Pond
Desilt pond, extend
Add reed bed

Improve access
Stepping stones

Strengthen edges
Improve access
Renovate and add disabled access to existing toilet

Still Pond

Thomson’s Lawn
Repair and improve access

Access track to car park resurfaced. Car park resurfaced

Gate
Improve access signage

New toilets to include wheelchair access and simple shelter

FIG 2: OVERALL MASTERPLAN
2 Masterplan

2.1 The Masterplan (Fig. 2) illustrates the key components of the access improvements. These respond to issues arising from site surveys, experience of the Plantation, and from the consultation process with a wide range of users and potentials users of the Plantation. To help focus the design process particular items, concerns and issues felt to need improvement are tabulated below in Table 2.1: Design Issues. These will then be covered in more detail in the following chapters.

2.2 It should be noted that the measures described below are designed not only to improve physical access, but are also aimed at heightening sensory experience, (sight, sound, touch, vision and smell.) Hence paths, benches and leaning posts and signs will be positioned to draw attention to and allow visitors not only to see what the Plantation has to offer but also to:

2.3 Touch tree bark, leaves, buds and flowers;
2.4 Listen to the rippling streams as they cascade over small waterfalls;
2.5 Hear the leaves rustling in the breeze, the call of the wildfowl on the ponds or the song of the birds in the trees;
2.6 Feel the crunch of the gravel path or the softer grass lawns;
2.7 Smell the perfume of flowering plants;
2.8 Experience in any way that you can, the peace and tranquillity that are such an important part of the Isabella Plantation experience.

Table 2.1: Design Issues

<table>
<thead>
<tr>
<th>Component</th>
<th>Current situation/Issues</th>
<th>Design solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approach to car park for disabled users</td>
<td>Rutted and prone to puddling</td>
<td>Resurface with bitumen</td>
</tr>
<tr>
<td>Car park for disabled users</td>
<td>Some ruts.</td>
<td>Resurface with bitumen.</td>
</tr>
<tr>
<td></td>
<td>No formal parking spaces leading to the potential</td>
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<tr>
<td>Component</td>
<td>Current situation/Issues</td>
<td>Design solution</td>
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<tr>
<td></td>
<td>for wheelchair users to be blocked from their cars when users park too close together. Bike racks not integrated into the car park surfacing. While the ‘blue badge’ car park serves those who have ‘blue badges’, or who have obtained permission to use this car park from The Royal Parks, the Plantation can be difficult to reach for those who have no registered disability but nonetheless frail and/or have limited mobility</td>
<td>Provide a ‘Liberty Vehicle’ to transport people from the main car park at Broomfield Hill to the main gate at the south of the Plantation.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Integrate bike racks into surfacing.</td>
</tr>
<tr>
<td></td>
<td></td>
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</tr>
<tr>
<td>Gates</td>
<td>The gate serving the car park for disabled users is not easy to use.</td>
<td>Move the current gate to provide additional access near the existing toilets, and replace with a gate which allows easier access for disabled users, but still deer proofs the Plantation.</td>
</tr>
<tr>
<td>Paths in Plantation</td>
<td>Some paths prone to puddling in winter. Some surfaces are difficult for wheelchair users to move over, some gradients are too severe, and some paths too narrow to allow 2 wheelchairs to pass one another. Tree roots occur at surface</td>
<td>Improve surfacing, gradients and widths of selected paths to provide a choice of accessible routes. Provide a variety of paths in the more populated and formal areas and less in more unpopulated and informal areas of the Plantation.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Build paths up over tree roots.</td>
</tr>
<tr>
<td>Component</td>
<td>Current situation/Issues</td>
<td>Design solution</td>
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<td>----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Edges of some paths</td>
<td>Edges of some paths difficult to distinguish for sight impaired users</td>
<td>Define edges with natural texture changes (grass/shrubs/ground cover)</td>
</tr>
<tr>
<td>Bridges</td>
<td>Some too narrow, entrances to others are not well defined.</td>
<td>Improve selected bridges on accessible routes, widening some, adding handrails and redefining entrances to the bridge deck. Retain the design style of existing bridges.</td>
</tr>
<tr>
<td>Benches</td>
<td>Not always accessible to wheelchair users. May be distant from path surface. Design not always easy to use for more frail and less mobile users.</td>
<td>Particularly on the accessible routes, position benches in ‘alcoves’ off the path, but still with a hard surface to and around the bench to allow wheelchair access. Improve the design, making seats higher to make it easier get out of, add arm supports. Ensure that benches are positioned at points of interest. Uniquely identify benches with numbers/symbols, possibly tactile, to help users locate themselves in the Plantation.</td>
</tr>
<tr>
<td>Leaning posts</td>
<td>Consultation indicated the need for features which could be used by those with stamina or balance issues to rest against without having to sit.</td>
<td>Careful use of natural logs, stumps, trees with some additional green oak posts to provide respite at appropriate positions, particularly along the accessible paths.</td>
</tr>
<tr>
<td>Wayfinding and information</td>
<td>Issues on signage and way finding arising from the consultation included: Information signs at gates difficult to</td>
<td>Design and position signs to provide more accessible information (completed). Provide locational information, using simple designs</td>
</tr>
<tr>
<td>Component</td>
<td>Current situation/Issues</td>
<td>Design solution</td>
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<tr>
<td></td>
<td>access from wheelchairs;</td>
<td>carefully positioned to be unobtrusive but accessible. Make use of 3D symbols and tactile signs to help those with sight issues.</td>
</tr>
<tr>
<td></td>
<td>• Need for clear signs to exits;</td>
<td>Look to incorporate locational information in other furniture, eg leaning posts, benches etc.</td>
</tr>
<tr>
<td></td>
<td>• Tactile signs for direction and information on particular features in the Plantation would help those with sight disabilities.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Signage needs to be present but not to intrude and mar the informal atmosphere of the gardens</td>
<td></td>
</tr>
<tr>
<td>Stepping stones</td>
<td>The stepping stones provide access across streams at Thomson’s Pond and in the Bog Garden, and have proved to be an attractive feature, providing a measure of adventure, which those with mobility issues would like to experience and cannot at the moment.</td>
<td>Design a stepping stone area which has a central section that allows wheelchairs and buggies to cross the stream, with stepping stones on the outside edge to provide the challenge desired by some users.</td>
</tr>
<tr>
<td>Ponds</td>
<td>Recent surveys have shown that the 3 ponds in the Plantation have significant depths of silt. There is potential for increasing the biodiversity of Peg’s Pond in particular by adding reed beds. These could also serve to help treat effluent from new toilets proposed for this area.</td>
<td>Desilt.</td>
</tr>
<tr>
<td></td>
<td>Pontoons providing access to the edge of Peg’s Pond are difficult for wheelchairs to access, wheels becoming caught between boards, and</td>
<td>Increase the size of Peg’s Pond adding reed beds.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Thoroughly investigate the potential for using reed beds to help treat effluent from the proposed toilets, mindful of the need to ensure that the operation will not jeopardise the ecology of the Plantation and of Richmond Park (NNR and SSSI).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Design the pontoon surface to be non-slip but still facilitate safe access for wheelchairs and for those with sticks. Mark edges with raised lips to act as</td>
</tr>
</tbody>
</table>
### Component

<table>
<thead>
<tr>
<th>Current situation/Issues</th>
<th>Design solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>wire mesh designed to provide extra grip potentially providing a trip hazard for those with sticks, and the potential for puncturing wheelchair tyres. The banks and edges of Still Pond are worn.</td>
<td>stops for wheelchairs and markers for white sticks.</td>
</tr>
<tr>
<td></td>
<td>Strengthen and isolate part of the bank with marginal planting.</td>
</tr>
<tr>
<td></td>
<td>Strengthen a section of the bank to facilitate access, ensuring that there is a lip at the edge to provide a stop for wheelchairs and a definite edge for those using white sticks.</td>
</tr>
<tr>
<td><strong>Vegetation</strong></td>
<td></td>
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<tr>
<td>While the vegetation in the Plantation is varied in species and layout, there are areas where the rhododendrons are suffering from sooty mould, brought on partly by still damp conditions. In addition there is a need to provide more grassy areas suitable for family groups and picnics, to relieve visitor pressure on features such as Thomson’s Lawn.</td>
<td>Cut back selected areas of shrubs to improve air flow, and to create additional glades. Manage existing shrubs to retain or create views from vantage points, benches etc. Allow selected shrubs/trees to grow close to the paths to allow visitors to touch and smell plants.</td>
</tr>
<tr>
<td><strong>Buildings</strong></td>
<td></td>
</tr>
<tr>
<td>The existing toilets at the southern end of the Plantation are not open during winter, have no power, and are relatively hidden from the path and overshadowed by trees and tall shrubs.</td>
<td>Look at bringing in power to allow all year opening. Provide easier access from the nearby paths. Increase natural light into the building by increasing the size/number of windows.</td>
</tr>
<tr>
<td>Component</td>
<td>Current situation/Issues</td>
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</tr>
<tr>
<td>Effluent storage in a sealed cess pit</td>
<td>Effluent is stored in a sealed cess pit which is emptied on a regular basis. There is no access for wheelchair users.</td>
</tr>
<tr>
<td>New toilets and shelter</td>
<td>The only wheelchair accessible toilet in the Plantation is a portable example close to Peg’s Pond. There is no shelter in the Plantation, which was raised at consultation as an issue for users less able to dodge showers and shelter under trees etc. There is also no obvious and defined meeting point for groups to congregate at prior to events/walks meeting etc.</td>
</tr>
<tr>
<td>Power</td>
<td>Power is led to the mess rooms, but not into the gardens, but this is limited in terms of power capacity and only provides for a gas fridge and low levels of lighting with the use of kettles precluded.</td>
</tr>
<tr>
<td>Component</td>
<td>Current situation/Issues</td>
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<tr>
<td>Heat</td>
<td>There is no heating in the existing toilet; hence the facility is closed in the winter to avoid frozen pipes.</td>
</tr>
<tr>
<td>Irrigation</td>
<td>The Plantation’s existing irrigation system is mains reliant, and unsustainable</td>
</tr>
<tr>
<td>Grey water</td>
<td>Toilets all flushed with mains water</td>
</tr>
<tr>
<td>Component</td>
<td>Current situation/Issues</td>
</tr>
<tr>
<td>-------------------</td>
<td>------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Effluent treatment</td>
<td>Effluent from existing toilets stored in sealed cess pits and emptied periodically.</td>
</tr>
</tbody>
</table>
3 Landscape

3.1 While the level of detail at Stage 1 of this bid for HLF funding is at sketch design stage, the main design intentions for the landscape and components within the Plantation are clear, and are illustrated in Fig.s 3 and 4 with further explanation, where necessary, given below.

Car park for disabled users

3.2 The surface of the approach road to and the car park itself are currently natural gravels, and are rutted and prone to puddles in wet weather.

3.3 In addition the lack of formal spaces can lead to problems at times of heavy use with wheelchair users not being left enough space to access their cars.

3.4 Bike racks are available but these are currently positioned in what was grass but which has now been worn to mud.

3.5 Suggested improvements are:

- Surface the approach road and car park with bitumen to reduce the occurrence of rutting and puddles. Use a surface finish to match other road and car park finishes in the Park.
- Delineate parking places, providing sufficient space for wheelchair users to access their cars. Provide space for minibus etc to drop off passengers.
- Incorporate space cycle racks within the surfaced area.
- Use Park produced timber bollards around the edge of the car park to deter people from parking outside the designated spaces.

3.6 The upgraded car park will take approximately the same footprint as the existing informal car park and hence not increase the intrusion into the Park.

Liberty Vehicle

3.7 While this car park does cater for those who qualify for a ‘Blue Badge’, and provides easy access to the Plantation for those users, it does not cater for users who might be frail, have limited mobility, but do not qualify for the right to use the car park.

3.8 These users would have to use the main car park at Broomfield Hill, which is a significant distance up a steep hill from the main gate and from a number of the ‘attractions’ in the Plantation.

3.9 Users in large groups or with large and young families who have picnic equipment are also faced with the same difficulty.

3.10 The proposal is to provide a battery powered Liberty vehicle running between the main car park and the main gate. This may be operated by volunteers, and stored and charged at the mess rooms.
FIG 3: IMPROVING ACCESS - 1

**BRIDGES**

Above: Proposed widened bridge design

Below: Existing bridges are unprotected and too narrow for some users to cross comfortably

**PATHS**

Minimise steep gradients on proposed routes.

On proposed routes allow sufficient space for wheelchair users to approach and pass others in the opposite direction. (1800mm)

The cross fall of a path should not exceed 1:40.

Exposed aggregates should be in the range of 5-10mm diameter.

Edge of paths defined by change in surface. Metal edging used where needed to provide structural stability

**Examples of natural gravel surfaces:**

- a) Cedec
- b) Breedon gravel
- c) Slatepath
- d) Coxwell gravel

**PEDESTRIAN GATE**

Above: Existing gate is heavy and difficult for a wheelchair user to open

Below left: Existing gate at Petersham entrance to Richmond Park.

Below right: Kissing gate

**CAR PARK**

Below right: Existing car park at Petersham entrance to Richmond Park.

Below left: Existing gates at Petersham entrance to Richmond Park.

Examples of natural gravel surfaces:

- a) Cedec
- b) Breedon gravel
- c) Slatepath
- d) Coxwell gravel

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**LEANING POSTS**

Potential for navigational element built into posts.

Oak posts of varying heights to allow informal leaning and sitting.

Options for timber sitting posts.

**WAY FINDING**

Potential for carved details produced by artist.

Navigational element to posts.

**BENACHES**

Room should be allowed for wheelchair users to rest next to seat.

Most should be approached by a well constructed path.

Seating should be located close to features of interest e.g. ponds.

**STEPPING STONES**

Crossing point 1 - new accessible bridge crossing with stepping stones alongside.

Crossing point 1 - stepping stones, a challenge for some users, but impossible for others.

Accessible bridge crossing with stepping stones.

Crossing points 3 & 4 - wheelchair accessible stepping stone crossings with timber stepping posts either side.

Crossing point 2 - new accessible bridge crossing with stepping stones either side.

Crossing point 3 - wheelchair accessible stepping stone crossing with timber stepping posts either side.

Crossing point 4 - wheelchair accessible stepping stone crossing with timber stepping posts either side.

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Potential for navigational element built into posts.

Oak posts of varying heights to allow informal leaning and sitting.

Options for timber sitting posts.

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Crossing point 2 - new accessible bridge crossing with stepping stones either side.

Crossing point 3 - wheelchair accessible stepping stone crossing with timber stepping posts either side.

Crossing point 4 - wheelchair accessible stepping stone crossing with timber stepping posts either side.

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Potential for carved details produced by artist.

Navigational element to posts.

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Crossing point 1 - stepping stones, a challenge for some users, but impossible for others.

Accessible bridge crossing with stepping stones.

Crossing points 3 & 4 - wheelchair accessible stepping stone crossings with timber stepping posts either side.

Crossing point 2 - new accessible bridge crossing with stepping stones either side.

Crossing point 3 - wheelchair accessible stepping stone crossing with timber stepping posts either side.

Crossing point 4 - wheelchair accessible stepping stone crossing with timber stepping posts either side.

**WAY FINDING**

Potential for carved details produced by artist.

Navigational element to posts.

**BENACHES**

Room should be allowed for wheelchair users to rest next to seat.

Most should be approached by a well constructed path.

Seating should be located close to features of interest e.g. ponds.

**STEPPING STONES**

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**WAY FINDING**

Potential for carved details produced by artist.

Navigational element to posts.
**Entrance gate**

3.11 While sound, the current gate providing entrance to the Plantation from the ‘Blue badge’ car park cannot easily be operated by those in wheelchairs or with poor mobility.

3.12 While allowing easy access, the gate has to keep deer, and rabbits, out of the Plantation.

3.13 The proposals are:
- To remove the current gate and use it to provide additional access to the Plantation at its southwest corner, close to the existing toilet.
- Replace it with a new gate, probably based on a ‘kissing gate’ design, to allow easier access for wheelchairs but to still keep deer and rabbits out.

**Paths in the Plantation**

3.14 Paths within the Plantation range from heavily used, gravel topped paths to informal desire lines lightly used by those familiar with the Plantation and seeking the quiet and tranquil areas. Formal surfaces include:
- Hoggin around Peg’s Pond;
- Breedon Gravel on paths leading from Peg’s pond through the Heather Garden and towards the Bog Garden;
- Coxwell gravel leading from the Bog Garden to and around the edge of Thomson’s Lawn;
- Desire lines topped with loose sand and gravel on major paths from the main entrance to the three ponds.

3.15 Issues with these paths include:
- Surfaces not smooth or hard enough for easy wheelchair access;
- Tree roots protruding through surfaces, and potentially causing harm to the tree, and causing obstructions for users;
- Puddles in wet weather arising from uneven path surfaces;
- Steep or uneven gradients;
- Some edges undefined and difficult for poorly sighted users to pick up;
- Not wide enough to allow wheel chairs in travelling in opposite directions to pass one another.

3.16 The summary of the proposals is to improve some of the paths to provide better access, using a natural self binding gravel for surfacing, to provide a choice of routes which are more accessible to users than the current paths. The routes are shown in Fig. 2: Master plan and are:
- **Proposed Route**, from Peg’s Pond, through the Heather Garden past the Bog Garden, to and around the east side of Thomson’s Pond and Lawn, through the Acer Glade, past the Bluebell Walk and to Wilsons Glade (where there will be a spur providing access to
3.17 The work which will provide improved access will be to:

- construct new paths along the line of existing paths where gradients, width and surfaces are not suitable for easy access, providing a solid base and sound surface, cambered to aid drainage and with edges defined;
- resurface existing paths where the current structure is sound;
- build up paths over tree roots, using metal edging to hold the path structure together but feathering into local ground levels.

3.18 Of the current surfaces used already in the Plantation, the most suitable for wheel chair access seems to be the Breedon Gravel, which produces a slightly firmer surface than Coxwell Gravel. However tests need to be carried out in the Plantation to check whether the alkaline nature of the gravel (a limestone derivative) will be harmful to the acid nature of the Plantation and surrounding Richmond Park, which is designated as an SSSI partly for its acid grassland. It is likely that Coxwell Gravel will be used if Breedon Gravel proves to be unsuitable.

3.19 Although structurally good, the high stone content of Hoggin produces a rough and bumpy surface which was not popular with wheelchair users.

3.20 A principle aim of the work on the paths will be to provide a suitable structure and surface to allow easy access, but to ensure that the finished paths appear to be as natural as possible.

3.21 With re-constructed paths, straight lines will be avoided and detailed position of the paths will be carried out to ensure that there is easy access to interesting features, trees, plants etc.

### Bridges

3.22 There are two grades of bridge in the Plantation:

- larger bridges, some with handrails and tending to be over the larger water courses eg around Peg’s Pond;
• more informal bridges over small streams and often composed of two wide planks with no handrails.

3.23 Issues picked up from the consultation included:
• Steep gradients onto bridges with little to prevent wheelchairs falling off;
• Wire mesh non-slip surfaces potentially puncturing wheelchair tyres, and causing a trip hazard for stick users;
• Lack of handrails for those with limited balance and mobility;
• Poorly defined entrances onto the bridges;
• Smaller bridges are too narrow for wheelchair access.

3.24 The proposals are to:
• Construct new wooden (sustainable sources) bridges at key crossing points on the proposed routes, e.g. at the southern end of Peg’s Pond, and where the Extended Route rejoins the Proposed Route over the Main Stream, designed to overcome the issues above;
• Modify some of the informal bridges on key routes by adding a third plank to widen them as well as low rails on either side to provide guidance, hence maintaining their character but making them more accessible.

3.25 Benches

There are a number of benches in the Plantation, of varying style, condition and location, from simple trimmed tree trunks to relatively ornate, dedicated examples.

3.26 Issues to be addressed include:
• Some benches are located in grass areas and hence difficult to access for wheelchair users those with limited mobility. The grass also tends to wear around popular benches creating an unsightly and unpleasant mud patch in wet weather;
• The design of others is not easy to use for those with reduced mobility or strength.

3.27 The proposals are based on the following:
• Benches need to be designed with high seats and armrests to allow frailer users to sit and rise from them. It is proposed to use an adapted form of the Park produced ‘Cathcart’ bench already used in the Plantation and which has a simple relatively informal design in keeping with the nature of the Plantation;
• The positioning of benches, and other seating, needs to be such that the gaps between suitable seating is not too great;
• However the positioning of benches needs to be such that views along the paths in the Plantation do not reveal rows of benches as in a sea side promenade;
• Benches also need to be positioned at points of interest.
Leaning posts

3.28 The concept of leaning posts arose out of consultation, their function being to provide unobtrusive support for those with problems of balance (e.g. stroke victims) at regular and relatively short intervals. While not providing the full resting facility that a bench would, the leaning posts are far less obtrusive and require less space than benches. In addition use of natural features such as tree trunks, stumps etc can provide the function of the leaning post while still being part of the natural landscape.

3.29 Where manufactured leaning posts are used these will:
- Be made of green oak;
- Will also incorporate way marking signs;
- Will be located at points of interest and off the edge of the path but still be surrounded by the path surfacing.

Wayfinding and information

Information

3.30 Information on the Plantation and its contents is important to make visitors aware of what can be expected, both in terms of facilities and the attractions of the site. This information needs to be in a form or forms accessible to all potential users.

3.31 The consultation process stressed the importance of providing this information in a variety of formats that could be used prior to visiting the Plantation to help plan visits, as well as within the Plantation. The former is discussed as a component of the activities and education section of this bid.

3.32 Within the Plantation the main information signs are positioned close to the entrance gates. Issues raised during the consultation included:
- Board too high for wheelchair access, should preferably mounted lower down and at an angle;
- Readability of text could be improved.

3.33 New improved signs have been produced and will be put in place in the near future.

3.34 As part of this bid, we are suggesting that the sign board at the Peg’s Pond entrance at the northern end of the Plantation is located under shelter. This will allow visitors to read the information in comfort in times of poor weather, but also allow leaflets to be available from holders on the signboard to provide additional or seasonal information which was not present on the main board.

3.35 As an example, this could include information on the accessibility of the various paths in the Plantation to allow users to plan their visit according to their needs.

Way marking

3.36 Once in the grounds of Plantation information is required to:
• Allow visitors to locate themselves within the Park, both as a means of navigating around the site and to be able to accurately guide aid workers to visitors in need;
• Indicate the exits, a particular requirement for those with less confidence in their ability to navigate in a woodland setting;
• Indicate the routes of the improved paths;
• To draw attention to features of interest, particularly for those with poor sight.

3.37 The need for such signage needs to be balanced against the requirement to maintain the informal nature of the Plantation, and hence signs need to be present and available if required but not obtrusive.

3.38 The proposals include:
• Using simple green oak posts with colours and/or 3D symbols (eg a maple leaf in the Acer Glade) to indicate the accessible routes and places of interest;
• Making use of the other furniture, eg benches, leaning posts, to provide location information, eg signs/symbols on these to help reduce the number of additional signs needed;
• Designing 3D symbols that could tie into tactile maps for those with sight disabilities.

Stepping stones

3.39 There are three sets of stepping stones in the Plantation:
• One the north end of Thomson’s Pond;
• Two in the Bog Garden.

3.40 The stepping stones have proved to be an attractive feature, providing a measure of adventure, which those with mobility issues would like to experience and cannot at the moment.

3.41 In addition, the set at Thomson’s Pond potentially form part of the short Link on the routes proposed as part of the accessible route network, and hence would need to be equally accessible.

3.42 The proposals are to improve access across the streams where stepping stones are positioned, but still retain the sense of adventure, and are based on providing a solid, wheelchair and buggy accessible section in between or alongside the traditional stepping stones.

3.43 The nature of the solid section will be determined at detailed design stage. Ideas include:
• Wooden bridge;
• Fused stepping stones;
• Hard surface with runnels to allow water to flow through.

3.44 Care will be taken in the choice of materials to ensure that the design conforms with the informal nature of the Plantation.
Ponds

3.45 The Plantation has three ponds, each with their own individual character and all regarded as major attractions by visitors:

- **Still pond**, a small, very sheltered pond flanked by azaleas which provides magnificent reflections in the calm water during flowering period;
- **Thomson's Pond**, a larger pond on the western edge of Thomson’s Lawn, partially edged with a variety of aquatic and marginal plants, and partially covered with water lilies;
- **Peg’s Pond**, at the northern end of the Plantation, the largest of the three and home to a variety of wildfowl.

3.46 Current issues and scope for improvement include:

- Substantial depths of silt in all three ponds;
- Damage to banks;
- Potential for improving the biodiversity of Peg’s Pond.

3.47 Within this project the proposals are to:

- Improve the banks of Still Pond with planting on one bank and improved and more accessible viewing on the other;
- Enlarge Peg’s Pond to accommodate reed beds (see **Fig. 5 Sketch Landscape Proposals**, including one to treat effluent from the new toilets.

3.48 The proposals for Peg’s Pond are based on providing additional habitat to the Plantation, hence increasing biodiversity and at the same time adding to the visitor experience to be gained from the Plantation. We plan to achieve this by:

- Carrying out some enough desilting to improve the habitat;
- Partially re-routing part of the existing path network to cater for the enlarged pond surface;
- Covering areas of this path with boards to provide a ‘board walk’ path through the reeds;
- Removing existing pontoons, and providing a new one more suitable for wheelchair access (ie closer boards, edge rim);
- Repairing the edges where necessary; improve Wally’s Island by adding reed beds;
- Adding reeds to the edge of the pond as shown in Fig. 5 and excavating a reed bed to the west of the path, and a separate one to treat effluent, providing this procedure can remove sufficient solids and nutrients from this effluent for acceptable discharge into the sensitive environment of the Plantation and Park.

3.49 Fig. 5 also illustrates the proposed location of the new toilet and shelter block, as described in Chapter 4 Buildings.
Extended pond and reeds beds close to the entrance. Toilet/shelter separated from pond and shielded by shrub planting high enough to provide a partial visual shield but not high enough to cut out light.

The reed beds would provide increased biodiversity, visual interest appropriate could be used in the treatment of outfall from the toilets.

Where the paths pass through the reed beds, they would be constructed as causeways with the reed beds excavated either side of them.
Vegetation management

3.50 The vegetation within the Plantation is varied, both in composition and layout and as such is very important in providing interest for visitors and habitats for wildlife.

3.51 While the most recognised plants are the rhododendrons and azaleas which provide a spectacular display of colour in April/May, the Plantation has an increasing variety of plants to provide all year interest.

3.52 The issues covered within this proposal are:

- Occurrences of sooty mould;
- Plants growing over paths;
- Plants blocking view points;
- Potential for increasing the number of lawn areas.

3.53 The prevalence of Sooty mould is thought to be exacerbated by still damp conditions, commonly found in the plantation where *Rhododendron ponticum* in particular have become overgrown. Such areas will be cut back to allow greater movement of air, open up vistas and allow greater room around paths.

3.54 In doing so, care will be taken to ensure that in some areas, plants do grow close to paths, particularly the accessible routes, to allow visitors to touch and feel bark, leaves and flowers.

3.55 Around benches and other viewing points, shrubs will be pruned, both to rejuvenate them but also to provide longer vistas and views, of streams for example.

3.56 Visitors like the open lawn areas, Thomson’s Lawn for example, as places to sit, picnic and generally relax. This places a heavy burden on these areas and erosion occurs, particularly on entrance points. The proposals include:

- Cutting back some area of rhododendron, particularly the vigorous and invasive *Rhododendron ponticum* to provide more glades and lawn areas, possibly closer to the existing toilets to provide easier access for families with young children;
- Repair the erosion damage to Thomson’s Lawn.

3.57 In addition access along paths and on bridge approaches could be improved for those with impaired sight by using plants to help define path edges, bridge approaches, stream banks etc.
4 Buildings

New toilet and shelter

4.2 The proposed new building (see Fig. 6: New Toilet and Shelter) will accommodate toilets for users of the Plantation. Overhanging roofs and open shelters will protect visitors waiting to be collected from the car park and provide a meeting point, location for information and some seating.

4.3 These uses have been combined into a single building in order to minimise the overall impact on the Plantation. The building is placed close to the entrance from the car park for blue badge holders in order to be convenient for car park users and also to simplify servicing requirements.

4.4 It is to be set within the planting at the edge of the Plantation, the screening from which will be supplemented with additional planting with species suitable for the area.

4.5 In view of the sensitivity of the setting, it is considered important that the building should be unobtrusive, using natural materials in order to blend in with woodland setting, should be no bigger than necessary and should be elegantly and simply detailed but without attention-seeking architectural flourishes.

4.6 The internal layout is simple, but flexible. There is a single entrance to allow good natural supervision, limited male and female toilets, a wheelchair WC with RADAR lock and a second compartment also laid out as wheelchair WC accessible to users without RADAR keys and also providing a unisex babychanging facility.

4.7 The second WC is to be the opposite hand to the first in order to accommodate a wider range of users.

4.8 The basic structure is to be of concrete blockwork on a concrete raft, which will minimise disturbance to tree roots and be resistant to damage from leaking pipework. Both types of concrete will utilise recycled aggregate.

4.9 The structure will be clad externally in green oak cladding over lambswool insulation. The roof structures and overhangs will also be of green oak, finished with oak shakes. The green oak will ideally be sourced from within the park.

4.10 High level windows in the gable wall will provide good light and ventilation to the main toilet areas.

4.11 Grey water storage can be accommodated within the roof pitch.

4.12 Taps will be supplied from a nearby mains source.

4.13 As mentioned above, effluent will be treated via a septic tank/reed bed system. If after further investigation, this proves to be unsuitable, a cess pit system will be used.
FIG 6: NEW TOILETS AND SHELTER

PROPOSED NEW WCS AT ISABELLA PLANTATION

Reinforced concrete raft foundation. Concrete screed on 100mm Celotex type insulation internally. Non slip quarry tiles and coved skirtings to interior.

Walls generally of blockwork using blocks with recycled aggregate. Fairfaced internally. 100mm thick generally, 150mm to external walls. Green oak cladding to external face of external walls, say 200x25 vertical boards on 100mm layer wood fibre insulation, with 50x25 cover strips over joints to accommodate shrinkage.

Green oak columns and eave beams to support overhanging roofs and shelter.

Treble glazed windows.

Timber doors and frames.

Oak shake roof on green oak roof structure. Lambswool insulation between rafters. Finished on underside with green oak boarding.

York stone paving to shelter and below overhanging roofs.

Oak seats in recesses and to shelter.

Signboard/ information board to shelter.

White sanitary fittings and Doc M packs. Recessed baby change unit. Towel dispensers and bins. Waterless urinals. Taps and internal lights to have automatic controls. Cleaners sink in store. Cubicle system to WCs.

Power supplied from LPG Micro CHP (combined heat and power) power source and batteries, augmented in summer with remote photovoltaic cells, located in the Plantation nursery and mess room area.

Drainage to cesspit (subject to further review)

Mechanical ventilation system for use when heating is in

GREY WATER SCHEME

The grey water scheme would be fed by gravity from a storage tank at the Plantation mess rooms. A mains supply would provide potable water.

GREY WATER / DRAINAGE SCHEMATIC
Existing toilet

4.14 Issues with the existing toilet (see Fig. 7: Existing Toilets) are:

- Lack of power to keep pipes warm enough to allow all year uses.
- Difficult to find;
- Forbiddingly dark, making visitors reluctant to use the facilities.

4.15 Improvements proposed as part of this project are designed to make the toilets more accessible to all users and providing wheel chair accessible facilities at both ends of the Plantation, and are as follows:

- Extend to provide a wheel chair accessible compartment;
- Access to the existing male and female sections will be reversed so that they are approached from the nearby accessible route;
- Additional windows will be added to provide improved natural lighting;
- The existing sections will be refurbished;
- Power will be provided to allow for year round operation;
- The path layout around the building will be modified to provide a shorter route to and from the nearby accessible route;
- Shrubs currently shading the toilets will be pruned to a lower level, still providing some screening but allowing more light into the building and making them less off-putting to use.

4.16 The finished building will be similar in style to the existing one to avoid a full scale demolition.

4.17 Effluent will still be collected and disposed of using the current cess pit system.

4.18 Initially at least the water supply will be via the current mains provision.
UPGRADING THE EXISTING TOILETS

These would be renovated and an extra cubicle with wheelchair access added. The existing entrances would be turned around to face the Plantation, albeit shielded from the nearby path, to provide improved access to the men's and women's cubicles. The interior would be refitted and upgraded, and additional windows installed for improved light and ventilation.

Existing situation

Prune shrubs to increase light
Realign paths and access.

Upgraded

Existing situation, current access

Existing situation, proposed access

Sketch of added wheelchair accessible unit
5 Sustainability

5.1 There are a number of elements that could be considered as part of an assessment of the sustainability of the measures proposed to improve accessibility within the Plantation. Those covered in this report on the design elements of the project are:

- Power;
- Heat;
- Irrigation;
- Grey water;
- Effluent treatment.

Power

5.2 There is a low capacity mains power supply to the mess rooms where the team maintaining the Plantation are based, in the private section of the Plantation to the east of the gardens. This is used to power lights and a gas fridge in the mess rooms and is at capacity.

5.3 There is no power to the gardens themselves. This means that there is no heating in the existing toilets, and hence the pipes are drained and the facility closed during the winter to prevent burst pipes.

5.4 The project proposes to open these and the new toilets all year around, and hence power is needed. This need only be low capacity to provide for:

- Maintaining the ambient temperature above freezing;
- Providing warm water;
- Low power lighting operated on motion/light sensor so that the lights are only activated when needed.

5.5 In addition the increased use of water from Pen Ponds for irrigation (see below) will require additional power at the mess rooms.

5.6 Power will also be required to charge the batteries of Liberty vehicles used to improve access from the main car park to the main gate of the Plantation (see para 3.6 above).

5.7 Improving the connection to the mains service was considered, but is costly and less sustainable than other potential sources of power.

5.8 Research into the options for providing this power in a sustainable manner suggested that it was not feasible to use a carbon neutral source. The suggested solution is rated at low carbon and consists of a combined system of Combined Heat and Power Units (CHP) and photovoltaic (PV) cells.

5.9 The CHP units are fuelled by LPG and are essentially used to generate power, in doing so they also generate heat,
which is captured and used where required. Hence in winter when there is greater demand for power (lights etc), heat would also be supplied and used.

5.10 In summer when power is also required, less, if any, heat would be required and hence would need to be dispersed.

5.11 However in summer with abundant light, the PV cells are at their most efficient and would be able to generate power, stored in batteries, to provide for the needs the mess room, irrigation and for the toilets.

5.12 The PV units would be erected in the nursery, away from the public areas of the gardens, and the CHP units based in the mess area for easy access to LPG tanks and maintenance.

5.13 The carbon rating could potentially reduce if or when sustainable sources of LPG become available.

Heat

5.14 Currently the only source of heat in the Plantation is an LPG fuelled boiler providing heat and hot water to the mess rooms.

5.15 With the proposals for operating both the existing and the new toilets all year round, heating will also need to supplied for these to provide an ambient temperature above freezing, and to provide warm water for visitors’ use.

5.16 As described above it is proposed to use CHP units in the mess room to supply power, with heat as a by product.

This combination is more efficient and contributes less carbon dioxide to the atmosphere than the current boiler.

5.17 Heating at the toilets would be supplied from the electrical power created by the CHPs at the mess rooms in winter, and if needed in summer, from the PVs in the nursery.

5.18 While leading power from the mess rooms to the toilets will require cabling, and result in some energy loss over the length the cable, it provides a solution which is easier to manage than separate CHP’s at each toilet, and does not require gas and battery storage in the public toilets.

Irrigation

5.19 There is a comprehensive irrigation system within the Plantation, serving the nursery to the east of the gardens, and the gardens themselves.

5.20 The current gardens irrigation system is mains reliant and unsustainable.

5.21 The streams are supplied with water pumped up to the Plantation from Pen Ponds and it is intended that the irrigation system is supplied in the same manner.

5.22 The proposal is to eliminate the reliance on mains water by increasing the use of water from Pen Ponds.

5.23 This will be achieved by building a holding tank close to the mess rooms and keeping this permanently topped up from the Pen Ponds supply.
5.24 Water from here would then be used for irrigation and to feed the streams, with the water eventually finding its way back to Pen Ponds.

5.25 As the tank would be at a height above most of the gardens, there would probably be a reduced need to pump water through the irrigation system.

5.26 Any pumping that is required would be provided from the CHP/PV system at the mess rooms.

**Grey water**

5.27 The existing toilets are flushed using mains water.

5.28 The proposal is to continue to do so rather than use grey water, as this would consume power to pump water from the mess room tank.

5.29 However the new toilets are some 10m below the level of the proposed storage tank for Pen Ponds water at the mess rooms, and hence a tank in the roof of the new toilets could be filled by gravity from this storage tank.

5.30 Mains water would still be needed for hand washing, this to be supplied from a mains pipe close to Peg’s Pond.

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**Effluent treatment**

5.31 Effluent from the existing toilet is stored in a sealed cess pit, emptied on a regular basis, and it is probable that this procedure will continue after the toilets are improved.

5.32 However with the new toilets the proposal is to fully explore the possibility of using combined septic tank and reed bed system for treating effluent.

5.33 Initial studies show that it is possible, but further research needs to be carried out to ensure that any discharge from the system, whatever the level of use of the toilets, is suitably cleaned to avoid contamination of the Plantation and surrounding parkland.

5.34 If the system is not suitable, effluent would be stored in a cess pit and regularly emptied, as per the existing toilet.

5.35 Connection to the mains has been considered, but felt to be too expensive and the installation of the main across the parkland would be too disruptive.