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ROYAL BOROUGH OF KENSINGTON AND CHELSEA

(5) CONDITION 12

DOCUMENT TYPE

SUPERSEDED DOCUMENTS

APPLICATIONS

LATE UPDATE

PP/02/01324

PP/02/01324

Lots Road Power Station And Chelsea Creek

Due to case file size the content has been broken down and scanned in sections as denoted.

Index of content of case files

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MIDDLEMARCH ENVIRONMENTAL

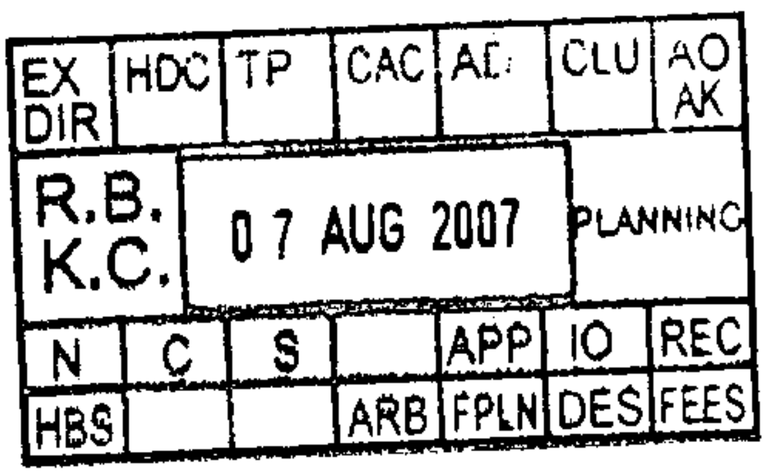
LOTS ROAD POWER STATION, CHELSEA, GREATER LONDON

INPUT INTO ECOLOGICAL DESIGN, MANAGEMENT AND MONITORING OF CHELSEA CREEK AND BASIN

HABITATS WITHIN DEVELOPMENT SITE MANAGEMENT PLAN

ROYAL BOROUGH OF KENSINGTON AND CHELSEA

A Report to Circadian Ltd



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Report Number: RT-MME-4911-04 A (RBKC)

July 2007

LOTS ROAD POWER STATION, CHELSEA, GREATER LONDON

INPUT INTO ECOLOGICAL DESIGN, MANAGEMENT AND MONITORING OF CHELSEA CREEK AND BASIN

HABITATS WITHIN DEVELOPMENT SITE MANAGEMENT PLAN

ROYAL BOROUGH OF KENSINGTON AND CHELSEA

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01 OF 02

01 CIRCADIAN LTD
02 MIDDLEMARCH ENVIRONMENTAL LTD

This report was conducted and compiled by
Dr Katy Read MCIWEM MIEEM CEnv DipSM
and Dr Philip Fermor MIEEM CEnv

Contract Number C4911

July 2007

CONTENTS

1. INTRODUCTION

On 6th June 2007, Middlemarch Environmental Ltd was commissioned by Circadian Ltd to provide a management plan associated with the long-term management of habitats within the proposed development site at Lots Road, London.

These works are associated with planning conditions with respect to the development of a 4.58 ha site located on a bend in the Thames adjacent to the King's Road, Chelsea (London). It is understood that 3.31 ha of the developed site will be retained as open space. The development will provide a new urban quarter containing 821 homes, shops, transport infrastructure and riverside open space. The scheme intends to open up around 600 m of river and creek to public use. The on-site former canal feature, known as Chelsea Creek will be transformed into a new linear park and water garden.

It is understood that the works outlined in this report are required in order to discharge ecological planning conditions imposed by the Royal Borough of Kensington and Chelsea (RBK&C) and the London Borough of Hammersmith and Fulham (LBH&F) on the development. This report provides information with respect to the ecological input to the project within the Royal Borough of Kensington and Chelsea. It is understood that those conditions which must be met before the site may be cleared are as follows.

RBK&C Condition 12: Treatment of Chelsea Creek

'Development shall not begin until a scheme for the treatment of Chelsea Creek has been submitted to and approved in writing by the local planning authority. The scheme shall include details of the construction and subsequent maintenance of the inter-tidal terraces, of the marginal and aquatic species to be planted and of the location and design of mooring posts, boat landing and access facilities and health and safety measures be provided. Development shall be carried out in accordance with both the approved details and a programme of implementation first agreed in writing with the local planning authority.'

These works have been carried out in accordance with the above brief and have utilised the following information about the site provided to Middlemarch Environmental Ltd by the client:

- 'Lots Road Power Station and Land at Thames Avenue Development – Regulation 19 Environmental Statement'. Circadian. November 2004.

- 'A Management Plan for Chelsea Creek Nature Area'. Nardell June 1992.
- 'The Foreshore Communities and Sediment Habitats in Chelsea Creek'. Physalia. August 2004.
- 'Lots Road Power Station – Input Into Ecological Design, Management and Monitoring of Chelsea Creek and Basin: Nesting Bird Survey and Site Clearance Protocol'. April 2007.
- 'BREEAM Ecological Assessment EcoHomes – Lots Road Power Station, London'. Middlemarch Environmental Ltd. April 2007.
- 'Lots Road, London – A Report on the Issues Associated with Planting on the Roofs Terraces'. Townshend Landscape Architects Ltd. January 2007. Issue: Draft for Comment.

This report is associated with the 10-year management of the habitats within the proposed development site including: creek terraces, green roofs, and bat and bird boxes.

This report should be read in conjunction with the following report which provides input to ecological design for given aspects of the proposed development:

- 'Lots Road Power Station – Input Into Ecological Design, Management and Monitoring of Chelsea Creek and Basin: Ecological Design – Royal Borough of Kensington and Chelsea'. July 2007.

This report provides information with respect to the ecology of the proposed habitats and features within the development site (Section 2), the proposed management of the habitats and bird and bat boxes within the development site (Section 3), and long-term monitoring proposals (Section 4).

2. ECOLOGY

2.1 Introduction

Information with respect to the proposed ecology of the habitat areas / features is provided in Middlemarch Environmental Ltd Report RT-MME-4911-02 A (RBKC). A description of the habitats is given in Table 2.1.

Table 2.1: Description of Habitats Considered Within Management Plan

Habitat	Description
Creek terraces	Three terraces are proposed for creation as part of the development works at the site. These terraces will be located along the northern and southern banks of the Chelsea Creek and will provide the following habitats: • Reedbed • Terrestrial and rivering planting
Extensive green roof	Extensive green roof areas have been identified for inclusion within the proposed development. These will be located on Building KC4. The roof will be established using a 'London Living Roof' seed mix.
Bat and bird boxes	As part of the proposed development a series of targeted bat and bird boxes will be installed on the walls / roof of the proposed buildings. These will be targeted to provide nesting areas specifically for: peregrine falcon house martin, house sparrow and bats. In addition, other bird boxes will be installed for use by a range of bird species.

Note – additional information with respect to the proposed design of these habitats / areas is given in Middlemarch Environmental Ltd Report RT-MME-4911-02 A (RBKC) (Middlemarch Environmental Ltd, 2007).

A summary of the ecological value of the existing and proposed habitats within Chelsea Creek Basin are presented in Table 2.2.

Table 2.2: Ecological Evaluation of Proposed Habitats Within Development Site

Habitat/Feature	London BAP	KCBC LBAP
Creek Terraces	✓ (Tidal Thames)	✓ (Water)
Green Roofs	✓ (Urban Wastelands)	-
Bird and Bat Boxes	✓ (targets for various birds and bat species)	✓ (targets for various birds and bat species)

London BAP London Biodiversity Action Plan
KCBC BAP Kensington and Chelsea Borough Council Local Biodiversity Action Plan

The proposed habitat management works will also provide habitat suitable for species listed on London BAP and Kensington and Chelsea Local BAP. The species include pipistrelles and other bat species, birds (house martin, house sparrow) and invertebrates.

3. HABITAT CREATION AND MANAGEMENT

3.1 Introduction

The habitat creation proposals are based on the information provided in the following document (Middlemarch Environmental Ltd, 2007): 'Lots Road Power Station – Input Into Ecological Design, Management and Monitoring of Chelsea Creek and Basin: Ecological Design – Royal Borough of Kensington and Chelsea'. July 2007.

The aims and objectives for habitat management are presented in Section 3.2 to 3.4.

3.2 Creek Terraces

3.2.1 Aims and Objectives

Aim: To create and maintain a diverse habitat within the Creek Terraces.

Objectives:
1. Maintain areas of reedbed and terrestrial / riverine habitats within the creek terraces.
2. Provide habitat for target species listed in relevant Biodiversity Action Plans.

The maintenance of these habitats will work towards meeting targets outlined in the London BAP and Royal Borough of Kensington & Chelsea Local BAP.

3.2.2 Habitat Management Prescriptions

Table 3.1 presents management activities in order to meet the aims and objectives for these habitats.

Table 3.1: Creek Terraces Management Prescriptions

Habitat	Prescription	Purpose	Timing	Year 1	2	3	4	5	6	7	8	9	10
Creek Terrace 1 [Terrestrial / Riverine Planting]	Grassland Grassland will require minimal watering. Sward to be cut when grass reaches 100 mm and cut to 50 mm. Cuts to be completed throughout Year 1.	Establishment of habitat.	Mar and Sep	x									
	Grassland to be cut once between mid August to late September to less than 50 mm. Second cut to take place in October where necessary. Remove grass arisings from the site or stack them in discrete grass heaps within identified area of site. Grass paths may be mown more frequently throughout the year.	Maintenance of diversity of sward within meadow.	Cut 1: mid Aug to late Sep Cut 2: Oct		x	x	x	x	x	x	x	x	x
	Ensure that responsibilities are discharged under the Noxious Weeds Act, 1959 using methods such as spot treatment for the following species: • Common ragwort *Senecio jacobaea* • Spear thistle *Cirsium vulgare* • Creeping thistle *Cirsium arvense* • Broad-leaved dock *Rumex obtusifolius* • Curled dock *Rumex crispus*	Compliance with UK legislation, particularly during development of the site.	Spot treatment during May or Jun	x	x	x	x	x	x	x	x	x	x

Table 3.1: Creek Terraces Management Prescriptions

Habitat	Prescription	Purpose	Timing	Year 1	2	3	4	5	6	7	8	9	10
	Scattered Trees and Scrub Minimal intervention strategy.	Allow habitat to grow and provide important features for nesting birds and insects.	n/a	x	x	x	x		x	x	x	x	
	Thin any trees / scrub with overhanging branches by the open water on a rotational basis.	To provide a mosaic of vegetation along creek edge.	Nov to Feb					x					x
Creek Terrace 2 [Reedbed]	On-going removal of litter and debris from area. Area should be subject to litter/debris removal twice a year.	Long-term maintenance of visual impact of area.	Feb and Sep (to avoid disturbance to nesting birds)	x	x	x	x	x	x	x	x	x	x

3.3 Green Roofs

3.3.1 Aims and Objectives

Aim: Creation and maintenance of diverse green roof habitats.

Objectives: 1. Maintain areas of extensive green roof habitat.

The maintenance and enhancement of this habitat and provision of foraging and nesting habitat for birds and foraging habitat for bats will work towards meeting targets outlined in the London BAP and Royal Borough of Kensington & Chelsea Local BAP.

3.3.2 Habitat Management Prescriptions

Table 3.2 presents management activities in order to meet the aims and objectives for the habitats.

Table 3.2: Extensive Green Roof Management Recommendations

				Year									
Compartment	Prescription	Purpose	Timing	1	2	3	4	5	6	7	8	9	10
Extensive Green Roofs	Adopt a minimal intervention strategy to allow development of habitat on roof surface.	Development of habitats within extensive green roof areas and provision of habitats for house martin, house sparrow and bats species.	n/a	x	x								
	Cut one-third of the habitat each year. Remove arisings from the site or stack them in discrete heaps.	Maintain habitat type.	Sep to Oct			x	x	x	x	x	x	x	x

3.4 Bat and Bird Boxes

3.4.1 Aims and Objectives

Aim: To ensure maintenance of bird nesting and bat foraging opportunities with the bird boxes on the site.

Objectives: 1. To manage the bird box resource to ensure nesting opportunities are available.

1. To manage the bat box resource to ensure roosting opportunities are available.

3.4.2 Management Prescriptions

Table 3.3 presents the activities to be carried out in order to meet the aims and objectives of this item of the management plan.

Table 3.3: Bird and Bat Box Management Recommendations

				Year									
Compartment	Prescription	Purpose	Timing	1	2	3	4	5	6	7	8	9	10
Bird Boxes	Bird boxes should be cleaned out on an annual basis. This would involve removing any used nesting material etc. When cleaning out boxes care should be taken not to inhale dust from nest contents. Do not take used nest materials indoors and carefully wash hands after works.	Maintain nesting opportunity for birds.	Dec to Feb	x	x	x	x	x	x	x	x	x	x
	Visual inspection of bird boxes to ensure that they are still intact, functioning well and are secure. Repair or replace any faulty items.	Ensure bird boxes are still intact and functioning well.	Dec to Feb	x	x	x	x	x	x	x	x	x	x
Bat boxes	Visual inspection of bat boxes to ensure that they are still intact, functioning well and are secure. Repair or replace any faulty items.	Ensure bird boxes are still intact and functioning well.	Jan to Dec	x	x	x	x	x	x	x	x	x	x

4. MONITORING

An integral element of any management system and associated plans for future improvement is a system of effective monitoring. A monitoring system should be established for the habitats within the proposed development site with the aim of providing data on habitat change as a result of changing management regimes.

It is recommended that an ecological survey of the entire site is conducted once every two years in order to assess the development of habitats on the site as a whole. During the ecological survey all compartments at the site should be visited. Photographs should be taken from set locations in each compartment during the walkovers. These will be used to create a photographic record of habitat change over a ten-year monitoring period.

During the survey and photographic surveys any changes or deterioration in habitats should be recorded on scale site maps in order that management recommendations can be made to improve the quality of these areas.

In addition, information with respect to the deposition of rubbish and debris and the status of the bat and bird boxes should be completed with any recommendations from these monitoring visits reported on an on-going basis and any remedial works necessary included into work schedules.

Table 4.1: Proposed Monitoring Requirements for Creek Terraces, Brown/Green Roofs and Bird / Bat Boxes

Habitat	Monitoring	Timing	Year 1	2	3	4	5	6	7	8	9	10
All habitats	Completion of a National Vegetation Classification Survey of all habitats within the proposed development site. Surveys to be carried out using standard quadrat sizes to assess the understorey, field and ground layers. The information should be analysed using National Vegetation Classification techniques such as MATCH to determine changes in community type. Information to be reviewed to provide necessary on-going changes to management regime.	May - Jun	x		x		x		x		x	
Creek Terrace 2	Bi-annual assessment of the levels of debris and rubbish within Terrace 2. Reporting and necessary remedial works undertaken as soon as possible.	Feb and Sep	x	x	x	x	x	x	x	x	x	x
Fixed-point Photography	To enable a visual assessment of the development of habitats within the site fixed-point photography should be used to determine the changes in the habitats throughout the monitoring period. Fixed-point photographs will be taken from agreed points during each visit.	May - Jun	x	x	x	x	x	x	x	x	x	x
Bird and Bat Boxes	Annual monitoring of the bird and bat box resource at the site. Any problems should be reported and necessary remedial works undertaken as soon as possible.	Bird Boxes: Dec to Feb Bat Boxes: Jan to Dec		x	x	x	x	x	x	x	x	x

REFERENCES

Middlemarch Environmental Ltd. (2007). 'Lots Road Power Station – Input Into Ecological Design, Management and Monitoring of Chelsea Creek and Basin: Ecological Design – Royal Borough of Kensington and Chelsea'. July 2007. Middlemarch Environmental Ltd, Coventry.

MIDDLEMARCH ENVIRONMENTAL

QUALITY ASSURANCE

LOTS ROAD POWER STATION,
CHELSEA, GREATER LONDON

INPUT INTO ECOLOGICAL DESIGN,
MANAGEMENT AND MONITORING OF
CHELSEA CREEK AND BASIN

CHELSEA BASIN MANAGEMENT PLAN

A Report to Circadian Ltd

Contract Number: C4911

Report Number: RT-MME-4911-04 A (RBKC)

Revision Number: 00

Description: Final

Date: July 2007

Checked by:

Lois Browne

pp James Calow
Principal Consultant

Approved by:

P Fermor

Dr Philip Fermor
Managing Director

Lots Road
Chelsea Creek Design Principles

See revised document Council Stamped 2nd Nov 2007.

TOWN352(08)600 R01
August 2007

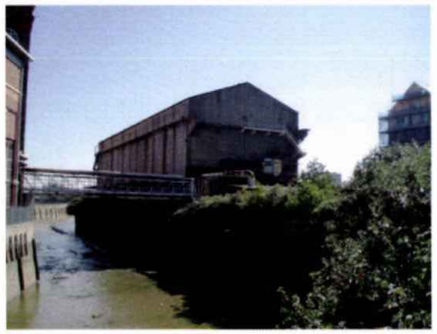
Developer: Hutchison Whampoa Property (Circadian Ltd.)

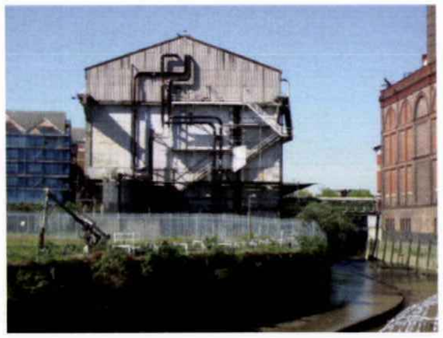
TOWNSHEND Landscape Architects

CONTENTS

Introduction



Existing images of Chelsea Creek

Introduction

The purpose of this document is to summarise the commitments that the Developer, Circadian Ltd, is making in relation to the regeneration of the Chelsea Creek and Chelsea Basin areas.

The Chelsea Creek is a considerable asset both in terms of its value to the residents of the development but of equal if not more importance to the wider landward and riverside community. The principle in developing the design of the Creek is to provide a long-term recreational amenity that seeks to balance the visual, ecological and engineering requirements whilst allowing boat users, cyclists, and the general public to enjoy an area, which will become a significant London-wide area of interest.

In addition, Circadian Ltd. is aware of it's obligations in respect of management and regular maintenance of the asset and is committed to it's upkeep and ensuring it is enjoyed for future generations. The costs in meeting this obligation would rest with the owners of the Creek. ? This implies C. or RBKC

Lots Road - Master Plan

Chelsea Creek - Masterplan

Chelsea Creek forms part of the Lots Road masterplan which has been granted planning consent by the London Borough of Hammersmith & Fulham and the Royal Borough of Kensington & Chelsea.

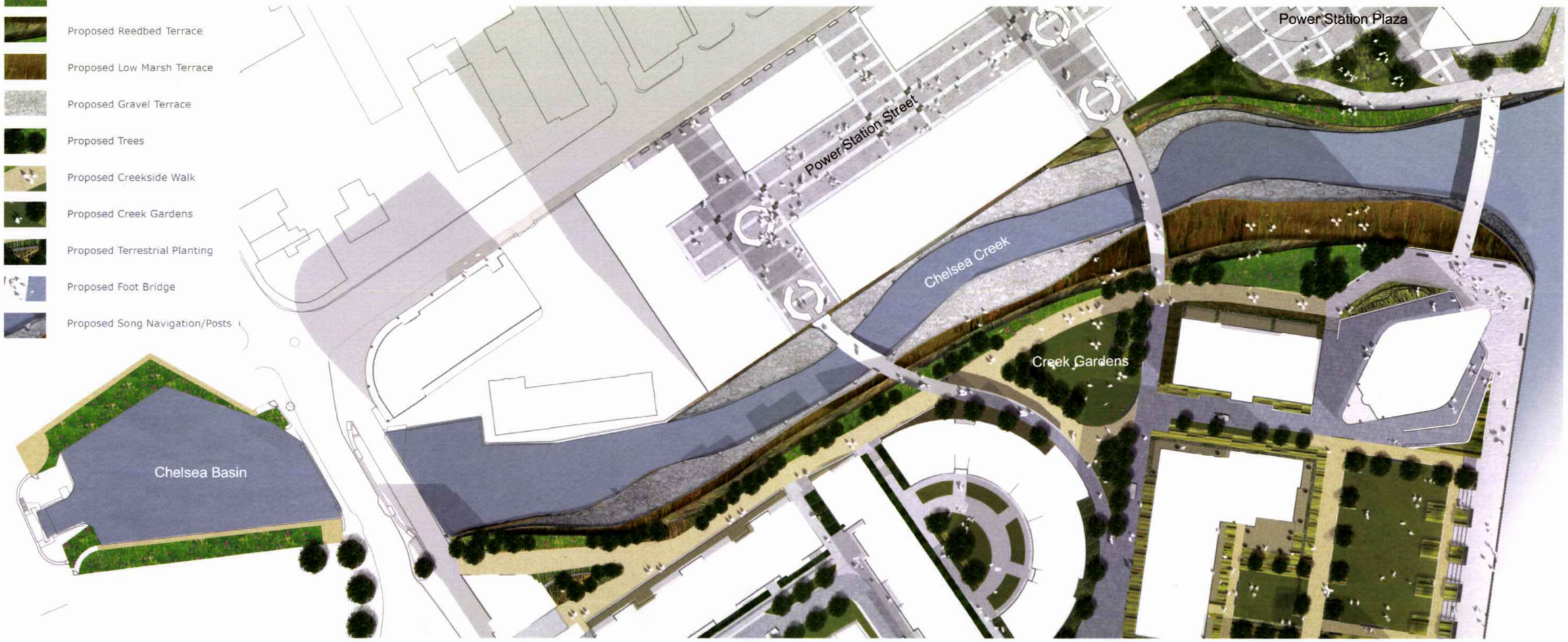
The Creek runs through the Lots Road site dividing it into two, however the the masterplan seeks to treat the creek, with its terraces and associated spaces as a key features that are incorporated within the propsals for the overall site.

-personal file.

Chelsea Creek - Plan

KEY

- Proposed Riverine/Terrestial Terrace
- Proposed Reedbed Terrace
- Proposed Low Marsh Terrace
- Proposed Gravel Terrace
- Proposed Trees
- Proposed Creekside Walk
- Proposed Creek Gardens
- Proposed Terrestrial Planting
- Proposed Foot Bridge
- Proposed Song Navigation/Posts

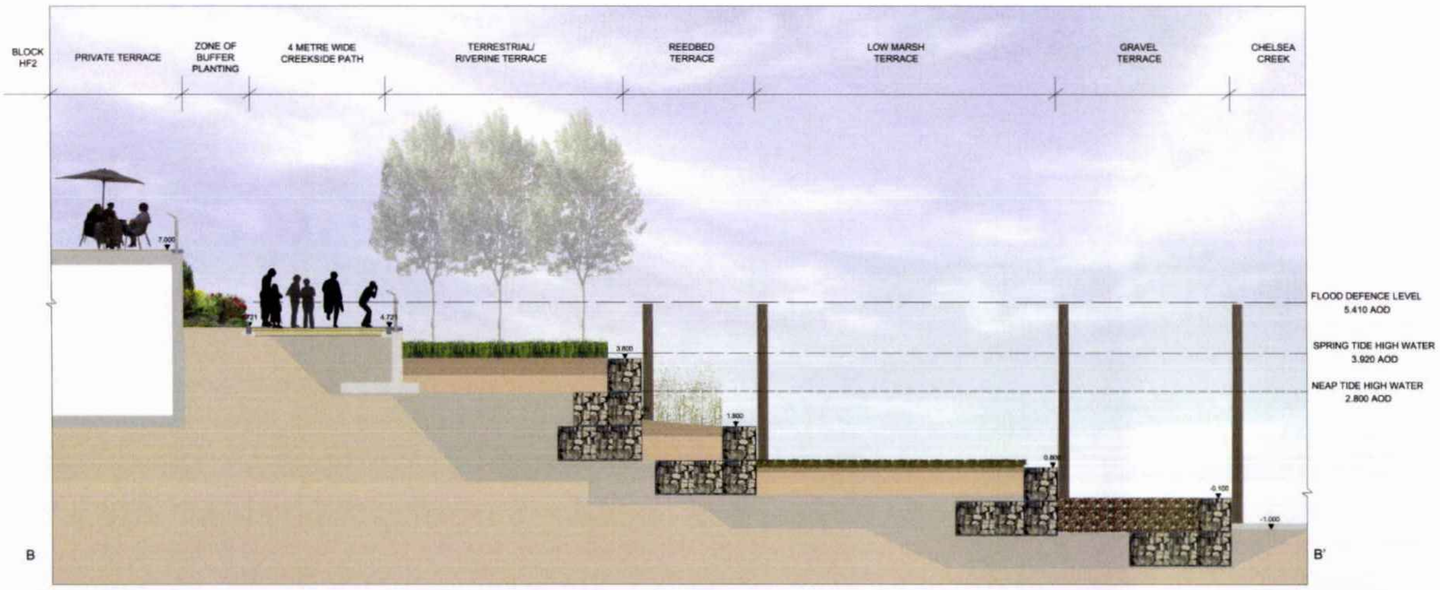


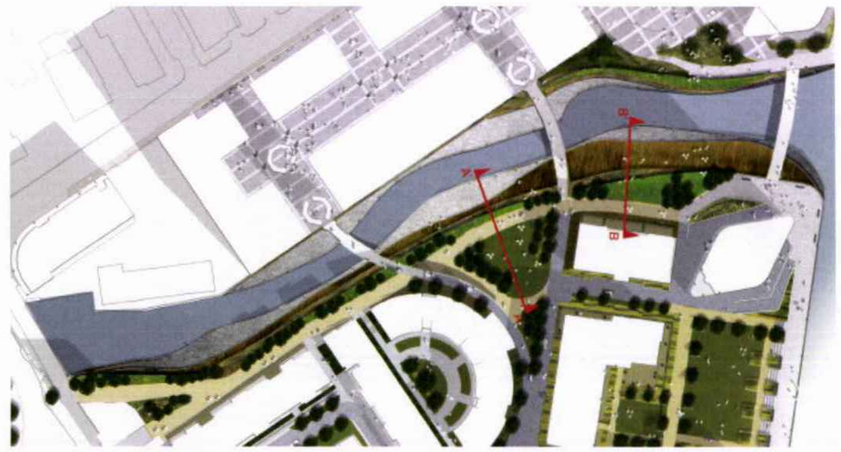
Design Principles

Chelsea Creek Principles

- Opening up previously inaccessible stretches of the River Thames to the Public
- The proposed public access to the river would make a positive contribution to the character and appearance of the locality, and the positioning of new public open spaces at the points of access to the creek and river would provide benefits to the wider community
- Revitalisation of a lost asset; Chelsea Creek.
- Without development of the Power Station project, the Creek will suffer from progressive silt deposition resulting in complete siltation in 20-30 years. The changes in the form of the Creek would significantly diminish the potential for use of the creek by Westminster Boating Base and Cremorne Riverside Centre. Ecological diversity and the habitat value of the Creek would also be alterered. The corresponding flood storage capacity will also be lost.
- Reduction in the height of the existing Creek walls and the formation of a series of terraces within the Creek together with a 10m wide channel in the base of the Creek. The terraces will provide a substrate upon which intertidal plants can be established and would provide a vertical transition of a range of habitats.
- The construction of intertidal terraces along the entire length of the south bank of the Chelsea Creek and along the north bank of the Creek between the Power Station and the Thames to produce a more natural bank gradient;
- The construction of three pedestrian bridges over the Creek connecting both the RBK&C and H&F sites which do not provide any additional restrictions to the use of the Creek beyond that already imposed by the Thames Avenue Bridge near the Chelsea Basin.
- Provision of significantly improved Riverside facilities including the Creekside Park and Riverside Square;
- The upper terraces provide continuous pedestrian access linking the Creek and the Thames path providing increased access to the waterside.

Chelsea Creek - Sections

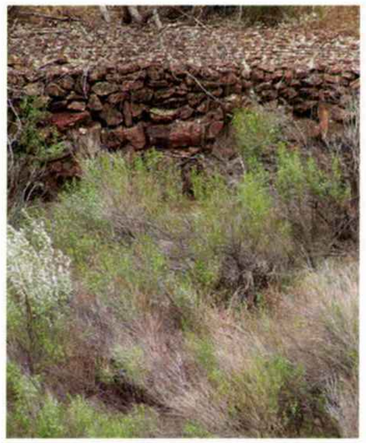




Section Location Plan

Chelsea Creek - Character





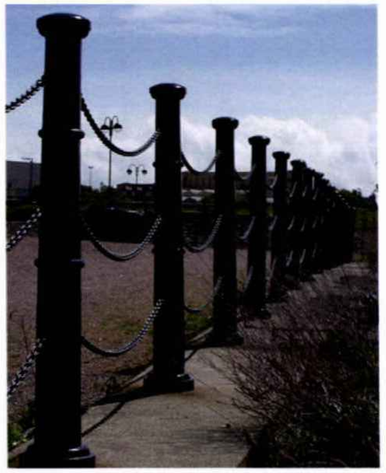


Chelsea Creek - Character

The creek and associated creekside gardens will be soft in character with creekside terraces that will flood at different times of the year and on different tides. These will incorporate indigenous tree species such as willow and Alder trees and indigenous riverine, reedbed and low marsh planting to re-introduce planting associtated with the River Thames before the urbanisation of London.

The creek will have different levels of activity along its length from quietier zones with limited public access to encourage wildlife and habitats to more active zones incorporating recreation and pedestrain routes.

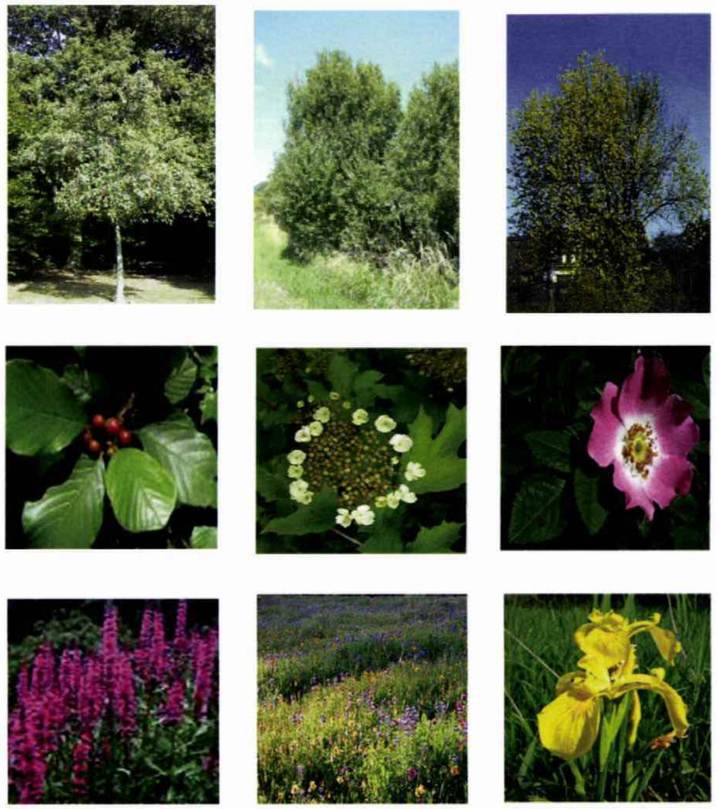
Chelsea Creek - Amenity & Recreation



Amenity/ Recreation

- The safety of users of the Creek will be of prime impor tance and full provision of escape ladders, rope pulls, life rings and boat tie points would be made.
- The extension of the Thames Path and Natural Trail and Cycle Route connecting the existing path at Chelsea Harbour with Lots Road and, for the first time in 100 years, permitting public access across the site and along the edge of the Creek;
- Provision of safe access and egress points to the foreshore and tidal terraces with an access point to be provided, mid-way along the Creek frontage
- Provision of new safety features such as grab chains and and life belts;
- Lowering of the southern Creek wall and part of the northern Creek wall and creation of new retreated flood defences at these points;
- Amenity Recreation – The Creek is currently used by canoeists from Westminster Boating Base and Cremorne Riverside Centre;
- The provision of safe, flat resting locations for canoes on the foreshore and small dinghy boat tie points and safe means of escape.

Chelsea Creek - Ecology & Habitat



Examples of riverine/terrestrial planting species on higher terraces

Examples of low marsh planting species on lower terraces

Examples of reed planting on middle terrace

Example of tidal planting along the river Thames.

Chelsea Creek Ecology/ Habitat

- The creation of a Creekside Park and improved ecological habitat along the creek walls, through the use of terraces would increase both access to and enjoyment of the Creek and the River Thames on the site by both residents and the public.
- Planting to the upper terraces would include alder and willow species and river birch supplemented at ground level by a range of locally occurring shrubs, groundcover and herbaceous plants plus areas to allow natural colonisation/ regeneration. Timber and hurdle screens would be included to screen nesting birdlife.
- Second and tertiary vegetated terraces reflect more regular inundation; planted as reedbed or lower marsh accordingly.
- The lowest terrace would be maintained as foreshore habitat.
- Horizontal and vertical bulk timbers will be fixed to the existing Power Station; designed to provide perches and roosts to increase habitat diversity.
- Improvements to the visual appearance and ecological value of the River and Creek walls, the planting of native species and enhancement of existing habitats and biodiversity;
- Abstraction of surface water from the River Thames to create a water flow within Chelsea Creek at periods of low tide;
- Abstraction of water from the rising groundwater in the underlying Chalk aquifer to minimise the requirement to use water from other treated water resources.

Chelsea Creek - Maintenance

Image illustrating the creek bed when the power station was operational.

Image illustrating silting up of the creek bed post closure of the power. station.

Maintenance

- The long term maintenance of the resource of Chelsea Creek that would be otherwise lost or diminished by progressive accumulation of silt.
- Repair and stabilisation of the existing Creek and river walls.
- Introduction of water flow into the Creek:
- Maintain the current tidal regime;
- Minimise siltation and loss of the Creek;
- Increase flood capacity.
- Retention of current sporting amenity;
- Provide an opportunity for improved public access/ educational potential;
- Incorporate bankside enhancement work to improve the existing lower frontage from an ecological perspective;
- Help prevent undesirable build up of algae that might occur in the relatively static water and hence prevent un wanted odour;
- Help prevent depletion of oxygen as a result of algal photo synthesis; and
- Remove the need for substantial dredging, utilising a managed low tide water flow.

Chelsea Creek Basin

Chelsea Creek Basin

- A management plan for the basin, which has long been promoted by RBK&C, would be part funded by Circadian as a result of this development. The implementation of an educational facility in the basin, in conjunction with the Environment Agency, RBK&C and other relevant bodies, further enhances the recreational value of the Site.
- Construction of new access (suitable for disabled access) along northern boundary of Basin area.
- Creation of viewing area in north-west corner of Basin area.
- Creation/ repair of platform in south-western corner of Basin.
- Creation of new steps in south-western corner of site to lead from new gate to viewing platform.
- Lower bridge parapet to open up vista of the Basin.
- Development and installation of interpretation boards.
- Along viewing platform on southern bank.
- Within viewing area in north-west corner.
- Along bridge parapet.
- Rubbish and debris removal in the basin area to the west of Chelsea Harbour Drive and implementation of an ongoing management plan in association with RBK&C, LBHF and the London Wildlife Trust so that the basin can be used as an educational resource.

Hutchison Whampoa Property

30 October 2007

Mr David Prout
Director of Planning & Conservation
Royal Borough of Kensington & Chelsea
The Town Hall
Hornton Street
London
W8 7NX

GCS

Dear Mr Prout

Re: Lots Road PowerStation Redevelopment

Further to my letter of 21 August 2007 when I provided you with a copy of a brochure setting out the Design Principles we are following for the Chelsea Creek improvements, you subsequently made comment about removing public access to the Basin area. Our landscape architect has amended the brochure in accordance with your comments and I am pleased to enclose four copies for your use and reference.

Yours sincerely

David Beynon
Senior Project Manager

EX DIR	HDC	TP	CAC	AD	CLU	AO AK
R.B. K.C.	- 2 NOV 2007				PLANNING	
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HBS			ARB	FPLN	DES	FEES

Enc:

c.c. Cllr M Cockell (Leader of the Council) RBK&C (w/enc)
Cllr D Moylan (Deputy Leader of the Council) RBK&C (w/enc)
Mr D Myers (Town Clerk & Chief Executive) RBK&C (w/enc)
Mr I Doolan (Borough Valuer) RBK&C (w/enc)

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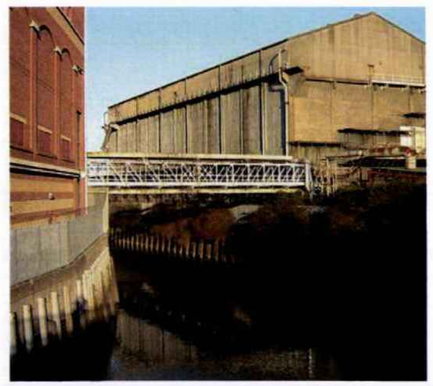
Lots Road
Chelsea Creek Design Principles

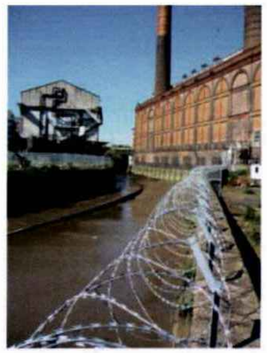


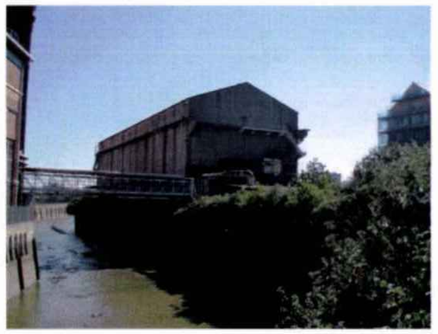
TOWN352(08)600 R02
August 2007

Developer: Hutchison Whampoa Property
(Circadian Ltd.)

TOWNSHEND
Landscape Architects

CONTENTS






Existing images of Chelsea Creek

Introduction

The purpose of this document is to summarise the commitments that the Developer, Circadian Ltd, is making in relation to the regeneration of the Chelsea Creek area.

The Chelsea Creek is a considerable asset both in terms of its value to the residents of the development but of equal if not more importance to the wider landward and riverside community. The principle in developing the design of the Creek is to provide a long-term recreational amenity that seeks to balance the visual, ecological and engineering requirements whilst allowing boat users, cyclists, and the general public to enjoy an area, which will become a significant London-wide area of interest.

In addition, Circadian Ltd. is aware of it's obligations in respect of management and regular maintenance of the asset and is committed to it's upkeep and ensuring it is enjoyed for future generations. The costs in meeting this obligation would rest with the owners of the Creek.

Lots Road - Master Plan

Chelsea Creek - Masterplan

Chelsea Creek forms part of the Lots Road masterplan which has been granted planning consent by the London Borough of Hammersmith & Fulham and the Royal Borough of Kensington & Chelsea.

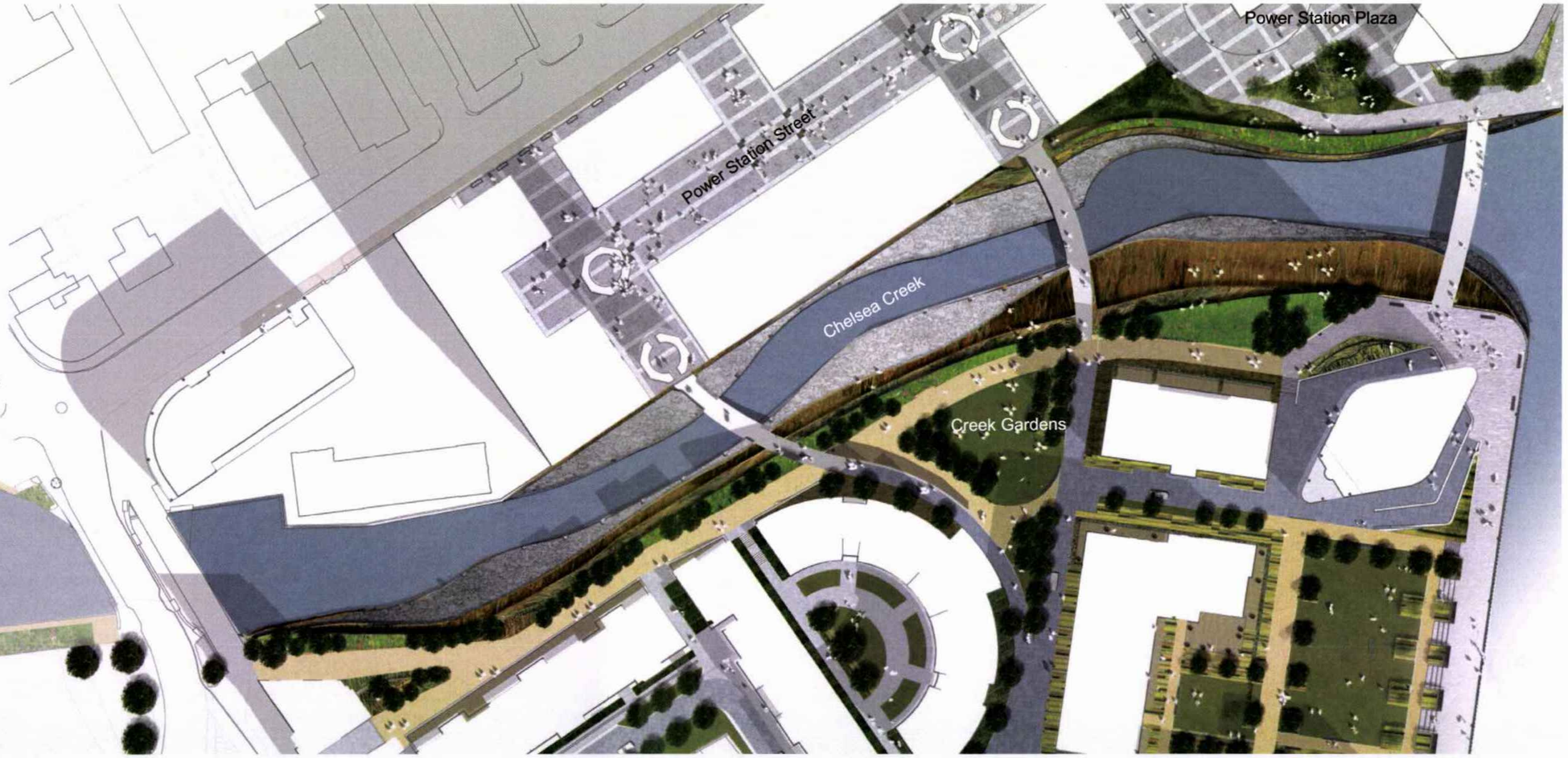
The Creek runs through the Lots Road site dividing it into two, however the the masterplan seeks to treat the creek, with its terraces and associated spaces as a key features that are incorporated within the propsals for the overall site.

Developer: Hutchison Whampoa Property (Circadian Ltd.)

Chelsea Creek - Plan

KEY

- Proposed Riverine/Terrestial Terrace
- Proposed Reedbed Terrace
- Proposed Low Marsh Terrace
- Proposed Gravel Terrace
- Proposed Trees
- Proposed Creekside Walk
- Proposed Creek Gardens
- Proposed Terrestrial Planting
- Proposed Foot Bridge
- Proposed Song Navigation/Posts

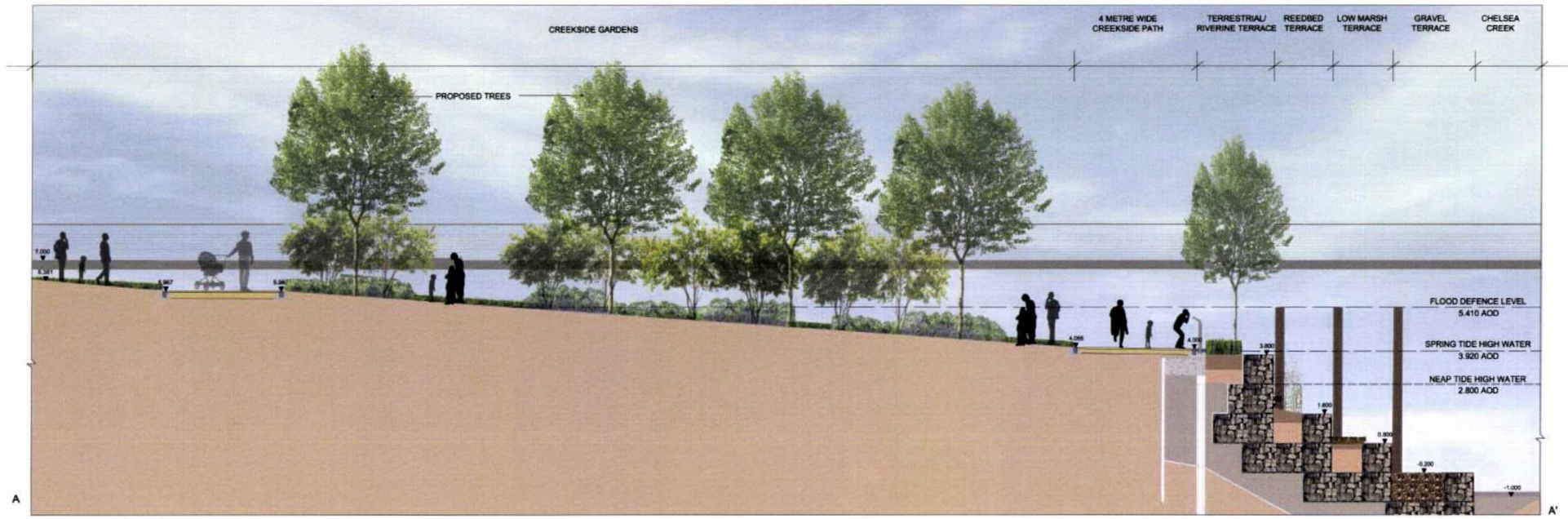


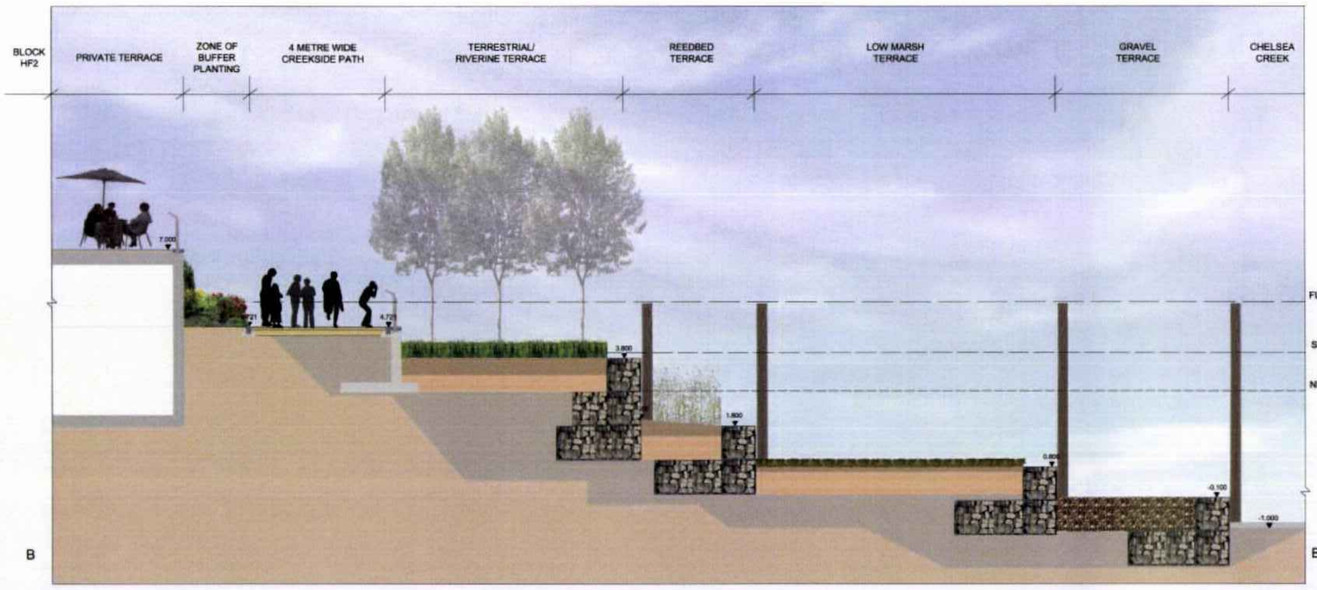
Design Principles

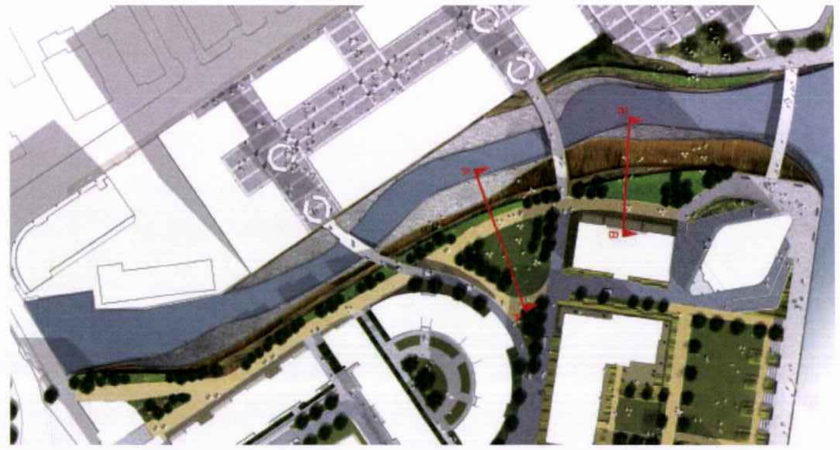
Chelsea Creek Principles

- Opening up previously inaccessible stretches of the River Thames to the Public
- The proposed public access to the river would make a positive contribution to the character and appearance of the locality, and the positioning of new public open spaces at the points of access to the creek and river would provide benefits to the wider community
- Revitalisation of a lost asset; Chelsea Creek.
- Without development of the Power Station project, the Creek will suffer from progressive silt deposition resulting in complete siltation in 20-30 years. The changes in the form of the Creek would significantly diminish the potential for use of the creek by Westminster Boating Base and Cremorne Riverside Centre. Ecological diversity and the habitat value of the Creek would also be alterered. The corresponding flood storage capacity will also be lost.
- Reduction in the height of the existing Creek walls and the formation of a series of terraces within the Creek together with a 10m wide channel in the base of the Creek. The terraces will provide a substrate upon which intertidal plants can be established and would provide a vertical transition of a range of habitats.
- The construction of intertidal terraces along the entire length of the south bank of the Chelsea Creek and along the north bank of the Creek between the Power Station and the Thames to produce a more natural bank gradient;
- The construction of three pedestrian bridges over the Creek connecting both the RBK&C and H&F sites which do not provide any additional restrictions to the use of the Creek beyond that already imposed by the Thames Avenue Bridge near the Chelsea Basin.
- Provision of significantly improved Riverside facilities including the Creekside Park and Riverside Square;
- The upper terraces provide continuous pedestrian access linking the Creek and the Thames path providing increased access to the waterside.

Chelsea Creek - Sections



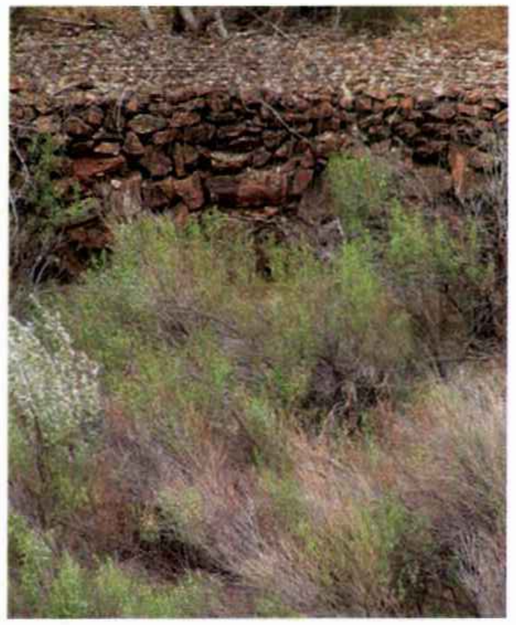




Section Location Plan

Chelsea Creek - Character



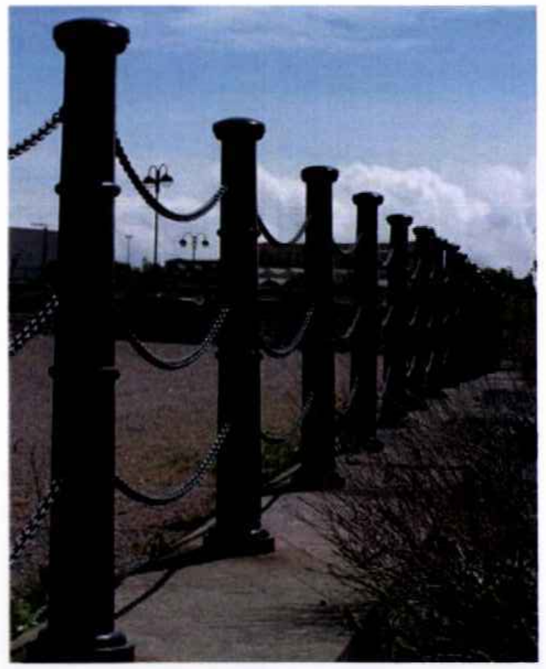



Chelsea Creek - Character

The creek and associated creekside gardens will be soft in character with creekside terraces that will flood at different times of the year and on different tides. These will incorporate indigenous tree species such as willow and Alder trees and indigenous riverine, reedbed and low marsh planting to re-introduce planting associtated with the River Thames before the urbanisation of London.

The creek will have different levels of activity along its length from quietier zones with limited public access to encourage wildlife and habitats to more active zones incorporating recreation and pedestrain routes.

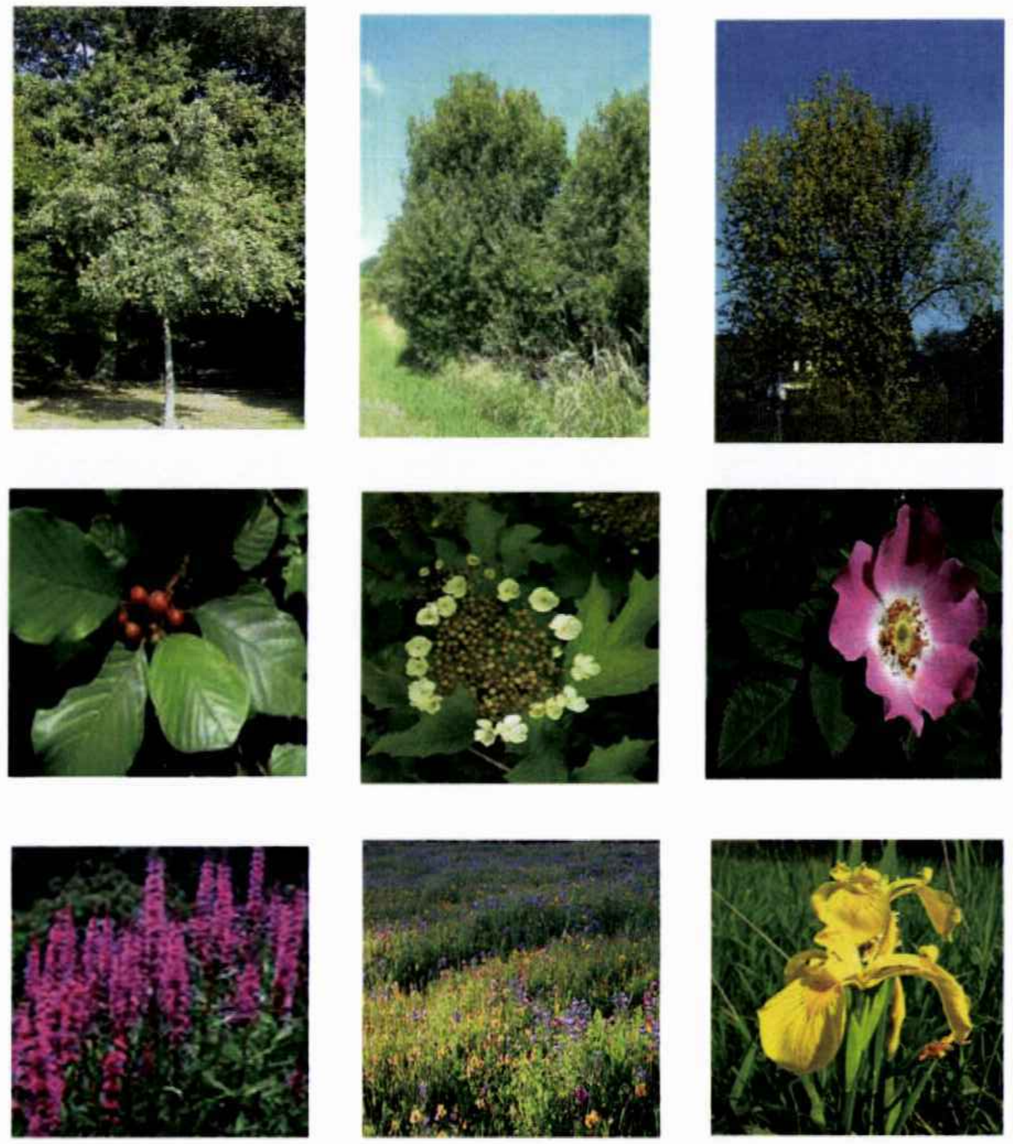
Chelsea Creek - Amenity & Recreation



Amenity/ Recreation

- The safety of users of the Creek will be of prime impor tance and full provision of escape ladders, rope pulls, life rings and boat tie points would be made.
- The extension of the Thames Path and Natural Trail and Cycle Route connecting the existing path at Chelsea Harbour with Lots Road and, for the first time in 100 years, permitting public access across the site and along the edge of the Creek;
- Provision of safe access and egress points to the foreshore and tidal terraces with an access point to be provided, mid-way along the Creek frontage
- Provision of new safety features such as grab chains and and life belts;
- Lowering of the southern Creek wall and part of the northern Creek wall and creation of new retreated flood defences at these points;
- Amenity Recreation – The Creek is currently used by canoeists from Westminster Boating Base and Cremorne Riverside Centre;
- The provision of safe, flat resting locations for canoes on the foreshore and small dinghy boat tie points and safe means of escape.

Chelsea Creek - Ecology & Habitat



Examples of riverine/terrestrial planting species on higher terraces

Examples of low marsh planting species on lower terraces

Examples of reed planting on middle terrace

Example of tidal planting along the river Thames.

Chelsea Creek Ecology/ Habitat

- The creation of a Creekside Park and improved ecological habitat along the creek walls, through the use of terraces would increase both access to and enjoyment of the Creek and the River Thames on the site by both residents and the public.
- Planting to the upper terraces would include alder and willow species and river birch supplemented at ground level by a range of locally occurring shrubs, groundcover and herbaceous plants plus areas to allow natural colonisation/ regeneration. Timber and hurdle screens would be included to screen nesting birdlife.
- Second and tertiary vegetated terraces reflect more regular inundation; planted as reedbed or lower marsh accordingly.
- The lowest terrace would be maintained as foreshore habitat.
- Horizontal and vertical bulk timbers will be fixed to the existing Power Station; designed to provide perches and roosts to increase habitat diversity.
- Improvements to the visual appearance and ecological value of the River and Creek walls, the planting of native species and enhancement of existing habitats and biodiversity;
- Abstraction of surface water from the River Thames to create a water flow within Chelsea Creek at periods of low tide;
- Abstraction of water from the rising groundwater in the underlying Chalk aquifer to minimise the requirement to use water from other treated water resources.

Chelsea Creek - Maintenance

Image illustrating the creek bed when the power station was operational.

Image illustrating silting up of the creek bed post closure of the power. station.

Maintenance

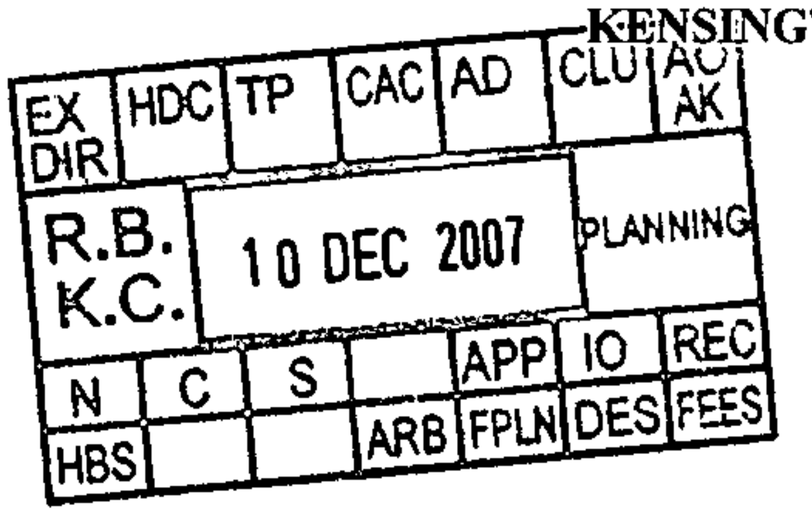
- The long term maintenance of the resource of Chelsea Creek that would be otherwise lost or diminished by progressive accumulation of silt.
- Repair and stabilisation of the existing Creek and river walls.
- Introduction of water flow into the Creek:
- Maintain the current tidal regime;
- Minimise siltation and loss of the Creek;
- Increase flood capacity.
- Retention of current sporting amenity;
- Provide an opportunity for improved public access/ educational potential;
- Incorporate bankside enhancement work to improve the existing lower frontage from an ecological perspective;
- Help prevent undesirable build up of algae that might occur in the relatively static water and hence prevent un wanted odour;
- Help prevent depletion of oxygen as a result of algal photo synthesis; and
- Remove the need for substantial dredging, utilising a managed low tide water flow.

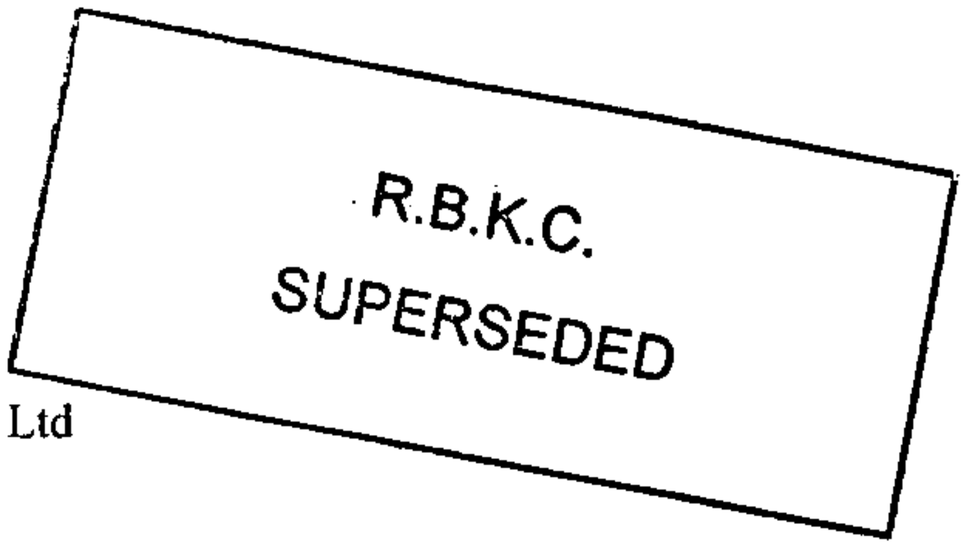
LOTS ROAD POWER STATION, CHELSEA, GREATER LONDON

INPUT INTO ECOLOGICAL DESIGN, MANAGEMENT AND MONITORING OF CHELSEA CREEK AND BASIN

ECOLOGICAL DESIGN

ROYAL BOROUGH OF KENSINGTON AND CHELSEA





A Report to Circadian Ltd

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Coventry
CV5 9AZ

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E-Mail: admin@middlemarch-environmental.com
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Report Number: RT-MME-4911-02 A (RBKC) Rev A

Submitted: July 2007
Revised: December 2007

LOTS ROAD POWER STATION, CHELSEA, GREATER LONDON

INPUT INTO ECOLOGICAL DESIGN, MANAGEMENT AND MONITORING OF CHELSEA CREEK AND BASIN

ECOLOGICAL DESIGN

ROYAL BOROUGH OF
KENSINGTON AND CHELSEA

CONTROLLED COPY

01 OF 02

01 CIRCADIAN LTD
02 MIDDLEMARCH ENVIRONMENTAL LTD

This report was conducted and compiled by
Dr Katy Read MCIWEM MIEEM CEnv DipSM
and Dr Philip Femor MIEEM CEnv

Contract Number C4911

December 2007

CONTENTS

1. INTRODUCTION

On 6th June 2007, Middlemarch Environmental Ltd was commissioned by Circadian Ltd to provide ecological design input with respect to the proposed development of Lots Road Power Station for residential use.

These works are to provide ecological support to the development of a 4.58 ha site located on a bend in the Thames adjacent to the King's Road, Chelsea (London). It is understood that 3.31 ha of the developed site will be retained as open space. The development will provide a new urban quarter containing 821 homes, shops, transport infrastructure and riverside open space. The scheme intends to open up around 600 m of river and creek to public use. The on-site former canal feature, known as Chelsea Creek will be transformed into a new linear park and water garden.

Mitigation proposed in the Environmental Statement (Circadian, 2004) for this project involves the ecological restoration and enhancement of Chelsea Creek, the biodiversity of which has been shown to have deteriorated since the cessation of its use as a receptor for cooling water from the (now dormant) Power Station in 2002. It is understood that the first tranche of ecological support for these works are required to fulfil a range of ecological planning conditions imposed by the Royal Borough of Kensington and Chelsea (RBK&C) and the London Borough of Hammersmith and Fulham (LBH&F). This report provides information with respect to the ecological input to the project within the Royal Borough of Kensington and Chelsea. It is understood that those conditions which must be met before the site may be cleared are as follows.

RBK&C Condition 12: Treatment of Chelsea Creek

'Development shall not begin until a scheme for the treatment of Chelsea Creek has been submitted to and approved in writing by the local planning authority. The scheme shall include details of the construction and subsequent maintenance of the inter-tidal terraces, of the marginal and aquatic species to be planted and of the location and design of mooring posts, boat landing and access facilities and health and safety measures be provided. Development shall be carried out in accordance with both the approved details and a programme of implementation first agreed in writing with the local planning authority.'

These works have been carried out in accordance with the above brief and have utilised the following information about the site provided to Middlemarch Environmental Ltd by the client:

- 'Lots Road Power Station and Land at Thames Avenue Development – Regulation 19 Environmental Statement'. Circadian. November 2004.

- 'A Management Plan for Chelsea Creek Nature Area'. Nardell. June 1992.
- 'The Foreshore Communities and Sediment Habitats in Chelsea Creek'. Physalia. August 2004.
- 'Lots Road Power Station – Input Into Ecological Design, Management and Monitoring of Chelsea Creek and Basin: Nesting Bird Survey and Site Clearance Protocol. April 2007.
- 'BREEAM Ecological Assessment EcoHomes – Lots Road Power Station, London'. Middlemarch Environmental Ltd. April 2007.
- 'Lots Road, London – A Report on the Issues Associated with Planting on the Roofs Terraces'. Townshend Landscape Architects Ltd. January 2007. Issue: Draft for Comment.
- 'Lots Road Intensive and Extensive Green Roofs'. Townsend Drawing TOWN352(08)1400 Rev R01. July 07.

This report is associated with the ecological design associated with the following aspects of the project:

- Guidance on ecological planting;
- Guidance on ecological aspects of creek design; and
- Selection and positioning of nesting and roosting boxes/platforms.

Townsends Drawing TOWN352(08)1400 RevR01 was issued after completion of the original report for this project and the location of extensive green roofs shown in the drawing was different from that presented to Middlemarch Environmental Ltd by Townsends prior to completion of the report. It has therefore transpired that there are to be no extensive green roofs included within the RBKC section of the site at Lots Road.

This report provides information with respect to the proposed treatment of Chelsea Creek (Section 3) and ecological input to the design of bird / bat boxes and platforms (Section 4).

2. THE SITE

2.1 PROPOSED DEVELOPMENT SITE

The site is located to the north and south of Chelsea Creek and thus contains land in both the Royal Borough of Kensington and Chelsea (RBKC) and the London Borough of Hammersmith and Fulham (LMHF). To the north of the Chelsea Creek the site contains the Lots Road Power Station, to the south of the Creek the site currently comprises an open area of semi-improved grassland, tall ruderal and scattered scrub areas.

The proposed development would comprise the following:

- Retention and conversion of the power station as a mixed-use community building.
- Creation of two towers on the north and south bank of the Chelsea Creek fronting on to the River Thames.
- Creation of 9 blocks of affordable housing and private residential areas within the site.
- Provision of open space and public areas within the site.
- Restoration of Chelsea Creek and Basin.

2.2 CHELSEA CREEK

Chelsea Creek is a man-made tidal canal, 357 m long from its mouth on the River Thames to its end adjacent to the West London Railway. The creek is approximately 25 m wide for most of its length, widening on the west side of Lots Road bridge to form a basin area.

Historically Chelsea Creek was a small river known as Counter Creek, which flowed from north of Shepherds Bush to emerge into the river Thames close to the location of the present day creek. In 1828 the route of the creek was widened and straightened to form the Kensington Canal. Eventually the section of the canal between Lots Road and Kings Road was infilled and the waters diverted to sewer. Thus the catchment of Chelsea Creek has been urbanised and drained to sewer and as a result there are currently minimal water inputs to the top end of the creek. As part of the power station operation water was abstracted from the River Thames, screened to remove silt and debris and then used as cooling water. The warmed water was then discharged in to the central section of the creek 24 hours a day throughout the year. This continued from 1905 until 2002 when the power station was closed.

3. ECOLOGICAL INPUT TO TREATMENT OF CHELSEA CREEK

3.1 INTRODUCTION

Information with respect to the treatment of Chelsea Creek was provided in the following documentation:

- 'Lots Road Power Station and Land at Thames Avenue Development – Regulation 19 Environmental Statement'. Circadian. November 2004.
- 'Lots Road Development – Creek Terraces' Townshend Drawing [Issued 15-06-07].
- 'Lots Road Development – Analysis of Planting Zones' Townshend Drawing [Issued 06-06-07].
- 'Impact of the Closure of Lots Road Power Station – Sediment Accretion in Chelsea Creek' Extract and Figures. Waterman Environmental. No Date.
- 'Tide levels approx. and indicative'. No reference. No Date.

A number of options were considered with respect to the treatment of Chelsea Creek as part of the development proposals. The Environmental Statement (Circadian, 2004) presents a fully tidal option which it is understood will be implemented as part of the proposed development of the site. This option includes the creation of terraces along the edge of the creek which will be inundated and exposed with the tide of the river.

The data provided shows three terraces which are to be created:

Terrace 1 This is furthest from the centre of the creek and has been designed to have a finished ground level of 3.80 mAOD.

Terrace 2 This is the middle terrace and has been designed to have a finished ground level of 2.00 mAOD.

Terrace 3 This is closest to the centre of the creek and has been designed to have a finished ground level of 0.80 mAOD. Note – there are no terraces at this level within the Royal Borough of Kensington and Chelsea area of the proposed development and therefore no information regarding this terrace has been included.

It is understood that the terraces would be created using natural stone gabions with a depth of soil at the top of the gabions which would be suitable for planting establishment.

With respect to the ecological input to the treatment of Chelsea Creek, focus is predominately made on the proposed vegetation establishment of the three terraces which are to be created along the

banks of the creek and proposed habitat enhancement works within the basin area to the west of the proposed development site.

The London Biodiversity Action Plan (BAP) includes a Tidal Thames Habitat Action Plan (HAP) which states that the River Thames can be divided into two zones – freshwater and brackish. Chelsea Creek is within the Upper Tidal Thames and can be categorised as the freshwater zone.

In addition, the LBHF BAP (no date) states that the '*river* [Thames] *within the Borough is predominately fresh water, as the influx of the sea acts as a piston pushing back the water coming down stream*'.

Pitten (pers. comm. 2007) states that the water in the creek is '*a mixture of both (brackish) although the proportion of freshwater versus saline will change depending on tide level and other factors*'. However, assessment of the most recent ecological survey report for the creek area completed by Physalia (2004) shows that the majority of the plant species recorded in and around the creek are freshwater / terrestrial species, with the exception of sea aster *Aster tripolium* a brackish water species. They conclude that the communities found have now stabilised after closure of the power station and therefore should represent the type of species which will survive given the salinity levels of the creek. In addition, Bertrand (pers. comm. 2007) stated that the tidal water in Deptford Creek (downstream of Chelsea Creek) was predominately freshwater, with hardly any saline plant species being found within the creek itself.

Gowing (pers. comm 2007) concluded that if the water within the creek was freshwater, the plant assemblages likely to be found would be the same as on a regular floodplain, assuming that the plants could withstand the hydrological implications of tides.

Thus, the development of planting schedules for the terraces have focused on the inclusion of predominately freshwater species (although some, such as common reed *Phragmites australis* thrive in both freshwater and brackish water situations).

3.2 POTENTIAL ECOLOGICAL BENEFITS OF CREEK RESTORATION

The Tidal Thames HAP states that *'The Tidal Thames and Creeks within London have been designated as a Site of Metropolitan Importance for Nature Conservation.* [This] *signifies that every part of the river and its tidal tributaries are of major importance for nature conservation in*

the Capital'. Indeed, Chelsea Creek is specifically noted as a tributary of nature conservation value in Greater London. This is also reflected in the Royal Borough of Kensington and Chelsea Local Biodiversity Action Plan (no date) which states that '*Chelsea Creek is recognised as an important habitat, particularly for fish spawning*'. The BAP identifies that '*there is significant development planned for the River Thames at Chelsea Creek...the opportunity to enhance the adjacent habitat should be seized*'.

The Environmental Statement (Circadian, 2004) states that with respect to the creation of terraces along the banks of Chelsea Creek the terraces would be '*planted with communities typical of the low, mid and upper marsh habitats that have been lost from most of the Thames due to development*'.

Table 3.1 provides a summary of habitats and species listed on the London BAP and RBKC LBAP which may benefit as a result of the proposed restoration of Chelsea Creek.

Habitats / Species	Targets / Notes	London BAP	RBKC LBAP
Habitats			
Tidal Thames	To conserve and enhance the wildlife habitats, species diversity and local distinctiveness of the tidal Thames. To create new areas of riverine habitat.	✓	
Reedbeds	To increase London's overall reedbed habitat resource.	✓	
Water (including marshes, ponds, canals and rivers)	To conserve and enhance the wildlife of water habitats.		✓
Mammals			
Pipistrelle and other bat species	To reverse the current population declines in London's bats. To protect and create new...suitable feeding habitat.	✓	✓
Birds			
Grey heron	Flagship species. To conserve London's grey heron population by [new]...foraging habitat. Note - also listed as flagship species on Tidal Thames HAP.	✓	

Table 3.1: A Checklist of London Species of Conservation Concern Which Might Benefit from Proposed Habitat Creation / Enhancement

3.3 Design Criteria And Objectives

3.3.1 Introduction

Design criteria for the terraces were specified in the Environmental Statement and have been used to develop the objectives outlined in Section 3.3.2.

3.3.2 Objectives

Using the proposed mitigation outlined in the Environmental Statement and the London BAP and the RBKC Local BAP the following objectives have been determined with respect to the ecological design of the treatment of Chelsea Creek:

Obj1) To provide target habitats detailed in the Environmental Statement (low marsh, reedbed and riverine / terrestrial planting) within the created terraces along Chelsea Creek.

Obj2) To provide suitable habitat for target species identified within the Environmental Statement (birds and bats).

Obj3) To provide target habitats listed on the London BAP (tidal Thames, reedbeds).

Obj4) To provide habitat for target species listed on the London Biodiversity Action Plan (pipistrelle and other bats, grey heron).

Obj5) To provide target habitats listed on the Royal Borough of Kensington and Chelsea LBAP (water).

Obj6) To provide habitat for target species listed on the Royal Borough of Kensington and Chelsea LBAP (pipistrelle and other bats).

Obj7) To provide species and features which will fulfil the recommendations outlined in Middlemarch Environmental Ltd BREEAM EcoHomes 2006 assessment report.

Obj8) To provide positive visual impact where possible to the terraces along the banks of Chelsea Creek (Gray, pers. comm. 2007).

These objectives will be met through implementation of the design criteria outlined in Sections 3.3.3 to 3.3.5.

3.3.3 Terrace 1

Terrace 1 is located furthest away from the centre of the creek and will have a finished ground level of 3.80 mAOD. This terrace will be exposed at low, high and neap high tides but will be inundated with 0.30 m depth of water during spring high tides.

The plans presented in the Environmental Statement (Circadian, 2004) and subsequent drawings from Townshends show that the design criteria for this area includes grassland and trees. The Environmental Statement (Circadian, 2004) states that the '*Planting design would utilise indigenous species throughout the public realm and along the creek*'.

Given the fact that the terrace will be inundated with water during spring tides, the species recommended for the grassland, trees and shrub areas have been chosen to replicate freshwater systems which are subject to periodic inundation. With respect to the grassland areas it is recommended that the substrate be seeded with a grass mix (see Table 3.1) which replicates an MG4 *Alopecurus pratensis – Sanguisorba officinalis* grassland. This grassland is typical of a lowland flower-rich meadow found on floodplains of large English rivers (including the Thames) with deep alluvial soils and/or gravel terraces. The grassland is generally found on fine-textured, but highly structured soils which are permeable to water and have the ability to store relatively large volumes of water in a form that vegetation can access (Wheeler et al, 2004).

Seed should be sown by hand at a rate of 4g / m^2 in either early autumn or spring. Seeding should not be completed immediately prior to a spring high water tide as the seed will be washed away. Careful planning should be taken to ensure that the seed sowing is timed to maximise establishment potential between tidal inundation of terrace. Tree / shrub planting should be completed during the winter.

Within the grassland areas, ideally at the edge of the terraces, areas which retain flood water should be created. This can be achieved by creating 'wet' pockets using an impermeable substrate so that when spring high tide water floods over the terrace some of the water is retained in these 'wet pocket' areas. These areas will then support colourful target wetland emergent species such as purple loosestrife and yellow flag iris.

Trees should be established in clumps within scrub species planted beneath to create pockets of trees and shrubs which would be utilised by birds and bats for foraging and, when the areas is well developed, potentially nesting.

Table 3.1: Meadow Mixture for Wetlands
(seed mix from Emorsgate Seeds)

MEADOW MIXTURE FOR WETLANDS		
Percentage of Mix	**Scientific Name**	**Common Name**
Wildflowers		
0.5	*Achillea millefolium*	Yarrow
2.0	*Centaurea nigra*	Common Knapweed
2.0	*Filipendula ulmaria*	Meadowsweet
1.0	*Galium verum*	Lady's Bedstraw
1.2	*Leucanthemum vulgare*	Oxeye Daisy
0.8	*Lotus pedunculatus*	Greater Birdsfoot Trefoil
0.5	*Lychnis flos-cuculi*	Ragged Robin
1.0	*Plantago lanceolata*	Ribwort Plantain
1.0	*Primula veris*	Cowslip
1.3	*Prunella vulgaris*	Selfheal
2.5	*Ranunculus acris*	Meadow Buttercup
1.0	*Rhinanthus minor*	Yellow Rattle
1.2	*Rumex acetosa*	Common Sorrel
1.0	*Sanguisorba officinalis*	Great Burnet
1.0	*Silaum silaus*	Pepper-saxifrage
1.0	*Stachys officinalis*	Betony
1.0	*Vicia cracca*	Tufted Vetch
Grasses		
8.0	*Agrostis capillaris* (w)	Common Bent
4.0	*Alopecurus pratensis* (w)	Meadow Foxtail
2.0	*Anthoxanthum odoratum* (w)	Sweet Vernal-grass
1.0	*Briza media* (w)	Quaking Grass
40.0	*Cynosurus cristatus*	Crested Dogstail
1.0	*Deschampsia cespitosa* (w)	Tufted Hair-grass
24.0	*Festuca rubra* (w)	Slender Creeping Red Fescue

An assessment of the suitability of the species listed in the Environmental Statement (Circadian, 2004) for planting on Terrace 1 is provided in Table 3.2. This table presents published water level requirements of target species and an assessment of the species habitat range and suitability. Recommendations of additional species to plant are also provided in Table 3.2.

Table 3.2: Proposed Species For Planting on Terrace 1

TERRACE 1: TERRESTRIAL / RIVERINE PLANTING	Terrace Water Level Range:	Predominately exposed but also inundated by 0.30 during high spring water tide	
Species	**Water Level Requirements[1]**	**Assessment of Suitability[2]**	**Species To Be Included in Planting Specification?**
Listed in Environmental Statement (landscape drawings and text)			
Dogwood *Cornus sanguinea*	-	Native, in woodlands and scrub on limestone or base-rich clays. This species is not generally found dominant in woodlands which are subject to flooding and therefore is not recommended for inclusion.	x
Grey willow *Salix cinerea*	Range: -0.10 to +0.10 m	Marshes and fens at low altitude. Species found in floodplain wet woodland habitats.	✓ (tree)
Ivy *Hedera helix*	-	Native, on trees banks, rocks and creeping over the ground. This species is not generally found dominant in woodlands which are subject to flooding and therefore is not recommended for inclusion.	x
Alder *Alnus glutinosa*	Range: -0.90 to +0.30 Preferred: -0.03 to +0.15	Native, damp woods and rivers and by lakes. Species found in floodplain wet woodland habitats.	✓ (tree)
River birch *Betula nigra*	-	Tree native to the south-eastern United States and therefore not recommended for use in UK native planting mix.	x
Other Recommended Species			
Goat willow *Salix caprea*	Not specifically listed. Other willows shown as:- Range: -0.10 to +0.10 m	Damp and rough ground, hedges and open woodland.	✓ (tree / scrub)
Alder buckthorn *Frangula alnus*	Range: -0.40 to 0.00	Native, scrub, bogs and open woods usually on damp peaty soils.	✓ (scrub)
Guelder rose *Viburnum opulus*	-	Native, woods, scrub and hedges. Species found in floodplain wet woodland habitats.	✓ (scrub)
Dog rose *Rose canina*	-	Native, hedges, scrub, and wood-boarders. Species found in floodplain wet woodland habitats.	✓ (scrub)
Meadow mixture for wetlands (see Table 3.1)	-	Mixture of suitable wildflowers and grasses which can cope with occasional inundation of freshwater.	✓ (grassland)

[1] Water level requirements data from Newbold and Mountford (1998)
[2] Species data from Rose (1981) and Stace (2001)

Table 3.2: Proposed Species For Planting on Terrace 1

TERRACE 1: TERRESTRIAL / RIVERINE PLANTING	Terrace Water Level Range:	Predominately exposed but also inundated by 0.30 during high spring water tide	
Species	**Water Level Requirements [1]**	**Assessment of Suitability [1]**	**Species To Be Included in Planting Specification?**
Purple loosestrife *Lythrum salicaria*	Range: -0.40 to +0.10 Preferred: -0.10 to +0.10	Native, by water and in marshes and fens. Listed on LBHF BAP. Species should be included in 'wet' pocket areas.	✓ (grassland – in 'wet' pockets)
Yellow flag-iris *Iris pseudacorus*	Range: -0.60 to +0.60 Preferred: -0.10 to +0.10	Native, wet meadows, fens and ditches, by lakes and rivers. Species should be included in 'wet' pocket areas.	✓ (grassland – in 'wet' pockets)

3.3.4 Terrace 2

Terrace 2 is the central terrace and will have a finished ground level of 2.00 mAOD. This terrace will be exposed at low tides but will be inundated with between 0.80 m and 1.90 m depth of water during high tide and neap and spring high tides.

The plans presented in the Environmental Statement (Circadian, 2004) and subsequent drawings from Townshends show that the design criteria for this area includes reedbed. The Environmental Statement (Circadian, 2004) states that the '*Planting design would utilise indigenous species throughout the public realm and along the creek*'.

This terrace would be inundated on a daily basis and therefore the plants specified should be able to cope with regular inundation and also should provide a visually interesting habitat type whilst the tides are low and the area is not inundated. Therefore species with an erect growth form have been chosen as these will continue to stand upright during low tide.

The dominant species within the planting on Terrace 2 should be common reed *Phragmites australis*. This is a target species within the reedbed habitat and provides not only a visually interesting habitat but also feeding and perching areas for a number of bird species which may use the creek.

Hawke and José (1996) suggest that reed grows best in finer soils such as clay and silts. Thus to maximise establishment potential, such soils should be utilised within the planting bed areas of the top of the terraces. Although the terraces will be subject to rising and falling water levels, reedbeds are generally most successfully maintained when the plants are growing in permanently wet soils. Thus, to ensure that when the tide drops the soils within the planting bed are maintained in a saturated state, the planting bed should be lined with an impermeable liner prior to importation of soils. When the water levels within the creek fall with the tide, water will be maintained within the soils in the reedbed planting zone thus ensuring maximum growth and stability of the plants within the zone.

With respect to the establishment of reedbed species within the planting zone, the greatest challenges will be during the establishment phase of the reedbed development. Hawke and José (1996) state that the use of pot grown plants increases the success of establishing a reedbed. However, they also recommend that during establishment, the top third of the reed shoots be above

water to ensure the rhizome and roots receive oxygen through the aerial parts above water. The maximum water depth during establishment should be 50 mm, with the soils not allowed to dry out during the establishment phase. This will be difficult to manage with a tidal system where any seedlings will be inundated from the point that they are planted with up to 1.90 m of water. To ensure establishment therefore it will be necessary to plant the reedbed using well established, full height reeds. These can be supplied in either 2 litre pots or as root balled plants. It is recommended that the root balled plants be used in this instance as these are grown to have rhizomes already growing out from the plant and are most successful when establishing reeds in an area of inundation. The reeds would need to be grown to order and Yarnigdale Nurseries (a specialist Phragmites grower) state that they could either grow reed from local provenance (if suitable seed was collected in September/October) or from a known source on the River Severn (this reed source would be from plants which were used to tidal fluctuations and potentially a low level of salinity and therefore may be suited to use in this situation). To grow reeds to full height suitable for use in this project 2-3 months notice would be required if plants can grown through the growing season (March to September) or 6 months notice if ordered during the dormant season (October to February).

The reedbed should be planted at a rate of 1 reed plant per m^2. It would then take 2-3 for establishment to full reedbed. Reed planting from plugs / plants can be undertaken at any time of the year but the best time is April / May, as early as possible after the frosts have ceased (Hawke and José, 1996).

An assessment of the suitability of the species listed in the Environmental Statement (Circadian, 2004) for planting on Terrace 2 is provided in Table 3.3. This table presents published water level requirements of target species and an assessment of the species habitat range and suitability. Recommendations of additional species to plant are also provided in Table 3.3.

A summary of the proposed terrace planting and the objectives which each one meets is provided in Table 3.4. Images of habitats proposed for the terraces are shown in Appendix 1.

Table 3.3: Proposed Species For Planting on Terrace 2

TERRACE 2: REEDBED	Terrace Water Level Range: Exposed at low tide. Inundated with 1.9 m water during high spring water tide.		
Species	**Water Level Requirements[3]**	**Assessment of Suitability[4]**	**Species To Be Included in Planting Specification?**
Listed in Environmental Statement (landscape drawings and text)			
Common reed *Phragmites australis*	Range: -1.00 to +2.00 Preferred: -0.20 to 0.00 Species can cope with +4.00 m depth of water if tall enough.	Native, in rivers, canals, marshes, edges of estuaries (plus other locations). Reed is able to thrive in places where there is a gradient of saline mixing and appear to be able to survive in soils which have a saline input (Hawke and José, 1996). Haslam (2003) states that a little chronic salt such as found on the banks of tidal rivers favours Phragmites and concludes that in rivers, salt seems to give reed more tolerance to flowing water and bank erosion.	✓ (reedbed)

[3] Water level requirements data from Newbold and Mountford (1998) and Haslam (2003)
[4] Species data from Rose (1981) and Stace (2001)

Table 3.4: Summary of Proposed Creek Terrace Planting

Creek Terrace	Proposed Habitat Type	[Obj(1) ES Habitat	[Obj(2) ES Species	[Obj(3) London BAP Habitat	[Obj(4) London BAP Species	[Obj(5) RBKC BAP Habitat	[Obj(6) RBKC BAP Species	[Obj(9) BREEAM Credits	[Obj(10) Positive Visual Impact
Terrace 1	Terrestrial / riverine planting	✓ (riverine planting)	✓ (bats & birds)	-	✓ (bats & grey heron)	-	✓ (bats)	✓ (species diversity)	✓ (meadow & trees)
Terrace 2	Reedbed	✓ (reedbed)	✓ (birds)	✓ (tidal Thames, reedbed)	✓ (bats & grey heron)	✓ (water)	✓ (bats)	✓ (species diversity)	✓ (reedbed)

4. ECOLOGICAL DESIGN OF BIRD / BAT BOXES

4.1 INTRODUCTION

Information with respect to the proposed location and design of bat boxes and bird boxes and ledges at the site were provided in the following documentation:

- 'Lots Road Power Station and Land at Thames Avenue Development – Regulation 19 Environmental Statement'. Circadian. November 2004.
- 'BREEAM Ecological Assessment EcoHomes – Lots Road Power Station, London'. Middlemarch Environmental Ltd. April 2007.

4.2 POTENTIAL ECOLOGICAL BENEFITS OF NESTING BOXES / LEDGES

The case for providing nest boxes in and around our gardens and developments has never been greater. du Feu (2003) states that changes in weather pattern and damage as a result of climate change, the use of pesticides and herbicides, the increasingly sanitised and hostile agricultural landscape and the loss of habitat through urban developments are just some examples of the huge number of potential threats currently faced by the UK's birds. du Feu (2003) concludes that although the provision of nest boxes alone will not solve the problems, where a lack of nesting sites is a factor limiting breeding population, nest boxes can provide an instant, but long-term solution.

Bat boxes are designed to encourage bats into areas where there are few natural roosting sites. Bat boxes have a useful place in bat conservation, although they are generally utilised less than bird boxes.

Table 4.1 provides a list of bird and bat species listed on the London BAP and the Royal Borough of Kensington and Chelsea Local Biodiversity Action Plan (RBKC LBAP).

Table 4.1: A Checklist of London Species of Conservation Concern Which Might Benefit from Bat and Bird Boxes

Habitats / Species	London BAP	RBKC LBAP
Mammals		
Pipistrelle and other bats	✓	✓
Birds		
Black redstart	✓	
Grey heron	✓	
House sparrow	✓	✓
Peregrine	✓	

4.3 Design Criteria And Objectives

4.3.1 Introduction

With respect to design criteria for the bat and bird boxes and ledges, the Environmental Statement (Circadian, 2004) identifies the following mitigation: *'Boxes for nesting birds, including house martins and black redstart would be incorporated into the scheme...Boxes for bats would be incorporated within the scheme*'. In addition the Environmental Statement concludes that '*those blocks with extensive green roofs (i.e. closest to the creek) would include roost sites designed to replace the heron high tide roost on the Power Station*'.

Middlemarch Environmental Ltd (2007b) provided the following recommendations for inclusion within the proposed development to provide suitable features for Ecological Credits under BREEAM EcoHomes 2006 scheme. It should be noted that this covers both the RBKC and LBHF areas of the site and therefore the total number relates to both parts of the site.

- *'8 bird boxes are to be erected; these should include at least 1 nest box specific to black redstart and another specific to peregrine falcon.*
- *Five bat boxes/bricks are to be erected / installed. The bat boxes can either be attached to the building or to the existing trees.*
- *To replace the roosting opportunities for the birds associated with the River Thames that will be removed by the development. Ledges should be incorporated into the new buildings on site and perches designed into the creek reprofiling scheme.'* Note – this will be provided on the LBHF side of the site.

4.3.2 Objectives

Using the proposed mitigation outlined in the Environmental Statement and the London BAP and the RBKC and LBHF Local BAPs the following objectives have been determined with respect to the ecological design of the bat boxes and bird boxes and ledges for the site:

Obj1) To provide a minimum of 8 bird boxes within the proposed development, with some targeted towards black redstart, house sparrow and peregrine falcon.

Obj2) To provide a minimum of 5 bat boxes / bricks within the proposed development.

Obj3) To provide a minimum of 3 bird ledges within the proposed development suitable for use by roosting herons (to be located on LBHF side of site).

These objectives will be met through implementation of the design criteria outlined in Sections 4.3.3 to 4.3.5.

4.3.3 Bird Boxes

The highest priority when siting any nestbox must be to provide a safe, comfortable environment in which birds can nest successfully. All boxes should also be positioned such that maintenance and cleaning is as simple as possible, and if records are to be kept, ease of inspection must also be considered to minimise the risk of disturbance to nesting birds.

With respect to box location du Feu (2003) provides the following guidance:

- **Aspect** – The direction that the box entrance faces makes relatively little difference provided that it is sheltered from prevailing wind, rain and strong sunlight. In exposed areas it is recommended that the entrance should be located to face between north and south-east.
- **Height** – The nest box must be sited to allow a clear flight path. Additional information is provided below for specific nest boxes.
- **Reducing Access for Predators** – boxes should be located way from potential predators.

Information with respect to boxes for target species is provided below.

<u>House martin</u>

- House martin boxes are made of concrete and are 70 mm high, 120 mm wide at the back and 90 mm deep (Figure 4.1).

- The boxes should be mounted under the eaves of a building or fixed to a ledge approximately 120 mm wide and secure boxes underneath. The box must be sited to ensure water does not trickle into box. Site boxes in groups not singly, as this will encourage colonisation.

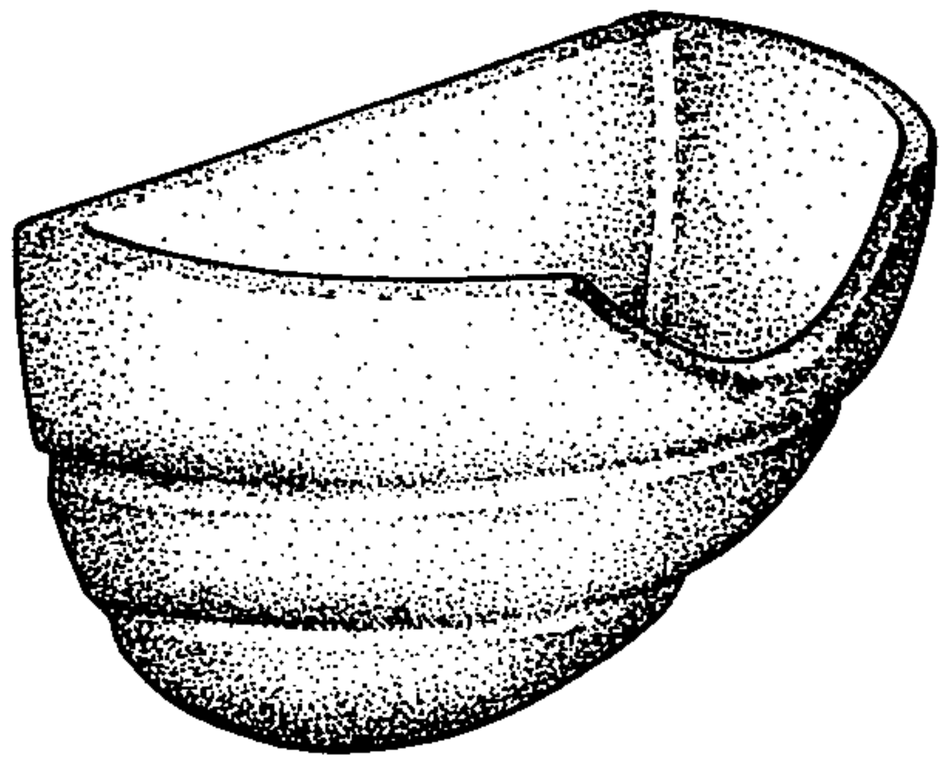

Fig. 4.1: House Martin Nest Box

House Sparrow

- House sparrows will utilise small hole-entrances boxes with a 32 mm diameter hole (see Figure 4.2). Hole-entrance boxes are preferred as they offer greater seclusion, security from predators and shelter from the elements.
- House sparrows may nest colonially and therefore the inclusion of sparrow terraces within the proposed development would be of benefit for this species (Figure 4.4). The interior of the sparrow terrace is sub-divided into three for three sparrow families. All the entrances are situated on the front so that the box can be positioned facing away from the prevailing weather and close to a corner if required. However, if the location is appropriate a box with entrance holes on the ends may be used (Figure 4.3).

Fig.4.2: Sparrow Terrace With Entrance Holes to Front
(image from The Nestbox Company Limited)

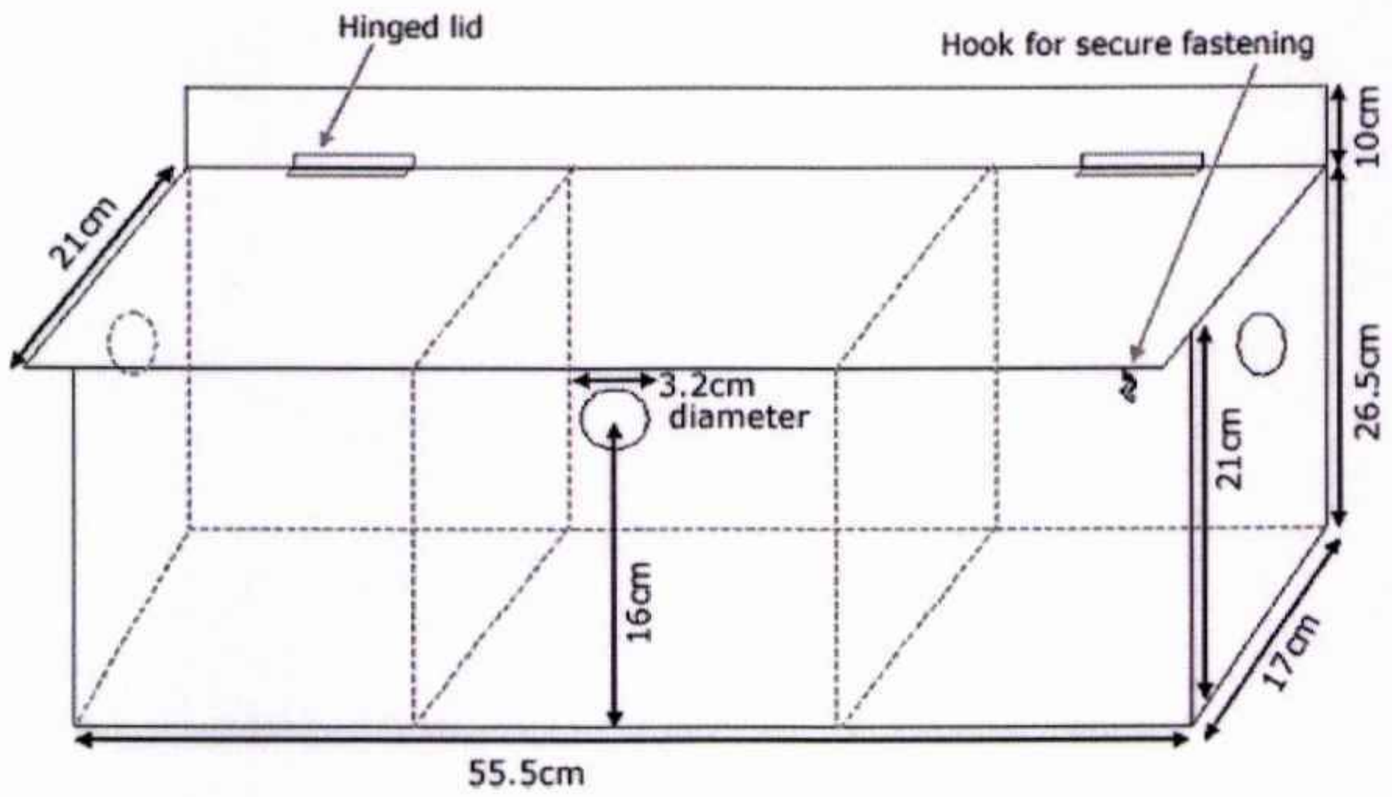

Fig. 4.3: Sparrow Terrace With Entrance Holes to Front
(image from Lincolnshire Wildlife Trust)

- Sparrow terraces should be located a minimum of 3 m from ground level so that the box is not in direct sun in May or June, and where there is no public access / disturbance. It is recommended that house sparrow terraces be installed on the north-eastern or north-western sides of Building KC4.

Peregrine Falcon

- A box suitable for peregrine falcons should be approximately 0.80 m wide, 0.50 m long and 0.50 m high (with a slope on the roof from back to front with an overhang to prevent water dripping into the box). A strip of wood approximately 0.15 m high should be affixed across the frontal base of the box.
- Alternatively peregrine falcons will utilise trays for nesting. A tray should similarly be 0.80 m x 0.50 m with a 0.15 m ledge all the way around the edge of the tray. Trays should be located within sheltered aspects e.g. a natural recess within a building or a window ledge area (if the latter then away from human observation/interference).
- Boxes / trays should be located high on buildings but away from human interference i.e. not where access is required for regular maintenance, etc. They should be sheltered positions away from extremes of the elements (a south-eastern aspect is usually the favoured location).
- Boxes / trays should be sited sloping slightly backwards and should be securely fixed in position.
- Boxes / trays should be constructed from suitable materials. Thin man-made materials should be avoided, although exterior plywood is suitable.
- A series of small holes should be drilled into the base of the box/tray to allow drainage.
- For peregrine falcons the floor of the box / tray should be covered with rounded pea gravel.

The peregrine falcon box should be located as high as possible on the top of the highest building within the proposed development footprint.

4.3.4 Bat Boxes

- Bat roosting boxes (Figure 4.4) are similar to bird boxes, but the entrance should be a narrow slot at least 20 mm wide underneath the box, allowing the animal to crawl up into the roost. The wood should be unplanned, at least 20 mm thick and most importantly left untreated as bats do not like unpleasant smells. The thickness of the wood gives the bat protection from any changes in temperature, like ourselves the bat is warm blooded. The size of bat boxes should be: 100 mm wide, 80 mm deep and 400 mm high.
- Bat boxes are most likely to be used if they are located in places where bats are known to feed. Woodland, parkland and river banks are good places as are gardens close to ponds, rivers or

parks. If possible they should be close to a hedge or tree line as some species of bat use these to navigate and are reluctant to cross open spaces to access their roost.

- Bat boxes should be placed a high as possible (4-5 m high) in clusters around the trunk of a tree i.e. with three boxes at different aspects (ideally south, south-east and south-west) around the tree trunk.
- Bat bricks (Figure 4.5) should be placed in a clean, quiet, draught free environment, ideally on a gable end or as close to a soffit as possible. Most bats will roost in a cavity wall rather than in a loft or large space. The cavity wall should be free from insulation material at least from the level of the brick to the top of the wall.

Table 4.2 provides a summary of the proposed locations for the bird and bat boxes as part of the proposed development.

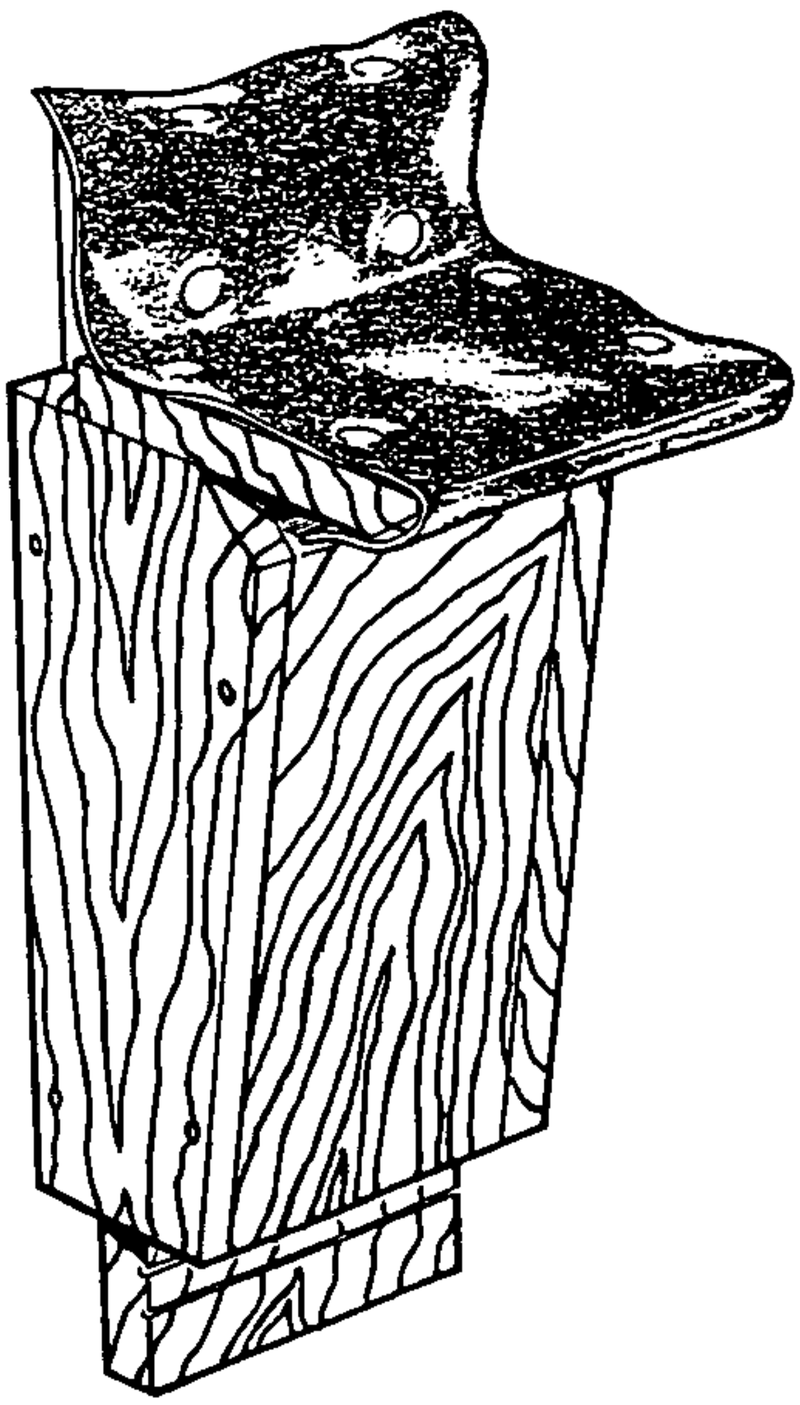

Fig. 4.4: Bat Roosting Box

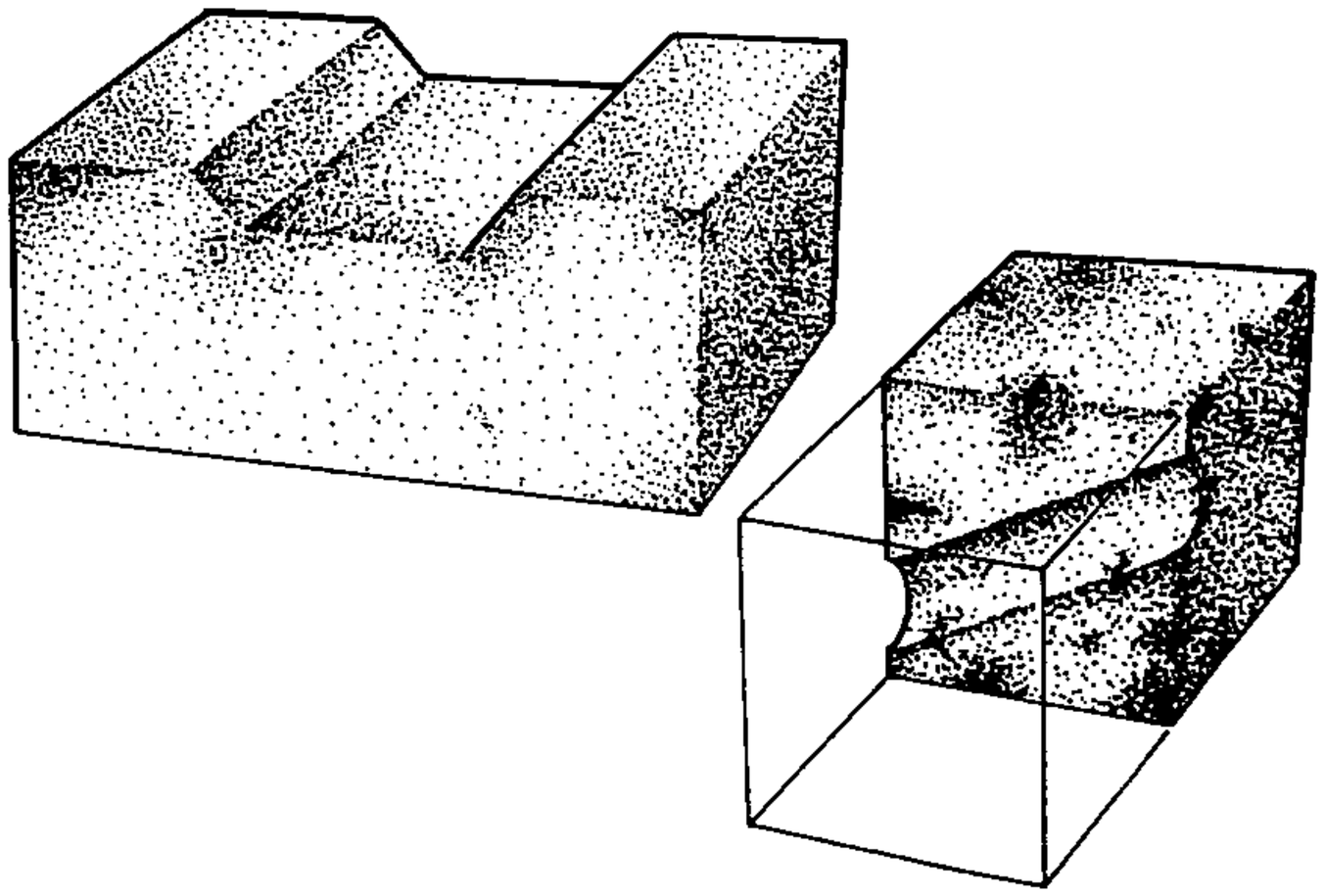

Fig. 4.5: Bat Bricks

Table 4.2: Summary of Proposed Locations for Bird and Bat Boxes

Building Reference	House Sparrow Boxes	House martin boxes	Peregrine Falcon Box / Ledge	Other assorted open-entrance and open fronted boxes	Bat Boxes	Bat Bricks
KC4	2 no. sparrow terraces on north-eastern edge of building	4 no. boxes on south-eastern edge of building	-	5 no. boxes on north-eastern, south-eastern and south-western walls	3 no. bat boxes on trees to west of building	5 no. bat bricks on north-eastern, south-eastern and south-western walls
KC1	-	-	1 no. peregrine falcon box and 1 no. peregrine falcon ledge on highest point on building	-	-	-
Total	2 no.	4 no.	1 no. ledges 1 no. boxes	5 no. boxes	3 no. boxes	5 no. bat bricks

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APPENDICES

Appendix 1 Example Images of Terrace Planting Schemes

APPENDIX 1

Example Images of Terrace Planting

Fig. A1.1: Tidal Reedbed at Blacktoft Sands
(image from RSPB)

Image of naturally occurring tidal reedbed with exposed mud and at Blacktoft Sands, within the Humber Estuary SSSI. This is the largest tidal reedbed in England (second largest in the UK) and is managed for nature conservation.

Fig. A1.2: Depford Creek, Location of The Creekside Centre
(image from The Creekside Centre)

Images of Deptford Creek, London, where works have been completed to provide opportunities for natural colonisation of species. The Creekside Centre is an environmental education resource which provide educational activities and access to the Creek.

MIDDLEMARCH ENVIRONMENTAL

QUALITY ASSURANCE

TITLE: LOTS ROAD POWER STATION,
CHELSEA, GREATER LONDON

INPUT INTO ECOLOGICAL DESIGN,
MANAGEMENT AND MONITORING OF
CHELSEA CREEK AND BASIN

ECOLOGICAL DESIGN

ROYAL BOROUGH OF KENSINGTON AND CHELSEA

A Report to Circadian Ltd

Contract Number: C4911

Report Number: RT-MME-4911-02 A (RBKC) RevA

Revision Number: RevA

Description: Final

Date: December 2007

Checked:

James Calow
Principal Consultant

Approved:

Dr Philip Fermor
Managing Director

Lots Road 123162
6.12.07

Responses to Royal Borough Kensington and Chelsea

This summarises responses to comments under RBKC Condition 12.

Refer to previous submission of documents to address:

- Condition 12:

Arup Design Notes Condition 12 and attached drawings, submitted on 06.08.07

QUERY No.	CONDITION	QUERY	RESPONSE	RELATED DRAWING
1 [ref 1]	Condition 12	Terraces do not allow sufficient accretion of sediment necessary for the creation of self sustainable vegetated habitat. Terraces are over-engineered.	An alternative gabion design is proposed that allows topsoil in the top gabion basket. This will allow vegetation to grow in this area.	Arup Drawings: 123162-01-001 123162-01-005
2 [ref 1]	Condition 12	Terraces should be sloped to allow flatfish to access the terraces. 'V' shaped notches should be cut in weirs to allow migration of fish.	Three sections of terrace have slopes between +2.8m and +3.8m to meet this requirement. In addition to this the bottom (0.8m) terrace has been sloped down towards the creek bed in places. 'V' shaped notches will be cut out of the existing weir system.	Arup Design Note: Condition 12. Arup Drawing: 123162-01-001
4 [ref 2]	Condition 12	Request for hydrological and engineering plans for the proposal to pump water back into the creek	This has not been developed under Condition 12. We have met the requirement of no net loss of flood storage (condition 11) regardless of pumping water to keep silt levels down.	N/A
5[Ref 4]	Condition 12	Suggested locations of navigation markers. Navigation would be much improved by omitting the bottom terrace.	Following a meeting with West London River Group, we have amended the number and location of the mooring posts. We have now deleted the bottom terrace and the lowest terrace has been marked as suggested.	Arup Drawings: 123162-01-001 123162-01-005
6 [Ref 4]	Condition 12	Include a pontoon between the middle and upper bridges against the Power Station	It is not proposed to provide a pontoon for the development.	N/A
7[Ref 4]	Condition 12	It would be much more "appropriate and good looking" "to leave out the bottom three terraces both sides (or bottom two?), and concentrate the landscaping where it feels most comfortable along the River bank at the top of the river wall".	The revised submission materials provide a scheme which responds to the landscape and ecological requirements. It provides a balance of ecological and landscape quality and interest which has been further improved by the removal of the lower terrace and providing sloping terraces in places.	Refer to Townshend drawings

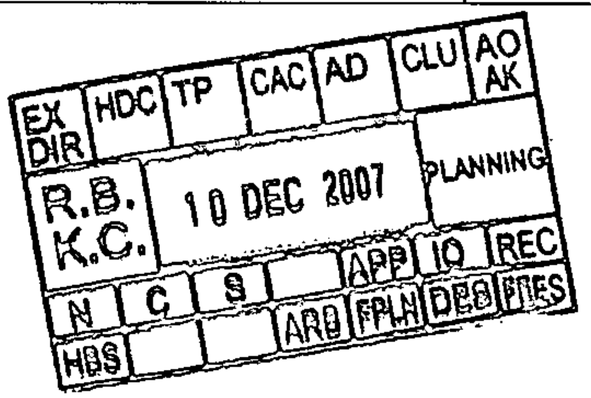
Responses to Royal Borough Kensington and Chelsea

8 [Ref 5]	Condition 12	Provision for future addition of pontoon against the Power Station wall between the middle and upper bridges. Suggested detailing the bridge railings or sections next to the Power Station with removable panels, so that it would be relatively easy to add the gangways down to the pontoon at some time in the future.	It is not proposed to provide a pontoon for the development.	N/A
9 [Ref 5, 6]	Condition 12	Provision for mooring large vessels (like Thames barges as shown in planning drawings) against the southern Thames frontage wall. Wooden piles, access ladders, set back railings for walking space, mooring cleats, gate in railing, bollards suggested.	Emergency ladders have been incorporated into the scheme.	Arup Drawing: 123162-01-012
10 [Ref 6]	Condition 12	Raise bridge soffit levels to allow for future reopening of the channel of the old Chelsea Creek canal.	The proposed bridge soffit levels are intended to replicate the existing bridge levels at the centre of the bridge.	
11 [Ref 6]	Condition 12	Navigation markers should be lights, at least at the mouth of the creek	This has been provided.	Arup Drawings: 123162-01-001 123162-01-005
13 [Ref 6]	Condition 12	Escape ladders, safety chains requested.	These have been provided.	Arup Drawing: 123162-01-012
14 [Ref 6]	Condition 12	Encourage use of Thames for deliveries of materials removal of spoil etc.	Noted. This is being actively considered.	

References

[1] Letter from Anna Scott of EA to Georgina Slater of RBKC dated 10 October 2007
[2] Notes from Jennifer O'Riley of Ecology Services to RBKC dated 29 October, 2007

Arup have also received comments directly from the EA



Lots Road 123162 **Responses to Royal Borough Kensington and Chelsea**
6.12.07

[3] Email from Anna Scott of EA to Jane Pitten of Arup dated 10 October, 2007

HWPG have also received written comments directly from the West London River Group:
[4] Letter from Peter Makower of West London River Group to David Benyon of HWPG dated 13 November, 2007
[5] Letter from Peter Makower of West London River Group to David Benyon of HWPG dated 26 November, 2007
[6] Minutes of meeting with HWPG, Arup, River Thames Society, West London River Group dated 31 October, 2007

MIDDLEMARCH ENVIRONMENTAL

This table is of responses to LBHF and RBKC related to ecology that were raised in the following documents

[1] Letter from Anna Scott of EA to Georgina Slater of RBKC dated 10 October, 2007
[2] Notes from Jennifer O'Riley of Ecology Services dated 29 October, 2007

QUERY No.	CONDITION	QUERY	RESPONSE	RELATED DRAWING / REPORT
(1)	Condition 12	The EA state that they have reviewed the salinities for the creek and it is proposed to use freshwater plants in an area where it will be a third strength sea water at high tide (when the plants are inundated) so it is unlikely these plants will survive.	During development of the ecological design for the creek terraces detailed investigation with respect to the salinity of the creek was completed. The London Biodiversity Action Plan (BAP) includes a Tidal Thames Habitat Action Plan (HAP) which states that the River Thames can be divided into two zones – freshwater and brackish. Chelsea Creek is within the Upper Tidal Thames and can be categorised as within the freshwater zone. The LBHF BAP (no date) states that the '*river* [Thames] *within the Borough is predominately fresh water, as the influx of the sea acts as a piston pushing back the water coming down stream*'. Assessment of the ecological survey report for the creek area completed by Physalia (2004) shows that the majority of the plant species recorded in and around the creek were freshwater / terrestrial species, with the exception of sea aster Aster tripolium a brackish water species. They conclude that the communities found have now stabilised after closure of the power station and therefore should represent the type of species which will survive given the salinity levels of the creek. In addition, Bertrand (pers. comm. 2007) stated that the tidal water in Deptford Creek (downstream of Chelsea Creek) was predominately freshwater, with hardly any saline plant species being found within the creek itself. It is therefore not considered that the salinity of the water within	n/a

			Chelsea Creek would be unsuitable to support the freshwater species detailed in Middlemarch Environmental Ltd Reports RT-MME-4911 A (RBKC) and RT-MME-4911 B (LBHF). However, with respect to the proposed reedbed habitat on Terrace 2, Haslam[1] states that reed is found in brackish rivers and estuaries and concludes that *'a little chronic salt, such as is found…on the banks of tidal rivers, favours Phragmites. In rivers salt seems to give reed more tolerance to flowing water and bank erosion'.* With respect to the lower terrace, much of this area will be allowed to naturally colonise with species and therefore those species which establish will be suited to the level of salinity (or otherwise) within the Creek water.	
2 (1)	Condition 12	Need clarity on who will carry out the management work, how will it be monitored (outputs, rather than bio monitoring), what happens after 10 years?	As the Basin is adjacent to the Lots Road development site, the developer agreed to provide RBKC with an updated management plan to assist RBKC with its understanding of the long-term management obligations of the area. It was agreed that this management plan should be based on the data included in the 1992 Management Plan for the Basin which had been agreed by the Council. With respect to the capital works associated with the management of the Basin area (ie Year 1 works identified in Middlemarch Environmental Ltd Management Plan) it has been agreed that the developer (Circadian) will carry out these works. As the Basin area is in the ownership of RBKC it is understood that the longer-term management of the area will be carried out by RBKC. Any management works completed after the 10-years of the Middlemarch Environmental Ltd Management Plan will also be the responsibility of RBKC.	n/a
2 (2)	Condition 12	Can we see a more detailed	The monitoring schedule proposed provides a baseline for the	n/a

		monitoring schedule, and the outcomes of surveys and any changes to design or management (outlined in the habitat management plan) be submitted to RBKC.	necessary monitoring on the site. As this monitoring will not be carried out by the developer (but by RBKC) it is recommended that a more detailed monitoring schedule be developed by RBKC in line with their standards and available funds to carry out the monitoring works.	
3	Condition 12	It is not clear that current baseline data is adequate, particularly for the basin. An NVC survey must be undertaken before commencing works (as per the management plan), particularly covering the basin, as plans for the basin need to be rewritten.	As the Basin is adjacent to the Lots Road development site, the developer agreed to provide RBKC with an updated management plan to assist RBKC with its understanding of the long-term management obligations of the area. It was agreed that this management plan should be based on the data included in the 1992 Management Plan for the Basin which had been agreed by the Council. As the Basin is outside of the landownership of the developer, it was not possible to access the Basin to carry out any further detailed ecological survey work. The distribution of habitats within the Basin has been assessed as far as possible from the edge of the site and it is believed that this provided suitable information for development of the management plan. It is not the intension to update the baseline data for the Basin. With respect to Chelsea Creek, the ecological baseline data was based on survey work completed by Middlemarch Environmental Ltd in March 2007 and the proposed habitats to be created through inclusion of the terraces along the edge of the creek. It is believed that this provided suitable information for development of the management plan. It is not the intension to update the baseline data for the Basin.	n/a
4	Condition 12	Can we get consent to share survey data with GIGL (London's biological records centre)	HWMP would be pleased to support the collation of biological records from the London area and can confirm that they would be happy for survey data to be shared with GIGL if the Council feels that this would be beneficial to the project.	n/a

5		Is weed control necessary, can it be manual?	Weed control can be completed manually thus reducing the requirement for use of herbicides close to Chelsea Creek.	n/a
6 (1)		Confirmation of the green roof on KC4.	The original documentation with respect to Green Roofs provided to Middlemarch Environmental Ltd showed that there would be a green roof included on Building KC4. However, further discussions have now identified that there will not be an extensive green roof on this building, or indeed anywhere within the RBKC side of the development site. Intensive green roofs will be included on sections of Buildings KC2A and KC1.	See Middlemarch Environmental Ltd Report RT-MME-4911 A (RBKC) RevA and Townsends Drawing TOWN352(08)1400 Rev R01
6 (2)		RA Jones report on invertebrate biodiversity (2004) mostly recommends allowing natural colonisation – The Ecological Design document recommends that "some areas be used for naturally colonising brown roofs with some other roofs targeted to provide target habitat for bats, birds, invertebrates and spiders" – Can we get confirmation of the treatment of the brown roofs/extensive green roofs on the LBHF side – are these going to be left to colonise naturally?	Information with respect to the treatment of extensive green roofs within the LBHF side are included in Middlemarch Environmental Ltd Report RT-MME-4911 B (LBHF) RevA. It is understood that BRKC and LBHF are in the process of sharing information with respect to the proposed development and therefore this data should be available from LBHF. It should be noted that no areas of brown roof have been included within the design for LBHF side.	See Middlemarch Environmental Ltd Report RT-MME-4911 B (LBHF) RevA
6 (3)		Jones also suggests retaining a small volume of substrate from the existing site and adding it to the roof in order to conserve and utilize the local seedbank. Can this option be assessed?	As no brown or extensive green roofs are proposed for RBKC side, we would propose to respond directly to LBHF with respect to this comment if necessary.	n/a
6 (4)		Green walls are mentioned in the	Green walls are to be included around the base of the tower on	n/a

		Environmental Statement (2004) as part mitigation for "impacts as a result of the overall mitigation scheme" but no details in plans. RBKC should encourage planting of vegetated walls as they contribute to the environmental sustainability of buildings in various ways (insulation, wildlife habitat, absorbing air pollutants and cooling ambient temperatures).	RBKC side. Further details with respect to these features will be provided to RBKC as required.	

Note – additional information with respect to RBKC queries associated with the Management Plan are awaited from Jennifer O'Reilly.

[1] Haslam, S. M. (2003). *Understanding Wetlands: Fen, Bog and Marsh*. Taylor & Francis, London.

Job title: Lots Road

Job number: 123162

Cc:

File reference:

Prepared by: Jane Pitten x 52514

Date: 3 August 2007

Subject: Appeal Ref: APP/K5600/A/04/1146268
RBKC Planning Condition 12
Rev 1

1. INTRODUCTION

This Technical Note addresses the requirements of Condition 12 attached to planning permission ref. PP/02/01324 of Royal Borough of Kensington and Chelsea (RBKC) as specified in the decision letter dated 30th January 06 [Ref.1] for the redevelopment of the land at Lots Road Power Station.

This note and the accompanying documents are intended to fulfil the requirements of the Condition.

2. CONDITION 12

2.1 The Condition

Condition 12 states that,

"Development shall not begin until a scheme for the treatment of Chelsea Creek has been submitted to and approved in writing by the local planning authority. The scheme shall include details of the construction and subsequent maintenance of the inter-tidal terraces, of the marginal and aquatic species to be planted and of the location and design of mooring posts, boat-landing and access facilities and health and safety measures to be provided. Development shall be carried out in accordance with both the approved details and a programme of implementation first agreed in writing with the local planning authority.'

We understand that the above condition was attached to the planning permission to address comments received from the Environment Agency.

3. PLANNING CONTEXT

3.1 RBKC requirements: Comparison with planning submission

The proposals for Chelsea Creek are consistent with the approved planning application drawings and Environmental Statement [Ref 2] submitted for planning permission in November 2004, considered at the Public Inquiry in February - April 2005 and granted consent by the Secretary of State in January 2006.

Changes are minimal and are generally:

- Some minor changes to the alignment of the terraced gabion walls
- Navigation post locations and lighting proposal

3.2 Environment Agency requirements

Discussions took place over an extended period between the Environment Agency and Waterman Environmental before the developing designs were acceptable in principle to the Agency. This note addresses the comments raised by the Environment Agency in their Position Statement dated January 05 2005 [Ref.3].

4. DETAILS SUBMITTED PURSUANT TO CONDITION 12

4.1 Construction Details of Intertidal Terraces

Refer to the Arup drawings [Ref 4] showing the terrace gabion construction details.

The method of construction will be:

- Designate a new flood defence line set back behind the existing river wall (existing ground levels are generally above the statutory defence level of +5.41mOD)
- Lower ground levels behind the existing river wall and demolish the top of the wall where necessary
- Excavate the creek bed to the underside of the proposed gabion baskets or to terrace gravels, whichever is lower.
- Place geotextile and gravel levelling layer on excavated bed
- Place lower level gabion baskets and fill with rock
- Place geotextile and granular fill behind gabion basket.
- Continue to build up gabion baskets and fill in layers.
- Place soil in the pockets provided
- Make good existing wall locally where it will still be exposed
- Construct reinforced concrete retaining wall at crest of slope, where required.
- Construct footpath and handrail along top of wall
- Plant terraces

For landscaping details refer to Townshend drawings [Ref 5] and Townshend Materials Booklet and Landscape Planting Drawings [Ref 6]. For ecological design and management of the terraces refer to Middlemarch Environmental Ltd 'Input to Ecological Design' Reports [Ref 7].

4.2 Maintenance of inter-tidal terraces

Part of the Creek wall can be accessed on the landward side. Refer to Arup drawing [Ref 8]. This shows that a large crane can access the path along the creek and Thames frontage. This crane will have a reach of approximately 20m allowing it to pick up and replace gabion baskets used in the inter-tidal terraces.

The location of the power station building will restrict the crane from reaching the terraces below in this area. As a result a barge with a tracked excavator will be required to access the terraces from the creek side in this area. The lower terraces will be reached by an excavator on a barge which can rest on the bed of the creek at low tide. The higher level of terrace will be accessed from the barge resting on the gabions of the lower terrace when the tide permits.

The heights of a barge and excavator have been considered for access, taking into account the restriction of the bed level and proposed bridge soffit levels. Refer to Arup drawing showing boat clearances for the creek [Ref 9]. From this it can be seen that the total height of a barge and excavator (including draught) is less than the height difference between the bridge soffit and bed level. It is therefore possible for the maintenance plant to access the terraces from the creek (depending on tide levels).

It is likely that the gabions will have to be replaced or repaired during the design life of the development. However gabion design life can be maximised during construction by carefully packing the gabions using good quality rock fill and also using galvanised and PVC coated mesh to obtain a maximum design life. The design life would be a minimum of 10 years in saline tidal conditions but could be substantially longer. It is recommended that an engineer inspects the gabion terraces when the gabion design life is approaching its limit to determine the maintenance requirements.

Plants may also require replacement when the gabion baskets are replaced (refer to References 6 and 7). This provides details of the planting proposed for the terraces.

In addition to the maintenance of the gabion baskets, there will be maintenance required to deal with the rubbish accumulating in the terraces from the tidal waters or from boat users. A set of steps will be provided to allow access to the upper terrace levels for maintenance. Refer to Townshend's drawing [Ref 10].

4.3 Marginal and aquatic species

Details of the proposed marginal and aquatic species are provided on Townshend landscape planting drawings and Materials Booklet [Ref.6] and Middlemarch Creek Management Plan [Ref 7].

4.4 Design of Mooring Posts

4.4.1 Function

Although described as 'mooring posts' in Condition 11, it is not intended to use the posts for mooring. The function of the posts will be:

- Posts are placed as a marker for each terrace level to aid navigation of boats
- Posts with lighting will provide a sculptural function
- They will also provide perches for water birds

4.4.2 Description

Refer to Townshend drawings showing post locations [Ref 10], and Arup drawings [Ref. 4]

- Navigation posts to be 300mm x 300mm hardwood timber from sustainable source.
- Posts to be driven into creek bed.

- The concept for sculptural lighting is illustrated on page 5 of Townshend's Material Booklet [Ref. 6]
- Lights are not to be provided on the posts for navigation purposes.
- Signage to be provided on or near the posts stating 'Mooring prohibited' or similar.

4.5 Boat landing and Access facilities

There is no provision for mooring and boat landing in the proposals. However, boats will be able to access the creek and there are posts in place to ensure their navigation is guided away from the terraces.

All proposed bridges will have a soffit level no lower than the existing bridge at the site. The proposed bridges will not impose any further height restriction for navigation in comparison to the existing bridge.

It is important to note that the creek is tidally restricted. Due to the tidal nature of the river, boat access will be restricted in the creek at low tide when the water is not at a sufficient depth (as is the existing case on site).

The creek can be used by a series of boats during a specific tidal window. Canoes and narrow boats will be able to use the creek, although they will be restricted during the lower half of the tidal cycle as the creek will have very low flow in low tide. Refer to Arup drawing [Ref 9] for details of clearances for typical boats that would be able to navigate up the creek.

The navigation channel is restricted to approximately 9m width in places (governed by the distance between navigation posts on either side). Pleasure boats the creek can accommodate can have a length of up to 9.5m. As a result the longer boats will have to limit turning to the wider part of the proposed creek, situated upstream towards the west.

4.6 Health and Safety measures to be provided

It is not the intention to provide public access to the terraces or the Creek bed. This is because:

- The creek is naturally silty. The creek bed and terraces will be unsafe to walk on
- Public access will damage the intertidal flora
- Disturbance to fauna

For health and safety purposes, emergency escape routes and life buoys are to be provided. Grab chains will be located at the sheer walls where there are no terraces. In the terraces, stepped gabions will be provided for escape in places. Refer to Townshend's drawing [Ref 10] for escape provisions.

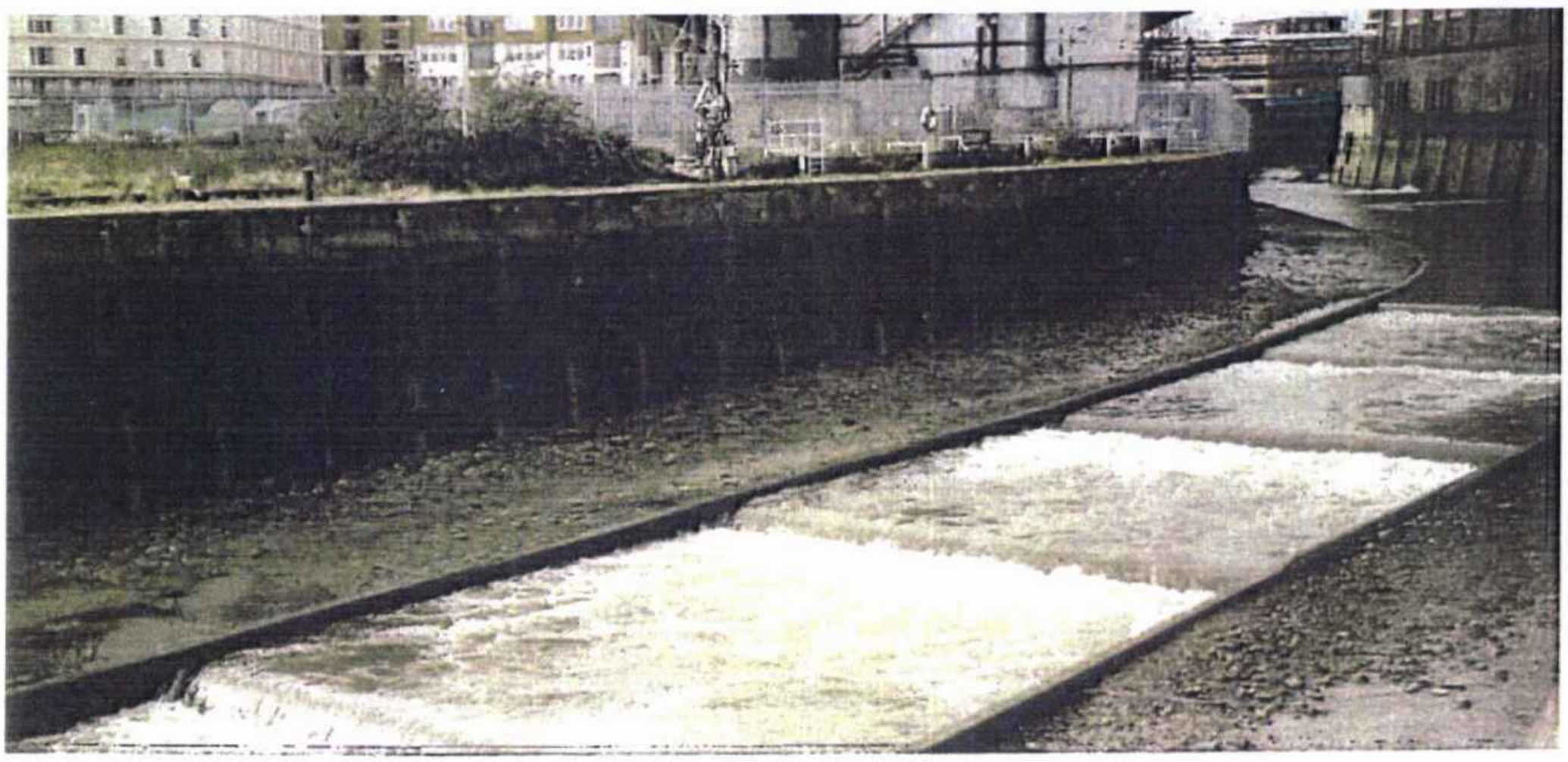
Concrete steps provided from the riverside path down to the upper intertidal terrace, for maintenance purposes will be gated to permit access to maintenance staff only.

4.7 Programme of Implementation

The "programme of Implementation" has been agreed to with both RBK&C and LBH&F Councils and the precise detail of those agreements are contained within the documents executed on 24th April 2005 [Ref 11].

4.8 Creek Bed

Part of the creek bed comprises a series of concrete campsheds enclosed within piled weirs to form a low water channel near the mouth of the creek. Outside this low water channel, the creek bed was, whilst the power station was operational, varying compositions of shingle, compacted chalk beds and silt and mud sediments (refer to Section 13 of Reference 2). See photo below from 1995 when the Power Station was in operation.



The existing creek has silted up since the Power Station was closed in 2002. The silt now covers the concrete low water channel. See the photograph below taken in 2007.

The new development will re-introduce a low water flow from the power station outfalls but at a much lower volume than previously. It is expected that this cooling water flow from the new development will lower the silt level within the low water channel downstream of the cooling water outlets; but will remain silty compared to when the power station was in operation.

In the proposals the creek low water channel will be narrowed where the proposed new terraces encroach. The new terraces will have gravel and soil in place of the existing concrete. Underneath the new gabion walls and terraces it is proposed to remove the softer layer of mud and silt sediments so that the terraces are founded on firm material. See Arup creek drawings, [Ref 4].

Where the low water channel remains exposed, the Creek bed will be left as it is. The new low water flow is likely to wash out some but not all of the silt which has built up since 2002.

5. REFERENCES

1. Secretary of State letter: Planning Applications 2002/03132/FUL and PP/02/01324 2002. 30th January 2006
2. Circadian, Regulation 19: Environmental Statement, Nov 2004.
3. EA Position Statement: Application and Appeal by Circadian Land at South Side of Chelsea Creek Harbour Creek, Lots Road Power Station. January 2005.
4. Arup Creek Drawings:
   123162-01-001 Chelsea Creek Terraces Engineering Design of Gabion retaining walls – Plan (24.07.07)
   123162-01-005 Chelsea Creek Terraces Engineering Design of Gabion retaining walls – Section 4-4 (25.07.07)

123162-01-006 Chelsea Creek Terraces Engineering Design of retaining walls – Section 5-5 (25.07.07)

5. Townshend Drawings - Terrace Sections:
   TOWN 352 (08) 7001 R00, Lots Road Creek: Schematic Section A-A', 13.07.07
   TOWN 352 (08) 7005 R00, Lots Road Creek: Schematic Section E-E', 13.07.07
   TOWN 352 (08) 7006 R00, Lots Road Creek: Schematic Section F-F', 13.07.07
   TOWN 352 (08) 7006 R00, Lots Road Creek: Schematic Section G-G', 13.07.07

6. Townshend's Materials Booklet and Landscape planting drawings
   TOWN 352 (08) 300 R00, Lots Road Creek Materials Booklet, 13.07.07
   TOWN 352 (08) 1207 R01, Lots Road Creek: Landscape Planting 1 of 2, 20.07.07
   TOWN 352 (08) 1208 R01, Lots Road Creek: Landscape Planting 2 of 2, 20.07.07

7. Middlemarch Environmental Ltd Documents:

   RT-MME-4911-02A (RBKC): Input into Ecological Design, Management & Monitoring of Chelsea Creek and basin: Ecological design, July 07.

   RT-MME-4911-03 (RBKC): Input into Ecological Design, Management & Monitoring of Chelsea Creek and basin: Chelsea Basin Management Plan, July 07.

   RT-MME-4911-04A (RBKC): Input into Ecological Design, Management & Monitoring of Chelsea Creek and basin: Habitats within development site Management Plan, July 07.

8. Arup Drawing

   123162-03-21: "Swept Path Analysis Large 10.3m mobile crane", June 07.

9. Arup Drawing:

   123162-01-SK020, Chelsea Creek Boat Clearances (1.08.07).

10. Townshend's Creek Drawings:

    TOWN 352 (08) 1201 R01, Lots Road Creek: Landscape Surface Finishes Plan Creek 1 of 2, 20.07.07
    TOWN 352 (08) 1202 R01, Lots Road Creek: Landscape Surface Finishes Plan Creek 2 of 2, 20.07.07

11. The Mayor and Burgesses of the Royal Borough of Kensington & Chelsea:
    Deed Made Pursuant to Section 106 of the Town and Country Planning Act 1990 Relating to Land at Lots Road Power Station and Chelsea Creek, Lots Road, London SW10. 25.04.05

JOB NAME: LOTS ROAD LONDON

JOB NUMBER :123162-01

ARUP
13 Fitzroy Street London W1P 6BQ

			Date			
			Day	01	02	03
			Month	08	08	08
			Year	07	07	07
Document No.	**Document Title**	**Scale**	**Size**	**Revisions**		
	Design Notes Condition 12 (RBKC) 01.08.07			0		1
123162-01-001	Design of Gabion Retaining walls – Plan (24.07.07)			0		
123162-01-005	Design of Gabion retaining walls – Section 4-4 (25.07.07)			0		
123162-01-006	Design of retaining walls – Section 5-5 (25.07.07)			0		
123162-03-21:	"Swept Path Analysis Large 10.3m mobile crane", June 07.			0		
123162-01-SK020	Chelsea Creek Boat Clearances (Issue 2)				1	
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	BPTW			1	1	1
	Middlemarch Environmental			1	1	1
	Davis Langdon			1	1	1
	Hoare Lea			1	1	1
			TOTAL			

STATUS					
		Draft			
		Comments			
		Information			
		Approval			
		Preliminary	✓	✓	✓
		Tender			
		Construction			
		As-Built			
		Other			

ISSUE FORMAT					
		ASITE			
		BIW			
		Business Coltaborator			
		Integration			
		E-mail	✓	✓	✓
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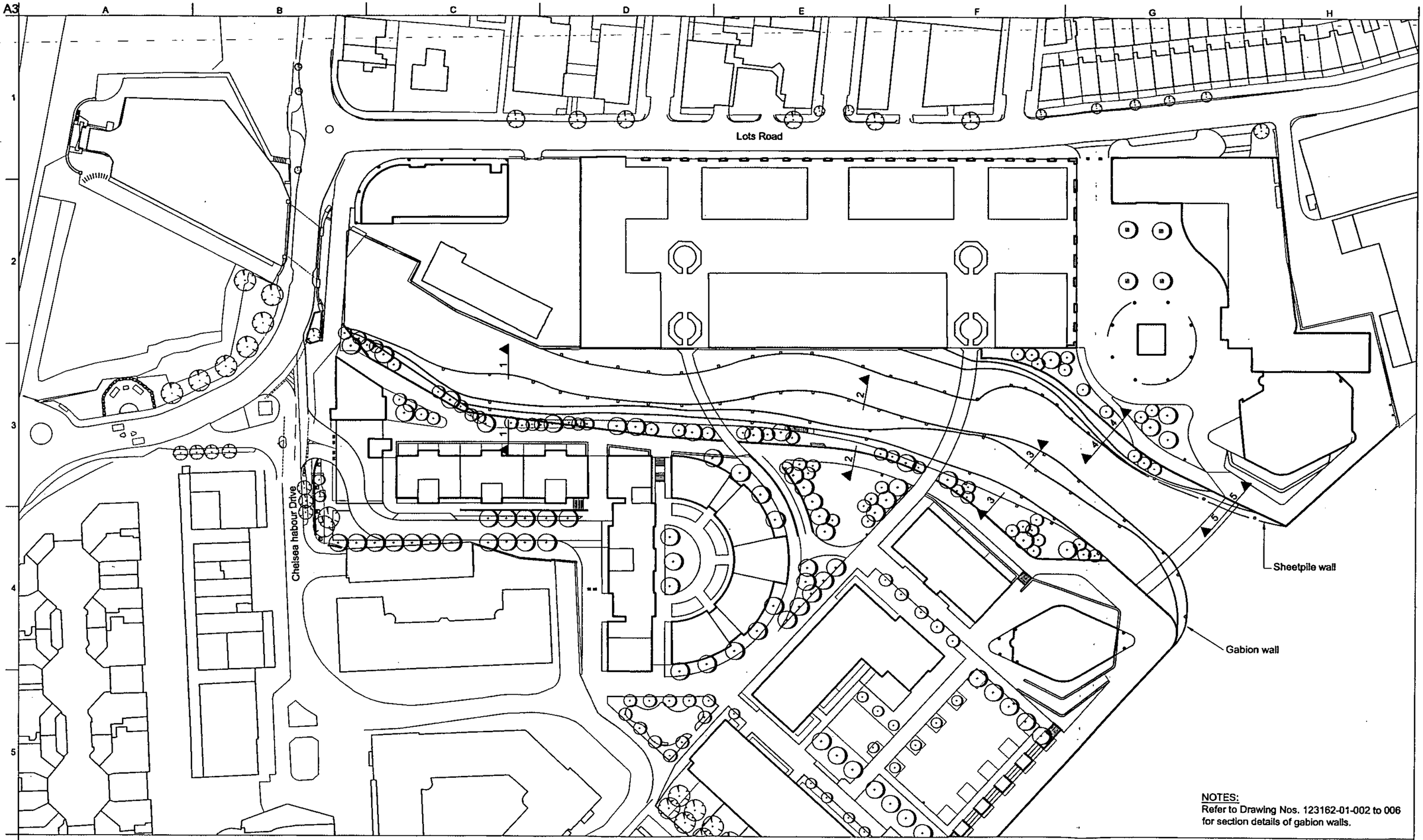
A3



NOTES:
Refer to Drawing Nos. 123162-01-002 to 006 for section details of gabion walls.

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Issue	Date	By	Chkd	Appd
	24/07/07	ACC	EW	CU

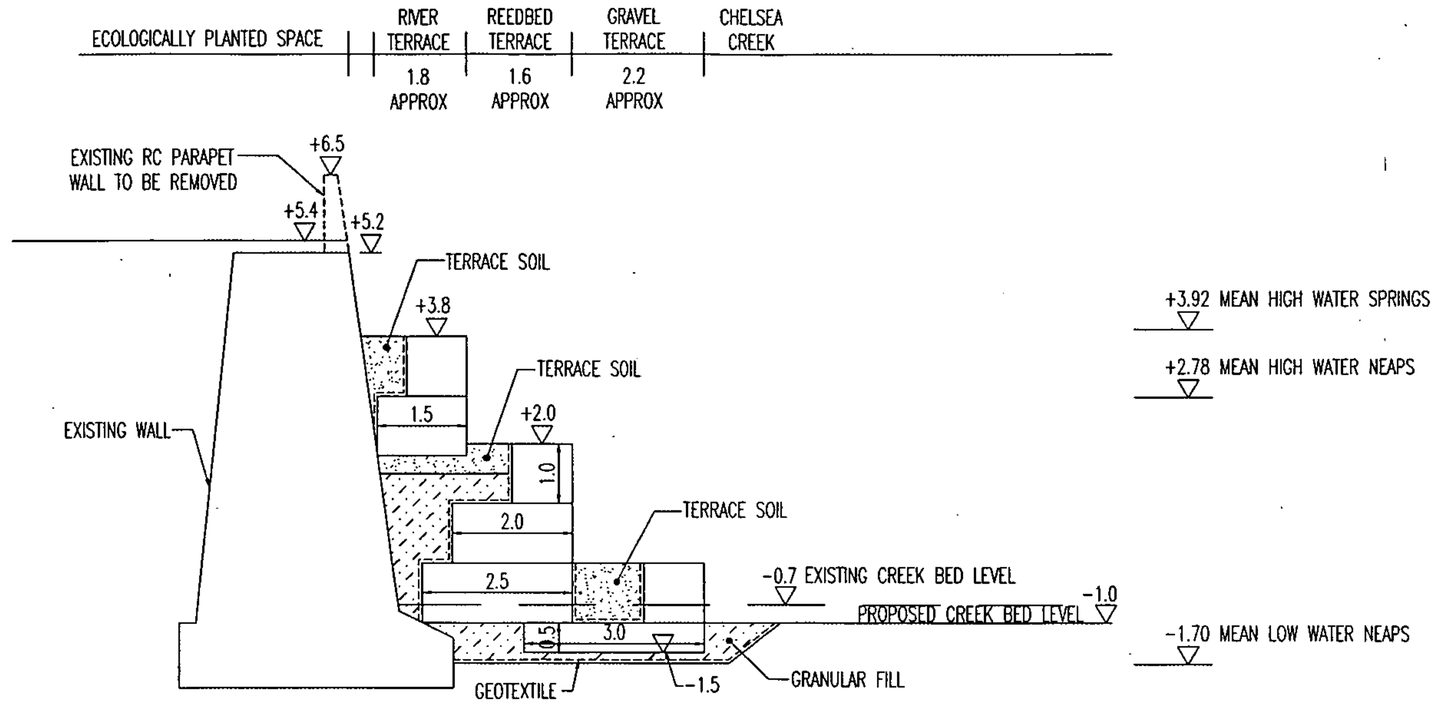
Client
Hutchison Whampoa Ltd.

Job Title
Lots Road

Drawing Title
Chelsea Creek Terraces
Engineering Design of Gabion Retaining Walls
Plan

Scale at A3 1:1000
Plot ID
Drawing Status
PRELIMINARY

Job No	Drawing No	Issue
123162-00	**123162-01-001**	



SECTION 4-4

NOTES:

1. Refer to Drawing No. 123162-01-001 for location of section.
2. Refer to Townshend drawing TOWN 352 (08) 7005 for details of landscaping.
3. Materials:
   - Imported granular fill to be: Highways Agency table 6/1 type 6A fill.
   - Gabion baskets to be from approved supplier.
     Wires to be galvanised and plastic coated with rock filling, all to BS8002.
   - Terrace soil to be to landscape architects specification.

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Issue	Date	By	Chkd	Appd
	25/07/07	DB	EW	CU

Client: Hutchison Whampoa Ltd.

Job Title: Lots Road

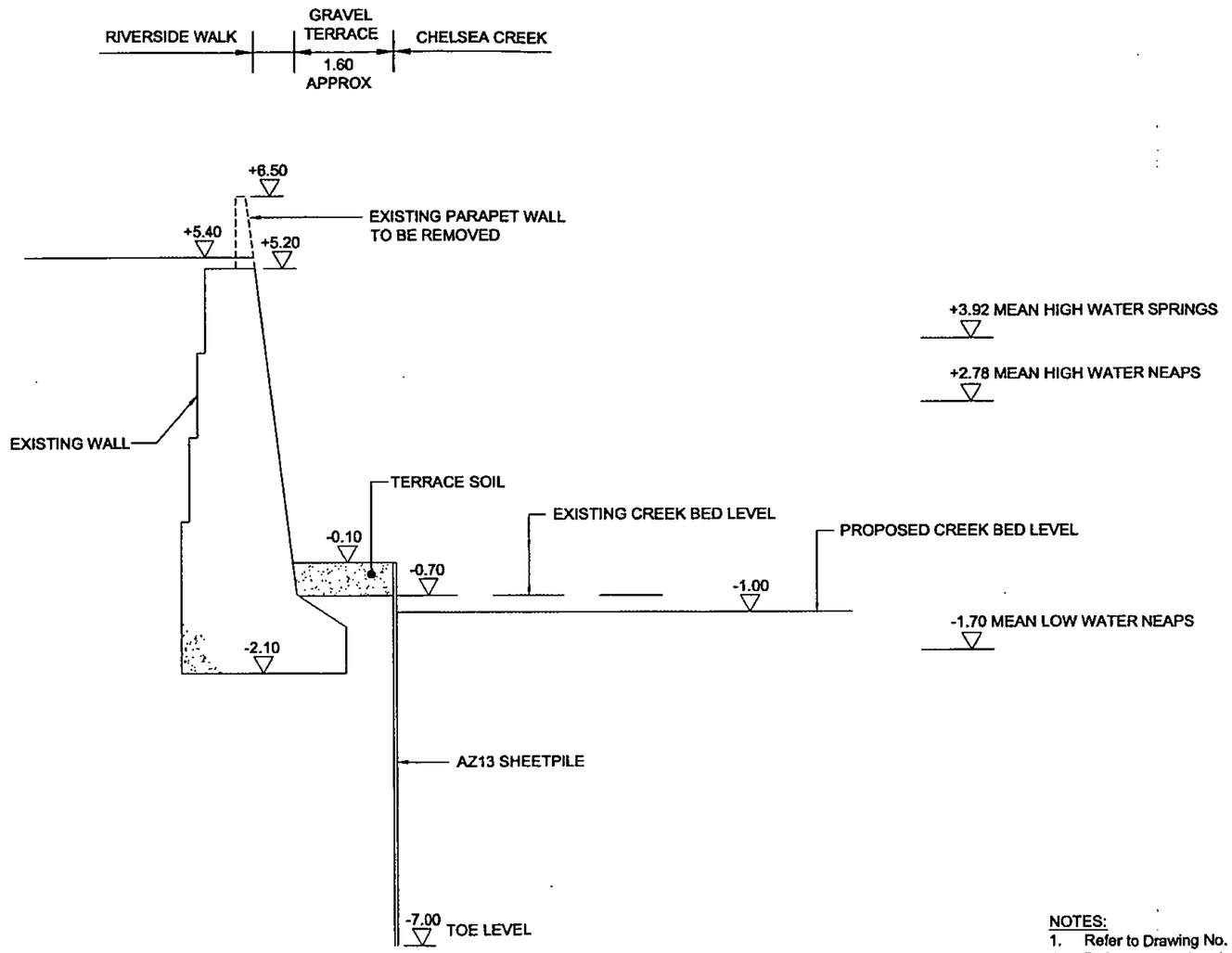
Drawing Title: Chelsea Creek Terraces Engineering Design of Gabion Retaining Walls Section 4-4

Scale at A3: 1:100

Plot ID:

Drawing Status: **PRELIMINARY**

Job No	Drawing No	Issue
123162-00	123162-01-005	



SECTION 5-5

NOTES:
1. Refer to Drawing No. 123162-01-001 for location of section.
2. Refer to Townshend drawing TOWN 352 (08) 7006 for details of landscaping.
3. Materials:
   - Imported granular fill to be: Highways Agency table 6/1 type 6A fill.
   - Gabion baskets to be from approved supplier.
   - Wires to be galvanised and plastic coated with rock filling, all to BS8002.
   - Terrace soil to be to landscape architects specification.
4. Effect of vibrations from sheetpiling on existing gravity wall to be assessed
5. Construction methodology to be considered

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Issue	Date	By	Chkd	Appd
	25/07/07	DB	EW	CU

Client: Hutchison Whampoa Ltd.

Job Title: Lots Road

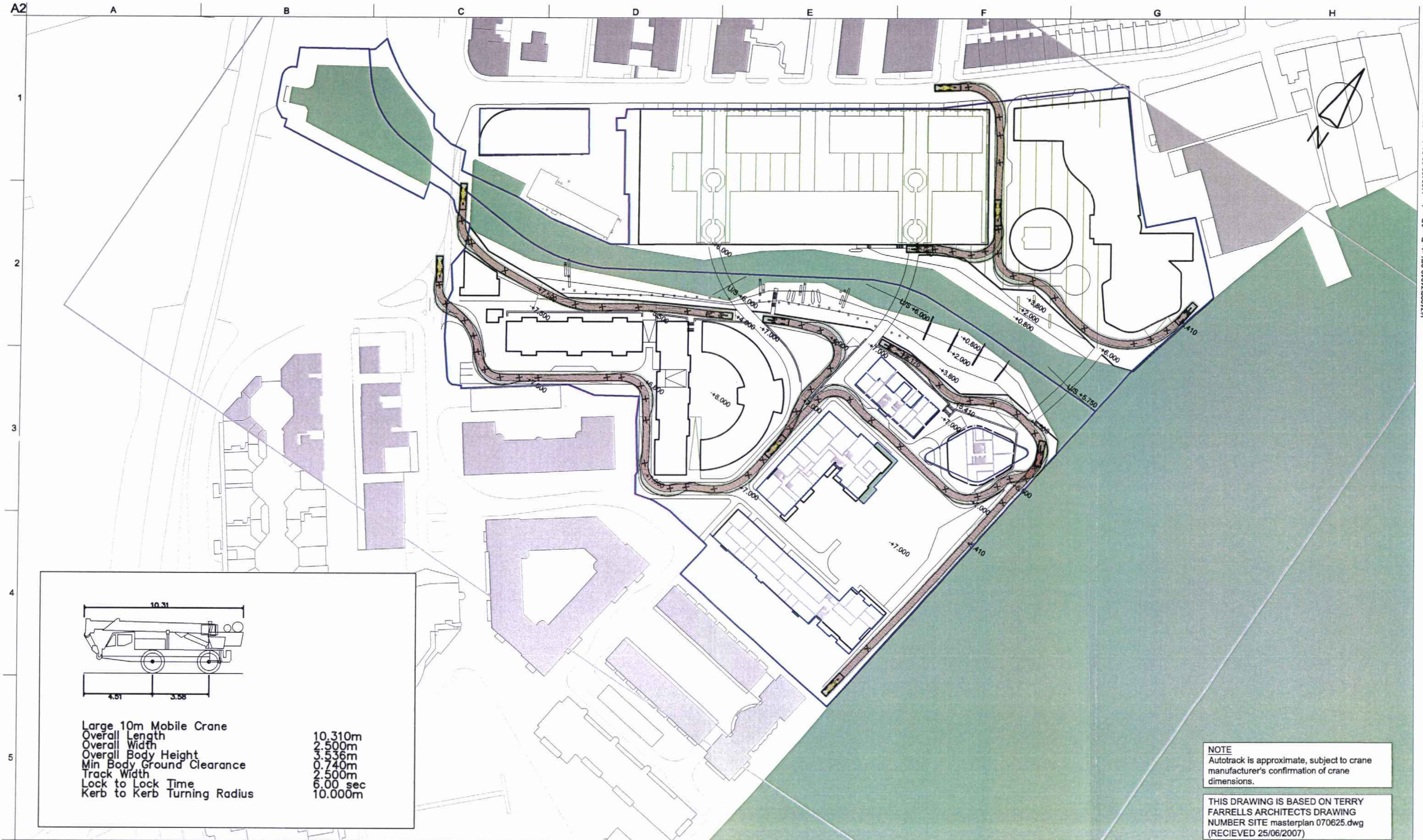
Drawing Title: Chelsea Creek Terraces Engineering Design of Retaining Walls Section 5-5

Scale at A3: 1:100

Plot ID:

Drawing Status: **PRELIMINARY**

Job No	Drawing No	Issue
123162-00	123162-01-006	



Large 10m Mobile Crane

Overall Length	10.310m
Overall Width	2.500m
Overall Body Height	3.536m
Min Body Ground Clearance	0.740m
Track Width	2.500m
Lock to Lock Time	6.00 sec
Kerb to Kerb Turning Radius	10.000m

NOTE
Autotrack is approximate, subject to crane manufacturer's confirmation of crane dimensions.

THIS DRAWING IS BASED ON TERRY FARRELLS ARCHITECTS DRAWING NUMBER SITE masterplan 070625.dwg (RECIEVED 25/06/2007)

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Issue	Date	By	Chkd	Appd
-	25/06/07	COT	MR	AB

Client: Hutchison Whampoa Ltd.

Job Title: Lots Road

Drawing Title: Swept Path Analysis Large 10.3m Mobile Crane

Scale at A2: 1:1000

Plot ID: B7363B9A-885A-4754-97E5-4D8B2AC0422B

Drawing Status: DRAFT

Job No	Drawing No	Issue
123162-03	123162-03-21	-

J:\71000\71919-20\Lots Road\Drawings\123162-03-21.dwg 25 Jun 2007 14:58:44 chris.otoole

A4

Duration of Vessel Usage

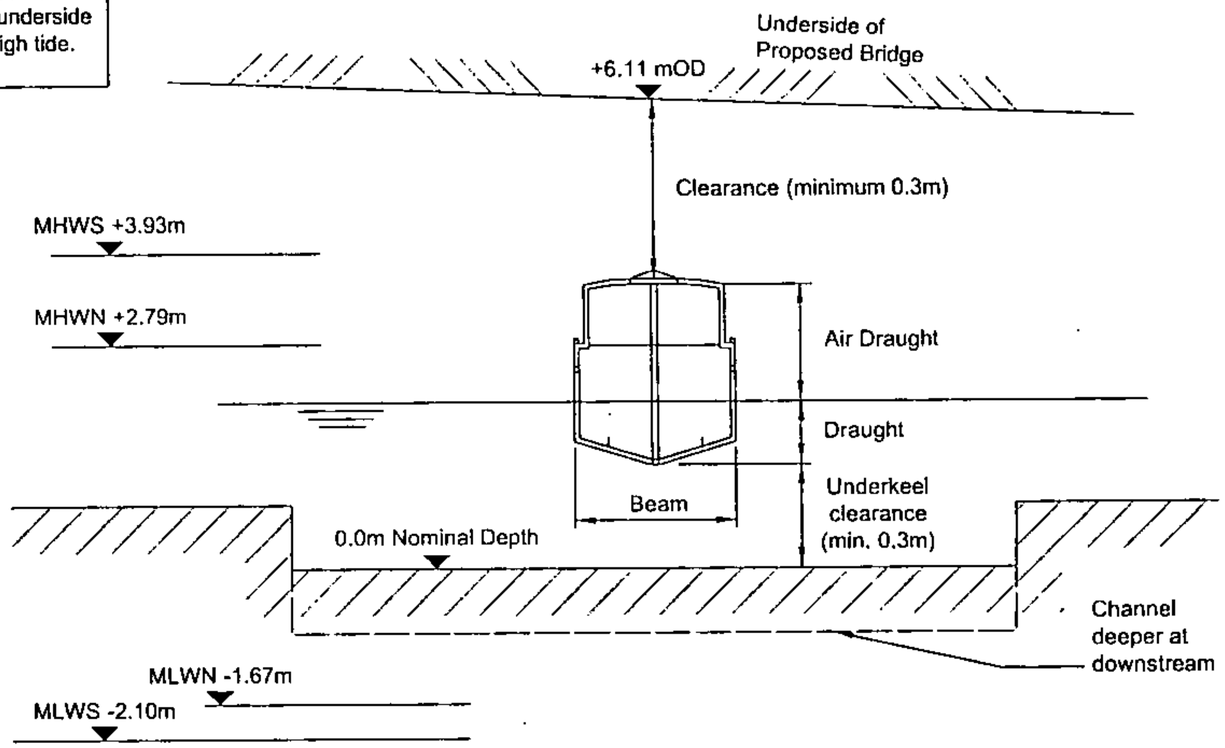
Type of Vessel	Spring tides: Total hours of boat usage per tidal cycle	Spring tides: %	Neap tides: Total hours of boat usage per tidal cycle	Neap tides: %	Comments
Open boats, outboard motor boats, canoes, rowing boats, dinghies	6.2	50%	6.2	50%	Boats only restricted at lower tide due to bed level.
Cabin cruiser, sailing boats	3.6	30%	5.9	45%	Boats tidally restricted at lower tide due to bed level. Boat also restricted by underside of bridge at high tide.

Notes
- Full tidal cycle approximately 12 hours 20 minutes.
- Times in table are for biggest boat of each type.

Dimensions of Design Boats for Chelsea Creek

Type of vessel	Dimensions (m) * Length	Beam	Air Draught	Draught
Open boats, outboard motor boats, canoes, rowing boats, dinghies.	5.5	2.0	1.75	0.5
Cabin cruisers, sailing boats.	9.5	3.0	2.5	1.0
Barge & excavator (maintenance)	T.B.C.	T.B.C.	3.0	1.0

* Note: The dimensions of a boat can vary. The figures given in the table are the maximum dimensions for that category



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Client: Hutchison Whampoa Ltd

Job Title: Lots Road

Drawing Title: Chelsea Creek Boat Clearances

Issue	Date	By	Chkd	Appd
02	02/08/07	ACC	JP	CU
01	27/07/07	DB	JP	

Scale at A4: Not to scale

Plot ID: 61A77BF7-64B0-48A8-9E59-BB79D212A98E

Drawing Status: Preliminary

Job No	Drawing No	Issue
123162-01	Sk020	02

Job title: Lots Road	Job number: 123162
Cc	File reference
Prepared by: Jane Pitten x 52514	Date: 6 December 2007
Subject: Appeal Ref: APP/K5600/A/04/1146268 RBKC Planning Condition 12 Rev 2	

1. INTRODUCTION

This Technical Note addresses the requirements of Condition 12 attached to planning permission ref. PP/02/01324 of Royal Borough of Kensington and Chelsea (RBKC) as specified in the decision letter dated 30th January 06 [Ref.1] for the redevelopment of the land at Lots Road Power Station.

This note and the accompanying documents are intended to fulfil the requirements of the Condition. Information was submitted by Arup and the design team to address this condition in August 2007. Since the information was submitted, feedback has been received through RBKC, incorporating various consultees comments. This report now intends to address these comments (the Environment Agency, and West London River Group [Ref 2]).

2. CONDITION 12

2.1 The Condition

Condition 12 states that,

"Development shall not begin until a scheme for the treatment of Chelsea Creek has been submitted to and approved in writing by the local planning authority. The scheme shall include details of the construction and subsequent maintenance of the inter-tidal terraces, of the marginal and aquatic species to be planted and of the location and design of mooring posts, boat-landing and access facilities and health and safety measures to be provided. Development shall be carried out in accordance with both the approved details and a programme of implementation first agreed in writing with the local planning authority.'

We understand that the above condition was attached to the planning permission to address comments received from the Environment Agency (EA).

3. PLANNING CONTEXT

3.1 RBKC requirements: Comparison with planning submission

The proposals for Chelsea Creek are consistent with the approved planning application drawings and Environmental Statement [Ref 3] submitted for planning permission in November 2004, considered at the Public Inquiry in February - April 2005 and granted consent by the Secretary of State in January 2006, subject to changes which have now been made according to comments received through RBKC after the previous submission of this design note.

These changes are generally:

- Adjustments to the creek terraces
- Navigation post locations

3.2 Environment Agency requirements

Discussions took place over an extended period between the Environment Agency and Waterman Environmental before the developing designs were acceptable in principle to the Agency. This note addresses the comments raised by the Environment Agency in their Position Statement dated January 05 2005 [Ref.4] and their more recent comments on the previous submission of information for this condition [Ref 2].

4. DETAILS SUBMITTED PURSUANT TO CONDITION 12

4.1 Construction Details of Intertidal Terraces

Refer to the Arup drawings [Ref 5] showing the typical terrace gabion construction details.

The method of construction will be:

- Designate a new flood defence line set back behind the existing river wall (existing ground levels are generally above the statutory defence level of +5.41mOD)
- Lower ground levels behind the existing river wall and demolish the top of the wall where necessary
- Excavate the creek bed to the underside of the proposed gabion baskets or to terrace gravels, whichever is lower.
- Place geotextile and gravel levelling layer on excavated bed
- Place lower level gabion baskets and fill with rock
- Place geotextile and granular fill behind gabion basket.
- Continue to build up gabion baskets and fill in layers.
- Place soil in the pockets provided
- Make good existing wall locally where it will still be exposed
- Construct reinforced concrete retaining wall at crest of slope, where required.
- Construct footpath and handrail along top of wall
- Plant terraces

. For landscaping details refer to Townshend drawings [Ref 6] and Townshend Materials Booklet and Landscape Planting Drawings [Ref 7]. For ecological design and management of the terraces refer to Middlemarch Environmental Ltd 'Input to Ecological Design' Reports [Ref 8].

4.2 Maintenance of inter-tidal terraces

Part of the Creek wall can be accessed on the landward side. Refer to Arup drawing [Ref 9]. This shows that a large crane can access the path along the creek and Thames frontage. This crane will have a reach of approximately 20m allowing it to pick up and replace gabion baskets used in the inter-tidal terraces.

The location of the power station building may restrict the crane from reaching the terraces below in this area. As a result a barge with a tracked excavator will be required to access the terraces from the creek side in this area. The lower terraces can be reached by an excavator on a barge which can rest on the bed of the creek at low tide. The higher level of terrace can be accessed from the barge resting on the gabions of the lower terrace when the tide permits.

The heights of a barge and excavator have been considered for access, taking into account the restriction of the bed level and proposed bridge soffit levels. Refer to Arup drawing showing boat clearances for the creek [Ref 10]. From this it can be seen that the total height of a barge and excavator (including draught) is less than the height difference between the bridge soffit and bed level. It is therefore possible for the maintenance plant to access the terraces from the creek (depending on tide levels).

It is likely that the gabions will have to be replaced or repaired during the design life of the development. However gabion design life can be maximised during construction by carefully packing the gabions using good quality rock fill and also using galvanised and PVC coated mesh to obtain a maximum design life. The design life would be a minimum of 10 years in saline tidal conditions but could be substantially longer. It is recommended that an engineer inspects the gabion terraces when the gabion design life is approaching its limit to determine the maintenance requirements.

Plants may also require replacement when the gabion baskets are replaced (refer to References 7 and 8 which provide details of the planting proposed for the terraces).

In addition to the maintenance of the gabion baskets, there will be maintenance required to deal with the rubbish accumulating in the terraces from the tidal waters or from boat users. A set of steps will be provided to allow access to the upper terrace levels for maintenance. Refer to Townshend's drawing [Ref 11].

4.3 Terrace Design

As a result of navigational discussions with River Thames Society and West London River Group [Ref 2], the lowest terrace at the approximate level of -0.1m OD has now been removed.

As a result of comments from the EA, the terraces will be sloped locally to allow flatfish to access the terraces. Terraces have been sloped in places between 0.2m to 0.8m and between 2.8m and 3.8m. Refer to Townshends drawings [Ref 6] and Arup sections [Ref 5] showing levels of the terraces.

As previously stated, the terrace walls will be mainly of gabion design. The gabions on the surface of the terraces will be of a special design to allow topsoil and plants to be planted within the gabion. Refer to Arup sections [Ref 5] for details.

4.4 Marginal and aquatic species

Details of the proposed marginal and aquatic species are provided on Townshend landscape planting drawings and Materials Booklet [Ref.7] and Middlemarch Creek Management Plan [Ref 8].

4.5 Design of Mooring Posts

Mooring posts have now been adjusted where possible to take on board the comments from River Thames Society and West London River Group [Ref 2]. As a result, the location and number of mooring posts have been amended in accordance with the consultees requirements.

4.5.1 Function

Although described as 'mooring posts' in Condition 12, the posts are mainly intended to be used as navigation posts. The function of the posts will be:

- Posts are placed as a marker for the lowest terrace level to aid navigation of boats
- They will also provide perches for water birds
- They can be used for mooring but this will be the subject of limitations on duration to avoid management issues regarding long term mooring (particularly overnight). .

4.5.2 Description

Refer to Townshend drawings showing post locations [Ref 11], and Arup drawings [Ref. 5]

- Navigation posts to be 300mm x 300mm hardwood timber from sustainable source.
- Posts to be driven into creek bed.
- Signage to be provided on or near the posts stating 'Overnight mooring prohibited' or similar.
- Posts to be fitted with red cans marking the port hand (LBHF side of creek) and green cones marking starboard hand (RBKC side of creek).
- Mooring posts to have red lights at the mouth of the creek at port hand and green lights at the mouth of the creek at starboard hand.

4.6 Boat landing and Access facilities

There is no provision for boat landing in the proposals. However, boats will be able to access the creek and there are posts in place to ensure their navigation is guided away from the terraces.

All proposed bridges will have a soffit level no lower than the existing bridge at the site. The proposed bridges will not impose any further height restriction for navigation in comparison to the existing bridge.

It is important to note that the creek is tidally restricted. Due to the tidal nature of the river, boat access will be restricted in the creek at low tide when the water is not at a sufficient depth (as is the existing case on site).

The creek can be used by a series of boats during a specific tidal window. Canoes and narrow boats will be able to use the creek, although they will be restricted during the lower half of the tidal cycle as the creek will have very low flow in low tide. Refer to Arup drawing [Ref 10] for details of clearances for typical boats that would be able to navigate up the creek.

Navigation posts will mark the lower terraces. As stated in Section 4.5.2, these posts will be fitted with red cans marking the port hand and green cones marking the starboard hand. Lights will be fitted at the mouth of the creek. Refer to Arup creek drawings for details [Ref 5].

4.7 Health and Safety measures to be provided

It is not the intention to provide public access to the terraces or the Creek bed. This is because:

- The creek is naturally silty. The creek bed and terraces will be unsafe to walk on
- Public access will damage the intertidal flora
- Disturbance to fauna

For health and safety purposes, emergency escape routes and life buoys are to be provided. Grab chains will be located at the sheer walls where there are no terraces. In the terraces, stepped gabions will be provided for escape in places. Refer to Townshend's drawing [Ref 11] and Arup ladder and grab chain detail drawing [Ref 12] for escape provisions.

Concrete steps provided from the riverside path down to the upper intertidal terrace, for maintenance purposes will be gated to permit access to maintenance staff only.

4.8 Programme of Implementation

The "programme of Implementation" has been agreed to with both RBK&C and LBH&F Councils and the precise detail of those agreements are contained within the documents executed on 24th April 2005 [Ref 13].

4.9 Creek Bed

Part of the creek bed comprises a series of concrete campsheds enclosed within piled weirs to form a low water channel near the mouth of the creek. Outside this low water channel, the creek bed was, whilst the power station was operational, varying compositions of shingle, compacted chalk beds and silt and mud sediments (refer to Section 13 of Reference 3). See photo below from 1995 when the Power Station was in operation.

The existing creek has silted up since the Power Station was closed in 2002. The silt now covers the concrete low water channel. See the photograph below taken in 2007.

The new development will re-introduce a low water flow from the power station outfalls but at a much lower volume than previously. It is expected that this cooling water flow from the new development will lower the silt level within the low water channel downstream of the cooling water outlets; but will remain silty compared to when the power station was in operation.

In the proposals the creek low water channel will be narrowed where the proposed new terraces encroach. The new terraces will have gravel and soil in place of the existing concrete. Underneath the new gabion walls and terraces it is proposed to remove the softer layer of mud and silt sediments so that the terraces are founded on firm material. See Arup creek drawings, [Ref 5].

Where the low water channel remains exposed, the Creek bed will be left as it is. The new low water flow is likely to wash out some but not all of the silt which has built up since 2002.

The existing concrete campsheds containing weirs will have 'V' notches cut out of each weir to allow fish to travel more easily upstream into the creek.

5. REFERENCES

1. Secretary of State letter: Planning Applications 2002/03132/FUL and PP/02/01324 2002. 30th January 2006
2. Consultees responses to previous Condition 12 submission:

   EA letter (reference NE/2007/104036/01-L02), dated 10th October 2007

   West London River Group letter for Condition 11 LBHF, dated 10th October

3. Circadian, Regulation 19: Environmental Statement, Nov 2004.
4. EA Position Statement: Application and Appeal by Circadian Land at South Side of Chelsea Creek Harbour Creek, Lots Road Power Station. January 2005.
5. Arup Creek Drawings:
   123162-01-001 Chelsea Creek Terraces Engineering Design of Gabion retaining walls – Plan
   123162-01-005 Chelsea Creek Terraces Engineering Design of Gabion retaining walls – Section 4-4
6. Townshend Drawings - Terrace Sections:
   TOWN 352 (08) 7001, Lots Road Creek: Schematic Section A-A'.
   TOWN 352 (08) 7005, Lots Road Creek: Schematic Section E-E'.
   TOWN 352 (08) 7006, Lots Road Creek: Schematic Section F-F'.
7. Townshend's Materials Booklet and Landscape planting drawings
   TOWN 352 (08) 300, Lots Road Creek Materials Booklet.
   TOWN 352 (08) 1207, Lots Road Creek: Landscape Planting 1 of 2.
   TOWN 352 (08) 1208, Lots Road Creek: Landscape Planting 2 of 2.
8. Middlemarch Environmental Ltd Documents:

   RT-MME-4911-02A (RBKC): Input into Ecological Design, Management & Monitoring of Chelsea Creek and basin: Ecological design.

   RT-MME-4911-03 (RBKC): Input into Ecological Design, Management & Monitoring of Chelsea Creek and basin: Chelsea Basin Management Plan.

   RT-MME-4911-04A (RBKC): Input into Ecological Design, Management & Monitoring of Chelsea Creek and basin: Habitats within development site Management Plan.
9. Arup Drawing

   123162-03-21: "Swept Path Analysis for 15T Mobile Crane".
10. Arup Drawing:

    123162-01-SK020, Chelsea Creek Boat Clearances.
11. Townshend's Creek Drawings:

    TOWN 352 (08) 1201, Lots Road Creek: Landscape Surface Finishes Plan Creek 1 of 2.
    TOWN 352 (08) 1202, Lots Road Creek: Landscape Surface Finishes Plan Creek 2 of 2.
12. Arup Drawing:

    123162-01-012, River Wall Ladders and Grab Chains (30.11.07)

13 The Mayor and Burgesses of the Royal Borough of Kensington & Chelsea:
   Deed Made Pursuant to Section 106 of the Town and Country Planning Act 1990 Relating to Land at Lots Road Power Station and Chelsea Creek, Lots Road, London SW10. 25.04.05

A3

Lots Road

Chelsea habour Drive

Mooring posts

Gabion walls

NOTES:

1. Refer to Drawing Nos. 123162-01-002 to 005 for section details of gabion walls.
2. Mooring posts to be fitted with red cans marking the Port Hand (LBHF Side of creek).
3. Mooring post at mouth of creek to have red lights at Port Hand.
4. Mooring posts to be fitted with green cones marking the Starboard Hand (RBKC Side of creek).
5. Mooring post at mouth of creek to have green light at Starboard Hand.

J:\123000\123162-00\11 TCL Drawings\Acad\123162-01-001-B.dwg 6 Dec 2007 17:08:32 emily.whitehill

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Issue	Date	By	Chkd	Appd
B	06/12/07	DB	JP	JP
A	28/11/07	ACC	EW	CU
	24/07/07	ACC	EW	CU

Client: Hutchison Whampoa Ltd.

Job Title: Lots Road

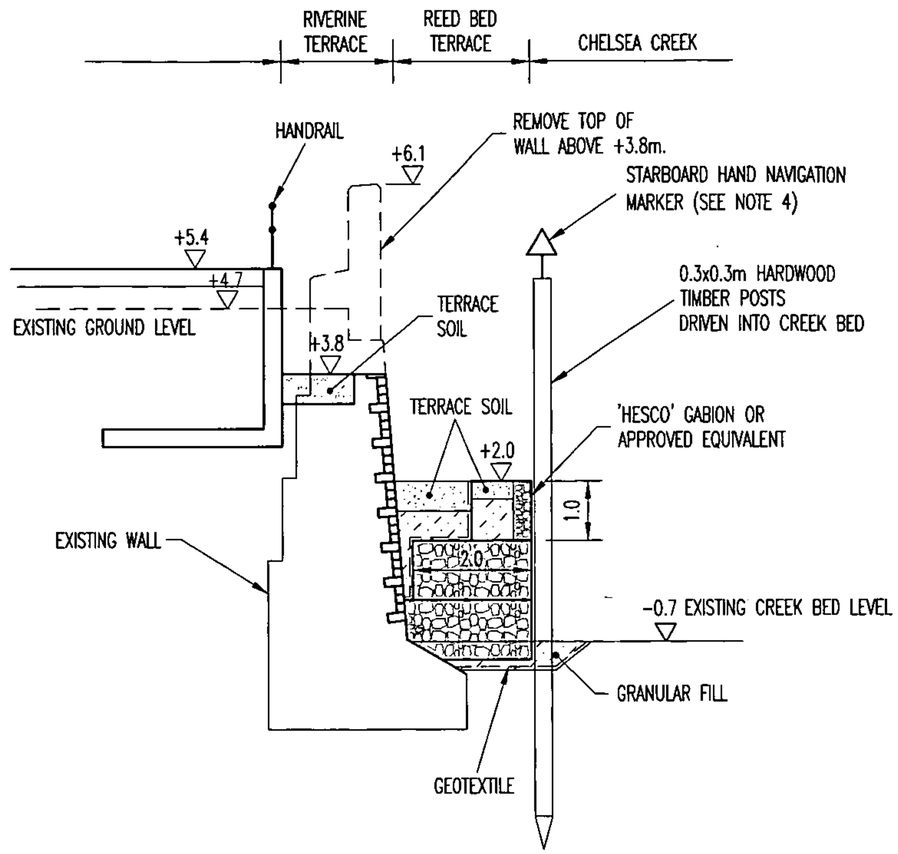
Drawing Title: Chelsea Creek Terraces Engineering Design of Gabion Retaining Walls + Mooring Post Locations Plan

Scale at A3: 1:1000

Plot ID: E18514CC-A77D-438E-AB65-BD99B9B554B7

Drawing Status: **PRELIMINARY**

Job No	Drawing No	Issue
123162-00	**123162-01-001**	**B**



+3.92 MEAN HIGH WATER SPRINGS

+2.78 MEAN HIGH WATER NEAPS

-1.70 MEAN LOW WATER NEAPS

KEY:

- TERRACE SOIL
- GRANULAR FILL
- STONES

NOTES:

1. Refer to Drawing No. 123162-01-001 for location of section.
2. Refer to Townshend drawing TOWN 352 (08) 7005 for details of landscaping.
3. Materials:
   - Imported granular fill to be: Highways Agency table 6/1 type 6A fill.
   - Gabion baskets to be from approved supplier.
     Wires to be galvanised and plastic coated with rock filling, all to BS8002.
   - Terrace soil to be to landscape architects specification.
4. Mooring posts to be fitted with green cones marking the Starboard Hand (RBKC Side of creek). Mooring post at mouth of creek to have green light at Starboard Hand.

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Issue	Date	By	Chkd	Appd
B	06/12/07	DB	JP	JP
A	28/11/07	ACC	EW	CU
	25/07/07	DB	EW	CU

Client: Hutchison Whampoa Ltd.

Job Title: Lots Road

Drawing Title: Chelsea Creek Terraces Engineering Design of Retaining Walls Section 4-4

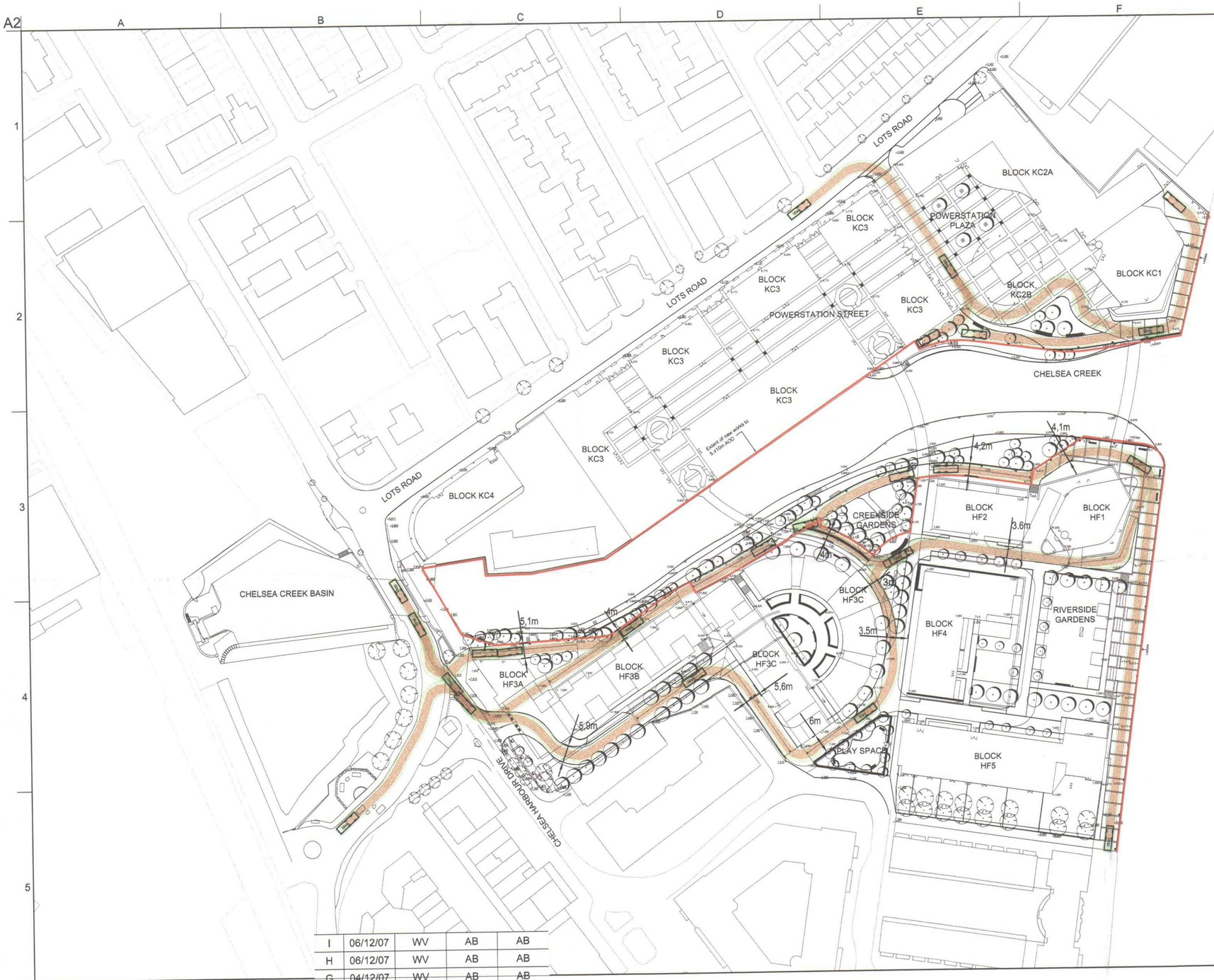
Scale at A3: 1:100

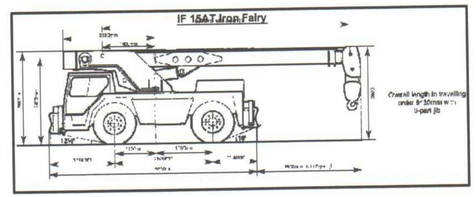
Plot ID: BAFF48CC-6106-4294-BB59-7A84106F686E

Drawing Status: **PRELIMINARY**

Job No	Drawing No	Issue
123162-00	123162-01-005	B

A2





NOTE
Minimum clear widths of paths are shown in metres.
Autotrack is approximate, subject to crane manufacturer's confirmation of crane dimensions.

KEY:
Proposed statutory flood defence level +5.410m AOD

Issue	Date	By	Chkd	Appd
I	06/12/07	WV	AB	AB
H	06/12/07	WV	AB	AB
~~G~~	~~04/12/07~~	~~WV~~	~~AB~~	~~AB~~
F	03/12/07	WV	AB	AB
E	03/12/07	WV	AB	AB
D	30/11/07	WV	AB	AB
C	29/11/07	WV	AB	AB
B	29/11/07	GW	AB	AB
A	24/09/07	COT	MR	AB

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Client
Hutchison Whampoa Ltd.

Job Title
Lots Road

Drawing Title
Swept Path Analysis
Large 15T Mobile Crane

Scale at A2 1:1000

Plot ID FF845C53-B9E0-4C52-AFB9-24087821A40A

Drawing Status
DRAFT

Job No	Drawing No	Issue
123162-03	**123162-03-21**	**I**

J:\123000\123162-03 Lots Road (Transport)\4 Internal Project Data\4-03 Arup Drawings\123162-03-21 I bound.dwg 6 Dec 2007 18:42:30 warwick.vogt

A4

Duration of Vessel Usage

Type of Vessel	Spring tides: Total hours of boat usage per tidal cycle	Spring tides: %	Neap tides: Total hours of boat usage per tidal cycle	Neap tides: %	Comments
Open boats, outboard motor boats, canoes, rowing boats, dinghies	6.2	50%	6.2	50%	Boats only restricted at lower tide due to bed level.
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Notes
- Full tidal cycle approximately 12 hours 20 minutes.
- Times in table are for biggest boat of each type.

Dimensions of Design Boats for Chelsea Creek

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Barge & excavator (maintenance)	T.B.C.	T.B.C.	3.0	1.0

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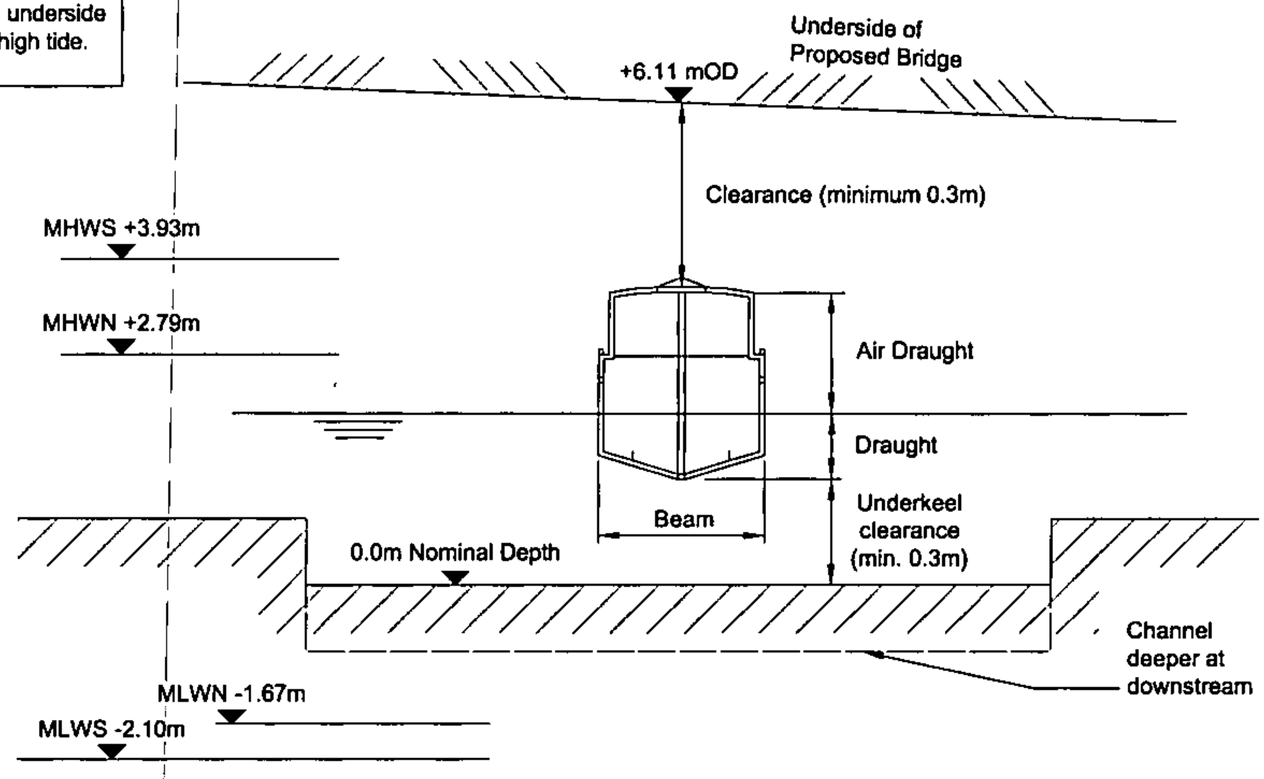

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Client: Hutchison Whampoa Ltd

Job Title: Lots Road

Drawing Title: Chelsea Creek Boat Clearances

Issue	Date	By	Chkd	Appd
02	02/08/07	ACC	JP	CU
01	27/07/07	DB	JP	

Scale at A4: Not to scale

Plot ID: 61A77BF7-64B0-48A8-9E59-BB79D212A98E

Drawing Status: **Preliminary**

Job No	Drawing No	Issue
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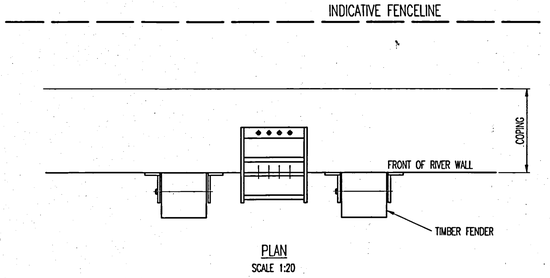
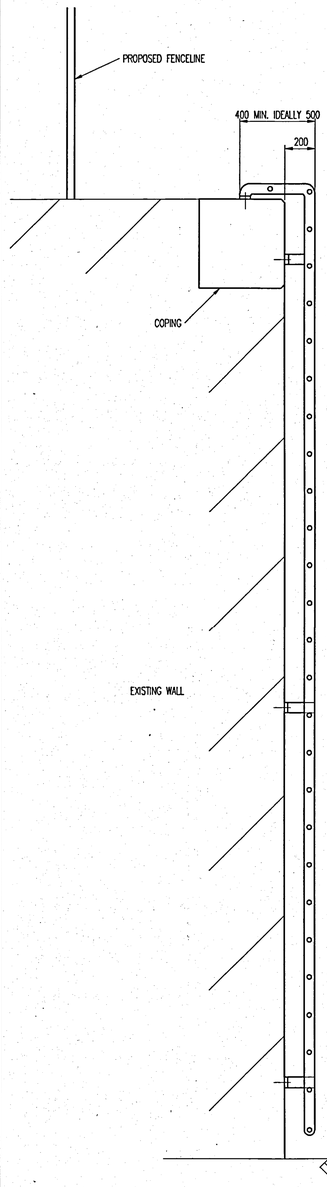
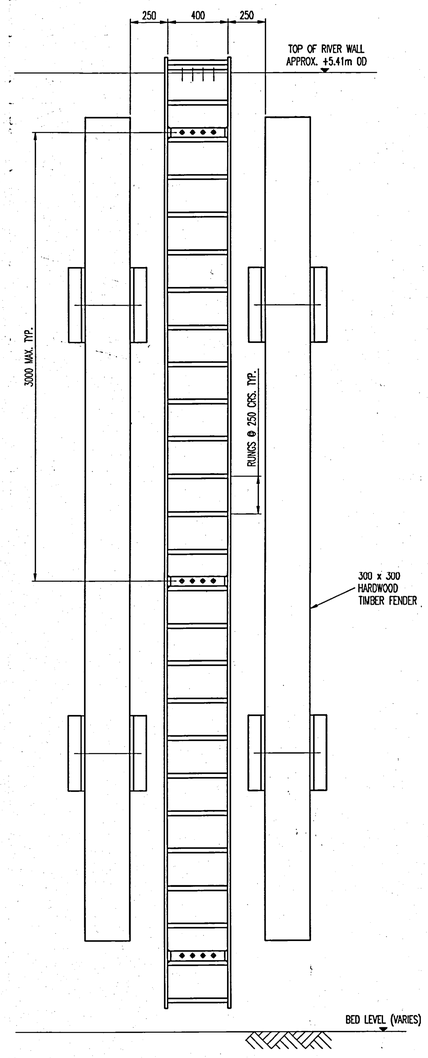


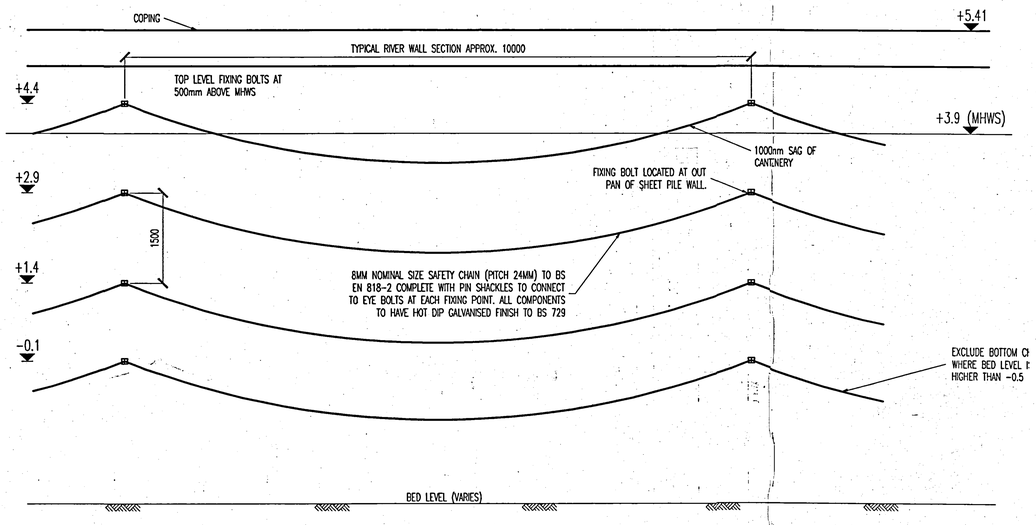
PLAN
SCALE 1:20



SECTION
SCALE 1:20



ELEVATION
SCALE 1:20



TYPICAL WALL ELEVATION SHOWING GRAB CHAIN LAYOUT
SCALE 1:50

NOTES:

1. REFER TO TOWNSHEND DRAWINGS FOR PLANS SHOWING LOCATION OF CHAINS AND LADDERS.
2. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
3. ALL LEVELS ARE IN METRES ABOVE ORDINANCE DATUM.

Issue	Date	By	Chkd	Appd
01	30/11/07	ACC	JP	CU

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Client
Hutchison Whampoa Ltd.

Job Title
Lots Road

Drawing Title
River Wall Ladders
and Grab Chains

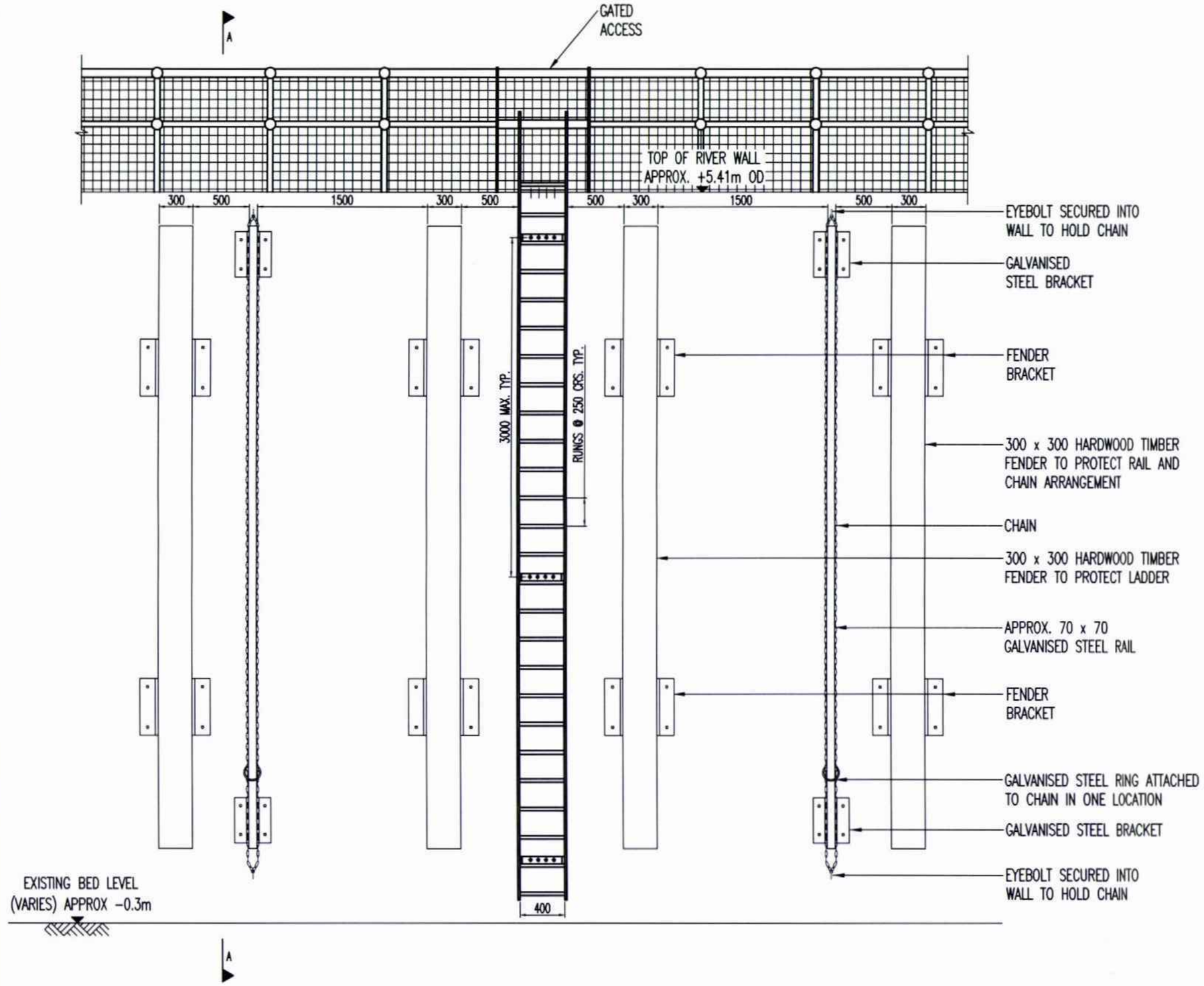
Scale at A1 1:50 & 1:20

Discipline

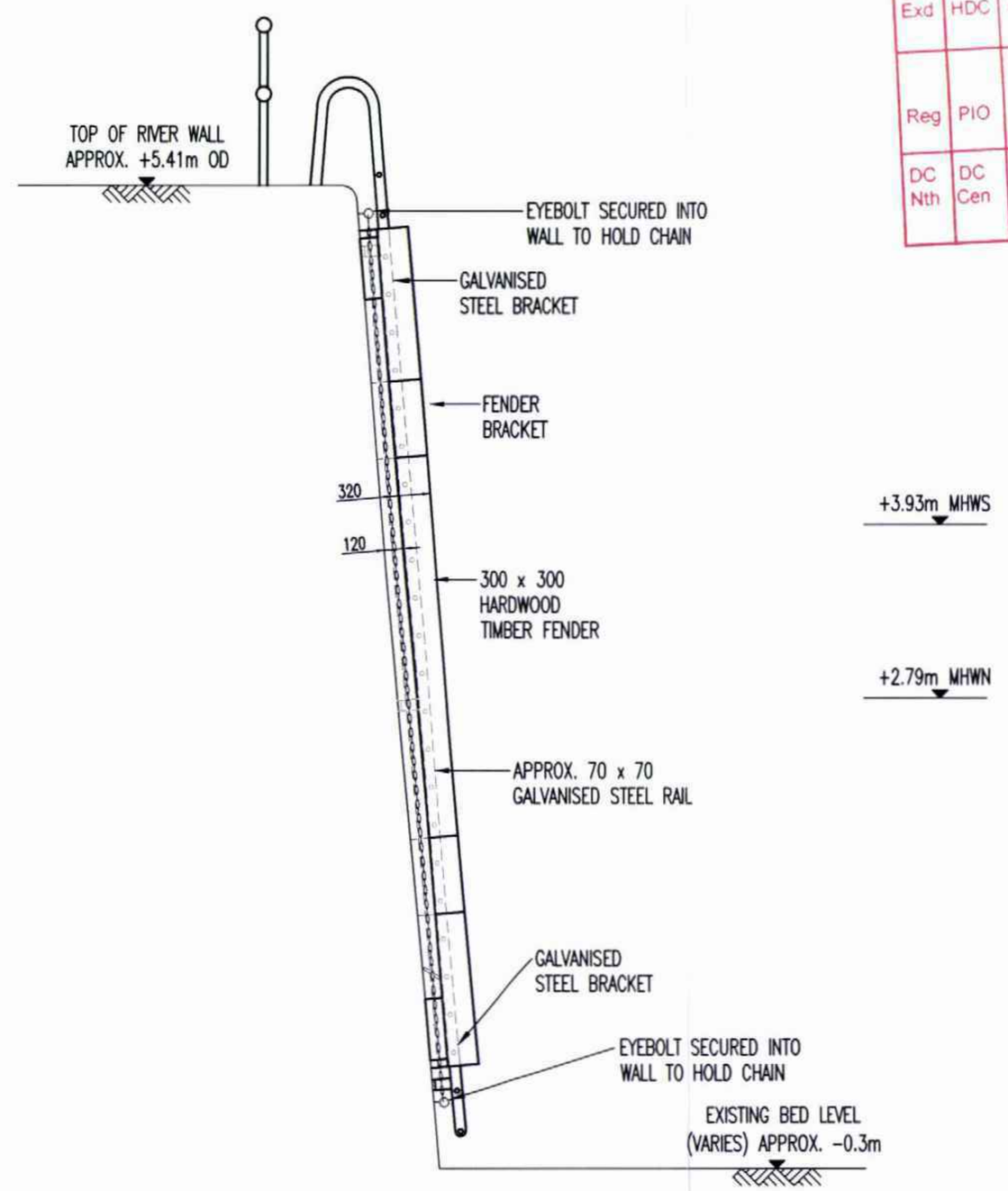
Drawing Status
Preliminary

Job No	Drawing No	Issue
123162-01	123162-01-012	01

NOTES:
REFER TO DRAWING
LRS02-OAMR-9151-PL211-F100
FOR LOCATION OF BOAT LANDING
ACCESS POINT.



ELEVATION



SECTION A-A

0 0.5 1 1.5 2 2.5 Metres
Scale 1:50

Exd	HDC	HSS	HPD	PDir	Des	AHB	Rec
Reg	PIO	29 JUL 2008				RBKC Planning	APP
DC Nth	DC Cen	DC Sth	Obj	Supp	No Obj	Rev	Other
						Cmte	PDA

REV	DATE	REASON FOR ISSUE
03	27/06/08	FOR INFORMATION
02	09/06/08	FOR INFORMATION
01	18/04/08	DRAFT TENDER ISSUE
00	31/03/08	DRAFT TENDER ISSUE

CLIENT
Hutchison Whampoa Property

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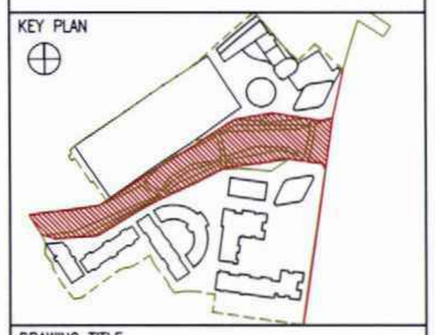
www.arup.com

PROJECT
LOTS ROAD
LONDON

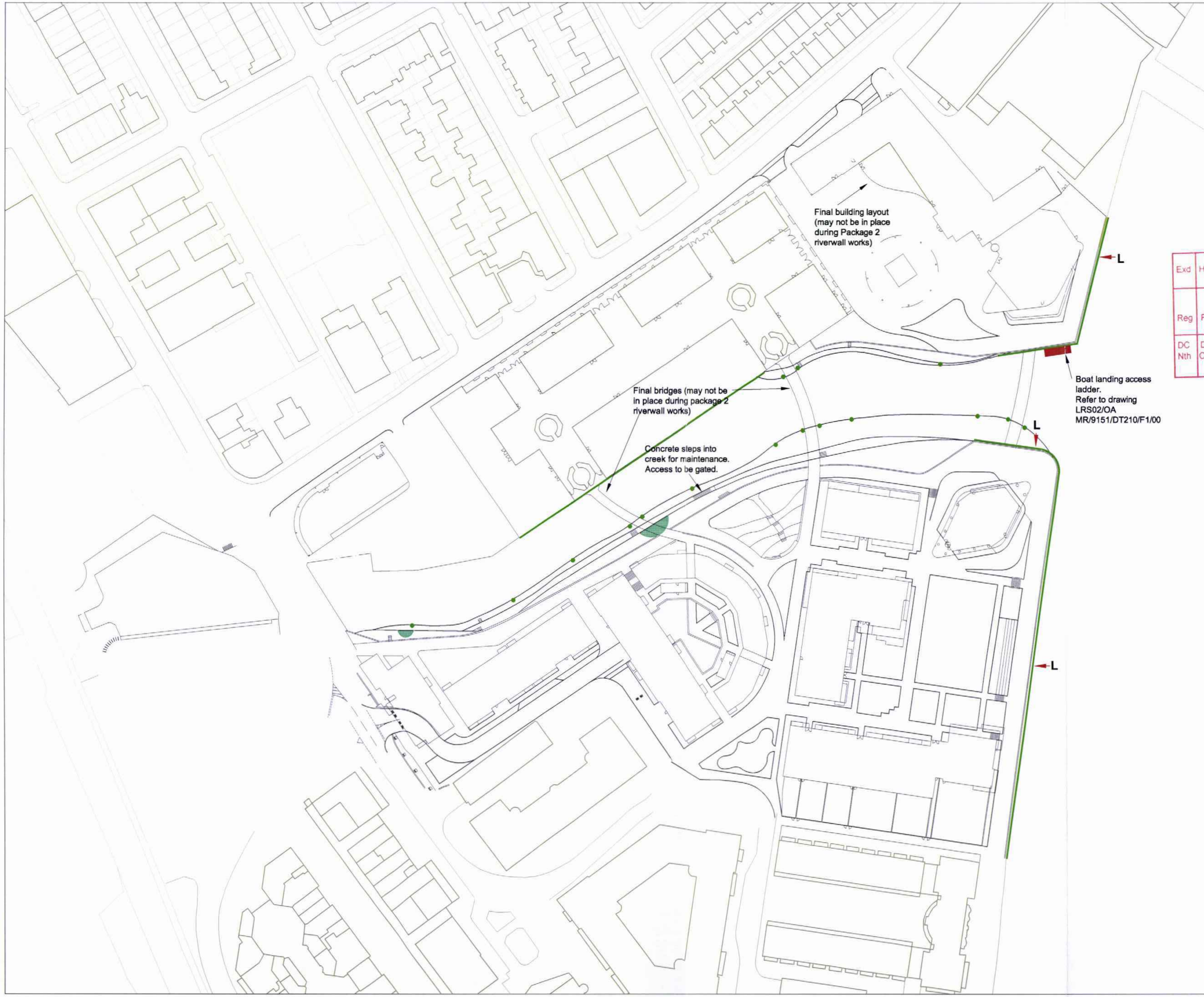
KEY PLAN



DRAWING TITLE
RIVER WALLS
PACKAGE 2:
DETAIL OF
BOAT-LANDING ACCESS

STATUS	DRAFT TENDER	SIZE	A3
DRAWN	JP	DATE	27/06/08
CHECKED	JP	SCALE	1:50 Approx.
APPROVED	CU	SYSTEM	AutoCAD
FILE NAME	LRS02-OAMR-9151-DT210-F1-03		

CODE BLOCK	DISCIPLINE	SERIES	DWG No	STAGE	REV
LRS 02	OA MR	9151	DT 210	F1	03



NOTES:

1. THESE WORKS ARE TO BE COMPLETED IN PACKAGE 2.
2. FOR DETAILS OF FIXTURES AND FITTINGS REFER TO DRAWING LRS02-OAMR-9151-DT212-F1-00.

KEY:

- DISH IN TERRACE LOCALLY TO ALLOW CONNECTION BETWEEN DIFFERENT TERRACE LEVELS .
- MOORING POSTS
- BOAT LANDING
- L EMERGENCY LADDER ESCAPE
- GABIONS STEPPED LOCALLY FOR EMERGENCY ESCAPE
- LOCATION OF GRAB CHAINS

Exd	HDC	HSS	HPD	Poi	Des	ARB	Rec
Reg	PIO	29 JUL 2008				RBKC Planning	APP
DC Nth	DC Cen	DC Sth	Obj	Supp	No Obj	Rev	Other
						Cond	

REV	DATE	REASON FOR ISSUE
00	31/03/08	DRAFT TENDER ISSUE

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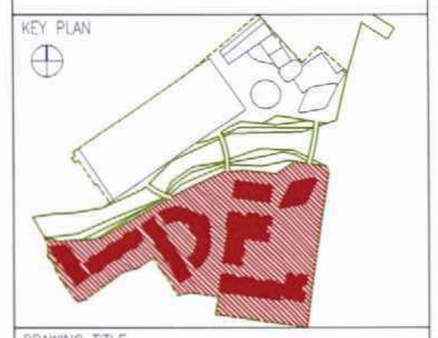
PROJECT

LOTS ROAD
LONDON

KEY PLAN



DRAWING TITLE

PACKAGE 2:

PLAN OF
FIXTURES & FITTINGS

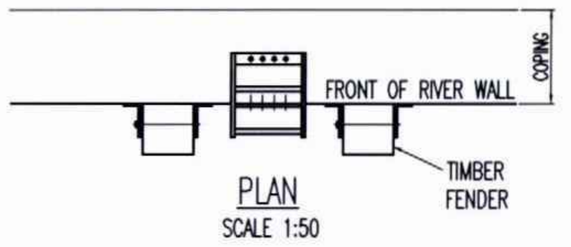
STATUS	DRAFT TENDER	SIZE	A1
DRAWN	JP	DATE	31/03/08
CHECKED	JP	SCALE	1:100 Approx.
APPROVED	CU	SYSTEM	AutoCAD

FILE NAME LRS02-DAMR-9151-PL211-F1-00

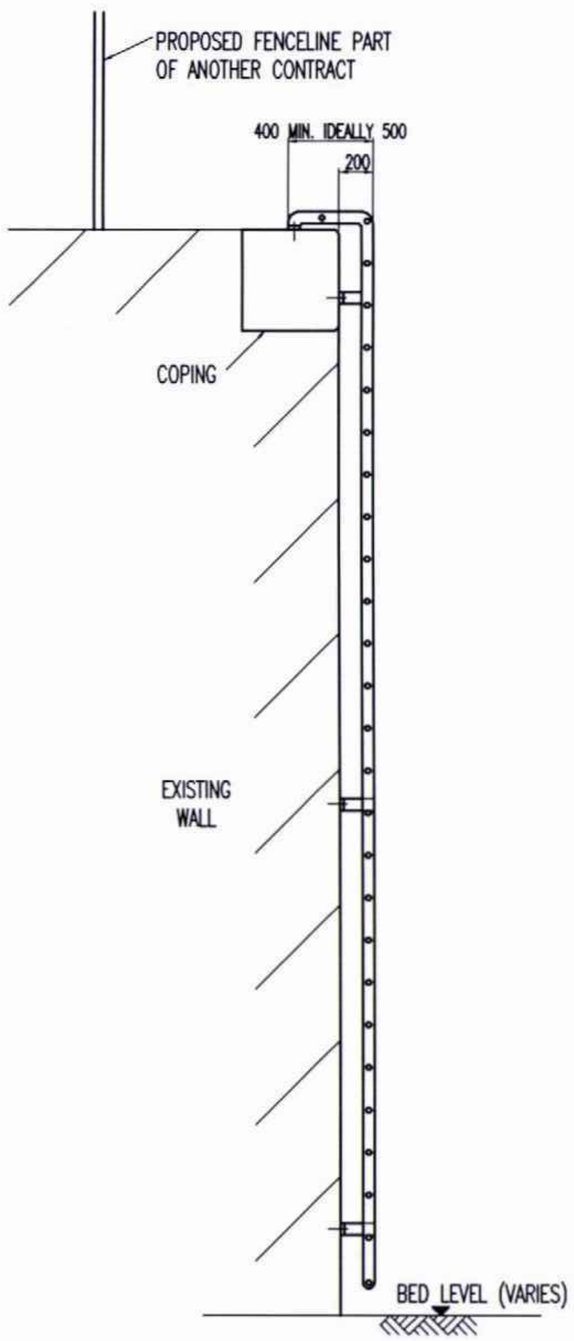
CODE BLOCK	DISCIPLINE	SERIES	DWG No	STAGE	REV
LRS 02	DA MR	9151	PL 211	F1	00

Exd	HDC	HSS	HPD	PDI	Des	ARB	Rec
Reg	PIO	29 JUL 2008				RBKC Planning	APP
DC Nth	DC Cen	DC Sth	Obj	Supp	No Obj	Rev Cand	Other FDA

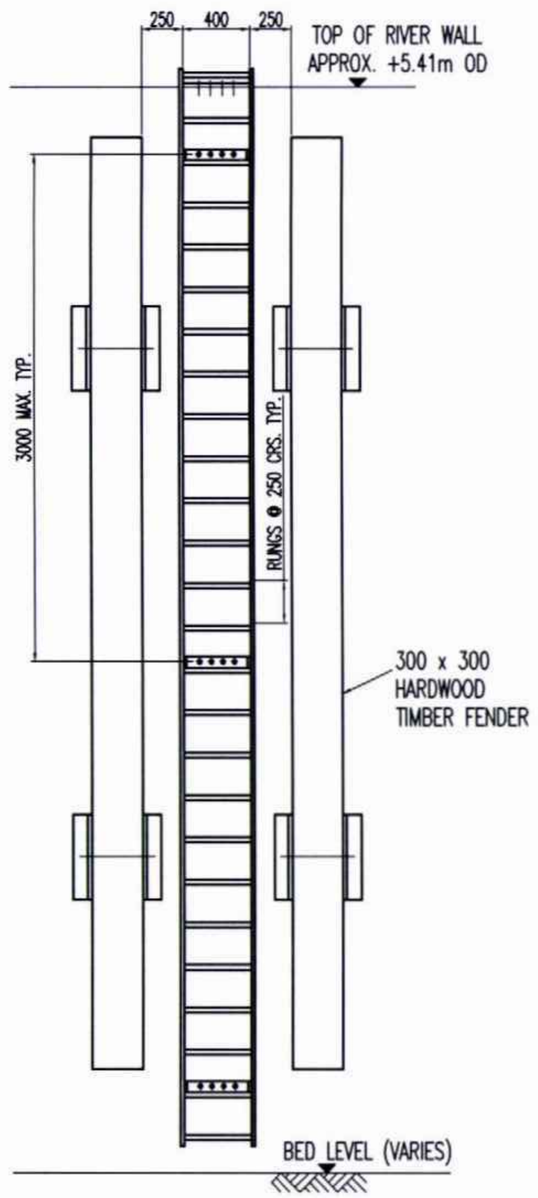
INDICATIVE FENCELINE PART OF ANOTHER CONTRACT



PLAN
SCALE 1:50



SECTION
SCALE 1:50



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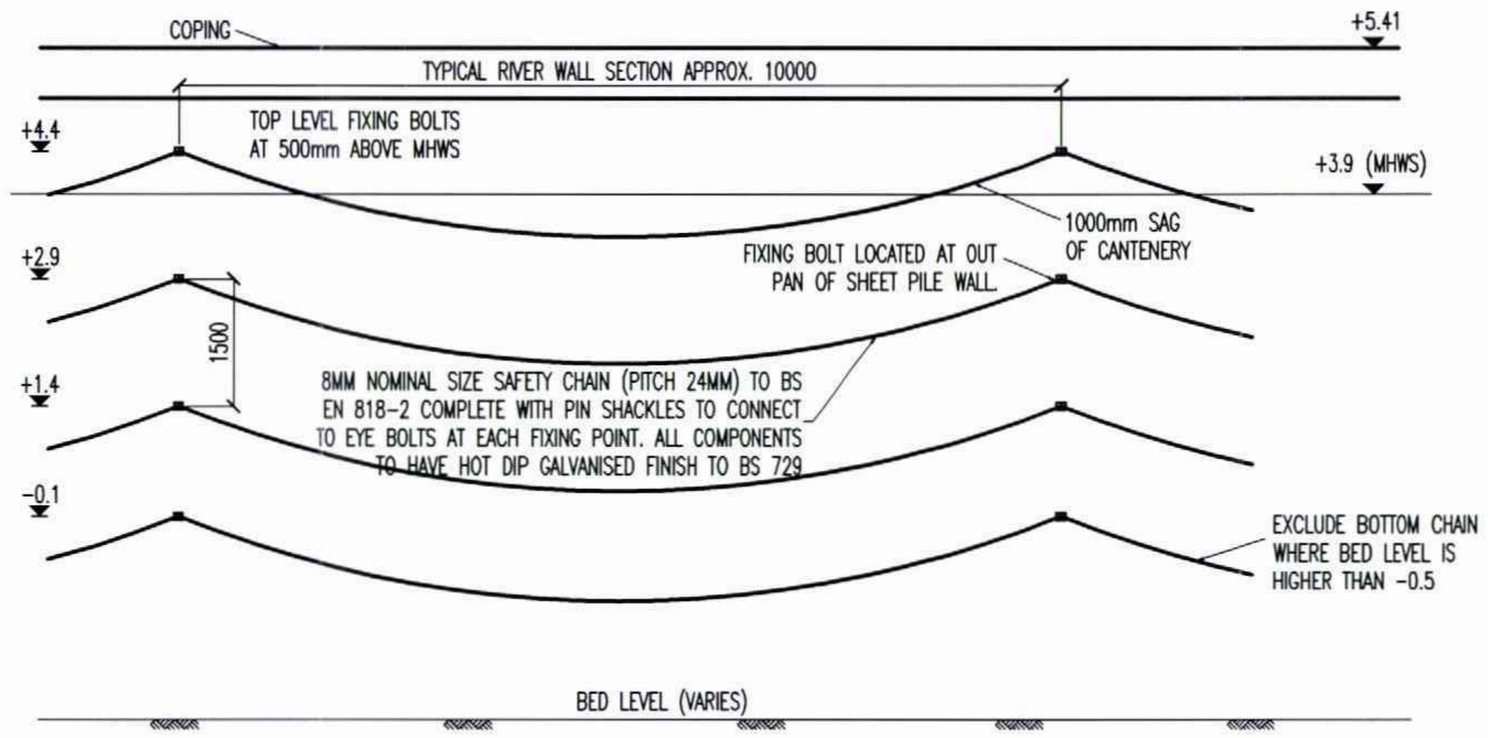
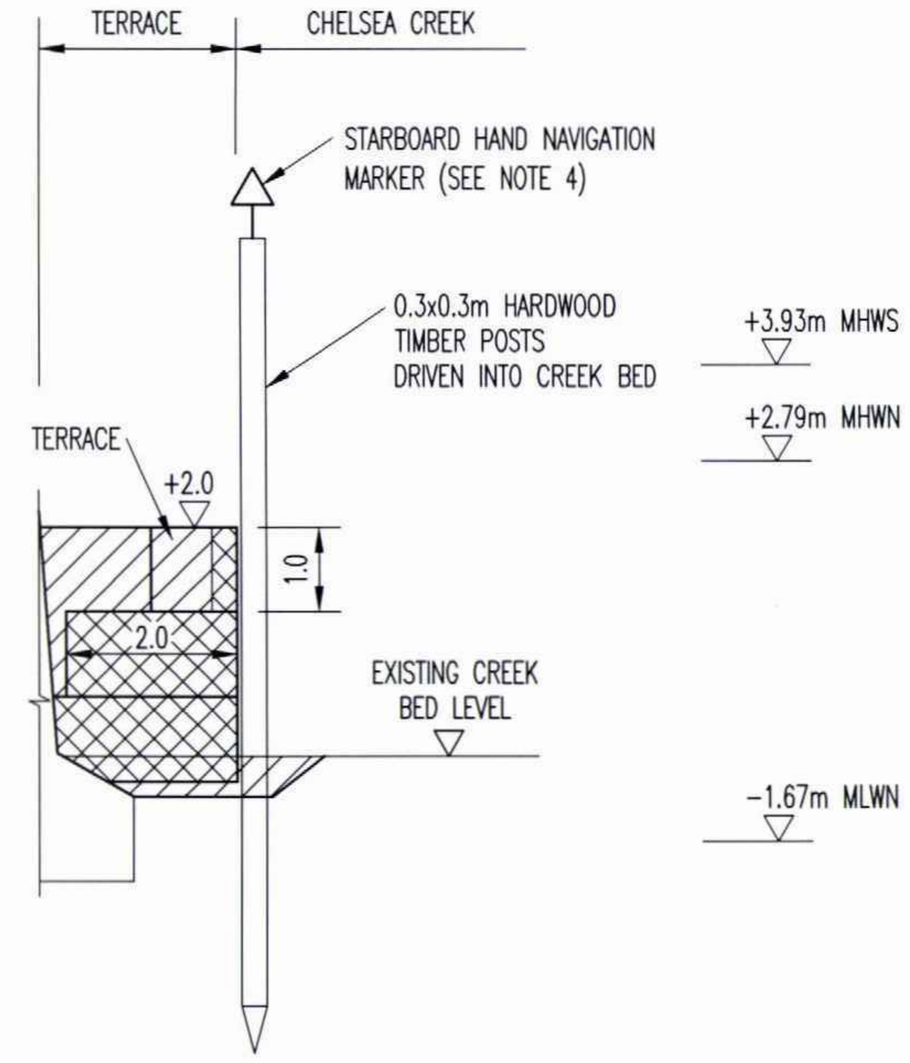
SCALE 1:50



TYPICAL WALL ELEVATION SHOWING GRAB CHAIN LAYOUT
SCALE 1:100



SECTION
SCALE 1:100

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
2. ALL LEVELS ARE IN METRES ABOVE ORDNANCE DATUM.
3. REFER TO PLAN OF FIXTURES & FITTINGS LRS02-OAMR-9151-PL211-F1-00.
4. MOORING POSTS TO BE FITTED WITH GREEN CONES MARKING THE STARBOARD HAND (RBKC SIDE OF CREEK). MOORING POST AT MOUTH OF CREEK TO HAVE GREEN LIGHT AT STARBOARD HAND. MOORING POSTS TO BE FITTED WITH RED CONES MARKING THE PORT HAND (LBHF SIDE OF CREEK). MOORING POST AT MOUTH OF CREEK TO HAVE RED LIGHTS AT PORT HAND.

REV	DATE	REASON FOR ISSUE
00	31/03/08	DRAFT TENDER ISSUE

CLIENT

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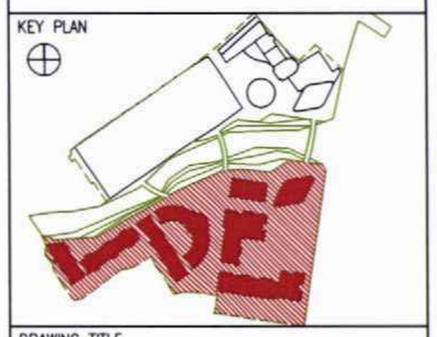
PROJECT

LOTS ROAD LONDON

KEY PLAN



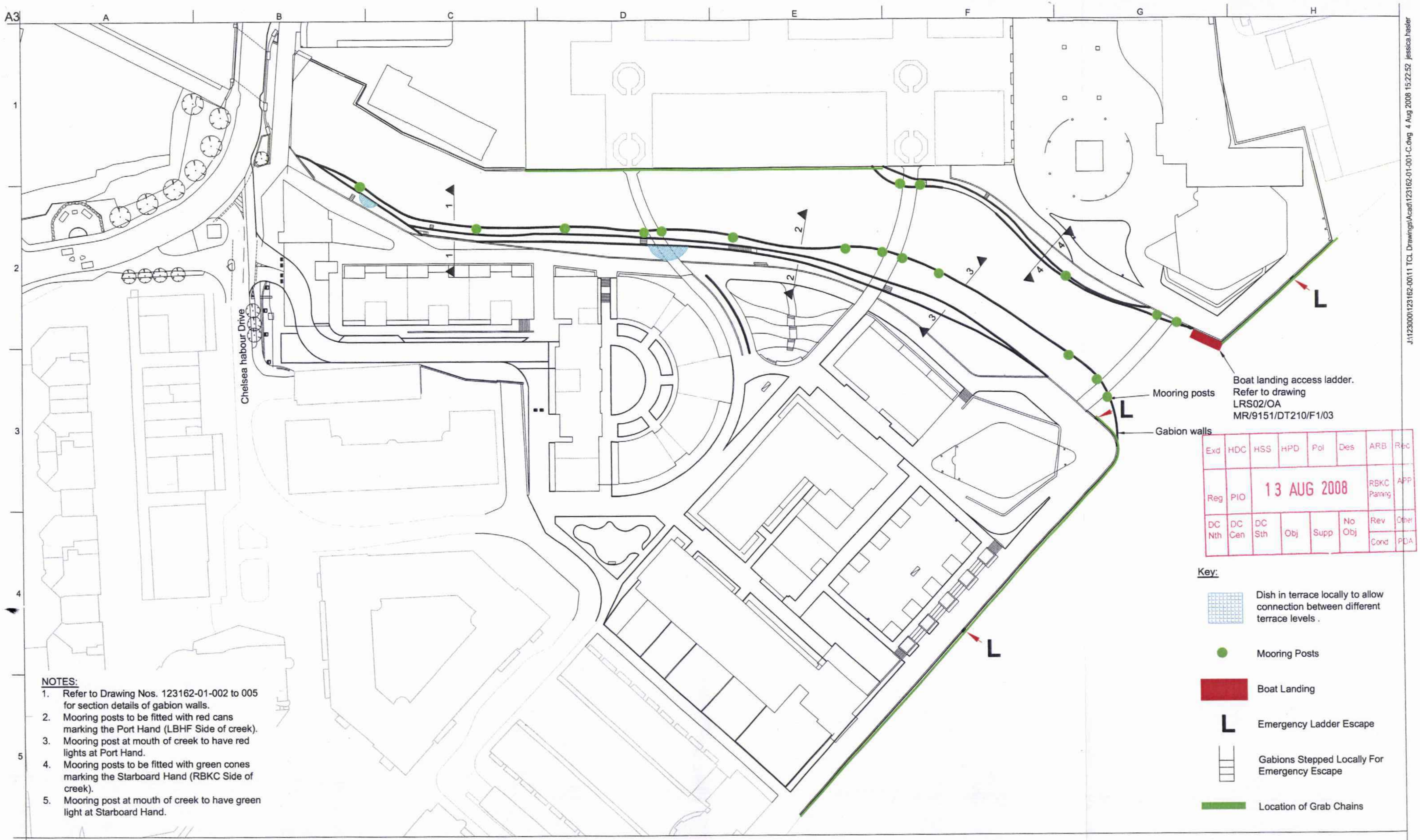
DRAWING TITLE

DETAILS OF FIXTURES + FITTINGS

STATUS	DRAFT TENDER	SIZE	A3
DRAWN	JP	DATE	31/03/08
CHECKED	JP	SCALE	AS NOTED
APPROVED	CU	SYSTEM	AutoCAD

FILE NAME LRS02-OAMR-9151-DT212-F1-00

CODE BLOCK	DISCIPLINE	SERIES	DWG No	STAGE	REV
LRS 02	OA MR	9151	DT 212	F1	00



J:\123000\123162-00\11 TCL Drawings\Acad\123162-01-001-C.dwg 4 Aug 2008 15:22:52 jessica.hasler

Exd	HDC	HSS	HPD	Pol	Des	ARB	Rec
Reg	PIO	13 AUG 2008				RBKC Planning	APP
DC Nth	DC Cen	DC Sth	Obj	Supp	No Obj	Rev	Other
						Cond	PDA

NOTES:

1. Refer to Drawing Nos. 123162-01-002 to 005 for section details of gabion walls.
2. Mooring posts to be fitted with red cans marking the Port Hand (LBHF Side of creek).
3. Mooring post at mouth of creek to have red lights at Port Hand.
4. Mooring posts to be fitted with green cones marking the Starboard Hand (RBKC Side of creek).
5. Mooring post at mouth of creek to have green light at Starboard Hand.

Key:

- Dish in terrace locally to allow connection between different terrace levels .
- Mooring Posts
- Boat Landing
- L — Emergency Ladder Escape
- Gabions Stepped Locally For Emergency Escape
- Location of Grab Chains

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Issue	Date	By	Chkd	Appd
C	04/08/08	JH	CT	CU
B	06/12/07	ACC	EW	CU
A	28/11/07	ACC	EW	CU
	24/07/07	ACC	EW	CU

Client: Hutchison Whampoa Ltd.

Job Title: Lots Road

Drawing Title: Chelsea Creek Terraces Engineering Design of Gabion Retaining Walls + Mooring Post Locations Plan

Scale at A3: 1:1000

Plot ID: 94729597-E80F-48F2-8113-D514D71FE7A1

Drawing Status: **FOR INFORMATION**

Job No	Drawing No	Issue
123162-00	123162-01-001	C

Job title	Lots Road
Job number	123162
Cc	
File reference	4.0
Prepared by	Jane Pitten x 52514
Date	24th July 2008
Subject	Appeal Ref: APP/K5600/A/04/1146268 RBKC Planning Condition 12 Rev 3

1. INTRODUCTION

This Technical Note addresses the requirements of Condition 12 attached to planning permission ref. PP/02/01324 of Royal Borough of Kensington and Chelsea (RBKC) as specified in the decision letter dated 30th January 06 [Ref.1] for the redevelopment of the land at Lots Road Power Station.

This note and the accompanying documents are intended to fulfil the requirements of the Condition. Information **prepared** by Arup and the design team to address this condition **was submitted to the Council** in August 2007 **and December**. Since the information was submitted, feedback has been received through RBKC, incorporating various consultees' comments. This report now intends to address these comments (the Environment Agency, and West London River Group [Ref 2]) **and supersedes the Technical Note previously submitted.**

Textual changes to the Technical Note previously submitted are highlighted in bold.

The enclosed drawings now propose a boat landing facility within the design. Further discussions have been held with the Environment Agency, West London River Group and River Thames Society representatives regarding provisions for a boat landing facility (see [Ref 2] for details of discussions).

We followed the recommendations of the EA and have now agreed the boat landing design with them, see attached [Ref 2]. Subsequently the boat landing solution was reviewed and agreed with the representatives of West London River Group and River Thames Society at a meeting dated 16th July 2008.

This revised Technical Note should be read in conjunction with the enclosed correspondence with the EA and the West London River Group and the Hammersmith & Fulham Historic Buildings Group [Ref 2]. As such, the following revised drawings are now also submitted in order to address the comments raised and obtain approval of the submitted details pursuant to the above condition.

2. CONDITION 12

2.1 The Condition

Condition 12 states that,

"Development shall not begin until a scheme for the treatment of Chelsea Creek has been submitted to and approved in writing by the local planning authority. The scheme shall include

details of the construction and subsequent maintenance of the inter-tidal terraces, of the marginal and aquatic species to be planted and of the location and design of mooring posts, boat-landing and access facilities and health and safety measures to be provided. Development shall be carried out in accordance with both the approved details and a programme of implementation first agreed in writing with the local planning authority.'

We understand that the above condition was attached to the planning permission to address comments received from the Environment Agency (EA).

3. PLANNING CONTEXT

3.1 RBKC requirements: Comparison with planning submission

The proposals for Chelsea Creek are consistent with the approved planning application drawings and Environmental Statement [Ref 3] submitted for planning permission in November 2004, considered at the Public Inquiry in February - April 2005 and granted consent by the Secretary of State in January 2006, subject to changes which have now been made according to comments received through RBKC after the previous submission of this design note.

These changes are generally:

- Adjustments to the Creek terraces
- Navigation post locations
- **Provision of a boat landing facility**

3.2 Environment Agency requirements

Discussions took place over an extended period between the Environment Agency and Waterman Environmental before the developing designs were acceptable in principle to the Agency. This note addresses the comments raised by the Environment Agency in their Position Statement dated January 05 2005 [Ref.4] and their more recent comments on the previous submission of information for this condition [Ref 2]. **Further discussions have now been held with the EA regarding boat landing provisions [Ref 2].**

4. DETAILS SUBMITTED PURSUANT TO CONDITION 12

4.1 Construction Details of Intertidal Terraces

Refer to the Arup drawings [Ref 5] showing the typical terrace gabion construction details.

The method of construction will be:

- Designate a new flood defence line set back behind the existing river wall (existing ground levels are generally above the statutory defence level of +5.41mOD)
- Lower ground levels behind the existing river wall and demolish the top of the wall where necessary
- Excavate the Creek bed to the underside of the proposed gabion baskets or to terrace gravels, whichever is lower.
- Place geotextile and gravel levelling layer on excavated bed
- Place lower level gabion baskets and fill with rock

- Place geotextile and granular fill behind gabion basket.
- Continue to build up gabion baskets and fill in layers.
- Place soil in the pockets provided
- Make good existing wall locally where it will still be exposed
- Construct reinforced concrete retaining wall at crest of slope, where required.
- Construct footpath and handrail along top of wall
- Plant terraces

For landscaping details refer to Townshend drawings [Ref 6] and Townshend Materials Booklet and Landscape Planting Drawings [Ref 7]. For ecological design and management of the terraces refer to Middlemarch Environmental Ltd 'Input to Ecological Design' Reports [Ref 8].

4.2 Maintenance of inter-tidal terraces

Part of the Creek wall can be accessed on the landward side. Refer to Arup drawing [Ref 9]. This shows that a large crane can access the path along the Creek and Thames frontage. This crane will have a reach of approximately 20m allowing it to pick up and replace gabion baskets used in the inter-tidal terraces.

The location of the power station building may restrict the crane from reaching the terraces below in this area. As a result a barge with a tracked excavator will be required to access the terraces from the Creek side in this area. The lower terraces can be reached by an excavator on a barge which can rest on the bed of the Creek at low tide. The higher level of terrace can be accessed from the barge resting on the gabions of the lower terrace when the tide permits.

The heights of a barge and excavator have been considered for access, taking into account the restriction of the bed level and proposed bridge soffit levels. Refer to Arup drawing showing boat clearances for the Creek [Ref 10]. From this it can be seen that the total height of a barge and excavator (including draught) is less than the height difference between the bridge soffit and bed level. It is therefore possible for the maintenance plant to access the terraces from the Creek (depending on tide levels).

It is likely that the gabions will have to be replaced or repaired during the design life of the development. However gabion design life can be maximised during construction by carefully packing the gabions using good quality rock fill and also using galvanised and PVC coated mesh to obtain a maximum design life. The design life would be a minimum of 10 years in saline tidal conditions but could be substantially longer. It is recommended that an engineer inspects the gabion terraces when the gabion design life is approaching its limit to determine the maintenance requirements.

Plants may also require replacement when the gabion baskets are replaced (refer to References 7 and 8 which provide details of the planting proposed for the terraces).

In addition to the maintenance of the gabion baskets, there will be maintenance required to deal with the rubbish accumulating in the terraces from the tidal waters or from boat users. A set of steps will be provided to allow access to the upper terrace levels for maintenance. Refer to Townshend's drawing [Ref 11].

4.3 Terrace Design

As a result of navigational discussions with River Thames Society and West London River Group [Ref 2], the lowest terrace at the approximate level of -0.1m OD has now been removed.

As a result of comments from the EA, the terraces will be sloped locally to allow flatfish to access the terraces. Terraces have been sloped in places between 0.2m to 0.8m and between 2.8m and 3.8m. Refer to Townshends drawings [Ref 6] and Arup sections [Ref 5] showing levels of the terraces.

As previously stated, the terrace walls will be mainly of gabion design. The gabions on the surface of the terraces will be of a special design to allow topsoil and plants to be planted within the gabion. Refer to Arup sections [Ref 5] for details.

4.4 Marginal and aquatic species

Details of the proposed marginal and aquatic species are provided on Townshend landscape planting drawings and Materials Booklet [Ref.7] and Middlemarch Creek Management Plan [Ref 8].

4.5 Design of Mooring Posts

Mooring posts have now been adjusted where possible to take on board the comments from River Thames Society and West London River Group [Ref 2]. As a result, the location and number of mooring posts have been amended in accordance with the consultees' requirements.

4.5.1 Function

Although described as 'mooring posts' in Condition 12, the posts are mainly intended to be used as navigation posts. The function of the posts will be:

- Posts are placed as a marker for the lowest terrace level to aid navigation of boats
- They will also provide perches for water birds
- They can be used for mooring but this will be the subject of limitations on duration to avoid management issues regarding long term mooring (particularly overnight).
- **Although the posts could be used for mooring in an emergency, the intention is that boats will use the boat landing facility provided for mooring purposes. See Section 4.6 below for further details of the proposed facility.**

4.5.2 Description

Refer to Townshend drawings showing post locations [Ref 11], and Arup drawings [Ref. 5]

- Navigation posts to be 300mm x 300mm hardwood timber from sustainable source.
- Posts to be driven into Creek bed.
- Signage to be provided on or near the posts stating 'Overnight mooring prohibited' or similar.
- Posts to be fitted with red cans marking the port hand (LBHF side of Creek) and green cones marking starboard hand (RBKC side of Creek).
- Mooring posts to have red lights at the mouth of the Creek at port hand and green lights at the mouth of the Creek at starboard hand.

4.6 Boat landing and Access facilities

Provision for a boat landing facility has been developed after further discussions with the EA since the submission of documents for RBKC Condition 12 and LBHF Condition 11 in December 2007.

Following discussions with the EA and representatives of West London River Group and River Thames Society, provision has now been made in the proposals for a boat landing facility. Refer to Arup drawings [Ref 12] for details and location. The boat landing facility is positioned against the vertical wall to the north side of the Creek.

The design shows a ladder with vertical rails with rings attached that a boat can moor against. Fenders are provided for protection of the boats and ladders / rails. The spacing of the rails is shown at approximately 5m, ideal for a 5m length boat, although a range of boat sizes can use it. Signage is to be provided near the boat landing facility stating 'Overnight Mooring prohibited' or similar. The access to the ladder will be gated from the site. Access will be granted using a telecom system.

Boats will be able to access the Creek and there are posts in place to ensure their navigation is guided away from the terraces.

All proposed bridges will have a soffit level no lower than the existing bridge at the site. As such, the proposed bridges will not impose any further height restriction for navigation in comparison to the existing bridge.

It is important to note that the Creek is tidally restricted. Due to the tidal nature of the river, boat access will be restricted in the Creek at low tide when the water is not at a sufficient depth (as is the existing case on site).

The Creek can be used by a series of boats during a specific tidal window. Canoes and narrow boats will be able to use the Creek, although they will be restricted during the lower half of the tidal cycle as the Creek will have very low flow in low tide. Refer to Arup drawing [Ref 10] for details of clearances for typical boats that would be able to navigate up the Creek.

Navigation posts will mark the lower terraces. As stated in Section 4.5.2, these posts will be fitted with red cans marking the port hand and green cones marking the starboard hand. Lights will be fitted at the mouth of the Creek. Refer to Arup Creek drawings for details [Ref 5].

4.7 Health and Safety measures to be provided

It is not the intention to provide public access to the terraces or the Creek bed. This is because:

- The Creek is naturally silty. The Creek bed and terraces will be unsafe to walk on
- Public access will damage the intertidal flora
- Disturbance to fauna

For health and safety purposes, emergency escape routes and life buoys are to be provided. Grab chains will be located at the sheer walls where there are no terraces. In the terraces, stepped gabions will be provided for escape in places. Refer to Townshend's drawing [Ref 11] and Arup ladder and grab chain detail drawing [Ref 12] for escape provisions.

Concrete steps provided from the riverside path down to the upper intertidal terrace, for maintenance purposes will be gated to permit access to maintenance staff only.

4.8 Programme of Implementation

The "programme of Implementation" has been agreed to with both RBK&C and LBH&F Councils and the precise detail of those agreements are contained within the documents executed on 24th April 2005 [Ref 13].

4.9 Creek Bed

Part of the Creek bed comprises a series of concrete campsheds enclosed within piled weirs to form a low water channel near the mouth of the Creek. Outside this low water channel, the Creek bed was, whilst the power station was operational, varying compositions of shingle, compacted chalk beds and silt and mud sediments (refer to Section 13 of Reference 3). See photo below from 1995 when the Power Station was in operation.

The existing Creek has silted up since the Power Station was closed in 2002. The silt now covers the concrete low water channel. See the photograph below taken in 2007.

The new development will re-introduce a low water flow from the power station outfalls but at a much lower volume than previously. It is expected that this cooling water flow from the new development will lower the silt level within the low water channel downstream of the cooling water outlets; but will remain silty compared to when the power station was in operation.

In the proposals the Creek low water channel will be narrowed where the proposed new terraces encroach. The new terraces will have gravel and soil in place of the existing concrete. Underneath the new gabion walls and terraces it is proposed to remove the softer layer of mud and silt sediments so that the terraces are founded on firm material. See Arup Creek drawings, [Ref 5].

Where the low water channel remains exposed, the Creek bed will be left as it is. The new low water flow is likely to wash out some but not all of the silt which has built up since 2002.

The existing concrete campsheds containing weirs will have 'V' notches cut out of each weir to allow fish to travel more easily upstream into the Creek.

5. REFERENCES

1. Secretary of State letter: Planning Applications 2002/03132/FUL and PP/02/01324 2002. 30th January 2006
2. Consultees responses to previous Condition 12 submission:

   EA letter (reference NE/2007/104036/01-L02), dated 10th October 2007

   West London River Group letter for Condition 11 LBHF, dated 10th October

   Hammersmith and Fulham Historic Buildings Group, dated 14th October 2007

EA letter to Georgina Slader RBKC (reference TL/2008/100450/01-L02), dated 7th March 2008

EA Email to Jane Pitten Arup, dated 2nd July 2008

3. Circadian, Regulation 19: Environmental Statement, Nov 2004.

4. EA Position Statement: Application and Appeal by Circadian Land at South Side of Chelsea Creek Harbour Creek, Lots Road Power Station. January 2005.

5. Arup Creek Drawings:
   123162-01-001 Chelsea Creek Terraces Engineering Design of Gabion retaining walls – Plan
   123162-01-005 Chelsea Creek Terraces Engineering Design of Gabion retaining walls – Section 4-4

6. Townshend Drawings - Terrace Sections:
   TOWN 352 (08) 7001, Lots Road Creek: Schematic Section A-A'.
   TOWN 352 (08) 7005, Lots Road Creek: Schematic Section E-E'.
   TOWN 352 (08) 7006, Lots Road Creek: Schematic Section F-F'.

7. Townshend's Materials Booklet and Landscape planting drawings
   TOWN 352 (08) 300, Lots Road Creek Materials Booklet.
   TOWN 352 (08) 1207, Lots Road Creek: Landscape Planting 1 of 2.
   TOWN 352 (08) 1208, Lots Road Creek: Landscape Planting 2 of 2.

8. Middlemarch Environmental Ltd Documents:

   RT-MME-4911-02A (RBKC): Input into Ecological Design, Management & Monitoring of Chelsea Creek and basin: Ecological design.

   RT-MME-4911-03 (RBKC): Input into Ecological Design, Management & Monitoring of Chelsea Creek and basin: Chelsea Basin Management Plan.

   RT-MME-4911-04A (RBKC): Input into Ecological Design, Management & Monitoring of Chelsea Creek and basin: Habitats within development site Management Plan.

9. Arup Drawing

   123162-03-21: "Swept Path Analysis for 15T Mobile Crane".

10. Arup Drawing:

    123162-01-SK020, Chelsea Creek Boat Clearances.

11. Townshend's Creek Drawings:

    TOWN 352 (08) 1201, Lots Road Creek: Landscape Surface Finishes Plan Creek 1 of 2.
    TOWN 352 (08) 1202, Lots Road Creek: Landscape Surface Finishes Plan Creek 2 of 2.

12 . Arup Drawing:

    LRS02-OAMR-9151-DT210-F1-03, Detail of Boat Landing Access

    LRS02-OAMR-9151-PL211-F1-00, Plan of fixtures and fittings

    LRS02-OAMR-9151-DT212-F1-00, Details of Fixtures and Fittings

13 The Mayor and Burgesses of the Royal Borough of Kensington & Chelsea:

Deed Made Pursuant to Section 106 of the Town and Country Planning Act 1990 Relating to Land at Lots Road Power Station and Chelsea Creek, Lots Road, London SW10. 25.04.05

Georgina Slater
Royal Borough of Kensington and Cheslea
Planning and Conservation
The Town Hall
Hornton Street
LONDON
W8 7NX

Our ref: NE/2007/104036/01-L02
Your ref: PP/02/01324

Date: 10 October 2007

Dear Ms Slater

DETAILS PURSUANT TO CONDITIONS 7, 9, 12, AND 27 (KENSINGTON AND CHELSEA).
LOTS ROAD POWER STATION

We advise the following in relation to the discharge of Conditions 7, 12, and 27 of Planning Permission 2002/03132/FUL:

Condition 7 (Landscaping)

We are happy to recommend the discharge of this condition.

Condition 9 (Riverside Walk)

We cannot recommend the discharge of this condition as acceptable drawings with dimensions to scale have not been submitted to demonstrate that the distances set out in the condition have been achieved.

Condition 12 (Treatment of Chelsea Creek)

We cannot discharge the condition regarding the treatment of Chelsea Creek.

We do not think the terraces are designed to allow sufficient accretion of sediment which is necessary for the creation of a self-sustainable vegetated habitat. In addition, the terraces make extensive use of gabions and as such the end result is over-engineered and not a sufficient biodiversity enhancement to mitigation for the development.

We have reviewed the salinities for the creek and it is proposed to use freshwater plants in an area where it will be a third strength sea water at high tide (when the plants are inundated) so it is unlikely these plants will survive.

Cont/d..

Further to our meeting with the Applicant and Consultants at ARUP on 7 September 2007, we advised that within the terracing some sections are sloped to allow for flatfish to access the terraces. We also advised that a 'V' shaped could be knocked into the weirs to allow for migration of fish.

Condition 27 (Site Investigation)

We cannot recommend discharge of this conditions until we have received and reviewed all the Site Investigation reports and together with the agreed validation reports.

Please contact me if you have any questions to the above.

Yours sincerely

Ms Anna Scott
Major Projects Officer
Planning Liaison

Direct dial 01707 632323
Direct fax 01707 632515
Direct e-mail anna.scott@environment-agency.gov.uk

End

West London River Group

89 Hartington Road, Chiswick, London, W4 3TU. Tel: 020-8994 0232

Paul Entwistle
Environment Department, London Borough of Hammersmith and Fulham
The Town Hall, King Street
London W6 9JU.

10th October 2007.
[as sent]

Dear Paul Entwistle,

Lots Road - Land adjacent to south side of Chelsea Creek, Chelsea Harbour Drive.
Planning Permission 2002/03132/FUL - submission of details pursuant to Condition 11.

The West London Group is writing to comment on the submission by dp9 dated 6 AUG 07.

1. INADEQUATE INFORMATION:
Condition 11 relates to the treatment of Chelsea Creek. The submission by dp9 dated 6 AUG 07 is incomplete, and inadequate for detailed consideration by the Council, because a lot of the material is unenforcable. E.g. examples of materials etc, are worthless without specifications, working details and locations. There are also no details submitted of the "mooring posts, boat-landing and access facilities, and health and safety measures to be provided", as called for by Condition 11. In fact the submission, such as it is, states openly and categorically that the mooring posts, noted specifically as such on the Appeal drawings, and now granted planning permission, are nothing of the sort. (See Arup's Technical Note dated 3 AUG 07, sections 4.4, 4.5 and 4.6.) If mooring posts have been permitted, are they seriously applying now for permission to omit them? Surely this makes a nonsense of the whole Appeal/Judicial Review/Permission process, and is grossly unfair to all those involved in the process so far, from the two Judges in the High Court to the humblest volunteer in a local community group, to say nothing of all the local planning authority and Planning Inspectorate staff time expended. A symptom of the wholly inadequate way in which this submission has been made, is the slogan 'BE SAFE' inscribed in large block capitals on most of the drawings. From such 'details' as have so far been included, the authors clearly have no idea of safety on a navigable waterway, which Chelsea Creek is, because the drawings contain many unmarked hazards to navigation, as described below. And the drawings do NOT (yet) include the essential SAFETY ladders and grab-chains on all the vertical River and Creek walls. Another gap in the details submitted is the absence of any reference to the berths for Thames barges or similar vessels on the River wall itself, which were included in the drawings/illustrations submitted at the Appeal and now permitted.

2. CREEKSCAPE/RIVERSCAPE:
The first drawing listed, called the Landscape Key Plan, is characteristically titled, being all about the land, and NOT taking due account of the River and the Creek, to which Condition 11 specifically relates. (See dwg no. 1200.)

3. HAZARDS TO NAVIGATION:
The drawings show some of the new terraces in the Creek marked on their outer edges by vertical piles or posts,. The posts lining the residual 9m./30' channel in the Creek, which mark the new terraces (underwater obstacles and therefore 'hazards to navigation'), need to carry the customary signs warning vessels to keep clear of the new hazards, i.e. red cans on the posts on the left going upstream (the south side of the Creek),

and green triangles on the posts on the right side going upstream (the north side of the Creek). This will mark the channel in the correct way for safe navigation. These warning markers need to be shown on the drawings, if they are to BE SAFE, as they loudly claim. (See dwgs nos 7001, 7003, 7004, 7006, 7009 and 7010.)

4. BOTTOM TERRACES:
The lowest new terraces (-0.200 and -0.100 AOD) are shown unmarked by posts/piles on most of the drawings. They should be marked in the customary way described above, or omitted. It would NOT BE SAFE for the Council to approve unmarked hazards to navigation, however winsomely invited. (See dwgs nos 1201 and 1202.)

5. BRIDGE SOFFIT LEVELS:
These need to be established by reference to Ordnance Datum, as the paving and terrace levels already are. The Appeal/permission drawings indicated a headroom of only 1.9m./6' 2 3/4" where the Creekside Walk passes under the Middle Bridge. Actually the drawings now submitted look as though the headroom may be greater, which is warmly welcomed. But to be enforcable, this needs to be established beyond doubt by figured dimensions on drawings, before any approval can SAFELY be given (or enforced). (See dwgs nos 1204, 1205, and 7001.) If the Bridge soffit level of +6.650 AOD scaled off dwg no. 7001 is actually the soffit level proposed for the Middle and Upper Bridges, this would provide 2.65m/8' 6" clear under the Bridges where they cross the Creekside Walk. This would be a big improvement on the Appeal/permission scheme in this respect. We trust that we are reading the drawings correctly, and that this can be formally confirmed. This would give an air-draft of 2.75m. at Spring Tide High Water, according to section A2 – A2 on dwg no. 7001, which would be much better than the impractical 1.58m on the Appeal drawings, although less than the preferred minimum airdraft of 4m. But it is impossible from the drawings included in this submission to establish the actual levels. Until this additional information has been provided, any decision on this part of the Reserved Matters should be deferred.

6. DRAFTING ERRORS:
The Section arrows indicating the direction in which the Section has been drawn, look as though they are the wrong way round on dwgs nos 7001, 7003, 7004, and 7010. This makes them UNSAFE as a basis for an informed and reasoned decision.

7. CONCLUSION:
The West London River Group emphatically suggsts that it would be UNSAFE for the Council to validate and consider the submission in respect of Condition 11 in its present state. Too much detail is missing for an enforcable decision to be reached. And a substantial change to the permitted design should NOT be smuggled through disguised as a Reserved Matter. Unless the submission is amended as indicated, WLRG recommends that the submission be NOT approved.

Yours sincerely

Peter Makower. Hon. Planning Adviser, West London River Group.

C.c. Fulham Society. Chelsea Society. Hammersmith & Fulham Historic Buildings Group.
Battersea Society. Wandsworth Society. River Thames Society.
RB Kensington & Chelsea. LB Wandsworth.

HAMMERSMITH AND FULHAM HISTORIC BUILDINGS GROUP
Chairman: Angela Dixon
31 St Peter's Square, London W6 9NW
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Paul Entwistle
Environment Department
London Borough of Hammersmith and Fulham
Town Hall
King Street
London W6 9JU

date: 14th October 2007
our ref: Area18 (ACD)

Dear Paul Entwistle,

LOTS ROAD
Land adjacent to south side of Chelsea Creek, Chelsea Harbour Drive.
Re Planning Permission 2002/03132/FUL
Submission of details pursuant to conditions 6, 8 & 11 and 18

I write on behalf of the H BG to express our concerns about the details supplied to fulfil the above conditions on the Lots Road scheme relating to landscaping and the Riverside Walk in our Borough. (We have not been consulted on, nor seen the details for, the part of the scheme in RBK&C. We assume these will be identical?)

1. BACKGROUND

The Riverside Walk and the Creek is in the Sands End CA, and in the Thames Policy Area. The River is a Nature CA of Metropolitan Importance. I have included a list of relevant policies and guidance at the end of the letter.

The Group has argued for many years about the need for detailed design guidance for the Riverside Walk. At the last UDP enquiry it was agreed in principle that the Council's Riverside Walk Brief would be updated as a future project (see UDP EN 34 para 4.174). The Borough's *Street Smart* Guide now has a section on the Riverside Walk and more detailed guidance is currently being worked on by the Borough's Riverside Walk Working Party.

2. COMMENT AND OBJECTION

2.2 Landscaping Generally

2.2.1. The plans state (see Town352(08)1300 Landscape Key Plan and Town352(08)1600 Landscape Key Plan Riverside Walk)) '*This package established the principles of quality and design development only, exact details including more detailed working drawings and samples will be submitted at a later date.*'

Although there is an abundance of plans related to the above conditions, most of the details submitted are generic rather than specific eg the A3 booklet containing small photographs of possible materials – more a 'sales' brochure than details to discharge conditions.

The conditions specify the requirement for '*full details of both soft and hard landscaping'* . These applications do not provide full details including location and specification of the relevant items and therefore would not be enforceable. We ask that the conditions are not discharged until full details are supplied that are appropriate, meet the relevant standards and are specific enough to be enforceable.

2.2.2. Generally the landscaping is hard – apart from the retreated flood defence area alongside the Creek and some trees within the development. While appreciating the practical need for paths to be robust and easy both to maintain and to keep clean there are missed opportunities for 'greening' particularly along the Riverside Walk. Both the London Plan and the UDP support the 'enhancement' of biodiversity (see policy appendix). We hope that the Borough's Biodiversity Officer can suggest some appropriate planting to enhance the green corridor along the Riverside.

2.2.3. We question whether the garish examples of play equipment are the most appropriate. In recent presentations from well known landscape consultants which I have attended, much more imaginative suggestions have been put forward for children's play areas which are less intrusive into the surrounding landscaping.

2.2.4. We hope that the principles of SUDs have been applied to all the hard areas of landscaping.

2.2.5. Both sides of the existing avenue of horse chestnut trees (TPOs) now appear to be in private gardens (Farrell LRTW-4/PA/06-021-G). At the enquiry surely one row was to remain in the public area? If this is a revision, it should be refused. These potentially large trees are not suited to small private gardens and are likely not to survive there.

2.3 Riverside Walk Specifically

2.3.1.. One of the principles behind the drive to have a Riverside Walk guide is to avoid the Riverside Walk being 'annexed by design' into the adjacent development. The Walk will be adopted by the Borough and should have a design style of its own conveying that it is a public path not a permissive private path.

The materials and street furniture of the Riverside Walk should follow the standards of *Street Smart*. In particular we suggest this is an area where York paving would be appropriate. The proposed benches and railing along the riverside are especially unsuitable. This part of the Riverside Walk (which is also the Thames Path National Trail) will be perceived by its users as a continuation of Chelsea Harbour, where riverside street furniture (eg the railings and the lamp posts) has been successful and stood the test of time. We suggest this, or something similar, should be continued, to avoid an unattractive and jarring 'join' in the section of the Riverside Walk up to the Creek.

2.3.2. We are concerned at what appear to be changes from the scheme discussed in such detail at the lengthy public inquiry. We note what appears to be an overhang over the Riverside Walk. Such overhangs have the effect of reducing the openness of the public area. If this is a revision, it should not be agreed.

2.3.3. There appears to be no attempt to enhance the green chain/corridor along the Riverside. No planting is suggested along the Riverside Walk. This is contrary to policies in both the London Plan and the UDP which support the enhancement of biodiversity (see policy appendix).

Trees should be included along the riverside walk which could improve the landscaping and the biodiversity. At the Inquiry it was established that the EA's requirements did not exclude this.

2.3.4. There is reference to installing grab chains and ladders along the River wall which is welcomed.

2.3.5 There are no proposals at the moment to improve the biodiversity of the river wall itself, a matter raised at the public inquiry. Wooden fendering could be installed at the same time as the chains and ladders along following Environment Agency guidelines on riverbank design: '*Riverbank Design Guidelines for the Tidal Thames*'. (see TSKtoC page3.8)

Considerable work is being done to enhance the biodiversity of the Creek. Not to continue such a simple improvement along the rest of the river wall is a wasted opportunity.

2.4.Treatment of the Creek

2.4.1. We support the detailed comments about the proposed treatment of the Creek to our colleagues in the West London River Group. We note the following in particular..

2.4.2. A comfortable clearance under the bridges for boats in the Creek and pedestrians on the Creekside Walk is a priority.

2.4.3. We are astonished to read in the Arup report that

- ' Mooring Posts ...are '*not intended to be used for Mooring*' (para 4.4.1
- Signage to be provided stating '*Mooring prohibited*' (4.4.2)
- '*There is no provision for boat landing and mooring*' (para 4.5.)

The condition requires that: '*The scheme shall include details of the construction and subsequent maintenance of...the location and design of mooring posts, boat- landing and access facilities...*'

At the Inquiry we were assured that such access from the water was provided by the scheme. It is totally unacceptable that this should now be deleted.

3. Summary

We object to the conditions being discharged on the details currently supplied.

Much of the detail submitted both in relation to materials and street furniture is 'indicative', unspecific in relation to location and not capable of enforcement.

In the case of the Riverside Walk the 'indicative' details do not comply with the guidance of Street Smart.

The current proposals do not satisfactorily enhance biodiversity along the Riverside.

The proposals for the Creek do not provide mooring posts, boat landing and access facilities as required by the condition.

We should be grateful to be consulted on any proposed revisions to the scheme which received permission as well as any amendments to the details supplied relating to conditions.

Yours sincerely

Angela Dixon
Chairman

c West London River Group

RELEVANT POLICY AND GUIDANCE
Re Lots Road conditions.

London Plan

Policy 3D12 Biodiversity and Nature Conservation
The Mayor will work with partners to ensure a proactive approach to the protection, promotion and management of biodiversity in support of the Mayor's Biodiversity Strategy.
para 3.258 *The Mayor expects the biodiversity and natural heritage of London to be conserved and enhanced for the benefit of this and future generations*
para 3.260 *.....Wherever appropriate new development should include new or enhanced habitat or design (such as green roofs) and landscaping that promotes biodiversity and provision for their management.*

Policy 4C3 The Natural Value of the Blue Ribbon Network
The Mayor will and Boroughs should protect and enhance the biodiversity of the: Blue Ribbon Network by:

- *Resisting development that results in a net loss of biodiversity*
- *Designing new waterside development in ways that increase habitat value.....*

Policy 4C.4 Natural landscape
The Mayor will, and boroughs should, recognise the blue Ribbon Network as contributing to the open space network of London. Where appropriate natural landscapes should be protected and enhanced. As part of Open Space Strategies, boroughs should identify potential opportunities alongside waterways for the creation and enhancement of open spaces.

Hammersmith &Fulham UDP

Policy EN27 Nature Conservation Areas and Appendix 4.5
This states that the River Thames with its foreshore, drawdocks and inlets - including Chelsea Creek - is a Nature Conservation Area of Metropolitan Significance.

Policy EN31A The Natural Environment of the Thames
The Council will seek to preserve and enhance the special character of the nature conservation and open space aspect of the Thames corridor and the quality of the natural environment of the Thames Policy Area with particular regard to...

(ii) the river's value as a nature conservation area of Metropolitan Importance (Policy EN27)

EN34 The Riverside Walk
.... The walk should be at least 6 metres wide...

paragraph 4.174 *The Council also accepts that the design of the Riverside Walk should reflect and enhance the natural character of the river wherever possible eg by planted embankments. The Council's Riverside Walk Brief ...will be updated now that the Thames Strategy Kew to Chelsea supplementary planning guidance has been approved.*

The Thames Strategy Kew to Chelsea 2002 (TSKtoC)

Includes Chelsea Creek and the Lots Road site in Character Reach 7 (4.76-89). It recognises that:

- *'Existing vegetation is limited, small scale and should be reinforced. Species of a more appropriate size should be utilised.' (4.88)*
- *'The treatment of the River Walk will be an important consideration in the development of Lot's Road Power Station, the final phase of Chelsea Harbour and the treatment of Chelsea Creek.' (4.89)*
- *'The environmental value of Chelsea Creek should be protected and the potential for new wetland habitats investigated. These could form part of a green chain extending up to the Brompton Cemetery.' (4.89)*

Policy SD15 (page 3.110)
A Riverside Walk of a minimum 6 metres width should be provided in all new development schemes on the riverside and variations in width should be encouraged to create a strong sequence of spaces of varying sizes.

Conservation Area Profile for Sands End CA

paragraph 6.24 *Links between the green edge of Hurlingham Club Grounds and the strong built edge of Chelsea Harbour to the east should be improved where possible through planting along the riverfront.*

paragraph 6.18 *All new stretches of the River walk should incorporate high quality materials, lighting and landscaping including trees where appropriate.*

Georgina Slader
Royal Borough of Kensington and Chelsea
Planning and Conservation
georgina.slader@rbkc.gov.uk

Our ref: TL/2008/100450/01-L02
Your ref: 2007/02994/DET

Date: 07 March 2008

Dear Ms Slader

SUBMISSION OF DETAILS OF A SCHEME FOR THE TREAMENT OF CHELSEA CREEK PURSUANT TO CONDITION 12 OF PLANNING PERMISSION PP/02/01324 GRANTED BY THE SECRETARY OF STATE ON 30 JANUARY 2006.
LAND ADJACENT TO SOUTH SIDE OF CHELSEA CREEK, CHELSEA HARBOUR DRIVE, LONDON.

Following the receipt of further information from ARUP, we are now in a position to comment on the discharge of Condition 12 of Planning Permission PP/02/01324. The information submitted related to the provision for boat landing and access facilities as required by the condition. We have the following comments to make:

Provision for boat landing point

When we were first consulted on the scheme we negotiated for a provision of a boat landing/pontoon to sit adjacent to the crescent shaped park along the creek side. We encouraged provision of this landing point through our recreational remit and it resulted in the specific wording in Condition 12:

'The scheme shall include details of.....the location and design of mooring posts, boat-landing and access facilities and health and safety measures to be provided.'

We acknowledge the correspondence from ARUP (dated 26 February 2007) in relation to the requirement for this landing area in the condition. In particular we acknowledge the safety issues and provisions that have been made for mooring posts and grab chains. However we do not feel that this is adequate mitigation and justification for not providing the boat landing provision as required by the condition.

We request that drawings are submitted to show a boating landing pontoon to be accommodated within a gap in the terraces adjacent to the crescent shaped park. We are happy to advise on the design of the pontoon.

Cont/d..

We recommend that either a rise and fall pontoon or provision for an access ladder with vertical fenders and vertical risers with rings. These are traditional method used for tidal waters. Please refer to photos attached to this letter.

The provision for this pontoon would be for the collective benefit of future residents and for recreational craft using the creek.

Terracing

As discussed in previous meetings, much of the lower terrace will be rapidly covered by sediment and therefore is not of ecological value as a separate habitat. We have agreed that the lower terrace can be deleted.

The 3.8m upper terrace is high and this will influence the species of plants which will colonise it. To maximise the diversity of plant species a range of heights between mean high water springs and neaps would be more appropriate. If this can be achieved then it would have greater benefit ecologically.

The proposed bastions may be more effective in their trapping of silt, then the previously proposed gabion baskets and therefore we are happy with this design. The bastions should be hand packed to ensure that there is a range of gravel sizes within the baskets to increase their silt trapping and accretion capability.

Position

We are satisfied with the overall design of the terracing and commend the work that ARUP have done in the design. However, we are unable to recommend the discharge of the condition until the requirement of the pontoon has been fulfilled.

Please contact me if you have any questions to the above.

Yours sincerely

Ms Anna Scott
Major Projects Officer

Direct dial 020 7091 4042
Direct e-mail anna.scott@environment-agency.gov.uk

End

Jane Pitten

From: Scott, Anna [anna.scott@environment-agency.gov.uk]
Sent: 02 July 2008 11:02
To: Jane Pitten
Cc: Emily Whitehill
Subject: RE: Lots Road Boat landing provision
Attachments: LRS02-OAMR-9151-DT210-F1-03.PDF

Jane,

Thank you for sending through the revised drawing - titled River Walls Package 2: Detail of Boat-Landing Access dated 27/06/08 Revision 3. We can confirm that we are satisfied with the revised drawing. We also commend you on your efforts to ensure that it best meets the needs of the river users.

Can I please request that you now formally submit the drawings showing the location of the boat landing access and details to both LB of Hammersmith and Fulham and the Royal Borough of Kensington and Chelsea so that we can formally discharge the condition.

Kind Regards

Anna Scott

From: Jane Pitten [mailto:Jane.Pitten@arup.com]
Sent: 30 June 2008 15:28
To: Scott, Anna
Cc: Emily Whitehill
Subject: RE: Lots Road Boat landing provision

Anna,

Thanks for the email. Could you please copy in Emily Whitehill (cc'd on this email) when you respond to the boat landing drawing, as I am away on holiday for the rest of this week. Thanks in advance.

Regards

Jane Pitten
Engineer
ARUP
13 Fitzroy Street, London W1T 4BQ
Tel: +44 (0)20 7755 2514
Fax: +44 (0)20 7755 2406
www.arup.com/maritime

From: Scott, Anna [mailto:anna.scott@environment-agency.gov.uk]
Sent: 30 June 2008 09:10
To: Jane Pitten
Subject: RE: Lots Road Boat landing provision

Hi Jane

Thank you for sending through the revised drawing. I have sent this on to our internal staff and will aim to get back to you in the next couple of days.

Kind Regards

Anna Scott
Major Projects Officer
Planning Liaison - North London

Direct Dial 020 7091 4042

Eastbury House
9th Floor
30-34 Albert Embankment
SE1 7TL

Developers: www.environment-agency.gov.uk/developers

Please think about the environment and only print this email if required.

From: Jane Pitten [mailto:Jane.Pitten@arup.com]
Sent: 27 June 2008 17:15
To: Scott, Anna
Subject: Lots Road Boat landing provision

Anna,

As discussed in our earlier telephone conversation please find attached the updated drawing taking account of your latest comments and combining this with a 5m boat requirement as previously indicated by Peter Makower (member of West London River Group). Further fenders outside of the risers have been provided as you have suggested.

The spacing of the risers are now shown at approximately 5m. It may be easier for smaller boats to connect to this arrangement in comparison to the suggestion of 8m spacing of risers which may restrict the smaller boats usage.

Could you please let me know if this meets the EA's requirements or if you have any further requirements.

Thanks again.

Regards

Jane Pitten
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24/07/2008