

**Greenwich Peninsula
Land Management Plan on
Behalf of English Partnerships**

**Section B
Component Area Management Plan
4. Meridian Gardens, Ordnance Wharf
and Riverside Walk**

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EXECUTIVE SUMMARY

PART 1 – DESCRIPTION

1.1 GENERAL INFORMATION

Location
Land Tenure
Management Infrastructure
Map Coverage
Document and Photographic Library
Management Compartments
Meridian Gardens
Ordnance Wharf
Riverside Walk

1.2 ENVIRONMENTAL INFORMATION

Physical

Climate
Geology, Geomorphology and Hydrology
Soils
Topography

Human/Cultural

Archaeology/Past Land Use
Present and Predicted Land Use Categories
Landscape Context
Details of Recreational Uses
Public/Organisational Interest and Involvement – Present and Predicted
Educational/Research/Interpretational Uses and Facilities

Biological and Ecological

1.3 LANDSCAPE DESIGN STRATEGY

PART 2 – EVALUATION & OBJECTIVES

2.1 SITE EVALUATION

Summary of Key Landscape Features and Elements
Nature Conservation Evaluation of Site
Site Value in the Wider Perspective and Implications for Management
Key Environmental Relationships with Implications for Management

2.2 MANAGEMENT POLICY

Ideal Management Objectives
Factors Influencing the Achievement of Ideal Management Objectives

PART 3 – ACTION PLAN

PART 4 – PROJECT RECORDS AND REVIEW

List of Tables

Table 1.1a – Plants Considered Uncommon in London that have been Planted within Meridian Gardens	7
Table 1.1b – Plants Considered Uncommon in London that have been Planted within Riverside Walk	8
Table 2.1 – Summary and Evaluation of Landscape Features in Meridian Gardens and Ordnance Wharf	13
Table 2.2 – Summary and Evaluation of Landscape Features in Riverside Walk	13
Table 2.3 – Summary of Features and Evaluation – Historic c. 1980s	14
Table 2.4 – Summary of Features and Evaluation – 2000	14
Table 2.5 – Summary of Features and Evaluation – Predicted 2020 (if retained in current layout)	15
Table 2.6 – Ideal Management Objectives	17
Table 2.7 – Ideal Management Objectives and Prescriptions	18

List of Figures

Figure 1.1 – Location of Meridian Gardens, Ordnance Wharf and Riverside Walk within the Greenwich Peninsula	3
Figure 1.2 – Meridian Gardens and Ordnance Wharf Management Compartments	4
Figure 1.3 – Part of the Design Strategy for Meridian Gardens Wet Meadow Areas	11
Figure 1.4 – Design Strategy for Riverside Walk	11
Figure 1.5 – Riverside Zones	12

Appendices

Appendix 1	As-Built Drawings List Covering the Areas
Appendix 2	Typical Soils

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 Management Plan for the following sub areas of recently created Green Space on the Greenwich Peninsula in London:

- Meridian Gardens;
- Ordnance Wharf; and
- Riverside Walk.

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 the peninsula-wide Management Plan.

The Meridian Gardens and Riverside Walk (January 2001) are at relatively early stages in their evolution. Features are already of Medium or even High Local Nature Conservation Value. Future value depends strongly on the ultimate fate of the Dome and on implementation of land management prescriptions.

The key aims of management are:

For Meridian Gardens: to provide an attractive and interesting open space adjacent to the Dome drawing on themes of the former wetland nature of the tip of the peninsula and the open, estuarine ecosystems of the adjacent tidal Thames. The theme of threatened world wetlands is also intended to be reflected in the design, as is the theme of sustainable wetland design for water treatment.

For Ordnance Wharf: to provide a stylised 'high shore' habitat artificially on the former wharf by establishment of saltmarsh vegetation and supplementing with planting of small trees. The entire vegetated island is intended to become a refuge for bird life away from terrestrial predators and to add visual diversity to the waterfront.

For Riverside Walk: to provide an attractive public walkway drawing on themes of the semi-maritime tidal Thames and the former relatively recent vegetation cover of the Peninsula (self-seeded shrubs and herbaceous plants). The design is intended to mitigate to some extent for the loss of this former habitat which was of particular value to birds and invertebrates.

Management should encourage the joint development of a strong visual design, a shelter-belt and a habitat as described.

PART 1 – DESCRIPTION

1.1 GENERAL INFORMATION

Location

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

- Meridian Gardens TQ389801;
- Ordnance Wharf TQ388803; and
- Riverside Walk from the Yacht Club at TQ402792 to Meridian Gardens at TQ395803.

These locations within the Greenwich Peninsula are shown in Figure 1.1.

Land Tenure

Details can be found in 'Section 1 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

Meridian Gardens (See Figure 1.2)

- Wet meadow with pools of water, reed beds/marsh, grass and wild flowers.
- Millennium Dome grey water treatment lagoons located in the wet meadow area.
- Dry meadow wildflowers and grasses.

- Timber boardwalk running through the wet area of lagoons, ponds, reedbeds and wet meadow.
- Native willow shrub planting between the footpath and riverside handrail.
- A continuous segregated footway and cycleway along the entire frontage.
- Ornamental grasses/wildflowers in between the granite steps/slope between the riverside path and the Dome perimeter road.

Ordnance Wharf

- A redundant wharf planted with native trees and shrubs and turfed with saltmarsh turfs imported from the local area.
- Protection of the site against intrusion by predators; not accessible by the general public.

Riverside Walk

- A continuous segregated footway and cycleway along the entire frontage including provision for limited emergency vehicle access.
- A step feature and lower pedestrian promenade between Millennium Pier and connection with the Trans-Peninsula Path.
- Embankment Gardens, an area of hard and soft landscape providing a viewing area across the Thames. Soft landscape of halophytic herbs.
- Retaining wall between the Ecology Park and the Riverside walk.
- Quayside planting restricted to native estuarine and maritime species.
- Band of planting to development plots using willows with planted ground flora of coarse grasses.

Figure 1.1 – Location of Meridian Gardens, Ordnance Wharf and Riverside Walk within the Greenwich Peninsula

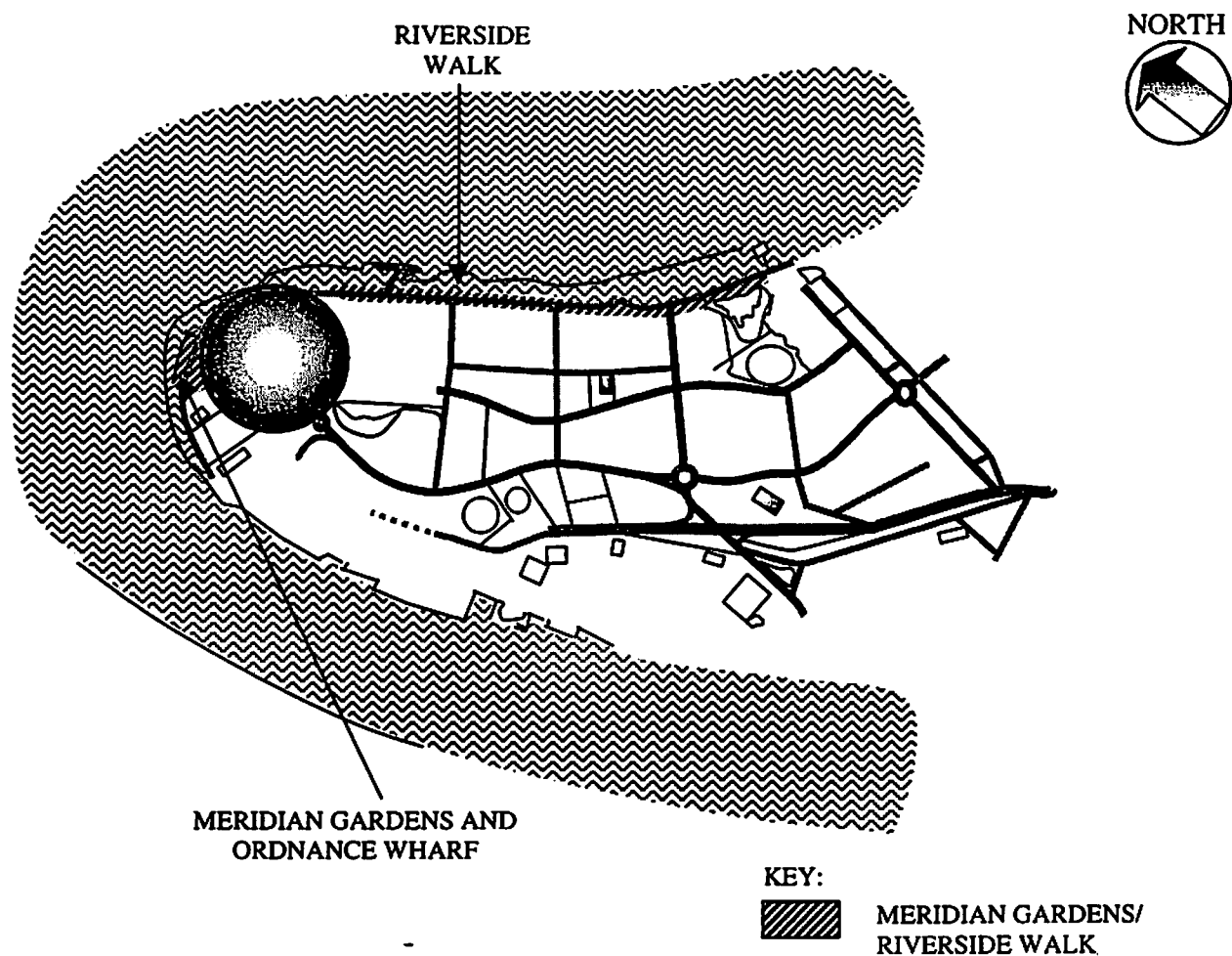
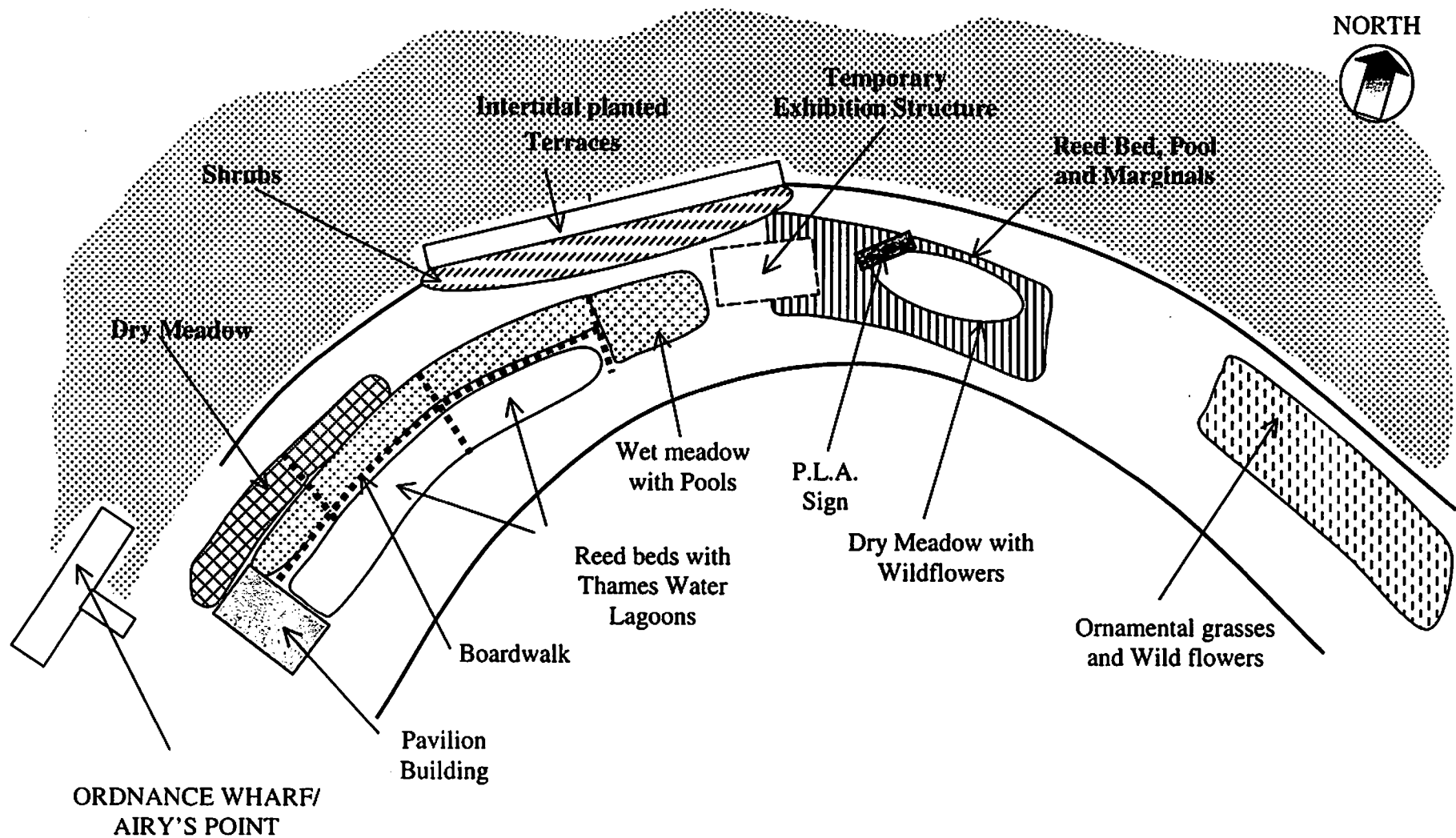


Figure 1.2 – Meridian Gardens and Ordnance Wharf Management Compartments



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 nearby built form.

Geology, Geomorphology and Hydrology.

Details can be found in 'Section A of the Greenwich Peninsula Management Plan' of the general geological, geomorphological and hydrological characteristics of the peninsula.

The development of Meridian Gardens is based upon that of constructed wetlands which is dependant upon water supply provided by the Greenwich Peninsula irrigation process (via the purpose built borehole) and the water supply which is part of the Thames Water/NMEC grey water project.

The constructed wetlands are provided in an area which has been subjected to ground remediation works and overlies a clay cap. A MDPE membrane is provided to contain water flows within the defined wetland area. The wetland consists of a number of reedbeds, water collection ponds, marshland (marginal transitions between reed beds/ponds and dry areas) and dry grassland areas formed at the perimeter of the membrane.

The design of the reed beds are based upon the horizontal flow system and this principle is extended to the hydrological operation of the whole of the wetland area. The sub-surface water flow is artificially controlled by an installed supply and recirculation system consisting of pipes, pumps, overflows and valves. The water is supplied via perforated horizontal pipes located at the perimeter of the wetlands area, and recirculated via pipes located in the lower levels of the ponds and reed beds.

To assist flow rates and to overcome problems with relatively shallow gradients, channels are formed within the substrata consisting of low permeability fill material and which extend radially from the reed bed and pond areas.

Soils.

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

All soils and substrates have been imported or manufactured on site, except the topsoil used in the willow/grass beds between the development area and the footway/ cycleway and the saltmarsh soils on Ordnance Wharf. This material was re-used from the previous sports area now occupied by the Sainsbury Store. The specification for the topsoil used can be found in Appendix 1. This information is included as an initial guide to the general properties of soils on the sites covered by this section of the plan.

Topography

Both Meridian Gardens and Riverside Walk are relatively level throughout their lengths at approx. 5.5m AOD.

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

In the short term, access to Meridian Gardens will be controlled through the Millennium Exhibition. In the long term it is designated as public open space although depending upon the future use of the 'Dome', this again could be subject to change. Riverside Walk is designated as public open space with the segregated foot way/cycle way being part of the transport infrastructure for the Peninsula site.

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:

Meridian Gardens and Ordnance Wharf are currently incorporated as part of the setting of the Millennium Dome and the temporary sculptural works and legacy environmental signage connected with the Millennium Exhibition. The long term use of the Millennium Dome is unknown at time of writing, Meridian Gardens will be retained within new proposals for the area.

Riverside Walk is located on the eastern edge of the peninsula and is currently bordered by an area previously used as a Millennium Exhibition support area at its northern end. The Millennium Village and park and yacht club are at the southern end and a future residential development area in the centre section.

Details of Recreational Uses

Details can be found in 'Section A of the Greenwich Peninsula Management Plan' for site wide uses.

For Meridian Gardens:

- Meridian Gardens is currently incorporated as part of the Millennium Exhibition but is to remain after this as a legacy item and should provide opportunities for informal recreation.

For Ordnance Wharf:

- Wildlife habitat. Wildlife for nature conservation value and passive public amenity (bird watching).

For Riverside Walk:

- **Footway and Promenade:** Informal recreation and enjoyment of nature, especially views of birdlife on the tideway;
- **Embankment Gardens** to provide more activities e.g. eating areas, picnicking on grass as well as enjoyment of nature including maritime plants, birdlife, invertebrates and bats. Further uses to develop in conjunction with the vacant jetty and any land based activities.

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 out as required)*.

Biological and Ecological

General information on the biological and ecological conditions on the peninsula can be found in 'Section A of the Greenwich Peninsula Management Plan'.

As recently as the start of the 20th Century, Blackwell Point and from this tip of the peninsula to around 100 m inland was marshland, and doubtless an important waterfowl roost. The land areas occupied by Meridian Gardens and Riverside Walk, were in 1985 just prior to clearance, occupied by hard-standing scattered scrub and ruderal grassland, mostly on contaminated fill.

There was, as stated in Section A of this Management Plan, an important Grey Heron roost on the edge of the sheet piling at the north-eastern edge of what is now Riverside Walk.

The current (January 2001) redeveloped ecological interest of the site has not been assessed by survey. The recently created ponds and reedbeds near the Dome may already have attracted notable invertebrate assemblages (despite some water quality problems) and possibly even some uncommon bird species, though disturbance from the public was more or less continuous through Dome opening hours. Bats are also likely to be foraging over the ponds. The habitats of the Riverside Walk are still very much in their infancy, but still may be attracting notable invertebrates, and birds.

The future habitats depend on the fate of the Dome and the implementation of the management regime set out here. Most crucially ecological value depends on:

- ensuring that willow height is not reduced below 2 metres; and
- providing opportunities for colonisation by wild/naturalised flora and fauna, and not simply removing ruderal plant colonisers as 'weeds'.

Within the planting schedules it is important to record that several species considered uncommon in a London context were planted. These are listed in Tables 1.2a and b.

Table 1.1 a – Plants Considered Uncommon in London that have been Planted within Meridian Gardens

Scientific	Common Name	Rare in London – less than 5% tetrads Source: London Biodiversity Audit 2000	%2x2 km tetrads in London Source: Burton 1983
<i>Onobrychis viciifolia</i>	Sainfoin		2.25
<i>Anthyllis vulneraria</i>	Kidney Vetch	•	2.75
<i>Echium vulgare</i>	Viper's-bugloss		2.5
<i>Lychis flos-cuculi</i>	Ragged Robin		9.5
<i>Malva moschata</i>	Musk-mallow		8.75
<i>Medicago sativa</i>	Lucerne		9.25
<i>Myriophyllum spicatum</i>	Spiked Water-milfoil	•	4.5
<i>Salvia verbenaca</i>	Wild Clary		2
<i>Sanguisorba minor</i>	Salad Burnet		8.25

Table 1.1b – Plants Considered Uncommon in London that have been Planted within Riverside Walk

Scientific	Common Name	Rare in London – less than 5% tetrads Source: London Biodiversity Audit 2000	%2x2 km tetrads in London Source: Burton 1983
<i>Armeria maritima</i>	Thrift		0.75
<i>Hippophae rhamnoides</i>	Sea Buckthorn		0.25
<i>Luzula sylvatica</i>	Great Wood-rush		2.5
<i>Salix purpurea</i>	Purple Willow		2
<i>Salix repens</i>	Creeping Willow	•	3
<i>Smyrniolum olusatrum</i>	Alexanders		1
<i>Verbena officinalis</i>	Vervain		6.75

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 sites in question:

The Design Strategy for Meridian Gardens and Ordnance Wharf proposed the following:

- to develop a strong wetland theme of open estuarine fringe by creation of a stylised series of pond features inter-linked by a water circulation system based on gravity-feed and pumped return (to maintain water quality) and plant attractively with (mostly native) wetland species for visual interest and wildlife value;
- to integrate a reedbed treatment system into this wetland landscape;
- to provide an attractive setting for temporary art display and permanent 'legacy' signage relating to the environment of the tideway;
- to educate the general public in themes of wetland conservation, the tidal Thames and the Metropolitan importance of its wildlife; and
- to provide attractive areas for informal recreation (such as picnicking) designed to emphasise environmental sustainability, using elements of native flora in semi-formal setting to represent eg dry herb-rich meadow, wet meadow and coastal pool.

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

- creation of dry land habitat;
- creation of wetland habitat; and
- enhancement of Ordnance Wharf/Airy's point.

Refer to Figure 1.3.

The Design Strategy for Riverside Walk proposed the following:

- echo the original condition of the peninsula as inter-tidal salt marsh and marshy grass land;
- provide a sequence of varied spaces and relationships to the riverside; and
- provide habitat for birds and invertebrates.

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

- soften the relationship between the land and river through planting;

- break the possible monotony of a repeated section and react to the drama and scale of the river;
- create a linear corridor linking a varied series of spaces (Areas; Riverside Walk and Quayside, Embankment Gardens) changing from more formal urban landscape at 'The Dome' through Quayside character at the pier to more informal landscape at the southern end;
- develop embankment gardens in conjunction with the jetty and land based activity into cafes, shops etc;
- embankment gardens planting to create enclosure and habitat, frame river views and contrast with 'seafront' feel of quay;
- quayside area to respond to the large scale and vast panorama of the river with views to the horizon. A clear relationship from foreshore to inter-tidal terraces to walkway to roadway and adjoining landscape; and
- quayside planting zone to provide wildlife habitat through native tree and shrub planting and also create shelter for development parcels beyond.

Refer to Figure 1.4.

Figure 1.3 – Part of the Design Strategy for Meridian Gardens Wet Meadow Areas

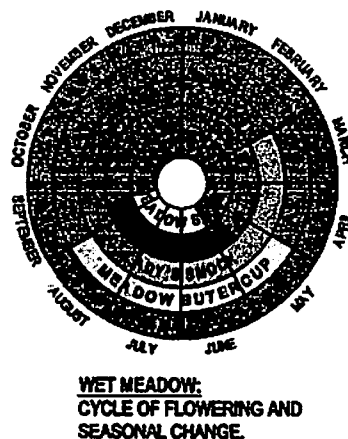


Figure 1.4 – Design Strategy for Riverside Walk

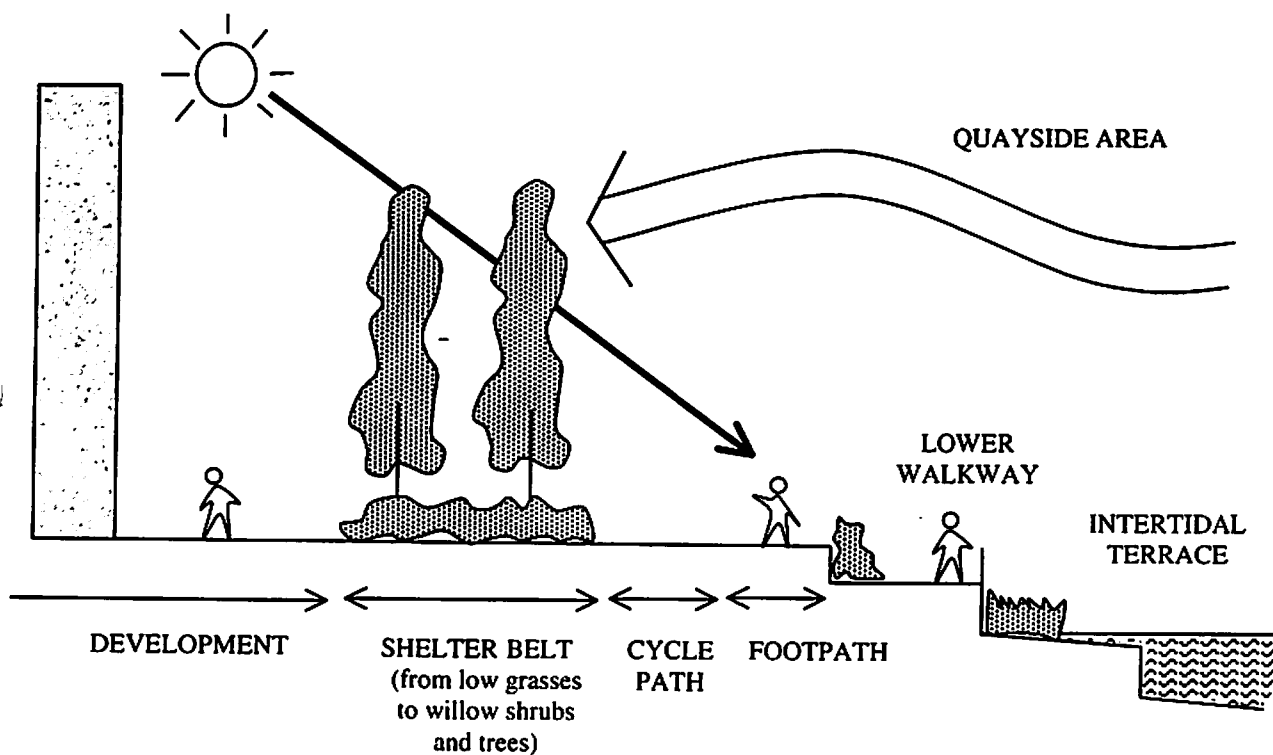
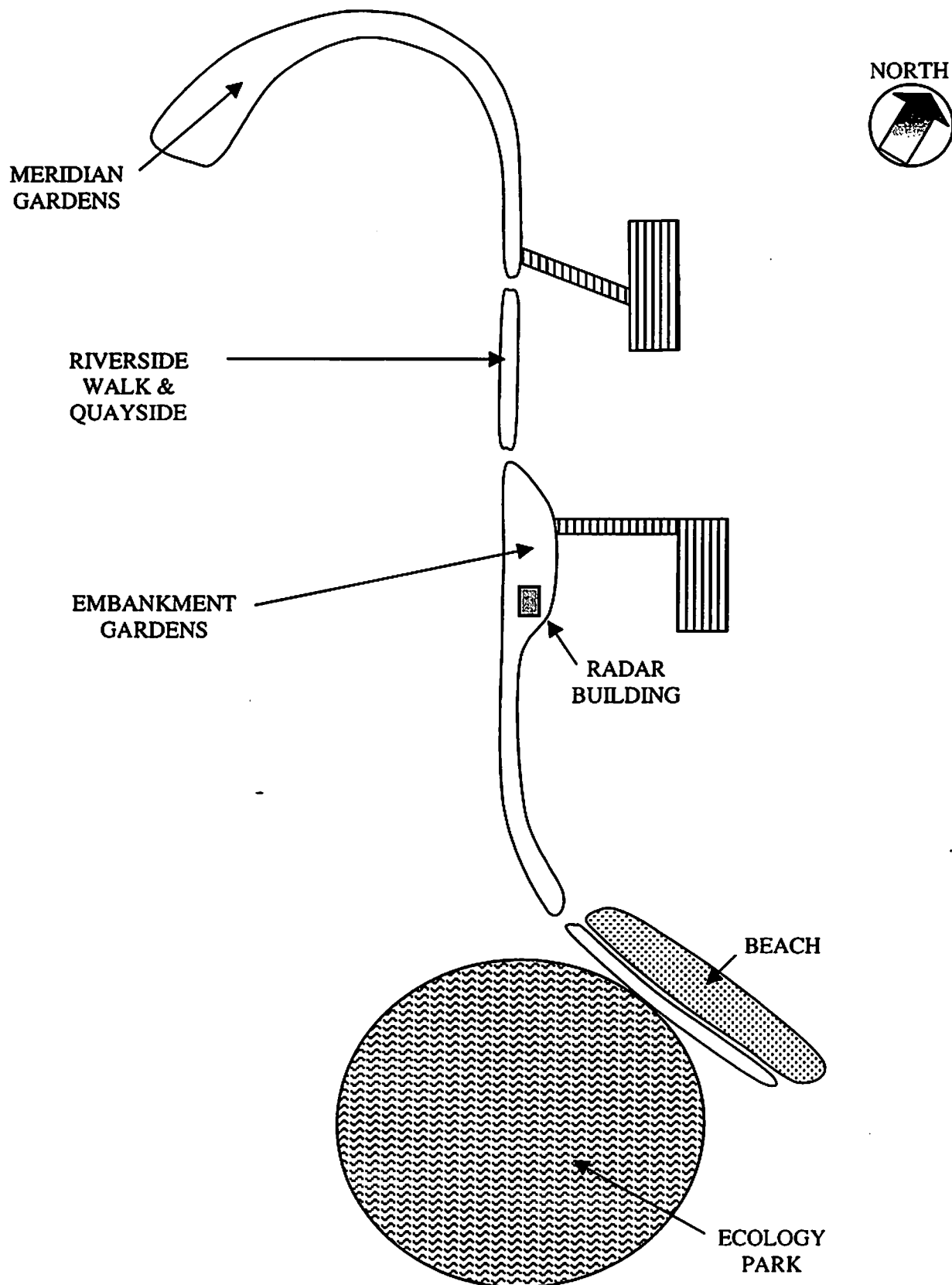


Figure 1.5 – Riverside Zones



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 Meridian Gardens and Ordnance Wharf

Element	Evaluation
1 Wet meadow with pools of water, reed beds/marsh, grass and wild flowers.	Pumping system and liner under meadow and pools to artificially maintain it.
2 Millennium Dome grey water treatment lagoons located in the wet meadow area.	Currently maintained by Thames water.
3 Dry meadow wildflowers and grasses.	A place to picnic.
4 Timber boardwalk running through the wet area of lagoons, ponds, reedbeds and wet meadow.	Allows access to view the wet area which may otherwise not be seen.
5 Native willow shrub planting between the footpath and riverside handrail.	Part of the ecological strategy for the Greenwich Peninsula.
6 A redundant wharf planted with native trees and shrubs and saltmarsh turfs from nearby reaches of the Thames.	Meridian line runs through the centre of the wharf.
7 A continuous segregated footway and cycleway along the entire frontage.	Part of the transport infrastructure for the Greenwich Peninsula.
8 Ornamental grasses/wildflowers in between the granite steps/slope between the riverside path and the Dome perimeter road.	Helps in softening the interface.

Table 2.2 – Summary and Evaluation of Landscape Features in Riverside Walk

Element	Evaluation
1 A continuous segregated footway and cycleway along the entire frontage including provision for limited emergency vehicle access.	Part of the transport infrastructure and the main element of riverside walk.
2 A step feature and lower pedestrian promenade between Millennium Pier and connection with the Trans-peninsula Path.	Part of the ecological strategy for the Greenwich Peninsula. Part of the design strategy for different spaces along the Riverside.
3 Embankment Gardens, an area of hard and soft landscape providing a viewing area across the Thames. Soft landscape of salt-tolerant herbs.	Part of the design strategy for different spaces along the Riverside.
4 Retaining wall between the Ecology Park and the Riverside walk.	Part of the design strategy for different spaces along the Riverside.
5 Quayside planting restricted to native estuarine and maritime species.	Rockery types require periods of renewal to maintain neat look.

Element	Evaluation
6 Band of planting to development plots using willows with planted ground flora of coarse grasses.	Height to maintain willows at and rotational pollarding to be agreed.

Nature Conservation Evaluation of Site

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

Table 2.3 – Summary of Features and Evaluation – Historic c. 1980s

Element	Description	Evaluation
Whole area of Meridian Gardens, Ordnance Wharf and Riverside Walk formerly in industrial use, then colonised naturally.	See Bibliography Section 2.0 WS Atkins 1990. Approximately 70% hard standing, 15% dense shrubs and 15% ruderals/rank grass/sparse scrub.	Estimated to be of at least High Local Value
Flora	Unknown. No data sufficiently site specific.	Unknown.
Fauna	Incomplete information, but shrubs noted to be 'good for birds'. Many summer visitors and passage migrants known to occur in the whole peninsula. This area likely to be key.	Unknown. But probably at least of High Local Value.

Table 2.4 – Summary of Features and Evaluation – 2000

Element	Description	Evaluation
Whole complex of habitats	<i>Meridian Gardens and Ordnance Wharf:</i>	
	Wet meadow, water pools, reed and marsh, sown wild flora.	Medium Local Value
	Dry grassland/picnic area with sown wild flora (ornamental)	Low Local Value
	Treatment lagoons	Medium Local Value
	Willow shrubs and vegetated wharf	High Local Value
	<i>Riverside Walk</i>	
Flora	Salt-tolerant herbs and gravel habitat.	Medium Local Value
	Willow belt with grass groundflora.	Medium Local Value
	<i>Meridian Gardens</i>	
	Planted sward includes 9 plant species uncommon in a London context.	High Local Value
	<i>Riverside Walk</i>	
	Planting includes 7 species uncommon in London.	High Local Value

Element	Description	Evaluation
Fauna	No data collated. Likely to be well colonised by invertebrates and utilised by birds already.	
	Use of falcons to deter pigeons from dome will have greatly decreased potential for birds.	
	<i>Meridian Gardens</i> <i>Riverside Walk</i>	Medium Local Value Medium to Low Local Value

Table 2.5 – Summary of Features and Evaluation – Predicted 2020 (if retained in current layout)

The future value will depend on these elements remaining in situ. This may not occur for habitats around the Meridian Gardens, which have been established primarily for purposes of display. Nevertheless, assuming that all habitats are maintained, and managed to achieve the status prescribed within the present plan, the following predictions can be made:

Element	Description	Evaluation
Whole complex of habitats	<i>Meridian Gardens:</i>	
	Wet meadow, water pools, reed and marsh, sown wild flora.	High Local Value
	Dry grassland/picnic area with sown wild flora (ornamental).	Low Local Value
	Treatment lagoons.	Medium Local Value
	Willow shrubs and vegetated wharf	High Local to Metropolitan Value
	<i>Riverside Walk</i>	
	Salt-tolerant herbs and gravel habitat.	Medium Local Value
	Willow belt with grass groundflora.	Metropolitan Value
Flora	<i>Meridian Gardens</i>	
	Planted sward includes 9 plant species uncommon in a London context.	High Local Value
	<i>Riverside Walk</i>	
	Planting includes 7 species uncommon in London.	High Local Value
Fauna	<i>Meridian Gardens</i>	Medium to High Local Value
	<i>Riverside Walk</i>	
	Should develop with sensitive management to support good populations of passerine bird, invertebrate and self-seeded wild flora. Black Redstart may feed on the open gravel/short sward areas, though competition by Robins may deter them.	High Local to Metropolitan Value

Site Value in the Wider Perspective and Implications for Management

Refer to 'Section A of the Greenwich Peninsula Management Plan' for peninsula-wide evaluation. The Meridian Gardens Sector has been the landscape setting for hundreds of thousands of visitors to the Millennium Dome. As such, the primary importance of this landscape zone has been to send out messages regarding environmental sustainability, rather than acting primarily as habitat. The importance or value of these ecological features is therefore greatly elevated above their absolute value (as shown in the previous section).

The value of the willow belt along the Riverside Walk as habitat will depend on the future evolution of the Central Village; and the balance reached relating to safety, views and shelter for people. The willow belt should be allowed to develop as habitat to send out strong messages relating to sustainable development and recognition of the need to mitigate, at least in part, for habitat lost during original clearance of the peninsula.

The management of both the Meridian Gardens and Riverside Walk should be viewed jointly with that of the adjacent inter-tidal terraces. Species of bird or invertebrates visiting the area may utilise habitats in both areas. The inter-tidal habitats form part of a stylised ecological succession extending inland, mimicking in a formal way the habitats that probably existed long before extensive human occupation of the area.

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.

2.2 MANAGEMENT POLICY

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

AIM: To maintain a simple and safe space for Amenity and Recreation value.

Table 2.6 – Ideal Management Objectives

NUMBER OF IDEAL OBJECTIVE	DESCRIPTION OF OBJECTIVE
IDEAL OBJECTIVE 1:	MAINTAIN ALL HARD LANDSCAPE ELEMENTS TO THEIR ORIGINAL DESIGN INTENTIONS AS SET OUT IN THE DETAILED DESIGN DRAWINGS.
IDEAL OBJECTIVE 2:	TO MAINTAIN TARGET WATER LEVELS IN THE MERIDIAN GARDENS PONDS AND REED BEDS WITHIN PRESCRIBED LIMITS TO BENEFIT HUMAN AMENITY AND TO PROMOTE WILDLIFE VALUE.
IDEAL OBJECTIVE 3:	MAINTAIN ALL SOFT LANDSCAPE ELEMENTS.
IDEAL OBJECTIVE 4:	PROMOTE AND PROTECT LONG TERM AMENITY INCLUDING AESTHETIC, RECREATIONAL, EDUCATIONAL AND RESEARCH BENEFITS.
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.
IDEAL OBJECTIVE 6:	IMPLEMENT AS FAR AS POSSIBLE MEASURES FOR ECOLOGICAL ENRICHMENT IN THE LONG TERM.

Table 2.7 – Ideal Management 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, street furniture, lighting. 1.1.2 Liaise with the Environment Agency, Rospa. 1.1.3 Maintain to the standard outlined in the Landscape Maintenance Specification for the original works.	
Operational Objective 1.2	Respond to development pressures.	1.2.1 Identify maintenance problems associated with on going development pressures and changes of use and implement re-mediation proposals in keeping with the original design intent.	
IDEAL OBJECTIVE 2:	TO MAINTAIN TARGET WATER LEVELS IN THE MERIDIAN GARDENS PONDS AND REED BEDS WITHIN PRESCRIBED LIMITS TO BENEFIT HUMAN AMENITY AND TO PROMOTE WILDLIFE VALUE.		
Operational Objective 2.1	Maintenance of ponds, reed bed and general wetland levels.	2.1.1 Maintain water levels by referring to operations manual. 2.1.2 Ensure plant establishment and continued growth so that design intentions are achieved. 2.1.3 Monitor health of emergent and aquatic plants to assist in water quality maintenance.	
Operational Objective 2.2	Maintain all water circulation equipment in good working order.		

Objective Number	Operational Objective	Outline Prescription	Review Period
Operational Objective 2.3	Monitor water on a periodic basis and compare to target levels, taking appropriate action if required.		
IDEAL OBJECTIVE 3:	MAINTAIN ALL SOFT LANDSCAPE ELEMENTS.		
Operational Objective 3.1	Maintain to desired levels.	<p>3.1.1 Maintain to the standard outlined in the Landscape Maintenance Specification for the original works.</p> <p>3.1.2 Ensure that establishment meets design intentions.</p> <p>3.1.3 Monitor establishment of Riverside Walk grass species – <i>Luzula sylvatica</i>, <i>Descampsia cespitosa</i>, <i>Carex pendula</i> to maintain health of plants, design intent and maximise retention of winter seed heads.</p> <p>3.1.4 Maintain to appropriate health and safety standards for all soft landscape elements eg trees, shrubs, grass and wildflowers.</p> <p>3.1.5 Monitor automatic irrigation water usage, aim to reduce water consumption.</p>	
Operational Objective 3.2	Replacement plants should be native species and of local origin.	3.2.1 Aim to replace ornamental varieties of <i>Festuca rubra</i> in the riverside hard terraces by the native species.	
Operational Objective 3.3	Review performance against specifications.	3.3.1 Promote re-use/re-cycling of materials within the site.	
IDEAL OBJECTIVE 4:	PROMOTE AND PROTECT LONG TERM AMENITY INCLUDING AESTHETIC, RECREATIONAL AND RESEARCH BENEFITS.		
Operational Objective 4.1	Put in place and maintain an effective and progressive system of management that involves local people/ residents, interested organisations in appropriate way and promotes integration with other (future) open space on the Greenwich Peninsula.	4.1.1 Co-ordinate with objectives and outline prescriptions for the Millennium Village Marsh and the Inter-Tidal Terraces.	1 year
Operational Objective 4.2	Provide for change.	4.2.1 Do not undertake works that would prevent future integration.	

Objective Number	Operational Objective	Outline Prescription	Review Period
Operational Objective 4.3	Accommodate increasing visitor numbers and maintain public safety.	4.3.1 Monitor pressures arising from increased visitors and identify ameliorative measures for implementation in the maintenance programme.	
Operational Objective 4.4	Provide and maintain safety equipment in relation to water.		
Operational Objective 4.5	Ensure areas in Meridian Gardens are re-instated following removal of Millennium Exhibitions Works.		
Operational Objective 4.6	Promote Meridian Gardens in any future use of the Dome.		
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.		
Operational Objective 5.1	To carefully address concerns raised by CAA regarding bird - strike risk.	See Peninsula-wide Plan.	
Operational Objective 5.2	Monitor all taxa and physico chemical parameters within habitats of Meridian Gardens and Riverside Walk according to the relevant objectives provided in the Component Management Plan 1 (Village Marsh).	5.2.1 Log all monitoring data onto suitable computer database (eg RECORDER). Half yearly review of implications of survey results for management prescriptions. 5.2.2 All data logs to be held by the Management Company controlling the Village Marsh. 5.2.3 Liaise with the warden for the Millennium Village Marsh. 5.2.4 Use botanical survey data to assess appropriate species for retention – re self colonising species.	
Operational Objective 5.3	Monitor and record colonisation and use of Meridian Gardens by invertebrates.	5.3.1 Survey of invertebrates in water bodies by standardised kick sampling every 2 years with identification to family level; every 5 years with identification of species level. 5.3.2 Annual recording of all butterflies and dragonflies seen each summer.	

Objective Number	Operational Objective	Outline Prescription	Review Period
Operational Objective 5.4	Monitor and record colonisation and use of Meridian Gardens and Riverside by birds.	See Peninsula-wide Plan	
IDEAL OBJECTIVE 6:	IMPLEMENT AS FAR AS POSSIBLE MEASURES FOR ECOLOGICAL ENRICHMENT IN THE LONG TERM.		
Operational Objective 6.1	Maintain the quality of the surroundings to support flora and fauna that has colonised – do not remove all self-seeding flora.	6.1.1 Refer to annual botanical survey data for decision on appropriate species to be kept and in which location.	
Operational Objective 6.2	Install, monitor and maintain artificial refuges for birds – Meridian Gardens.		1 year
Operational Objective 6.3	Assess different mowing regimes in Meridian Gardens to benefit establishment of wild flowers and invertebrates.		1 year
Operational Objective 6.4	Keep willow-belt scrub a minimum of 2m high for birds.	6.4.1 Monitor willow height. 6.4.2 Cut back shrub willows on a 3-5 yearly cycle (not all species in one year) to encourage development of stools and to maintain design intentions.	

Factors Influencing the Achievement of Ideal Management Objectives

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

The most important factor to be considered carefully in relation to achievement of the objectives for the Riverside Walk is potential future changes in attitudes to the willow planting. Should calls arise, for example, to reduce the height of the dense willow belt along the Riverside Walkway from the target height of two metres then it will be important to remember that:

- the dense willow belt is a key element of the sustainable redevelopment of the Greenwich Peninsula providing, as it does, important mitigation for loss of very extensive self-seeded scrub habitat that colonised the peninsula after industrial installations were decommissioned;
- the willow belt provides shelter to people as well as wildlife; and
- fears relating to criminal attacks launched from dense cover can be addressed by eg good lighting, CCTV and regular policing.

PART 3 – ACTION PLAN

Introduction

In this section, all prescriptions are brought together by the landscape manager as logical tasks organised by season and year. From this table it is possible to estimate the manpower requirements and costs of management.

To be completed in association with the Facilities Management Company.

PART 4 – PROJECT RECORDS AND REVIEW

Introduction

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

1. AS-BUILT DRAWINGS LIST COVERING THE AREAS

Name of Plan	WS Atkins Reference	Management Library Reference
MERIDIAN GARDENS AND ORDNANCE WHARF		
Finishes Ground Contours.	AC1787/C/9060	
Top of Clay Levels	AC1787/C/9061	
Pond Setting Out Information	AC1787/C/9070-1	
Ponds & Wetlands Irrigation Feed, Distribution and Gravity Return Layout	AC1787/C/9300	
Ponds & Wetlands Irrigation Details	AC1787/C/9301	
Irrigation Feed & Return Pump, Filter & Valve Chambers	AC1787/C/9302	
Meridian Park – Thames Water Feature	AC1787/C/9310	
Ordnance Wharf – Landscape Proposals, Plans and Elevations	AC1787/C/SK133-134	
Ordnance Wharf – Pond Edge Detail	AC1787/C/SKS 025	
Meridian Gardens Planting Proposals 1-6	AC1787/PLD/8759-8764	
Meridian Gardens Mulch Spread 1-5	AC1787/PLD/8765-8769	
Meridian Park Landscape Proposals	AC1787/PLD/9100	
RIVERSIDE WALKWAY		
Riverside Planting Proposals 1-8	AC1787/PLD/8711-8718	
Riverside Topsoil and Mulch Spread 1-8	AC1787/PLD/8731-8738	
Riverside Secondary Irrigation 1-8	AC1787/PLD/8751-8758	

APPENDIX 2

Typical Soils

2. TYPICAL SOILS

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

Imported Topsoil:

- Imported topsoil is to be provided for the planting areas within the landscape terrace, and for the creation of mounds within the riverside planting areas. Refer to Drawing Numbers: AC1787/PLD/8731, 8732, 8733, 8734, 8735, 8736, 8737 & 8738 for further details. Imported topsoil is also to be provided to the areas of grass reinforcement to Meridian Park – refer to Clauses Q30, 200 & 201 and Drawing Number: AC1787/PLD/9100 for further details.
- Provide any additional topsoil, 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.

- Obtain approval of a sample load of not less than 5 cu m. Retain for comparison with subsequent loads. The sample of 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.
- (i) An indication of the range of acceptable topsoil for the riverside planting areas (referred to as topsoil type 1 on Drawing Numbers AC1787/PLD/8731, 8732, 8733, 8734, 8735, 8736, 8737 & 8738) and for the area of grass reinforcement to Meridian Park (refer to Drawing Number AC1787/PLD/9100) 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:	(2-50mm) 30% by dry weight, where stones of a size 2-5mm do not exceed 20%. Maximum size of stones in any dimension: 50mm
Electrical Conductivity:	<2000 micro Siemens/cm in 1:2.5 soil/water extract
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.

- (ii) An indication of the range of acceptable topsoil for the landscape terrace planting areas (referred to as topsoil type 2 on Drawing Numbers AC1787/PLD/8731, 8732, 8733, 8734, 8735, 8736, 8737 & 8738) is given below:

Soil Texture:	Medium, friable, and showing a degree of porosity Sand (0.05-2.00mm) 50-70% Silt (0.002-0.05 mm) 10-50% Clay (less than 0.002 mm) 5-20%
Soil pH:	6.5-7.5
Stone content:	(2-50mm) 30% by dry weight, where stones of a size 2-5 mm do not exceed 20%. Maximum size of stones in any dimension: 50mm
Electrical Conductivity:	<1500 micro Siemens/cm in 1:2.5 soil/water extract
Phosphorus:	10-15 ppm;
Potassium:	60-120 ppm
Magnesium:	16-25 ppm
Nitrogen:	0.1-0.14%
Organic Matter:	1.5-3%
Micro-elements:	Refer to DoE Handbook ICRCL 59/83 for threshold values.