Greenwich Peninsula
Land Management Plan on
Behalf of English Partnerships

Section B
Component Area Management Plan
3. Central Park & Millennium Village Green

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EXECUTIVE SUMMARY

Some 119.6 hectares of the Greenwich Peninsula in East London have been subject to regeneration measures. The regenerated landscape includes notable areas of green space, which require management. Responsibility for land management for these areas lies with an organisation called the Greenwich Peninsula Trust.

A Land Management Plan has been prepared in relation to this land holding and is in two sections. Section A covers the land holding in general and provides detail on those elements which are best considered at the peninsula-wide scale. Section B comprises a series of five component area plans relating to identifiable management units within the overall holding.

This document is the first 20-year Component Area Management Plan for the following sub areas of recently created Green Space on the Greenwich Peninsula in London:

- Central Park, including relevant sections of East Parkside and West Parkside Roads.
- Millennium Village Green, including the relevant section of West Parkside Road.

The above areas form a part of the redeveloped Greenwich Peninsula, for which all Green Space shall be managed holistically, to ensure that standards of management are consistent, high and in keeping with the carefully developed design intentions for landscape, ecology, transport and other aspects of human amenity. This component document should be read in conjunction with Section A.

The use of large numbers of trees at the larger end of stock held by nurseries; and high quality turf has produced a landscape that in the year 2000 is already clearly a wooded parkland. Further management is intended to remove the current regularity of planted pattern and develop a parkland in the best traditions of established amenity parklands in the capital.

PART 1 - DESCRIPTION

1.1 GENERAL INFORMATION

Location

The centres of the areas are located at the following Grid References:

- Central Park TQ395795
- Millennium Village Green TQ400791

These locations within the Peninsula are shown in Figure 1.1.

Land Tenure

Details can be found in 'Section A of the Greenwich Peninsula Management Plan'.

Management Infrastructure

Details can be found in 'Section A of the Greenwich Peninsula Management Plan'.

Map Coverage

See Appendix 1 for list of as-built plans that cover this area. Details of where these are located within the Management Library can be found in 'Section A of the Greenwich Peninsula Management Plan'.

Document and Photographic Library

See the relevant reference section in 'Section A of the Greenwich Peninsula Management Plan' for documents which relate to this area.

The library locations of further photographic, diagrammatic and other relevant archive information are as follows *(To be filled out as required).*

Management Compartments

These are two geographically separate areas within the peninsula, Central Park in the middle of the area and Millennium Village Green to the west of the Village Marsh. As regards management, both may largely be considered together. The exception being management of grasslands, where maintenance regimes should reflect the varying requirements of amenity grassland and wildflower grassland. In broad terms the management compartments within Central Park and Millennium Village Green include:

- Amenity woodland and individual parkland and street trees;
- Ornamental ground cover and shrub planting;
- Shelter belt planting;
- Amenity grassland; and
- Dry and wet wildflower grasslands.

1.2 Environmental Information

Physical

Climate

Details can be found in 'Section A of the Greenwich Peninsula Management Plan'. Micro-climatically, the area is likely to change with both the maturation of the habitat and construction of surrounding built form.

Geology, Geomorphology and Hydrology.

Details of remediation works can be found in 'Section A of the Greenwich Peninsula Management Plan'.

Soils.

All soils and substrates have been imported or manufactured on site. A typical set of results for the topsoil and subsoil that were used through out the site and specialist tree trench soil can be found in Appendix 2. This information is included to be an initial guide to the general soil properties that can be found on the sites. The specifications that apply to the Millennium Village Green wildflower grasslands is summarised in Table 1.1.

Topography

Central Park is generally flat and undulating with levels of approx. 4.5 – 5.5m AOD at Millennium Boulevard/East Parkside to approx. 3.25 – 4.5m AOD at West Parkside. The Pilot Inn and Cottages remain at their existing levels of 2.5 – 3.5m AOD on Riverside Road.

A retaining wall has been constructed between the cottages and East Parkside Road.

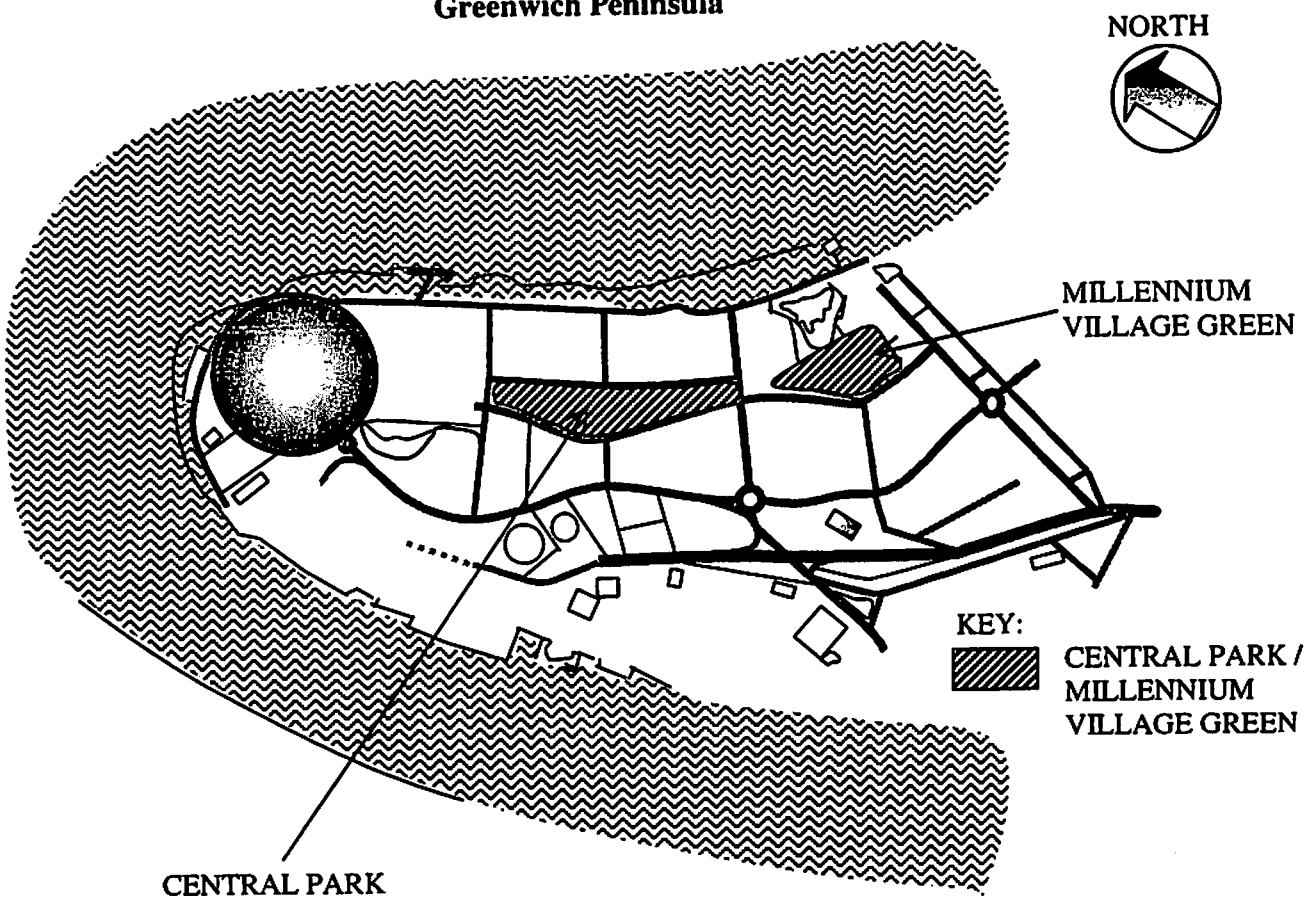
Millennium Village Green can best be described as a an escarpment with the scarp slope on the North side of the park with levels from 6.0 – 8.5m AOD. The dip slope runs from North to South with levels from 8.5 – 7.0m AOD at West Parkside Road.

Table 1.1 – Topsoil/Subsoil Specifications

Substrate Type	Composition			
Tree trench	Urban Soils			
Low nutrient topsoil for Millennium Village Green wildflower grassland	Natural or soil substitute Sand 50-70% Silt 10-50% Clay 5-20%			
	Maximum stone content	>2mm >20mm >50mm >100mm	: : : :	50% 30% 10% 0%
	pH value 5 – 6.5			
	Nutrient content	P (mg/kg) K (mg/kg) Mg (mg/kg) N% (m/m) min Organic matter		10-15 60-120 16-25 0.1-0.14% 1.5-3%

In practice, the pH specification of the soil, which was manufactured on site, was not met. The pH of the installed soil was actually circum neutral. This may militate against the achievement of the intended ground floral communities (see page 6).

Figure 1.1 - Location of Central Park and Millennium Village Green within the Greenwich Peninsula



Human/Cultural

Archaeology/Past Land Use

Details can be found in 'Section A of the Greenwich Peninsula Management Plan'.

Present and Predicted Land Use Categories

Both areas covered by this plan are intended to be publicly open space in the short and long term. The roads that are covered in this section are part of the future transport infrastructure for the peninsula.

Landscape Context

Details can be found in 'Section A of the Greenwich Peninsula Management Plan' for the site wide and surrounding context. On a peninsula-wide scale:

Central Park is the main focus of green space on the Greenwich Peninsula. It currently stands out on its own, surrounded by remediated land, coach parks and surfaced support areas with temporary buildings.

Millennium Village Green will be one of the two main foci of the new Millennium Village, currently under construction with Phase 1, with Phase 2 about to begin (the other focus being the Millennium Village Marsh, see Component Area Plan 1).

Details of Recreational Uses

Details can be found in 'Section A of the Greenwich Peninsula Management Plan' for site wide uses. The uses of Central Park are as follows:

- Informal recreation; and
- Millennium Boulevard to be used for informal activities and meetings.

Millennium Village Green is suitable for:

- Informal games of. football, cricket etc.; and
- Passive activities e.g. kite flying.

Public/Organisational Interest and Involvement – Present and Predicted

Details can be found in 'Section A of the Greenwich Peninsula Management Plan'.

Educational/Research/Interpretational Uses and Facilities.

Details can be found in 'Section A of the Greenwich Peninsula Management Plan'. Further details are as follows (*to be added as they are known*).

Biological and Ecological

General comments on the ecological resource of the whole peninsula (past and present) can be found in 'Section A of the Greenwich Peninsula Management Plan'.

Historic

A detailed ecological survey of the Village Green/Central Park Areas was not undertaken before construction. Information on the habitats present in 1989 in the general area is presented in Bibliography Section 2.0; (WS Atkins 1990). The descriptions of species of plant identified in this survey referred to the peninsula as a whole rather than any specific location on the peninsula. Essentially the area where the Village Marsh is now located was a mixture of hard standing, walls, smaller areas of dense scrub cover, rich ruderal swards and long grassland. No data were gathered or collated on any faunal group relevant to the Village marsh site *per se.*

Present (and Future)

The matrix of trees and grassland comprised by the Central Park and Village Green are of limited nature conservation interest at present. Wild flora planted and sown under woodland around in the central amenity grassland 'cricket green' in the Millennium Village Green will begin to develop conservation values within two to five years. The flora sown (based on a National Vegetation Classification semi-natural woodland type in which Hornbeam can be abundant on relatively acidic soils CW10; 'Lowland mixed broadleaved woodland with Bluebell/Wild Hyacinth' see Bibliography Section 6.0; Rodwell 1995) included a number of species that are uncommon in a London context. These are listed in Tables 1.2a and b. Of these, Bluebell has been sown as a particularly key visual element of the desired woodland type.

The Central Park lacks notable shrub planting as part of an intended visual design for pedestrian level 'transparency'. By contrast in the Millennium Village Green notable areas of shrubs should develop significant wildlife value in the longer term.

Table 1.2a - Plants considered uncommon in a London context that have been planted or sown in the Millennium Village Green Landscape

Scientific Name	Common Name	Rare (in London – less than 5% tetrads) Source: London Biodiversity Audit 2000	% 2 x 2 km tetrads in London Source: Burton 1983
Hyacinthoides non-scripta	Bluebell		
Malva moschata	Musk Mallow		8.75
Primula veris	Cowslip		7
Salix purpurea	Purple Willow		2
Stachys officinalis	Betony		8.75
Viburnum tinus	Laurustinus		0.25

Note – Bluebell also Priority/Species of Conservation Concern (London Biodiversity Audit 2000)

Table 1.2b - Plants Considered Uncommon in a London Context that have been Planted or Sown in Central Park

Scientific Name	Common Name	% 2 x 2 km tetrads in London Source: Burton 1983
Primula veris	Cowslip	7
Scabiosa columbaria	Small Scabious	3.5
Sorbus intermedia	Swedish Whitebeam	5

1.3 LANDSCAPE DESIGN STRATEGY

Details of the peninsula-wide strategy can be found in 'Section A of the Greenwich Peninsula Management Plan'. The following are specific to the areas covered by the present Component Area Plan:

The Design Strategy for Central Park proposed the following:

- Main 'Green Square' on the Peninsula;
- Short term – external space for the Millennium Exhibition;
- Long term – quality of space set by the urban density (residential buildings will define the edge) and animation (busy and lively 'feel' set by peoples actions); and
- Increase the façade to façade perception of space/perceived area of landscape.

The implementation to achieve the landscape design strategy and peninsula-wide design strategy proposed:

- Main space to be a series of inter connecting forest clearings;
- Mass planting for immediate feeling of containment;
- Concentrate the main pedestrian flows away from the park centre;
- Pavements treated as part of the landscape to extend the perception of space from façade to façade – engaging the future residents in ownership of the space; and
- The use of a hard pedestrian promenade on side of the park juxtaposed with a softer more organic edge on the other.

Refer to Figure 1.2

The Design Strategy for the Millennium Village Green proposed the following:

- Conceived as a Common/Village Green;
- An activity park – a large undivided field suitable for a range of activities including 'village' cricket – contrasting with Central Park; and

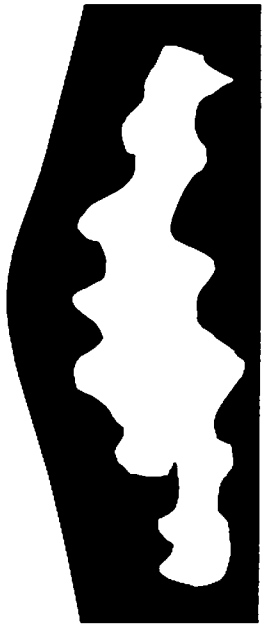
- Ecologically diverse areas around central amenity grassland to include notable areas of shrubs and wildflower planting to benefit desired wildlife.

The implementation plan to achieve the above strategy and peninsula-wide strategy was as follows:

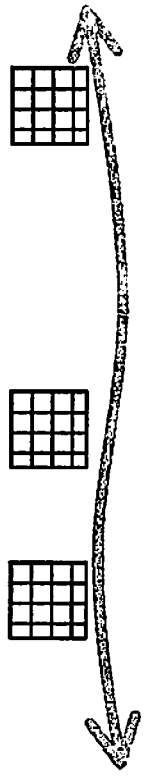
- Tree planting strategy/principles common to the overall landscape strategy;
- A large clearing in the 'Forest';
- The space is sheltered at ground level from wind by the gentle incline and tree plantings;
- Edges to integrate with the proposed village built form;
- Space defined by West Parkside Road and a wooded knoll towards the river;
- A clear route from across from central park to the river and link to West Parkside Road;
- Careful soil development to ensure low nutrient status in wild flower areas; and
- Dense shrub belts managed to encourage parkland birds.

Refer to Figure 1.3.

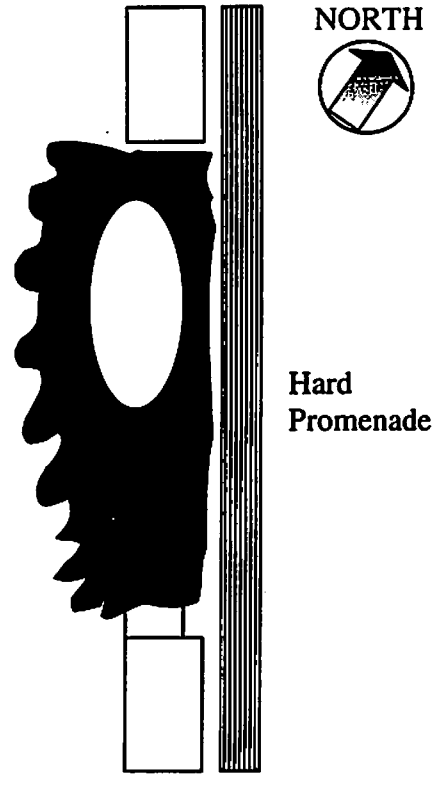
Figure 1.2 - Design Strategy and Implementation for Central Park



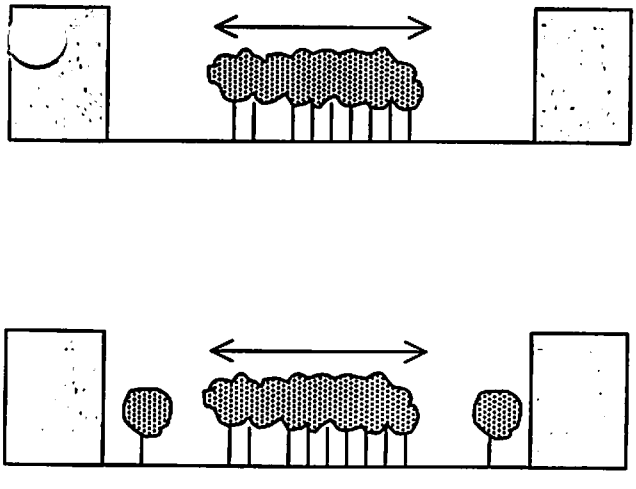
Tree Canopy – Containment
Mass Planting

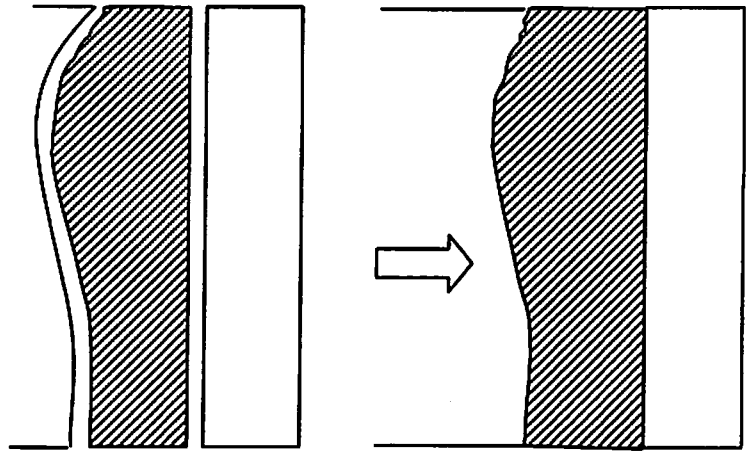


Pedestrian Spine -
Concentrate Flows
Connect Forest Clearings



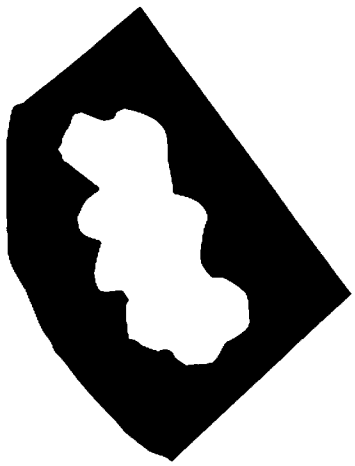
Overall Concept



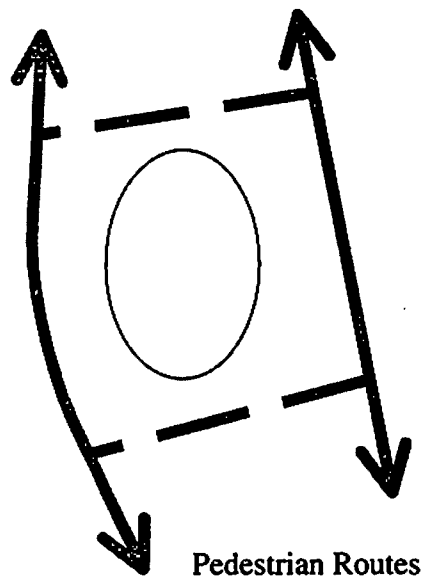


Increase Perceived Areas of Landscape

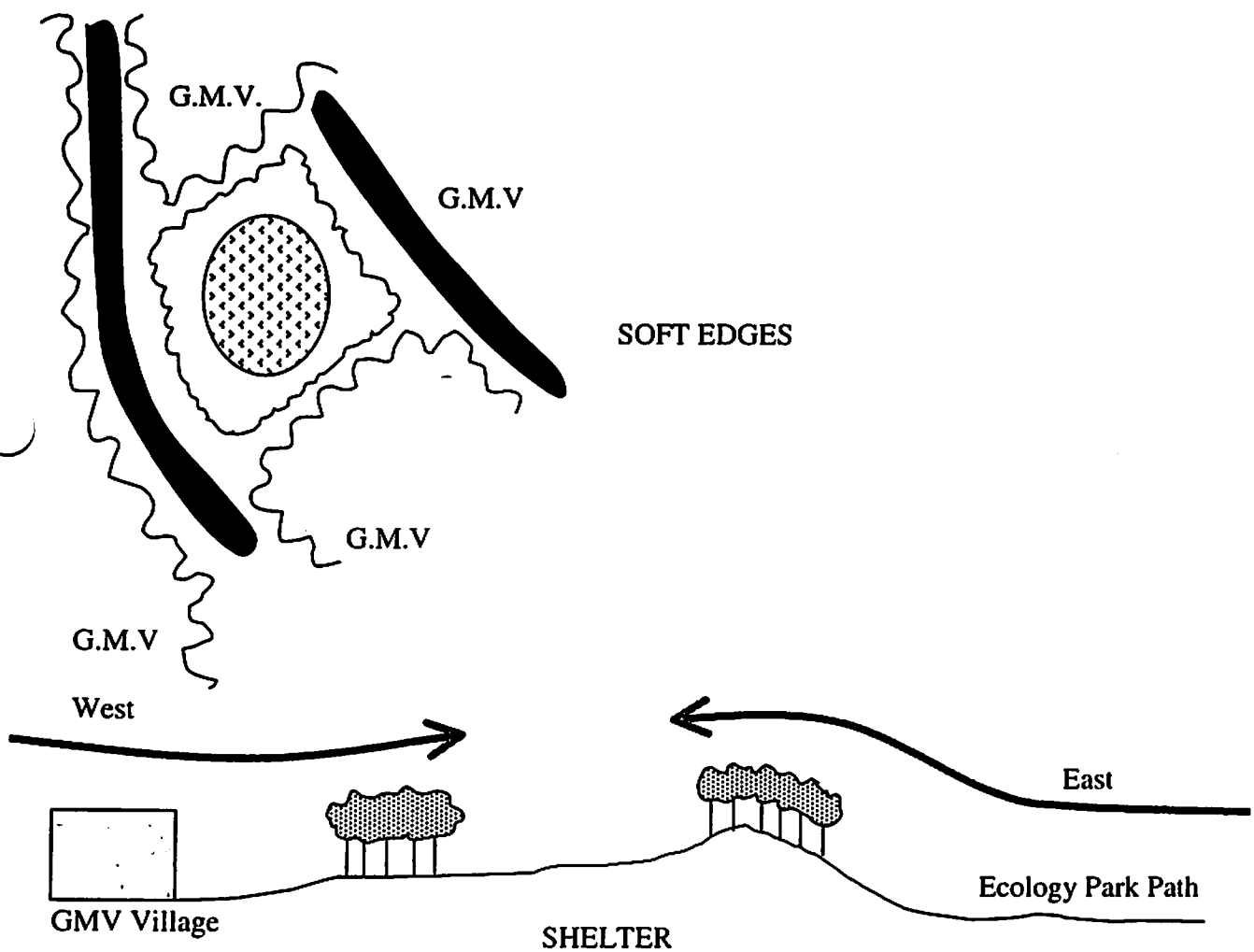
Figure 1.3 - Design Strategy and Implementation for Millennium Village Green



Tree Canopy Forest Clearing



Pedestrian Routes



PART 2 – EVALUATION & OBJECTIVES

2.1 SITE EVALUATION

Summary of Key Landscape Features and Elements

The elements in each area are listed together with a description and the importance of this element in relation to the overall design strategy in Tables 2.1 and 2.2.

Table 2.1 - Summary and Evaluation of Landscape Features in Central Park

Element	Evaluation
Water feature at the north end adjacent to the Central Business District Square.	Large display fountain is a key feature for this urban park.
A tree-lined boulevard/walkway along the east side of the park.	A hard surfaced space with granite steps and seats defines the east edge of the park.
A segregated footway/cycleway (Trans-Peninsula Path) crossing the park connecting A102(M) road with the riverside.	Part of the essential transport infrastructure.
Retention of Pilot Inn, cottages and Riverway including provision for limited parking.	A key feature for an urban park and the location for the second water feature in the park.
10m wide corridor for the Millennium Transit Link.	A guided bus link, part of the transport infrastructure.
A shallow ditch to the above guided bus route.	Defines the western edge of the park. Contains low planting to maintain sight lines.
Mudlarks Square, including the site for the relocated War Memorial.	Defines southern end of the park and is part of the space and clearings design strategy for the peninsula.
Street Furniture including lighting, signs and paving.	Anticipates future needs of the park and integrates with the overall peninsula design strategy.
Trees planted on a dense grid; a mixture of advanced nursery and semi mature stock, with low shrub understorey planting (including mass bulb planting).	Part of the key design strategy for the peninsula. Low shrub planting to maintain sightlines through trees.
Grassed recreation area, the main forest clearing space.	Informal recreation area is part of the space and clearings design strategy for the peninsula.

Table 2.2 - Summary and Evaluation of Landscape Features in Millennium Village Green

Element	Evaluation
Trees planted on a dense grid; a mixture of advanced nursery and semi mature stock.	Part of the key design strategy for the peninsula.
Shrub and wildflower/grass understorey planting to trees varies in areas between low planting (to maintain sightlines) and taller native planting.	Part of the key design strategy to add to the sheltering of the space and provide ecological habitat.
Grassed recreation area, the main forest clearing space.	Informal recreation area is part of the space and clearings design strategy for the Peninsula.
Hard surfaced terrace area (Bellevue – viewing platform) with granite edges and steps.	Located on the North side of the park, it defines the transition between the village green and the Ecology Park.
Transit Corridor – the guided bus link and West Park Side Road	Part of the transport infrastructure and defines the western edge of the park.
A non segregated footpath/cycleway running east to west with a link to West Park Side Road.	Defines the northern boundary of the park and will be important in the connection of the village areas to the overall green spine.
Street Furniture including lighting, signs and paving.	Anticipates future needs of the park and integrates with the overall peninsula design strategy.

Nature Conservation Evaluation of Site

Refer to 'Section A of the Greenwich Peninsula Management Plan' for peninsula-wide evaluation.

Historic Nature Conservation Value

Unquantified but certainly of at least High Local Value, possibly higher.

Present and Future Value

The present and future nature conservation value can, at this stage in landscape evolution, only be sub-divided to a limited extent.

Feature	Description	Present Value	Estimated/Intended Future Value
Village Green: Peripheral woodland and rough grassland	Tree/shrub/wild floral mosaic on NVC woodland type	Low Local	High Local
Village Green: Cricket Oval	Amenity Grassland	Low Local	Low to Medium Local
Central Park Woodland areas	Mixed Hornbeam – dominated woodland with mainly Ivy (var) wild flora	Low Local	Medium to High Local
Central grassland	Amenity grassland with limited plug planting of wild flowers	Low local	Low to Medium Local

Site Value in the Wider Perspective and Implications for Management

Refer to 'Section A of the Greenwich Peninsula Management Plan' for peninsula-wide evaluation.

As regards nature conservation the success of the area of the Village Green based on a semi-natural model inclusive of ground flora would be important in a wider context. Such amenity parkland woodland design is not uncommon e.g. in urban Holland but much less so in high-density urban Britain. Lessons learned form this design element set in motion to an active amenity area could assist in the design of many more parks in the capital.

Key Environmental Relationships with Implications for Management

The environmental relationships between elements of the existing landscape that must be understood in order for appropriate management to be carried out are discussed here. It should be noted that key successional and natural processes are essential components of the design and should not be disrupted unduly for reasons of e.g. 'tidiness' or 'safety' without careful reference to the objectives of the plan.

Factors to be Considered with Implications for Management

- water table and water logging and wind burn/exposure in relation to tree growth (especially in the short-term);
- relative growth rates of trees and shading between trees;
- effect of shading of trees as they mature – on ground flora;
- effects between trees in case of storm winds;
- attractiveness of grass-sward to grazing geese (short term); and
- attractiveness of the canopy to visiting birds, especially the development of large roots (with any associated potential hazard to aircraft).

2.2 MANAGEMENT POLICY

Refer to 'Section A of the Greenwich Peninsula Management Plan' for Peninsula wide policy.

AIM: To develop and maintain a robust, safe and aesthetically appealing space for passive and active public recreation, incorporating and maintaining areas of wildlife value where feasible and appropriate.

Table 2.3 – Ideal Management Objectives

NUMBER OF IDEAL OBJECTIVE	DESCRIPTION OF OBJECTIVE
IDEAL OBJECTIVE 1	MAINTAIN ALL HARD LANDSCAPE ELEMENTS TO THE ORIGINAL DESIGN INTENTIONS AS SET OUT IN THE DETAILED DESIGN DRAWINGS.
IDEAL OBJECTIVE 2	MAINTAIN ALL SOFT LANDSCAPE ELEMENTS.
IDEAL OBJECTIVE 3	PROMOTE AND PROTECT LONG TERM AMENITY INCLUDING AESTHETIC RECREATIONAL AND RESEARCH BENEFITS.
IDEAL OBJECTIVE 4	CONSIDER LONG TERM OPPORTUNITIES FOR ECOLOGICAL ENRICHMENT.
IDEAL OBJECTIVE 5	TO UNDERTAKE SURVEY MONITORING AND RESEARCH WITH THE KEEPING OF DETAILED ENVIRONMENTAL AND BIOLOGICAL RECORDS IN ORDER TO FACILITATE THE ACHIEVEMENT OF OTHER MANAGEMENT OBJECTIVES.

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Table 2.4 – Operational Objectives (in relation to Ideal Objectives) and Prescriptions

Objective Number	Operational Objective	Outline Prescription		Review Period
IDEAL OBJECTIVE 1:	MAINTAIN ALL HARD LANDSCAPE ELEMENTS TO THE ORIGINAL DESIGN INTENTIONS AS SET OUT IN THE DETAILED DESIGN DRAWINGS.			3 years
Operational Objective 1.1	Maintain to desired levels and to meet legal obligations.	1.1.1	Ensure that health and safety standards are maintained for all hard landscape elements eg surfacing, sTeet furniture, lighting, water features.	
		1.1.2	Liaise with Rospa.	
		1.1.3	Maintain to the standard outlined in the Landscape Maintenance Specification for the original works.	
Operational Objective 1.2	Maintain water features.	1.2.1	Maintain water features by referring to operation manuals and ensuring that correct procedures are being employed.	
		1.2.2	Maintain records as operations manuals require.	
Operational Objective 1.3	Respond to development pressures.	1.3.1	Identify maintenance problems associated with ongoing development pressures and changes to uses and implement re-mediation proposals in keeping with the original design intent.	
IDEAL OBJECTIVE 2:	MAINTAIN ALL SOFT LANDSCAPE ELEMENTS.			3 years
Operational Objective 2.1	Maintain to desired levels.	2.1.1	Maintain to the standard outlined in the Landscape Maintenance Specification for the original works.	
		2.1.2	Ensure that establishment meets design intentions.	
		2.1.3	Maintain to appropriate health and safety standards for all soft landscape elements eg trees, shrubs, grass and wildflowers.	
		2.1.4	Monitor automatic irrigation water usage, aim to reduce water consumption.	
Operational Objective 2.2	Manage the phased thinning of trees to achieve the desired afforestation and to meet the concerns of the CAA.	2.2.1	Refer to Section A, Figure 1.8 for illustrations of phased thinning.	
		2.2.2	Refer to the Peninsula-Wide plan for CAA bird strike issues.	
		2.2.3	Monitor changes in quality of establishment, arising from ongoing development and potential micro-climate changes. Consider implications within thinning programme.	

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Objective Number	Operational Objective	Outline Prescription	Review Period
Operational Objective 2.3	Review performance against specification.	2.3.1 Review use of materials such as: effectiveness of bark mulch. Consider alternatives to reflect different levels of establishment. 2.3.2 Promote re-use/re-cycling of materials within the site.	
IDEAL OBJECTIVE 3:	PROMOTE AND PROTECT LONG-TERM AMENITY INCLUDING AESTHETIC, RECREATIONAL AND RESEARCH BENEFITS		
Operational Objective 3.1	Put in place and maintain an effective and progressive system of management that involves local people/ residents, interested organisations in appropriate ways and promotes integration with other (future) open space on the Peninsula.	3.1.1 Co-ordinate with objectives and prescriptions for the Millennium Village Marsh.	1 year
Operational Objective 3.2	Provide for change.	3.2.1 Do not undertake works that would prevent future integration with ongoing development. 3.2.2 Monitor changes in desire lines, develop paths to accommodate change, with reference to Operational Objective 3.4.	3 year
Operational Objective 3.3	Accommodate increasing visitor numbers and maintain public safety.	3.3.1 Monitor pressures arising from increased visitors and identify ameliorative measures for implementation in the maintenance programme. 3.3.2 Security to be maintained by transparency through the trees – remove suckers and side shoots up to 1.5m from ground level.	3 year
Operational Objective 3.5	Central Park Squares at northern and southern end of the park to develop in conjunction with neighbouring urban developments.		As required by develop. proposals
IDEAL OBJECTIVE 4:	CONSIDER LONG-TERM OPPORTUNITIES FOR ECOLOGICAL ENRICHMENT		3 year

Objective Number	Operational Objective	Outline Prescription		Review Period
Operational Objective 4.1	Maintain the quality of the surroundings to support the flora and fauna that colonise the parks.	4.1.1	Assess the benefits of different mowing regimes to maximise the establishment of wildflowers within the wildflower grassland areas.	
		4.1.2	Review mowing regimes adjacent to woodland areas – longer grass margins.	
		4.1.3	Install, monitor and maintain bird and bat boxes.	
		4.1.4	Leave dead wood piles as possible habitats in selected areas within woodland blocks – Millennium Village Green.	
Operational Objective 4.2	Re-cycle materials – consider on-site composting of green waste.			
Operational Objective 4.3	Thinning of tree planting to allow light to penetrate the ground.			
IDEAL OBJECTIVE 5:	TO UNDERTAKE SURVEY MONITORING AND RESEARCH WITH THE KEEPING OF DETAILED ENVIRONMENTAL AND BIOLOGICAL RECORDS IN ORDER TO FACILITATE THE ACHIEVEMENT OF OTHER MANAGEMENT OBJECTIVES.			3 years
Operational Objective 5.1	To carefully address concerns raised by CAA regarding bird-strike risk.	5.1.1	Develop specific prescriptions in response to concerns regarding bird-strike risk, following consultation with CAA.	
Operational Objective 5.2	Maintain Botanical Records	5.2.1	Carry out full botanical survey every three years.	3 year
		5.2.2	Maintain site specific records of uncommon plants recorded during 3-yearly survey and at other times.	
		5.3.3	Modify management if possible to promote survival of significant species and swards.	
Operational Objective 5.3	Maintain Invertebrate Records	5.3.1	Undertake full terrestrial invertebrate survey every three years.	
		5.3.2	Modify management if possible to promote survival of significant species and communities.	

Factors Influencing the Achievement of Ideal Management Objectives

Refer to 'Section A of the Greenwich Peninsula Management Plan' for peninsula-wide evaluation.

The key constraint to the achievement of management objectives will be the pressure on the landscape features caused by intense human use. The development of herb-rich areas within/around the amenity sward will require persistent intervention and public liaison by park attendants and staff until the general public accept and understand the general design intentions.

PART 4 – PROJECT RECORDS AND REVIEW

Introduction

In this section, monthly maintenance reports and reviews are to be filed.

APPENDIX 1

As-Built Drawings List Covering the Areas

1. AS-BUILT DRAWINGS LIST COVERING THE AREA

Name of Plan	Plan Reference Number	Management Library Reference
CENTRAL PARK		
Central Park – Regrade Levels and Extent of Capping Works	AC1787/C/5550 REV 0	
Central Park – Alteration to Clay Capping	AC1787/PLD/8707 REV A	
Central Park – Earthworks Contents and Topsoil Requirements	AC1787/PLD/8706 REV 0	
General Arrangement 1-3	AC1787/PLD/8221-8223	
Co-ordinated Levels 1-3	AC1787/PLD/8224-8226	
Co-ordinated Setting Out 1-3	AC1787/PLD/8227-8229	
Irrigation Layout	AC1787/PLD/8230	
Irrigation Details	AC1787/PLD/8231	
Water Features A – Schematic	AC1787/PLD/8232	
Water Features B – Plan and Schematic	AC1787/PLD/8283-8234	
Large Tree Setting Out 1-3	AC1787/PLD/8240-8242	
Medium Tree Setting Out 1-3	AC1787/PLD/8243-8245	
Ground Cover Setting Out 1-3	AC1787/PLD/8246-8248	
Water Features Details/ Elevations	AC1787/PLD/8292-8296	
Contractors Drawings Water Feature A	UL 3057/1 UL 3057/5-6	
Contractors Drawings Water Feature B	UL 3060/2 UL 3060/4 UL 3060/7 UL 3060/13	
MILLENNIUM VILLAGE GREEN		
Proposed adjustments to finish Top of Clay Cap	AC1790/C/1820	
General Arrangement 2 of 3	AC1790/PLD/1824	

Name of Plan	Plan Reference Number	Management Library Reference
Co-ordinated Levels 2 of 2	AC1790/PLD/1826	
Irrigation Amenity Area	AC1790/PLD/1843	
Soil Placement 2 of 2	AC1790/PLD/1842	
Terraces Ground Levels, Surfaces and Setting Out	AC1790/PLD/1848	
Large Tree Setting Out	AC1790/PLD/1833	
Medium Tree Setting Out	AC1790/PLD/1834	
Ground Cover and Mulch Setting Out 2 of 3	AC1790/PLD/1838	
Contractors Drawing Secondary Irrigation	BOIL NO. 2083-2	

APPENDIX 2

Typical Soils

2. TYPICAL SOILS

2.1 The following extracts are taken from the original specification for the works.

Imported Topsoils

Provide as necessary to make up any deficiency of topsoil existing on site and to complete the work:

The special requirements for imported topsoil are:

- **Description:** Topsoil shall be imported from a source approved by the Engineer. It shall comply with BS 3882, general purpose grade, and this Clause. It shall not be sticky or leave a polished surface when smeared, or be easily moulded when moist. It shall be free from sub-soil, rubbish, weed seeds, roots of perennial weeds, sticks, non-soil material, foreign matter, brick and other construction materials and other materials injurious to plant growth.
- Laboratory analysis shall be submitted to the Engineer covering the following as determined by methods approved by A.D.A.S. (MAFF Handbook RB427), or other methods approved by the Engineer:
- Soil Texture/Particle Analysis, Soil pH, Stone content, Electrical Conductivity, Extractable phosphorus, potassium, magnesium and nitrogen, Organic Matter, cadmium, copper, lead, nickel, zinc water soluble boron, arsenic, mercury, chromium.
- An indication of the range of acceptable topsoil is given below:

Soil Texture:	Medium, friable, and showing a degree of porosity. Sand (0.05-2.00mm) 20-60% Silt (0.002 – 0.05 mm) 10-60% Clay (less than 0.002 mm) 10-20%
Soil pH:	6.5 – 7.5
Stone Content	(2-50 mm) 30% by dry weight, where stones of a size 2-5 mm do not exceed 20%. Maximum size of stones in any dimension: 50 mm.
Electrical	<2000 micro Siemens/cm in 1:2.5 soil/water extract

Conductivity:	
Phosphorus:	> 45 ppm;
Potassium:	>240 ppm
Magnesium:	> 80 ppm
Nitrogen:	not less than 2%
Organic Matter:	Not less than 4%
Micro-elements:	Refer to DoE Handbook ICRCL 59/83 for threshold values.

- Obtain approval of a sample load of not less than 5 cu m. Retain for comparison with subsequent loads. The topsoil shall be submitted for approval by the Engineer, at least one week before its incorporation into the works.
- The objective is to create a well-drained soil profile, able to support and sustain good quality amenity grass, groundcover, shrubs, and a variety of indigenous and ornamental trees.

Metro Tree Sand/Urban Tree Soil/Amsterdam Tree Soil:

- To be used in tree trenches, where trees are to be planted in hard landscape areas.
- Tree soil is to be a blend of highly graded sand and organic material that can be compacted sufficiently to control settlement for laying pavements and hard landscape materials, yet still function as a healthy medium for promoting growth.
- Tree soil is to be used in a continuous trench, approximately 900 mm deep, and with a 300 mm drainage layer. The trench must be backfilled in 3 layers, and compacted to 1.5-2.0 mega pascels with a Wacker Rammer BS 60Y (Jumping Jack/Elephant;s Foot), and then checked with a penetrograph.
- If it is not possible to lay the tree soil immediately upon delivery, then it should be protected by tarpaulin.
- The tree soil must not be contaminated by any foreign matter, or building material.
- The tree trench must have no standing water at the time of backfilling.
- Layering: approximately 100 mm is lost on compaction, therefore the soil is to be put in loose, to 400 mm, and levelled before compaction. Over-compaction will stop root penetration, and under-compaction will lead to surface settlement.
- Drainage Layer: Approx. 300 mm clean stone. 1 pass with BS 60Y.
- 1st & 2nd Layers: 1 pass over surface area, with BS 60Y.
- 3rd/Final Layer: 2 passes over surface area with BS 60Y.

- Once the final tree soil has been correctly installed, it should not be driven over by site machinery, etc., before the final surfacing/paving is applied.
- Refer to Drawing Number AC1787/PLD/8255, for further details.
- Insert an approved post planting fertiliser tablet into the topsoil of each planting pit. Suggested Supplier: Sierrablen Flora Tablet – Tel: 01159 455100
- Sizes to be: Advanced Nursery Stock (A&B): 165 grams, Semi-Mature Trees (C&D): 200 grams, in tablet form.