King's Cross Central
Shared Service Yard and
Access Ramp

Environmental Sustainability Plan

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1.0 INTRODUCTION

This Environmental Sustainability Plan has been prepared by Waterman Building Services with regard to Condition 17 of outline planning permission (ref 2004/2307/P), relating to the Enabling Works being brought forward within this submission. It details the implementation of certain sustainability strategies for the Shared Service Yard (SSY) and Access Ramp (AR), and highlights those elements of design being incorporated to ensure the associated buildings in development Zone A can fully meet their commitments.

Passive design, the use of energy-efficient equipment and low carbon technology is being employed as part of this strategy to reduce the energy consumption and CO_2 emissions. The strategy includes for future connections to distributed Combined Heat and Power (CHP) plants across the King's Cross Central development which will provide electrical and district heating networks.

The purpose of this report is to detail both the sustainable technologies being adopted under the immediate Shared Service Yard and Access Ramp and the allowances being put in place to enable the future construction of Building A1.

A low carbon approach has been adopted for the design of the buildings. Using less energy involves passive and active technologies, which have been applied to the Shared Service Yard design. The following technologies are included in the current works:

- Inverter Driven Pumps
- Ventilation fans controlled by Carbon Dioxide sensors
- Low energy lighting
- Thermal Mass (High mass, lightweight construction)

The design of the Enabling Works has been developed in such a way as to safeguard the future building requirements of Zone A and building A1 in particular. The design of these Enabling Works have therefore made allowances for the future inclusion of sustainable technologies in the Zone A buildings.

2.0 BUILDING SERVICES

This section outlines the building services that are included within the design of the Enabling Works being brought forward in this submission.

2.1 Electrical Systems

Power Supply

The Shared Service Yard and Access Ramp will derive their normal and emergency back-up power supplies from the Network Rail plantroom.

Lighting

The Shared Service Yard will be provided with a lighting and emergency lighting system in accordance with good practice and the user requirements (200lux on the Service Yard floor).

Small Power

Small Power supplies will be provided to individual pieces of equipment including security barriers and the Network Rail Compactor.

Fire Alarms

A fire alarm system will be installed in accordance with BS 5839 Part 1: 2002 L1

2.2 Mechanical Systems

Ventilation

Normal daily ventilation will comprise of extraction and fresh air supply to the Service Yard at the rate of 6 to 8 air changes per hour. External fresh air will be drawn down the access ramp by a series of soffit-mounted jet-flow fans to supply air from where the ramp is open to the outside and relay its movement from one fan to the next down the enclosed section of the ramp. This will then be distributed to cover the volume of the delivery bay and directed to an extract location at the far end (South East Corner).

Twin extract fans will be provided to exhaust air above the Network Rail Suburban Shed roof level.

In the event of fire, the ventilation fans will revert to speed 2 to provide increased ventilation to 12 Air changes per hour via the soffit-mounted jet-flow fans. Fire barriers shall drop to separate the Shared Service Yard from Network Rails Plantroom and the Access Ramp.

Heating

Electrical frost protection will be provided to the cold-water and sprinkler pipework

2.3 Public Health Systems

Water Services

Two new water main service connections will be provided from Thames Water's external main in Pancras Road, one for use by Network Rail, and the second for the future use of Building A1.

Sprinkler System

The Network Rail Plantroom Sprinkler system will be extended into the Shared Service Yard.

Drainage

A complete system of drainage will be provided to convey surface water 'run off' from the vehicle ramp into the Service Yard together with any water from sprinkler discharge, wash down, or spillage within the Service Yard, and surface water carried into the Service Yard by road vehicles.

On surface/storm water drainage, the overall King's Cross Central development will be designed to reduce the existing total combined peak flow of storm/foul water by 10%. Detailed design work is currently progressing on a site wide drainage scheme in order to achieve this. This site wide drainage scheme will not, however, be operational before the completion of the Shared Service Yard and Access Ramp Enabling Works. It is therefore intended that the surface will be drained into the existing storm-water drainage system until the site wide attenuation works are completed.

The scope for rainwater harvesting (the local collection of non surface rainwater i.e. from roofs and gutters for collection and re-use for non potable domestic purposes) has been considered. However, the roof of the Shared Service Yard and Access Ramp is likely to be used for construction compounds, materials storage etc, as explained elsewhere within this submission and, as such, does not lend itself to rainwater harvesting.

3.0 ENERGY EFFICIENT TECHNOLOGIES

Condition 17a of the Planning Conditions requires an Environmental Sustainability Plan to explain:

> ***"How the proposed building design(s) realise(s) opportunities to include design and technology energy efficiency measures."***

3.1 Inverter Driven Fans / Pumps

The Stage 1 drainage pumps and ventilation fans will be inverter driven. This will allow savings in fan power energy values as well as significant indirect cost savings available by extending motor life, reducing maintenance time and cutting overall noise levels.

The mechanical ventilation fans will normally operate to provide minimum required ventilation rates based on Carbon Dioxide sensors. These will only increase to full speed in the event of a fire scenario.

The overall savings to be made in energy and indirect costs rely upon the effective application of variable speed AC inverter drives; for example, a 15% reduction in fan or motor speed will achieve a 40% energy saving.

3.2 Lighting and Controls

Although the Shared Service Yard and Access Ramp fall outside of Part L2(A) of the Building Regulations, the lighting and controls have been designed to meet the requirements.

Hi-bay luminaires shall be provided to exceed the minimum average initial efficacy of 45 luminaire-lumens per circuit Watt.

Lighting in Ancillary Spaces (Toilets, Stair-cores, Lobbies, Corridors and the Bin Store area) will be controlled by presence detection.

Where the Access Ramp rises above ground next to the Network Rail Track Access point, luminaires will be controlled by photocell.

The Loading Bay and Access Ramp are understood to be under 24/7 operation. Automatically switched lighting is unlikely to produce much energy saving and is likely to pose a health and safety risk due to the presence of moving vehicles and pedestrians in a restricted space.

3.3 Building Fabric Engineering

The Shared Service Yard is a buried concrete box buried and inherently has high thermal mass. As such, space heating systems are not being provided.

Thermal insulation will be applied to the underside of the Ground Floor Slab (To act as the floor insulation for Building A1). The floor will have a target U-Value (W/m^2C) of 0.2. Space for this has been allowed for in the design of the works.

On the wider issue of embodied energy, measures to incorporate recycled or sustainably sourced materials have been adopted: this will reduce the overall demand for new and non-renewable resources.

The use of ground granulated blast furnace slab (GGBS) to partially replace Portland cement (CEM1) yields significant improvements in the environmental performance of concrete. Of particular note are the reductions in greenhouse gas emissions, primary energy use and acidification.

Recycled aggregate (RA) and recycled concrete aggregate (RCA) to BS8500 will form up to 20% of total aggregates blended with natural aggregates. Where RA and RCA are found to be alkali silica reactive (ASR) or contaminated they shall be considered unacceptable. RCA may be used in low-grade use concrete, mass concrete, concrete blinding and concrete for piling. This would not be adopted where high compressive loads are to be carried eg in plunge column casings. Maximum concrete grade will be limited to C35/45 using RA and RCA. Fines from RA and RCA sources are not to be used.

Where possible, timber shall be sought from a Forest Stewardship Council (FSC) approved source.

4.0 CARBON EMISSIONS

Condition 17b of the Planning Conditions requires an Environmental Sustainability Plan to explain:

> ***"The reduction in carbon emissions achieved through these building design and technology energy efficiency measures, compared with the emissions permitted under the national Building Regulations prevailing at the time the application(s)for approval of reserved matters are submitted"***

The national Building Regulations do not include a reference to Service Yards with respect to Carbon Emissions. As such, a meaningful comparison is not possible.

Based on an electrical demand of 15 W/m^2 and an electricity grid connection, the Shared Service Yard and Access Ramp are calculated as having an estimated carbon footprint of 106,000 kg of Carbon a year based on 24/7 operation.

Once Building A1 is completed, with connection to the CHP electrical network, this carbon footprint will decrease. However final carbon emissions will be dependent on the detailed design of the CHP system: see section 6 below.

5.0 GREEN AND BROWN ROOFING

Condition 17c of the Planning Conditions requires an Environmental Sustainability Plan to explain:

"The specification for any green and/or brown roofs"

Following completion of these Enabling Works, the roof of the Shared Service Yard and Access Ramp is likely to be used for construction compounds, materials storage etc, as explained elsewhere within this submission and, as such, does not lend itself to Green and/or Brown Roofing.

6.0 CHP AND RENEWABLES

Condition 17d of the Planning Conditions asks for an explanation of how energy shall be supplied to the building, highlighting:

i) ***"How the building(s) relate(s) to the site-wide strategy for district heating incorporating tri-generation from distributed combined heat and power***

ii) ***How the building(s) relate(s) to the strategy for using biofuel boilers to supplement the energy supplied through district heating systems;***

iii) ***The assessment of the cost-effectiveness and reliability of the supply chain for biofuels***

iv) ***Any other measures to incorporate renewables"***

6.1 Site Wide Strategy for Combined Heat and Power

King's Cross Central is fully committed to providing a number of distributed CHP plants across the Development. The CHP strategy t is currently undergoing detailed design work and the development partners are in discussion with a number of potential ESCO partners, through a formal tender/procurement process.

Condition 48 of the Planning Permission requires all new buildings within development zone A to incorporate the pipework to connect to the CHP heating and HV electrical networks that are put in place. By definition, however, the CHP systems contemplated will not be operational before the implementation of the Shared Service Yard and Access Ramp early Enabling Works.

In any event, the Shared Service Yard does not have a heating load and will therefore not incorporate biofuel boilers or other space heating systems. An assessment of the cost effectiveness and reliability of the supply chain for biofuels does not arise.

The Shared Service Yard will source its electrical supply from the CHP HV electrical network on the completion of Development Zone A Building A1.

6.2 Renewable Energy

The Shared Service Yard itself has limited scope for incorporating renewable technologies. As there is no heating requirement, biomass heating and ground sourced heating & cooling are not required. As future buildings will be located directly above, there is no space to locate solar water heating, wind turbines, or photovoltaic panels to produce electricity.

Furthermore, Network Rail has stipulated that electrical supplies should be sourced from the Network Rail plantroom, thus ensuring they are not dependent on another party. However, Network Rail has agreed that, once Building A1 is completed, a changeover device can be installed with the SSY normally fed from the Building A1 incoming supply, sourced from the CHP HV electrical network.

7.0 BREEAM

Condition 17e of the Planning Conditions asks for an explanation of:

> ***"How the proposed building(s) have been designed to achieve a BREEAM and/or Ecohomes rating of "very good" (or an equivalent assessment method and rating) or better"***

The Shared Service Yard is an unheated semi-enclosed external space and energy usage is only related to ventilation and other functional requirements. As such, it is outside of the scope of BREEAM and equivalent assessment methods.

8.0 WILDLIFE FEATURES

Condition 17f of the Planning Conditions asks for an explanation of:

"The incorporation of bird boxes, bat roosts and other wildlife features on buildings."

With limited surface features, it would be impractical to incorporate such features into the Stage 1 Enabling Works, due to their nature and location. The incorporation of wildlife features into Building A1 will be considered as part of its future detailed design.

9.0 SAFEGUARDS FOR ZONE A DEVELOPMENT

Façade and Building Fabric Engineering

The Shared Service Yard and Access Ramp structures are designed to allow for the building in Development Zone A to be constructed as concrete framed building. The use of a concrete frame would help reduce their peak heating loads.

The structural design allows for a minimum 300mm cladding zone beyond the face of the building A1 structural columns for use with wall insulation. If required, this zone could be brought in between columns, increasing it to about 700mm.

Other fabric elements of the buildings such as glazing specification, roof insulation and solar design will not be effected by the Stage 1 Enabling works construction.

Combined Heat and Power

The SSY design makes allowance for two 200mm diameter flow and return pipes from the future CHP District Heating system, which, when brought forward, shall provide the heating and domestic hot-water requirements for Building A1. Heat-exchanger plant is likely to be located at the basement mezzanine plant floor. There will be scope to utilise the district heating pipework to generate cooling via absorption chillers, mounted on the roof of building A1 (Tri-generation – CCHP system).

The SSY design makes allowance for connection to the CHP electrical HV ring network

Rainwater

Building A1 may lend itself to rainwater harvesting or green roofing. Neither On-site Rainwater Harvesting or Green Roofing would have an impact on the Enabling Works package. Provision has been made within the SSY to drop separate rainwater pipes on the Boulevard side of the development. Here, they could connect to any central rainwater harvesting system or other site-wide drainage system.

6 Urban Design Report

6.1 An Urban Design Report is enclosed. The purpose of design reports, as set out in Condition 16, is to explain "for relevant applications…the underlying approach of the design and explain how it addresses each of the relevant Design Guidelines."

6.2 In this case, the Design Guidelines, set out at Annex 1 to the Planning Permission, are not directly relevant. The Design Guidelines are concerned with the detailed design of buildings, their envelope and façades and how they address and relate to each other and the public realm. They have little relevance to below-ground basements and access ramps.

6.3 Accordingly, the enclosed Urban Design Report concentrates on the underlying design approach of the Shared Service Yard and Access Ramp. As such, it has regard to the introductory paragraph of Annex 1 to the Planning Permission which states that:

i) Detailed designs should reflect a commitment to ensuring architectural quality and diversity can thrive whilst affording priority to the public realm and achieving an integrated urban grain, with continuity and human scale; and

ii) Detailed designs should reflect a suitable level of consultation with the local authority and other statutory bodies; and a commitment to use the Urban Design Statement and Public Realm Strategy as reference documents throughout the design process, such that the original vision is maintained.

6.4 The Urban Design Report explains how the Shared Service Yard and Access Ramp have been designed to protect future design flexibility within Development Zone A buildings. At the same time, the Enabling Works inevitably impose some 'fixes' or constraints on these future buildings and these fixes and constraints are explained below.

Shared Service Yard and Access Ramp

Urban Design Report

Introduction

This document has been written to provide design information regarding the Shared Service Yard and Access Ramp, which is part of the enabling works for King's Cross Central. The Shared Service Yard (SSY) and Access Ramp (AR) would provide vehicular access and service facilities for future buildings within Development Zone A, in particular it provides a basement for the building(s) within Zone A1. The other key function is to provide vehicular access and service facilities for Kings Cross Station.

The report explains the underlying approach of the SSY and AR design, having regard to Condition 16 of the outline planning permission 2004/2307/P.

The report does not specifically address the Design Guidelines at Annex 1 of the planning permission as these guidelines are specifically concerned with buildings, their envelope and facades and how they address and relate to each other and the public realm. The report does however pay regard to the introductory paragraph of Annex 1 which states that:

i) Detailed designs should reflect a commitment to ensuring architectural quality and diversity can thrive whilst affording priority to the public realm and achieving an integrated urban grain, with continuity and human scale; and

ii) Detailed designs should reflect a suitable level of consultation with the local authority and other statutory bodies; and a commitment to use the Urban Design Statement and Public Realm Strategy as reference documents throughout the design process, such that the original vision is maintained.

The Report explains how the Shared Service Yard and Access Ramp have been designed to protect future design flexibility within Development Zone A buildings. At the same time, the Enabling Works inevitably impose some 'fixes' or constraints on these future buildings and these fixes and constraints are explained below.

The location of the works being brought forward is concentrated towards the southern end of the 'Zone A' development area. This zone is defined in the set of Parameter Plans, lodged as part of the revised planning application to which the permission relates. The proposed location of the works, and the related Parameter Plan Development Zones, are shown on the submitted plans.

Integration with future development

The buildings within Development Zone A will encompass predominately business uses on upper floors and predominantly shopping/food and drink uses at ground floor.

The buildings within this zone are to be serviced from basement accommodation which would be accessed from a ramped road constructed at basement level alongside the east boundary (the Access Ramp). This submission of details for the package of Enabling Works includes the southern section of this ramped access and leads to a Shared Service Yard, also at basement level.

One of the key design principles enshrined within the King's Cross Central scheme is that of servicing buildings predominantly below ground. This principle relieves roadways of unnecessary traffic, unburdening them for more public and pedestrian use and freeing up Public Realm space. In this way, the Shared Service Yard and Access Ramp perform a key role. Together they provide an essential conduit, conducting vehicles from their entry into the development site at Goods Way down to the basement service areas below Zone A. Here, at its southern terminal, the Shared Service Yard would facilitate a fundamental delivery and service interface for King's Cross Station.

Both the Shared Service Yard and Access Ramp have been designed, in accordance with the guidelines of the Freight Transport Association (ref for a specific document) , to accommodate the calculated traffic flow necessary to service both Network Rail requirements and that of future development within Development Zone A of King's Cross Central.

Under these proposed Enabling Works, the Access Ramp would terminate at its upper (northern) end at a level of approximately 16.0m AOD. Vehicles would initially approach from Battlebridge Road and access the ramp via an entrance gained through what is currently the existing Kings Cross station car park. Later on, the access would be via a temporary route to/from the new Boulevard, as explained in section 3.

In due course, probably after 2012, the Access Ramp will be extended northwards from this point to an intersection with Goods Way to form the permanent entry and exit point for vehicles. This Stage 2 ramp does not form part of this submission.

At its lower end the ramp connects to the Shared Service Yard basement at a level of 7.8m AOD, equal to the lower basement of the proposed adjacent Network Rail service accommodation.

The ramp has been designed to service each of the future Zone A buildings at descending basement levels. To facilitate this, access openings are provided through the west wall of the ramp where 'break out' retaining panels have been specified for this preliminary stage. These access points are strategically positioned to interface with the future levels of development Zone A stepped basement floors. In designing the ramp levels, care has been taken to allow the necessary flexibility and tolerance for the anticipated basement volumes of Zone A.

Clearly, the levels of the future ground floor plates will inevitably determine the form and extent of any basement space beneath. It is proposed that future floor plates will step, synchronized with the basement floors, to follow the Boulevard as it rises northwards. In designing the ramp, the levels specified in the Parameter Plans and within the permitted deviation tolerance have been followed.

The likely future form, arrangement, service needs, structural demands and general planning of the content of the buildings that fall within the envelope of Development Zone A have been considered and taken into account in the design of these works.

The proposed Enabling Works would provide both the service infrastructure and the physical, structural support of future superstructure of buildings within Development Zone A. The introduction of the CRT into the Boulevard has also been considered carefully and allowances made to ensure that the Tram scheme can be accommodated.

Waterproofed Penetrations for future incoming utilities shall be provided within the substructure on the boulevard side of development below ground level.

Interface with 'Zone A' superstructure

The Access Ramp is designed to accept the structural loads of the future superstructure. The relationship between future façade lines within Development Zone A and the supporting piles at ground level has been established and this relationship is shown in the submission drawings. The relationship has been determined by a set of rules that relate to boundary position, the adjacent site conditions and the anticipated loads that will need to be conducted axially through to the ramp ground structure. Along the East Façade, space has been allocated for maintenance, both for future buildings within Zone A and Railway property.

Certain constraints will be imposed upon the future superstructure by virtue of the design decisions taken for these Enabling Works. These constraints on the buildings within Development Zone A are set out below. They would not hinder or prevent a successful response to the Urban Design Guidelines attached to the outline planning permission.

East façade

The grid centreline of the columns/structural elements, located along the East Façade of the superstructure, must be coincident with the pile centreline below the east wall of the ramp. Design criteria have established a 'cladding zone' allowing 500mm between the external face of the cladding and the centreline of the integral column grid. This provides a 300mm zone for cladding from the superstructure.

Structural Grid

The first line of superstructure columns (west of the East Façade) must sit directly over the ramp's West wall. The grid centreline of these columns will need to be positioned directly over the central axis of the ramp wall. This restriction imposes a wide structural bay (approx 10m span) above the ramp zone, and successive floors above, throughout buildings A2 to A5.

The maximum footprint of Zone A together with the dividing boundary lines (as per the Parameter Plans) between plots A1 to A5, are reflected in the submission drawings. It has been necessary to 'fix' the latter boundaries - those between the plots - since movement joints between buildings will need to be conducted continuously through the built section of the ramp. The setting out of buildings and grids is based on a 1.5m module and allows options for future structural bay grids of 6m, 7.5m or 9m. Division between the building units assumes a 1m space between opposing parallel column grids separated by a movement joint along the full length of the junction.

Vehicular access

Vehicular access from the ramp into the future basement service areas (buildings A2 to A5) can necessarily only be accomplished via the openings provided (constructed as part of these Enabling Works) through the piled/reinforced concrete wall structure. These future entrances, protected during the interim period by sheet piling, have been located at strategic positions along the West wall of the ramp. Across these entrances, the ramp is flattened delivering a manageable gradient (at points of access) of 1:20. In general, the working height of basement areas (clear of structure) has been assumed to require a minimum of 4.8m. Notional floor levels of future basements have been set, and cross-sections examined, to ensure that these statistics are achievable. There remains flexibility in the choice of finished basement level and this will be determined by the design, gradient and limitations of the entrance transfer ramp/passageway connecting the main Access Ramp to the basement floor.

Floor levels

The ground floor levels of buildings A1 to A5 have been established in relation to the future Boulevard levels, to provide step-free access through strategically placed entrances to both retail and office units where they front on to the Boulevard. In buildings within plots A2 to A4, the concrete roof of the ramp is stepped to follow just below the stepped levels of the ground floor retail units allowing future raised floors to pass over both ground floor and ramp. Alternatively, additional height may be gained above the ramp e.g. 'back-of-house' storage areas. In building A5, the ramp roof rises above the floor level but leaves useable raised or mezzanine space between ramp and first floor slab.

Cycle parking

The basement design for the Shared Service Yard does not accommodate bicycle parking/storage. It is considered inappropriate to provide cycle parking for building A1 10m below ground, accessed by a lengthy ramp and sited amongst heavy goods vehicles. Cycle parking will be available within the dedicated bicycle interchange within the lower ground floor of Building B1, close by. The bicycle interchange is a committed facility within the Section 106 Agreement. In addition, some spaces could be provided at grade, within the public realm, in due course.

Cycle parking for other buildings within Development Zone A would be brought forward as part of their detailed design. For these buildings, basement provision would be appropriate.

Design Drivers and User Requirements

The requirements of the Service Yard have been determined from an analysis of the anticipated type, number and frequency of vehicle deliveries. The delivery bays for NR would be on the south side of the Yard whilst those for A1 would be positioned on the north side.

Stakeholder Consultation

Consultation with Network Rail and their design team, together with the Department for Transport (DfT) and London Underground (LUL) has formed an important part of the design development of both the Shared Service Yard and Access Ramp. There are two main areas where consultation has been critical. The first is the interface between the SSY and the NR Plant Room. The second is the requirement to maintain a Track Access Point for Network Rail together with the impact of this upon the ramp gradient and the boundary conditions.

A critical issue regarding the interface with the NR Plant Room involves the potential over-sail of the A1 superstructure. The footprint of A1 has undergone a detailed analysis, responding to both developments relating to the entrance/forecourt of KXSE. Both of these two issues result in a level of flexibility regarding the final footprint and structural discipline of A1. To account for this flexibility (in respect of the NR interface) a boundary has been defined and agreed with an acceptance that any part of building A1 that extends above and beyond this boundary line would be cantilevered. To account for this degree of future flexibility in the setting out, structural grid and superstructure loads, the basement structure has been designed in a particularly robust manner to allow for a number of anticipated options.

The position of the Track Access is largely controlled by the need to approach the track from the ramp beyond (i.e. north of) the point where the adjacent KX Station platform terminates. South of this point vehicle movement is restricted by the opposing platform. The ramp gradients have been designed to fall within the guidelines of the Freight Transport Association 'Design for Deliveries'. Allowance has also been made for conforming to the highways requirements for sight lines and vehicle movement at the intersection with Goods Way. Transition zones (limiting gradients at future basement entrances) have been provided. These limitations control the minimum level at which track access can occur. Final access from the ramp on to the track is via a small transitional 1:10 ramp. A number of options have been examined in consultation with Network Rail.

The Wharfdale Road Bridge

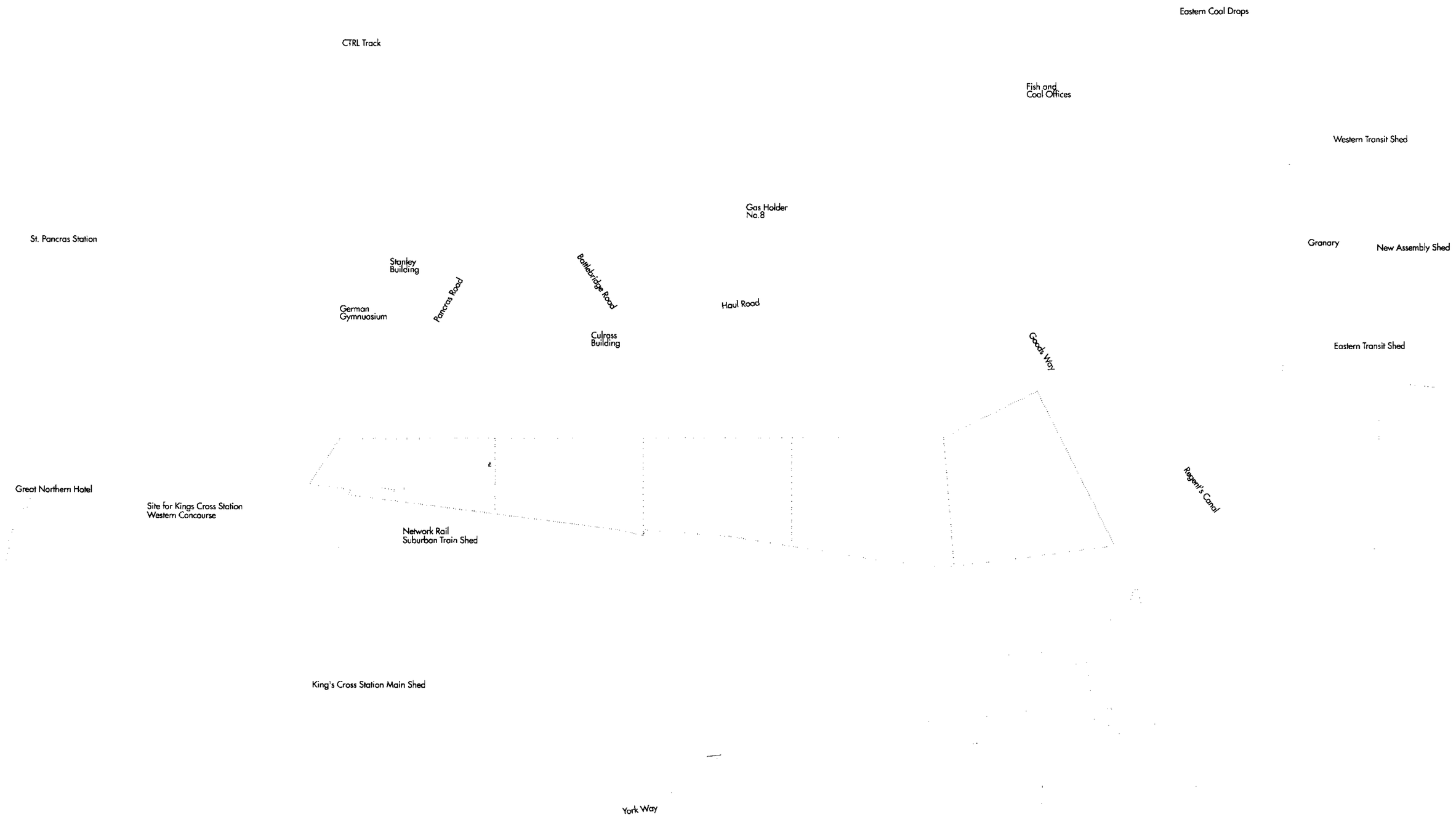
The London Borough of Camden / Islington Planning and Development Brief for the Kings Cross Opportunity Area identifies a potential pedestrian route, running due west from the east end of Wharfdale Road, continuing across over railway lines, and linking up with the Boulevard of King's Cross Central.

The King's Cross Central Parameter Plans, for example KXC007, allow for this route to come forward and there are related obligations in the King's Cross Central Section 106 Agreement.

Provision has been made within these Enabling Works to ensure the proposed bridge structure will, if required, adequately receive and support a pedestrian bridge at its anticipated point of juncture.

Views of the Shared Service Yard and Access Ramp

The attached drawing 456_07_11 identifies a series of potential views of the SSY and AR, based on the visual impact analysis undertaken for the Environmental Impact Assessment (EIA). Each view is then presented in the same way as that adopted in the EIA, using a CAD model to illustrate where and how much of the SSY and AR would be seen, following the completion of these Enabling Works but prior to the completion of other planned development, in particular future buildings within Development Zone A.



01 GROUND FLOOR PLAN
SCALE 1:500

REV	DATE	DESCRIPTION	CKD

CKD	REV	DATE	DESCRIPTION

CKD	REV	DATE	DESCRIPTION

Parameter Plan Area Development Zone A

Stage-1 Share Service Yard
& Ramp Area

View Point

0m 10m 20m 30m 40m 50m

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A&M JOB NO: 456

KXC SHARED SERVICE YARD & ACCESS RAMP ENABLING WORKS

VIEWS - LOCATION PLAN (SITE CONTEXT)

456_07_011 P1

SCALE: 1:750 @ A1 1:1500@ A3 Revision