

Thames Tideway Tunnel
Thames Water Utilities Limited



Application for Development Consent

Application Reference Number: WWO10001

Design Principles

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**Thames
Tideway Tunnel**



Creating a cleaner, healthier River Thames

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Thames Tideway Tunnel

Design Principles

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1 Introduction

1.1 Scope of this report

1.1.1 This report describes the design principles that underpin the design of the permanent ground level and above-ground elements and spaces of the Thames Tideway Tunnel project (the ‘project’). The above-ground elements include permanent structures in the river, ventilation structures or columns, ventilation buildings, electrical and control kiosks and potential new public space, footpaths and landscaping. The design principles apply to the permanent operational phase of the project; they do not apply to the temporary construction phase.

1.1.2 The principles were developed in consultation with local authorities and other stakeholders. They establish parameters that must be met in the final detailed design of the ground level and above-ground structures and spaces associated with the project. The principles serve a number of functions:

- a. They have helped to inform the assessment of the likely environmental effects of the project in the Environmental Impact Assessment.
- b. They have also helped to inform the project’s sustainability strategy by demonstrating how sustainability objectives were implemented in the design of sites.
- c. They set the parameters for the detailed plans to be prepared by contractors or others to satisfy the requirements that will be attached to the Development Consent Order (DCO).
- d. The principles will be considered by the relevant local planning authorities alongside the DCO plans in assessing the detailed designs submitted for subsequent approval.
- e. They help to illustrate how Thames Water has responded to public consultation feedback in relation to design.
- f. They help to illustrate how Thames Water has taken account of the criteria for good design set out in the National Policy Statement for Waste Water (the ‘NPS’) in order to ensure that the development is as attractive, durable and adaptable as it can be, taking account of regulatory and other constraints.

1.1.3 This report is structured as follows:

- a. Section 2 outlines the high-level design objectives. These are Thames Water’s overarching objectives for the design of permanent structures on all sites.
- b. Section 3 sets out the generic principles. These represent general project-wide commitments. However, they must be read in conjunction with the site-specific principles as they are not necessarily appropriate for each site. For example, lighting principles do not apply to sites where lighting is not required. A table at the beginning of each site-

specific section lists the generic principles that do not apply to that location.

- c. Section 4 details the site-specific principles. These are contextual principles that are unique to each site or which elaborate further on the generic principles.
- 1.1.4 The principles work within the framework provided by the Site works parameter plans, the landscape plans and the other plans that form part of the application for development consent. They provide more detail of the design intent but still provide some flexibility to develop the detailed designs at a later date in the light of the prevailing circumstances when the project is implemented.
- 1.1.5 The design principles are submitted for approval as part of the application for development consent so subsequent design development and detailed plans must be in accordance with the principles.
- 1.1.6 The design principles help to ensure that the project meets the criteria in the NPS with regard to the following:
- a. good design (para. 3.5.2 of the NPS)
 - b. locating odour sources away from sensitive developments, where practicable (para. 4.3.16 of the NPS)
 - c. ensuring any impacts on habitats are minimised and managed and opportunities are taken to enhance existing habitats or create new habitats of value, where practicable (para. 4.5.17 of the NPS)
 - d. demonstrating that adverse landscape and visual effects have been minimised through appropriate siting, and design, including colours and material and landscaping schemes (para. 4.7.17 of the NPS)
 - e. minimising the direct effects on existing land uses, or proposed uses near the sites by the application of good design principles, including the layout of the project (para. 4.8.19 of the NPS)
 - f. sustaining and, where appropriate, enhancing the significance of heritage assets and making a positive contribution to the character and local distinctiveness of the historic environment (para. 4.10.12).

2 High-level design objectives

2.1 Vision

- 2.1.1 The project would be a major, city-wide investment in London's wastewater infrastructure for the 21st century. It would build on Sir Joseph Bazalgette's legacy and maintain the long-term sustainability of London as a world-class city and improve the quality of its largest open space, the River Thames. This vision comprises the high-level design objectives which have guided the development of the scheme to date. The generic and site-specific design principles that follow will be used to test the acceptability of subsequent, more detailed design development.
- 2.1.2 In keeping with Bazalgette's tradition, any new public open spaces shall be designed to positively enhance the environment and provide a lasting legacy.
- 2.1.3 Site designs shall be of high quality and provide value. They shall respect each site's individual location and setting, while recognising the contribution of all sites to providing a cleaner, healthier River Thames.
- 2.1.4 Designs shall recognise the importance and quality of the engineering infrastructure below-ground. They shall meet safety, functional, environmental, maintenance and access requirements. The structures and finished surfaces shall be robust and of appropriate quality.
- 2.1.5 Thames Water's vision shall be achieved by:
- a. Being responsible:
 - i respecting and contributing positively to each site's individual context and surroundings
 - ii reducing the impacts of operations on local communities, the environment and third party interests as far as reasonably practicable
 - iii listening to and working with stakeholders, being open to new ideas and identifying areas of mutual interest with others
 - iv challenging operational and functional requirements to create sites that meet the functional requirements, work within the day-to-day life of the city, and reflect local community and environmental considerations
 - v ensuring that the principles of sustainability are integral to designs by incorporating environmental solutions and environmental mitigation
 - vi developing a signature across the sites that recognises the collective importance of the project and the sites to the river.
 - b. Being flexible and creative:
 - i where opportunities arise, we shall seek to create new, high quality, public spaces and enhance habitats and biodiversity

- ii where there is existing site development, we shall work with known developers to find solutions that are conducive to both parties. Where development proposals are less certain, we shall provide flexible solutions to meet operational needs that are also able to respond to changing future circumstances
 - iii at existing Thames Water operational sites, designs shall be a simple expression of the functional requirements that respect the context and enhance the wider surroundings.
- c. Meeting functional requirements
- i developing high quality, well-designed and durable solutions that protect and respect the environment and amenity of the areas in which they are located
 - ii providing safe sites for operations staff and (where relevant) the public that are accessible to all
 - iii developing low maintenance solutions that meet operational and functional requirements using existing Thames Water assets wherever possible
 - iv ensuring that spaces that would be handed over to others could be maintained to a good standard in the long-term, having due regard to planning policy and best practice
 - v reinstating and extending the Thames Path where practicable.

3 Generic design principles

3.1 Integration of functional components

- 3.1.1 These principles apply to all sites unless stated otherwise in the table at the beginning of each site-specific section.
- 3.1.2 It is a high-level design objective that any new public open spaces shall be designed to enhance the environment and provide a lasting legacy. In order to realise this, the functional components shall be integrated in a way that supports and reinforces the visual success of the overall design. The following principles address how this shall be achieved.

Table 3.1 Integration of functional component principles

Reference	Integration of functional component principles
FNCC.01	The designs shall make efficient use of the land required for the project and land take shall be minimised. Buildings and materials shall be re-used, wherever practicable and economic.
FNCC.02	The ground-level surfaces of the works shall be integrated into the public realm without the need for fenced and gated compounds, except at sites which are within existing operational compounds (Thames Water or others) or subject to a planning proposal by other developers. Where development is proposed in a park, the landscape design for the location and layout of any areas of hardstanding shall be sympathetic to the character and nature of the park.
FNCC.03	The 'signature' design shall be used for all ventilation columns serving the shaft, except where stated otherwise in site-specific principles. The ventilation columns shall stand a maximum 8m high and have a minimum proportion of 1:5 (girth to height). Multiples of the signature design shall be used to achieve the cross-sectional areas required for ventilation.
FNCC.04	In parks and open spaces any above-ground structures shall be positioned on the park/site boundaries and adjacent to planting, as far as possible, so as not to obstruct views into and out of the space. In exceptional circumstances, above-ground structures may be designed as specific statement features that contribute to the character of the park.
FNCC.05	All above-ground structures shall be of high quality design and materials, appropriate to the context.
FNCC.06	Areas of hardstanding required for maintenance access shall be minimised wherever possible in order to reduce surface water run-off rates without compromising the functional requirements.
FNCC.07	In publicly accessible areas, large access covers (exceeding 675mm x 675mm) shall have durable recessed covers integrated into the surrounding paving treatment for visual continuity.

Reference	Integration of functional component principles
FNCC.08	In publicly accessible areas, small access covers (675mm x 675mm or less) shall be of a bespoke project design or be recessed covers inset with the surrounding paving treatment for visual continuity.
FNCC.09	Buildings and kiosks shall have a low-maintenance brown roof unless otherwise specified in site-specific principles in order to reduce surface water run-off rates and to promote biodiversity.

3.2 Heritage design principles

- 3.2.1 The NPS recognises the desirability of sustaining and, where appropriate, enhancing the significance of heritage assets, the contribution of their settings and the positive contribution they can make to sustainable communities and economic vitality. The decision maker should take into account the desirability of new development making a positive contribution to the character and local distinctiveness of the historic environment (para. 4.10.12). The following principles shall be applied at sites in sensitive heritage locations, unless specified otherwise in the table at the beginning of each site-specific section. Further detail is also available in the *Heritage Statement* and *Code of Construction Practice*.

Table 3.2 Heritage principles

Reference	Heritage principles
HRTG.01	Where interventions to the fabric of listed buildings or listed structures are proposed, they shall be designed to remove as little historic fabric as possible in order to ensure maximum retention of historic form and fabric.
HRTG.02	Modern structural and environmental designs that interface with listed buildings or structures shall respect the historic structural and environmental behaviour of the adjacent listed building or structure.
HRTG.03	Monitoring equipment for assessing the effect of the works on listed buildings and structures shall be designed to be unobtrusive and to ensure the significance of the listed building is undamaged.
HRTG.04	Facing materials and detailing shall be compatible with the visual character of existing adjacent listed buildings and heritage assets.
HRTG.05	Designs shall aim to support the legibility of the key historic functions of heritage assets.
HRTG.06	Alterations to historic fabric shall be reversible, wherever reasonably practicable.
HRTG.07	Interpretive material shall be provided at sites of heritage value where this would be of wider public benefit. The design of interpretation materials shall not lead to unacceptable visual clutter. Interpretation shall be undertaken in line with a project-wide Interpretation Strategy and shall take account of any existing local interpretation strategies.
HRTG.08	Trees that need to be removed in a conservation area shall be replaced as close as possible to the original position with a species that relates to the character of the area. For new trees, reference shall be made to the principles outlined in the Mayor of London's <i>London Trees and Woodland Framework. Right Place, Right Tree initiative</i> .

3.3 Riparian and in-river structure principles

3.3.1 Unless specified otherwise in the table at the beginning of each site-specific section, the following principles apply to foreshore structures, new flood defence walls and reinstated flood defences.

Table 3.3 Riparian and in-river structure principles

Reference	Riparian and in-river structure principles
IRVR.01	Structures in or over the river shall be reduced in scale as far as possible and be designed to take account of effects on river flow, the needs of river users, aquatic ecology and visual effects.
IRVR.02	As a minimum, all new flood defences shall provide the same level of protection against flooding as the existing defences and be designed to accommodate the raised levels specified in the Environment Agency's TE2100 Guidance at an appropriate time in the future.
IRVR.03	New foreshore structures shall be publicly accessible except during essential maintenance when they would be closed to the public.
IRVR.04	Lifesaving equipment on the river wall shall tie in with any existing safety features and comply with the Port of London Authority (PLA) recommendations in the <i>Review of lifesaving provision along the tidal Thames 1994</i> .
IRVR.05	Facing materials and detailing for new river walls shall be compatible with the visual character of existing adjacent river walls.
IRVR.06	Horizontal or vertical timber fenders shall be included in the design of river walls in order to promote aquatic ecology.
IRVR.07	Horizontal demarcations shall be designed on the new river walls to mark pertinent river levels (such as the highest astronomical tide, mean high water springs etc) across the project.
IRVR.08	Navigational aids including signage and lighting shall be provided where required by the PLA.
IRVR.09	The aprons of any existing outfalls made redundant by the project shall be broken out and removed where practicable, unless required for scour protection.
IRVR.10	Appropriate scour protection shall be provided beneath any new outfall to prevent excessive scouring of the foreshore and to protect the foundation of the river wall. The detailed design and extent of this shall seek to avoid or minimise adverse effects on aquatic ecology.
IRVR.11	Where practicable, suitable habitat shall be provided at the base of any foreshore structure to encourage retention of sediment in order to promote aquatic ecology.
IRVR.12	Any moorings affected by the works shall be replaced, where practicable, unless otherwise agreed with the Port of London Authority.

Reference	Riparian and in-river structure principles
IRVR.13	Any flood defences that are directly impacted shall be reinstated to an appropriate standard.

3.4 Landscape design principles

3.4.1 These principles apply to all sites unless specified otherwise in the table at the beginning of each site-specific section.

Table 3.4 Landscape design principles

Reference	Landscape design principles
LSCP.01	Designs shall seek to provide a net increase in trees over the project as a whole. Where practicable, any trees which are removed shall be replaced as close as possible to the current position or within close proximity to the site, in line with a coherent landscape design.
LSCP.02	For new trees, reference shall be made to the principles outlined in the Mayor of London's <i>London Trees and Woodland Framework. Right Place, Right Tree initiative</i> . They shall be native species except where non-native species (eg, London Plane) are chosen for their townscape value. Species may be selected for their resilience to a demanding urban environment or climate change where a biodiversity benefit can also be demonstrated.
LSCP.03	Where possible, large tree pits shall be provided to maximise tree size and growth potential. Such measures increase the tree's access to space and light and reduce the potential for vandalism.
LSCP.04	Any public furniture, fencing or railings shall be robust, durable and in keeping with the character of the surrounding townscape. Reference shall be made to any relevant local street design guides for specification of landscape elements.
LSCP.05	The design shall be developed with reference to relevant guidance on safety and security, including Secured by Design, Design Council CABE guidance and the Centre for the Protection of National Infrastructure and National Counter-Terrorism Security Office's <i>Protecting Crowded Places</i> design guidance.
LSCP.06	Publically accessible spaces shall be designed to be safe and inclusive and consider the needs of the diverse communities within the city. In line with current best practice the following shall apply as a minimum: <ol style="list-style-type: none"> a. Gradients shall be kept as shallow as possible, preferably no steeper than 1:21. b. On graded routes (1:21 to 1:60) level rest areas shall be provided at a minimum of 10m intervals. c. Surface colour contrast and 'corduroy' strips shall be used at landings to steps and ramps where appropriate to enable visually impaired persons to use and anticipate them. d. Where external stairs are provided, a step-free alternative shall also be provided. e. Where stairs are provided, they shall be designed in accordance with Part M (Approved Document M) of Schedule 1 of the Building Regulations.

Reference	Landscape design principles
	f. A minimum of 2.3m clear height shall be allowed under overhangs, structures, signage and tree canopies.
LSCP.07	Walkways shall be an adequate width to allow wheelchair users to pass one another comfortably (a minimum of 2m wherever practicable).
LSCP.08	Designs shall seek to improve access for pedestrians and cyclists, wherever practicable and economic, while meeting functional requirements.
LSCP.09	Clear lines of sight shall be maintained throughout pedestrian environments in order to maximise accessibility, reduce visual confusion, and reduce dependence on signage and auditory information.
LSCP.10	Materials shall be selected for safety and accessibility and footway surfaces shall be firm, level and slip-resistant. Where paving is provided, larger setts/slabs shall be used where practicable to minimise the risk of trapping wheels or other walking aids.
LSCP.11	Materials shall be robust, durable and meet the technical requirements of the project.
LSCP.12	In areas of public realm, paving materials shall relate to and reflect the character of the surrounding townscape.
LSCP.13	Surfaces and sub-surfaces in operational areas shall be constructed to support heavy machinery and vehicles.
LSCP.14	Where appropriate, existing materials shall be reused within the landscape design.
LSCP.15	Surface materials within existing Thames Water compounds shall be robust and comply with Thames Water's standard requirements.
LSCP.16	Any cycle parking spaces affected by the Works shall be re-provided, where practicable.

3.5 Lighting design principles

3.5.1 In general, new operational lighting shall not be provided as part of the project. The principles in Table 3.5 apply specifically to sites where newly created areas of public realm would be accessible at night. They do not apply to the reinstatement of existing lighting. These principles apply unless stated otherwise in the table at the beginning of each site-specific section.

Table 3.5 Lighting design principles

Reference	Lighting design principles
LTNG.01	Light pollution at sites shall be minimised by means of capped, directional and cowled lighting units. Lighting design shall adhere to the principles outlined in <i>Bats and Lighting in the UK</i> ¹ produced by the Bat Conservation Trust in partnership with the Institute of Lighting Engineers.
LTNG.02	In heritage locations, lighting proposals shall respect adjacent historic elements and be co-ordinated with wider lighting objectives.
LTNG.03	In heritage locations, the colour temperature of light sources shall complement and enhance the colours of adjacent buildings and the wider landscape setting.
LTNG.04	Lighting designs shall seek to reduce the risk of accidents and help to prevent crime and the fear of crime. However, this shall be balanced with the need to produce high quality attractive design, reduce light pollution and promote terrestrial and aquatic biodiversity.
LTNG.05	Dark patches and high light/dark contrasts shall be avoided as they can impair visibility.
LTNG.06	Localised lighting of shrubberies, trees and flowerbeds may be used to create a contrasting effect at night. This shall be determined on a site-by-site basis.
LTNG.07	Where appropriate, lighting shall be integrated into seating, steps, walls and other furniture and features in order to reduce visual clutter.
LTNG.08	Lighting units shall be high quality and robust. The ease of future maintenance shall be a relevant consideration to the choice of detailed light fittings.
LTNG.09	Lighting shall not be proposed for the River Thames or directed towards it, except where required for navigational safety.
LTNG.10	Lighting sources shall be selected to be aesthetically appropriate and to limit light pollution, improve energy efficiency and increase equipment longevity.

¹ http://www.bats.org.uk/publications_download.php/243/BATSANDLIGHTINGINTHEUKJan08.pdf

3.6 Site drainage principles

- 3.6.1 The following site drainage principles shall apply, unless stated otherwise in the table at the beginning of each site-specific section. In areas that would be incorporated into developments by others, the third-party developer shall determine the final site drainage arrangement, subject to their obtaining a separate consent.

Table 3.6 Site drainage principles

Reference	Site drainage principles
SDRN.01	Site drainage shall comply with the National Standards for Sustainable Drainage Systems under the Floods and Water Management Act 2010.
SDRN.02	Site drainage at foreshore sites and sites immediately adjacent to the tidal river shall be designed to discharge surface water run-off directly into the river. In the event of a storm coinciding with a high tide event, surface water drainage from the site may be restricted and would need to be stored on-site. If necessary, on-site storage would be provided to manage the risk of site flooding in the event of tide-locking of the surface water outfall.
SDRN.03	At greenfield and park sites, site drainage shall be designed to ensure that post-development surface water run-off rates do not exceed existing rates.
SDRN.04	At brownfield sites, site drainage shall comply with the Mayor's Essential Standard as follows: <ul style="list-style-type: none"> a. use Sustainable Drainage Systems measures, wherever practical b. achieve 50 per cent attenuation of the undeveloped site's peak surface water run-off at peak times.
SDRN.05	For outfalls with a diameter of 300mm or greater two means of preventing the back up of river water shall be provided (eg, two rows of flap valves).

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4 Site-specific design principles

4.1 Acton Storm Tanks

Table 4.1 Generic site information

Site name: Acton Storm Tanks	
DCO Work No.	2
Generic design principles	Principles that do not apply
Integration of functional components	FNCC.03 and FNCC.04
Heritage principles	All (ie, no principles apply)
Riparian and in-river structure principles	All (ie, no principles apply)
Landscape design principles	LSCP.01, LSCP.06 and LSCP.12
Lighting design principles	LTNG.02, LTNG.03 and LTNG.09
Site drainage principles	SDRN.02, SDRN.03 and SDRN.05

4.1.1 The project works would be located within an existing Thames Water operational site. Consequently principles relating to integration of functional components (in the public realm) have been dis-applied.

Table 4.2 Acton Storm Tanks site-specific design principles

Reference	Site-specific design principles
ACTST.01	A single vehicular maintenance access to the project works shall be provided from Canham Road. This access shall be used infrequently by larger vehicles to enable them to turn within the site. Access for frequent visits by smaller vehicles shall be via the Acton Storm Tanks existing site access from Warple Way/Canham Road.
ACTST.02	Provision shall be made to extend the width of the footpath on Canham Road to a minimum of 2m, using land within the Thames Water site. The footpath shall be constructed to adoptable standards.
ACTST.03	Sustainable drainage shall be provided (as shown on the indicative Landscape plan), in order to comply with the generic site drainage principles. This shall be maintained by Thames Water as part of the operational site.
ACTST.04	The design of the ventilation column shall be bespoke and help to mark it as a local landmark, enhance the local townscape and celebrate the project. The form of the column shall make visual reference to the signature design in order to achieve consistency with other sites and it shall be clad in a high quality, robust material.

Reference	Site-specific design principles
ACTST.05	The ventilation column and structure shall preferably be located close to the Canham Road frontage, in order to reduce the visual effects on properties to the west and to locate the column nearer to similar height buildings and in a prominent location near the public footpath.
ACTST.06	Advanced tree planting along Warple Way shall be undertaken prior to site clearance and construction in order to partially screen views of the site. Material piles potentially used by hedgehogs and notable invertebrates shall be relocated within the advanced planting.
ACTST.07	Fences to the north and west of the site shall be replaced with a new high quality boundary treatment. The extent of this fencing shall be as shown on the proposed landscape plan.
ACTST.08	At least five bat boxes shall be attached to the mature trees retained on-site.
ACTST.09	The existing lighting scheme for the compound shall be reinstated.
ACTST.10	Species-rich wildflower grassland, native trees and scrub shall be provided in appropriate areas as part of the reinstatement of the construction site.

4.2 Hammersmith Pumping Station

Table 4.3 Generic site information

Site name: Hammersmith Pumping Station	
DCO Work No.	3
Generic design principles	Principles that do not apply
Integration of functional components	FNCC.03 and FNCC.04
Heritage principles	All (ie, no principles apply)
Riparian and in-river structure principles	All (ie, no principles apply)
Landscape design principles	LSCP.01, LSCP.02, LSCP.03 and LSCP.04
Lighting design principles	All (ie, no principles apply)
Site drainage principles	SDRN.02, SDRN.03 and SDRN.05

4.2.1 Thames Water is not responsible for any landscaping works outside the wall of the permanent operational site compound. A legal agreement is in place between Thames Water and St George, the developer of Fulham Reach. The detailed designs for this site, and the responsibilities for implementation, shall reflect this agreement.

Table 4.4 Hammersmith Pumping Station site-specific design principles

Reference	Site-specific design principles
HAMPS.01	The electrical and control equipment shall be located within the existing pumping station building. The local penstock isolation kiosk shall be located on the external wall of the pumping station.
HAMPS.02	All above-ground structures shall be located within the Thames Water operational site.
HAMPS.03	The extended and rebuilt compound wall facing Chancellor's and Distillery Roads shall match the construction of the existing precast concrete wall. Walls and fencing to the south and west shall be sympathetic to the new residential development.
HAMPS.04	Any structures outside the Thames Water compound shall be designed to be incorporated into the public realm of the residential development that will be completed by others.
HAMPS.05	No lighting shall be provided, unless incorporated as part of the adjacent residential development.
HAMPS.06	The ventilation column shall be combined with the existing Venturi ventilation superstructure on the site. The combined structure shall either match the existing elevations or be re-clad with materials appropriate to their context. The signature design ventilation column shall not be used.

Reference	Site-specific design principles
HAMPS.07	If the Screen House is removed, then it shall be replaced with a structure(s) that shall not exceed the height and footprint of the existing Screen House building.
HAMPS.08	Bat roost features for common pipistrelle and soprano pipistrelle bats shall be mounted in mature trees along Chancellor's Road on land owned by Thames Water.
HAMPS.09	The three trees to be removed as part of the construction works shall not be replaced, in accordance with LSCP.01, as the proposed landowner will include the area within their subsequent development site and landscaping proposals.

4.3 Barn Elms

Table 4.5 Generic site information

Site name: Barn Elms	
DCO Work No.	4
Generic design principles	Principles that do not apply
Integration of functional components	FNCC.03
Heritage principles	All (ie, no principles apply)
Riparian and in-river structure principles	All (ie, no principles apply)
Landscape design principles	LSCP.07, LSCP.08, LSCP.09 and LSCP.12
Lighting design principles	LTNG.02, LTNG.03, LTNG.06, LSCP.07 and LSCP.09
Site drainage principles	SDRN.02 and SDRN.04

- 4.3.1 Alternative changing room facilities shall be provided of equal capacity to the facility scheduled for demolition as part of the access road proposals. The facilities shall be located in close proximity to the existing changing room facilities. The exact specification and location of the alternative facilities shall be agreed in advance with the site owners. The alternative changing room facilities shall be constructed, commissioned and made available for use prior the closure of the existing facilities.
- 4.3.2 Relocated track and field facilities shall be provided to offset the removal of existing facilities as part of the access road proposals. The new facilities shall be located in close proximity to the existing facilities. The exact location of the facilities shall be agreed with the land owner prior the removal of the existing facilities. The facilities shall be constructed and made available for use prior to the removal of the existing facilities.

Table 4.6 Barn Elms site-specific design principles

Reference	Site-specific design principles
BAREL.01	Replacement changing room facilities shall be located in close proximity to the existing facilities scheduled for demolition. The relocated track and field facilities shall be moved to locations agreed by the local planning authority in consultation with the landowner.
BAREL.02	The permanent works shall be located as close as possible to the perimeter of the site, incorporating an 8m buffer from the embankment to the Beverley Brook. This would allow for flexibility in the reconfiguration and relocation of the playing fields without compromising Thames Water's access and maintenance arrangements.

Reference	Site-specific design principles
BAREL.03	Vehicular maintenance access shall be from the north along the eastern edge of the playing fields. The surface of this route shall be reinforced grass and the construction shall be capable of supporting operational maintenance vehicles, plant or equipment. The vehicular maintenance access shall be located to avoid impact on mature trees.
BAREL.04	The above-ground structures shall be positioned in a planting and landform scheme sympathetic to the character of a tree-dominated backdrop and amenity grass (playing field) foreground, when viewed from within the playing fields, as illustrated on the indicative landscape plan.
BAREL.05	The extent of hardstanding shall be reduced as far as practicable to maintain the character of the playing fields and reduce surface water run-off.
BAREL.06	There shall be no security fence; therefore the structures shall be designed to be publicly accessible. The designs shall make provision for high security doors and manhole covers, as well as an appropriate void ratio for the cladding of the structure.
BAREL.07	The design shall accommodate the raised level required for the shaft and other hydraulic structures in a grass covered hardstanding area for operational maintenance, capable of supporting heavy plant.
BAREL.08	The signature design ventilation column shall not be used. The electrical and control kiosk and ventilation column shall be combined into a single structure. The combined structure shall have a brown roof and the walls shall be finished to promote biodiversity.
BAREL.09	No lighting shall be provided, except a low level light to the kiosk doors to allow access for maintenance purposes in the hours of darkness. This light shall only be activated by a directional motion control switch, linked to the door opening.
BAREL.10	Landscaping shall include semi-improved acid to neutral grassland to promote biodiversity around operational structures and along the operational access road without impinging on the use of the playing fields. A maintenance schedule shall be produced and implemented in such areas.
BAREL.11	A minimum of 15 bat boxes shall be installed in re-provided trees and on existing trees in order to promote biodiversity. New trees shall be of an appropriate height and growth pattern in order to physically accommodate bat boxes and to increase the chance of successful use by bats.
BAREL.12	A minimum of ten bird boxes for small bird species shall be attached to mature trees or dense shrub/under storey species may be planted in order to promote biodiversity. A maintenance schedule for bird boxes and shrub planting shall be produced and implemented.

4.4 Putney Embankment Foreshore

Table 4.7 Generic site information

Site name: Putney Embankment Foreshore	
DCO Work No.	5
Generic design principles	Principles that do not apply
Integration of functional components	None (ie, all principles apply)
Heritage principles	None (ie, all principles apply)
Riparian and in-river structure principles	None (ie, all principles apply)
Landscape design principles	None (ie, all principles apply)
Lighting design principles	None (ie, all principles apply)
Site drainage principles	SDRN.03 and SDRN.04

Table 4.8 Putney Embankment Foreshore site-specific design principles

Reference	Site-specific design principles
PUTEF.01	In order to minimise the visual and physical impact on the listed bridge, the top of the interception chamber shall sit below the springing point of the bridge arch and be as small as possible. The interception chamber shall be set back from the main bridge elevations as far as possible to maintain the architectural integrity of the existing bridge.
PUTEF.02	The interception chamber shall be finished in high quality, fair-faced concrete that complements the existing finish of the bridge.
PUTEF.03	In order to minimise the size of the CSO interception chamber (see PUTEF.01 above) and maintain hydraulic integrity, there shall be no openings such as access covers and flap valve openings in the structure.
PUTEF.04	Level access to the shaft foreshore structure shall be provided for maintenance vehicles via the Embankment/Lower Richmond Road.
PUTEF.05	The surface of the foreshore structure shall sit at or above current flood defence level.
PUTEF.06	The electrical and control equipment shall be housed in two structures. The main kiosk shall be located on Waterman's Green and a smaller kiosk on the foreshore structure.
PUTEF.07	The design and materials of the facades of the main kiosk shall match the existing bridge abutment wall. The design and layout of this kiosk shall accommodate the continued use of an existing ventilation louvre located within the abutment wall.
PUTEF.08	The main kiosk shall be as narrow in depth as possible (ie, to minimise the extent to which it protrudes off the existing wall) to maximise space on Waterman's Green.

Reference	Site-specific design principles
PUTEF.09	The cable and ducting route to the main kiosk shall run partially beneath Waterman's Green but mostly beneath the pavement and road surface in order to protect tree roots and avoid disturbance to the Green.
PUTEF.10	Maintenance access to the main kiosk shall be on foot via Waterman's Green; no vehicular access shall be provided, except in emergencies when vehicles would need to park on the adjacent public drawdock/slipway or carriageway.
PUTEF.11	No new lighting shall be provided to Waterman's Green except for a low level light to the kiosk doors to allow access for maintenance purposes in the hours of darkness. This light shall only be activated by a directional motion control switch, linked to the door opening.
PUTEF.12	The kiosk on the foreshore structure shall be positioned to mark the western junction with the existing embankment and mediate the level change between the pavement and the foreshore structure. It shall be finished in way that enhances the public realm with the inclusion of public art, possibly incorporating historic interpretive information on the area and maritime events. Any public art at this site shall be procured in close collaboration with the local authority's Arts Team.
PUTEF.13	The design of the interception ventilation column (positioned on the listed bridge) shall be appropriate to the listed structure and in keeping with the character of surrounding street furniture.
PUTEF.14	The layout of the permanent works shall minimise any visual and physical effects on the existing slipway and avoid the need for alterations. Any slipway materials that are disturbed by the works shall be removed with care, stored and reinstated to the existing standard. The works shall not prejudice the possibility of widening the slipway in the future by others.
PUTEF.15	Provision shall be made for the potential extension of the platform to reduce the accumulation of sediment/debris in the foreshore area between the existing river walls and the foreshore structure.
PUTEF.16	The edge treatment of the foreshore structure shall facilitate the mooring of vessels, except immediately in front of the new CSO outfall where mooring is prohibited. The handrail shall be set back from the river's edge and it shall not incorporate any removable sections, except for vessel loading, if required.
PUTEF.17	The foreshore structure sits on the starting line of the University Boat Race. The University Boat Race stone shall be retained in its current position. A physical marker shall run from the stone to the new river wall. The marker shall have a detailed treatment and could feature as a work of public art.
PUTEF.18	The design of the kiosk on the foreshore structure shall incorporate a segregated electrical connection that is protected against water for use by the local authority.

Reference	Site-specific design principles
PUTEF.19	The river wall of the permanent foreshore structure shall be finished in natural stone with vertical timber fenders on the outer face and horizontal fenders on the upstream and downstream faces.
PUTEF.20	The listed bollards shall be carefully removed, stored and reinstated. They shall be relocated in the vicinity of their current positions in keeping with the revised layout and access requirements.
PUTEF.21	The size and layout of the foreshore structure shall allow for a pier to be constructed from it in the future by others. The design shall also include provision of an access zone across the structure to Putney Embankment during project maintenance activities.
PUTEF.22	The foreshore structure shall facilitate the loading and unloading of vessels at its eastern end. Above-ground structures shall not be located in this area to ensure this activity is unobstructed.
PUTEF.23	The Holly tree that would be removed from Waterman’s Green during construction shall be replaced with another tree at a location to be agreed with the local authority.
PUTEF.24	Bat boxes for common pipistrelle and soprano pipistrelle bats shall be attached to trees on and adjacent to the site. They shall be located to ensure that they would not be disturbed during construction and to avoid disturbance from lighting.

4.5 Dormay Street

Table 4.9 Generic site information

Site name: Dormay Street	
DCO Work No.	8
Generic design principles	Principles that do not apply
Integration of functional components	FNCC.03 and FNCC.04
Heritage principles	All (ie, no principles apply)
Riparian and in-river structure principles	IRVR.03, IRVR.10 and IRVR.12
Landscape design principles	LSCP.01 to LSCP.04 and LSCP.06 to LSCP.09
Lighting design principles	All (ie, no principles apply)
Site drainage principles	SDRN.03 and SDRN.04

Table 4.10 Dormay Street site-specific design principles

Reference	Site-specific design principles
DRMST.01	The electrical and control kiosk and ventilation column shall be combined into a single structure. The signature design ventilation column shall not be used.
DRMST.02	No operational lighting shall be provided to the Thames Water works except for a low level light to the kiosk doors to allow access for maintenance purposes in the hours of darkness. This light shall only be activated by a directional motion control switch linked to the door opening.
DRMST.03	Existing operational lighting to the depot areas shall be retained or reinstated.
DRMST.04	Thames Water vehicular maintenance access shall be required from Dormay Street.
DRMST.05	The permanent works shall be positioned to allow for the future provision of a river walkway with a minimum width of 4m from the edge of the kiosk to the river wall.
DRMST.06	A detailed assessment of the existing river wall shall be carried out prior to construction. Should the wall require strengthening, substantial renovation or rebuilding, it shall be reconstructed to enable provision for biodiversity. Furthermore, it shall be designed to support the forecast raised flood defence levels stipulated in the Environment Agency's Thames Estuary 2100 Guidance. The wall finishes shall relate to the surroundings and in agreement with the Environment Agency, the wall shall incorporate horizontal fenders to enable accretion and potential habitat for vegetation and invertebrates.

Reference	Site-specific design principles
DRMST.07	An operational refuge shall be provided around the kiosk and a valve chamber using bollards to maintain 24-hour access and to protect against vehicle strike, unless agreed otherwise in writing with the local authority.
DRMST.08	A section of river wall on the southern side of Bell Lane Creek east of the shaft location shall be altered at the end of the construction period to incorporate an inter-tidal terrace.
DRMST.09	Replacement tree and scrub planting shall be provided for vegetation lost during construction adjacent to Bell Lane Creek to restore the corridor for the movement of and foraging resource for bats, and a nesting and foraging resource for birds.

4.6 King George's Park

Table 4.11 Generic site information

Site name: King George's Park	
DCO Work No.	9
Generic design principles	Principles that do not apply
Integration of functional components	None (ie, all principles apply)
Heritage principles	All (ie, no principles apply)
Riparian and in-river structure principles	All (ie, no principles apply)
Landscape design principles	None (ie, all principles apply)
Lighting design principles	LTNG.02 and LTNG.03
Site drainage principles	SDRN.02, SDRN.04 and SDRN.05

4.6.1 Thames Water shall develop detailed landscape proposals in agreement of the London Borough of Wandsworth. The proposals may include tree planting within the park in advance of site clearance and construction in order to screen views. Advanced tree planting shall include measures such as bat boxes to reduce impacts on biodiversity. Post construction, planting shall be maintained by the London Borough of Wandsworth.

Table 4.12 King George's Park site-specific design principles

Reference	Site-specific design principles
KNGGP.01	The planting and landscape design shall reinforce edge planting at the park boundaries within the site boundary. The existing cast iron railings and gates shall be re-used, where possible and practicable, as part of the new park boundary fronting Buckhold Road.
KNGGP.02	The existing avenue of trees along the eastern edge of the park, which terminates at the north end with Black Poplar and Red Oak trees, shall be retained, with the exception of trees shown on the Demolition plan for removal and the possible pruning of the Red Oak.
KNGGP.03	The design shall consider and accommodate plans for alternative/additional pedestrian access to the park at the corner of Neville Gill Close and Buckhold Road as shown on the indicative Landscape Plan, to be agreed in more detail with the local authority.
KNGGP.04	The design shall link the following points and ensure the links are easy to follow for pedestrians and respond to the future development of the northern end of the park: <ul style="list-style-type: none"> a. the existing main gates b. the path to the west of the lake c. the path to the east of the lake

Reference	Site-specific design principles
	<p>d. the reconfiguration of the entrance and footpaths at the northern end of the park (see above).</p>
KNGGP.05	<p>The area of hardstanding shall be reduced as far as practicable. All new paths and areas of hardstanding shall be surfaced in resin bonded gravel, wherever possible and practicable. The exact specification shall be agreed with the local planning authority.</p>
KNGGP.06	<p>The design shall maximise the amount of soft landscaping within the site boundary to maintain the character of the park and improve surface water drainage. At least four specimen trees shall be used along the north western boundary.</p>
KNGGP.07	<p>Maintenance vehicle access for Thames Water shall be via Neville Gill Close.</p>
KNGGP.08	<p>The design shall accommodate the raised level required for the shaft and interception structures within a coherent landscape design for the park.</p>
KNGGP.09	<p>The John Young tree and memorial bench shall be protected and retained in its current position in the final design.</p>
KNGGP.10	<p>The design shall incorporate the provision of a separate secure power and water supply to the area of hardstanding installed as part of the project for use by the local planning authority for a mobile café if required.</p>
KNGGP.11	<p>A low level light shall be provided to the kiosk doors to allow access for maintenance purposes in the hours of darkness. This light shall only be activated by a directional motion control switch, linked to the door opening. In addition, low level lighting shall be provided at the entrance, along the steps around the permanent platform of the works.</p>
KNGGP.12	<p>The design shall incorporate re-contouring of the site to improve flood plain flow characteristics as agreed with the Environment Agency. This would require part of the existing site adjacent to the shaft to be lowered by up to 700mm. Re-contouring shall be in keeping with the character of the park and the overall landscape design for the site. Any approved Environment Agency Flood Alleviation Scheme should be considered during construction, with designs amended accordingly, wherever practical.</p>
KNGGP.13	<p>On completion of the works approaches such as gaps in fence bottoms and railings shall be provided where appropriate, in order to allow hedgehogs free transit through the site.</p>
KNGGP.14	<p>The landscape design shall include suitable ground treatment and planting structures in order to promote natural colonisation by terrestrial invertebrates. Replacement trees shall include semi-mature and specimen trees.</p>

Reference	Site-specific design principles
KNGGP.15	Advanced planting shall be undertaken prior to site clearance and construction in order to partially screen views of the site during construction. The advanced planting shall comprise tree planting along the path that runs adjacent to the lake and continues for a short distance where the path forks towards Buckhold Road and towards the site. This advanced planting would be retained in the operational phase.

4.7 Carnwath Road Riverside

Table 4.13 Generic site information

Site name: Carnwath Road Riverside	
DCO Work No.	6
Generic design principles	Principles that do not apply
Integration of functional components	FNCC.03
Heritage principles	HRTG.02, HRTG.06, HRTG.07 and HRTG.08
Riparian and in-river structure principles	None (ie, all principles apply)
Landscape design principles	None (ie, all principles apply)
Lighting design principles	LTNG.02 and LTNG.03
Site drainage principles	SDRN.03 and SDRN.04

Table 4.14 Carnwath Road Riverside site-specific design principles

Reference	Site-specific design principles
CARRR.01	The works shall retain the existing surface water drainage regime as far as possible.
CARRR.02	The surface of the shaft shall be incorporated into a new area of landscaped public space that can be integrated into the wider development of the area. The top of the shaft slab shall be buried 1m below the finished surface level to enable tree planting and soft landscaping.
CARRR.03	The new public area shall strengthen the links between Carnwath Road and the river by improving visual and pedestrian permeability across the site.
CARRR.04	The landscape treatment shall screen the space from the traffic effects of Carnwath Road allowing for framed views.
CARRR.05	The ventilation building and the separate ventilation column shall either be positioned on the eastern boundary of the site to create a buffer between Whiffin Wharf and the adjacent safeguarded wharf or, if it can be integrated into a development of the site by others.
CARRR.06	The architectural treatment of the ventilation building and boundary shall coordinate with and complement the landscape design for the space.
CARRR.07	A detailed assessment of the existing river wall shall be carried out prior to construction. Should it require rebuilding or strengthening as a result of the project works, it shall be constructed to enable provision to be made for biodiversity.

Reference	Site-specific design principles
CARRR.08	All shaft access openings and covers shall be located within the boundary of Whiffin Wharf.
CARRR.09	The ventilation column shall stand a maximum of 15m high and have a minimum proportion of 1:4 (girth to height). The ventilation column shall be maintainable from the outside, eg, for the replacement of any lighting cabling, conduits and cladding.
CARRR.10	The height and cross-section of the ventilation requirements at this site preclude the use of the signature design ventilation column. However, the form and design of the column shall make a visual reference to the signature design for consistency with other sites.
CARRR.11	The design of the ventilation column shall mark it as a local landmark and enhance the local townscape. In particular, it should mark a 'moment' from the river. If the final design for the ventilation column incorporates lighting, any provisions deemed necessary by the Civil Aviation Authority shall be accommodated as the site is on the approach to Battersea Heliport.
CARRR.12	Lighting shall be provided to the Thames Path and new public area in accordance with the lighting design principles.
CARRR.13	The site layout shall leave sufficient space to accommodate a feasible footprint for residential development at the western end of the Whiffin Wharf site. No operational assets, buried or otherwise, shall be sited west of the shaft's external diameter.
CARRR.14	The layout of the permanent works shall not compromise the viability of the future use of Hurlingham Wharf as a safeguarded wharf, in accordance with its designation by the Greater London Authority.
CARRR.15	New hand railing shall be provided on the river wall in accordance with ROSPA guidance.
CARRR.16	The building and boundary to the eastern edge of Whiffin Wharf shall be clad in the same high quality materials. The selection of materials shall comply with the <i>Sands End Conservation Area Appraisal</i> for the river corridor.
CARRR.17	London Plane trees shall be used where appropriate, to supplement native planting and enhance the landscape design of the site.
CARRR.18	The four trees proposed for removal to facilitate the Carnwath Road/Wandsworth Bridge Road junction improvement shall be replaced as close as possible to their existing locations.
CARRR.19	High quality secure hoardings shall be left around the boundary of Hurlingham Wharf and the Carnwath Road industrial area.
CARRR.20	The roof of the ventilation building shall be mono-pitched and feature water collection along the western perimeter to make maintenance easier.

Reference	Site-specific design principles
CARRR.21	The Riverside Walkway shall be a minimum width of 6m along the river frontage of Whiffin Wharf, excepting the ventilation column which encroaches into this width.
CARRR.22	There shall be no vehicular access to the new area of public realm except for project maintenance purposes unless agreed otherwise with the appropriate authority.
CARRR.23	Nesting features shall be provided at appropriate locations on-site for nesting black redstarts. This has the potential to increase the population of this species of conservation concern in London and the UK.

4.8 Falconbrook Pumping Station

Table 4.15 Generic site information

Site name: Falconbrook Pumping Station	
DCO Work No.	10
Generic design principles	Principles that do not apply
Integration of functional components	None (ie, all principles apply)
Heritage principles	All (ie, no principles apply)
Riparian and in-river structure principles	All (ie, no principles apply)
Landscape design principles	None (ie, all principles apply)
Lighting design principles	LTNG.02 and LTNG.03
Site drainage principles	SDRN.02, SDRN.03 and SDRN.05

- 4.8.1 Tree planting shall be undertaken within the park in advance of site clearance and construction to screen views of the Pumping Station. This shall be agreed in consultation with the London Borough of Wandsworth. Advanced tree planting shall include measures such as bat boxes to reduce impacts on biodiversity. Planting shall be maintained in the long-term by the London Borough of Wandsworth.

Table 4.16 Falconbrook Pumping Station site-specific design principles

Reference	Site-specific design principles
FALPS.01	The area outside the compound shall be publicly accessible at night, so new lighting shall be provided in accordance with the lighting principles.
FALPS.02	The design shall accommodate the raised level required for the shaft and combined valve/interception structures.
FALPS.03	Thames Water operational vehicular maintenance access shall be through York Gardens to the east.
FALPS.04	The existing pumping station compound wall shall be reinstated in its current position. An open section of wall with railings shall be incorporated to provide a line of sight between the pumping station compound and the shaft. Demountable railing/gated access shall be provided adjacent to the raised interception chamber structure to allow maintenance access.
FALPS.05	Pedestrian only access shall be provided to the area outside of the pumping station compound area, except for maintenance access by Thames Water vehicles.
FALPS.06	The design of the ventilation column shall be bespoke as the column would be located in the pumping station compound.
FALPS.07	The landscape design shall respond positively to the local authority's emerging Landscape Management Strategy for the York Gardens area.

Reference	Site-specific design principles
FALPS.08	Advanced planting shall be undertaken prior to site clearance and construction at the perimeter of the pumping station compound in order to screen views of the Pumping Station and Sub Station buildings and the compound. The advanced planting shall comprise tree planting, which would be retained in the operational phase.
FALPS.09	Planting shall comprise native deciduous trees and other robust, low-maintenance shrubs that provide seasonal variety. The scheme shall also facilitate the local authority's aspiration to improve the biodiversity value of York Gardens.
FALPS.10	The existing advertising screen shall be permanently removed.
FALPS.11	Cobbles from the existing paving in the area around the pumping station shall be reused in the final proposals.
FALPS.12	The entrance gates to the pumping station compound may be relocated along the southern façade to accommodate the functional requirements.
FALPS.13	A pedestrian access from York Way to York Gardens shall be reinstated.
FALPS.14	Bat boxes for a range of bat species shall be provided at suitable locations in York Gardens. The number of bat boxes, locations and method of attachment to trees shall be agreed with the local authority.
FALPS.15	Ground treatments shall incorporate areas of shaded, exposed earth to promote natural colonisation by terrestrial invertebrates.

4.9 Cremorne Wharf Depot

Table 4.17 Generic site information

Site name: Cremorne Wharf Depot	
DCO Work No.	11
Generic design principles	Principles that do not apply
Integration of functional components	FNCC.04
Heritage principles	HRTG.07 and HRTG.08
Riparian and in-river structure principles	IRVR.01 to IRVR.03, IRVR.05 to IRVR.07, IRVR.10 and IRVR.12
Landscape design principles	All (ie, no principles apply)
Lighting design principles	All (ie, no principles apply)
Site drainage principles	SDRN.03 and SDRN.04

4.9.1 In order to construct the works, Thames Water would need to demolish the existing depot facilities, which it proposes to reinstate. However, it was not possible to determine a full brief for such facilities and the landowner is unclear as to what they would require in terms of facilities upon completion. Therefore consent is being sought for the principle of a reinstated depot building and its maximum height and massing, without any further details.

Table 4.18 Cremorne Wharf Depot site-specific design principles

Reference	Site-specific design principles
CREWD.01	On completion of the project, the depot facilities shall be reinstated unless agreed otherwise with the landowner.
CREWD.02	The footprint, scale and design of the reinstated depot facilities shall respect the historic setting of the listed pumping station.
CREWD.03	The layout of the permanent works shall not compromise the viability of the site as a safeguarded wharf, in accordance with its designation by the Greater London Authority.
CREWD.04	The signature design ventilation columns shall be located as close to the river as practicable. The vent columns shall not be flood lit.
CREWD.05	Electrical and control equipment located in the Lots Road pumping station shall be freestanding away from the existing tiled walls. The tile wall finish to the pumping station shall not be removed unless approved by the local planning authority.
CREWD.06	A local control pillar shall be located externally, adjacent to the rear wall of the Thames Water pumping station building with a line of sight to the access covers for the CSO interception structure.
CREWD.07	Lighting for the reinstated depot building shall be provided as existing and shall only be for operational and safety reasons.

Reference	Site-specific design principles
CREWD.08	Connections between the project works and the electrical and control equipment in the Lots Road Pumping Station shall be made underground.
CREWD.09	The design of the ventilation column to the valve and interception chambers shall make use of the existing concrete ventilation stack on the southeast corner of the Lots Road Pumping Station building. The connection into the stack shall be made underground and the ventilation stack shall be sympathetically modified or replaced to preserve and enhance the listed pumping station.
CREWD.10	Subject to the agreement of the landowner and the depot's operational requirements, bat roost features for common pipistrelle and soprano pipistrelle bats shall be installed on-site.
CREWD.11	Subject to the agreement of the landowner, nest boxes/ledges shall be installed in the replacement building to potentially attract a range of bird species, including the Black Redstarts and Grey Wagtails (an Amber List species).
CREWD.12	No boxes or ledges for birds/bats shall be attached or made within the existing Grade II listed pumping station.
CREWD.13	The site restoration shall minimise the amount of visual clutter and street furniture and provide a 4m clear strip along the river frontage for the future provision of a Thames Path by others.

4.10 Chelsea Embankment Foreshore

Table 4.19 Generic site information

Site name: Chelsea Embankment Foreshore	
DCO Work No.	12
Generic design principles	Principles that do not apply
Integration of functional components	FNCC.09
Heritage principles	HRTG.01, HRTG. 02 and HRTG.08
Riparian and in-river structure principles	IRVR.06 and IRVR.12
Landscape design principles	LSCP.15
Lighting design principles	LTNG.06
Site drainage principles	SDRN.03 and SDRN.04

Table 4.20 Chelsea Embankment Foreshore draft site-specific design principles

Reference	Site-specific design principles
CHEEF.01	The new river wall and parapet materials shall match the stone and brick of the existing wall.
CHEEF.02	The foreshore structure shall incorporate terraces that provide either inter-tidal habitat or floodable public realm which incorporates planting. The design shall aim to minimise maintenance requirements and the risks of litter accumulation.
CHEEF.03	The landscape design shall replace the trees removed along the Embankment with the same number of semi-mature London Planes along the Embankment or in the Bull Ring. A gap in the line of the existing London Plane trees shall be retained as part of the landscape scheme to facilitate views between the river and Royal Hospital Chelsea.
CHEEF.04	The design shall discourage use of the foreshore structure as a bus/coach drop off.
CHEEF.05	The proposed signature design ventilation columns, electrical and control kiosks, and trees shall be located away from the axis of Monument Walk to enable views along Monument Walk to and from the river, as well as to and from the Royal Hospital.
CHEEF.06	The carriageway and 'roundabout' between the Bull Ring gates and the Chelsea Embankment (A3212) shall be repaved to match the new foreshore structure in natural stone without compromising the safe operation of the red route and bus turning. To the north of the Bull Ring, the existing bollards shall be retained in position and new paving to the footway shall match the existing.

Reference	Site-specific design principles
CHEEF.07	The existing pedestrian crossing (refuge) to the east of the Bull Ring gates shall be relocated further east as part of the overall landscaping scheme and shall provide the same facilities as existing.
CHEEF.08	The landscape design shall minimise the amount of visual clutter and street furniture.
CHEEF.09	Timber fenders shall not be provided as they are inappropriate to the character of this stretch of the river wall.
CHEEF.10	The existing parish boundary marker shall be reinstated on the new river wall.
CHEEF.11	No railings shall be provided on top of the new river wall parapet around the axis from the Royal Hospital, in order to ensure views between the river and the Royal Hospital are uninterrupted.
CHEEF.12	Interpretive historical material and information that references the lost river (Westbourne) shall be carefully designed and integrated into the site, and agreed with the local authority.
CHEEF.13	The landscape works around and above the low level sewer connection shall be graded to blend in with existing levels.
CHEEF.14	The boundary treatment of Ranelagh Gardens shall include a gate for utility company maintenance access. The new wall, railings and gate shall be designed to match the existing walls and railings.
CHEEF.15	The design and provision of any seating shall discourage rough sleepers.
CHEEF.16	Pre-established planting shall be used in the terraces.
CHEEF.17	The signature design ventilation columns shall not be flood lit.
CHEEF.18	The kiosks shall be integrated into the design of the new river wall parapet, in order to minimise visual clutter on the site.

4.11 Kirtling Street

Table 4.21 Generic site information

Site name: Kirtling Street	
DCO Work No.	13
Generic design principles	Principles that do not apply
Integration of functional components	FNCC.02, FNCC.03, FNCC.07 to FNCC.09
Heritage principles	All (ie, no principles apply)
Riparian and in-river structure principles	All (ie, no principles apply)
Landscape design principles	LSCP.04 and LSCP.07
Lighting design principles	LTNG.02 and LTNG.03
Site drainage principles	SDRN.02, SDRN.03, SDRN.04 and SDRN.05.

4.11.1 Once the site is operational, Thames Water shall return it to the current owner/operator of the wharf, who would reconfigure the site in accordance with their own planning permission. An agreement with the owner/operator would ensure that Thames Water shall have access to the shaft, covers and above-ground structures at all times.

4.11.1 It is assumed that streetscape improvements would be provided by others in accordance with the Mayor of London's *Vauxhall/Nine Elms/Battersea Opportunity Area Planning Framework* public realm strategy for the area. Therefore, interim street surfacing and lighting would be provided and agreed with the local authority.

Table 4.22 Kirtling Street site-specific design principles

Reference	Site-specific design principles
KRTST.01	No operational lighting shall be provided, except for the concrete batching plant and a low level light to the electrical and control kiosk doors to allow access for maintenance purposes in the hours of darkness. This light shall only be activated by a directional motion control switch, linked to the door opening.
KRTST.02	No landscape works shall be undertaken except for new tree planting on Kirtling and Cringle Streets (subject to the agreement of the highway authority) and interim provision of signage for the Thames Path.
KRTST.03	The electrical and control kiosk and ventilation column shall be combined in a single structure. The signature design ventilation column shall not be used.
KRTST.04	The layout of the permanent works shall not compromise the viability of the future use of the site as a safeguarded wharf, in accordance with its designation by the Greater London Authority.

Reference	Site-specific design principles
KRTST.05	The final access arrangement and fence design for Kirtling Wharf shall be determined by the site owner and operator and agreed with Thames Water and the London Borough of Wandsworth.
KRTST.06	Maintenance vehicle access for Thames Water shall be from Kirtling Street.
KRTST.07	The materials and design of any reinstatement works outside of Kirtling Wharf shall be consistent with the Riverlight development in order to support a coherent public realm in the area.
KRTST.08	At the end of construction, Thames Water shall secure those parts of the site that are not public highway or concrete batching plant with high quality secure hoardings.
KRTST.09	The location of the permanent structures shall not compromise the future provision of a riverside Thames Path (by others).
KRTST.10	The combined ventilation and electrical and control kiosk structure shall preferably be located within the eastern zone identified on the Site works parameter plan in order to allow safe and unrestricted access for Thames Water maintenance and provide further flexibility for the sites future use.

4.12 Heathwall Pumping Station

Table 4.23 Generic site information

Site name: Heathwall Pumping Station	
DCO Work No.	14
Generic design principles	Principles that do not apply
Integration of functional components	FNCC.02, FNCC.07, FNCC.08 and FNCC.09
Heritage principles	All (ie, no principles apply)
Riparian and in-river structure principles	None (ie, all principles apply)
Landscape design principles	None (ie, all principles apply)
Lighting design principles	LTNG.02 and LTNG.03
Site drainage principles	SDRN.03 and SDRN.04

Table 4.24 Heathwall Pumping Station site-specific design principles

Reference	Site-specific design principles
HEAPS.01	A new, publicly accessible riverside walkway shall be constructed between Middle Wharf and the Riverlight development for access to the foreshore structure. Provision shall be made for its closure during essential maintenance activities, and the operation of the safeguarded wharf if required. A diversion via Nine Elms Lane (along the route of the existing Thames Path) shall be clearly signposted when the riverside walkway is closed.
HEAPS.02	Safe and secure access shall be provided for future users of Middle Wharf across the riverside walkway and over the river wall to their jetty.
HEAPS.03	The riverside walkway shall be as wide as possible (minimum of 4m, if practicable) without compromising the operation of the safeguarded wharf and Thames Water activities, or without encroaching into the River Thames.
HEAPS.04	Materials and furniture in the public realm shall be in accordance with the public realm strategy in the <i>Vauxhall Nine Elms Battersea Opportunity Area Planning Framework</i> and shall coordinate with materials used in the adjacent St James Riverlight development.
HEAPS.05	Barbed wire shall be removed from the boundary and Pumping Station walls and replaced with a suitable and appropriate security measure, for compliance with Thames Water security requirements. The Pumping Station and boundary wall shall be cleaned and painted as necessary.
HEAPS.06	The treatment of the wall at the western end of the Middle Wharf site shall coordinate with that provided by the Riverlight developers.
HEAPS.07	The substation/office structure on Middle Wharf shall be retained.

Reference	Site-specific design principles
HEAPS.08	New trees shall be planted on Nine Elms Lane in accordance with the public realm strategy in the <i>Vauxhall Nine Elms Battersea Opportunity Area Planning Framework</i> and positioned to minimise disruption to existing utilities in the footway.
HEAPS.09	New lighting to the riverside walkway and foreshore structures shall be provided in accordance with the generic lighting principles. Luminaries shall be chosen to tie in with the Riverlight development.
HEAPS.10	High quality fencing shall be provided to the southern (back) edge of the riverside walkway. The fencing shall incorporate secure access gates to the pumping station and Middle Wharf. The fencing finishes shall tie in with the adjacent Riverlight development.

4.13 Albert Embankment Foreshore

Table 4.25 Generic site information

Site name: Albert Embankment Foreshore	
DCO Work No.	15
Generic design principles	Principles that do not apply
Integration of functional components	FNCC.02, FNCC.09
Heritage principles	None (ie, all principles apply)
Riparian and in-river structure principles	IRVR.03 and IRVR.12
Landscape design principles	LSCP.15
Lighting design principles	None (ie, all principles apply)
Site drainage principles	SDRN.03 and SDRN.04

Table 4.26 Albert Embankment Foreshore site-specific design principles

Reference	Site-specific design principles
ALBEF.01	Access to Lack's Dock shall be retained for London Duck Tours Ltd and their security kiosk and vehicle barrier shall be reinstated in its existing location.
ALBEF.02	Any planting along Lack's Dock lost during construction shall be replaced.
ALBEF.03	The design shall respect the character and setting of the Grade II* listed Vauxhall bridge. In order to minimise effects on the setting of the bridge, the top of the interception structure (excluding vent columns) shall be below the springing point of the bridge arch.
ALBEF.04	Inter-tidal habitat shall be provided on the terraces around the interception structure. The design of the inter-tidal habitat and terraces shall be designed to: <ul style="list-style-type: none"> a. minimise the accumulation of litter b. use pre-established planting c. have minimum fixings into the listed bridge abutment d. have an attractive appearance in an un-vegetated state e. discourage access and climbing from the foreshore onto the top of the structure f. require minimal maintenance.
ALBEF.05	The interception structure and terraces shall be 'bedded' into the foreshore by rocks and boulders to provide habitat for fish species.

Reference	Site-specific design principles
ALBEF.06	Unless otherwise agreed there shall be no public access to the top of the interception structure. Level maintenance access shall be provided for Thames Water through the existing river wall via a secure gate from the Thames Path. The gate shall be the same height as the handrail on the existing river wall.
ALBEF.07	The new shaft structure shall be publicly accessible except during essential maintenance when it would be closed to the public.
ALBEF.08	The main electrical and control kiosk (interception structure) shall be located in the secure area below Vauxhall Bridge and shall not be attached to the listed bridge. A low level light shall be provided to the kiosk doors to allow access for maintenance purposes in the hours of darkness. This light shall be activated by a directional motion control switch, linked to the door opening.
ALBEF.09	Secure fencing to the area below the bridge shall be reinstated to match the existing like-for-like.
ALBEF.10	At the shaft location the public realm shall be elevated to the existing flood defence level to encourage views across the river to the Palace of Westminster World Heritage Site and Tate Britain.
ALBEF.11	In order to widen and improve the Thames Path, the area of existing Thames Path that passes below Camelford House shall be diverted over the new foreshore structure. The undercroft area shall be enclosed and shall not be publically accessible, subject to agreement with the landowner. The Thames Path shall be a minimum width of 4m across the new shaft structure.
ALBEF.12	The kiosk on the shaft structure shall be located in the proposed tree line.
ALBEF.13	Seating shall be positioned to maximise views of views of the Palace of Westminster World Heritage Site.
ALBEF.14	Three new semi-mature London Plane trees shall be planted on the shaft structure to separate the Thames Path from the seating area.
ALBEF.15	Removable bollards shall be provided along the northern edge of the entry to Lack's Dock to allow vehicular access to the shaft structure for maintenance purposes. Vehicle access to the shaft structure in the foreshore shall also be via Lack's Dock. The landscape design shall include provision for a vehicle to turn around on the shaft structure.
ALBEF.16	Interpretive materials and information on the views and historic interest of the site shall be incorporated into the permanent works.

Reference	Site-specific design principles
ALBEF.17	Existing lighting on the Thames Path shall be reinstated as appropriate in accordance with the overall lighting design.
ALBEF.18	Existing paving in front of the Vauxhall Cross building shall be reinstated in accordance with the landscape scheme for the site.
ALBEF.19	The new river walls to the interception chamber and shaft structures shall be finished in high quality fair faced concrete.
ALBEF.20	Paving to the top of the interception structure shall be imaginatively designed to reference the lost river Effra and to be attractive when viewed from the bridge above.

4.14 Victoria Embankment Foreshore

Table 4.27 Generic site information

Site name: Victoria Embankment Foreshore	
DCO Work No.	16
Generic design principles	Principles that do not apply
Integration of functional components	FNCC.04
Heritage principles	None (ie, all principles apply)
Riparian and in-river structure principles	IRVR.06
Landscape design principles	LSCP.15 and LSCP.16
Lighting design principles	None (ie, all principles apply)
Site drainage principles	SDRN.03 and SDRN.04

Table 4.28 Victoria Embankment Foreshore site-specific design principles

Reference	Site-specific design principles
VCTEF.01	The new river wall shall be finished in granite blocks to tie in with the existing wall.
VCTEF.02	Replacement trees planted on the embankment shall be semi-mature London Planes. Additional trees shall be planted on the structure to provide shade and improve the microclimate.
VCTEF.03	The sturgeon lamp standards shall be reinstated in their current position except where the permanent structure is located in which case their re-use would be agreed with the local authority.
VCTEF.04	The listed (sphinx) benches on the Victoria Embankment shall be reinstated and repositioned to either side of the new foreshore structure. If this is not possible, their re-use would be agreed with the local authority.
VCTEF.05	The proposed seating shall be positioned to maximise views over the river towards the Palace of Westminster World Heritage Site.
VCTEF.06	The coach parking on Victoria Embankment shall be reinstated where practicable.
VCTEF.07	The festoon lighting on Victoria Embankment shall be reinstated as far as possible and terminate either side of the structure. New lighting shall be designed in consultation with local authority and English Heritage.
VCTEF.08	The electrical and control kiosk(s) and small amenity buildings (to be operated by others) shall be located on the line of the existing river wall.
VCTEF.09	The kiosks shall be clad in natural stone that is appropriate to the setting and include a planted roof.

Reference	Site-specific design principles
VCTEF.10	Both junctions with the existing river wall shall be marked with a shadow gap, designed to limit the accumulation of litter.
VCTEF.11	Paving materials shall be of natural stone appropriate to the setting.
VCTEF.12	The central part of the public realm shall be raised to flood defence level to create viewing platforms towards the Palace of Westminster World Heritage Site.
VCTEF.13	The railing proposed for the front projecting area shall be designed to be visually unobtrusive and would be unglazed.
VCTEF.14	Any public furniture, fencing or railings shall be robust, durable and in keeping with the character of the surrounding townscape.
VCTEF.15	The design of the public realm shall be in accordance with guidance in Westminster Council's <i>Westminster Way - Public Realm Strategy, Design Practice and Principles</i> and <i>Trees and the Public Realm - A Tree Strategy for Westminster</i> , where practicable and unless otherwise agreed with the City Council.
VCTEF.16	<p>The eastern (front projecting area) part of the structure shall be designed to step down to below the flood defence level to create an area of public realm which is occasionally flooded at the highest tides. The steps shall be broad to provide informal seating. The design shall provide a safe means of escape when the lower steps are flooded by the tide.</p> <p>Due to space constraints and the design intent to reflect existing projections in the listed river wall, step free access to this area is not possible.</p>

4.15 Blackfriars Bridge Foreshore

Table 4.29 Generic site information

Site name: Blackfriars Bridge Foreshore	
DCO Work No.	17
Generic design principles	Principles that do not apply
Integration of functional components	FNCC.04
Heritage principles	None (ie, all principles apply)
Riparian and in-river structure principles	IRVR.06
Landscape design principles	LSCP.16
Lighting design principles	None (ie, all principles apply)
Site drainage principles	SDRN.03 and SDRN.04

Table 4.30 Blackfriars Bridge Foreshore site-specific design principles

Reference	Site-specific design principles
BLABF.01	A lift shall be provided between the Thames Path and Blackfriars Bridge to facilitate step free access between Blackfriars Millennium Pier and Blackfriars Station.
BLABF.02	The Thames Path shall be diverted over the new foreshore structure. It shall be level and a minimum width of 4m. The Thames Path east of the Fleet Main CSO shall be a minimum width of 3m.
BLABF.03	Access ramps for the President moorings shall be designed to current standards. They shall bridge over the river wall with minimum physical or visual impact on the listed structure or span from the elevated platform at the western end of the new foreshore structure.
BLABF.04	The coach parking on Victoria Embankment shall be reinstated where practicable.
BLABF.05	The festoon lighting to Victoria Embankment shall be reinstated as far as possible.
BLABF.06	The WCs below the ramp shall be returned to use with new separate entrances.
BLABF.07	The majority of electrical and control equipment shall be located in the undercroft area. A smaller kiosk shall be located closer to the shaft within the line of the existing river wall for equipment that must be located close to the shaft.
BLABF.08	VOIDS below the ramp (both existing and proposed) shall be enclosed with high quality screens designed to be in keeping with the overall architectural and landscape design. Entrances to the main electrical and control equipment kiosk, WCs and specialist sports facility shall be integrated into this screen.

Reference	Site-specific design principles
BLABF.09	Services shall be provided to the undercroft areas to facilitate possible future commercial development (by others).
BLABF.10	The handrail that runs from the western Blackfriars Bridge parapet to the off-ramp from Blackfriars Bridge to Victoria Embankment shall be replaced to tie in with the new development. The fascia of the concrete edge beam shall also be re-clad.
BLABF.11	The western end of the foreshore structure shall be raised above the current flood defence level to create a viewing platform.
BLABF.12	The proposed railings to the western end of the foreshore area shall be designed to be as visually unobtrusive as possible without compromising safety.
BLABF.13	An amenity building (to be operated by others) shall be provided at the western end of the foreshore structure to help animate the space.
BLABF.14	The existing listed sturgeon lamp standards shall be carefully removed, stored and reinstated in their current position as far as possible.
BLABF.15	Trees planted on the Victoria Embankment shall be semi-mature London Planes.
BLABF.16	<p>The landscape design shall seek to educate and encourage informal play and biodiversity. This may include:</p> <ul style="list-style-type: none"> a. A water feature to visually interpret the challenges of surface water management, encourage play and improve the microclimate, subject to suitable maintenance arrangements b. planting to provide shade and improve the microclimate.
BLABF.17	The design shall respect the views from the river to the listed buildings along Victoria Embankment and St Paul's Cathedral beyond.
BLABF.18	The foreshore structure walls shall be finished in natural stone.
BLABF.19	The Lion Heads along the river wall shall be incorporated into the design where possible.
BLABF.20	The pump house shall be removed and not replaced.
BLABF.21	The inter-tidal platform below the bridge shall be inaccessible to the public.
BLABF.22	The existing break in the parapet wall of Blackfriars Road Bridge shall be used to accommodate replacement stairs and a new lift to the eastern side of the bridge. The western replacement stairs shall be positioned to end in the zone of modern additions to the bridge. Both shall be designed to respect the historic character and fabric of the bridge.

4 Site-specific design objectives

Reference	Site-specific design principles
BLABF.23	The junction at the western end of the foreshore structure with the listed wall shall be marked with a 'shadow gap' designed to limit the accumulation of litter.
BLABF.24	Paving materials for areas of public realm shall be of natural stone.
BLABF.25	Vertical timber fenders shall be included in the design of river walls in order to deflect vessels away from the structure.

4.16 Chambers Wharf

Table 4.31 Generic site information

Site name: Chambers Wharf	
DCO Work No.	19
Generic design principles	Principles that do not apply
Integration of functional components	FNCC.02, FNCC.06 and FNCC.07
Heritage principles	All - No principles apply
Riparian and in-river structure principles	IRVR.01, IRVR.03, IRVR.04 and IRVR.06 to IRVR.13
Landscape design principles	LSCP.01 to LSCP.13, LSCP.15 and LSCP.16
Lighting design principles	All (ie, no principles apply)
Site drainage principles	All (ie, no principles apply)

- 4.16.1 The later phases of the approved mixed-use redevelopment and landscaping of the Chambers Wharf site, to be carried out by others, shall commence after the completion of the works on the site.

Table 4.32 Chambers Wharf site-specific design principles

Reference	Site-specific design principles
CHAWF.01	The electrical and control kiosk shall be clad in materials that reflect the future use of this part of the site as public realm.
CHAWF.02	The large access covers shall have temporary infill or be paved with materials provided by the developer to match proposals for the residential development.
CHAWF.03	The site shall not be publicly accessible until the residential development and associated landscaping by others is complete. In the interim, the site shall be left secured against public access but shall allow safe access for maintenance by Thames Water.
CHAWF.04	No lighting shall be provided, except a low level light to the electrical and control kiosk doors to allow access for maintenance purposes in the hours of darkness. This light shall only be activated by a directional motion control switch, linked to the door opening.
CHAWF.05	Permanent handrail/guardings to the river wall shall be provided by the residential developer. Thames Water shall provide a temporary guarding to the new river wall around the maintenance area only to ensure the safety of Thames Water personnel.

Reference	Site-specific design principles
CHAWF.06	The ventilation columns and electrical and control kiosk shall be positioned to minimise the impact on the residential development and circulation within the new public realm and Thames Path (to be provided by the residential developer). The electrical and control kiosk shall be located no closer than 0.8m from the boundary wall of properties in Fountain Green Square.
CHAWF.07	In the event that the approved residential development for the site does not proceed immediately after construction of the operational structures and as an interim stage prior to the construction of the approved residential development, drainage of the permanent works, comprising the footprint of the raised ground level around the above ground structures and top of the shaft and access into site, shall comply with the National Standards for Sustainable Drainage Systems under the Floods and Water Management Act 2010. Drainage of the interim footprint of works shall be designed to drain rain water and so protect the operational structures.

4.17 King Edward Memorial Park Foreshore

Table 4.33 Generic site information

Site name: King Edward Memorial Park Foreshore	
DCO Work No.	24
Generic design principles	Principles that do not apply
Integration of functional components	None (ie, all principles apply)
Heritage principles	HRTH.01, HRTH.02, HRTH.04 and HRTH.06
Riparian and in-river structure principles	None (ie, all principles apply)
Landscape design principles	None (ie, all principles apply)
Lighting design principles	All (ie, no principles apply)
Site drainage principles	SDRN.04

- 4.17.1 Thames Water shall seek to work with the local authority and local stakeholders on the detailed design of the landscape scheme for the park.
- 4.17.2 The existing children's playground shall be permanently relocated prior to construction as shown on the landscape plan. It may be extended and modified as part of the permanent works or located in a different part of the park if agreed by the local authority.
- 4.17.3 Once the permanent access route for the project is open, the existing western end of the Thames Path may become redundant and may be removed in agreement with the local authority to be incorporated in an enhanced landscaping associated with the new section of the Thames Path.

Table 4.34 King Edward Memorial Park Foreshore site-specific design principles

Reference	Site-specific design principles
KEMPF.01	The electrical and control kiosk shall be located no closer than 0.8m from the eastern boundary wall, to avoid interrupting views from the park to the river, and be designed so as not to provide a means of scaling the boundary wall into the adjacent residential development.
KEMPF.02	The permanent access route to the site shall be fully integrated with the landscaping proposals for the park, as part of a new area of public realm and a potential new alignment of a widened Thames Path. It shall be publicly accessible to pedestrians and cyclists only during park opening hours. The entrance at Glamis Road shall be gated when the park is closed.
KEMPF.03	The memorial benches and bandstand shall be reinstated within the park as shown on the Landscape Plan, unless otherwise agreed with the local authority.

Reference	Site-specific design principles
KEMPF.04	The sports pitches shall be reconfigured to accommodate the proposed access arrangements prior to the start of construction.
KEMPF.05	Circulation onto and around the foreshore structure shall be clear and legible and integrated as far as possible with circulation around the park and along the Thames Path.
KEMPF.06	The design shall reinforce the character of the park, specifically by planting large tree species close to the river frontage wherever possible. Existing paths and landscaped areas shall be extended onto the foreshore structure where practicable, in order to integrate it into the surroundings.
KEMPF.07	The park is closed at night, therefore no permanent lighting shall be provided except for a low level light to the kiosk doors to allow access for emergency maintenance purposes in the hours of darkness. This light shall only be activated by a switch, linked to the door opening.
KEMPF.08	The design of the river walls shall not compromise the safety of recreational boat users and shall not incorporate overhangs unless these are adequately fendered.
KEMPF.09	Bird boxes shall be installed on trees to attract a range of bird species.
KEMPF.10	Bat boxes shall be installed on trees to attract species such as common pipistrelle and noctule bats.
KEMPF.11	The proposed permanent access shall be designed to facilitate improved views of the Rotherhithe tunnel ventilation shaft which at the present is not visible from the western end of the Thames Path.

4.18 Earl Pumping Station

Table 4.35 Generic site information

Site name: Earl Pumping Station	
DCO Work No.	21
Generic design principles	Principles that do not apply
Integration of functional components	FNCC.04 and FNCC.06
Heritage principles	All (ie, no principles apply)
Riparian and in-river structure principles	All (ie, no principles apply)
Landscape design principles	LSCP.01 to LSCP.10, and LSCP.16
Lighting design principles	LTNG.02, LTNG.03, LTNG.05, LTNG.06 and LTNG.08 to LTNG.10
Site drainage principles	SDRN.02, SDRN.03 and SDRN.05

Table 4.36 Earl Pumping Station site-specific design principles

Reference	Site-specific design principles
EARPS.01	Following construction, high quality secure hoardings shall be left temporarily in place on the part of the site that is not required permanently.
EARPS.02	For hydraulic reasons, the design shall incorporate the raised level required for the shaft structure.
EARPS.03	The existing pumping station compound wall shall be reinstated in its current position. Additional gates shall be provided to access the shaft.
EARPS.04	A high quality, low-maintenance planted brown roof shall be provided on top of the shaft. The roof shall be visually attractive when viewed from above.
EARPS.05	The shaft enclosure shall provide visual interest when viewed from the surrounding streetscape and from above.
EARPS.06	The valve chamber shall incorporate a low-maintenance brown roof.
EARPS.07	Access to the roof of the shaft structure shall be provided within the Thames Water compound. The roof of the shaft structure shall not be publicly accessible.
EARPS.08	The design shall not compromise the existing operation of the Thames Water pumping station.
EARPS.09	Lighting shall be provided to the staircase and shaft surface for maintenance activities only.

4.19 Deptford Church Street

Table 4.37 Generic site information

Site name: Deptford Church Street	
DCO Work No.	22
Generic design principles	Principles that do not apply
Integration of functional components	None - All principles apply
Heritage principles	HRTG.02 to HRTG.04 and HRTG.06 to HRTG.08
Riparian and in-river structure principles	All (ie, no principles apply)
Landscape design principles	LSCP.15 and LSCP.16
Lighting design principles	All (ie, no principles apply)
Site drainage principles	SDRN.02, SDRN.04 and SDRN.05

4.19.1 Thames Water shall work with the local authority and local stakeholders on the detailed design of the landscaping scheme.

Table 4.38 Deptford Church Street site-specific design principles

Reference	Site-specific design principles
DEPCS.01	The design shall facilitate pedestrian movements around the site identified in the local authority's <i>North Lewisham Links Strategy 2007</i> .
DEPCS.02	The car parking spaces on Coffey Street shall be reinstated unless otherwise agreed with the local authority.
DEPCS.03	Adequate space for the school fire and emergency mustering point shall be re-provided.
DEPCS.04	Access points for Thames Water maintenance vehicles shall be provided on Coffey Street and Crossfield Street to create a through route across the site. When not in use for maintenance purposes, the route shall only be accessible to pedestrians and cyclists.
DEPCS.05	The amount of hardstanding within the site boundary shall be minimised as far as possible.
DEPCS.06	The design shall create a more integrated and accessible public space to enhance the setting of the listed church.
DEPCS.07	No new lighting to the park shall be provided except for a low level light to the kiosk doors to allow access for maintenance purposes in the hours of darkness. This light shall only be activated by the door opening. Street lighting shall be reinstated.
DEPCS.08	Bird boxes shall be installed on the trees to attract a range of bird species following completion of the construction works.

4 Site-specific design objectives

Reference	Site-specific design principles
DEPCS.09	The landscaping of the open space following completion of the construction works shall include reinstatement of a species-rich amenity grassland mix and include the fiddle dock species.

4.20 Greenwich Pumping Station

Table 4.39 Generic site information

Site name: Greenwich Pumping Station	
DCO Work No.	23
Generic design principles	Principles that do not apply
Integration of functional components	FNCC.02 to FNCC.04 and FNCC.07, to FNCC.09
Heritage principles	HRTG.07 and HRTG.08
Riparian and in-river structure principles	All (ie, no principles apply)
Landscape design principles	LSCP.16
Lighting design principles	LTNG.06 and LTNG.09
Site drainage principles	SDRN.03 and SDRN.04

4.20.1 There are no acoustic requirements for the envelope of the Beam Engine House. Noise shall be reduced at the source.

Table 4.40 Greenwich Pumping Station site-specific design principles

Reference	Site-specific design principles
GREPS.01	Following completion of the works, high quality secure hoardings shall be left in place on the Phoenix Wharf part of the site until it is handed over to others for redevelopment.
GREPS.02	The footpath, including lighting, shall be reinstated as existing, unless otherwise agreed by the local authority. Land between the DLR and Network Rail viaducts shall be left in a condition that would not preclude any potential future enhancement of public realm in this area.
GREPS.03	For hydraulic reasons, the design shall accommodate the raised level required for the shaft structure. It shall fit with the overall architectural and landscape design for the site. The shaft shall feature a low-maintenance brown roof with integrated covers.
GREPS.04	Any York stone slabs removed by construction works shall be re-used for the roof of the new interception chamber. If this is not possible, the chamber shall be finished in fair-faced concrete consistent with its functional nature and context.
GREPS.05	Access for Thames Water maintenance vehicles shall be via Norman Road. Modifications to the existing gates and wall shall be in character with the existing.
GREPS.06	Fencing or railings shall be robust, durable and in keeping with the context.
GREPS.07	The area within the site that is not required for access shall be planted with low-maintenance wild flowers and grassland.

4 Site-specific design objectives

Reference	Site-specific design principles
GREPS.08	Security arrangements within the site, such as new or altered fence lines, shall be in accordance with Thames Water policy.
GREPS.09	The existing glazing of the East Beam Engine House shall be renovated or replaced as required. Any alterations to the glazing to facilitate the reuse of the building shall be sensitive to the building's significance.
GREPS.10	No new lighting shall be provided except for low level lighting to the steps to the shaft, which shall only be used during maintenance activities.
GREPS.11	Trees removed to improve access to the construction site shall be replaced elsewhere on the site.

4.21 Abbey Mills Pumping Station

Table 4.41 Generic site information

Site name: Abbey Mills Pumping Station	
DCO Work No.	26
Generic design principles	Principles that do not apply
Integration of functional components	FNCC.03, FNCC.04 and FNCC.9
Heritage principles	HRTG.01 to HRTG.03 and HRTG.06, to HRTG.08
Riparian and in-river structure principles	All (ie, no principles apply)
Landscape design principles	All (ie, no principles apply)
Lighting design principles	All (ie, no principles apply)
Site drainage principles	SDRN.03 and SDRN.04

4.21.1 The project works would be located within an existing Thames Water operational site.

Table 4.42 Abbey Mills Pumping Station site-specific design principles

Reference	Site-specific design principles
ABMPS.01	The layout of the permanent works shall coordinate with the permanent works associated with the Lee Tunnel project.
ABMPS.02	The design of the ventilation outlets shall be in keeping with the context. The signature design ventilation column shall not be used.
ABMPS.03	Planting and fence treatments to the boundary, outside of the project site, shall be completed as part of the Lee Tunnel project. Any landscaping disrupted during construction shall be reinstated. No additional landscaping is proposed for the project works.
ABMPS.04	The fenced enclosure around the Lee Tunnel shaft shall be extended to encompass the project works.
ABMPS.05	Materials shall be robust and comply with Thames Water requirements.
ABMPS.06	A minimum of ten bat boxes shall be installed on trees adjacent to the site following completion of the construction works.
ABMPS.07	Bird boxes shall be installed on the trees adjacent to the site to attract a range of bird species including kestrel and pied wagtail, following the completion of the construction works.

4.22 Beckton Sewage Treatment Works

Table 4.43 Generic site information

Site name: Beckton Sewage Treatment Works	
DCO Work No.	27
Generic design principles	Principles that do not apply
Integration of functional components	FNCC.03 to FNCC.06, FNCC.08 and FNCC.09
Heritage principles	HRTG.01 to HRTG.03, HRTG.06 to HRTG.08
Riparian and in-river structure principles	All (ie, no principles apply)
Landscape design principles	All (ie, no principles apply)
Lighting design principles	All (ie, no principles apply)
Site drainage principles	All (ie, no principles apply)

4.22.1 The project works would be located within an existing Thames Water operational site.

Table 4.44 Beckton Sewage Treatment Works site-specific design principles

Reference	Site-specific design principles
BESTW.01	The site layout shall coordinate with the Lee Tunnel project and the permanent works of the sewage treatment works upgrade.
BESTW.02	The design of the ventilation outlets shall be in keeping with the context. The signature design ventilation column shall not be used.
BESTW.03	Materials shall be robust and comply with Thames Water standard requirements.
BESTW.04	Barn owl nest sites created during construction shall be retained and maintained during operation.

4.23 Shad Thames Pumping Station

Table 4.45 Generic site information

Site name: Shad Thames Pumping Station	
DCO Work No.	18
Generic design principles	Principles that do not apply
Integration of functional components	FNCC.01 to FNCC.04, FNCC.06 to FNCC.09
Heritage principles	HRTG.01, HRTG.02 and HRTG.06 to HRTG.08
Riparian and in-river structure principles	All (ie, no principles apply)
Landscape design principles	All (ie, no principles apply)
Lighting design principles	All (ie, no principles apply)
Site drainage principles	All (ie, no principles apply)

- 4.23.1 The purpose of the new annex is to house electrical and control equipment. Access shall be required infrequently in order to inspect and maintain the equipment.

Table 4.46 Shad Thames Pumping Station site-specific design principles

Reference	Site-specific design principles
SHTPS.01	The new annex shall be no higher than the former building.
SHTPS.02	The materials used shall be low-maintenance and durable. They shall preserve or enhance the character of the conservation area and the setting of the listed Wheat Wharf.
SHTPS.03	Glass on the northeast elevation shall be minimised or permanently obscured and windows shall be fixed shut so that it is not possible to look directly into rooms and balconies on Wheat Wharf.
SHTPS.04	The ventilation column for the pumping station shall be relocated as far from existing residential windows as possible, to minimise impacts on residential amenity.
SHTPS.05	No brown roof shall be provided on the new building.
SHTPS.06	The main pedestrian access to the annex shall be via the alley way at the northeastern end of the building.
SHTPS.07	Vehicular access shall be via Maguire Street only.
SHTPS.08	Site drainage shall be reinstated as existing.

4.24 Bokesbourne Street

Table 4.47 Generic site information

Site name: Bokesbourne Street	
DCO Work No.	25
Generic design principles	Principles that do not apply
Integration of functional components	FNCC.01 to FNCC.04, FNCC.06 and FNCC.09
Heritage principles	All (ie, no principles apply)
Riparian and in-river structure principles	All (ie, no principles apply)
Landscape design principles	All (ie, no principles apply)
Lighting design principles	All (ie, no principles apply)
Site drainage principles	All (ie, no principles apply)

Table 4.48 Bokesbourne Street site-specific design principles

Reference	Site-specific design principles
BEKST.01	The paving treatment around the landscaping works on Bokesbourne Street shall be reinstated as existing.
BEKST.02	Site drainage shall be reinstated as existing.
BEKST.03	An additional tree shall be planted in the empty tree pit on Bokesbourne Street.

Glossary

advanced tree planting	Trees planted before the main construction activities commence.
air management structures	Collective term for ventilation equipment.
biodiversity	Biological diversity – or ‘biodiversity’ – is the term given to the variety of plant and animal species in a given environment and the natural patterns they form.
brown roof	A roof that supports a wide variety of plant and animal species and reduces storm water run-off.
Code of construction practice (CoCP)	A document that sets out control measures to be adopted during the construction period.
combined sewer overflow (CSO)	A structure, or series of structures, that allows sewers that carry both rainwater and wastewater to overflow into a river when at capacity during periods of heavy rainfall. The flows are discharged to river in order to prevent the sewers backing up and flooding streets or houses. Flows may discharge by gravity or by pumping.
connection culvert	A covered channel structure to connect the interception chamber to the drop shaft.
connection tunnel	A tunnel that connects a drop shaft to the main tunnel.
drop shaft	A circular, vertical concrete structure to drop flows from a CSO to a main tunnel.
electrical and control kiosk	A structure that houses electrical and control equipment.
heritage asset	A building, monument, site, place, area or landscape positively identified as having a degree of significance that merits consideration in planning decisions. Heritage assets are the valued components of the historic environment. They include designated heritage assets and assets identified by the local planning authority (including local listing).
historic environment	Above-ground and buried heritage assets that are considered to be significant because of their historic, archaeological, architectural or artistic interest. They might comprise below and above-ground archaeological remains, buildings, structures, monuments or heritage landscapes within or immediately around proposed development sites.
impact	A physical or measurable change to the environment that is attributable to the project.
interception chamber	A structure constructed around an existing combined sewer

	that diverts storm water from the sewer into a new system of structures to transfer storm water flow to a sewage treatment works.
open space	All space of public value, including landscaped public areas, playing fields, parks and play areas as well as areas of water such as rivers, canals, lakes and reservoirs that offer opportunities for sport and recreation or provide visual amenity.
operational phase	Once construction work is complete and the tunnel system is in use.
penstock	A gate used to control wastewater flow
public open space	Urban space designated by a local development framework where public access may or may not be formally established that fulfils or may fulfil a recreational or non- recreational role.
public realm	Any publicly-owned area, including streets, pathways, parks, publicly accessible open spaces, and public and civic facilities.
Public Right of Way	Route to which the public has right of access.
pumping station	A vertical structure with pumps used to lift water up to a higher level.
reinforced grass	An area of grass reinforced with a mesh to improve load bearing capacity and wear resistance.
run-off	Run-off is the movement of rain water over land. Run-off consists of precipitation that does not evaporate, transpire or penetrate the surface to become groundwater. Excess run-off can lead to flooding, which occurs when there is too much precipitation.
safeguarded wharf	A wharf that is protected by the Mayor of London and the Port of London Authority, to ensure that it is retained as a working wharf and protected from redevelopment into other uses.
scour	Movement of riverbed materials due to the force of the water.
screens	As part of the wastewater treatment process, screens are used to physically remove larger objects, including floating debris, from the incoming flow to ensure that sewage is amenable to treatment.
sewage or wastewater	Water-borne wastes from domestic uses of water, derived from households, trade and industry.
signature ventilation column	The project's own specially designed ventilation column (a vent column is a vertical pipe through which air is released).

slipway	A sloping surface leading down to a body of water from which boats may be launched.
specimen trees	Specially selected large trees with a height over 7m and a girth over 50cm when planted.
temporary works	Works required to facilitate construction, including any works left in place after completion (eg, temporary steel piles that do not need to be removed).
Thames Path	A designated footpath that follows the route of the River Thames.
valve chamber	An underground structure on the sewer system that contains valves used to isolate the flow between different parts of the sewerage system. For example, flap valves prevent flow from the river travelling back up the sewer or into tunnels.
ventilation building	A building that contains fans and filters to remove and treat air from the tunnel.
ventilation column	A vertical pipe through which air is released.
ventilation duct	Pipework (generally below ground) through which air moves.
ventilation structure	An above-ground or below-ground structure that is part of the tunnel ventilation system.
venturi	A constricted section of pipe designed to reduce pressure when a fluid flows through it.
wastewater or sewage	Water-borne wastes from domestic uses of water, derived from households, trade and industry.

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