

TOPIC AND OUTLINE OF MITIGATION MEASURES	PLANNING CONDITIONS	SECTION 106
AIR QUALITY		
CONSTRUCTION MITIGATION MEASURES		
<p>Outline Construction Method Statement</p> <p>Employ:</p> <ul style="list-style-type: none"> • Best Practicable Means • Codes of Construction Practice (CoCP) • Monitoring • On-going liaison with local boroughs <p>Material Storage and Handling</p> <p>Appropriate dust control measures:</p> <ul style="list-style-type: none"> • Handling storage areas sited as far away as reasonably and practically possible from public/residential areas. • Storage areas actively managed and fine, dry material stored inside enclosed shield/buildings or within a central storage area. Unenclosed storage areas will be covered/sheeted • Vehicles carrying dusty materials sheeted. • Cementitious materials delivered by road and transferred through a closed system of heavy-duty hoses to storage silos/ or delivered to in-line covered bin storage areas. • Alarms or sensors installed to prevent overfilling or system failure. • Adjoining undeveloped zones will be seeded/planted to reduce dust from the erosion of topsoil. <p>Construction Plant</p> <ul style="list-style-type: none"> • Site plant and equipment kept in good repair and maintained • Plant selected for least potential for dust emissions (allowing for economic constraints) • Likely to use electrical tower cranes to avoid exhaust emissions. • Plant will not be left running when not in use. • Fencing/enclosures erected around major construction plant • Cleaner fuels employed. • Visual checks to ensure black smoke is not being emitted from exhausts at times other than during ignition. <p>Vehicle Movements</p> <ul style="list-style-type: none"> • All weather surfaces provided on heavily used haul roads and regularly cleaned; • Wheel cleaning; • During prolonged dry periods or as directed by the site manager, haul roads will be dampened down; • Speeds restricted on haul roads; • All site vehicles kept in a good state of repair and maintenance; 	<p>C1(c) – Site Wide CMS</p> <p>G1-G7 – Zonal Construction Method and Management Statement to be submitted and approved by the LPA.</p> <p>C1(d) – Site wide air quality strategy</p> <p>P6 Perimeter dust monitoring strategy</p> <p>P1 – Dust Management Plan</p> <p>P2 – Details of wheel washing equipment</p> <p>P3 – Emission standards for commercial road vehicles</p> <p>P4 – Non-road mobile vehicle emission standards</p> <p>P5 – Ultra-low diesel fuel</p>	

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<ul style="list-style-type: none"> • Use of low emission vehicles will be specified in construction contracts where practicable; • Limit traffic speeds within the site to 5mph on unpaved roads and 10mph on paved roads; and • Use rumble strips at site egress points to minimise the quantity of particulate matter leaving the site which may become re-suspended. <p>Good Site Management Practice</p> <p>Control measures and good management practices will be employed:</p> <ul style="list-style-type: none"> • site operations will be planned to take into account local topography, prevailing wind patterns and local sensitive receptors (e.g. schools, residences and ecologically designated sites); • burning of any materials on site will be prohibited; • loading and unloading only permitted in designated areas; • provision of water sprays and wind/dust fences where possible, particularly in dust sensitive locations for example, during demolition works, there will be no blasting, and water spraying and/or screening will be undertaken prior to and during demolition; • staff will be trained/inducted with regards to on-site practices; • an appointed person will oversee/control activities and handle complaints; • conduct a risk assessment of proposed construction activities to identify which are most likely to contribute to high on site levels of PM₁₀; and • use a buffer zone to separate receptors from PM₁₀ generating construction activities. <p>Good design and management practices include the following:</p> <ul style="list-style-type: none"> • planning of site operations – potentially problematic activities in terms of dust emissions will be positioned away from areas close to neighbouring properties. Operations should also be planned to take account of local topography and prevailing wind patterns; • site plant and equipment should be selected on the basis of which has the least potential for dust emission (allowing for economic constraints); • greater provision of water sprays and wind/dust fences in dust sensitive locations; • staff should be trained effectively with regard to site practices; and • ongoing liaison with local people regarding construction control measures is recommended. <p>Suggested mitigation measures that would promote sustainable construction are as follows:</p> <ul style="list-style-type: none"> • restrictions on certain types of vehicles that can contribute comparatively higher emissions as they do not have to comply to such stringent exhaust emission regulations; • encouraged use of construction vehicles that run on cleaner burning fuels; and • prefabricate fittings, windows etc in an off-site environment with particle control measures in place. 		

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<p>OPERATIONAL MITIGATION MEASURES</p> <p>It is recommended that sustainable transport and energy use will be encouraged, when the site is operational, through an overarching (site) environmental management strategy. It is recommended that this includes the following measures:</p> <ul style="list-style-type: none"> • development of travel plans by final site occupiers to complement the overall site travel plan - occupiers would be encouraged to negotiate contracts with suppliers to maximise sustainable transport use; • restrictions of certain types of vehicles and encouragement of the use of cleaner fuel vehicles; • promotion of cycling and supported provision of facilities for cyclists; • use of cleaner fuels for energy and heating; and • schemes for air quality monitoring. <p>Development to comply with air quality monitoring measures set out in P7.</p> <p>The energy plant will require permitting under the pollution control regime prior to construction. To obtain approval, the operator will need to demonstrate application of suitable techniques for pollution control and that no significant pollution is caused. This study has utilised worst-case emissions and stack height data. For the permit application, a suitable stack height will need to be determined to ensure adequate dispersion of pollution takes place.</p>	<p>P7 – Pollution monitoring scheme</p> <p>P9 – Scheme for the use of cleaner fuels for energy and heating</p> <p>P8 P11</p>	<p>Para 1.17, 2.4, Part 2, Schedule 1</p>
<p>MITIGATION (SUMMARY)</p> <p>Set out in construction method statement</p> <p>Transport strategy</p> <p>Energy strategy and pollution control permitting requirements</p>		
ARCHAEOLOGY		
<p>CONSTRUCTION MITIGATION MEASURES</p> <p>The core part of the site will be raised by approximately seven meters with material derived from construction activities, to create a development platform. This will result in the preservation <i>in situ</i> of the archaeological resources.</p> <p>Outside the land raise area archaeological mitigation in advance of, or during construction activity will be required. The nature of such mitigation will be dependent on the impact of the development on the archaeology.</p> <p>The provision of basements and the impact that these have on the archaeological resource will require consideration on a case-by-case basis, to determine the impacts from construction on the archaeological resource.</p> <p>The site of Chobhams Manor (a medieval manor house) will be preserved beneath the land raise in accordance with best practice and with the requirements of the Local Planning Authorities as defined in their UDP.</p>	<p>N – Archaeology and Cultural Resources.</p> <p>N1 – Programme of archaeological works to be agreed prior to works.</p> <p>N2 – The remains of Chobham Manor shall be preserved <i>in situ</i></p>	

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<p>The provision of utilities within the site is likely to involve deep excavation. The impact of these works on the archaeological resource will be dependant on their location in relation to the depth of the land raise fill and the spatial extent of the works. It is likely that in some areas, extensive excavation is likely to be required which may not be contained within the land raise fill material and may therefore have an impact on archaeological resources.</p> <p>Activities during construction such as the provision of concrete batching plant and other temporary works need to be designed and operated in a manner that ensure that they do not adversely impact on the archaeological resource.</p> <p>During construction, the works will be carried out in such a way to ensure that disturbance to areas of archaeological interest are controlled and limited. Supervision and observation during the construction phases will be undertaken to minimise the risk of damage or destruction of undiscovered archaeological remains.</p> <p>OFF SITE INFRASTRUCTURE WORKS</p> <p>The off-site utility works will mainly be located within existing highway corridors where previous construction activities will have resulted in damage/truncation of the archaeological resource. However, there is the potential for the works to result in additional impacts on the archaeological resource.</p> <p>A programme of archaeological mitigation should be agreed with the Greater London Archaeology Advisory Service (GLAAS) in advance of the implementation of the works.</p> <p>The most likely form of mitigation is a watching brief during construction.</p> <p>MITIGATION (SUMMARY)</p> <p>Works outside the Stratford Railway Lands – A programme of archaeological works, depending on the actual impact on the archaeological resource will be required. This is to be agreed with the Greater London Archaeology Advisory Service</p> <p>Stratford Railway Lands Basements – Depending on the extent of the impact a programme of archaeological works, agreed with the Greater London Archaeology Advisory Service will be required.</p>		

ECOLOGY			
<p>CONTROLS FOR THE OUTLINE APPLICATION AREA</p> <p>Additional ecological field surveys may need to be undertaken as part of the detailed design process, or prior to the implementation of construction works for any development zone within the outline application area, in case new habitats have developed, or noxious weeds have established; and to reflect any changes in protected species legislation. Surveys may include:</p> <ul style="list-style-type: none"> • protected species and breeding birds; • noxious weeds. <p>Any works that may directly affect breeding birds, e.g. vegetation clearance, should be programmed to occur outside this period.</p> <p>GENERAL CONTROLS FOR HIGHWAYS AND OTHER OFF-SITE APPLICATION AREAS</p> <p>Direct construction impacts would be anticipated at the Bully Point Nature Reserve, River Lee and Eastway Cycle track, Temple Mills MOL, Wick Field MOL, the Waterden Road Allotments and the location of the CTRL Southern Outfall.</p> <p>Construction works within or adjacent to these sites will be carried in such a way, to ensure that disturbance to areas of nature conservation interest are controlled and that appropriate measures are adopted to preserve the ecology of specified areas or avoid impacts on protected species, in accordance with relevant statutory provisions/ legislative requirements.</p> <p>Where necessary, working sites adjacent to areas of nature conservation value will be fenced with a standard design hoarding or other appropriate screening to protect areas of conservation interest adjacent to working sites.</p> <p>Developments to be managed in accordance with ecological management plans Specialist wildlife exclusion fencing may be required at certain locations, e.g. reptile-proof fencing at Temple Mills MOL.</p> <p>In addition, the following mitigation measures would be employed, as appropriate:</p> <ul style="list-style-type: none"> • further surveys prior to construction; • programming of initial site clearance works to avoid sensitive periods; • an ecological 'Watching Brief' or monitoring of a suitable duration and level of sensitivity for the site concerned; and, • implementation of an Environmental Management System, e.g. to ensure appropriate responses to unanticipated finds. <p>SPECIFIC CONTROLS FOR HIGHWAYS AND OTHER OFF-SITE APPLICATION AREAS</p> <p>Translocation or exclusion of reptiles from worksites at the Temple Mills MOL is programme sensitive. The capture of animals would need to occur between March to October, prior to site clearance and construction.</p> <p>The programme for works affecting Bully Point Nature Reserve SNCI will need to allow specific exclusion works</p>	<p>C1(a) – Sustainable design manual to include strategy for Ecology and Nature Conservation.</p> <p>J1 – Ecological programme of work to be submitted and approved by LPA prior to works. J2 – Pre-construction survey for noxious weeds to be undertaken.</p> <p>J3, J4 – Zonal ecological management plan to be submitted and approved prior to works.</p> <p>J6 Zonal ecological management plan</p>	<p>12.9 – Translocation of Lizards – Receptor sites, consents and approvals.</p>	

for amphibians to be undertaken prior to the clearance of worksites.

MITIGATION (SUMMARY)

Temple Mill Lane MOL

- reptile survey and translocation to suitable receptor site;
- off-site habitat creation works at a variety of locations, e.g. SNHA1 and SNHS1.

River Lee SNCI

- access provided beneath new structure on eastern side of towpath. Habitat creation on highway earthworks (SNHS2) and of river corridor (SNHA2).

River Lee SNCI (Eastway, Waterden Road & Carpenters Road)

- OCMS, e.g. programme works outside bird breeding season, protective fencing, pollution control measures, etc.;
- restoration of construction sites and planting of new earthworks. Additional ecological planting adjacent to River Lee towpath at Carpenters Road.

Bully Point Nature Reserve SNCI

- OCMS, e.g. programme works outside bird breeding season, protective fencing and rescue of amphibians, pollution control measures for pond and rivers, etc.;
- permanent habitat restoration proposals for affected areas. Pylon removal will increase area available for ecological seeding or planting.

Eastway Cycle Track SNCI

- OCMS, e.g. programme works outside bird breeding season, protective fencing, etc.;
- restoration or habitat replacement proposals along the wayleave corridor.

Undesignated Areas, e.g. Waterden Road Allotments, Wick Field MOL, playing fields, Frigoscandia and other low ecological value wasteland sites.

- OCMS protective measures, as appropriate, e.g. programme of works outside bird breeding season, protective fencing, pollution control measures, etc.;
- on-site landscape works, or off-site habitat creation at a variety of locations.

Protected Species (excluding Reptiles – see Temple Mill Lane MOL above).

- pre-construction surveys, OCMS and watching brief, if required;
- detailed design at habitat creation areas may benefit specific groups.

Breeding and Foraging Birds

- pre-construction surveys, OCMS protective measures, as appropriate, e.g. programme of works outside bird breeding season and watching brief;
- detailed design at on and off-site habitat creation areas would provide new habitat variety and may be

tailored to benefit specific species or groups.

Based on the existing conditions at the sites affected, the following main ecological mitigation requirements have been identified:

- habitat creation as compensation for land take from SNCI designated in the UDPs and habitat loss within the Lee Valley Regional Park due to land take or change of land use;
- restoration of SNCIs and river bank temporarily affected by utilities construction works;
- general protection measures for habitats or species occupying land within or adjacent to work sites;
- pre-construction surveys;
- protection of breeding birds;
- control of noxious weeds;
- reptile translocation, including the identification, or creation of a suitable receptor site.

RAIL LANDS OUTSIDE PLANNING APPLICATION AREA

Habitat Creation

The land take of adjacent terrestrial wasteland habitat and general impacts on local breeding birds would be mitigated by habitat creation works within SNHS1 and 2 and SNHA2. Additional habitats would be also incorporated around the edges of the Northern Attenuation Pond in SNHA1 and along the water body in SHNS3, which would help to off-set habitat losses primarily associated with the impacts of off-site works at Temple Mill Lane MOL. Examples of beneficial features that could potentially be included are:

- bank design and wetland planting along proposed Northern Attenuation Pond suitable for the release of water vole;
- provision of artificial bat roosts or bat houses, particularly near the Channelsea River or the proposed Northern Attenuation Pond;
- provision of nest boxes suitable for black redstart, kingfisher, or other birds;
- installation of 'brown roofs', where black redstart habitat; mimicking derelict land, is created by placing rubble directly onto roofs of new buildings, and is allowed to become colonised by seed-bearing plants of benefit to the bird; and
- creation of grassy, herb-rich banks of benefit to invertebrates along habitat strips and utilities corridors.

ENERGY

Mitigation type 1: measures implemented within the design of the proposed development prior to the Energy Assessment being carried out. These measures are included within the Development Specification and are already above the statutory minimum;
Mitigation type 2: measures recommended following assessment of the proposed development against policy requirements. These measures are not yet included within the Development Specification, but are recommended become a condition for planning approval.

C1(a) – Sustainable design manual to include strategy for energy.

12.5 – Sustainable energy. The developer will not commence any works pursuant to the planning permission until it has established

<p>No part of the Angel Lane development in Zone 1 shall be occupied until the CCHP has been constructed in accordance with the details approved by the conditions of K2, approved by the Local Planning Authority and fully commissioned.</p> <p>No development (aside from minor variations agreed with the Local Planning Authority for the Channel Tunnel car park and access facilities, development at Angel Lane and Temporary or Permanent Works shall commence until details of the main electrical substation (to be located in Zone 1) and a programme for its provision has been submitted and approved in writing by the Local Planning Authority.</p> <p>ENERGY STRATEGY</p> <ul style="list-style-type: none"> • In order to mitigate against the carbon emissions from the proposed development, it is recommended that the Development Partners develop a strategy to achieve those targets that they have not already committed to achieving. • The use of an Environmental Management System or similar may be useful as a framework to deliver continual improvement against a set of objectives in a structured manner.’ <p>MONITORING</p> <ul style="list-style-type: none"> • The energy strategy should include a comprehensive framework for monitoring energy use and related carbon emissions within the proposed development throughout its life time. This should include a strategy for metering of energy, collection of data, trend mapping and ability to draw attention to ‘out of range’ values. • Information and communication technology infrastructure should be employed to facilitate widescale remote metering and data collection from building energy consumption as well as generation from CHP/CCHP and renewable energy installations. • This should be delivered through an energy service company linked to an Estate Management Company that will maintain an overall management role across the development. <p>ENERGY EFFICIENCY</p> <ul style="list-style-type: none"> • Additional carbon targets should be set to reduce energy use within buildings at Stratford City. These targets should be based on reductions to the ECON ‘good practice’ figures already committed to by the Development Partners. • An energy strategy should include measures to increase energy efficiency of the development including possibilities for super-low or zero carbon residential development. An energy strategy should identify areas of development that may be naturally ventilated due to the plot context in terms of air quality and noise. This is likely to lead to much lower energy demand in a building compared with an air conditioned counterpart. An energy strategy should include a commitment to install energy efficient appliances within buildings, including ‘Class A’ rated white goods in domestic properties. <p>RENEWABLE ENERGY</p> <p>The scheme does not currently incorporate any renewable energy generation. It is recommended that the Development Partners further investigate the feasibility of incorporating renewable energy generating plant, in order to generate a significant proportion of energy for the site. Renewable sources to be considered include:</p>	<p>K4 – CCHP</p> <p>K5 – Electrical substation</p> <p>K7 – Energy monitoring</p> <p>K1 – Solar powered infrastructure</p> <p>K2 – CCHP</p>	<p>the Sustainable Energy Partnership.</p> <p>12.11 Environmental Management System.</p> <p>12.7 – Carbon Emissions</p> <p>12.6– CCHP Plant and Northern District Energy Systems</p>
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- Large wind turbines adjacent to the site (at around 1MW each)
- Smaller wind turbines within the proposed development (at around 100kW each)
- Solar photovoltaics (PV)
- Solar thermal
- Biomass for district heating or CHP/CCHP

It is understood that the large scale implementation of renewable energy generation at the proposed development would not be achieved in isolation, and should be the result of engagement of the LBN, GLA and the Development Partners, as well as using Energy Service Companies (ESCOs) to finance, and operate schemes.

In order to maximise flexibility for the future installation of renewable energy generation plant within the scheme, the strategy should include a framework to protect solar access to buildings.

The electrical infrastructure should be designed to be flexible and ducted in order that it may be replaced in the future with low voltage cables to enable widespread distributed energy generation.

An example of a low-risk, feasible renewable energy intervention would be the introduction of solar photovoltaics (PV) to generate electricity for all street lighting, parking meters and bus stops and shelters within the development, and possibly extended to pumping of water for fountains and water features and pumping of municipal potable water supplies.

EFFICIENCY OF SUPPLY

A framework for monitoring and reporting the energy use and efficiency of the CCHP should be developed in order that quality is maintained.

The strategy should include an investigation of the feasibility of extending the CCHP heating pipework to neighbouring residential areas outside of the proposed development to reduce levels of fuel poverty in those areas.

BREEAM

Prior to commencement of construction of any non-residential building, a certificate issued by or on behalf of The Building Research Establishment shall be submitted to the Local Planning Authority to demonstrate that the design of that building will achieve a BREEAM 2004 'Very Good' or 'Excellent' rating.

Prior to commencement of construction of any residential building, a pre-construction assessment shall be submitted to the Local Planning Authority to demonstrate that the design of that building will achieve, as a minimum, Level4 of the Code for Sustainable Homes.

ASSESSMENT WITH MITIGATION TYPE 2 MEASURES

The reduction in carbon emissions through a range of possible measures to be applied within the proposed development as mitigation

12.8 Renewable Energy

K3 – CCHP

K6 – BREEAM Ratings

K6A – BREEAM Pre-construction assessment

12.14 – Exemplar Buildings

Type 2 Measures have been assessed including:

- Additional carbon targets reduced by approximately 20%
- Introduction of PV-powered street furniture, signage and infrastructure
- Provision of 10% of energy from renewable sources

ENVIRONMENTAL WIND

DEVELOPMENT SPECIFICATION MITIGATION

A graded building height strategy has been adopted for Stratford City. The strategy ensures that developments cascade in height from lower-rise to high-rise from the site perimeter to site centre respectively along a SW-NE axis. This feature encourages the displacement of higher-level winds over the site and serves to reduce the severity of downdraughts generated on windward faces of individual buildings.

PROPOSED MITIGATION

The mitigation measures proposed for Stratford City focus on ground level wind flow patterns that are anticipated for the prevailing southwesterly and northeasterly wind directions, which dominate the perceived pedestrian wind comfort. The proposed mitigation schemes are experience-based and apply accepted industry approaches. The extent of their final effectiveness will depend on purposeful and integrated development with the detailed design development of the various plots. The proposed mitigation schemes seek to:

- Limit the impact of potential downdrafts (and associated corner streams) on both internal and external wind environments;
- Limit/alleviate wind funnelling between buildings;
- Provide local shielding to wind sensitive building features such as entrances, thoroughfares and recreational spaces.

Options for mitigating the external and internal impacts identified by the assessment include:

- Cascaded plot massing with lowest buildings located toward north eastern and south western extents of boundary Zones;
- Plot massing orientation streamlined with prevailing SW – NE wind axis;
- Substantial canopies;
- Ground level screening;
- Soft landscaping;
- Façade recesses between individual plots;
- Irregularly-shaped individual building plots;
- Substantial podiums for mid-rise and tall plots;
- Recessed building entrances.

The effectiveness of the listed mitigations schemes will need to be validated through boundary layer wind tunnel testing at a detailed design stage. The mitigation schemes outlined, or combinations thereof, are expected to reduce environmental wind impacts to levels which, in general, meet the target (Lawson) criteria set out in the development specification.

V4 – Wind testing

HYDROLOGY

SURFACE WATER PROCEDURES

The works will be carried out and working methods adopted to ensure that construction activities generally do not disturb ground contamination to adversely affect surface water and ground water quality. The following Best Practice measures will be adopted:

- discharge to public sewers – after prior agreement with TWUL;
- the existing storm water drainage system will be retained where possible during construction, with modifications made as necessary to prevent ingress of debris;
- discharge via sediment traps/ settlement tanks or ponds;
- installation of interceptors;
- control of spoil and other materials to prevent spillage, particularly during periods of high local surface flood risk (September to March), through appropriate handling and selection of spoil/material storage locations;
- issues relating to contaminated land affected by the construction, together with proposals for protection of surface and groundwater; and
- all drainage arrangements will be determined in consultation with the Environment Agency and Local Authority.

RAIL LANDS OUTLINE PLANNING APPLICATION AREA AND OFF SITE INFRASTRUCTURE WORKS SURFACE WATER

DRAINAGE AND FLOODING

The works at Carpenters Lock have off-set the loss of floodplain storage and the small increase in flood flows from the post-CTRL landraise area. In comparison, to the flows in the Lee during the 1 in 100 year event, the slight addition in flows from the proposed Stratford City development makes negligible difference to this operation. Therefore, primary mitigation is by ensuring that discharge during the flood peak (around 30 hours) is limited. This can be achieved during detailed drainage design by the use of appropriate sizing and controls and will be necessary for drainage consent approval.

WATER QUALITY

As discussed previously, water quality standards can be maintained by implementing best practices such as implementation of sediment traps and petrol interceptors. Consents will be discussed with the EA as part of the design process.

Those related to surface water are summarised as follows:

- the amount of bare, stripped soil on site at any one time will be minimised, possibly by seeding bare earth to stabilise it;
- adequate drainage will be designed and installed during construction work and cut off trenches/dewatering measures will be used across the site to manage surface water run off, with the aim of preventing any water from entering watercourses, either directly as surface run-off, or indirectly via the surface water drainage systems;
- storage tank/container facilities will be appropriately bunded within designated areas, sited as far as possible from any watercourse or surface drain;

C1(a) – Sustainable design manual to include strategy for water.

L – Hydrology and Water Resources.

L1, L2 – Details on foul and surface water drainage

- if materials escape, remedial action will be taken as soon as possible and the use of the appropriate absorbent material for containment will be employed;
- the existing surface water drainage system will be retained where possible during construction, with modifications made as necessary to prevent ingress of debris;
- discharge to public sewers – after prior agreement;
- discharge via sediment traps/ settlement tanks or ponds;
- installation of interceptors;
- control of spoil and other materials to prevent spillage, particularly during periods of high local surface flood risk (September to March), through appropriate handling and selection of spoil/material storage locations; and
- all drainage arrangements will be determined in consultation with the Environment Agency and Local Authorities.

TEMPLE MILL LANE OUTLINE PLANNING APPLICATION AREA

No increases in flows are expected from this area as it will be used as playing fields and will drain to ground.

HIGHWAYS IN LONDON BOROUGH OF NEWHAM, TOWER HAMLETS, HACKNEY AND WALTHAM FOREST

Attenuation may be necessary for these roads if inadequate capacity in the existing combined sewer system exists or large increases in run-off are predicted at detailed design stage.

MITIGATION (SUMMARY)

- Lee Flooding - Design system so no significant increase in discharge during flood peak
 - Flooding on site from rainfall - Design system so does not flood site in 1 in 30 year flood
 - Site discharge during operation - Use of petrol interceptors and settlement in pond and /or lake
 - Box dewatering discharge during operation - Ensure discharge consent is adhered to
 - Overflow from CSOs - None required
- Discharge from construction work - Use of best site practices (settlement tanks and petrol interceptors)

LANDSCAPE/TOWNSCAPE

LANDSCAPE STRATEGY

INITIAL WORKS

- Temporary grass seeding over the entire site to be developed
- Temporary and permanent buffer tree planting to key areas
- Erection of temporary security fencing to the site boundaries, and temporary public access routes

BUFFER TREE PLANTING – PHASE 1 WORKS

- Buffer tree planting consisting of a grid of Birch trees either side of the Phase 1 entry roads located in future/undeveloped phase areas and along the eastern/ Leyton-side site boundary of Zone 4 at the top of the boundary batter.

L3 – Storage of solid matter and proximity to watercourses.

C1(a) – Sustainable design manual to include strategy for environmental building design.

I1 – I4– Temporary Landscape and Earthworks

PHASE 1 WORKS

- The permanent landscape of the first phase will be installed with the development.

LANDSCAPE DEVELOPMENT

- The appearance of the site will evolve over time with the sequential phasing of development. The temporary grass seeding and tree buffer areas will be maintained in a clean and tidy state, and be replaced by phased development which will establish a new built environment consisting of buildings and public space with a landscape which will mature over time.

RAIL LANDS OUTLINE PLANNING APPLICATION AREA

GENERAL MEASURES

- Creation of a 'genius loci', i.e. a sense of place:
 - reliant on high quality design of both built form as well as public and private space
 - creation of connectivity and permeability
 - Uniformity of massing
 - Changes in heights, edge treatments and roof lines will help to create visual interest and sense of place.
- It is important that there is an all round commitment to the quality of building facades and that it is not only the main frontages that are imbued with physical and visual quality.
- Additional open space- the location, size, shape, function and character of which needs to relate directly to the character of the zone, the scale and character of adjacent buildings and to the functions that are likely to be required in these areas. Thus, for example, there is the likely requirement for additional urban parks and squares, which may include winter gardens, fountains, and a mixture of hard and soft landscape areas.
- Creation of urban 'light - wells', which provide appropriate places and spaces for passive and/or active amenity as well as visual amenity.
- Provision for appropriate pedestrian and cycle movements and for ecology, where possible.
- Water, which can provide amenity as well as physical and visual delight should form an important part of the overall open space urban design strategy with the provision of fountains, rills, pools, ponds within hard and softy landscape areas. Water can also be used to mask traffic noise within the development.

Furthermore, as stated above, it is considered that in order for the development to be successful, that every opportunity should be taken for environmental enhancement. To include:

- Urban armature and hierarchy of streets
- Parks and water features
- Green Roofs and Green Facades. The use of green roofs and green facades can create vertical greening effects and an appropriate synergy with the open space in some locations such as at the interface with the Lee Valley Park to the north west edge of the site. The use of green roofs and façades could also fulfill sustainability objectives, through better insulation and water retention
- Ecological objectives may also be furthered by providing nesting areas for birds and habitat and feeding areas for invertebrates, such as butterflies as well as fulfilling other environmental objectives such as filtering dust and pollution from the air. It is also suggested that in some areas fruit and berry producing

Q3 – Landscape management and maintenance plan to be submitted and approved by the LPA.

Q4- Details of the open space and design and landscaping of all unbuilt areas of each zone.

trees are used. It is considered that the use of appropriate species would enhance bird populations in the immediate and adjacent areas.

- The water bodies and their edges are key issues. It is important that water quality is maintained at all times and that this is conducive to the appropriate use of the water and its edges by wildlife including amphibians, fish, and wildfowl. In terms of amenity, it is also important to ensure that people are allowed to access the edges. However, in some areas this edge should be created specially for wildlife and human access should be discouraged. It is important to note that vegetation and especially trees can take time to have a marked impact on the visual character of the environment.
- Tree planting should be considered along all roads including tertiary roads. It is thus suggested that where street trees are planted and where an immediate effect is required that 'extra heavy standard trees' 16-18/18-20 girth and indeed 'semi-mature' specimens are used. The planting of trees is considered an important part of the urban fabric.
- The potential for the creation of further private/semi-public open space should be encouraged as far as possible above ground level with the use of roof gardens, terraces and balconies.
- It is recommended that the edge condition alongside the railway boundaries varies and that where possible tree planting should occur. This should help to break up the lower level massing of buildings and help to enhance townscape quality and views for railway passengers and views from potential developments at Chobham Farm, Carpenters Road, and the Stratford Station area.
- Where areas of land may be left for long periods, consideration should be made in agreement and liaison with the council for other activities to take place. Such activities which may help the short to mid to longer term character of the area may include:
 - Plant nursery – growing and holding of nursery stock for use in London as well as on site;
 - Temporary Garden Centre – open to the public;
 - Growing of shorter term crop species such as Christmas trees for the local market etc.
 - The success of the development will also depend in part on 'inclusivity' and the provision of appropriate access for disabled people. Detailed design proposals need to take account of best practice with regard to standards of accessibility and inclusion.

LEE VALLEY REGIONAL PARK AND CLAYS LANE

The interface between the Park and the north-western part of the development is sensitive and the built and open space proposals need to be sensitively designed. It may be appropriate to have a 'green' interface between the Park and built form.

- Semi-natural habitat areas may be planted with large trees. Poplars and willows appear to be appropriate in the context of the adjacent Channelsea River and the River Lee and the semi natural habitat proposals for the attenuation pond area. These trees would form part of an overall landscape/open space/ecological strategy, which would include wet areas, open wildflower areas, and tree groups.
- Pylons should be subject to design to create a 'landscape/architectural feature' that may be visually more acceptable than the standard pylons that are used.
- Water filled swales and ditches adjacent to the sealing compound boundaries may be used to provide

Q7 – All publicly accessible areas shall be designed to be accessible to and usable by disabled people.

separation and security at the sealing compound sites.

- It may be appropriate to 'soften' the effect of built form close to the Park boundaries, with green roofs, green facades and through good architecture.
- Lighting needs to be particularly sympathetic to Lee Valley Regional Park in order to not to detrimentally affect the local environment and wildlife.
- Planting needs to be used to provide amenity within the public realm and to help soften the built form.
- The proposed pedestrian/cycle link at Bully Point should be located to minimize damage to existing vegetation on the banks of the Channelsea River and the bridge link should be designed to be a positive physical and visual feature in the landscape.

The detailed proposals at the Clays Lane Housing Estate require sensitive treatment in order to create connectivity as well as to provide amenity for both the residents at Clays Lane and the new residents within the new development in the area of the under grounding of the power lines. It is important that the north facing facades, of the proposed buildings facing Clays Lane Estate are imbued with visual interest and are not treated as less important elements.

OTHER SPECIFIC MITIGATION MEASURES

- The bridge connection between Meridian Square, outside the existing Station over the railway to the urban armature, needs to be a landmark structure in order that the townscape quality of this important area is enhanced.
- The photomontage at Great Eastern Road, (Figure 31), indicates the importance of providing enough space for the public realm on Great Eastern Street as it connects to Angel Lane. It is considered that street tree planting is extremely important. These trees will help to improve the townscape character of a busy road corridor and at the same time ameliorate views and temper the apparent height of the proposals at ground level and some upper level views from adjacent buildings.
- The safety parapets along the railway bridges and at the CTRL box need to be detailed with regard to the relevant standards but the detail design should incorporate a strategy, which helps to better integrate these features visually into the area. This may include the use of planting and a range of material finishes.
- Tree planting around the CCHP would help to better integrate the facility into the local environment. The facades and stacks of the CCHP should be designed with visual quality in mind and not only function.
- Street tree planting along Temple Mill Lane adjacent to the proposed school would help to better integrate the proposals into the surrounding context.
- The minimum 15 metre width of temporary monoculture sacrificial planting which would be planted to screen areas either side of the primary road access to Zone 1 and along the eastern boundary of Zone 4 should be designed and specified to provide a robust and relatively quick growing and attractive screen. It is suggested that this screen be planted with 1.8-2.1 metre high 'feathered' pioneering species such as birch. (Refer to the National Plant Specification, 1997, T.2.6 Feathered Trees.) The application of a robust buffer of trees as described above should also be used where areas/parcels of land may be left open for longer periods whilst awaiting development to occur.
- It is recommended that should the Frigoscandia site remain undeveloped for longer periods of time that the existing industrial buildings are removed as soon as possible. Furthermore, the land raise should be

completed, and the area seeded and protected and the edges planted as per the other areas that are not part of the first phase of development.

- A minimum area of 156,470 m² shall incorporate a minimum of 123,760m² of publicly accessible open space and a minimum of 32,710m² of urban green space which shall include a NEAP facility in North Park, a LEAP facility in Carpenters Square, a LEAP facility in Long Park, a MUDA in Zone 2 and a LAP in Zone 1.
- The design of development will accord with the principles identified the Stratford City Design Strategy (2003) and the Design Strategy Update (2004).

NOISE BARRIERS

It is suggested that in order to assure landscape quality and to create permeability that any environmental noise barrier be designed specifically for their particular locations and that proprietary solutions are unlikely to suffice. The form and alignment of the barrier needs to arise through the balance of acoustic, landscape, and visual parameters.

LIGHTING

In order to minimise light pollution, the lighting strategy should comply with the guidance notes produced by the Chartered Institute Of Building Services Engineers (CIBSE) and The Institution of Lighting Engineers (ILE) and some or all of the following criteria:

- all street lanterns should be full cut-off and preferably with flat glass. Where indirect type lighting columns are used, care should be taken to select luminaires where there is no upward spill light;
- all lanterns around the perimeter of the site should be positioned so that they face into the site;
- columns should be kept as low as practically possible to prevent views of the lanterns from surrounding areas;
- where required, shields and anti glare screens should be used;
- any floodlighting of buildings should be considered with care. Low reflectance surfaces or low illuminances for the lit surfaces should be used;
- where possible luminaires should not be located on the ground but should be situated so that the majority of the light is directed downward;
- light sources selected should be low wattage as far as practically possible;
- controls should be included so that some non-essential lighting is switched off at pre-selected times, while the street lighting and security lighting should be designed to switch to a lower level during the appropriate hours. This could be done by switching each luminaire/lantern so that uniformity of distribution could be maintained.

(A detailed assessment of the issue should be made at detail design stage, when a full external lighting strategy should be developed to address all the relevant criteria.)

With regard to the proposed flood lighting of the proposed sports fields at the MOL at Temple Mill Lane, the lighting should comply with the guidance notes produced by the Chartered Institute Of Building Services Engineers (CIBSE) and The Institution of Lighting Engineers (ILE) and some or all the above criteria as well as guidance by the Sports Council. Light spill should be minimised, as far as possible. Some long term views of the flood lighting may be ameliorated through tree planting along the boundaries particularly during the summer

E1 – Open Space provision and strategy

F1 – Design strategy

months. The benefits would increase over time as planting matures.

TEMPLE MILL LANE PLANNING APPLICATION AREA

It is considered that the character and the visual quality of the interface with the railway corridor and Temple Mill Lane would benefit from planting. Depending on the area it may be possible to establish boundary tree planting as well as native tree and scrub areas and/or wildflower edges adjacent to the proposed turf sports pitches. Some views of the flood lighting may be ameliorated through tree planting along the boundary as suggested above.

HIGHWAYS IN LONDON BOROUGH OF NEWHAM HENRIETTA ROAD AND ALMA STREET

The proposals include for 2.5 metre, planting strips. It is suggested that these should include tree planting. In order to establish an immediate presence if trees are used these trees should at least be 'extra heavy standard' to BS 3936. It is considered that integration of the roads crossing the Chobham Farm land may best be achieved by utilising more urban type support solutions other than embankments.

It is suggested that perhaps stepped retaining structures with horizontal planting beds may use less land and allow for planting including tree planting. Mitigation could be applied which would help to reduce land take as well as provide screening. In order to establish an immediate presence if trees are used these trees should at least be 'extra heavy standard' to BS 3936.

WARTON ROAD/CARPENTERS ROAD/HIGH STREET

The road proposals and traffic would be viewed from the footpath and footbridge south of the Waterworks River. Taking account that the view at present is towards derelict buildings and car parking the change in effect is not considered consequential. However, it is considered that although the change is not necessarily adverse there is a need for mitigation. The proposals already include 10 metres for landscape works. (Photo 5, Figure 10) In order to establish an immediate presence if trees are used these trees should at least be 'extra heavy standard' to BS 3936. Where possible landscape/ecological works should be proposed in association with the proposals near the Waterworks River. Proposals here could have landscape as well as ecological objectives.

HIGHWAYS IN LB TOWER HAMLETS

It is suggested that the trees that may be lost should be replaced with street trees in the landscape strips and/or by agreement with the property holders. Trees should also be planted in the landscape strips associated with new highway works. In order to establish an immediate presence if trees are used these trees should at least be 'extra heavy standard' to BS 3936. The small area of land that would be left over between the railway line, Carpenters Road and the River Lee should be used for planting, potentially having amenity as well as ecological objectives.

HIGHWAYS IN LB HACKNEY WATERDEN ROAD

Street trees should be planted at appropriate centres within the landscape strips in order to create an 'avenue

effect'. Where possible, tree planting may occur in the central reservation. In order to establish an immediate presence if trees are used these trees should at least be 'extra heavy standard' to BS 3936. Additional planting may be required to replace loss of planting on private property. This replacement planting would need to be negotiated, designed, and planted by agreement with the property owners.

EASTWAY

(Photos 8 and 9, Figures 11 and 12). The proposals include for the replanting of the ash trees and infilling of the gaps that have occurred over time. It is furthermore considered that it would be beneficial to provide a double row of trees, which would help to mitigate the loss of visual character that is created by the existing large specimens. Trees here should particularly require robust staking/protection to prohibit vandalism. In order to establish an immediate presence if trees are used these trees should at least be 'extra heavy standard 18-20 girth' to BS 3936.

**HIGHWAYS IN LB WALTHAM FOREST
TEMPLE MILL LANE**

Where possible, avenue type tree planting should be planted along Temple Mill Lane. In order to establish an immediate presence if trees are used these trees should at least be 'extra heavy standard' to BS 3936.

RUCKHOLT ROAD

Mitigation should include for the replacement of the loss of the newly planted plane trees with similar trees in the immediate or nearby location.

OFF SITE INFRASTRUCTURE WORKS

If possible, the NGC sealing compound should be realigned not to intersect the cycle circuit itself. Appropriate belts of dense native tree and shrub planting should be located to help screen and integrate the sealing compounds at the north eastern section of the Eastway Cycle Circuit both within the park as well as on the park boundaries.

MITIGATION OF CONSTRUCTION EFFECTS

The proposals include for buffer tree planting of birch trees planted at a maximum of 1.5 metre centres to a minimum width of 15 metres alongside areas awaiting construction. (See Outline Construction Method Statement in Volume 1 of the ES.) This planting could remain as a visual buffer in order to screen construction. Furthermore, grass seeded earth mounding and/or hoardings would be used to mitigate views as well as noise.

LIGHTING

All Zonal Construction Method and Management Statements shall as a minimum contain details of the lighting scheme for use during demolition and construction of development within the relevant Zone

G2 (b) – Construction Method and Management Statement

EXTERNAL EFFECTS

To mitigate the impacts poor daylight availability on Building 7 in the caravan park and Building 8 (7-18b Clays

V1 – Demonstrate that

<p>Lane Close) it is proposed that further tests are undertaken at the detailed design stage, to ensure that the proposals comply with BRE good practice criteria, as stated in the Development Specification.</p> <p>To mitigate against poor daylight availability on 45-53 Angel Lane it is proposed to reduce parcel heights in the area to an acceptable level. The proposed buildings could be 'stepped' back creating a 'terrace' effect to achieve this. These measures should be incorporated into the design to comply with the non-mandatory BRE guidelines.</p> <p>INTERNAL EFFECTS</p> <p>The assessment of internal effects is dealt with by means of an Environmental Specification in the Stratford City Development Specification attached to Appendix 2 in Volume 1 of the Environmental Statement. Therefore further mitigation is not required.</p>	<p>design accords with BRE criteria.</p>	
<p>NOISE AND VIBRATION</p>		
<p>RAIL LANDS OUTLINE PLANNING APPLICATION AREA</p> <p>CONSTRUCTION NOISE</p> <p>General principles of construction site noise control would be followed according to the guidance given in BS 5228: Part 1. This requires that noise control measures would be adopted according to 'best practicable means' which includes:</p> <ul style="list-style-type: none"> • Specification of plant equipment • Hours of operation • HGV access routes. <p>Other noise control measures are described in the Outline Construction Method Statement (OCMS)</p> <p>If noise levels are to exceed 70 dB(A) at sensitive areas for an extended period, or works were likely to continue for over a year with significant noise impact, then a Section 61 application would probably be appropriate.</p> <p>Hoarding would be erected around the perimeter of the site, or at least the zones that are under construction to provide temporary screening.</p> <p>Plant machinery such as generators or compressors should be positioned as far from noise sensitive locations as possible and ideally in naturally screened positions. All plant equipment would be adequately maintained to minimise noise emission.</p> <p>No demolition, construction or maintenance activities audible at the site boundary of any residential dwelling shall be undertaken outside the hours of 08.00 to 18.00 Monday to Friday and 08.00 to 13.00 Saturday or at any time on bank or public holidays without the prior written approval of the Local Planning Authority.</p> <p>TRAFFIC NOISE</p> <p>Where practicable, noise mitigation should be used to control the noise impact. This may include noise insulation, such as proprietary noise barriers such as timber screens or earth mounds as part of the landscaping design. A combination of mounds with barriers on top is also an option.</p>	<p>C1(c) – Site Wide CMS</p> <p>G1 – Zonal Construction Method and Management Statement to be submitted and approved by the LPA.</p> <p>O1,O2,O3 – Construction of the development (noise during)</p> <p>G5 – Zonal Construction Method Statement</p> <p>O5,O6 – Occupation of the development - Noise exposure Category B, and</p>	

It was noted in section 9.2.20 (of the ES) that noise levels at internal locations intended for residential development may require mitigation as, in some areas, predicted levels could be in excess of Noise Exposure Category (NEC) B referred to in PPG24. In these locations noise levels could be controlled by the measures described above. In addition, suitable noise insulation of the building envelope would be specified to ensure that interior noise levels would be acceptable according to relevant standards cited in PPG24.

BUILDING SERVICES PLANT NOISE

Operational noise from building services plant will be controlled to within the target noise criteria established by the Local Authorities surrounding the development. To control noise, plant rooms will be placed, where possible, to minimise noise propagating to sensitive properties or areas. The specification of plant machinery with low noise emission and properly attenuated supply and extract terminations will help to ensure that noise is minimised. The use of enclosures or local screening might also be considered. As any impact from plant noise at residential locations is most likely to occur at night, if it all, the operation of plant at night will be minimized where possible.

All permanent development on site should meet a BS 4142 noise rating of 0 (control of noise from plant attached to the buildings)

TEMPLE MILL LANE OUTLINE PLANNING APPLICATION AREA

General noise mitigation measures in relation to construction noise would apply to this area as described above. Traffic noise impacts would not be sufficient to require mitigation measures based on the calculated noise increases around this area.

HIGHWAYS IN LONDON BOROUGH OF NEWHAM

General noise mitigation measures in relation to construction noise would apply to this area as described above. Traffic noise increases would not be sufficient to require mitigation measures based on the criteria for significant impact. However, location 13 would meet eligibility requirements for the Noise Insulation Regulations in that noise levels would exceed the 68 dB(A) LA10,18h noise level threshold. (see section 4.10.2). To control traffic noise levels some form of mitigation would be appropriate here such as proprietary noise barriers. These would be positioned between the road and the residential properties, breaking the line of sight between the two.

HIGHWAYS IN LB TOWER HAMLETS

The assessment is limited to potential noise impacts on existing noise sensitive receivers. No receiver locations have been identified for this borough and no mitigation has been considered.

HIGHWAYS IN LB HACKNEY

The assessment is limited to potential noise impacts on existing noise sensitive receivers. No receiver locations have been identified for this borough and no mitigation has been considered.

HIGHWAYS IN LB WALTHAM FOREST

Construction and operational impacts have been rated as not significant for this area. No additional mitigation is

exceptions.

O4 – Occupation of the development - plant noise.

O11 – Noise & occupation of the development.

O7 – Noise barriers Temple Mill Lane

considered appropriate

OFF SITE INFRASTRUCTURE WORKS

Based on the limited assessment described in paragraph 9.8 it is considered that the construction and operational impacts of the off site infrastructure would not be significant provided that plant were specified to remain within the established target noise criteria. It is assumed therefore that no further mitigation would be required.

OPERATIONAL NOISE LEVELS

Internal noise levels within residential units shall meet the 'good' standard of BS8233 Table 5.

O10 – Noise & Occupation of the development

SOCIO ECONOMICS

EMPLOYMENT IMPACTS

The employment impacts of the proposed development will be positive. An extensive and comprehensive range of education, employment and training initiatives will be required to strengthen the ability of residents of the CIZ and WIZ to access the employment opportunities provided at Stratford City, and the Development Partners will discuss with relevant education and training providers how best to take this forward.

The Construction Method Statement outlines the scope of the construction and employment training strategy to be developed in partnership with local agencies and training providers. The Development Partners will also work with relevant partners to develop training and employment initiatives in relation to the completed development employment. This should be based on an assessment of the sectoral and skill profile of employment at Stratford City as well as skill levels amongst the potential local workforce. The main scope for mitigation of negative employment impacts will be in respect of displaced employment (see below).

DISPLACED EMPLOYMENT

Appropriate mitigation measures for displaced employment would be for relevant business support or investment agencies to assist businesses that will be displaced from the Rail Lands site to relocate and re-invest to suitable sites elsewhere within East London.

HOUSING

The only main negative housing impact of the proposed development will be likely displacement of the Waterden Road travellers' site. It is recommended that the impact on this travellers' site is assessed further and steps are taken to relocate the site, or provide additional pitches on alternative sites.

An updated Site Wide Housing Strategy pursuant to condition C1 (e) will need to be submitted and approved by the Local Planning Authority prior to approval of any Zonal Masterplan or Reserved Matters. This revised strategy should indicate the proportions and mix of market, intermediate and social rent housing across the Stratford City Development.

A satisfactory mix of dwelling size according to predefined densities for residential floorspace shall be applied, unless minor variations are agreed with the Local Planning Authority.

C4, C1 (e) – Site wide strategies

U - Housing

<p>COMMUNITY FACILITIES</p> <p>The committed floorspaces for Community Facilities provide scope to provide a range of community facilities that will meet the needs of the new residential population, and strengthen provision for residents of surrounding areas. The benefits of the approach of committing space for community facilities at this stage enable detailed specifications of the community facilities and services at Stratford City to be developed in conjunction with local authorities, relevant service providers and the community as the scheme is taken forward. With the exception of schools, the Development Specification does not include specific details of the type and capacity of community facilities to be provided, and it is difficult therefore to draw conclusions on the detailed impacts of the proposed development. Discussions between the Development Partners and relevant providers of community facilities and services are ongoing. Discussions and further assessment of mitigation measures (in the form of new or enhanced community facilities, many of which could be provided onsite within the floorspace allocations outlined in the Development Specification) will need to consider the following issues:</p> <ul style="list-style-type: none"> • provision of nursery facilities and places for the residents and workforce of Stratford City; • impacts (both positive and negative) on Further Education provision; • details of primary healthcare provision (onsite) and any adverse impacts on acute care health provision; • details of the on-site provision of facilities for community and youth groups; • library provision; • the scope for providing appropriate indoor leisure and recreation facilities; and • off-site measures to mitigate or replace the loss of allotments. <p>No retail or leisure floor space will within Zone 1 shall be opened for trade with the public until all off-site road works referred to in Condition H2 (a-e) have been carried out, completed and are open for general use by the public.</p> <p>CRIME</p> <p>It is recommended that crime prevention and reduction measures are a major feature of the design and management strategy for Stratford City. A strategy and approach for proactive and high quality estate management will have a positive impact in reducing crime and fear of crime.</p> <p>USE CLASS</p> <p>All floorspace shall be restricted according to the use classes provided and shall only be used for the purposes falling within those use classes unless minor variations are agreed in writing with the Local Planning Authority.</p>	<p>H2 – Access</p> <p>S – Restrictions on use</p>	
SOIL CONDITIONS, GROUNDWATER AND CONTAMINATION		
<p>RAIL LANDS OUTLINE PLANNING APPLICATION AREA</p> <p>Mitigation measures to control the potential adverse effects of contamination will be a combination of:</p> <ul style="list-style-type: none"> • design measures for buildings, foundations, underground services and public open spaces; and • precautionary measures and procedures during all construction works. 	<p>C1(c) – Site Wide CMS</p> <p>G1-G7 – Zonal Construction Method</p>	

<p>The following general principles will apply:</p> <ul style="list-style-type: none"> • prior to undertaking areas of development, supplementary detailed site investigations will be carried out where required. These will be sufficient to define the requirements for any remediation of the ground and groundwater, and to enable the particular development of each area to be designed and constructed taking into account any residual ground risks; • if necessary, a remediation strategy will be agreed with LBN and the EA prior to any development works commencing; • the design and implementation of all ground works will comply with the Outline Construction Method Statement (OCMS), to ensure a consistent standard of good environmental practice and procedures; • detailed Construction Method Statements (CMSs), based on the OCMS, will be developed for the detailed masterplan applications for each zone and implemented during construction; • if contaminated material is identified within a zone, an assessment will be made of the requirements for remediation and an action plan agreed; • all piling systems will be designed to minimise any significant adverse effects arising from cross-contamination between aquifers, in accordance with published guidance issued by the EA. Piling proposals for each development will be required to comply with the zone specific CMS, which will be approved by the EA; • no soakaways shall be constructed in contaminated ground; • no hazardous materials shall be used, handled or stored on the site until details of such use, handling or storage has been submitted and approved by the Local Planning Authority; • no impact piling shall take place without the prior written approval of the Local Planning Authority; and • where building materials may be exposed to aggressive ground conditions, suitably resistant materials will be incorporated into the building design. <p>CONSTRUCTION PHASE</p> <p>The OCMS for the whole of the application site will be implemented to manage and control all ground works. Section 4.5 of the OCMS details the site-wide procedures and methods that must be followed to minimise the potential effects of residual ground contamination across the application site. Further detailed procedures will be outlined within the CMS for each zone and will be agreed with the local authorities, the EA and the Health and Safety Executive prior to the commencement of the construction activities. The CMS will be imposed on all contractors working on individual development plots during the progressive phases of development. The OCMS requires the following measures:</p> <ul style="list-style-type: none"> • prior approval of a zone specific 'Code of Construction Practice' document (CoCP) and detailed construction method statements by the local authorities and the EA; • a watching brief to be maintained to identify any potential contaminated material during the earthworks phases of the development. • A set of Contaminated Land Procedures will be followed if contaminated material is found; • procedures and protocols to prevent, or reduce to a minimum, the exposure of construction workers, visitors to the construction area, and users of neighbouring areas to contaminated materials; • procedures to be implemented during installation of underground services and foundations to prevent 	<p>and Management Statement to be submitted and approved by the LPA.</p> <p>M – Contaminated Land and Remediation Strategy</p> <p>L4 – Hydrology</p> <p>L8 – Hydrology G6 – Construction methods</p>	
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creation of contaminant migration pathways;

- watching brief of all excavation works to identify significantly contaminated ground;
- limiting dust generation during excavation, handling and storage of potentially contaminated materials;
- sampling and testing of excavated soils;
- all arisings containing Japanese Knotweed remnants shall be treated as controlled waste and disposal will follow the best practice recommendations issued by the EA;
- appropriate handling, treatment and disposal of groundwater pumped from excavations and dewatering works to be approved by EA prior to commencement of works;
- control of surface water run-off; and
- storage of all fuels and chemicals to conform with Government regulations and best practice guidance issued by the EA.

OPERATIONAL PHASE

All buildings will be designed to comply with Building Regulations, including the provision of ground gas protective measures where specific ground conditions and form of development require such measures.

Materials used for below ground services and structures will be suitable for the prevailing ground conditions and able to withstand the corrosive ground conditions that may be present.

All below ground services routed through areas of ground contamination will be laid in protected corridors of clean soil to ensure that workers are not exposed to contaminated materials during routine maintenance work. Any material excavated from the Rail Lands site and intended for re-use within soft landscaped areas will be sampled and tested in order to assess its suitability. Only those materials assessed to be suitable with respect to human health and plant health will be reused within landscaped areas and gardens.

If bulk storage of fuels or other liquid chemicals is required, all storage tanks will be designed in conformance with Government regulations and best practice guidance issued by the EA. The design of any proposed petrol stations will be approved by the EA prior to construction.

TEMPLE MILL LANE OUTLINE PLANNING APPLICATION AREA

Chemical analysis of soil and groundwater samples will be incorporated into any ground investigation undertaken at the Temple Mill

Lane site, prior to construction of the playing field facilities in order to characterise the ground conditions at the site with respect to soil and groundwater contamination. Construction activities undertaken at the Temple Mill Lane application area will also be covered by a CMS, as described above for the Rail Lands site.

The mitigations measures to counter the adverse effects of the operational phase of the development will be the same as those described above for the Rail Lands site.

HIGHWAYS IN LONDON BOROUGH OF NEWHAM

Chemical analysis of soil and groundwater samples will be incorporated into any ground investigation undertaken along the highways routes, prior to upgrade of the roads and construction of the flyovers and

bridges, in order to characterise the ground conditions at the site with respect to soil and groundwater contamination. Risks associated with impacted ground along the highway route will be mitigated by adoption the CMS to control potential adverse health and safety effects during construction, as described for the Rail Lands site above. Effects of aggressive ground conditions upon sub-surface structures will be mitigated by the incorporation of suitably resistant building materials into the design of the structures. Effects from fuel or oil spills during operation of the new highways will be mitigated by the incorporation of oil interceptors into the drainage design for the highways.

HIGHWAYS IN LB TOWER HAMLETS

The same mitigation measures will be adopted during construction and operation of the LBTH highways as those described above for the LBN highways.

HIGHWAYS IN LB HACKNEY

The same mitigation measures will be adopted during construction and operation of the LBH highways as those described above for the LBN highways.

HIGHWAYS IN LB WALTHAM FOREST

The same mitigation measures will be adopted during construction and operation of the LBWF highways as those described above for the LBN highways.

OFF SITE INFRASTRUCTURE WORKS

The same mitigation measures will be adopted during construction phase of the off-site infrastructure works as those described above for the LBN highways.

TV AND RADIO

TERRESTRIAL TELEVISION

The shadows produced by the proposed development are likely to affect a number of houses in the area of Leytonstone and Snaresbrook. In the case of reflections, Zone 1 is planned for development first which would mean that analogue services may still be in use, though at a lesser extent than at present. Therefore initially the development may cause some ghosting in the areas of Wanstead and Walthamstow.

TV services may be restored in these areas by choosing the most appropriate among a number of different methods. The method that is suitable for a particular location will depend on the nature and degree of the impairment to television reception. The choice of the method to be used in a particular case will need to be made by a technically qualified installer of television services.

The various methods are:

- **Improving the receiving antenna.** This involves the installation of a new higher gain antenna. This will provide two benefits; firstly, it will enhance the gain of the antenna and increase the received signal strength; and secondly, it will improve the antenna directional response, thus reducing the impact of reflected signals and shadows. The effect of shadows may be circumvented in some instances by

<p>making better use of diffracted direct signals and/or using reflected signals off other buildings;</p> <ul style="list-style-type: none"> • Relocating the receiving antenna. In some circumstances the interference is extremely localised and relocating the receiving antenna at another point in a building may be able to improve the received signal strength sufficiently. This may be because there are no reflections • received in that position and/or the effect of shadows is obviated by making better use of diffracted direct signals and/or using reflected signals off other buildings; • Retuning the receiver equipment. This may also include realigning the existing antenna and maybe even replacing it with a re-located or new antenna. There may be alternative transmitters available whose signal is not affected by the new building. These can provide substitute services in affected areas. In the event that the above options fail to resolve reception problems a more fundamental (and expensive) solution is the provision of a completely new service. This could be in any one of the three following forms, with the choice of service in a particular instance being based on service availability and the cost of implementation: <ul style="list-style-type: none"> • A digital cable television service; • A digital satellite television service; • An alternative rebroadcast transmitter, i.e. a 'self help' system where a signal 'master' antenna feeds an amplified signal that is distributed either by cable or by radio to the affected buildings. <p>SATELLITE TELEVISION</p> <p>As discussed earlier in the study, in a worst case scenario, satellite services may be impaired up to about 300m in a northerly direction from the proposed development. TV Services may be re-instated either by reinstalling the receiving dish antenna in a different position or by subscribing to Cable TV services. The former solution is preferred because of its lower cost. However, when the former solution is not practical, the latter one will need to be applied. With respect to satellite TV services inside the development, taller buildings in the south of the development are likely to affect satellite TV services in buildings in the north.</p> <p>MITIGATION MEASURES</p> <p>In order to more precisely define mitigation measures for potential impacts in the identified sensitive areas, the Development Partners will undertake investigations of the existing reception conditions in these areas, during the design of spatial masterplans. This information will provide the basis for determining the extent of potential impacts that may occur when such development takes place.</p>		
URBAN SERVICES		
<p>GENERAL</p> <p>For all urban services the most significant impacts are as a result of the off-site work. It is recommended that all new work, diversion works and reinforcement along the same road are co-ordinated, so that wherever possible the work is carried out at the same time using common trenches, logically sequenced where trench sharing is not feasible.</p> <p>Contractors will subscribe to the "Considerate Constructors Scheme", which limits the daily hours of work and disturbance to local residents. Method Statements should be produced, outlining the Contractors proposals to minimise impact by reducing traffic movements, installing screening etc. All work will be carried out to comply</p>	<p>C1(c) – Site Wide CMS</p> <p>G1-G7 – Zonal Construction Method and Management</p>	

<p>GAS A route proving exercise will identify the most appropriate route for the new supply, and will take into account the disturbance to the existing gas network and other services as part of this assessment.</p> <p>Off site work to install or reinforce utilities in the road will be co-ordinated to minimise the disruption to the local residents.</p> <p>POTABLE WATER TWUL should consider the option of relining pipes rather than installing new pipes to supply the site if appropriate. This is a potentially quicker method and reduces the need to open up trenches in existing roads.</p> <p>A route proving exercise will identify the most appropriate route for the new supply, and will take into account the disturbance to the existing water network and other services.</p> <p>Off site work to install or reinforce utilities in the road will be co-ordinated to minimise the disruption to the local residents.</p> <p>FOULWATER DRAINAGE Off site work to install or reinforce utilities in the road will be co-ordinated to minimise the disruption to the local residents. The works to combined sewers will be programmed, where possible, to coincide with periods of reduced flow.</p> <p>COMMUNICATIONS Managing the ducts can prevent repeated and unnecessary lifting of covers to remove or pull new communication lines. Consideration should be given to appointing a site network manager who will regulate the use of the on-site duct system. Off site work to install or reinforce utilities in the road will be co-ordinated to minimise the disruption to the local residents.</p>		
WASTE MANAGEMENT		
<p>RAIL LANDS OUTLINE PLANNING APPLICATION AREA A range of mitigation measures is available to minimise the effects of wastes generated during the construction and operation of Stratford City.</p> <ul style="list-style-type: none"> • The “do nothing” option, that is to assume that the local authority will collect and dispose of all wastes which may be generated, is unlikely to be acceptable to the responsible authorities. • The “do everything” option, that is to employ all available waste minimisation, recycling and re-use opportunities and best practices, to exceed national, regional and local targets for the recycling of MSW is unlikely to be acceptable to the waste producers or the developers. • A compromise, achieving greatest value in terms of waste reduction, will be required. <p>Discussions to achieve this compromise, the balance of which is likely to change with time and improved practices, should be established with the responsible authorities and revisited at regular intervals as the</p>	<p>C1(a) – Sustainable design manual to include strategy for waste management.</p> <p>M – Contaminated Land and Remediation Strategy</p> <p>W1 – Waste</p>	

development of Stratford City progresses.

CONSTRUCTION WASTE

- A commitment to re-use construction wastes, including waste raw materials, demolition wastes and excavated spoil, within the scheme for landscaping, backfilling and other purposes has been made. Where possible, excavated materials will be incorporated into the design and landscaping of the development, thus minimising the quantity of surplus spoil generated for off-site Disposal.
- Demolition wastes will include materials such as used bricks and scrap metal. Where possible, it is recommended that these materials be recovered to minimise the quantity of these wastes arising for disposal. Buildings suspected of containing asbestos should be surveyed and any asbestos found should be removed by a specialised waste contractor.
- Waste arisings due to construction are likely to constitute approximately 10% of the raw materials brought onto site. It is recommended that these wastes be dealt with primarily through careful management measures. These issues have been addressed in the Construction Method Statement, which sets out a method for materials handling at the site.
- Materials such as packaging could be returned to the suppliers for recycling.
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OPERATIONAL WASTES

It is recommended that operational waste arisings at Stratford City be dealt with through a combination of design and management measures. The principles of the waste hierarchy, should be followed to mitigate the quantity of wastes arising as a result of the construction and operation of the development. Under the waste hierarchy, waste minimization is the preferred option. This could be achieved by limiting the quantities of wastes at source, through design measures to reduce the quantity of surplus raw materials entering the site.

The segregation and recycling of wastes produced at the site is recommended in order to limit the quantity of wastes arising for disposal and assist in meeting UK government, GLA and LBN policy targets. As such, the provision of suitable facilities for the segregation and storage of the different waste streams identified will be required. Examples of wastes which could be recycled include materials such as office paper, cardboard, waste wood, glass, toner cartridges, scrap metal and plastics. Provision for the segregation of compostable wastes derived from residences, catering facilities and garden maintenance should also be considered. It is also recommended that provision be made for the segregation and storage of hazardous wastes, such as fluorescent lighting tubes and car batteries.

In order to facilitate the achievement of the recycling targets and enable the maximum levels of recycling, and therefore mitigation, of waste arisings to be undertaken at Stratford City, it is recommended that waste segregation and storage facilities be designed to be convenient and simple to use. In view of this, it is also recommended that best practice and emerging techniques such as collection chutes for high rise residential blocks, underground stores and automated waste collection systems be considered for use at the proposed development.

SUSTAINABLE WASTE MANAGEMENT STRATEGY

For the Stratford City development, sustainable methods of waste management should be favoured according

Management measures

to the waste hierarchy, as set out below:

The Waste Hierarchy

- Waste reduction **Most sustainable**
- Re-use of materials
- Recycling and composting .
- Landfill or incineration with energy recovery
- Disposal without energy recovery **Least sustainable**

For waste management to be sustainable, what is thrown away or disposed of should not exceed the production and absorptive capacities of the waste system or environment. To achieve this will require major reductions in the volumes and types of materials which are finally disposed, making sure that the methods used are as high in the waste hierarchy ranking as possible. For sustainable waste management to be achieved, the technical, financial and organisational resources available to Stratford City must be drawn upon collectively. It is recommended that the proposed waste strategy should include the following objectives:

- Waste minimisation at source, which should be the overarching objective;
- Working with the London Borough of Newham, East London Waste Authority and Shanks to achieve applicable targets.
- Recycling facilities for a range of materials will be provided for all site buildings and in public spaces;
- Where possible sustainable materials will be considered for the construction and operation of Stratford City;
- Opportunities for the movement of waste arisings from Stratford City by rail and water will be explored;
- A programme of awareness raising regarding waste management issues will be conducted at Stratford City to ensure that occupants are aware of how to use the facilities and of ongoing progress;
- All recycling and waste storage facilities will be designed in accordance with relevant guidance;
- Best practice and emerging techniques for the storage and recycling of waste at Stratford City will be explored; and
- Data on waste production and material recovery for the Stratford City site will be collected to enable the recycling performance and quantity of waste produced on the estate to be monitored periodically

SUMMARY OF MITIGATION MEASURES

Mitigation measures will be required to address the quantity of waste produced, particularly with a view to meeting applicable recycling targets. Proposed mitigation measures include:

- the provision of facilities for the segregation and storage of recyclable materials.
- the use of best practice techniques, such as underground storage facilities, automated waste collection techniques and chute collection systems for residential buildings, for use at the site.
- on-site re-use of inert materials generated during the construction phase of the development.
- minimisation of raw material wastes.
- preparation of a sustainable waste management strategy for Stratford City.

TEMPLE MILL LANE OUTLINE PLANNING APPLICATION AREA

The Temple Mill Lane Outline Planning Application Area is to be utilised as playing field space. As such, no waste arisings have been predicted and mitigation measures are not required for this part of the site.

HIGHWAYS IN THE LONDON BOROUGH OF NEWHAM, TOWER HAMLETS, HACKNEY AND WALTHAM FOREST

It has been assumed for the purpose of this assessment that waste arisings will be dealt with by the appropriate subcontractor. It is recommended that, where possible, wastes arising from the proposed highway improvements be re-used for backfilling or other purposes. Demolition of premises, associated with highway improvements, may generate wastes which contain recyclable materials, such as scrap metal. It is recommended that these waste materials are recovered where possible.

OFF SITE INFRASTRUCTURE WORKS

It has been assumed for the purpose of this assessment that waste arisings due to off-site infrastructure works will be dealt with by the appropriate subcontractor. It is recommended that, where possible, wastes arising from the proposed infrastructure works be re-used for backfilling or other purposes.

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